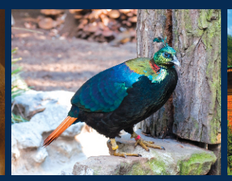
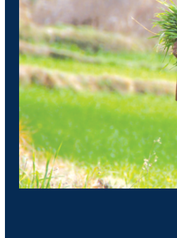


Uttarakhand was created in the year 2000 as a state to give voice to the aspirations of the people in the hills. After achieving high growth rate particularly in the recent years, it looks ahead towards sustained development in the future. Based on the Sustainable Development Goals (SDGs) framed by the United Nations, this document *Uttarakhand: Vision 2030* lays out the future roadmap for the state of Uttarakhand. It outlines the vision for the SDGs and sets out periodic targets appropriate for the state up till 2030 along with a strategy to achieve them. The overall *Vision 2030 for the state is to transform the Uttarakhand economy into a prosperous, healthy state such that the people are educated and gainfully employed in an equitable society, synergy is enhanced between the environment and the inhabitants, and that the development process is sustainable and inclusive.*

UTTARAKHAND Vision 2030



Uttarakhand Government

Department of Planning
Government of Uttarakhand

INSTITUTE FOR HUMAN DEVELOPMENT

UTTARAKHAND
Vision 2030

Uttarakhand

Vision 2030

Uttarakhand

Vision 2030

Government of Uttarakhand

Department of Planning
Government of Uttarakhand

INSTITUTE FOR HUMAN DEVELOPMENT

www.ihdindia.org

Prepared by:

INSTITUTE FOR HUMAN DEVELOPMENT

Plot No. 84, Functional Industrial Estate (FIE), Patparganj
Delhi- 110092; Phone: +91-11-2215-9148/49;
Mobile: +91-987-117-7540

Email:- mail@ihdindia.org; Website: www.ihdindia.org

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उत्तराखण्ड सचिवालय,
देहरादून-248001
फोन : 0135-2755177 (का.)
0135-2650433
फैक्स : 0135-2712827

संदेश

अत्यन्त हर्ष का विषय है कि नियोजन विभाग द्वारा संयुक्त राष्ट्र संघ द्वारा निर्धारित सतत विकास लक्ष्यों (SDGs) के आधार पर राज्य का विजन 2030 तैयार किया गया है, जो राज्य के नीति नियोजन प्रक्रिया को प्रभावी बनाने हेतु अत्यन्त उपयोगी होगा। उत्तराखण्ड सरकार राज्य में समेकित एवं समन्वित विकास को बढ़ावा देने के साथ ही सभी नागरिकों, युवाओं बुजुर्गों, पुरूषों और महिलाओं को समान रूप से स्थायी विकास हेतु दीर्घकालिक लाभ एवं पर्यावरण सुरक्षा पर विशेष बल देने के लिए प्रतिबद्ध हैं।

विजन 2030 रिपोर्ट में संयुक्त राष्ट्र द्वारा निर्धारित 17 सतत विकास लक्ष्यों (Sustainable Development Goals) को सफलता पूर्वक प्राप्त करने के लिए राज्य की आधारभूत स्थिति तथा मौजूदा संसाधनों के आंकलन के आधार पर 3 वर्षीय कार्य योजना, 7 वर्षीय दीर्घकालिक योजना के अनुरूप योजनाऐं तैयार की जानी है, जिस हेतु सतत विकास लक्ष्यों और संकेतकों को प्राप्त करने के लिए प्रमुख रणनीतियों के साथ मौजूदा कार्यक्रमों और नीतियों के बारे में चर्चा की गयी है, जो निःसंदेह सराहनीय है।

हमारा दृष्टिकोण उत्तराखण्ड राज्य की अर्थव्यवस्था को समृद्ध कर राज्य को देश के अग्रणी राज्य में शामिल करने के साथ–साथ समान सामाजिक न्याय, पर्यावरण तथा विकास की प्रक्रिया के बीच ताल–मेल को बढ़ावा देना है। हम पर्यटन के क्षेत्र में पर्यटन स्थलों को वैश्विक स्तर का तैयार कर घरेलू तथा विदेशी पर्यटकों के लिए शीर्ष प्राथमिकता प्रदान करना चाहते है। हम राज्य के दूर–दराज पहाड़ी क्षेत्रों में औद्यानिकी के द्वारा कृषि क्षेत्र को पुनर्जीवित करने तथा पारिस्थितिकी के अनुकूल औद्योगिकीकरण को बढ़ावा देने के लिए प्रतिबद्ध है।

मैं नियोजन विभाग उत्तराखण्ड तथा इन्स्टीट्यूट फॉर ह्यूमन डेवलपमैन्ट के सम्बन्धित समस्त अधिकारियों एवं कर्मचारियों को विजन 2030 रिपोर्ट तैयार करने के लिए बधाई देता हूँ।

मैं नियोजन विभाग की इस पहल पर सिविल सोसाइटी, औद्योगिक संस्थानों, शैक्षिक और अनुसंधान संस्थानों, मीडिया, पंचायतों आदि सहित विभिन्न हितधारकों से प्रतिक्रिया और इनपुट प्राप्त करने के लिए उत्सुक हूँ। मुझे आशा है कि विजन 2030 की यह रिपोर्ट राज्य के नीति नियोजन में सहायक सिद्ध होगी तथा हम राज्य के नागरिकों की प्रगति और समृद्धि के लिए प्रभावी एवं सुनियोजित नियोजन कर सकेगे।

(त्रिवेन्द्र सिंह रावत)
मुख्यमंत्री

उत्पल कुमार सिंह
Utpal Kumar Singh

मुख्य सचिव
Chief Secretary

उत्तराखण्ड शासन
Govt. of Uttarakhand
नेताजी सुभाष चन्द्र बोस भवन
Netaji Subhash Chandra Bose Bhawan
सचिवालय
Secretariat
4, सुभाष मार्ग, देहरादून
4, Subhash Marg, Dehradun
Phone (Off.) 0135-2712100
0135-2712200
(Fax) 0135-2712500
E-mail : cs-uttarakhand@nic.in

Foreword

It gives me great pleasure to learn that a Vision 2030 document has been prepared for the State of Uttarakhand highlighting sectors that could act as drivers of growth and laying down significant milestones to be achieved by 2030. This document is based on the seventeen Sustainable Development Goals (SDGs) adopted by the United Nations General Assembly in 2015 and which came into force on 1 January 2016. These SDGs will inform future development framework for the global community and our planet.

The Vision document is a culmination of a long process of intra and inter departmental brainstorming catalysed by the State Planning Department and Institute for Human Development (IHD), New Delhi since 2016. The SDGs have been arranged around the four themes of Sustainable Livelihood, Human Development, Social Development and Environmental Sustainability through a detailed exercise that took into account the baseline status, present challenges, detailed indicators for each SDG, possible strategies and target values for the short, medium and long term achievements.

I have been told that over 50 meetings were conducted between stakeholders and the IHD team, during the course of drafting of this detailed Vision document. I would like to congratulate the Department of Planning, the Secretaries of all departments and their teams for their untiring and dedicated efforts in preparing the Vision document. I would also like to thank the IHD team for their contribution in preparing this landmark report under the guidance of the State Planning Department.

The Vision document for Uttarakhand lays out a roadmap for the future and will help steer the course of development in the state for more than a decade. We look forward to effective partnership with all stakeholders in fulfilling this ambitious agenda.

Lastly, I would like to place on record my sincere appreciation of the patient hardwork put in by Shri Amit Singh Negi, Secretary (Finance) , Dr. Ranjit Kumar Sinha, Secretary (Planning) and Dr. Manoj Kumar Pant, Chief Co-ordination Officer, Planning Department of Uttarakhand in making this document possible.

(Utpal Kumar Singh)
Chief Secretary

डॉ. रंजीत कुमार सिन्हा
आई.ए.एस.
सचिव (प्र.)

Government of Uttarakhand

नियोजन विभाग
उत्तराखण्ड शासन
सोबन सिंह जीना भवन
4, सुभाष मार्ग, देहरादून
टेलीफोन: 0135-2659850

Preface

The state of Uttarakhand proudly presents its own Vision 2030 document, following the bold and transformative Agenda based on the SDGs, to which India is a signatory. The 193-Member United Nations General Assembly formally adopted the 2030 Agenda for Sustainable Development comprising a set of 17 Sustainable Development Goals and 169 target, which were hailed as a universal, integrated and transformative vision for a better world.

The Agenda is a plan of action for people, planet and prosperity and simultaneously aims to strengthen universal peace in larger freedom. During the collective journey towards a transformed future, the state is committed that no-one will be left behind. This mountain state is also committed towards an environmentally sustainable development trajectory, since a delicate equilibrium needs to be maintained between the man-made activities required to usher in prosperity for its people and the pristine natural gift of forests, rivers and mountains that the state is blessed with.

The framework of the Vision document for Uttarakhand uses four thematic categories to group the set of SDGs. These four thematic categories are Sustainable Livelihoods, Human Development, Social Development, and Environmental Sustainability.The report presents the baseline status, vision, challenges in attaining the vision and strategies to overcome the same for each SDG with detailed targets and indicators for the short term, medium term and long term till 2030. To realize the ambitious agenda articulated in the vision document, resource mobilization is of great importance and individual departments have made necessary exercises to plan for the same. The SDGs are inter-linked and hence it is also very important that these are pursued along with close co-ordination of various departments for full realization of the potential of goals and targets.

The Vision 2030 document has been prepared by a dedicated set of people from the state government, spearheaded by the Planning department, and the consultants from Institute for Human Development, New Delhi. It has benefited from numerous meetings and consultations with various stakeholders, in particular from comprehensive brainstorming meetings headed by the Chief Secretary, with representatives from all concerned departments. The Vision 2030 document reflects the hopes and aspirations of the people of Uttarakhand and chalks out a clear path to attain the vision. Let us take the steps towards realization of these dreams and usher in an era of inclusive and Sustainable Development for all people of Uttarakhand.

(Dr. Ranjit Kumar Sinha)
Secretary (I/c) Planning

ACKNOWLEDGMENTS

The Institute for Human Development (IHD) would like to express its immense gratitude to the Government of Uttarakhand for awarding the preparation of the document *Uttarakhand: Vision 2030* to the Institute. The preparation of this document involved considerable work in which a number of persons were involved.

A number of scholars at IHD have worked in this important endeavour. Dr. Tanuka Endow led the work as its Principal Author and Editor. Dr. Balwant Mehta, Professor Sarthi Acharya, Professor Dev Nathan, Professor Shipra Maitra and Dr. Suparna Pal contributed towards the preparation of background papers. Additional contributions to various themes and chapters were made by Ms. Amrita Datta, Professor I.C. Awasthi and Dr. Akhilesh Sharma. Professor Sarthi Acharya and Dr. Balwant Mehta also contributed to consultation meetings with the Government of Uttarakhand. Mr. Ramesh Joshi helped coordinate with various departments of the Government of Uttarakhand.

The IHD Team received all the needed support from the Government of Uttarakhand in preparing the report. We are very grateful to Shri Utpal Kumar Singh, Chief Secretary, Government of Uttarakhand for his support and encouragement. We are also grateful to the then Chief Secretary of Uttarakhand, Shri S. Ramaswamy, for inaugurating the first Consultative Workshop on 14 December 2016, which helped refine the scope and thrust of this exercise. After that a series of discussion meetings and workshops were held in which senior officials from various departments of the Government of Uttarakhand participated and their insights and suggestions contributed in preparation of the report. Apart from meetings, the officials of the Uttarakhand Government gave valuable insights in a number of departmental discussions held separately.

We would like to mention a few names in particular who actively contributed to this exercise. We are thankful to the Department of Planning for its support by way of providing data and advice as well as coordinating with other departments. Dr. Ranjit Kumar Sinha, Secretary (IC), Department of Planning gave his active guidance and support. We also received valuable support from Dr. U.K. Panwar, Shri Amit Singh Negi and Shri B.S. Manral, former Principal Secretary, Secretary, and Additional Secretary, respectively, of the Department of Planning. Dr. Manoj Pant, Chief Coordinating Officer of the Department of Planning, not only helped in coordination but also gave advice and support at every stage of preparing the document.

The layout and production of the report required many efforts. Shri. Siddharth Dhote put considerable effort in making appropriate infographics for the various sections and chapters of the report. Ms. Priyanka Tyagi, as Production Manager, led and coordinated the different processes of production. Thanks are also due to Banyan Infomedia Pvt. Ltd. for contributing to design of infographic plates. Shri. Mrityunjay Chatterjee very ably designed the text and graphics for the report. We deeply appreciate the help of Ms. Anupma Mehta for copy editing the text.

We are indeed very happy that the efforts in preparing and producing this report have been successful. IHD feels privileged to be part of this important exercise undertaken by the Government of Uttarakhand.

14 May, 2018

Alakh N. Sharma
Director
Institute for Human Development
Delhi

THE REPORT TEAM

IHD Team

Overall Guidance and Advice
Alakh N. Sharma

Principal Author, Coordinator and Editor
Tanuka Endow

Co-coordinator
Balwant Mehta

Production Manager
Priyanka Tyagi

Info graphics
Siddharth Dhote

Background Chapter Contributors

Sarthi Acharya

Balwant Mehta

Shipra Maitra

Dev Nathan

Suparna Pal

Other Theme Contributors

I.C. Awasthi

Amrita Datta

Akhilesh Sharma

Support and Advisory Team at Department of Planning

Dr. Ranjit Sinha
Secretary (IC)

Dr. Manoj Kumar Pant
Chief Coordinating Officer

Shri Ashish Joshi
Additional Secretary

Shri K.K. Pant
Additional Research Officer

ABBREVIATIONS

ANC	Antenatal Care
ANM	Auxiliary Nurse Midwife
APL	Above Poverty Line
APMC Act	Agriculture Produce Market Committee Act
ASHA	Accredited Social Health Activist
AWD	Alternate Wetting and Drying
AYUSH	Ayurveda Yoga Unani Siddha Homoeopathy
BFD	Best Finger Detection
BIP	Block Irrigation Plan
BPL	Below Poverty Line
BSUP	Basic Service for the Urban Poor
CAD	Computer Aided Design
CAF	Compensatory Afforestation Fund
CAGR	Compound Annual Growth Rate
CAP	Centre for Aromatic Plants
CAPP	Community Awareness and Participatory Programme
CAs	Certification Agencies
CCC	Course on Computer Concepts
CCTNS	Crime and Criminal Tracking Network and Systems
CDM	Clean Development Mission
CEDAW	Convention on Elimination of all Kinds of Discrimination against Women
CFL	Compact Fluorescent Lamp
CII	Confederation of Indian Industry
CIP	Concessional Industrial Package
CIPHET	Central Institute of Post Harvest Engineering and Technology
CLF	City Level Federation
CNG	Compressed Natural Gas
COP	Conference of Parties
CSA	Climate Smart Agriculture
CSC	Cargo Services Center
CSCs	Common Service Centers
DAY	Deendayal AntyodayaYojana
DAY-NULM	Deen Dayal AntyodayaYojana National Urban Livelihood Mission
DBTL	Direct Benefit Transfer of LPG or Pradhan Mantri LPG subsidy Pahal Yojana
DDUGJY	Deen Dayal Upadhyaya Gram Jyoti Yojana
DDU-GKY	Deen Dayal Upadhyay Grameen Kaushalya Yojana
DEICs	District Early Intervention Centers
DIP	District Irrigation Plan
DIPP	The Department of Industrial Policy and Promotion
DLIS	Disbursement Linked Indicators

DMs	District Magistrates
DOTS	Directly Observed Treatment, Short-Course
EDI	Entrepreneurship Development Institute
EDP	Entrepreneurship Development Programme
ESDM	Electronics System Design and Manufacturing
ESTP	Employment through Skill Training and Placement
FAO	Food and Agriculture Organization
FIG	Farmers Interest Group
FPC	Farmer Producer Companies
FPO	Farmers Producers Organization
FPS	Fair Price Shops
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GSDP	Gross State Domestic Product
GST	Goods and Services Tax
HDPE	High Density Polyethylene
HIV	Human Immunodeficiency Virus
HMNEH	Horticulture Mission for North-East and Himalayan States
HRDI	Herbal Research and Development Institute
HRVC	Hazard Risk Vulnerability and Capacity
HYV	High Yielding Variety
ICIMOD	International Centre for Integrated Mountain Development
ICMR	Indian Council of Medical Research
ICT	Information and Communication Technology
IEC	Information Education and Communication
IFA	Iron Folic Acid
IFAD	International Fund for Agricultural Development
IIES	Integrated Industrial Estates
ILSP	Integrated Livelihood Support Project
IMR	Infant Mortality Rate
INDCs	Intended Nationally Determined Contributions
INDP	India's Nationally Determined Plan
INM	Integrated Nutrient Management
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
IPMU	Investment Programme Management Unit
IRCTC	Indian Railway Catering and Tourism Corporation
IRRI	International Rice Research Institute
IRS	Incident Response System
IT	Information Technology
ITES	Information Technology Enabled Services
ITI	Industrial Training Institute
JICA	Japan International Cooperation Agency

JNNSM	Jawaharlal Nehru National Solar Mission
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
KMC	Kangaroo Mother Care
LBW	Low Birth Weight
LDPE	Low Density Polyethylene
LED	Light Emitting Diode
LLDPE	Linear Low Density Polyethylene
LLINs	Long Lasting Insectidal Nets
LPCD	Litres Per Capita Daily
LPG	Liquefied Petroleum Gas
MCP	Mother and Child Protection
MDDA	Mussorie-Dehradun Development Authority
MDGs	Millennium Development Goals
MDM	Mid Day Meal
MEIT	Ministry of Electronics and Information Technology
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MIS	Management Information System
MIS	Market Intervention Scheme
MMP	Mission Mode Project
MMR	Maternal Mortality Ratio
MNRE	Ministry of New and Renewable Energy
MSDP	Multi Sector Development Programme
MSME	Micro Small and Medium Enterprises
MSP	Minimum Support Price
MT	Metric Ton
NAS	National Achievement Survey
NBSUs	Net Backup Support Utility
NCD	Non Communicable Diseases
NeGP	National e-Governance Plan
NER	Net Enrolment Ratio
NFHS	National Family Health Survey
NFSM	National Food Security Mission
NGOs	Non Governmental Organizations
NHAI	National Highways Authority of India
NHM	National Horticulture Mission
NIELIT	National Institute of Electronics and Information Technology
NMSA	National Mission for Sustainable Agriculture
NPCDCS	National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease and Stroke
NRC	Nutrition Rehabilitation Centres
NRLM	National Rural Livelihood Mission
NSDM	National Skill Development Mission
NSS	National Service Scheme

NSSO	National Sample Survey Organization
NTFP	Non-Timber Forest Product
NTP	National Tuberculosis Programme
O &M	Operation and Maintenance
OECD	Organization for Economic Co-operation and Development
OPD	Out Patient Department
OSC	One Stop Centre
PAN	Permanent Account Number
PDS	Public Distribution System
PET	Polyethylene Terephthalate
PHCs	Primary Health Centres
PIL	Public Interest Litigation
PIO	Public Information Officer
PMAY	Pradhan Mantri Awas Yojana
PMGSY	Pradhan Mantri Gram Sadak Yojana
PMKSY	Pradhan Mantri Krishi Sinchai Yojana
PNC	Prenatal Care
PP	Polypropylene
PPH	Post Partum Haemorrhage
PPMS	Programme Performance Monitoring System
PPP	Public Private Partnership
PRIs	Panchayati Raj Institutions
PTCUL	Power Transmission Corporation of Uttarakhand Limited
PVC	Polyvinyl Chloride
PWD	Public Works Department
RAD	Rainfed Area Development
RAY	Rajiv Gandhi Awas Yojana
RDT	Rapid Diagnostic Tests
REC	Renewable Energy Certificate
RGGVY	Rajiv Gandhi Grameen Vidyutikaran Yojana
RKVY	Rashtriya Krishi Vikas Yojana
RNTCP	Revised National Tuberculosis Control Programme
RPO	Renewable Purchase Obligation
RTI	Right to Information
RTS Act	Right to Service Act
SAARC	South Asian Association for Regional Cooperation
SAPCC	State Action Plan for Climate Change
SBM	Swachh Bharat Mission
SC	Scheduled Caste
SDG	Sustainable Development Goal
SDIS	Skill Development Initiative Scheme
SDM	Sub-Divisional Magistrate
SDP	State Domestic Product

SECC	Socio Economic Caste Census
SeMT	State e-Mission Team
SHG	Self Help Group
SHP	Small Hydro Power
SIIDCUL	State Infrastructure & Industrial Development Corporation Uttarakhand Limited
SIMO	Skill India Mission Operation
SIP	State Irrigation Plan
SJSRY	Swarna Jayanti Shahari Rozgar Yojana
SLAS	State Level Achievement Surveys
SLL	Special and Local Laws
SMAM	Sub-Mission on Agricultural Mechanization
SMART	Simple Monitored Accountable Responsive and Transparent
SMEs	Small and Medium Sized Enterprises
SMID	Social Mobilization and Institution Development
SMSP	Sub-Mission on Seed and Planting
SNCUs	Special New Born Care Unit
SOPs	Standard Operating Procedures
SRI	Systems of Rice Intensification
SRR	Seed Replacement Rate
ST	Scheduled Tribe
STPs	Skill Training Providers
SUH	Shelter for Urban Homeless
SWAN	State Wide Area Network
SWAp	Sector Wide Approach
TB	Tuberculosis
TCPD	Town and Country Planning Department
TFR	Total Fertility Rate
TPP	Twenty Point Programme
U5MR	Under 5 Mortality Rate
UAPCC	Uttarakhand Action Plan for Climate Change
UERC	Uttarakhand Electricity Regulatory Commission
UHUDA	Uttarakhand Housing and Urban Development Authority
UIDAI	Unique Identification Authority of India
UJVNL	Uttarakhand Jal Vidyut Nigam Limited
UKH	Uttarakhand
UKSDM	Uttarakhand Skill Development Mission
ULBs	Urban Local Bodies
ULIPH	Uttarakhand Livelihoods Improvement Project for the Himalayas
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNFCCC	United Framework Convention on Climate Change
REDD	Reducing Emissions from Deforestation and Forest Degradation

UNWTO	United Nations World Tourism Organization
UOCB	Uttarakhand Organic Commodity Board
UPCL	Uttarakhand Power Corporation Limited
UPS	Usual Principal Status
UREDA	Uttarakhand Renewable Energy Development Agency
URTS Act	Uttarakhand Right to Service Act
URTSC	Uttarakhand Right to Service Commission
USCRC	Uttarakhand Science Research and Education Centre
USTDC	Uttarakhand Seeds and Terai Development Corporation
UTIITSL	UTI Infrastructure Technology and Services Limited
UUSDA	Uttarakhand Urban Sector Development Agency
UUSDIP	Uttarakhand Urban Sector Development Investment Programmme
VCSGPSY	Veer Chandra Singh Garhwali Paryatan Swarozgar Yojana
VIP	Village Irrigation Plan
VRA	Village Revenue Assistant
VSAT	Very Small Aperture Terminal
VTP	Vocational Training Provider
WAPCOS	Water and Power Consultancy Services
WHO	World Health Organization

Tables, Figures, Boxes

Tables

Figures

Boxes

Executive Summary

Human Development

Social Development

Vision 2030 Uttarakhand

Sustainable livelihoods

Environmental Sustainability

Uttarakhand was created in the year 2000 as a new state to give voice to the aspirations of the people in the hills. After achieving high growth rate of above 7 percent for four out of the last five years, it looks ahead towards sustained development in the future. The Vision 2030 report lays out the future roadmap for the state of Uttarakhand, based on the Sustainable Development Goals (SDGs) model framed by the United Nations. A new global development compact was reached in September 2015 in the form of 17 SDGs and enshrined in the 2030 Agenda for Sustainable Development duly adopted at the United Nations by 193 Member States. The Sustainable Development Agenda has become the centre of a renewed development framework for countries of the world following the Millennium Development Goals, which ended in 2015.

The Vision document for Uttarakhand outlines the vision for the SDGs and the targets/indicators as applicable for the state for the coming years till 2030 and indicates the strategy to achieve the same. A set of indicators suitable for the state have been developed for the targets under the individual SDGs, which can be monitored over time.

Uttarakhand Today

Several positive factors have been acting as enablers in favour of the state, including: (i) high economic growth and per capita income, (ii) good social and human development indicators (such as sex ratio and educational attainment), (iii) low poverty at just 11 percent (2011-12) with very little rural–urban disparity, (iv) absence of stark hunger problems, and (v) the fact that the state is, by and large, peaceful. However, one of the issues of concern in the state is the child sex ratio, which is disturbingly low.

Economic Growth: The state has achieved high annual rate of growth (at constant prices) of GSDP at close to 7 per cent for most years, since 2011-12, except in 2014-15 (Figure E1). Recently the growth rate has dipped slightly to 6.77 percent. Per capita income in the state (at current prices) for 2017-18 (advance estimates) is Rs. 1,77,356, which far exceeds the national average of Rs. 1,12,764. (Figure E2).

The state economy is characterised by a high share of the secondary sector at around half of the Gross Value Added of the state at current prices, followed by the share of the tertiary sector at 38.41 per cent, and lastly that of the primary sector at a meagre 11.19 per cent. During the period 2011-12 to 2016-17, the tertiary sector in the state maintained

Figure E1: Year-on year Growth (%) in GSDP (at constant 2011-12 prices) for Uttarakhand

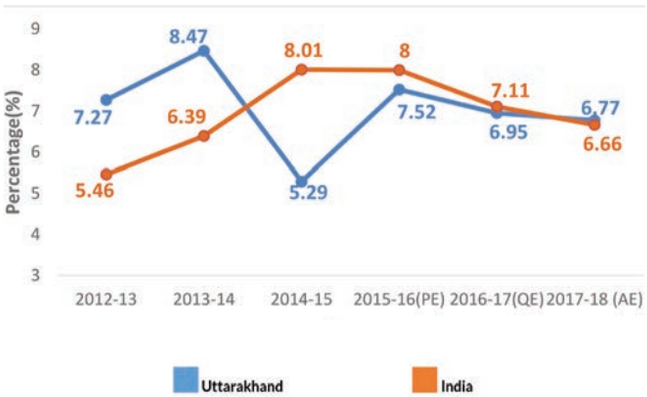
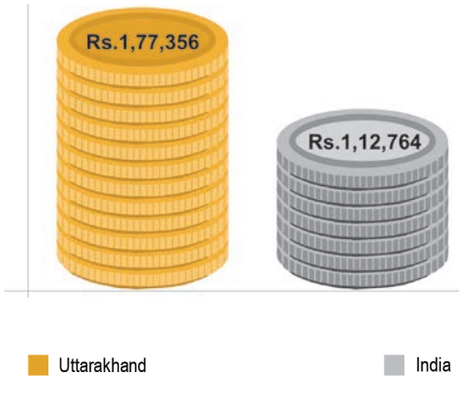


Figure E2: Per capita income in Uttarakhand and India (at current prices) for 2017-18 (advance estimates)



a growth rate of above 6.5 per cent. The secondary sector, too, exhibited healthy growth during this period (Figures E3 and E4).

Poverty: The poverty rate in Uttarakhand is low at 11.26 per cent (2011-12), much below the all-India poverty level of 21.92 per cent for the same year, and there is little rural–urban disparity in poverty rates.

Hunger: Uttarakhand has no overt problem of hunger in the state. The Antyodaya households and erstwhile Below the Poverty Line (BPL) households together account for around a quarter of the beneficiaries.

Education: The access to schooling is good, especially at the primary level. The Net Enrolment Ratio (NER) is 89.18 percent at the primary level and 71 percent at the upper primary level. School completion rate is 100 percent at the primary level and 96.76 percent at the upper primary level. However, NER at the secondary level is much lower at just 51.28 percent.

Health: The current (2012-13) Maternal Mortality Ratio (MMR) in Uttarakhand is 165 per 100,000 live births compared to 167 at the national level (2011-13). In 2015-16, both Infant Mortality Rate (IMR) (40 per 1000 live births) and Under Five Mortality Rate (U5MR) (47 per 1000 live births) in the state were lower than the corresponding national averages. Incidence of Non-communicable disease is an emerging area requiring attention.

The Challenges

Malnutrition and anaemia: Chronic malnutrition among children below the age of five years, is high, as seen from stunting and wasting, affecting, on an

Figure E3: Sectoral Shares in Gross Value Added (current prices) in Uttarakhand

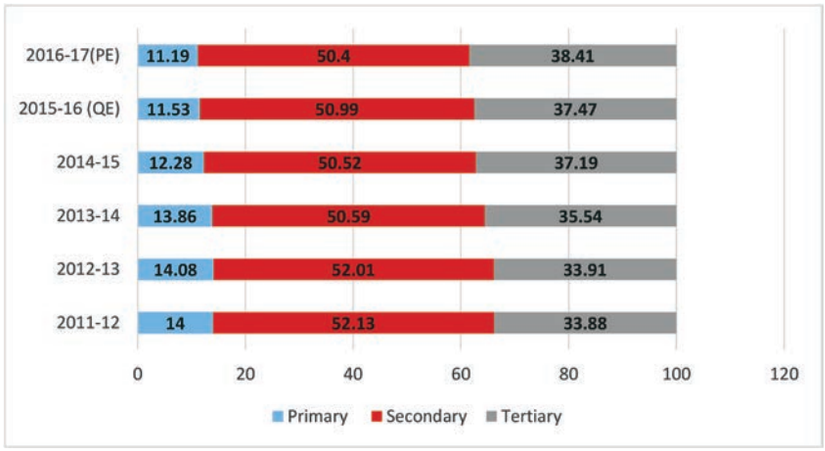
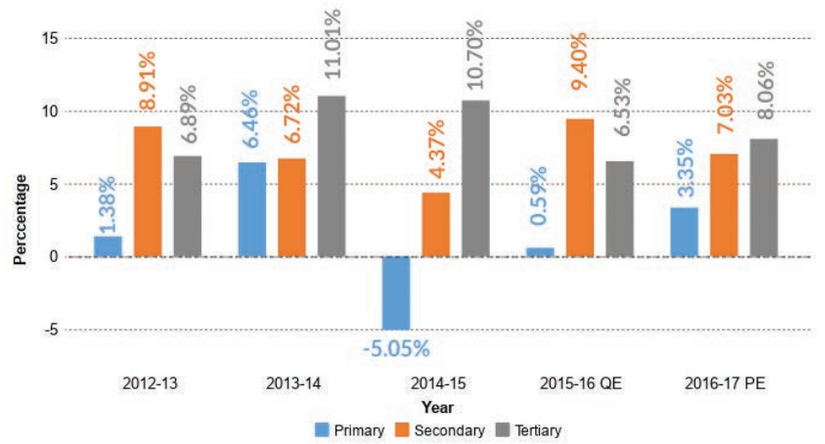


Figure E4: Sector-wise Year-on-year Growth Rate (%) in GSDP (at constant 2011-12 prices)



average, 33.5 per cent, and 19.5 per cent, respectively, of the children in this age group. A little over a quarter of the under-five children are underweight for their age.

Nearly 60 per cent of 6–59 months old children are anaemic. The incidence of anaemia amongst women of reproductive age is also high, at 45.2 percent.

Unemployment and under-employment: The rate of unemployment among the labour force of the working age was 4.3 per cent in the year 2012. This rate was higher among females (7.3 per cent) compared to males (3.1 per cent). The rate of youth unemployment rate is much higher than that of the overall unemployment at 14.3 per cent. The unemployment rate is even higher (17.2 per cent) among youth who have been educated up to the secondary and above levels. Around a quarter of the youth in the state are not in education, training, or employment.

Migration and hills-plains disparity: During the last decade, high economic growth has been accompanied with heavy outmigration of males from the state, with an increasing divide between the hills and plains in several outcomes, which is also manifested in the nature and pattern of migration in the hill and plain regions of the state. Between 2000 and 2011, the rate of growth of population of the hill districts, at 0.70 per cent, was substantially lower than that of the plain districts, at 2.8 per cent (census 2011). The Census also reveals an absolute decline in the populations of two hill districts, viz., Almora and Pauri Garhwal.

Environment: The state is extremely vulnerable to climate-related hazards such as water shortage and also excess monsoonal precipitations leading to severe floods. There is also glacier melting and glacier burst, etc., along with water and air pollution in rural as well as urban areas. Although the state does have a State Action Plan for Climate Change, there is little integration of climate change measures into state polices as yet.

Infrastructure: The state suffers due to poor connectivity of villages with cities as well as withering of the hill economy due to industrialisation and urbanisation. There is a need to build an infrastructure base in an environment-friendly manner, and balance it with the vulnerable mountain economy. Limited land is available for developing industry and infrastructure due to 70 per cent of the land being covered by forests. The State has not been receiving 'Green Bonus' to maintain forest cover, although the state is providing huge mountain ecosystem services to the entire country.

Health: There is severe shortage of health personnel, especially in the hills, for doctors, surgeons, etc. at PHCs and CHCs.

Education: At present the biggest challenge for the state is to improve the quality of education. The state faces a disadvantage in the fact that cost of education delivery in hills is higher than in plains, leading to higher than national average cost. Vocational streams also suffer from inadequate budget.

Vision 2030 Framework for Uttarakhand

The Report is framed with the background of implementation of the 17 Sustainable Development Goals. These milestones have the terminal year in 2030. The framework envisages people at the centre of the development process (Figure E5). Fifteen SDGs are categorized into four groups, each of which contributes towards enhancing the development process for the people of Uttarakhand. The four categories are: Sustainable Livelihoods, Human Development, Social Development and Environmental Sustainability. SDG 14 relating to 'Life Below Water' was considered not applicable for the state. SDG 17 refers to 'Strengthen the Means of Implementation and Revitalize the Global Partnership for Sustainable Development' and is largely applicable at the country level. The aspect of domestic resource mobilization has been discussed in the final chapter.

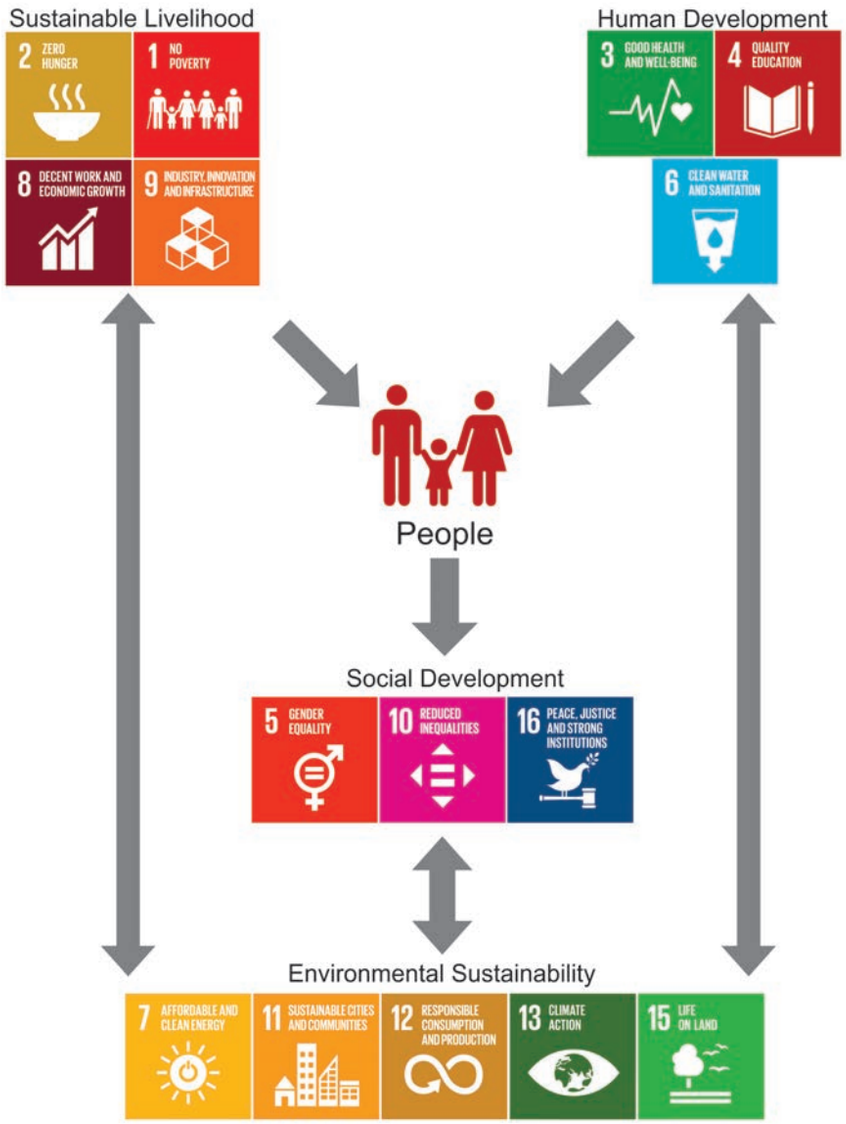
Vision 2030 and the Focus Areas

The Vision 2030 for the state, keeping in mind the implementation of the SDGs, is the following:

> ***Transform the Uttarakhand economy into a prosperous, healthy state such that the people are educated and gainfully employed in an equitable society, synergy between the environment and the inhabitants is enhanced, and the development process is sustainable and inclusive.***

This will need creation of sustainable livelihoods for the people of the state as well as enhancement of human and social development, in a way

Figure E5: Framework of Uttarakhand Vision 2030



that conserves natural resources, protects the environment and such that no-one is left behind.

Strategies for Attaining Vision 2030

1. Creating Sustainable Livelihoods

In Uttarakhand, the poverty is low, but there is concern about generating livelihood for people in the hills, who tend to get by-passed by the growth process. The strategy to provide sustainable livelihoods to all people of Uttarakhand, in the hills and in plains will rely primarily on two growth-driver sectors (Figure E6).

Transforming hill agriculture with emphasis on horticulture, including aromatic and medicinal plants, for improving productivity and creating livelihood, along with promotion of state-wide tourism, both carried out on a Mission Mode, will help the state in generating the necessary livelihood options. The Micro, Small and Medium Enterprises (MSME) is a cross-cutting sector which will link up to the growth-driver sectors to help generate further employment downstream. Simultaneous efforts to develop renewable energy in the form of small hydro-power and expansion of Information Technology to all parts of the state economy will make the growth plan sustainable and make its fundamentals stronger.

Table E1: The Focus Areas Identified for Attaining Vision 2030

	Focus Areas	Aim for 2030
1.	Sustainable and inclusive growth	• Maintain/accelerate the present high growth regime • The gains from development must close the hills-plains gap; therefore create sustainable livelihoods in the hills
2.	Reduce migration by transforming agriculture	Majority of the people in the state are dependent on agriculture, and thus • transform agriculture through diversification towards horticulture, aromatic and medicinal plants, animal husbandry, etc. to make agriculture profitable and retain people in the hills by giving additional employment opportunities • Connect farmers to the market by creating infrastructure
3.	Reduce migration by providing livelihood in hills	Create employment opportunities in hills; also in the tourism sector, forest sector (non-timber forest products).
4.	Improve connectivity in a sustainable manner	Improve access in a hilly state by better connectivity • Physical infrastructure such as roads, railways, air, etc. to be strengthened and expanded • Mobile/internet connectivity to be expanded to even the remotest areas
5.	Plan ahead for sustainable urbanization	Urban development sector must anticipate and • Prepare for increasing influx of people • Greater requirement of public services, water requirement • Greater need for management of waste water as well as solid waste.
6.	Enhance human development	• Provide quality education in schools • Improve access to doctors and health facilities for all, especially in the hills
7.	Improve capability of human resources	Provide suitable skill training and vocational education to all youth, including women, in order to facilitate access to gainful employment
8.	Empower marginalized segments	Empower all the marginalized segments of the population, and especially empower women by eliminating gender disparity and tackling crimes against women and girls.
9.	Enhance environmental sustainability	• Reduce the use of fossil fuel • Opt for renewable sources of energy
10.	Focus on sectors identified as Growth drivers and enablers	Growth Drivers • Horticulture/hill agriculture along with aromatic plants • Medicinal Plants with link to AYUSH • Tourism Enablers: MSME, IT Sector, Small Hydro-power

A. Horticulture Sector

The broad vision is to double the farmers' income for agriculture sector, including horticulture, by 2022. Here income from both on-farm and non-farm activities are included. The area under horticultural products will be expanded and productivity improved. The processing capacity of horticulture produce will be enhanced from 7.5 percent to 15 percent of the total horticulture production by 2030.

The strategy for doubling the farmers' income includes efforts for improving productivity in horticulture and increasing diversification by adopting an integrated approach towards farming. For the former, adoption of Clusters approach as per agro-climatic condition for scale economies, use of high-tech horticulture and precision farming technique (good quality seed with fertilizer, elite planting material with improved root stocks, high density plantation, micro-irrigation and mulching, etc), enhancing production through rejuvenation of old and senile orchards, promotion of high value horticulture crop (such as off-season vegetables, spices, medicinal and aromatic plants), formation of Farmers Interest Groups/Farmers Production Organization, etc. and convergence of ongoing schemes being implemented by various Departments are appropriate strategies.

Organic farming, whereby use of chemical fertilizers harmful for soil, are replaced by natural fertilizers, will be promoted. The area under organic farming will be expanded to 250 thousand hectares by 2030 and third party certification processes for exports will be accelerated.

Comprehensive baseline studies for the available water and soil should be conducted, to get a basic inventory of land resources, especially in the context that to increase the area under horticulture crop, 3.6 lakh hectare culturable fallow land will be targeted. Other strategies would include mapping plant hardiness zones in the state, whereby farmers can determine which plants are most likely to thrive in extreme climates, especially in view of the climatic changes that are taking place. In crop-specific clusters, there would be need to assess requirement of inputs such as fertilizers and the necessary augmentation of supply planned in a phased manner.

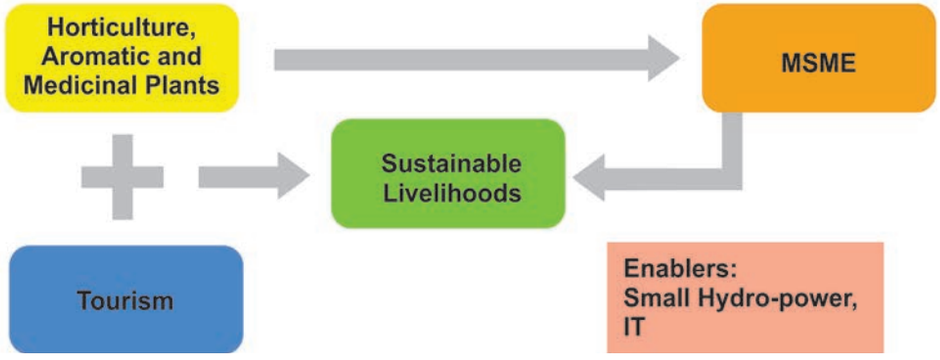
Provision of agricultural extension services is essential for reducing post-harvest losses and facilities for cleaning/grading, drying, storage, extraction, milling, fortification, packaging, transportation and handling of the produce at the farm level or in nearby locations are needed to be set up wherever deficient. This is also important for linkage with the MSMEs for accessing the final market for the value added product.

Simultaneously, there is a need to train farmers in modern technology and equipment to commercialise their business and produce for project wise tasks/programmes. Their training can be linked to existing agricultural universities.

Medicinal and aromatic plants (MAP)

This sector is a focus area for the state in the future and has enormous export potential. The vision is to expand the production of aromatic plants from 625 Ha area under cultivation at present to 16900 Ha by 2030, while the number of farmers engaged in production of aromatic plants will increase from 2000 to 68600.

Figure E6: Strategy for Creating Sustainable Livelihoods for Uttarakhand



The strategies for aromatic plants sector include: Promotion of annual aromatic crops by dovetailing with the MGNREGS and it is important to conduct a baseline survey. Cluster approach will be adopted and village level Farmers' Groups made to develop aroma entrepreneurs where each aroma cluster will have a distillation unit within a radius of 5-6 km to optimise transport costs, and will establish SMEs for villagers thereby promoting socio-economic growth of rural families. The cultivators would need marketing support and the state must also develop institutional support for undertaking R&D on MAP species.

Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) engages in tapping the potential of several aromatic and medicinal plants found in the mountains of Uttarakhand. Out of the herbal output in the state, around 60-70 percent herbs are being used at present. There is much scope for employment generation if processing centres for herbs are set up. Uttarakhand has the potential of promoting medical tourism using medicinal herbs, along the lines of other states such as Kerala, with promotion of processes such as 'Panchakarma'. This type of tourism efforts, along with yoga and wellness centres, under the stewardship of AYUSH, could generate employment in the hills.

B. Tourism

This sector is accepted as a growth driver for inclusive social economic progress through its forward and backward linkages, and the ability to create employment in the economy. The vision is to develop Uttarakhand as a comprehensive, world class tourism destination by realising the untapped potential of sustainable tourism, through the design of innovative tourism products that build on the inherent strengths of the state as a natural destination which can cater to all categories of tourists.

> ***The aim is to make the state one of the top 10 tourism destination states of the country by 2020, up from its present rank of 12, to acquire a place among the top 5 destination states by 2024, and finally to attain a position among the top 3 destination states by 2030.***

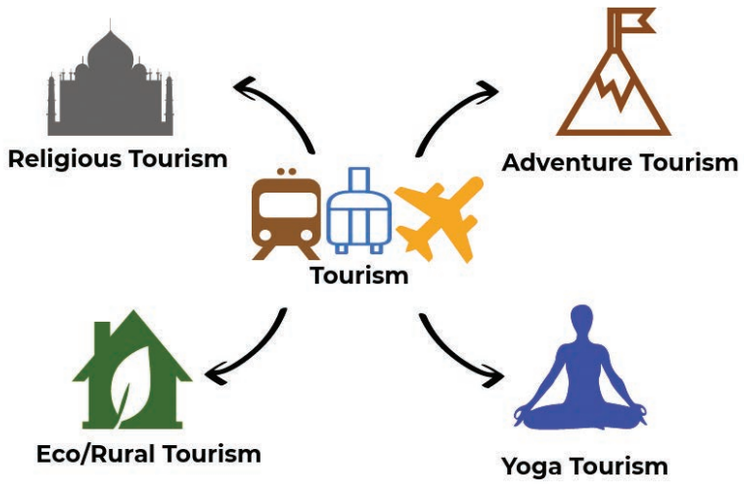
For the initial three-year period till 2020, taking stock of the existing strengths and weaknesses, as well as detailed planning for the development of the new segment of tourist markets can be the strategy. There should be a plan to position 'Brand Uttarakhand' in the domestic and international market. The medium term should see the realisation and execution of the detailed plans made in the short term, along with improvement in the existing facilities. The brand of the state should be publicised and marketed to more countries. The long-term strategy would involve further expansion depending on the success in the medium term.

In terms of identifying tourist destinations, the attraction of the state as a pilgrimage site is already well-established, but there is still a great deal of scope to promote the state as a destination for spiritual purposes, yoga, and wellness, alongside as a destination for trekking, mountaineering, river-rafting, and such adventurous activities. Rural tourism and eco-tourism can be encouraged as has been done in other countries and in other states of India, and to achieve this, the needs for infrastructure and connectivity, skill training, accreditation of dhabas/restaurants, and service providers have to be met. Thereafter, tourist destinations in the upper reaches of the state can also be developed, providing employment opportunities to the local youth.

Theme-based circuits that have the potential to be showcased as world class tourism products can be developed in consultation with the stakeholders. The state is considering development of spiritual and religious theme-based circuits for tourism. Under the Swadesh Darshan scheme of central government, Uttarakhand is a site for Eco tourism. Other themes may involve treks/hikes/tours to view famous Himalayan peaks, or treks along the course of the Ganga river, or places of culinary interest, or villages where communities maintain traditional lifestyles that tourists may find interesting.

Homestays in rural areas and in serviced apartments in urban areas, which supplement tourist accommodation, can be linked to the theme-based circuits for planned growth. The government can promote cleanliness and beautification of the concerned villages and locales for better tourist attraction. A framework for classifying infrastructural gaps can be developed to identify the existing bottlenecks so as to unlock the potential of these

Figure E7: Strategy for Creating Sustainable Livelihoods for Tourism in Uttarakhand



circuits. An integrated approach for planning these circuits, along with a comprehensive area development approach to ensure the availability all the requisite facilities in those circuits, is essential.

There is a plan to develop thirteen new destinations in thirteen districts of the state based on various themes like adventure, leisure, rural, spiritual, and wellness in the long term.

Success of tourism initiatives depend just not on tourism department, but on synergy between tourism and a host of other departments of the government. As a tourist arrives in Uttarakhand, the tourism experience starts at the airport, railway station, bus terminus, or in the car travel s/he undertakes to reach her destination. The tourist's experience actually starts even before that with access to information about tourist destinations and the ease of connectivity of the state with other states in India and with the rest of the world. The experience continues with the comfort of stay in hotels, etc., the culinary experience, the ease of access to popular tourist spots, safety, the diversity of tourist attraction and the functioning of the same, internet availability/connectivity, and above all, the warm and friendly behaviour of the local people which can make a stay memorable. Evidently, numerous departments such as PWD, road and rail transport, aviation, water and sanitation, electricity, urban development, hospitality, IT, Disaster management and many other departments need synergy with the tourist department to create a complete tourist experience. Here a strategy of deploying project-specific committees which span several major departments should be considered, especially for big projects.

C. Other Avenues for Generating Sustainable Livelihoods

The scope for linking the cross-cutting MSME sector to the growth-driver sectors, especially horticulture, and thereby generating further employment, has been mentioned. The MSME sector envisages massive expansion in the future, which would increase employment from the present number of 2.58 lakh people to 8.5 lakh people by the year 2030. The focus will be especially on the micro sector, which has a tremendous potential to provide employment at the mass level at minimum capital investment. This sector also plans to provide a marketing platform to the constituent segments such as cottage, khadi, handloom and handicraft producers, and to boost entrepreneurship among potential businesswomen. The employment generation from the large industries sector is envisaged to increase from 1.69 lakh at present to 4.44 lakh people by 2030.

Information Technology is an enabling sector that provides the under-pinning of smooth connectivity throughout the state in various departments, businesses and homes, thereby improving productivity and efficiency across sectors. Given the high literacy rate of 78.82 per cent in the state, employment opportunities for educated youth can be generated by encouraging ICT, ITES and electronics manufacturing units to establish their enterprises in Uttarakhand.

Skilling youth in the state is a key strategy for tackling youth unemployment. The Mahila Mangal Dal and the Yuva Mangal Dal, at the village level, shall also be motivated through workshops to create self-help groups (SHGs) and to undertake the required skill upgradation or training so that they can benefit from the various employment generation schemes of the different government departments. Uttarakhand Skill Development Mission is important in this context. Some youngsters will be trained by ex-Army personnel at the block level to facilitate their entry into the Army. Reform and diversification in agriculture, and especially more land ownership for women will help raise their work participation. Jal Vidyut Nigam undertakes projects in various parts of the state and can link the employment of local youths to these projects.

The employment department registers unemployed youth, who would be provided appropriate skill upgradation and training, so that they can benefit from various self-employment schemes. Job fairs will be organized regularly at the district level to facilitate the placement of these youths in various private sector enterprises. The department shall conduct career counselling in all parts of the state through psychometric or aptitude tests to help students choose their careers as per their skills and ability.

2. Enhancing Human Development

Health

Mother and child healthcare: There is need to promote institutional deliveries, training of ASHA Workers/*Dayees*, tracking of pregnant women and regular check-up, for which technology such as mobile apps or software can be used. Effective implementation of two major schemes Pradhan Mantri Swasthya Suraksha Yojana, and Integrated Child Development Services (ICDS) is important in this context. For improving Ante Natal Care, Post Natal Care and institutional delivery, the state should focus on strengthening the health facilities in terms of HR, infrastructure and equipment etc. Physical infrastructure including Blood Banks and Trauma Centres need special mention.

Considering that human development is a continuum in a person's life, there are overlaps between the education and health sectors. Proper monitoring of School Health Programme (including Health Cards of students) is necessary.

Malnutrition and anaemia: Establishment of Nutrition Resource Centres for nutrition counselling and treatment, observing 'Vajan and Poshan Diwas' for growth monitoring of young children, promoting hygienic habits such as correct hand washing practices, nail cutting, etc. and providing nutritional food through AWCs are some of the strategies for attaining 2030 vision. Under-nourished persons can be tracked via the AWCs. State government initiative URJA is designed for malnourished children and this dietary supplement is made with locally available food.

Here, too, convergence is the key because anaemia/malnutrition are not just health conditions but are also impacted by factors such as lack of safe drinking water, hygiene and sanitation (toilets), switching over to usage of polished rice and absence of leafy vegetables in meals etc. Hence, in the long run, over and above iron supplements, what is needed is promotion of nutrient-rich local food, consumption of greens & leafy vegetables, use of toilets, availability of safe drinking water and convergence of efforts of departments of Agriculture, Drinking Water and Sanitation, Ministry of Health and Family Welfare, Department of AYUSH, etc.

Communicable and non-communicable diseases: Increasing awareness and adoption of preventive measures to combat HIV/AIDS, expansion of testing facilities and facility for providing Anti-Retrovial Drugs for HIV positive people will help in tackling communicable diseases. The strategy for non-communicable diseases involves establishment of District Wellness Centre in all hospitals for early detection, treatment and referral of NCDs, use of alternative medicines such as ayurveda, yoga, homeopathy, naturopathy, unani, Siddha etc. (AYUSH), and aiming for Universal Health Coverage. Overall, in order to augment financial resources, convergence of schemes need to be explored.

Shortage of medical personnel: To tackle the shortage of doctors in the state, five medical colleges are being established, and the nursing capability will be augmented by five new nursing colleges as well as one nursing college at the medical college, Haldwani. Three General Nursing and Midwifery schools are also being established. In the existing

medical colleges, the in-take capacity is being increased.

Education

Pre-primary level: This can be made a tier of schooling to ensure smooth transition into primary level. In the existing set-up, each Anganwadi Centre must be provided with pre-school kit, curriculum and the capability of Anganwadi Workers must be enhanced.

Improving education quality: Education quality will be monitored with the help of frequent quarterly standardized assessment and the results will be displayed on a portal. SMART classes have been successfully piloted in many schools and can be scaled. To improve educational quality, Rajiv Gandhi Navodaya Vidyalayas have been set up in every district and can be scaled.

Teaching: The primary school will have the option of one teacher per class on the lines of model schools and at least one room per class at elementary level. Constitution of a Teacher Recruitment Board will be undertaken to ensure zero vacancy in schools which will create pool of candidates through merit cum aptitude test. Improvement in regularity in schooling and teacher attendance can be aided by a stronger monitoring mechanism as well as recruitment of Head Teachers where absent. Use of Biometric machines has been started for attendance in 200 schools. There is a proposed innovative measure whereby teacher training with 4 year integrated teacher training cum graduation course will be started.

Infrastructure: To universalise secondary education, there is an urgent need to provide access to unserved habitations by opening new schools or upgrading existing junior high schools. The option solar energy, a renewable source, can be explored for electrification in schools. In higher education, there is need to establish multi-faculty government colleges up to PG level. Physical infrastructure planning needs to be done before opening a college for admission. E-learning option for higher education can be used to reach the hitherto unreached and those in remote areas.

Technical and vocational education: Vocational education has been proposed in 120 secondary schools. The option of starting vocational education at the middle school level can be explored. In order to give youth in hill areas the opportunities, Vocational institutes can be set up in hill districts and technology-enabled education encouraged.

Financial allocation: Cost of education delivery in hills is higher than in plains and leads to a cost of service delivery in Education sector in the state that is much higher than the national average. To redress this imbalance, more finance should be provided for education sector in this hill state.

3. Improving Social Development

Gender Empowerment

The survival of the girl child must be ensured, following which measures must be taken by the government and the society so that she is empowered and not subjected to violence and discrimination. To achieve this, an important strategy is to spread awareness among the community and among pregnant women about declining child sex ratio and schemes such as Beti Bachao, Beti Padhao. The birth of a girl child can be celebrated at the Panchayat level to highlight value of the girl child.

Special awareness programmes can be conducted for pregnant women who have registered for second or third pregnancy. Similarly, organizing regular meetings with adolescent girls to sensitize them regarding pre-natal sex determination linked to female foeticide, can help in girl child survival. The strategy should be to effectively implement existing schemes to end discrimination against women, and especially enforcement of the Pre-Conception and Pre-Natal Diagnostic Techniques Act.

To combat domestic violence against women, a toll-free number 181, operating 24x7 will be used as Women's Helpline to provide them emergency services and information for assistance in case of need.

Increasing women's work participation will enhance their empowerment. Recognition of women's positive contribution to agriculture can help in this, and extension of all the benefits that government schemes offer to small and marginal farmers should be extended to women as well.

Reducing Inequality

In Uttarakhand, the disparity between hills and plains is huge in terms of development, income, livelihood, access to health and education, etc. Ed-

ucation and employment opportunities to youth, even in the remote hilly villages, are needed to stem the unabated migration of working age males. The various strategies for creating sustainable livelihoods in the hills whereby people in the hills can benefit, have been discussed. Provision of quality health and education facilities, along with doctors, in the hill districts are also crucial for retaining people, as is building good infrastructure to improve connectivity with the plains.

To close gaps between rich-poor and between mainstream and marginalized sections, there must be dedicated resources for under-privileged segments of the population such as Scheduled Castes/ Scheduled Tribes and Muslims in the state, and review of existing schemes in place for them. At present there are schemes such as Multi Sectoral Development Programme that address issues for the marginalized segments of population in a holistic manner, while there are major social protection schemes for the vulnerable segments of the population such as pensions for Old Age, for widows, the disabled, etc.

It is also important that the pace of economic growth in the state be sustained and returns from growth must find its way to the poorer sections of the population at an accelerated pace. Slum inhabitants lag behind the rest of the urban citizens, and improvement in Slum housing and sanitation in slums in terms of access to drainage needs to be in focus.

For public service provisioning, there are initiatives such as Right to Services Act, e-Governance programmes, etc., which give consumers the right to these services. Such technology-dependent service provisioning provided in a rights-based framework can mitigate inequality to a great extent, since technology does not differentiate between consumers.

4. Attaining Environmental Sustainability

Water and Sanitation, Air and Water Pollution

Water shortage is a severe challenge in the state and the main strategy to meet this would be to develop groundwater and surface water use schemes with an incentive or tariff system to discourage users from over extracting water. Conservation of water must be promoted, especially in hills by creating water storage from snow in artificial structures, such as done in Ladakh. There is also the experience of Singapore in converting waste-water into pure, clean water in a cost-efficient and eco-friendly way. Water thus reused can be used for industrial purposes, and can even be used for drinking purposes. The Urban Local Bodies can use this model for recycling waste water.

In rapidly expanding peri-urban areas, water supply will be augmented through pumping schemes based on ground water (tube well), sub-surface water (infiltration well/infiltration gallery), surface source (river and rivulet), and gravity schemes with sources such as rivulet and springs.

To meet challenges for sanitation, the strategy includes raising public awareness about the need for maintaining cleanliness, and inculcating the habit of using toilets. Uttarakhand state has been declared Open Defecation Free. Effective implementation of the Swachh Bharat Abhiyan and to bring management of solid waste in a phased manner to all villages is also an important part of the strategy, as is the effective functioning of committees related to health, sanitation and nutrition.

Waste management is a very important area, especially for growing cities and towns. Industrialization or increased service sector activity for boosting growth must use modern, clean technologies; scientific waste disposal; waste re-cycle; regular environmental audits, etc. Taxes could be imposed (polluter pay taxes) to compensate for the pollution and the amount so recovered used to address environmental damages.

To make agriculture cleaner, the strategy is to lower carbon emission from livestock, lower inorganic fertiliser/pesticide use, and increase bio-fertilizer-use. Improved governance could bring about less consumption of wood and timber; much of the waste generated can be recycled, which would also create employment as well as renewable energy.

Addressing pollution in cities can be tackled by setting targets for reducing air pollution from vehicular and industrial sources, and also by stoppage of unlawful construction activities that pollutes rivers and other water sources. For the former, a movement away from fossil-fuel based vehicles towards electric or CNG based vehicles will help. Overall, a shift in favour of renewable

sources of energy such as small hydro-power, solar power, energy produced from waste, etc. will reduce the share of harmful gases in the atmosphere which lead to warming.

Green House Gas emissions

When the source of emission is rice and livestock production, the strategy would involve a change to system of rice intensification and modification of livestock raising methods. In order to to reduce emission from cooking, solid biomass fuel must be replaced with LPG and provide incentives for LPG use. Eliminating emission from public transport can be assisted by adopting electric or CNG vehicles for public transport. Opting for clean energy from renewable sources will reduce emission of harmful GHG considerably and this can be done by power generation as well as by substitution of existing lighting and heating equipment with LED and solar sources.

Improving forest cover, land management and arresting land degradation

Converting part of open forest to moderate dense forest and part of moderately dense forest to dense forest is an important component of the strategy. Involving women more in land management strategizing is another option. Watershed management programmes in villages that are upstream of hydro electricity generation plants can be utilized to reduce land degradation.

Disaster Response

Hazard, Risk, Vulnerability and Capacity (HRVC) analysis, preparedness, proper land-use, monitoring and warning systems for disaster management are the main planks of the strategy. State Disaster Management Plan is being revised annually, and there is a long-term strategy for improvement in 'Technical Assistance and Capacity Building' for disaster risk management. The components include Disaster Risk Management, River Morphology Study, establishment of a Decision Support System, strengthening of hydro-meteorological network and Early Warning System, etc.

Resource Mobilization for Attaining Vision 2030

Uttarakhand has performed well in the area of fiscal management. With high growth in the GSDP and per capita income, the economic potential of the state is promising. Low revenue deficit as well as fiscal deficit indicate good fiscal management without the pressure of high inflation and an increasing loan burden. Sound financial records pave the way for more loans and grants, if desired.

Sectoral allocation of resources has remained stable though the gap between targets and achievements is not the same in every sector. The areas wherein these gaps are large need to be identified and resources allocated accordingly, so that the state can progress towards the attainment of SDGs in a time-bound man¬ner. The social sectors should receive more resources for raising the standard of human development

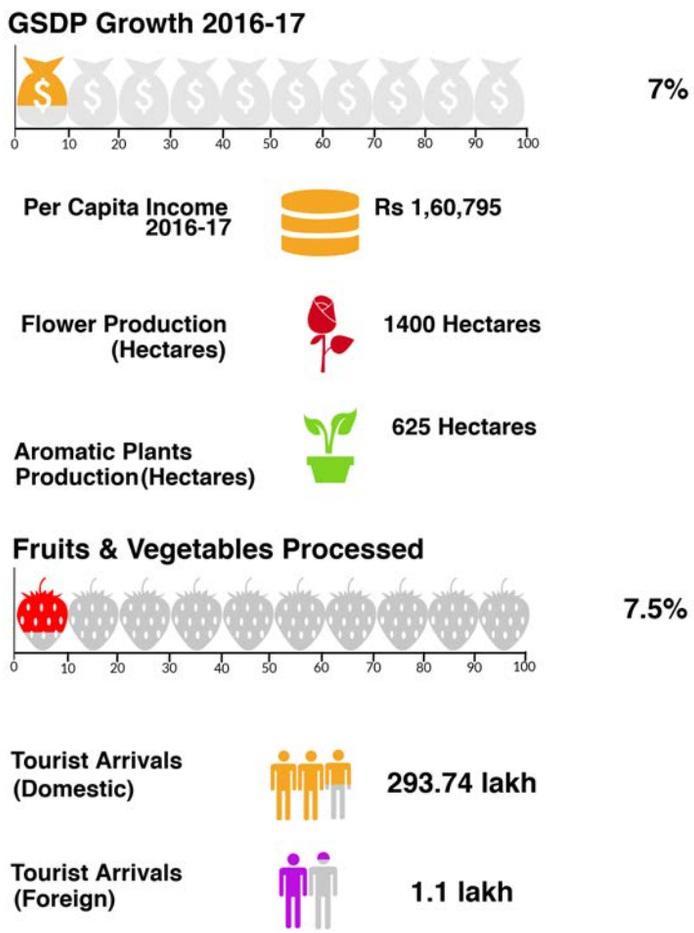
A good track record of loan repayment is very important for resource mobilisation through external assistance. However, the state should be more prudent in generating internal financial resources. A very low proportion of tax revenue to the GSDP indicates that the tax base needs to be widened and an increase in tax rates also may be considered with increasing per capita income. Very low cost of tax collection indicates efficient tax administration. The scope of increase in both direct and indirect taxes needs to be explored.

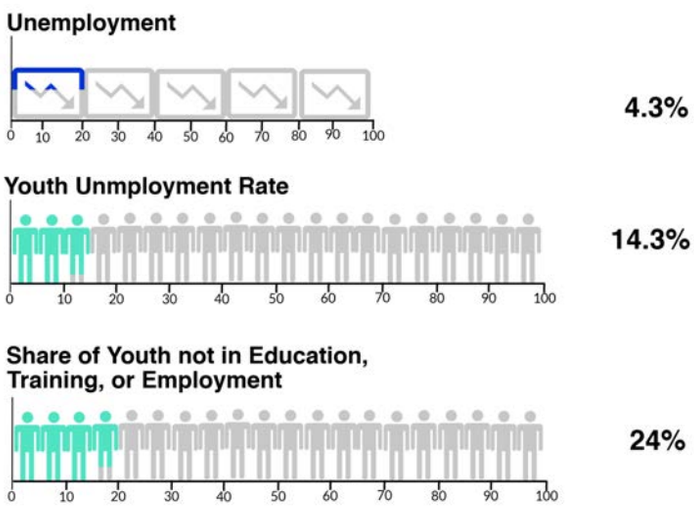
It is imperative to analyse the nature of suspense and miscellaneous accounts and reduce its impact on both revenue receipts and expenditure. The savings from this head can be utilised more effectively. Prudent financial management demands that loans must be utilized totally for creating capital assets. A clear and time-bound cash flow analysis is needed for resource generation on a sustainable basis.

While the major financial mobilisation should not be a problem for the state, it should tap all the Central as well as external funds to augment its own resources for achieving the SDGs in a time-bound manner.

Uttarakhand Today - Indicators

Economic



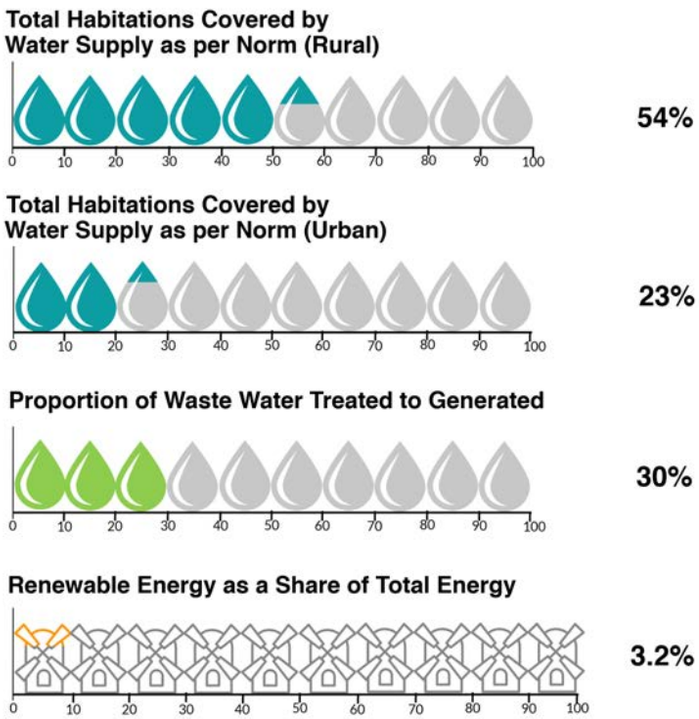


Uttarakhand Today - Indicators

ECONOMIC

Uttarakhand Today - Indicators

ENVIRONMENTAL

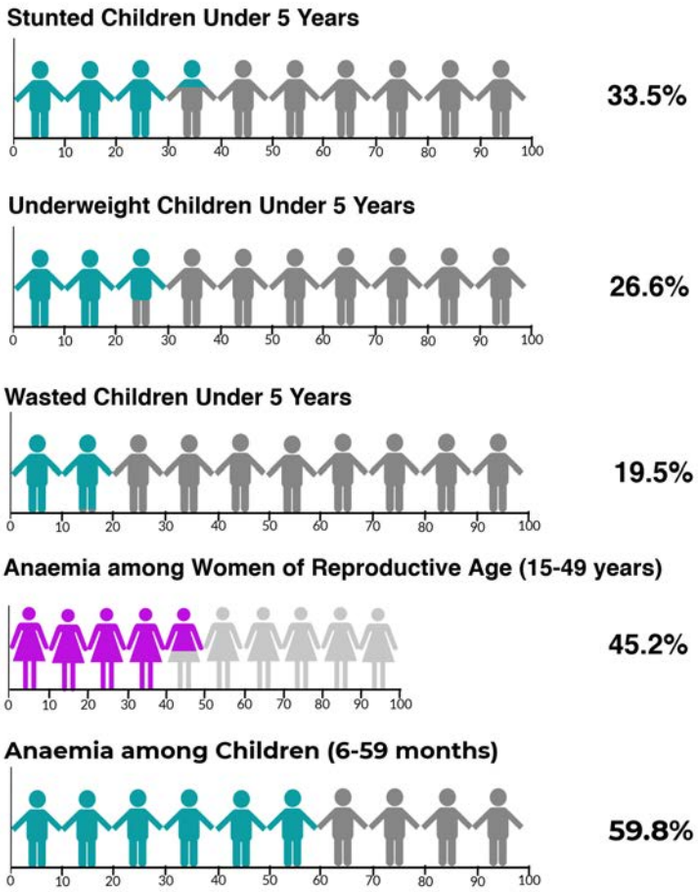


Uttarakhand Today - Indicators

ENVIRONMENTAL

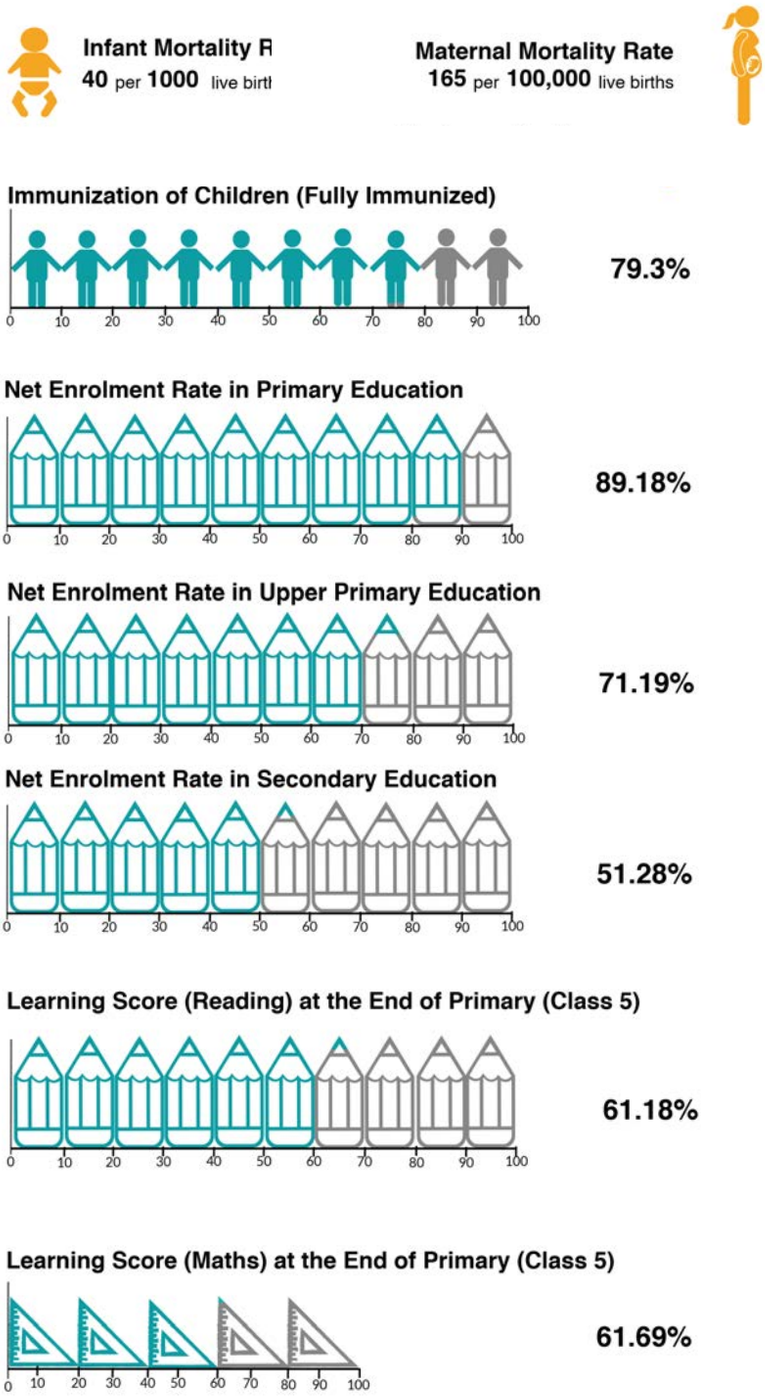
Uttarakhand Today - Indicators

SOCIAL



Uttarakhand Today - Indicators

SOCIAL



Uttarakhand Today - Indicators

SOCIAL

Child Sex Ratio  **890 per 1000**

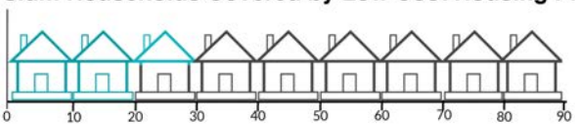
Crime Against Women (per 100,000 Population)

28.2%

Women in the Public Service Posts

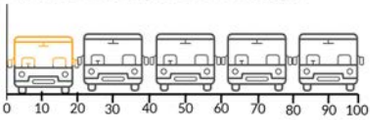
30%

Slum Households Covered by Low Cost Housing Programme



25%

Public Transport Coverage



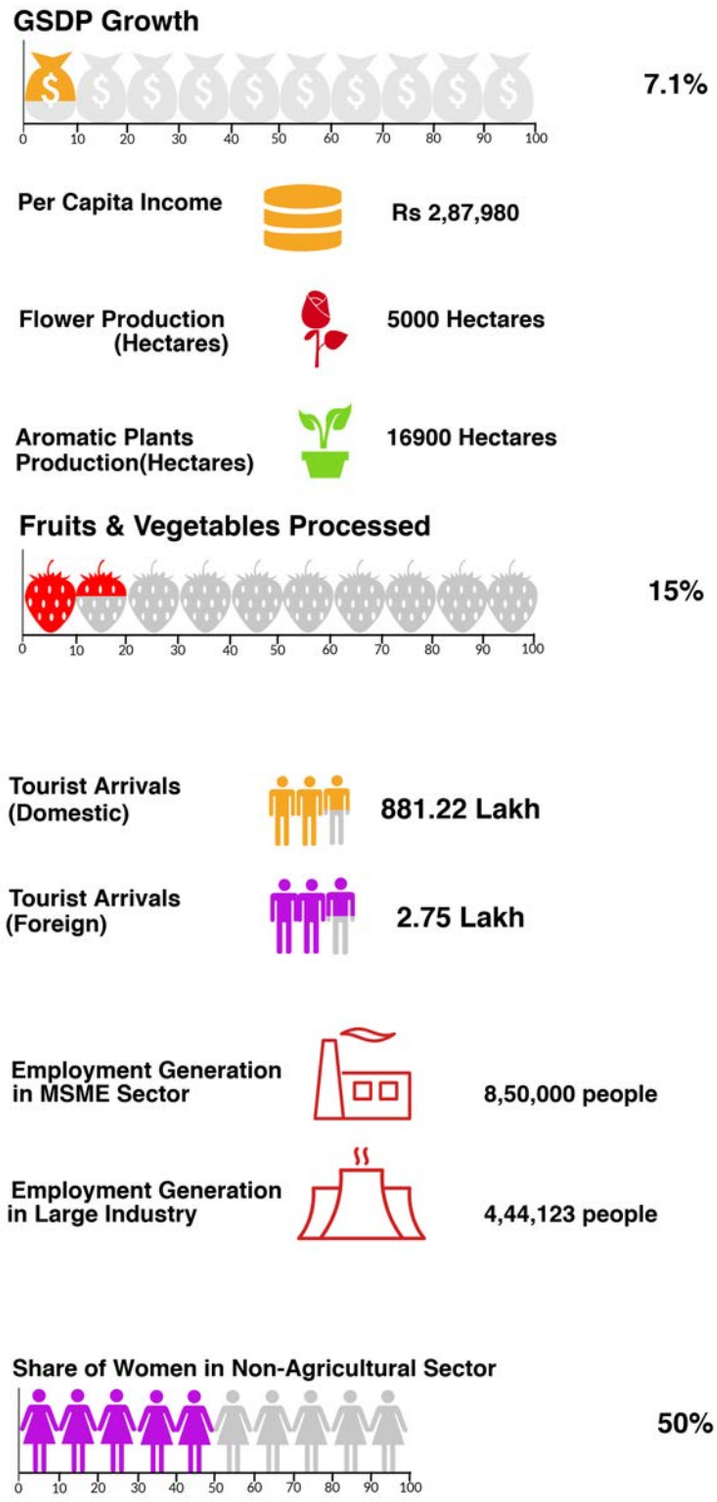
10%

Road Length per Lakh Population (Km)  **322.93 Km**

Access to All Weather Roads(% of Villages)  **67.65%**

Uttarakhand 2030 - Indicators

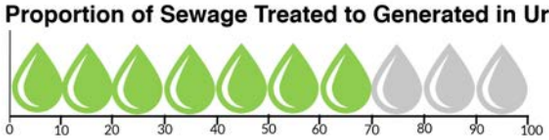
ECONOMIC



Uttarakhand 2030 - Indicators

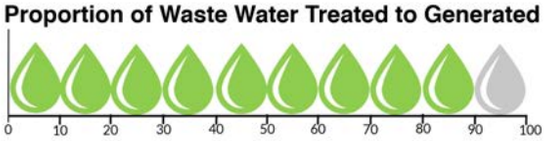
ENVIRONMENTAL

Proportion of Sewage Treated to Generated in Urban Areas



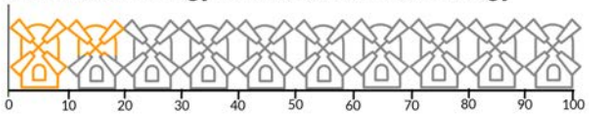
70%

Proportion of Waste Water Treated to Generated



90%

Renewable Energy as a Share of Total Energy



15.1%

Area Under Organic Certification (Thousand Hectares)

250,000 Hectares

Afforestation (Hectares)

2,24,000 Hectares

Green House Gas Emission from Cooking

0

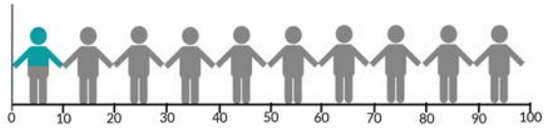
Green House Gas Emission from Public Transport

0

Uttarakhand 2030 - Indicators

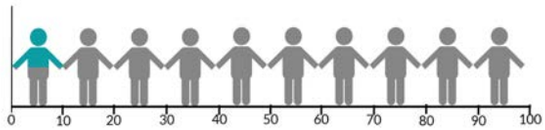
SOCIAL

Stunted Children Under 5 Years



<5%

Underweight Children Under 5 Years



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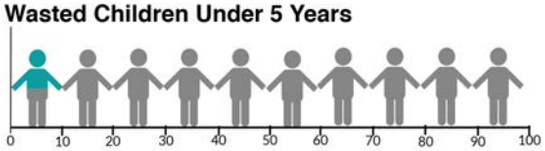
Wasted Children Under 5 Years

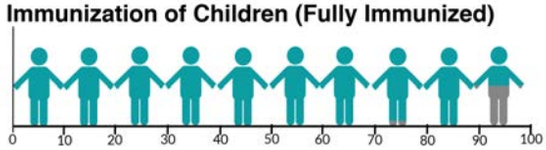


<5%

Infant Mortality Rate
25 per **1000** live births

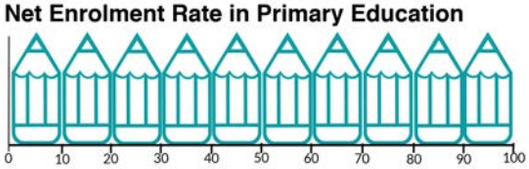
Maternal Mortality Rate
70 per **100,000** live births

Immunization of Children (Fully Immunized)



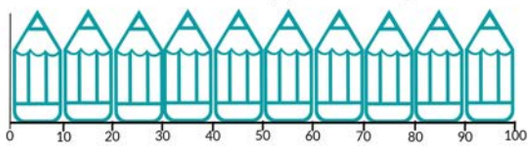
>95%

Net Enrolment Rate in Primary Education



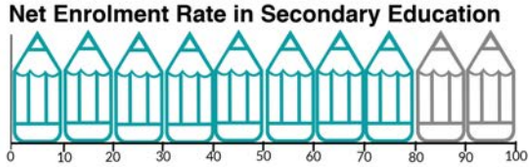
100%

Net Enrolment Rate in Upper Primary Education



100%

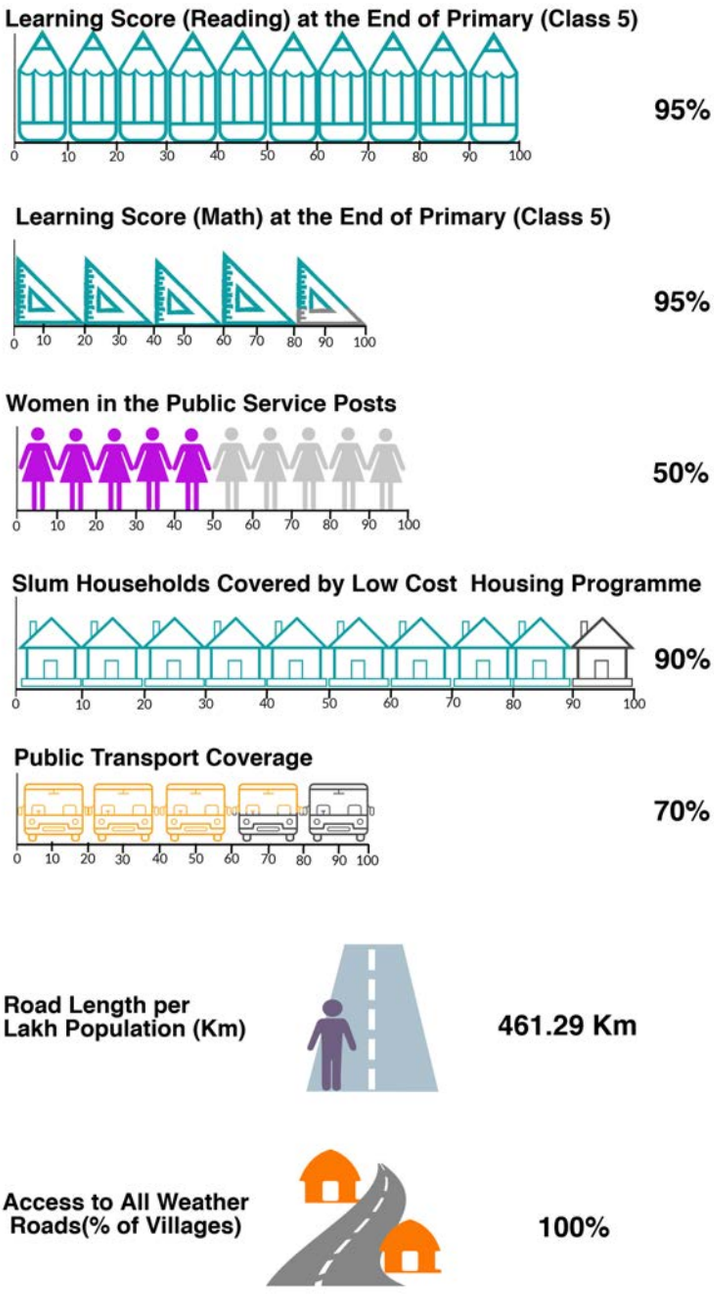
Net Enrolment Rate in Secondary Education



80%

Uttarakhand 2030 - Indicators

SOCIAL



Chapter 1

Introduction

The Context

Uttarakhand, the 27th state of India, was formed after bifurcation of the hill region including Haridwar and Udham Singh Nagar from the state of Uttar Pradesh, on 9th November 2000. The state is divided into two broad regions—Garhwal and Kumaon. These two regions share a common geography, culture, language, and tradition, and had united against the problems of economic backwardness, marginalisation and lack of a clear political identity faced by the people here. The birth of Uttarakhand in 2000 was thus the outcome of the combined struggle of the people of Garhwal and Kumaon.[1]

The population of Uttarakhand is 10.086 million, out of which 70.37 percent reside in rural areas and 30.50 in urban areas. The state has 13 districts, 49 sub-divisions, 95 development blocks, 16,793 census villages out of which 15,745 villages (including forest settlements) are inhabited, and the remaining 1048 are un-inhabited. Uttarakhand is primarily a mountainous state, as the plains constitute only about 10 per cent of its total geographical area. Out of thirteen districts, only Haridwar, Udham Singh Nagar, and some parts of Dehradun and Nainital districts are located in the plains.

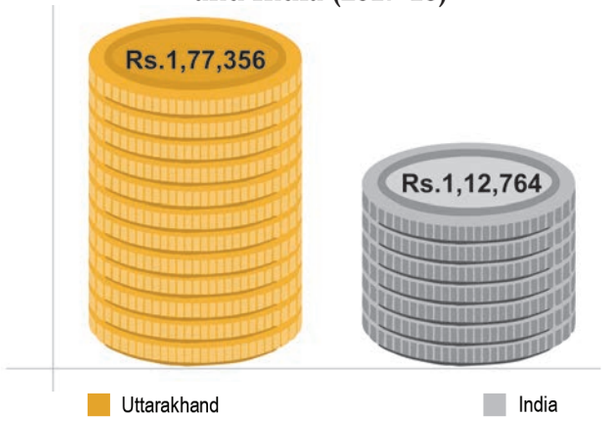
The topography in Uttarakhand ranges from foothills and plains to higher snow-clad mountains, thus including almost all major climatic zones conducive to agro-horticulture. The state is part of the central Himalayas and most of its northern area comprises high ranges and glaciers while its lower reaches are covered by dense forests. The numerous glaciers in the state provide perennial water to the downstream rivers including the mighty Ganga and Yamuna, which provide water to large parts of the country. Mountains thus play pivotal roles in the delivery of ecosystem services for sustaining the well-being of both people living in the mountains systems as well as in the plains. These services include the provision of food, water, wood, fibre and fuel, as well as regulation services such as climate regulation, flood regulation and drought control, regulation of the water and air quality, and crop pollination, among others. The cultural services comprise the benefits arising from tourism, recreation, and the aesthetic experience offered by the state.

An Overview of the Uttarakhand Economy

The state economy has made healthy progress since its inception and in the recent period between 2011-12 and 20167-18, has maintained a high annual rate of growth (at constant prices) of GSDP at around 7 per cent, with only a slight dip in 2014–15 (see Table 1.1 and Figure 1.2). The CAGR for this period is 7.1 percent. Very recently there has been a slight tapering off of the growth rate. While the state had outpaced the national average growth rate in the early years after 2011-12, later it has moved in tandem with the average GDP growth at the national level.[2] The per capita income in the state (at current prices) for 2017–18 (advance estimates) is Rs. 1,77,356, which is much higher than the corresponding national average of Rs. 1,12,764 (Figure 1.1).[3]

The state economy is characterised by a high share of the secondary sector at around half of the Gross Value Added of the state at current prices (Table 1.2). This is followed by the share of the tertiary sector at 38.41 per cent for the 2016–17 Provisional Estimates, while the primary sector accounts for a meagre 11.19 per cent at present. However, the tertiary sector has been gaining in share over the last six years, mainly at the cost

Figure 1.1: Per Capita Income Uttarkhand and India (2017-18)



1. Annual Plan 2013-14, State Planning Commission, Government of Uttarakhand.

2. Accessed at http://des.uk.gov.in/files/Aarthik_Sarveshan_-_Single_Pgs_All.pdf on April 14, 2018.

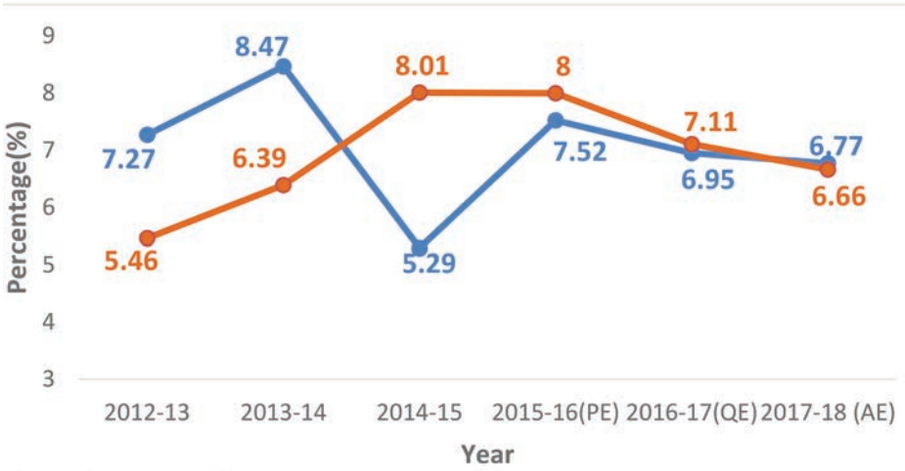
3. Ibid.

Table 1.1: Gross State Domestic Product 2011–12 to 2017–18 (at constant 2011–12 prices)

Item	2011–12	2012–13	2013–14	2014–15	2015–16PE	2016–17QE	2017-18AE
Gross State Domestic Product (Rs, crore)	1,15,328	1,23,710	1,34,182	1,41,278	1,51,894	1,62,451	173444
Growth in GSDP over the previous year (%)		7.27	8.47	5.29	7.52	6.95	6.77

Source: Government of Uttarakhand
Note: QE: Quick Estimates, PE: Provisional Estimates, AE: Advance Estimates

Figure 1.2: Growth (%) in GDP (at constant 2011-12 prices) over the Previous Year for Uttarakhand and India



Source: Government of Uttarakhand
Note: QE: Quick Estimates, PE: Provisional Estimates. AE: Advance Estimates

of the primary sector, while the secondary sector has maintained a high share, though at a slightly lower level of 50.4 per cent in 2016–17 (PE) as compared to 52.13 per cent in 2011–12 (see also Figure 1.3). The manufacturing sector has a sizeable share of 39.36 per cent.

The sectoral shares (%) in Gross Value Added are shown for current prices in Figure 1.3 and for constant prices in Figure 1.4. The figures show that the primary sector was affected relatively more than the other sectors by the inflationary effects over the last few years.

The steadily eroding share of the primary sector, which has agriculture as its main component, and the relative gain of the tertiary sector, are reflected in Figure 1.5, which shows the year-on-year percentage rates of growth for the three major sectors for the period 2011–12 to 2016–17. The tertiary sector maintained a growth rate of above 6.5 per cent over this period. Even in 2014–15, when, following the 2013 natural calamity in Uttarakhand, the other two sectors slumped, and the primary sector actually experienced negative growth rate, the tertiary sector still recorded a growth of 10.7 per cent. The secondary sector too exhibited healthy growth throughout the reference period, with the exception of 2014–15.

Enablers in the Uttarakhand Economy

In the light of the above discussion and Table 1.3 presented below, it can be said that Uttarakhand state has several positives that act as enablers in its favour, including: (i) high economic growth and per capita income, (ii) good social and human

Table 1.2: Sectoral Shares (%) in Gross Value Added of Uttarakhand (at current prices)

S. No.	Item	2011–12	2012–13	2013–14	2014–15	2015–16QE	2016–17PE
1.	Agriculture, forestry and fishing	12.28	12.42	11.32	10.71	10.09	9.70
1.1	Crops	7.05	7.29	6.09	5.73	5.24	4.93
1.2	Livestock	2.66	2.54	2.52	2.66	2.75	2.73
1.3	Forestry and logging	2.54	2.56	2.67	2.28	2.07	2.02
1.4	Fishing and aquaculture	0.03	0.03	0.03	0.03	0.03	0.03
2.	Mining and quarrying	1.72	1.66	2.54	1.57	1.44	1.49
	Primary	**14.00**	**14.08**	**13.86**	**12.28**	**11.53**	**11.19**
3.	Manufacturing	40.29	41.07	39.00	39.04	39.60	39.36
4.	Electricity, gas, water supply and other utility services	3.67	3.36	2.69	2.87	3.21	3.33
5.	Construction	8.16	7.57	8.91	8.62	8.19	7.71
	Secondary	**52.13**	**52.01**	**50.59**	**50.52**	**50.99**	**50.40**
	Industry	**53.84**	**53.67**	**53.14**	**52.10**	**52.44**	**51.89**
6.	Transport, storage, communication and services related to broadcasting	6.39	6.56	6.70	7.09	7.33	7.32
6.1	Railways	0.13	0.13	0.12	0.15	0.17	0.17
6.2	Transport by means other than railways	2.02	2.11	2.07	2.05	1.93	1.93
6.3	Storage	0.01	0.01	0.01	0.00	0.00	0.00
6.4	Communication and services related to broadcasting	4.23	4.31	4.50	4.88	5.23	5.22
7.	Trade, repair, hotels and restaurants	11.01	11.38	11.57	11.88	11.98	12.36
8.	Financial services	2.71	2.59	2.57	2.67	2.74	2.74
9.	Real estate, owner-ship of dwelling and professional services	5.44	5.42	5.30	5.41	5.30	5.34
10.	Public administration	3.73	2.55	3.47	4.05	4.05	4.02
11.	Other services	4.60	5.41	5.93	6.09	6.07	6.64
	Tertiary	**33.88**	**33.91**	**35.54**	**37.19**	**37.47**	**38.41**
12.	**TOTAL GSVA at basic prices**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: Government of Uttarakhand
Note: QE: Quick Estimates, PE: Provisional Estimates.

development indicators (such as sex ratio and educational attainment), (iii) low rate of poverty at just 11 per cent (as of 2011–12) with very little rural–urban difference, (iv) absence of stark hunger problems, and (v) the fact that it is, by and large, a peaceful state. However, its low child sex ratio is an exception in this context.

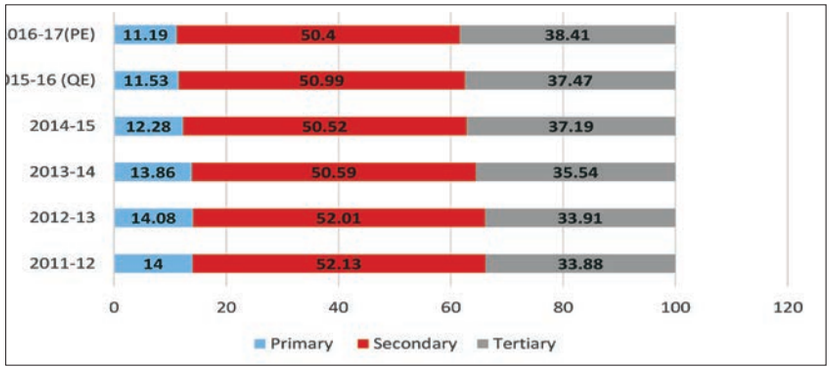
Many of the hill districts have higher child sex ratios, of above 900, but the districts of Pithoragarh (816) and Champawat (873) have particularly low child sex ratios. On an average, the hill districts have a higher child sex ratio (893) as compared to the districts in the plains (887).

Challenges for the Uttarakhand Economy

Despite these positives, Uttarakhand continues to face challenges such as the lack of inclusive growth in the state featuring stark disparity between the hills and the plains, paucity of gainful employment and of infrastructure for access to health and education in the hills, coupled with severe problems of environmental degradation. The environmental sustainability is being compromised in the form of increasing drought, landslides, soil erosion, glacial melt, deforestation, and so on. Meanwhile, the state is also affected by other issues related to infrastructure gaps, poor access to potable water, solid waste disposal problems, and social evils like the falling child sex ratio in the cities, and the prevalence of crime against women in the cities.

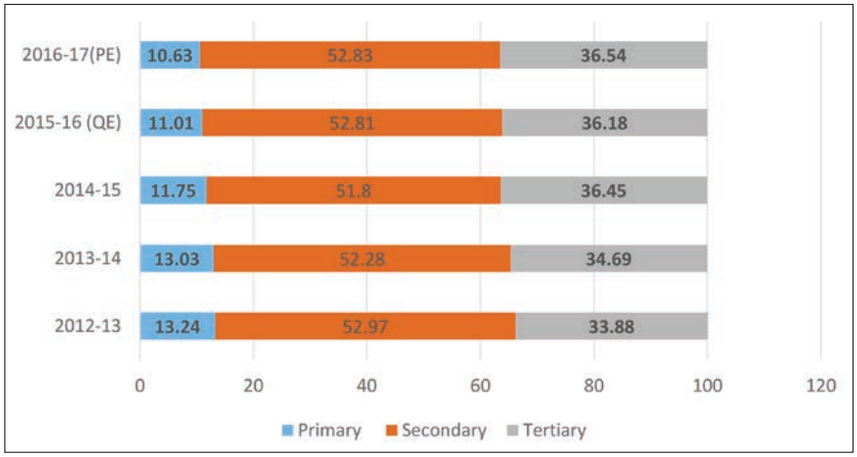
One of the repercussions of these issues is that people are rapidly migrating from the hills to the cities, which are consequently getting increasingly congested.

Figure 1.3: Sectoral Shares (%) in GVA Uttarakhand (at current prices)



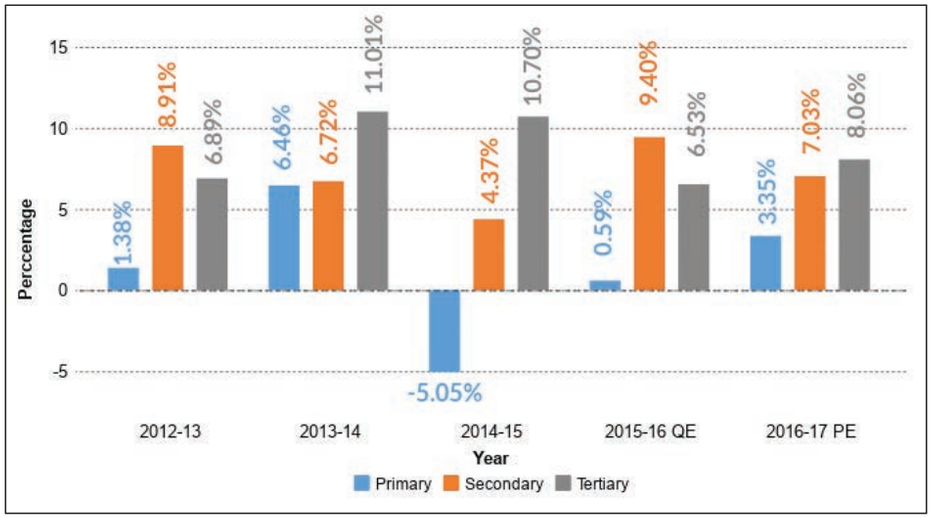
Source: Government of Uttarakhand

Figure 1.4: Sectoral Shares (%) in GVA Uttarakhand (at constant 2011-12 prices)



Source: Government of Uttarakhand

Figure 1.5: Sector-wise Year-on-year Growth Rate (%) in GSDP (at constant 2011-12 prices)



Source: Government of Uttarakhand

Migration

During the last decade, the development trajectory of the state has been characterised by high economic growth, accompanied with heavy outmigration of males from the state. Historically, migration has been a way of life in this region, but the incidence of migration has increased in recent years. There is evidence of an increasing divide between the hills and plains in several outcomes, which is also manifested in the nature and pattern of migration in the hill and plain regions of the state. Between the year 2000 and 2011, the rate of growth of population of the hill districts, at 0.70 per cent, was substantially lower than that of the plain districts, at 2.8 per cent (Census of India, 2011). The Census reveals another trend—an absolute decline in the populations of two hill districts, viz., Almora and Pauri Garhwal. Furthermore, the decline in population in these districts has been greater in the smaller villages (Mamgain and Reddy, 2016) than others. There is mounting evidence of depopulation of the villages in the remote hill areas where farms have been abandoned and empty homes are visible. These are termed as 'ghost villages'. At the same time, paradoxically, Uttarakhand also receives labour migrants from other states, particularly those from eastern India. The state is also a popular destination for migrants from the neighbouring country of Nepal and many Nepali migrants work on farms abandoned by the local population (Bruslé, 2008).

Farming remains the primary source of income in the hill areas, and with the phenomenon of de-population in the villages, the farms are becoming fallow, and incidences of wild animals attacking and destroying crops are becoming a common menace. Ancestral farmlands have been abandoned, and young people no longer want to pursue agriculture as a profession. The availability of limited options outside of agriculture forces people to leave the rural areas, and acts as a push factor for of out-migration from the state. There is thus a general disenchantment with farming, and young people aspire to do urban office jobs.

A major part of the migration from these hill districts is for the longer term and aimed at securing regular and salaried jobs in the cities even though these are low-paying jobs, available mostly in factories and restaurants. There is also substantial migration for education. Interestingly, the level of female migration for education is quite high. There is a caste pattern in permanent migration too; while the upper castes are better able to permanently move to the urban areas, the Scheduled Castes (SCs) are compelled to stay back in the villages mainly due to lower incomes. The SCs also migrate less on account of their low educational levels, lack of awareness, and social networks (Mamgain and Reddy, 2016).

Table 1.3: Selected Statistics for Uttarakhand and All-India

Indicator	Year	Total	Male	Female
Literacy rate (%), Uttarakhand	2011	78.80	87.40	70.00
Literacy rate (%), India	2011	74.04	82.14	65.46
Literacy rate (%) for SCs, Uttarakhand	2011	74.41	84.34	64.05
Sex ratio (females/000 males) Uttarakhand	2011	963		
Sex ratio (females/'000 males), India	2011	940		
Child sex ratio, Uttarakhand	2011	890		
Child sex ratio, India	2011	919		

Source: Directorate of Economics and Statistics, Government of Uttarakhand and Census 2011.

Approach to Vision 2030

With both forces of opportunities and constraints at play in the state of Uttarakhand, the state is poised at the crossroads for further development in the future. Uttarakhand had been created as a state to give voice to the aspirations of the people in the hills, whose dreams and aspirations were not always captured in the mainstream discourse on development. Seventeen years have passed since the creation of the state, and it is time to take stock regarding where it has reached and what destination it is heading towards. It is thus crucial to devise strategies for the optimal exploitation of the challenges and opportunities facing the state.

The Vision document for the state has been framed in the background of implementation of the 17 Sustainable Development Goals (SDGs), enshrined in the 2030 Agenda for Sustainable Development adopted at the United Nations by the 193 Member States, which represent a new global development compact. Encompassing the three core dimensions of economic, social, and environmental development, the Agenda has become the centre of a renewed development framework for countries of the world. The SDGs offer a unique transformative opportunity to close development gaps and provide a life of dignity and sustainable prosperity[4] (see Box 1.1 for the emergence of the concept of sustainable development).

The framework for the Vision document for Uttarakhand envisages people at the centre of the development process (Figure 1.6). Fifteen SDGs have been categorised into four groups,[5] each of which contributes towards enhancing the development process for the people of Uttarakhand. These four categories are:

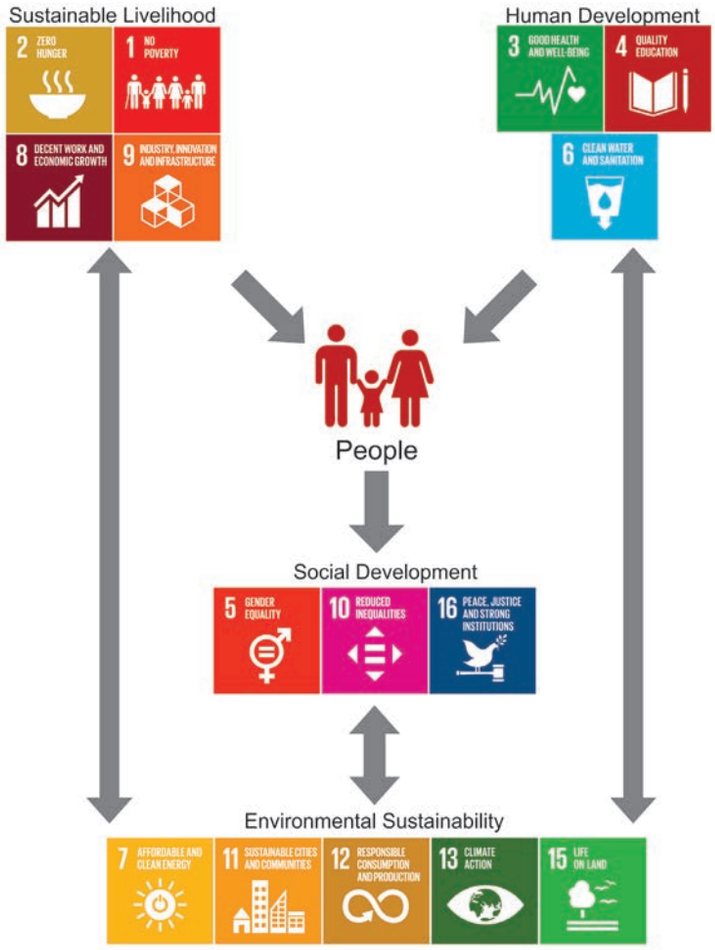
1. **Sustainable Livelihoods**, comprising SDG 1 (No poverty and sustainable agriculture), SDG 2 (Zero hunger), SDG 8 (Decent work and economic growth), and SDG 9 (Industry, innovation and infrastructure).
2. **Human Development**, comprising SDG 3 (Good health and well-being), SDG 4 (Quality education), and SDG 6 (Clean water and sanitation).
3. **Social Development**, comprising SDG 5 (Gender equality), SDG 10 (Reducing inequalities), and SDG 16 (Peace, justice and strong institutions).
4. **Environmental Sustainability**, comprising SDG 7 (Affordable and clean energy), SDG 11 (Sustainable cities and communities), SDG 12 (Responsible consumption and production), SDG 13 (Climate action), and SDG 15 (Life on land).

The progress of SDGs impacts the people and the planet and, as has been built into the SDG framework of the UN, there is a lot of synergy among the goals. Most of these are inter-dependent.

4. Kumar et. al. (2016).

5. SDG 14 relating to 'Life Below Water' was considered not applicable for the state. SDG 17 refers to 'Strengthen the Means of Implementation and Revitalise the Global Partnership for Sustainable Development', and is largely applicable at the country level. The aspect pertaining to domestic resource mobilisation has been discussed in Chapter 7.

Figure 1.6: Framework of Uttarakhand Vision 2030



Chapters 2, 3, 4 and 5 contain detailed discussions for each of the categories of Sustainable Livelihoods, Human Development, Social Development, and Environmental Sustainability. The individual SDGs are discussed along with the targets laid down by the UN and indicators, which were devised as appropriate for the state for each target. The baseline values for the indicators, along with the Vision for 2030, for the short term (2019–20) targets, and for the medium term (2023–24) targets are also discussed. The existing challenges for achieving the Vision for 2030, and the strategies are discussed at the end of discussion of each SDG. Chapter 6, discusses the resource mobilisation required for attaining the Vision 2030 for Uttarakhand.

In the chapters 2, 3, 4 and 5 appendices accompany each Sustainable Development Goal under discussion. These appendices contain a list of vision for the targets under the Goal, followed by baseline values as well as values for vision 2030 for indicators under each target, and lastly a list of existing schemes.

A consolidated set of annexures 1 to 15 contain details of all the SDGs discussed and their targets, along with values for the indicators for the baseline, for the short term (2019–20) , medium term (2023–24) and for vision 2030 [6].

The present chapter ends with a glimpse into the overall vision for the state as it looks ahead and plans for 2030. The Vision 2030 for the state is:

6. Some indicators for which values are currently not available, have also been mentioned in the Annexure, in view of the fact that statistical methods can be improved in the future for collecting such important information. This is particularly applicable for climate change related indicators.

Box 1.1: Evolution of the Concept of Sustainable Development

The concept of sustainable development emerged at Rio 2012, the UN Conference on Sustainable Development, which led to a set of Sustainable Development Goals (SDGs). Originally the thinking on sustainable development goes back to 1972 with the UN Conference on Human Environment at Stockholm and the publication of 'Limits to Growth'. Some takeaways from this conference are:

" – *The **natural resources** of the earth including the air, water, land, flora and fauna….must be guarded for the **benefit of the present and future generations**.*

– *The **capacity of the earth to produce vital renewable resources must be maintained**, and wherever practicable, restored or improved.*

– *The **non-renewable resources** of the earth must be employed in such a way as to **guard against their future exhaustion**.*"

With the concept of sustainable development, the planet that we live in and the environment are integrated in the very concept of development. Thus, there is need for social sustainability, which translates into inclusive development for the people; there should be economic sustainability, which translates into increased prosperity; and there should be environmental sustainability, implying that the development process should take care of the planet. Overall, human beings should aim to live within the bio-physical limits of their eco-system, which would lead to sustainable consumption and production. We also need to foster peaceful and just societies, and implement the agenda for sustainable development through a global partnership. The elements underlying the 17 SDGs are thus captured in the five P's: People, Prosperity, Peace, Partnership, and Planet.

Transform the Uttarakhand economy into a prosperous, healthy state such that the people are educated and gainfully employed in an equitable society, synergy between the environment and the inhabitants is enhanced, and the development process is sustainable and inclusive.

Overall, the state needs to focus on some thematic areas and aim for improvement in order to attain the Vision 2030. These are presented in Table 1.4.

The main growth drivers in the economy have been identified as: Hill agriculture with emphasis on horticulture, including aromatic and medicinal plants (promoted by AYUSH), and Tourism, in order to improve productivity and create sustainable livelihood, especially for the people in the higher reaches of the state. Also the Micro, Small and Medium Enterprises (MSME) sector is cross-cutting across all these sectors via the potential for employment generation and is extremely important in the growth strategy of the state. Simultaneous efforts to develop two other sectors, namely, renewable energy in the form of Small Hydro-power and expansion of Information Technology to all parts of the state economy will make the growth plan sustainable and make its fundamentals stronger.

The overall aim would be to double the agricultural productivity and income of small-scale food producers. Diversification away from mainstream agriculture would be the primary strategy for the state. The area under organic farming (environmentally sustainable) will be increased and there will be a shift away from crops which have low productivity to crops with a high value in the market, and the seed replacement rate will be enhanced. The focus will be on horticulture, including food processing, with expansion in this sphere envisaged over the fifteen years. Efforts will also be made to market aromatic/medicinal plants and promote traditional ayurvedic practices for medical tourism. Such transformation of the agricultural landscape will benefit the hill producers greatly and would be expected to reduce migration. The agriculture sector needs infrastructural support for completing the supply chain in terms of storage, transportation, handling, and marketing to the final consumers. There is also need for providing price support.

Table 1.4: The Focus Areas for Attaining Vision 2030

	Focus Areas	Aims for 2030
1.	Sustainable and inclusive growth	• Maintain/accelerate the present high-growth regime • The gains from development must close the gap between the hills and plains, which needs the creation of sustainable livelihoods in the hills
2.	Reduce migration by transforming agriculture	More than 50 per cent of the people in the state are dependent on agriculture, which necessitates: • Transforming agriculture through diversification towards horticulture, aromatic plants, and animal husbandry, to make agriculture profitable and retain people in the hills by giving them additional employment opportunities; and • Connecting farmers to the market by creating infrastructure
3.	Reduce migration by providing livelihood in the hills	There is need for creating employment opportunities in the hills in the tourism and forest sectors (for non-timber forest products).
4.	Improve connectivity in a sustainable manner	Access in a hilly state can be improved through better connectivity by taking care of the following: • Physical infrastructure such as roads, railways, and air, to be strengthened and expanded • Mobile/Internet connectivity to be expanded to even the remotest areas
5.	Plan ahead for sustainable urbanization	The urban development sector must anticipate and prepare for: • The increasing influx of people; • Greater requirement of public services and water; and Greater need for the management of waste water as well as solid waste.
6.	Enhance human development	• Provide quality education in schools; and • Improve access to doctors and health facilities for all, especially in the hills.
7.	Improve capability of human resources	Provide suitable skill training and vocational education to all youth, including women, in order to facilitate access to gainful employment.
8.	Empower the marginalised segments	Empower all the marginalised segments of the population, and especially empower women, by eliminating gender disparity and tackling crimes against women and girls.
9.	Enhance environmental sustainability	• Reduce the use of fossil fuels. • Opt for renewable sources of energy.
10.	Focus on sectors identified as growth drivers and enablers	Growth Drivers • Hill agriculture, with focus on horticulture, including aromatic and medicinal plants • Tourism Enablers • MSME, Small Hydro-power (up to 25 MW capacity), IT

AYUSH engages in tapping the potential of several aromatic and medicinal plants found in the mountains of Uttarakhand. The cultivation of such herbs and plants is being undertaken by various agencies such as Forest Department, the Herbal Research and Development Institute (HRDI) Centre for Aromatic Plants, and the Bhesaj Vikas Sangh, among others. The available information indicates that cultivation of medicinal and aromatic plants is around 4000 ha. There is a lot of potential for growth once processing centres for the herbs are set up in the state.

Tourism has an unlimited potential in the state, given its majestic natural beauty and resources, but this potential must be tapped fully. The vision is to make the state one of the top tourism destinations in India, in a sustainable way. The strategy would be to develop the less popular destinations alongside the more popular ones, in the interest of sustaining the fragile mountain environment. Popularising homestays would directly benefit the families in the hills, while the development of adventure tourism and ecotourism will generate employment for local youth. Entrepreneurs and service providers will be provided the necessary skill training and accreditation.

Optimising the exploitation of the potential for tourism needs meticulous planning, branding, and capacity-building at all levels. The building of both infrastructure as well as physical and Internet connectivity is critical for ensuring that the average tourist has a pleasant experience in the state. The success of tourism also entails the setting aside of substantial dedicated funds along with close inter-departmental coordination since it is crucially dependent on many sectors such as water, sanitation, electricity, and the Public Works Department, among others.

MSME sector is the nursery of entrepreneurship and has enormous potential for generating employment with low capital investment and high utilization of local resources. At present this sector provides employment to around 2.58 lakh people in the state. This sector is thus a major provider of employment in the state and promotes inclusive industrialization. The Department of MSME in Uttarakhand is providing livelihood in Handloom, Handicraft, Khadi & Village industries sector. Employment generation from many of the growth driver sectors are expected to be via MSME.

The Vision 2030 of the Uttarakhand government is 'Deployment of green power in Uttarakhand for empowerment, security, affordability and equity.' Uttarakhand as a state has a great potential for the clean option of hydro-power and the smaller and environment-friendly hydel projects offer renewable sources of energy. The burning of fossil fuel helps contain emission and consequently air and water pollution. Electricity is a key component for any form of development in a modern economy and using 'green' power would help the state grow in a sustainable manner. The broad goals for 2030 are: (i) sourcing 15 per cent of the energy demand from renewable sources; and (ii) saving up to 25 per cent of energy consumption. The state government aims to increase the share of renewable energy consumption from around 3 per cent at present to 15 per cent. In keeping with the Indian Government's commitment to source at least 40 per cent of its energy requirements from renewable sources, the state government of Uttarakhand also aims to save an additional 25 per cent of energy consumption by 2030.

The IT sector has consolidated its strengths in the state by digitising many of the public services, especially by provision through the Common Service Centres (CSCs) under the e-governance programme. It has also established convenient Wi-fi services for the promotion of tourism in the state, and is expanding mobile and Internet connectivity throughout the state, among its other achievements. Apart from fulfilling its role as an enabling sector for the

state, there is also a potential to make electronics a growth engine for the state and to establish Uttarakhand as the most preferred destination for investment in the Electronics System Design and Manufacturing (ESDM) industry. The IT department aims to set up education and IT hubs in the state, and can greatly help in deploying highly valuable disaster warning systems. It also has scope for employment generation, since given the fairly high literacy rate of 78.82 per cent, the educated unemployed can find employment opportunities in the ICT, ITES, and electronics manufacturing enterprises.

Since the entire economy requires connectivity for attaining growth in the coming years, the state must focus on expanding it road network and boosting Internet connectivity. In this context, it is imperative to consider preparing an enhanced budget for building roads and subsequently maintaining them efficiently in the mountainous regions.

Enhancing human development by improving the quality of education, expanding access to higher education, and providing youth with technical and vocational skills are also important objectives of Vision 2030, as is the criticality of reducing the Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR), tackling non-communicable diseases, plugging the shortages of doctors, and improving health facilities. Meeting the social objectives such as empowering women, reducing crime rates and violence, and providing social protection for the elderly, widows, and the disadvantaged segments of the society in order to ensure that no one is left behind is also an integral part of the vision for the state.

Above all, the respect for nature, environment and the planet constitutes an inherent aspect of the vision based on the seventeen SDGs. The mountain economy is especially fragile and the entire populace in the state, and even the people in other states are dependent on many of the mountain eco-services provided by Uttarakhand, in the form of water and wood, among others. Development in the mountains must take place in a manner such that GHG emissions are eliminated, by instance opting for LPG or electricity as the primary cooking fuel rather than wood; reducing methane emission from rice cultivation by gradually shifting from rice to fruit cultivation in part of the present area covered under rice, and eliminating GHG emissions from public transport by adopting CNG or electric energy. The other strategies for environmental sustainability would be to increase carbon absorptive capacity by increasing the land under forests, to reduce the severely degraded watersheds, and to halt biodiversity loss caused by a depletion of the habitat.

Finally, many central government and state government schemes are in operation throughout the state, providing important safety nets to the poor and the marginalised, the elderly and widows, among others, while also helping in promoting inclusive growth in areas of human development such as education and health. The achievement of these goals necessitates a systematic review of the efficacy of the schemes, monitoring of progress and the need, if any, for convergence, and/or expansion, in the coming fifteen-year period, which will help decide whether such interventions are adequate for attaining the Vision 2030.

Chapter 2

Sustainable Livelihoods

The approach to sustainable development rests on the three important pillars of social, economic, and environmental sustainability. These roughly translate into people, prosperity, and the planet. The other important pillars include peace and partnership. The discussion on Sustainable Livelihoods encompasses the following goals: SDG 1 (No extreme poverty), SDG 2 (Zero Hunger), SDG 8 (Decent work and growth), and SDG 9 (Resilient infrastructure and Sustainable Industry).

The sustainable livelihoods approach is primarily focused on livelihoods for poor people, especially in rural areas, and underscores sustainability of the same since otherwise the poverty reduction will not be lasting 1.

In Uttarakhand, the poverty is low, but there is concern about generating livelihood for people in the hills, who tend to get by-passed by the growth process. All four goals discussed in the present chapter are important from the point of view of basic sustenance of the people of the state as well as in the context of progressing towards a more prosperous and sustainable economic development trajectory wherein everyone would have access to gainful employment and livelihood.

The chapter is divided into two parts. Part I contains a brief discussion around issues related to sustainable livelihoods, the present status, vision and the strategy pertaining to the two major growth-driver sectors around which the strategy for attaining the vision is focused.

Part II contains detailed discussions of the component goals no. 1, 2, 8 and 9 in the SDG framework containing targets/indicators towards a vision for sustainable livelihoods.

PART I

Present Status of Selected Parameters in Uttarakhand

Poverty: The poverty rate in Uttarakhand with reference to the state poverty lines is low at 11.26 per cent (2011-12) [2]. This level is much below the all-India poverty Figureure of 21.92 per cent for the same year, and the state exhibits very little rural–urban differential in poverty rates.

Hunger: Uttarakhand has no overt problem of hunger in the state. The Antyodaya households and erstwhile Below the Poverty Line (BPL) households together account for around a quarter of the beneficiaries.

Malnutrition and anaemia: There is considerable chronic malnutrition among children below the age of five years, manifested in the form of stunting and wasting, affecting, on an average, 33.5per cent, and 19.5 per cent, respectively, of the children in this age group in the state. A little over a quarter of the children under the age of five are underweight for their age. However, the incidence of stunting and prevalence of underweight children have declined since 2005–06, the third round of NFHS.

Nearly 60 per cent of the children in the age group of 6–59 months in Uttarakhand are anaemic, and this high level of anaemia has persisted since 2005–06. The incidence of anaemia amongst women of reproductive age is also high, at 45.2 percent, though it has declined in the last decade.

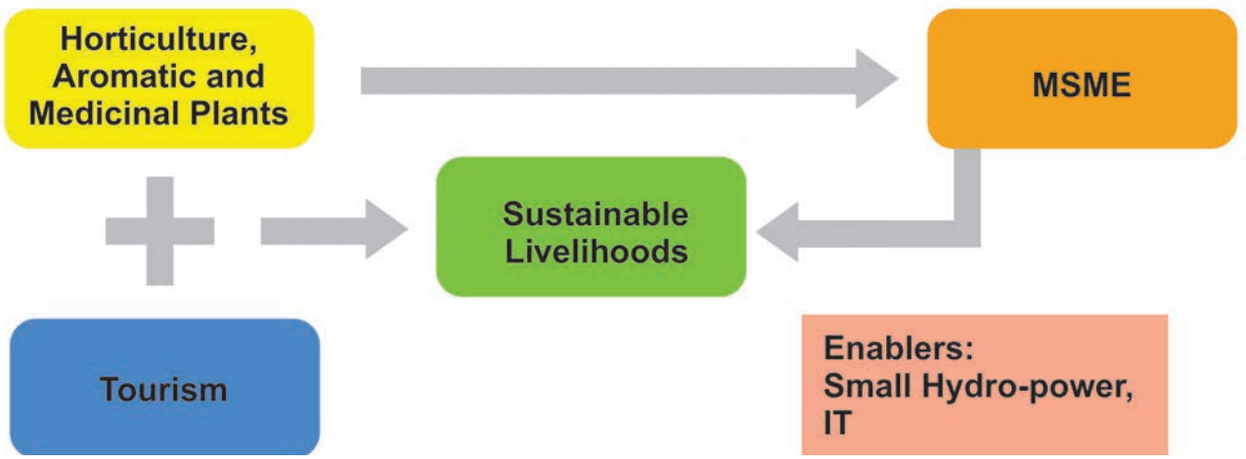
Economic growth: The state economy has made healthy progress since the inception of the state and recently, between 2011-12 and 2017-18, the state maintained a high annual rate of growth (at constant prices) of GSDP at around 7 per cent for most years.

Unemployment and under-employment: The rate of unemployment among the labour force of the working age was 4.3 per cent in 2012, going up from 2.8 per cent in 2005. This rate was higher among females (7.3 per cent) compared to males (3.1 per cent). The rate of youth unemployment rate is much higher than that of the overall unemployment at 14.3 per cent. The unemployment rate is even higher (17.2 per cent) among youth who have been educated up to the secondary and above levels. Around a quarter of the youth in the state are not in education, training, or employment.

1. https://www.ifad.org/topic/resource/tags/sla/2179541 accessed on 7th February, 2018.

2. This is the latest year for which official estimates of poverty are available.

Figure. 2.1 Strategy for Creating Sustainable Livelihoods for Uttarakhand



Vision and Strategy for Sustainable Livelihoods

The vision is to provide sustainable livelihoods to all people of Uttarakhand, in the hills and in plains, for youth and in older age-categories, for men and women alike. The strategy to provide sustainable livelihoods will rely on two growth-driver sectors (Figure. 2.1). First, transforming hill agriculture with emphasis on horticulture, including aromatic and medicinal plants, to improve productivity and to create livelihood, and second, promotion of state-wide tourism, both carried out on a Mission Mode, will help the state in generating the necessary livelihood options. The Micro, Small and Medium Enterprises (MSME) sector will link to up to the growth-driver sectors to help generate further employment downstream. Simultaneous efforts to develop renewable energy in the form of Small Hydro-power and expansion of Information Technology to all parts of the state economy will make the growth plan sustainable and make its fundamentals stronger.

Hill Agriculture / Horticulture

Hill agriculture, comprising mainly horticulture, is a key sector for Uttarakhand. The yield from traditional crops such as rice and wheat are low in the fragmented cultivated agricultural land in the hilly terrain, leading to subsistence level farming. Horticulture provides an avenue for a more remunerative form of cultivation and the natural climate of the state is ideally suited for growing fruits and vegetables.

The variance in climatic conditions of the region makes it an ideal location for growing temperate, sub-tropical, and tropical fruits that fetch a high price in both domestic as well as international markets. Secondly, due to the suitability of the climate, off-season and exotic vegetables, that is, products which can fetch a high price in the plains, can be grown in the hilly regions of the state. Thirdly, the demand for such fruits and vegetables is slated to grow in the coming years, because with rising incomes, the composition of the consumption basket of the average Indian tilts towards such products.[3] Thus, the horticulture sector is strategically placed to act as a growth driver in this hill economy. The main horticultural products for the state are fruits, vegetables, potatoes, spices, and flowers. There are around 650 food processing units in the state, providing a link to the MSME sector.

Vision and strategy for horticulture sector: The broad vision is to double the farmers' income for agriculture sector, including horticulture, by 2022. The area under horticultural products will be expanded and productivity improved. The processing capacity of horticulture produce will be enhanced from 7.5 percent to 15 percent of the total horticulture production by 2030.

There should be comprehensive base line studies for the available water and soil, on the basis of cultivated/non cultivated/ non irrigated land, as well as on the climate, in terms of area-wise, clus-

3. See Annual Plan, 2013-14, State Planning Commission, Government of Uttarakhand, for further details.

ter-wise, horticulture/agriculture/herbal/aromatic plants related policies with information on present scenario and development. Research on forecasting agriculture statistics related to soil mapping, water quality testing, etc. with land-based and meteorological data at Uttarakhand Space Application Centre (USAC) can be linked with the planning in agriculture sector in this context.

Strategy for doubling income in the horticulture sector

1. Adoption of Clusters approach as per agro-climatic condition for scale economies. There can be vegetables clusters, for which there would be crop sequence throughout years on the basis of elevation. Fruits clusters could be formed in sub-tropical in valley area mid hills or for temperate fruits in high hills, with inter-cropping. Other clusters planned are for potato, spices, flowers, etc.
2. Formation of Farmers Interest Groups/Farmers Production Organization, etc.
3. Adoption of high tech horticulture and precision farming technique (good quality seed with fertilizer, elite planting material with improved root stocks, high density plantation, micro-irrigation and mulching, etc).
4. Enhancing production through rejuvenation of old and senile orchards.
5. Promotion of high value horticulture crop like, off-season vegetables, spices, medicinal and aromatic plants.
6. Convergence of ongoing schemes being implemented by various Departments in the same cluster such as convergence with Rashtriya Krishi Vikas Yojana (RKVY), MGNREGA and watershed development programmes for the creation of water sources.

Other strategies include offering a cultivation cost subsidy to farmers and targeting cultivable waste land, promotion of tea cultivation, initiating mushroom production while also rejuvenating old low-performing plants, etc. The horticulture department is implementing various schemes for attaining the SDG-related targets. The centrally sponsored schemes include Horticulture Mission for North-Eastern and Himalayan Sates (HMNEH), RKVY, the 'per drop more crop' component of the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), and some state/district sector schemes. There are safety nets for the farmers by way of the Market Intervention Scheme (MIS) for fruits like apples, malta and pears. Weather-based cop insurance schemes are implemented for apple, mango, litchi, peach, malta, potato, tomato, ginger, French beans, and chilli crops.

As mentioned, specific targets of the horticulture sector for the coming fifteen years include conducting detailed Farm level baseline survey for updating statistics. In order to increase the area under horticulture crop, 3.6 lakh hectare culturable fallow land will be targeted. Land use and land cover mapping serve as a basic inventory of land resources and this can be carried out for the state using the application of Remote sensing and GIS.

In the identified crop-specific clusters, all arrangements for soil-testing, planting material, inputs, formation of growers' groups/federations and their training, marketing, etc. will be done. There will be arrangement for accreditation of all fruit plant nurseries.

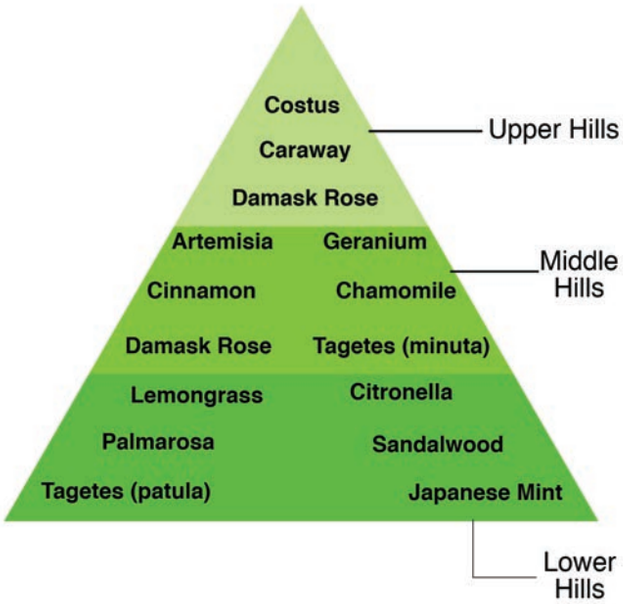
It is important to take advantage of the growing export market for fruits and vegetables and thus need for concerted export promotion for these products. Another target is establishment of mini spices parks with the support of Spices Board.

Other strategies can include mapping plant hardiness zones in the state, whereby farmers can determine which plants are most likely to thrive in extreme climates, especially in view of the climatic changes that are taking place. In crop-specific clusters, there would also be need to assess requirement of inputs such as fertilizers and the necessary augmentation of supply planned in a phased manner.

***Medicinal and aromatic plants (MAP)*:** sector comprises a focus area for the state in the future. Aromatic plants and their products, including essential oils such as Japanese mint oil, sandal wood oil, Citronella oil, lemon grass oil, etc. are becoming one of the most important export items from many developing countries of Asia.

In Uttarakhand, reportedly, 175 species of medicinal herbs are found. The ongoing migration in

Figure 2.2: Aromatic Crops Selected for Cultivation



Source: Government of Uttarakhand

the state has resulted in abandoned land, which has suffered from soil erosion, depletion of nutrients, growth of weeds like Lantana, etc. In this kind of adverse conditions, aromatic plants can be cultivated successfully. Such crops are usually safe from wild life and domestic animals, are easy to transport due to conversion of essential oils into low volume, are easier to store, and above all these have a high demand in the market.

The export of essential oils holds promise since dental care with consumption of essential oils and its fractions such as menthol, eucalyptus, etc. and flavours/fragrances are two important areas of demand worldwide. Flavours and fragrances, are the two most important sectors covering about 70 per cent within essential oil groups.[4]

Figure 2.1 lists the major crops selected for scale cultivation and extension in the farmers' fields in Uttarakhand following agronomic trials. The focus is on cultivating these as bonus crops to generate additional income and maximum land utilisation from the existing cropping pattern. Aromatic grasses are being promoted as waste land crops in abandoned land, damask rose as a boundary crop in the apple, pea, rajma, potato and vegetable fields, Japanese mint as an inter-crop in wheat, chamomile as a short-duration crop after paddy harvesting and cinnamon as an agro-forestry crop.

The vision is to expand the production of aromatic plants substantially by 2030, from 625 Ha area under cultivation at present to 16900 Ha by 2030, while farmers engaged in production of aromatic plants will increase from 2000 to 68600.

Some of the strategies to attain the vision are the following:

- Promotion of annual aromatic crops by dovetailing with the MGNREGS;
- Conduction of a baseline survey;
- Formation of village level Farmers' Groups to develop aroma entrepreneurs;
- Each aroma cluster will have a distillation unit within a radius of 5-6 km to optimise transport costs. Aroma clusters should have at least five farmers in a group and the cluster area should be at least 2.5 hectares. The main aim of the cluster approach is to establish SMEs for villagers and to promote the socio-economic growth of rural families;
- Building of the required infrastructure for this sector;
- Establishment of a high-tech nursery, aroma processing centre, and perfumery, at Centre for Aromatic Plants (CAP), Selaqui;
- Strengthening of CAP as an agri-aroma business incubator under RKVY;
- Linking with skill development and start-up programmes.
- Marketing support for farmers would be provided as a shield against price fluctuations and poor marketing mechanisms. The minimum support prices for 13 cultivated and 9 Himalayan minor essential oils have been fixed by CAP. An 'Aroma Bank' of 50 quintal oil storage capacity has been created for farmer's produce in CAP. A revolving fund has also been created for the provision of MSPs.
- Building institutional support for undertaking R&D on MAP species for generation of economically viable and environmental friendly technologies for sustainable quality production

4. Paroda et. al. (2014).

and creation of trained and skilled man power. Sustained efforts are needed for inventorization and distribution, threat categorization, conservation biology, reproduction of rare, endangered and threatened (RET) species of MAP, along with R&D on Plant Genetic Resources (PGR) management, crop improvement, crop production and post-harvest management, developing good agricultural practices (GAP) as well as adopting organic farming [5].

Horticulture/hill agriculture includes non-timber forest products which are promoted by AYUSH (Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy). AYUSH engages in tapping the potential of several aromatic and medicinal plants found in the mountains of Uttarakhand. Out of the herbal output in the state, around 60-70 percent is herbs are being used at present. There is a lot of scope for employment generation if processing centres for herbs are set up.

Uttarakhand has potential of promoting medical tourism using medicinal herbs, along the lines of other states such as Kerala. There is scope for promoting processes such as 'Panchakarma', a way of de-toxifying and rejuvenating the body using traditional methods, which are popular among foreign tourists, as well as, increasingly, among Indian tourists. This type of tourism efforts, along with yoga and wellness centres, under the stewardship of AYUSH, could also generate employment in the hills.

Not only can the horticulture sector, including MAP sector, generate livelihood for farmers, there is scope for employment whereby MSMEs connect with the orchards and distilleries for further downstream activities, and local youth find employment in the yoga and wellness centres. There is potential of further employment generation, particularly in the hills, if synergy with tourism is developed to promote agro-tourism, or culinary themes for tourist activities and tours.

Promotion of organic farming: The transformation of agriculture must take place in a sustainable manner. An important strategy for promoting sustainable agriculture is expanding area under organic farming by suitably identifying crops for each agro-climatic zone, and utilising fallow land. Organic farming system avoids the use of synthetic/chemical inputs (such as fertilizers, pesticides, etc.) and as far as possible rely upon crop rotations, crop residues, animal manures, off-farm organic waste, etc. and biological system of nutrient mobilization and plant protection 6. In this context, soil health management is extremely important. In addition, in the organic certification areas, third party certification is needed for any exports and concerted efforts needed in this context. There is also need for branding organic products from the state. The vision is to expand area under organic farming from 35 thousand hectares at present to 250 thousand hectares by 2030.

Sikkim is a state which has shown the way for organic practices and in 2016 it became a one hundred percent organic state (Box 2.1). The information presented in the Box indicates the hand-holding done by the government to encourage organic farming in the state, and how it has discouraged the use of chemical fertilizers by reducing subsidy, and has carried out the project in a Mission mode.

However, Uttarakhand, in its strategy of expansion of area under organic farming, must also take into account the experience of Sikkim that has not been so positive, such as crops being prone to diseases and pest attacks, decline in production as farmers switch from chemical to bio-fertilisers, and non-remunerative prices. Thus the overall strategy needs to include adequate supply of organic fertilisers and other inputs to farmers, training them in controlling plant disease and pest attacks, etc. For promoting sustainable practices in the agriculture sector, some guidelines are available from European Union, for Best Environmental Management Practices (see Box 2.2)

Integrated farming: While diversifying beyond traditional crops into horticulture, vegetable, livestock, poultry and fisheries, there is need to fix the Minimum Support Prices (MSPs) of these products. In view of climatic changes as well as given the divided hilly terrain, farmers would benefit

5. Ibid

6. http://agritech.tnau.ac.in/org_farm/orgfarm_introduction.html accessed on 27 January, 2018

Box 2.1 Sikkim's Journey Towards Becoming an Organic State

The process of converting Sikkim into a 100 per cent organic state was fast-tracked in 2010 with the launch of the Sikkim Organic Mission

2003 - Sikkim begins discouraging use of chemical fertilisers, reduces fertiliser subsidy by 10 per cent. The Sikkim Organic Board is constituted.

2003-2009 - State adopts 396 villages as bio-villages to test organic inputs.

2006-2009 - About 8,000 ha of land is certified as organic. Eight units of vermi-culture hatcheries are established in five state farms and three Krishi Vigyan Kendras.

2008-09 - Ginger processing unit is established at Birdang Farm, West Sikkim. Ginger is one of the four high-value crops selected by Sikkim for its trade potential.

2010 - Sikkim Organic Mission is launched to fast-track conversion of Sikkim into a 100 per cent organic state

2010-11 - More than 18,234 ha of land is certified. Automated greenhouses are established for production of disease-free quality planting material.

2011-12 - 19,216 ha land is certified.

2012-13 - 19,188 ha land is certified. `Organic farming' is included in school curriculum

2015 - Entire agricultural area in the state is converted to `certified organic'.

2016 - Sikkim is formally declared a `100 per cent organic' state.

Source: http://www.downtoearth.org.in/news/organic-trial-57517, accessed on 27 January, 2018

by adopting an integrated approach to farming comprising integrated nutrient management, weed management, and watershed management. The integration system, wherein the output of one system is used as an input for another, would particularly benefit small and marginal farmers. Livestock and poultry constitute potential areas for diversification.

Reducing post-harvest losses: To attain the full potential of hill agriculture/horticulture as a vehicle for creating sustainable livelihoods, there needs to be a well-defined plan for provision of agricultural extension services such as facilities for cleaning/grading, drying, storage, extraction, milling, fortification, packaging, transportation and handling of the produce at the farm level or in nearby locations. The infrastructure will be for the entire supply chain including collection, grading, packing centre, cold storage, CA storage, pre-cooling units, Refrigerating vans, and ripening chambers.

Grading centres for the Production and Collection of crops and fruits, should be established, along with MOU with the customers, in relation with the national/international department, needs to be done so that the farmers get the correct price for their produce. There is also need to link market infrastructure with reforms in the APMC (Agriculture Produce Market Committee) Act, for permitting the direct marketing of horticultural produce; and capability enhancement of staff/farmers/entrepreneurs through intensive extension programmes. Arrangements for small-medium industries are to be established for horticulture, agriculture, herbal, aromatic, honey production by the farmers to promote a multifaceted approach.

Increasing knowledge and awareness among farmers: Training farmers in modern technology and equipment to commercialise their business and produce for project wise tasks/programmes can pay rich dividend. The trained farmers can receive the title Master Trainer, along with a stipend and be given the responsibility for the plants/crops. Regular interaction between students at Agricultural universities and farmers will provide required updation of knowledge. In order to acquaint the farmers better with available government policies/incentives, an IT-trained helper can be appointed at the Block level, to provide necessary information.

Tourism Sector

Tourism can have a great positive impact on the host economy by increasing its income, generating employment for the local population, spurring the government to invest in infrastructure creation, and

Box 2.2 Best Environment Management Practices (BEMP)

Environmental management is important for sustainability in agricultural sector because

(i) Ammonia emissions arise from storage and application of manure and fertilizers; (ii) use of artificial fertilizers lead to GHG emissions and (iii) there is Eutrophication of surface waters, i.e. agriculture accounts for much of the nitrogen entering rivers and lakes.

Recent research in European Union provides some guidance for Best Practices to reduce environmental impacts in agriculture, comprising Practical guidance, Environmental performance indicators and Benchmarks of excellence.

An illustration for BEMP ON FERTILIZER MANAGEMENT.

Practical guidance:	Environmental performance indicators	Benchmarks of excellence
1. How to produce a nutrient management plan 2. Selection of lower impact fertilizers 3. Precise application of nutrients	1. Field nutrient surplus (kg/ha/year) (the amount of applied nutrient not ending up in harvests or animal products) 2. Nitrogen use efficiency (%) (an indication of the level of uptake of nitrogen)	1. The fertiliser nutrients applied do not exceed the amount required to achieve the 'economic optimum' crop yield 2. Field nutrient surplus or nutrient use efficiency are estimated for nitrogen, phosphorus and potassium for individual fields

Overview of the Agriculture BEMPs

1. Sustainable farm and land management - Resource-efficient food production - Land management to provide other ecosystem services - Engagement with consumers to encourage sustainable consumption
2. Soil quality management - Assess soil conditions - Maintain/improve soil organic matter - Maintain soil structure - Soil drainage
3. Nutrient management - Field nutrient budgeting - Crop rotations - Precise nutrient application - Selecting lower impact fertilisers
4. Soil preparation and crop planning - Crop rotations and cover/catch crops - Minimising soil preparation (tillage) - Low impact tillage operations
5. Grass and grazing management - Maintaining productive grassland - Maintaining biodiverse grassland - Efficient silage production
6. Animal husbandry - Achieve high feed conversion and N use efficiency - Green procurement of feed - Herd health and profile management
7. Manure management - Efficient housing - Appropriate slurry storage - Anaerobic digestion - Efficient slurry application
8. Irrigation - Minimising irrigation demand - Irrigation management / scheduling - Controlled irrigation techniques
9. Crop protection - Dynamic crop protection management - Crop protection products selection
10. Protected horticulture - Energy management and renewables - Water management - Waste management

Source: https://ec.europa.eu/jrc/sites/jrcsh/files/IntroductionAndOverview_BEMP_Agriculture.pdf

generally giving a boost to local sales and demand for the goods and services providers. This sector is accepted as a growth driver for inclusive social economic progress through its forward and backward linkages, and the ability to create employment in the economy. The high employment potential is reflected in the estimated Figureure of creation of around 90 jobs per Rs. 10 lakhs of investment. [7] There is scope for more employment generation opportunities in accommodation projects, food-oriented projects, and amusement parks and water sports.

Uttarakhand, known as 'Dev Bhoomi' or the Abode of the Gods, due to its natural endowment of snow-capped mountains, rivers, forests, and glaciers, as well as its renowned religious tourist destinations such as 'Char Dham', is a popular tourist destination in India. However, it is yet to fulfil its enormous potential as a growth driver for the Uttarakhand economy.

Present status: With 29 million tourist arrivals in 2015, Uttarakhand is ranked ahead of Himachal Pradesh as a tourist destination for domestic tourists, but still accounts for just 2 per cent of the all-India tourist arrivals (Table 2.1 Figure 2.3) and . As regards foreign tourists, the development of this sector in Uttarakhand lags considerably behind other states.

Vision and Strategy: The vision is to develop Uttarakhand as a comprehensive, world class tourism destination by realising the untapped potential of sustainable tourism, through the design of innovative tourism products that build on the inherent strengths of the state as a natural destination which can cater to all categories of tourists.

The aim is to make the state one of the top 10 tourism destination states of the country by 2020, up from its present rank of 12, to acquire a place among the top 5 destination states by 2024, and finally to attain a position among the top 3 destination states by 2030.

To attain this vision, the strategy for the state would involve the need to brand and position the experience of holidaying in the state in a planned manner so that it can be counted among the top national and international tourist destinations in the coming years.

For the initial three-year period till 2020, taking stock of the existing strengths and weaknesses, as well as detailed planning for the development of the new segment of tourist markets can be the strategy. There should be a plan to position 'Brand Uttarakhand' in the domestic and international market. The medium term should see the realisation and execution of the detailed plans made in the short term, along with improvement in the existing facilities. The brand of the state should be publicised and marketed to more and more countries, as a larger number of potential tourists become aware of the attractiveness of Uttarakhand as a tourist destination. The long-term strategy would involve further expansion depending on the success in the medium term.

The attraction of the state as a pilgrimage site is already well-established, but there is still a great deal of scope to promote the state as a destination for spiritual purposes, yoga, and wellness, also as a destination for trekking, mountaineering, river-rafting, and such adventurous activities. Rural tourism and eco-tourism can be encouraged as has been done in other countries and in other states of India (see Box 2.3 for the Finnish experience of promoting food-based tourism), provided the needs for infrastructure and connectivity, skill training, accreditation of dhabas/restaurants, and service providers are met. Thereafter, tourist destinations in the upper reaches of the state can also be developed, providing employment opportunities to the local youth.

For rural tourism, in particular, Himachal Pradesh with its scheme 'Har Gaon ki Kahani' has shown an exemplary way for how villages can become an attractive tourist destination. Under this scheme, the Panchayats of any village/districts can send anecdotes about the history and background of the concerned locale to the office of Deputy Commissioner or concerned District

7. Annual Report 2015-16, Ministry of Tourism, Government of India

Table 2.1 Tourist Arrivals in 2015 and the State's Rank as a Tourist Destination

	Tourist Arrivals in 2015 (million)		Rank in 2015	
	Domestic	Foreign	Domestic	Foreign
Uttarakhand	29	0.1	12	20
Uttarakhand share (%) in all-India	2.0	0.4		
Himachal Pradesh	17	0.4	17	12
Himachal Pradesh share (%) in all-India	1.2	1.7		
All-India	1432	23		

Source: Uttarakhand State government.

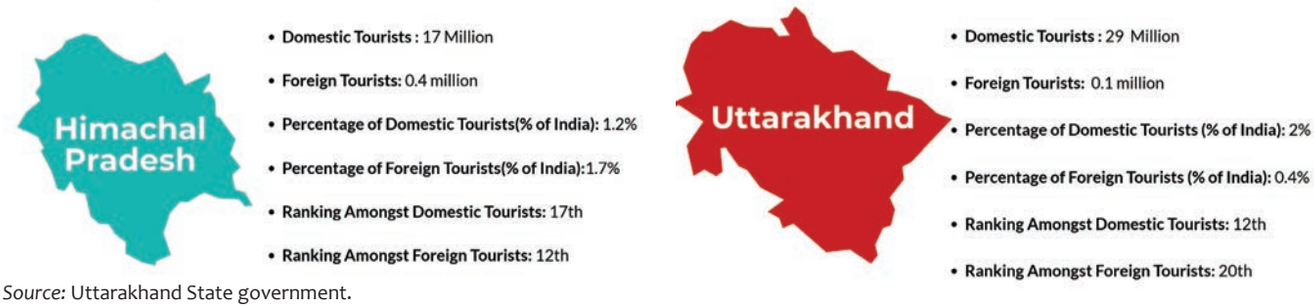
Tourism development Center. 8 The individual culture, customs, rituals for festivals/marriages and traditional tales were expected to attract tourists to experience their way of life and would give a boost to employment in the rural areas of Himachal Pradesh as visits by tourists increased. All the prevailing stories are compiled in a book which is published and disseminated world-wide for drawing in more tourists to the state.

In Kerala, tours to Kovalam villages, for example, can introduce tourists to coir manufacturing, coconut leaf weaving, and fish markets. In Wayanad one can meet, and greet oldest tribes, which are barely untouched by civilization. Apart from watching traditional activities like fishing by locals, tourists can visit villages to witness boat carnivals and races 9.

Rajasthan provides a good example of how entire villages are being developed as tourist destinations to provide additional sources of employment and income to residents, whether it be through operating homestays or rural tourist activities such as village visits and sale of wares 10. Guests stay with a family and experience the culture of the local village. The tourists thus have an opportunity to experience simple rustic lifestyle from close quarters and see the traditional values at work.

Theme-based circuits that have potential to be showcased as world class tourism products can be developed in consultation with the stakeholders.

Figure. 2.3 Tourist Arrivals in 2015 and the State's Rank as a Tourist Destination



Source: Uttarakhand State government.

8. Source: http://nestandwingsholidays.com/blog/har-gaon-ki-kahani-a-feather-in-the-crown-of-himachal-tourism/ accessed on 30 January 2018.

9. Source: https://www.tourmyindia.com/states/kerala/village-tourism.html accessed on 30 January, 2018.

10. Source: https://www.tripsavvy.com/rural-rajasthan-culture-aangan-homestays-1539654 accessed on 30 January, 2018.

Box 2.3 Hungry for Finland! The Finnish Experience in Culinary Tourism

Food and eating are essential elements of the tourism product that involve powerful experiences.

Finland's First Food Tourism Strategy 2015–2020 was launched and financed by the Ministry of Agriculture and Forestry together with 'Visit Finland' in 2015. The work on the Food Tourism Strategy was coordinated by Haaga-Helia University of Applied Sciences.

The key issues in developing food tourism are:

1. Taste of place: Associating a flavour to Finnish origins and the Finnish way of life.

2. Pure pleasure: Pure Finnish food involves Europe's purest ingredients, clean water and air, aromas and flavonoids created by Arctic light conditions, organic and local food and very high standards in food processing, all of which contribute to healthy food, including special dietary needs.

3. Cool and creative Finland: An internationally renowned culinary phenomenon.

Strategic Actions

The primary action in promoting Finnish food tourism is the development of spearhead products, strategic partnerships and communication, as well as measures and designated actors for each of these. The measures listed in the strategy aimed at promoting appealing, high-quality Finnish products to international and domestic tourists. Finnish tourism operators were involved in the strategy discussions.

Source: http://p2bhaaga.fi/sites/p2bhaaga.fi/files/Gastronomy_report_RUOKA%26MATKA.pdf

The state is actively considering development of spiritual and religious theme based circuits for tourism11. Under the Swadesh Darshan scheme of central government, Uttarakhand is a site for Eco tourism comprising 'Integrated Development of Eco-Tourism, Adventure Sports, Associated Tourism related Infrastructure for Development of Tehri Lake & Surroundings as New Destination-District Tehri, Uttarakhand' 12. Other themes may involve treks/hikes/tours to view famous Himalayan peaks, or treks along the course of the Ganga river, or places of culinary interest, or villages where communities maintain traditional lifestyles that tourists may find interesting.

Homestays in rural areas and in serviced apartments in urban areas can supplement tourist accommodation. These can be linked to the theme-based circuits for planned growth and the government can plan to promote cleanliness and beautification of the concerned villages and locales for better tourist attraction. A framework for classifying infrastructural gaps can be developed to identify the existing bottlenecks so as to unlock the potential of these circuits. An integrated approach for planning these circuits, along with a comprehensive area development approach to ensure the availability all the requisite facilities in those circuits, is also essential. There is a plan to develop thirteen new destinations in thirteen districts of the state based on various themes like adventure, leisure, rural, spiritual, and wellness in the long term.

Success of tourism initiatives depend just not on tourism department, but on synergy between tourism and a host of other departments of the government. As a tourist arrives in Uttarakhand, the tourism experience starts at the airport, railway station, bus terminus, or in the car travel she undertakes to reach her destination. The tourist's experience actually starts even before that with access to information about tourist destinations and the ease of connectivity of the state with other states in India and with the rest of the world. The experience continues with the comfort of stay in hotels, etc., the culinary experience, the ease of access to popular tourist spots, safety, the diversity of tourist attraction and the functioning of the same, internet availability/ connectivity, and above all, the warm and friendly behaviour of the local people which can make a stay

11. https://mediaindia.eu/indian-travel-trade/uttarakhand-to-develop-spiritual-tourism-circuits/ accessed on 2 February, 2018.

12. http://pib.nic.in/newsite/PrintRelease.aspx?relid=137206 accessed on 2 February, 2018.

memorable. Evidently, numerous departments such as PWD, road and rail transport, aviation, water and sanitation, electricity, urban development, hospitality, IT, Disaster management and many other departments need synergy with the tourist department to create a complete tourist experience. Here a strategy of deploying project-specific committees which span several major departments should be considered, especially for big projects.

Other Avenues for Generating Sustainable Livelihoods:

The scope for linking the MSME sector to the growth-driver sectors, especially horticulture, and thereby generating further employment, has been mentioned. The MSME sector envisages massive expansion in the future, which would increase employment from the present number of 2.58 lakh people to 8.5 lakh people by the year 2030. The focus will be especially on the micro sector, which has a tremendous potential to provide employment at the mass level at minimum capital investment. This sector also plans to provide a marketing platform to the constituent segments such as cottage, khadi, handloom and handicraft producers, and to boost entrepreneurship among potential businesswomen. The employment generation from the Large industries sector is envisaged to increase from 1.69 lakh at present to 4.44 lakh people by 2030.

Information Technology is an enabling sector that provides the under-pinning of smooth connectivity throughout the state in various departments, businesses and homes, thereby improving productivity and efficiency across sectors. Given the high literacy rate of 78.82 per cent in the state, employment opportunities for educated youth can be generated by encouraging ICT, ITES and electronics manufacturing units to establish their enterprises in Uttarakhand.

The Department of Rural Development focuses on generation of self-employment and employment opportunities through skill training, and asset creation via self-help groups (SHGs), among others, through implementation of schemes such as the National Rural Livelihood Mission (NRLM).

Skilling youth in the state is a key strategy for tacking youth unemployment. The Mahila Mangal Dal and The Yuva Mangal Dal, at the village level, shall also be motivated through workshops to create self-help groups (SHGs) and to undertake the required skill upgradation or training so that they can benefit from the various employment generation schemes of the different government departments. Uttarakhand Skill Development Mission is important in this context. Some youngsters will be trained by ex-Army personnel at the block level to facilitate their entry into the Army. Reform and diversification in agriculture, and, especially, more land ownership for women, will help to raise their work participation. Jal Vidyut Nigam undertakes projects in various parts of the state and can link the employment of local youths to these projects.

The employment department registers unemployed youth, who would be provided appropriate skill upgradation and training, so that they can benefit from various self-employment schemes. Job fairs will be organized regularly at the district level to facilitate the placement of these youths in various private sector enterprises. The department shall conduct career counselling in all parts of the state through psychometric or aptitude tests to help students choose their careers as per their skills and ability. In parallel, capacity building of concerned departments should also take place.

SDG 1

'End Poverty in All Its Forms Everywhere'.

Uttarakhand Vision for SDG 1

By 2030, all deprived families in rural and urban areas are empowered enough to lift themselves out of poverty, all poor and vulnerable people are covered with social protection and their financial inclusion is ensured.

Uttarakhand Today

- Per capita income (at current prices) for 2016-17 (provisional estimates) is Rs 160,795 compared to national average of Rs 103,007.
- Poverty rate is only 11.26% (2011-12)
- Existing pension and other social protection schemes cover many poor and vulnerable
- State is extremely vulnerable to climate related hazards

Focus for Tomorrow

- To reduce the number of deprived people to zero with twin support of livelihood opportunities and social protection
- To tackle multi-dimensional poverty, in rural areas, use combination of livelihood provision, basic services and social protection. In urban areas, focus on livelihood, skill training, provision of support to street vendors and shelters
- To expand coverage of social protection schemes further as well as financial inclusion
- To undertake Hazard, Risk, Vulnerability and Capacity (HRVC) analysis, preparedness, proper land-use, monitoring and warning systems to tackle natural disaster, and formulate/execute Disaster Management Plans

Targets for 2030

- Eliminate extreme poverty by reducing the number of deprived people to zero
- No-one in the state will remain homeless
- Reduce proportion of people below poverty line to at least half of present levels (5.63 percent)

PART II

SECTION 2.1

SDG 1 End Poverty in All Its Forms Everywhere

The Sustainable Development Goal No.1 is directly related to the economic and social pillars of sustainability, though as in the case of the other SDGs, it is also linked to the other pillars. Every citizen on this planet should be able to enjoy freedom from poverty in all its dimensions, and this is the basic issue addressed under Goal No. 1.

Traditionally, economic growth has been the primary instrument for tackling poverty. However, this has been based on the assumption that the fruits of growth would trickle down to the poor and rich alike. Yet recent experience has shown that the benefits of economic growth have often tended to bypass vast sections of the poor, especially in the developing countries, leading to increasing inequalities and disparities between the rich and the poor. Following efforts to address this serious issue, the provision of social protection has expanded around the globe in the form of cash transfers, meals for school children, and targeted food assistance, as well as social insurance and labour market programmes, including old-age pensions, disability pensions, unemployment insurance, skills training, and wage subsidies, among others.

Uttarakhand, with a high per capita income, is better placed than many other states in the country with respect to income poverty. However, it is widely accepted that poverty is multi-dimensional in nature, and it is worthwhile to explore the other aspects of poverty and deprivation in the state, such as access to basic services, as well as its resilience to withstand shocks and natural disasters, which can rapidly push even non-poor people into poverty.

The vision for 2030 for Goal No. 1 for the state of Uttarakhand is:

> ***By 2030, all deprived families in rural and urban areas are empowered enough to lift themselves out of poverty, all poor and vulnerable people are covered with social protection and their financial inclusion is ensured.***

The vision for targets of Goal No. 1 are presented in Appendix 2.1.1, followed by values for indicators (baseline and vision 2030) in Appendix 2.1.2, and Appendix 2.1.3 contains the schemes applicable for Goal no. 1. Annexure 1 contains the detailed information regarding indicators for Goal no. 1 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

In the present section, Target numbers 1.1 to 1.4 all largely relate to rural and urban development. Among these, Targets 1.1 and 1.2, which directly relate to poverty, will be discussed together, while Targets 1.3 and 1.4, which relate to social protection and inclusion, will be discussed together. Target 1.5, dealing with the resilience of the vulnerable and poor to climate-related extreme events will be discussed separately.

Target 1.1 Eradicating extreme poverty

Baseline for Uttarakhand

The UN had specified extreme poverty as applicable to those living below an income of 1.25$ daily. In the context of Uttarakhand, the concept of deprivation is being used as a proxy. In order to assess the deprivation of the people, a Socio-Economic Caste Census (SECC) was conducted in rural and urban households in India in 2011. Some results for the rural census are already in the public domain. Based on SECC data households are ranked and categorised on the basis of socio-economic status using automatic exclusion criteria, automatic inclusion criteria, and deprivation criteria. The automatic exclusion criteria are based on income/assets while those automatically included are the poorest of the poor. The remaining households are ranked on the basis of the following seven deprivation factors (Figure 2.4):

Using the above criteria, the total number of deprived rural households suffering from at least one deprivation at present is 4,29,888. Two districts in the plains, that is, Haridwar and Udham Singh Nagar, have the highest number of deprived households.[13]

13. The SECC data for the urban households have not yet been released and hence the corresponding values for the urban indicator cannot be estimated.

The poverty and vulnerability of the poor in urban areas, including urban street vendors, is sought to be reduced by enabling them to acquire skills which would help them access gainful employment. In the absence of estimates for the urban poor, the indicator for extreme poverty used is the number of homeless households, for which the baseline level is estimated to be 21,930. The National Urban Livelihood Mission addresses the problems of homeless families and provides them with them shelters equipped with the essential services. Existing schemes such as the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), which are operational in the rural areas of the state, are critical in providing the necessary safety net that prevents the vulnerable sections from falling into extreme poverty (see Appendix 2.1.3 for schemes).

Target 1.2 Reducing the number of poor people

Baseline for Uttarakhand

The indicators for this target show that the poverty rate with reference to the state poverty lines is 11.26 per cent [14] (2011-12), much below the all-India poverty Figureure of 21.92 per cent for the same year, and the state exhibits very little rural–urban differential in poverty rates.

Vision 2030 for Targets 1.1 and 1.2

The vision of the Department of Rural Development, Uttarakhand, is that, in order to empower the families identified as deprived, earnings of at least $1.25 daily will be created for each member of those families. The planks for creating such earnings would be generation of self-employment and employment opportunities through skill training, and asset creation via self-help groups (SHGs), among others, through implementation of schemes such as the National Rural Livelihood Mission (NRLM), MGNREGA, the Integrated Livelihood Support Project (ILSP) under International Fund for Agricultural Development (IFAD), and the Biogas Programme. This strategy thus largely depends on the creation of employment, which can also be provided by other departments such as horticulture, tourism, industry, etc.

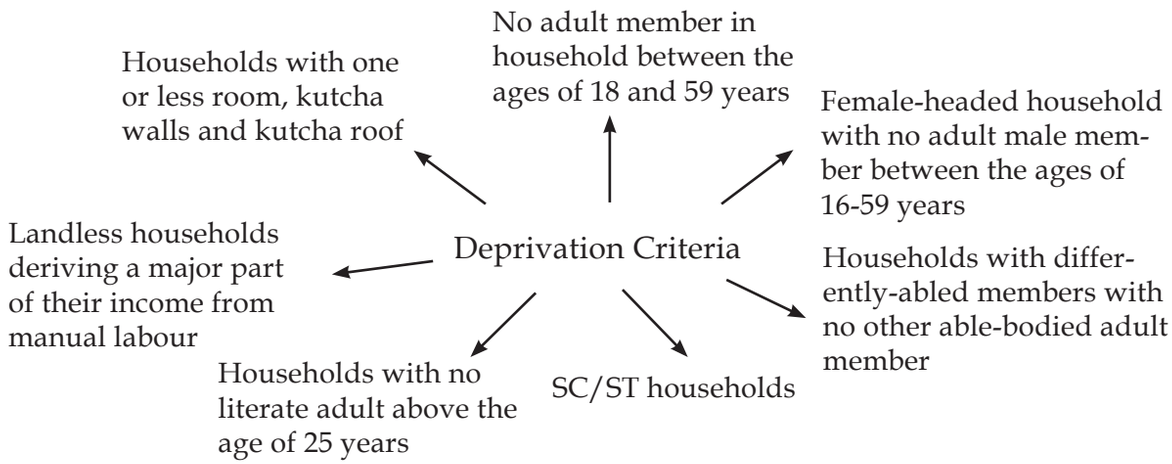
The first strand of this strategy aims to eliminate extreme poverty by reducing the number of deprived population to zero by 2030. In order to attain this from the baseline level of 4,29,888 deprived households in 2016–17, the number would be reduced by 20 per cent in the short term, to bring down the total number of deprived households to 3,43,911 by 2019-20. In the medium term, the aim would be to achieve a further reduction of 40 per cent to bring down the number reduces to 1,71,955 by 2023–24. The remaining 40 per cent of the deprived households would be brought above the extreme deprivation level by 2030. The second strand of the strategy would entail the provision of schemes to ensure social protection of the poor and the vulnerable.

With the increasing urbanisation, the number of urban poor is likely to increase in the coming years. The urban poor are being targeted on the basis of the following three kinds of vulnerabilities: occupational vulnerability (pertaining to livelihoods and dependence on the informal sector), residential vulnerability (concerning shelter/housing and basic services), and social vulnerability (covering health, education, social security, and inclusion, among other things). The issue of social vulnerability is being addressed by various departments/ministries, while the issues of occupational and residential vulnerability are being addressed by the Central Ministry of Housing and Urban Poverty Alleviation.

The vision propounded by the Deen Dayal Antyodaya Yojana-National Urban Livelihood Mission (DAY-NULM) is to reduce the poverty and vulnerability of the urban poor households by enabling them to access gainful self-employment and skilled wage employment opportunities, resulting in an appreciable improvement in their livelihoods on a sustainable basis, through the building of strong grass-root level institutions for the poor. Under this scheme, urban street vendors would be helped to access suitable space, institutional credit, social security, and skills for accessing emerging market opportunities. Another objective of the 2030 vision is to provide 21,930 homeless households with shelters equipped with services in a phased manner so that their number

14. 2011-12 Planning Commission estimates based on the Tendulkar methodology for poverty estimation.

Figure 2.4: Deprivation Criteria Used in Socio-economic Caste Census



Source: Based on information provided in secc.guv.in/

is gradually brought down to 18,853 by 2019–20, further down to 3077 by 2023–24, and finally to zero by 2029–30. The Pradhan Mantri Awas Yojana (PMAY—Housing for All), Shelter for Urban Homeless (SUH), and other such schemes also operate to address the problems of those without shelter and homes.

As regards Target 1.2, the proportion of people below the state poverty line is sought to be reduced from 11.26 per cent in the baseline to at least half, that is, 5.63 per cent, by 2030. Since the proportions of people below the poverty line in both rural and urban areas in Uttarakhand are comparable, the issue of mitigation of poverty for both will be addressed with equal priority.

Challenges for Targets 1.1 and 1.2

Migration from the Hills: Migration from the hills to the plains and to destinations outside the state is a major challenge, which is resulting in empty villages and in large swathes of land remaining uncultivated/fallow in the hills. Able people are more likely to migrate but sometimes others also leave, who later cannot fit themselves into the new environment. They need skilling to be able to adjust to the new environment and such schemes are being implemented by the Rural Development Department.

Strategy for Targets 1.1 and 1.2

The Rural Sector: The Department of Rural Development has planned to adopt a holistic approach to eliminate extreme poverty in the state. The government has devised a policy comprising 10 sutras or points which, if addressed, would mitigate the multidimensional poverty faced by the poor. These sutras aim to improve income/consumption by targeting and providing the poor and deprived with the necessary skills/livelihoods, while also improving their access to health and education, water and sanitation, housing, and finance, enhancing social protection and strengthening the community. The ten aspects of the holistic approach that needs to be adopted to combat poverty are presented in Figure 2.5.

Under the NRLM, hitherto 33,240 households have been organised into 4133 SHGs. The broad vision and strategy for lifting people out of poverty by empowering them would be as follows:

- In the short term, that is, between 2016–17 and 2019–20, some 7800 beneficiaries would be self-employed. Around 85,978 beneficiaries would receive skill training out of whom at least 70 percent will be placed for employment. These 85,978 households would be organised into 8597 SHGs.
- In the mid term, that is, between 2020–21 and 2023–24, 15,600 beneficiaries would be self-employed. A total of 1,71,955 people would benefit from skill training, out of whom

Table 2.2: Vision 2030 for MGNREGA and Housing Schemes

	2016–17	2019–20	2023–24	2029–30
MGNREGA (number of man-days created)	180	570	830	1395
PMAY (housing for homeless, families with no rooms, 1 or 2 kutcha rooms)	8120		21,930 All people belonging to this deprivation category to be provided housing by 2022	
Rajya Hrin Saha Anudan Grameen Awas Yojana (State loan for building houses)	44,072 houses built from 2000 till August 2016	6492	8656	12,984

Source: Government of Uttarakhand.

at least 70 percent will be ensured placements; and a total of 17,196 SHGs would be formed to include 1,71,955 households.

- In the long term, that is, between 2024–25 and 2029–30, another 15,600 beneficiaries would be self-employed. A total of 1,71,955 people would benefit from skill training, out of whom at least 70 per cent will be offered placement; and a total of 17,196 SHGs would be formed to include 1,71,955 households.

The focus on livelihood will be supplemented by social protection schemes. There are universal programmes such as MGNREGA, while the major central scheme NRLM targets the deprived sections among the women beneficiaries. Some other targeted schemes include the Integrated Livelihoods Support Programme (ILSP), which is a poverty alleviation programme operating in Uttarakhand.[15] The MGNREGA scheme, on the other hand, is open-ended, that is, there are no eligibility criteria for beneficiaries falling under it. For implementing the PMAY in the rural areas, the SECC data are being used for selecting the beneficiaries or the deprived. In addition, state-conducted surveys are also sometimes used. Table 2.2 depicts the vision for MGNREGA and the housing sector.

The biggest thrust for MGNREGA would be in the immediate three-year period, by increasing the targeted man-days by a little more than three times. In the subsequent time periods, the projected man-days will increase by 1.5 and 1.6 times, respectively.

Under the NRLM, a central scheme, the modus operandi is the formation of SHGs for women and then to inculcate savings behaviour in SHG members, followed by encouragement of inter-lending. Next, the SHG members receive revolving funds from the government. After 12–24 meetings, the micro-credit plans made by these SHG members are supported by project staff. Then the Government of India gives Rs. 1.1 lakh per SHG (subject to a criterion of a minimum size 5 in the hills and 10 in the plains, and with a maximum limit of 15). After six months, every individual or group delineates(s) plans for creating assets, such as buying cows, or building an atta chakki, among other things, and the state government provides a further subsidy of 3 per cent.

There have also been initiatives for skill development for wages and for self-employment through the DDU-GKY. This is a part of the NRLM and is tasked with the dual objectives of adding diversity to the incomes of rural poor families and catering to the career aspirations of the rural youth. The DDU-GKY is uniquely focused on rural youth between the ages of 15 and 35 years from poor families. As a part of the Skill India campaign, it plays an instrumental role in supporting the social and

15. ILSP is a poverty alleviation programme being implemented in Uttarakhand in 41 blocks of 11 hill districts (Almora, Bageshwar, Chamoli, Tehri, Uttarkashi, Rudrapryag, Dehradun, Pauri, Champawat, Pithoragarh, and Nanital) (Source: https://ilsp.in/).

Figure 2.5: Strategy to Eliminate Extreme Poverty in Rural Uttarakhand

Source: Based on information provided by Government of Uttarakhand

economic programmes of the government like 'Make in India', and 'Digital India'. 16

The Government of Uttarakhand is implementing the Uttarakhand Livelihoods Improvement Project for the Himalayas (ULIPH), with financial support from IFAD. The project is managed by the Uttarakhand Gramya Vikas Samiti (UGVS).The primary objective of the project is to improve the livelihood of vulnerable groups in a sustainable manner through the promotion of improved livelihood opportunities and strengthening of local institutions that relate to livelihood development. The approach is to provide opportunities for better livelihoods by utilising SHGs and developing community institutions, as well as by investing in their capacity to take livelihood decisions, and providing support services and linkages.

The project is covering 959 villages of 17 development blocks in 5 districts of Uttarakhand, wherein approximately 40 percent of the total population in each selected block is covered. The project has formed 3962 community-based organisations including SHGs, Van Panchayats and Federations.17

The central scheme of National Biogas and Manure Management Programme provides for setting

16. Source: http://ddugky.gov.in/content/about-us-0

17. Source: https://ugvs.org/uliph.html

up of Family Type Biogas Plants mainly for rural and semi-urban/households. [18] Such biogas plants generate biogas from organic substances such as cattle-dung, and other bio-degradable materials such as biomass from farms, gardens, kitchens and night soil wastes. The fuel thus obtained is clean and can be used for lighting and cooking, with the latter usage leading to savings on the cost incurred on Liquefied Petroleum Gas (LPG) cylinders. In addition, the digested slurry from biogas plants is used as enriched bio-manure to supplement the use of chemical fertilisers. Setting up bio-gas plants improves sanitation in villages, and most importantly, biogas plants help in reducing the causes of climate change.

Alleviating Poverty in the Urban Sector: The DAY-NULM is the main scheme aimed at lifting the poor out of poverty in the urban areas. This scheme has the following six main components:

(i) Social Mobilisation and Institution Development (SMID), which envisages the development of a three-tier structure for the socio-economic upliftment of the poor, comprising SHG (Self Help Group), ALF (Area Level Federation) and CLF (City Level Federation) (see Figure 2.6);

(ii) Employment through Skill Training and Placement (ESTP) (Utthan): The primary features of ESTP are that it entails imparting of training as per the needs of the market, and stipulates the empanelment of Skill Training Providers (STPs). It also posits that there will also be empanelment of independent Certification Agencies (CAs) and a Placement (of a minimum of 50 per cent of the candidates) and/or linkages for self-employment ventures. Thus, an asset will be provided to the urban poor in the form of skills for sustainable livelihood and alleviation of urban poverty.

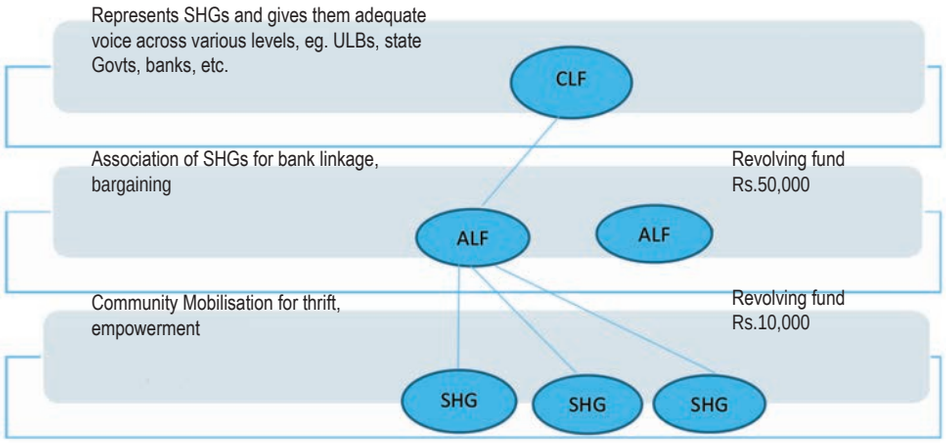
(iii) Self-employment Programme: Under the scheme, individual and group enterprises are to be promoted and linked with banks for financial support, and there is also provision of interest subsidy on loans for individual enterprises (up to a maximum amount of Rs. 2 lakhs) and for group enterprises (up to a maximum amount of Rs. 10 lakhs). The individual and group enterprises will get subsidised loans and SHGs will be linked with banks for loans.

(iv) Capacity building and training: Technical support will be provided at the national, state and city levels.

(v) Support to urban street vendors: A city-wide street vendor survey will be carried out with a view to identify vendors, vendor zones, and existing practices, and ID cards will be issued to the vendors by the urban local body (ULB). There are plans for vendor market development, skill development, and financial inclusion, as well as social security convergence.

(vi) Scheme of shelters for the urban homeless: For every urban population segment of one lakh, there will be permanent 24x7 all-weather com-

Figure 2.6: National Urban Livelihoods Mission for Alleviating Urban Poverty



Source: http://nulm.gov.in/PDF/Reg_Workshop_pdf/NULM_Launch_Presentation.pdf

18. Source: http://mnre.gov.in/schemes/decentralized-systems/schems-2/

munity shelters, with each shelter equipped to cater to 50–100 persons. A minimum space of 5 square meters or 50 sq. feet will be provided per person. Linkages with social security and other entitlements will also be ensured.

Target 1.3: Coverage of social protection

Baseline for Uttarakhand

There are many pension schemes, including central schemes, in Uttarakhand, such as Old Age Pension, Widow Pension, Disability Pension, and Farmers' Pension, among others, which provide a security net for the vulnerable segments of the society. Details of the baseline physical achievements and financial expenditure for the major pension schemes for the year 2015–16 are given in Table 2.3 and Figure. 2.7.

The largest outreach is for the Old Age Pension scheme, which has 4,25,000 beneficiaries. Other schemes for the vulnerable segments of the society include those that provide financial assistance for the marriage of daughters in poor SC families and for daughters of homeless widows.

Target 1.4: Right to economic resources including land, property and financial s ervices

Baseline for Uttarakhand

Target 1.4 will be assessed primarily by financial inclusion in the form of the number of Jan Dhan Yojana accounts opened till date. The baseline value is 21,70,693.

Vision 2030 for Targets 1.3 and 1.4

Target 1.3 entails extending social protection for vulnerable people. The state has plans for expanding the outreach of the main pension plans from the baseline levels to those in 2030, as delineated in table 2.5.

As regards Target 1.4, the baseline financial inclusion, as reflected in the number of Jan Dhan Accounts opened in the state, will be increased over the coming fifteen-year period in order to ensure that all unreached households are covered by 2030.

Strategy for Target 1.4

The Panchayati Raj Department has a major role to play in ensuring that all people, particularly the

Table 2.3: Physical Achievements (No.) and Expenditure (Rs. lakh) under Major Pension Schemes in Uttarakhand (2015–16)

Scheme	Physical Achievement (No.)	Total Expenditure (Rs. lakh)
Old Age Pension	4,25,962	35,342.75
Widow Pension	1,39,381	12,302.23
Disability Pension	64,921	5796.09
Farmer Pension	19,469	1429.28

Source: Government of Uttarakhand.

Figure 2.7 Expenditure (Rs lakh) under Major Pension Schemes in Uttarakhand (2015-16)

Source: Based on information provided by Government of Uttarakhand

Table 2.4: Achievements and Targets (No.) for Major Pension Schemes in Uttarakhand

Scheme	Baseline Achievement (No.)	Target 2030 (No.)
Old Age Pension	4,25,962	5,55,000
Widow Pension	1,39,381	1,80,000
Disability Pension	64,921	80,000
Farmer Pension	19,469	25,000

Source: Government of Uttarakhand.

poor and the vulnerable, get equal rights to economic resources and finance, as well as access to basic services, among other things. The department aims to adopt the following strategy to effectively address this target:

- Effective implementation of the flagship programmes of the Panchayati Raj department such as NRLM and MGNERGA, among others.
- Proper identification and prioritisation of eligible candidates and beneficiaries for all the plans/programmes, subsidies, and social protection schemes.
- Provision of basic services relating to drinking water, sanitation, waste management, and other such facilities for all citizens with the help of the 14th Finance Commission.
- Establishment of a system of managing public property/resources with the help of rural employment based on resource-mapping.
- Determination of local development goals, public interaction and garnering of resources for the elimination of poverty.

Target 1.5: Build the resilience of the poor and vulnerable to climate-related extreme events and environmental shocks and disasters.

Baseline for Uttarakhand

The vulnerability to climate-related events is captured by the indicators of loss of lives, injuries due to natural disasters, and also by the number of houses fully/partially damaged, and the loss of animals from natural disasters. Although the loss of lives numbered 126 for the baseline, it was 225 in 2013, and the number of missing that year had been a massive 4021, as there was a major natural disaster in Uttarakhand during the year concerned. The baseline value of the number of fully/partially damaged houses is 806/2440 and there was a loss of 1464 animals, including both small and big ones.

Vision 2030 for Target 1.5

Uttarakhand as a mountain economy faces more natural disasters such as landslides, floods and earthquakes than most other states in India. Hence, Target 1.5 is extremely important for this state. Overall, the vision is to minimise the loss of lives and property arising from people's vulnerability to climate-related extreme events and other environmental shocks, and to improve their resilience to vulnerability against such events. Specifically, it is aimed at that the number of deaths has to be brought to zero by 2030, and attempts have to be made to contain the damage to houses and loss of animals in a staggered way.

Challenges for Target 1.5

Poor response and preparedness for disaster management: There have been reports underscoring the weakness in disaster management observed during the 2013 disaster, particularly the response and preparedness components. [19]

Strategy for Target 1.5

The strategy needed for tackling the natural calamities that occur relatively frequently in mountain states such as Uttarakhand are: conduction of a Hazard, Risk, Vulnerability and Capacity (HRVC) analysis; augmenting preparedness to deal with disasters; ensuring proper land-use; and installing monitoring and warning systems. Further, all disaster management plans should be stringently followed and executed.

> The State government has prepared a State Disaster Management Plan, which is being revised

19. Uttarakhand Disaster 2013, National Institute of Disaster Management, Ministry of Home Affairs, Government of India.

every year. Given that in times of disaster, co-ordination between various departments such as Public works, Police, Health, Water, Power, Irrigation, Agriculture and Animal Husbandry is crucial for the effectiveness of the disaster management programme, the corresponding disaster management plans are also being prepared at the department levels. Standard Operating Procedures (SOPs) for different types of disasters are being prepared for different relevant departments and duties are being assigned to specific personnel. Provision of battery-operated chargers can be made in the disaster-prone areas to facilitate open communication among all stakeholders when disaster strikes.

> Mock drills and exercises are being carried out as a part of the Incident Response System (IRS) along with imparting of training for search and rescue operations to police personnel, fire-Figurehters, and homeguards, among all security personnel. It is also being ensured that SMS services are put in place and used efficiently for timely dissemination of weather-related information to warn communities about impending disasters.

> The Uttarakhand Government has a long-term strategy with detailed outlines for improvement in 'Technical Assistance and Capacity Building' for disaster risk management. The various components of this strategy are as follows:

- Disaster Risk Assessment: This will provide technical assistance to institutions to enable them to plan, setup and implement a multi-hazard risk assessment of the state. A Digital Disaster Risk Database will be developed, comprising information about major disasters such as earthquakes, landslides, floods, flash floods, and industrial hazards.
- River Morphology Study: This will support the study of the morphology of key rivers impacted by disasters, along with identification of critical protective infrastructure that is needed to strengthen river banks. It has also been proposed to develop an Uttarakhand River Information Management System (URMIS) to assist in decision-making and URMIS is likely to provide a better anticipation as well as control of response of rivers and catchment areas to any catastrophic event, and help to ensure timely corrective action.
- Establishment of a Decision Support System (DSS): This involves the setting up of a DSS for assimilating and analysing information from multiple sources in an integrated geo-spatial system that will display information and provide access in a user-friendly manner.
- Slope Stabilisation Study: This will entail learning about slope stabilisation from among the existing successful techniques and introduce appropriate technology in the state. The study will help minimise the impact of landslides on infrastructure and protect habitations from the overflow of rivers by treating and stabilising active and prone slopes along river training works.
- Strengthening of the Uttarakhand State Disaster Management Authority: This will involve institutional strengthening and enhancement of facilities, and training programmes, among other things.
- Strengthening of a Hydro-Meteorological Network and Early Warning System (EWS): This will review the existing hydro-meteorological capabilities at the state and national levels and will develop a relevant modernisation plan. Similarly, the existing EWS will be reviewed to identify gaps and help establish a robust and fail-safe EWS in the state.
- Seismic Assessment of Public Buildings in Uttarakhand: This will entail assessment of seismic vulnerability on the basis of the structural information of buildings through rapid visual screening, and identification of seismic-deficient buildings for prioritising the structural strengthening of such buildings.
- Strengthening Emergency Response Capacity: This will focus on strengthening the capacity of the State Disaster Response Force, including fire services personnel and other key response agencies through the use of better search and rescue equipment and enhanced training.

> Apart from the plans of the State Disaster Management Authority, the Civil Aviation department has also launched initiatives for improving preparedness to meet disasters since Uttarakhand is a mountainous state with many remote locations. Construction and upgradation of helipads/heliports along with associated facilities for disaster preparedness have been proposed for 60 such helipads/heliports, and No Objection Certificates (NOCs) have already been obtained for 51 of these.

SDG 2

End Hunger, Achieve Food Security and Improved Nutrition and Promote Sustainable Agriculture

Uttarakhand Vision for SDG 2

By 2030, access to food grains is substantially improved such that no citizen in Uttarakhand is hungry or malnourished, and agriculture is transformed with the help of expansion of irrigation, crop diversification, productivity enhancement and organic farming practices.

Uttarakhand Today

- No overt hunger problems in state
- Stunting and wasting among under 5 children at 33.5 percent and 19.5 percent, with rural malnutrition indicators higher than urban
- Anaemia amongst women of reproductive age declined in the last decade, but is still high
- Fragmented agricultural landholding
- Net area sown at 11.7 percent is much lower than national average. Irrigated area as a percentage of net area sown is just 45 percent and relatively low in hills
- State is self-sufficient in production of cereals and millets and is surplus in vegetable production
- Rich bio-diversity and favourable agro-climatic conditions for cultivation of off-season vegetables, temperate fruits, aromatic rice, medicinal and aromatic plants
- Low agricultural productivity and high vulnerability to climate related hazards in hills

Focus for Tomorrow

- To reduce the number of malnourished and severely malnourished children, and to reduce anaemia for women of reproductive age from baseline levels
- To improve access to food grains by increasing food collection and by reaching food-grain effectively to remote hilly regions with better infrastructure
- To double farmers' income by 2022 by increasing productivity, reducing input costs, expanding irrigation, crop diversification, land consolidation, focus on horticulture with cluster-based approach, etc.
- To promote sustainable agriculture by expanding area under organic cultivation, to develop agriculture market, post-harvest technology and storage, etc.
- To achieve self-sufficiency in pulses and oilseed
- To establish Uttarakhand as a seed state

Targets for 2030

- Reduce prevalence of stunting and wasting to less than 5 percent among relevant age group
- Reduce anaemia among women of reproductive age to less than 10 percent and that for 6-59 months old children to less than 5 percent
- Double farmers' income by 2022
- Increase foodgrain collection to 150 million tonnes per year

SECTION 2.2

SDG 2 End hunger, Achieve Food Security and Improved Nutrition and Promote Sustainable Agriculture.

Some of the reasons for slow progress in eliminating hunger globally have been natural and human-induced disasters or political instability, with increased vulnerability and food insecurity. Thus persistent hunger is associated not only with food availability, but also with access to food. 20

In Uttarakhand, the agriculture sector contributes just around 10 per cent to the GSDP. However, in a state where over 70 per cent of the inhabitants are rural, the same sector employs more than 50 per cent of the workers and provides livelihood security to a major proportion of the rural population. Thus, agricultural progress continues to be crucially important for not only food security but also for the overall development of the state.

The Vision for the state for Goal No. 2 is:

> ***By 2030, access to foodgrains is substantially improved such that no citizen in Uttarakhand is hungry or malnourished, and agriculture is transformed with the help of the expansion of irrigation, crop diversification, productivity enhancement, and organic farming practices.***

The vision for targets of Goal No. 2 are presented in Appendix 2.2.1, followed by values for indicators (baseline and vision 2030) in Appendix 2.2.2, and Appendix 2.2.3 contains the schemes applicable for Goal no. 2. Annexure 2 contains the detailed information regarding indicators for Goal no. 2 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

In the present section, Target 2.2 deals with aim of eliminating malnutrition. This will be discussed first. The targets 2.1, 2.3, 2.4 and 2.5 are all related directly to the agriculture and allied sectors and will be discussed together.

Target 2.2: By 2030, end all forms of malnutrition

Baseline for Uttarakhand

Uttarakhand has no overt problem of hunger though considerable malnutrition is prevalent in the state. There is an active Public Distribution System (PDS) comprising around 9000 Fair Price Shop outlets. The National Food Security Mission accounts for 60 per cent of the foodgrain supply through PDS while the remaining 40 per cent comes from the state food scheme. The Antyodaya households and erstwhile Below the Poverty Line (BPL) households together account for around a quarter of the beneficiaries.

Malnutrition among children is widely prevalent in India and Uttarakhand is no exception. There is considerable chronic malnutrition among children below the age of five years, which is manifested in the form of stunting and wasting, affecting, on an average, 33.5 per cent, and 19.5 per cent, respectively, of the children in this age group in the state. In this context, the rural indicators are higher than the urban, according to the latest NFHS data for 4th round in 2015-16. A little over a quarter of the children under the age of five are underweight for their age. However, the incidence of stunting and prevalence of underweight children have declined since 2005–06, the third round of NFHS.

Moderate Acute Malnutrition (MAM) and Severe Acute Malnutrition (SAM) are widely accepted as indicators of malnutrition. SAM refers to severe wasting and is a dangerous form of malnutrition, which can turn fatal if left untreated. [21] The state has 1677 children (aged less than three years) in the SAM category and 25,281 children (aged less than three years) in the MAM category.

Anaemia is a manifestation of under-nutrition and poor dietary intake of iron. Nearly 60 per cent of the children in the age group of 6–59 months in Uttarakhand are anaemic, and this high level of anaemia has persisted since 2005–06. However, it may be noted that the causes of nutritional anaemia among children include iron loss due to parasite load (for example, malaria, and presence of intestinal worms) as well as poor environmental sanitation, consumption of unsafe drinking

20 https://sustainabledevelopment.un.org/sdg2

21. http://actioncontrelafaim.ca/what-is-acute-malnutrition/types-of-acute-malnutrition/ accessed on October 2, 2017.

water, and inadequate personal hygiene, and not just dietary deficiency. [22] Thus, the attainment of Target 2.2 is also dependent on the attainment of SDG No. 6 and its concomitant targets. The incidence of anaemia amongst women of reproductive age is also high, at 45.2 percent, though it has declined in the last decade. Uttarakhand has recently turned to local produce such as mandua and kala bhat to boost nutrition among kids and pregnant women.

Vision 2030 for Target 2.2

The state aims to tackle the challenges of malnutrition by adopting a gradual approach over the fifteen-year period till 2030. The number of malnourished children will be reduced by 30 per cent and the number of severely malnourished children will be reduced by 25 per cent by 2019-20. The corresponding targeted reductions for the next four-year period till 2023–24 are 40 per cent for malnourished children and 35 per cent for severely malnourished children. The targets for the final time period till 2029–30 are to reduce the number of malnourished children by 60 per cent and the number of severely malnourished children by 50 per cent.

The objectives for reducing anaemia are: reducing the baseline levels of anaemia among women of reproductive age from the baseline levels of around 45per cent to successively 40 per cent by 2019–20, to 30 per cent by 2023–24, and to 15 per cent by 2029–30. For children aged 6–59 months, the baseline levels are higher, at around 60 per cent, and these are sought to be reduced successively to 50 per cent by 2019–20, to 40 per cent by 2023–24, and to 20 per cent by 2029–30.

Challenges for Target 2.2

-The remote hilly areas lack approach roads, godowns and proper weighing devices, all of which adversely affect the access to food for the people in such regions.

- The post-harvest losses are large, especially for fruits and vegetables, and they need to be curtailed.

- There is a need for convergence of schemes to tackle malnutrition and anaemia effectively.

Strategy for Target 2.2

The strategy of the state government is to mitigate/eliminate the challenges outlined above and also to expand production to meet the targets for 2030. A mountainous state such as Uttarakhand needs a concerted investment in infrastructure development for promoting agriculture. This includes all aspects of improving irrigation, power, rural roads, and Information and Communication Technology (ICT) infrastructure. A focus on these areas would improve productivity and widen the much-needed market access, as well as improve post-harvest storage and processing. Agriculture should also be made profitable for farmers, by weeding out intermediaries and protecting farmers from market price fluctuations.

Anaemia/malnutrition are not just health conditions but are also impacted by factors such as lack of safe drinking water, hygiene and sanitation (toilets), switching over to usage of polished rice and absence of leafy vegetables in meals etc. [23] Hence, in the long run, over and above iron supplements, what is needed is promotion of nutrient-rich local food, consumption of greens & leafy vegetables, use of toilets, availability of safe drinking water and convergence of efforts of departments of Agriculture, Drinking Water and Sanitation, Ministry of Health and Family Welfare, Department of AYUSH, etc.

The specific strategies proposed for attaining the vision for Target 2.2 are as follows:

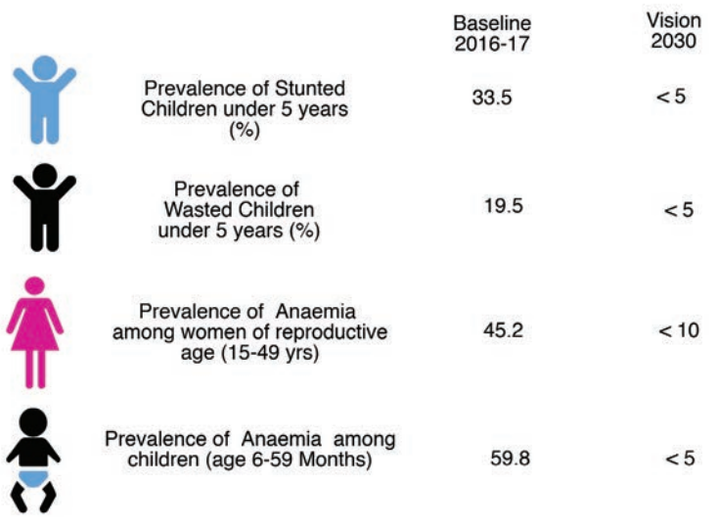
For reducing malnutrition:

- Establishment of Nutrition Resource Centres (NRCs) in all 13 districts for nutritional counselling and treatment;
- Promotion of schemes through Information, Education and Communication (IEC) activities;
- Observing 'Vajan and Poshan Diwas' monthly for growth monitoring of children who are less than 3 years of age—the focus is on identification of SAM and MAM children;
- Early detection and management, especially of stunted children with respect to endocrinological disorders;

22. Guidelines for Control of Iron Deficiency Anaemia, Ministry of Health and Family Welfare, accessed at http://www.pbnrhm.org/docs/iron_plus_guidelines.pdf on April 27, 2017.

23. https://tribal.nic.in/DivisionsFiles/sg/DraftBackgroundNoteonconvergence.pdf accessed on 6th February, 2018.

Figure 2.8: Selected Indicators for Malnutrition in Uttarakhand



Source: Based on information provided by Government of Uttarakhand

- Counselling of parents for ensuring nutrition under the Village Health Nutrition Day (VHND) and promoting hygienic habits such as correct hand washing practices, and nail cutting;
- Providing nutritional food through the anganwadis—the state government initiative Upyog Rojana Jaruri Hai—Abhi Se (URJA) is specifically designed for malnourished children, and this dietary supplement is made with locally available food; and
- Increasing the availability of safe drinking water and access to toilets at anganwadi centres (AWCs).

For reducing anaemia among women of reproductive age:

- Strengthening anaemia tracking and timely referral for proper management;
- Forging partnerships with development partners, medical colleges and professional bodies to support intervention for addressing reproductive child health challenges;
- Promoting antenatal screening of all pregnant women;
- Counselling of anaemic women of reproductive age under VHND and for maintaining menstrual hygiene;
- Distribution of Iron Folic Acid (IFA) tablets of blue colour to girls aged 15–19 years;
- Distribution of Albendazole tablets to girls aged 15–19 years twice a year;
- Distribution of iron and folic acid tablets to pregnant women;
- Promotion of schemes regarding nutrition and prevention of anaemia through IEC activities;
- Early detection and treatment of anaemia of girls aged 15–19 years by school health teams and screening of school children up to the ninth standard for detecting thalassemia and anaemia;
- Ensuring 100 per cent institutional delivery by the year 2030 and a minimum stay of 48 hours at a health facility for pregnant women after delivery;
- Disbursement of free medicines, food, and blood (if needed) to all pregnant women at government health facilities; and
- Provision of financial aid to BPL pregnant women for ensuring adequate nutrition.

For reducing anaemia among children aged 6-59 months:

- Increasing the number of facilities for newborn children—at present four Special New Born Care Units (SNCUs), and 29 Net Backup Support Utility (NBSUs) are operational in the state; by the year 2017–18, nine SNCUs and 41 NBSUs will be operational; and by the year 2020–21, SNCUs in all the 13 districts and NBSUs in all the high case load facilities

(Community Health Centres) will be functional;

- Increasing the incidence of institutional delivery and focusing on starting breastfeeding for the infant within one hour of birth and ensuring exclusive breastfeeding;
- Establishing Kangaroo Mother Care (KMC) units for Low Birth Weight (LBW) infants;
- Ensuring early detection and treatment of 30 identified diseases under the age group of 5 years under the RBSK programme;
- Augmenting the number of District Early Intervention Centres (DEICs) –at present, four DEICs are operational, but by year 2030, DEICs will be functional in all the 13 districts of the state;
- Promotion of schemes through IEC activities;
- Strengthening the Child Death Review Mechanism; and
- Promoting distribution of IFA syrup to children aged 6–59 months.

Target 2.1: End hunger and ensure access to food for all by 2030

Baseline for Uttarakhand

The availability of essential foodgrains in the state is considered first for looking at the food security situation. The pattern of land use in this mountainous state shows that the net area sown in Uttarakhand is much lower as compared to the corresponding all-India average due to its huge forest area and difficult terrain (Table 2.5). Although forests constitute a positive component in terms of the environment, the scope for foodgrain supply in the forested areas is limited. In addition, the irrigated area comprises just 45 per cent of the net area sown. [24]

What is more, the irrigation is mainly in the plains, with the hills that are largely rain-fed accounting for just around 13 per cent of the irrigation. However, the state is well ahead of the national average in terms of cropping intensity. The present foodgrain production per hectare is 18,43,785 mt.

Vision 2030 for Target 2.1

In order to improve access to foodgrains, the state intends to increase the food collection from the present 101 million tonnes to 150 million tonnes per year, by 2030. It also aims to reach foodgrain to all parts of the state effectively, including the remote hilly areas. The per hectare foodgrain production will be increased from 18.43.785 mt to 20,76,303 mt.

Target 2.3: Doubling agricultural productivity and incomes of small-scale food producers

Target 2.4: Ensuring sustainable food production systems

Target 2.5: Maintaining genetic diversity of seeds, cultivated plants, farmed and domesticated animals etc.

Baseline for Uttarakhand

Targets 2.3, 2.4 and 2.5, all deal with the agriculture and allied sectors. Crops and livestock are important components of the integrated agriculture system in the state and are an essential means for ending hunger, achieving food security, and improving nutrition. Fishing is also part of the agriculture and allied activities, and contributes

Table 2.5: Land Utilisation (% of Total Reporting Area) Pattern in Uttarakhand State (2014–15)

	Uttarakhand	All India
Forest	63	23
Non-agricultural use	7.5	8
Barren	3.8	6
Permanent pasture and other grazing lands	3.2	3
Culturable waste	5.3	4
Total fallow	2.4	8
Net area sown	11.7	46
Cropping intensity (%)	156.65	139

Source: Government of Uttarakhand.

24. Data not shown in the table.

towards food security and nutrition.

Agriculture in the hills in Uttarakhand is not a very productive activity due to several reasons including the fragmentation of land resulting in a predominance of marginal and sub-marginal landholdings. Other reasons are low irrigation, low productivity, lack of outreach to bigger markets, and price fluctuations. Overall, the area under agriculture has been on the decline. On the other hand, lack of livelihood opportunities, and lack of access to good educational institutions and health facilities, among other reasons, have prompted an exodus from the hills to the plains, thus irreversibly changing the hill economy. The dichotomy of agriculture in the state can be assessed from Table 2.6.

Major products: Uttarakhand is self-sufficient in the production of cereals and millets, and is surplus in terms of vegetable production, and the opening up of export opportunities. Sugarcane, wheat, rice, and potato are the main agricultural outputs of the state. Among the crops, the main field crops are wheat, paddy, maize, ragi, millet, lentil, and soybean while cole crops, cucurbits, capsicum, tomato, radish, pea, French bean, potato, and onions are the main vegetables grown. In the hills, the major crops grown include wheat, paddy, mandua, ramdana, and potato, whereas in the plains, the major crops are wheat, paddy, pulses, and sugarcane.

Bio-diversity in the state is reflected in over 175 rare species of aromatic and medicinal plants. In addition, the diverse agro-climatic conditions in Uttarakhand provide it with a competitive edge over other states in terms of the cultivation of off-season vegetables, temperate fruits, aromatic rice, medicinal and aromatic plants, as well as for organic farming.

The fact that the hill areas are largely rain-fed leads to low productivity. The agricultural land under foodgrains presently stands at 900,000 hectares. The seed distribution Figureures for rice and wheat for the baseline are 18,464 quintals and 1,20,337 quintals, respectively.

Climate change impact: Apart from natural calamities such as floods and landslides, which occur with relatively more frequency in a mountainous state, Uttarakhand has been suffering increasingly from drought conditions. It faced 16 drought years (including five severe ones) during the long period 1964–2000, and further, there were 7 droughts years (including three severe ones) during the subsequent nine years alone. These calamities have had an adverse impact on the behaviour of crops and pollinators and led to the emergence of some new diseases and insects, and new races of pathogens. Crop insurance is thus an important instrument to protect farmers' interests, and at present 3,75,000 farmers accounting for an area coverage of 85,790 hectares have been covered under insurance.

The crop production system in the state is based on agriculture, production of vegetables, horticulture, and the agroforestry/agri-horti-silvi-pastoral system. Next we discuss the overall agricultural situation for the state, followed by

Table 2.6: Dichotomy of Agriculture in Uttarakhand

Agriculture in the Plains	Agriculture in the Hills
Characterised by commercial farming	Characterised by subsistent farming
Mono cropping is common	Mixed cropping is prevalent
Consolidated holdings	Scattered and fragmented holdings
Irrigated area of around 90 per cent	Irrigated area of around 13 per cent
Seed replacement rate: 20-25 per cent	Seed replacement rate: 4-5 per cent
Use of chemical fertilisers: 150-200 kg/ha/year	Use of chemical fertilisers: 5-7 kg/ha/year
Productivity of main crops Rice—23 q/ha Wheat—33 q/ha	Productivity Rice—13 q/ha Wheat – 12 q/ha Ragi—13 q/ha Sawan—13 q/ha

Source: Annual Plan 2013-14, State Planning Commission, Government of Uttarakhand.

the baseline status, vision and strategy for some important segments such as horticulture, animal husbandry and fishery.

Vision 2030 for Targets 2.3, 2.4 and 2.5

The overall vision of the agriculture and allied sectors, is delineated in Box No. 2.6.

Target 2.3 pertains to doubling agricultural productivity and income of small-scale food producers by 2030. The state has the vision of achieving this through the adoption of an integrated approach to agriculture, efficient nutrient management, and diversification.

The above measures would need to be attained in the backdrop of a declining share of land under agriculture, which can be attributed to industrialisation in the plains, and to large-scale outmigration in the hills. Irrigation, and other measures like the use of high yield seeds needs scaling up in order to double land productivity. The following two-pronged strategy must be adopted to increase farmers' income (see also Box No. 2.5):

(i) Increase agricultural output through various measures including the reduction of input costs, mechanisation, soil testing, use of High Yielding Variety (HYV) seeds, and seed replacement;

(ii) Maintain and increase sustainability by increasing the percentage share of organic farming.

The targeted seed distribution for rice will grow by 36.5 per cent, 24.8 per cent, and 10 per cent, respectively between the given time-lines, in order to meet the targeted plans for rice production. The seed distribution for wheat is slated to see a very slight increase over the 15-year period, since the targeted production has already been met.

The farmers' interests will be protected by expanding crop insurance through an increase in the number of farmers covered under crop insurance by nearly 1.5 times by 2030, and a threefold increase in the area covered under crop insurance by 2030, a as compared to the present coverage.

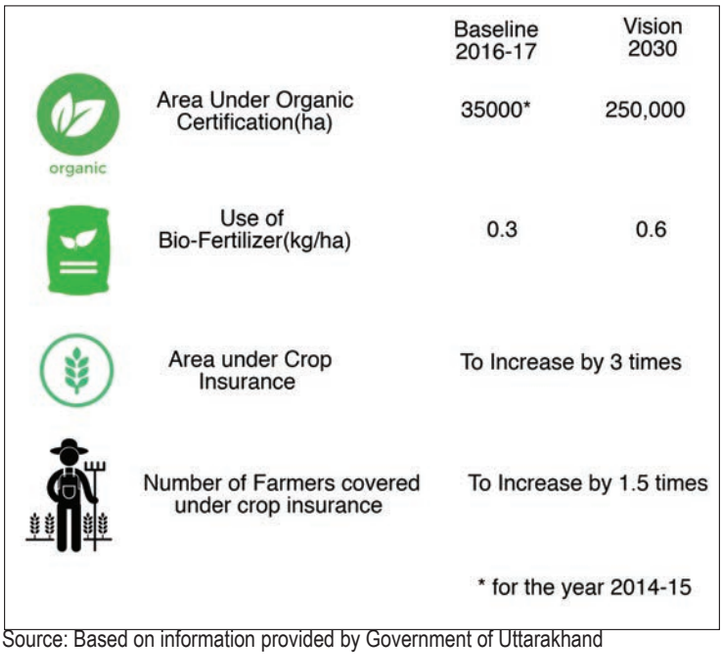
The vision for **Target 2.4** aims to ensure sustainable food production systems and sustainable agriculture practices by bringing more area under irrigation, and by strengthening the irrigation channels. Usually organic farming is viewed as the main form of sustainable agriculture, as the use of organic farming practices facilitates the production of chemical-free and environmentally friendly agro products. The large agro-climatic variations in Uttarakhand provide an advantage to the state, enabling it to produce off-season vegetables and fruits that have a high market value. For organic farming, emphasis is laid on constructing organic manure structures, soil testing and distribution of Soil Health Cards, bio-fertilisers and bio-pesticides to farmers in organic farming clusters. As of 2014–15, the area under organic certification

Box 2.4 Vision for Agriculture and Allied Sectors in Uttarakhand

- To establish Uttarakhand as a Seed state
- To establish Uttarakhand as an Organic state
- To commercialise the cultivation of conventional/local crops
- To promote the judicious use of pesticides/fertilisers
- To expand irrigations facilities
- To lay more emphasis on an integrated approach to agriculture
- To diversify beyond food crops to horticulture, vegetable production, livstock, poultry and fisheries
- To develop a market for agricultural produce
- To promote post-harvest technology and storage
- To increase the focus on extension and awareness programmes
- To ensure land consolidation
- To facilitate the convergence of all agricultural departmental schemes; and
- To invite participation from the private sector, NGOs and volunteer organisations

Source: Government of Uttarakhand

Figure 2.9: Vision 2030 for Selected Indicators for Agriculture and Allied Sectors for Uttarakhand



Source: Based on information provided by Government of Uttarakhand

was around 35,000 hectares, which is anticipated to have risen to 50,000 hectares in 2016–17. The target for 2030 is to raise this to 2,50,000 hectares. The use of bio-fertilisers in agricultural production will gradually be increased from the present level of 0.3 kg/hectare to 0.6 kg/hectares by 2030.

The farmers' interests will be protected by expanding crop insurance which will be achieved by increasing the number of farmers covered under crop insurance by nearly 1.5 times by 2030, and increasing the area covered under crop insurance by three times by 2030, as compared to the present situation.

The state plans to promote millets as a priority product, which is already produced in 60 per cent of the cropped area and has a good market value. The use of certified seeds and adoption of a cluster approach for millet farming would benefit the farmers by eliminating middlemen. Tying up production to supply for the Mid-day Meal Schemes and Anganwadis is also expected to give it a boost. Other areas that need attention in the long term strategy include an increase in mechanisation in agriculture to reduce women's excessive work burden, and the need for setting up farm machinery banks and government mandis.

Horticulture:

Baseline for Uttarakhand

Uttarakhand is a leading fruit cultivating state of India and is ranked No. 1 in production of Pears, Peaches and Plums. It is also ranked No. 2 in the production of Walnuts and No. 3 in Apple cultivation amongst all Indian states (2015-2016) [25].

Hill agriculture, comprising mainly horticulture, is a very important sector for the state. The yields from traditional crops being low in the fragmented cultivated agricultural land in the hilly terrain, horticulture provides an avenue for a more remunerative form of cultivation and the natural climate of the state is ideally suited for growing fruits and vegetables. The main horticultural products for the state are fruits, vegetables, potatoes, spices, and flowers. The land productivity for the first four products at present are 3.83, 9.13, 16.14, and 6.38 metric tonnes per hectare, respectively. The area under flower production at present stands at 1400 hectares.

The horticulture department exports products worth Rs. 100 crore annually, which include private exports facilitated by the Government. The products exported include mushroom, basmati rice (organic), frozen peas, basil, thyme, culinary herbs,

25. http://foodprocessingindia.co.in/state-profile/uttarakhand/?id=6&stateid=756&name=UTTARAKHAND accessed on 30 January, 2018.

Box 2.5: Vision and Strategy for Doubling Farmers' Income in Agriculture by 2022

1. Agriculture-based system including foodgrains, oilseeds, pulses, millets, aromatic and medicinal plants, commercial crops, etc;
2. Horticulture-based system including fruits and vegetables;
3. Dairy-based system including milch animals, poultry, sheep and goat-rearing;
4. Fishery-based system; and
5. Silvo-pastoral-based system.

Thus, the strategy shall consist of interventions that will aim at tapping the potential of all the above sectors for maximising the income from the 'farm'. The growth trends over the last decade indicate that higher growth can come from horticulture, dairy, livestock and fishery, as compared to field crops. However, field crops also have a growth potential in respect of many crop categories and high-yielding varieties.

The possible drivers of income growth for farmers could be:

1. Increase in crop productivity using quality seed, seed treatment, integrated nutrient and pest management, selecting appropriate cropping pattern and crops in accordance with the agro-climatic zone, increasing crop intensity by adopting inter-cropping;
2. Reduction in the cost of cultivation by reducing the use of purchased inputs, adopting organic agriculture, integrated nutrient and pest management, proper soil health monitoring and adoption of a farming system approach for better by-product management.
3. Strengthening the assured source of irrigation facilities—data reveals that proper irrigation may double productivity and also enhance nutrient efficiency;
4. Diversification of farm activities towards high value crops and enterprises by adopting a farming system approach—national level data reveals that shifting to high-value crops can quadruple income from the same piece of land, and that adopting a farming system approach enhances complementary relations among farm enterprises promoting efficient land use;
5. Improvement in the terms of trade for agriculture;
6. Promotion of mechanisation in agriculture, facilitated either by providing agriculture equipment on subsidy or through a custom hiring centre/farm mechanisation centres;
7. Promotion of organic agriculture, bringing more area under certification and providing growers a better market price of organic produce;
8. Improvement in access to credit covering small and marginal farmers, tenant farmers and landless cultivators;
9. Stabilisation of income and risk management through crop insurance and other such measures;
10. Reduction in post-harvest losses and provision of post-harvest facilities to farmers—this may include setting up warehouses, and cold storage, food processing, and other value addition facilities;
11. Shifting of cultivators from farming to non-farm occupations like poultry rearing, fishery production, bee-keeping, mulberry production, aromatic and medicinal plants, dairy business, and value addition of various products; and
12. Better price realisation for farmers through competitive markets, value chains and improved linkages between the field and the end-user.
13. Technology upgradation in agriculture.
14. Climate change resilience and sustainable Agriculture.

Source: Government of Uttarakhand

honey, some flowers, which are deemed exports and baby corn, and sweet corn, among others. There are around 650 food processing units in the state, which are mostly located in districts in the plains like Udham Singh Nagar and Haridwar. There are 49 training and training/processing centres in the districts where farmers/producers are given hands-on training, though these are primarily home-based skill development efforts, and are not undertaken on a commercial scale. The State Food Processing Mission has been active since 2016, and provides subsidy for this activity, with higher rates for the hilly regions. The Rural Infrastructure Development Fund is also available for container/storage/refrigerating vans.

Vision and strategy for horticulture

The Vision 2030 is to ensure sustainable and holistic development of horticulture sector by adopting area based cluster approach towards developing regionally differentiated crops, which are agro-climatically most suited for the region/area for enhancing production and productivity of various horticulture crops. There will also be focus on adoption of improved and appropriate technologies for ensuring quality, including genetic upgradation of all horticulture crops.

The main thrust is for doubling farmers' income by 2022 by improving productivity through the adoption of modern techniques, rejuvenation of senile orchards, promotion of high-value crops, and most importantly, the adoption of a cluster-based approach in order to take advantage of scale economies (see Box No. 2.6). Around 7.5 per cent of the fruits and vegetables are currently being processed. The target is to increase the share of processed fruits and vegetables to 15 per cent by 2030.

Strategies to increase the area under horticulture by 2030 include offering a cultivation cost subsidy to farmers and targeting cultivable waste land, but the availability of seeds is a constraint in fruit cultivation. Since the proliferation of insects and pests has led to a decline in the production of citrus fruits, efforts are being made to restore the original production levels. There are also plans to promote tea cultivation. The area productivity pertaining to the cultivation of spices, fruits, and flowers are also slated for expansion and plans are afoot to initiate mushroom production while also rejuvenating old low-performing plants.

Comprehensive base line studies for the available water and soil should be conducted, to get a basic inventory of land resources, especially in the context that to increase the area under horticulture crop, 3.6 lakh hectare culturable fallow land will be targeted. Other strategies would include mapping plant hardiness zones in the state, whereby farmers can determine which plants are most likely to thrive in extreme climates, especially in view of the climatic changes that are taking place. In crop-specific clusters, there would be need to assess requirement of inputs such as fertilizers and the necessary augmentation of supply planned in a phased manner.

A weather-based crop insurance scheme has already been implemented for a variety of fruits for providing a necessary safety net to the cultivators. Aromatic and medicinal plants comprise a focus area for the state in the future.

Present Status of aromatic crops

Growing aromatic crops is increasingly being viewed as a viable option for improving the benefits from agricultural operations. Land in many hill districts has suffered from soil erosion, depletion of nutrients, and growth of weeds like lantana. In such adverse conditions, aromatic plants can be cultivated successfully. Such crops are also usually safe from attacks by wild life and domestic animals, are easy to transport due to the conversion of essential oils into low volume, are easier to store, and above all, have a high demand in the market.

At present the aromatic plant sector in Uttarakhand is in a fledgling state and the area under cultivation is just 625 hectares with the involvement of 2000 farmers. The production of essential oils/herbs is 221 tonnes, distillation of aromatic herbs is being done for 1500 tonnes, and there is employment generation for approximately 3000 people. The major crops selected for scale cultivation and extension in the farmers' fields following agronomic trials had been presented in Table 2.1.

The Centre for Aromatic Plants (CAP) in Selaqui is providing support services to farmers for extension purposes, given that aromatic crop cultivation, processing and marketing are technical and commercial activities that need a scientific approach as well as a good business plan for attaining success

Box 2.6: Vision and Strategy for Doubling Income in the Horticulture Sector

1. Adoption of high tech horticulture and precision farming technique(good quality seed with fertilizer, elite planting material with improved root stocks, high density plantation, micro-irrigation and mulching, etc).
2. Enhancing production through rejuvenation of old and senile orchards.
3. Promotion of high value horticulture crop like, off-season vegetables, spices, medicinal and aromatic plants.
4. Adoption of Clusters approach as per agro-climatic condition for scale economies. There can be vegetables clusters, for which there would be crop sequence throughout years on the basis of elevation. Fruits clusters could be formed in sub-tropical in valley area mid hills or for temperate fruits in high hills, with inter-cropping. Other clusters planned are for potato, spices, flowers, etc.
5. Formation of Farmers Interest Groups/Farmers Production Organization, etc.
6. Convergence of ongoing schemes being implemented by various Departments in the same cluster.

Source: Government of Uttarakhand

Table 2.7: Activities Taken Up under Schemes/Programmes Operating in the Horticulture Sector

1.	Establishment of a nursery for production of quality planting material
2.	Bringing more area under horticulture crops by providing a 50% subsidy provision
3.	Rejuvenating old and senile orchards by giving 100% subsidy to farmers
4.	Fencing of orchards—provision of 75% subsidy to farmers
5.	Promotion of bee-keeping and pollination—provision of subsidy up to 50%
6.	Promotion of mushroom production—provision of subsidy up to 40-50%
7.	Promotion of protected cultivation by providing to farmers -- 80% subsidy of cost of construction of Green House up to 1000 sq. m. -- 50% subsidy on Shade Net House, Anti Hail Net -- on 5 year old poly-houses, 75% subsidy for change of polythene
8.	Promotion of organic farming by giving 75% subsidy to farmers for Vermi Compost Units
9.	Promotion of horticulture mechanization by giving 50-90% subsidy to farmers for reducing drudgery
10.	Creation of water sources (tanks/ponds/tube-wells/bore wells) for irrigation by giving 50% subsidy
11.	Development of Infrastructure for Post-Harvest Management and Processing by providing 33-35% subsidy to farmers/entrepreneurs
12.	Skill development of farmers and officials by conducting training programmes
13.	Promotion of micro irrigation (drip and sprinklers) by providing up to 45-60% subsidy

Source: Government of Uttarakhand

on the ground. The services comprise agro-technologies, crop demonstrations, awareness and training, incentives to farmers, quality planting material, buy-back of aromatic produce, development of a network of field distillation units, quality assessment of produce, and marketing, among others.

Vision 2030 Aromatic plants

The vision is to expand the production of aromatic plants substantially by 2030, from the present cultivated area of 625 ha area to 16,900 ha by 2030. The specific targets are presented in Table 2.8.

Table 2.8: Vision for the Aromatic Plants Sector (year-wise target)

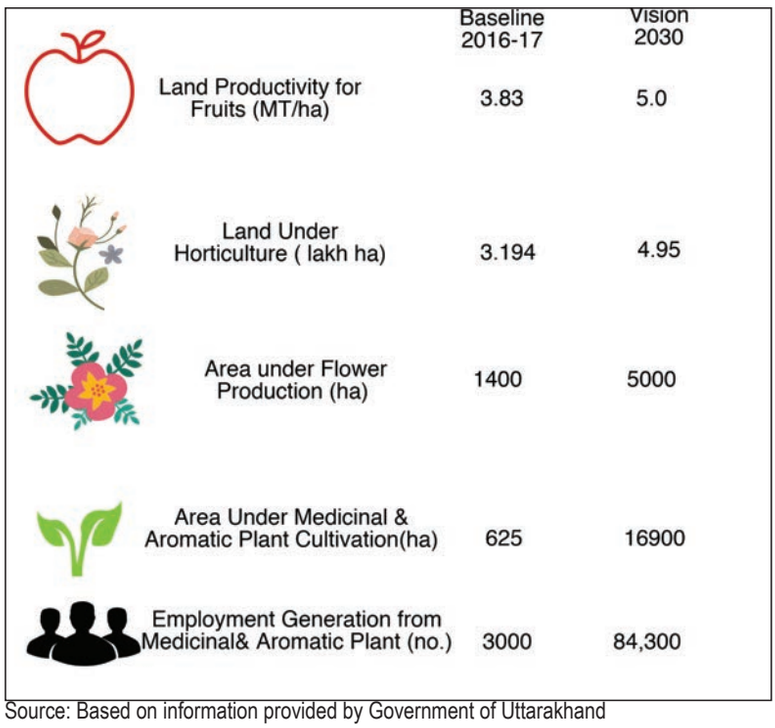
	Baseline 2016-17	2019-20	2023-24	2030
Area under cultivation (ha)	625	2400	7000	16,900
No. of farmers	2000	9000	24,500	68,600
Production of essential oil/herbs (tonnes)	221	1050	3650	11,050
Distillation of aromatic herbs (tonnes)	1500	9000	34,000	1,04,000
Employment generation (no.)	3000	12,000	29,500	84,500

Source: Government of Uttarakhand

CAP has submitted a five-year working plan for cultivation under MGNREGS to the Rural Development Department of the state government. Some specific targets for till 2030 would include the following:

- Promotion of annual aromatic crops by dovetailing with the MGNREGS;
- Conduction of a baseline survey;
- Formation of village level farmers' groups to develop aroma entrepreneurs;
- Support of aroma clusters by providing field distillation units under the RKVY scheme;
- Building of the required infrastructure for this sector;
- Establishment of a high-tech nursery, aroma processing centre, and perfumery, at CAP, Selaqui;
- Strengthening of CAP as an agri-aroma business incubator under RKVY; and
- Linking with skill development and start-up programmes.

Figure 2.10: Vision 2030 for Selected Indicators for Horticulture including Medicinal and Aromatic Plants



Source: Based on information provided by Government of Uttarakhand

There is also a need to build institutional support for undertaking R&D on MAP species for generation of economically viable and environmental friendly technologies for sustainable quality production and creation of trained and skilled man power. Sustained efforts are needed for inventorization and distribution, threat categorization, conservation biology, reproduction of rare, endangered and threatened (RET) species of MAP, along with R&D on Plant Genetic Resources (PGR) management, crop improvement, crop production and post-harvest management, developing good agricultural practices (GAP) as well as adopting organic farming [26].

Horticulture/hill agriculture includes non-timber forest products such as herbal products [promoted by the Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH)]. AYUSH engages in tapping the potential of several aromatic and medicinal plants found in the mountains of Uttarakhand. The cultivation of such herbs and plants is being undertaken by various agencies such as the Forest Department, Herbal Research and Development Research Institute (HRDI) Centre for Aromatic Plants, and the Bhesaj Vikas Sangh, among others. AYUSH has recently also set up a panel to find the mythical sanjeevani herb that is believed to have the potential to cure any disease, according to media reports. The available information indicates that the cultivation of medicinal and aromatic plants covers around 4000 hectares of land in the state.

Table 2.9 Vision 2030 for the Animal Husbandry Sector

Production	2016–17	2019–20	2023–24	2029–30
Milk (thousand metric tonne)	1656	2006	2532	3592
Egg (lakh)	3907	4719	5312	6343
Wool (thousand kg)	513	601	625	707
Meat (lakh kg)	276	308	333	375

Source: Government of Uttarakhand.

Animal Husbandry: Livestock is an integral part of farming in almost all places. Fishery and floriculture are also parts of production systems in certain areas. Uttarakhand state stands at the eighth position in India in terms of milk production, with the present level of output in dairy being 16,56,000 metric tonnes of milk. Due to lack of control on the packaged milk segment, milk producers are currently not getting the price they deserve. As regards the other departments in animal husbandry, the present levels of output are 3907,00,000 eggs, 5,13,000kg of wool, and 276,00,000 kg of meat.

Vision: The vision for the dairy sector is that by 2030, all working district level milk unions should become profitable in their respective operations. The physical targets for the production of milk have been set at 20,06,000, 25,32,000, and 35,92,000 mt for the years 2020, 2024, and 2030, respectively (Table 2.9). The other targets include automation of viable village level milk co-operative societies, farmer-wise testing of milk, direct payment to farmers' bank accounts, and self-sufficiency in milk procurement and sale.

The medium-term strategy focuses on value addition to milk products, market promotion to improve market share, increase in automation, establishment of milk analysers, and adoption of measures to increase the per cattle milk production.

The production targets for eggs are 4719,00,000, 5312,00,000 and 634300,000 for the years 2020, 2024, and 2030, respectively. The corresponding targets for the production of wool are 6,01,000, 6,25,000, and 7,07,000 kg, respectively, while those for meat are 308,00,000, 333,00,000, and 375,00,000 kg for the years 2020, 2024, and 2030, respectively (Table 2.9).For the animal husbandry department, the government has also made efforts for artificial insemination, fodder availability, dairy, and vaccination. The other initiatives taken by the government include the development of a cattle zone, and setting up of an Agriculture University and mandis for marketing.

Fisheries: Fishing and aquaculture, while constituting an integral part of the agriculture and allied

26. Ibid

Box 2.7: Potential for the Use of Herbal and Medicinal Plants

Uttarakhand has a climate that is very suitable for the production of different types of herbs and aromatic plants. Out of the herbal output in the state, around 60-70 per cent is presently that of herbs. The Centre for Medicinal Plants gives the nursery of medicinal plants to farmers and the output from this goes to the Bheshaj Centre in each district. But very little processing is done to this output, which is in the raw form. There is a lot of scope for employment generation if processing centres for these herbs are set up.

Regarding medicinal plants, the state has the potential of promoting medical tourism along the lines of other states such as Kerala. There are already eight centres for ayurvedic medicines which are integrated in the hospitals. The hospitals have an OPD for ayurvedic treatment. There are plans for upgradation and the creation of 38 new centres. There is also scope for promoting processes such as 'Panchakarma', a way of de-toxifying and rejuvenating the body using traditional methods, which are popular among foreign tourists, as well as, increasingly, among Indian tourists. Such tourism efforts, along with the promotion of yoga and wellness centres, under the stewardship of AYUSH, could also generate employment in the hills.

Source: Government of Uttarakhand

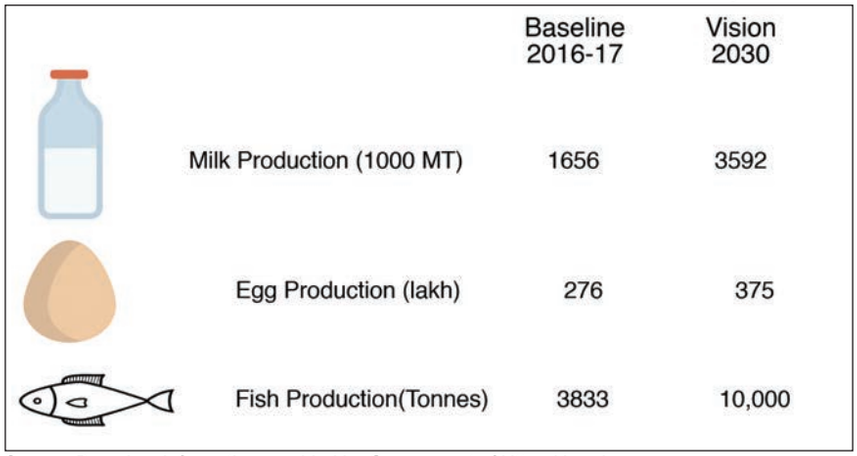
sector, comprise a very small share in this sector. At present, 3833 tons of fish and 400 million fish seeds are produced in the state annually. However, this sector has the potential for generating employment and income, especially among the poor and backward classes, in view of the abundant natural resources in the state in the form of 2686 km of river, 20,075 hectares of reservoirs, as well as many natural lakes and ponds.

Vision: The vision for this department is that all the water sources need to be utilized for fish production as well as for the conservation of fish and promotion of fishing activity. In particular, there will be a focus on trout farming, including the construction of trout reservoirs and hatcheries. The availability of fish seeds of high quality and the right size will be enhanced and a brood bank will be developed. Cage culture will be introduced in ponds for fishermen in the private sector in order to raise productivity. The distribution network will also be expanded through the promotion of mobile fish outlet eco-tourism and the associated expansion of angling activities.

In terms of physical targets, the aim is to achieve a production of around 10,000 thousand metric tonnes of fish, and a targeted output of 240 tonnes for trout. The annual production target for fish seed is around 20 crore. There is also a proposal to provide a subsidy of 50 percent subsidy for feed and other inputs to boost private sector participation. In addition, the provision of insurance schemes and other forms of financial assistance is being proposed for the backward fishing communities.

Target 2.5 of Goal no. 2 is concerned with maintaining the genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species, including through diversified plant and seed banks. In the context of Uttarakhand, this target has a great significance in view of the limited availability of land for ag-

Figure 2.11: Vision 2030 for Selected Indicators for Animal Husbandry Sector in Uttarakhand



Source: Based on information provided by Government of Uttarakhand

riculture. Further, since cultivable land continues to shrink owing to the increased intensity of non-productive utilisation, it is essential to increase the productivity per unit area to keep pace with the requirement of food for the ever-increasing population. Thus, ensuring the adequate availability of high-quality seeds is of paramount importance. Uttarakhand state had addressed this issue as far back as 1969 by launching the Terai Development Corporation (TDC) project. Prior to this, the work of seed production was being accomplished by the seed production department of the G.B. Pant University of Agriculture and Technology. This organisation has since been named as the Uttarakhand Seeds and Terai Development Corporation Ltd. (USTDC).

The vision for Target 2.5 is to attain the long-term objective of a 15 per cent annual average growth rate by the seed bank at USTDC.

USTDC aims to accelerate farm production and productivity per unit, thereby improving the socio-economic status of the rural areas. Its other objectives include ensuring the adequate, timely and cost-effective availability of quality seeds in its marketing territories, liaising and associating with research organisations of repute for promoting the production of scientifically proven high yielding seed varieties and arranging through selected growers at suitable locations the production of foundation seeds and certified seeds, as required from season to season. The seed bank at USTDC has the long-term of objective of attaining an average growth rate of 15 per cent per annum.

Challenges for Targets 2.1, 2.2, 2.3, and 2.4

- Agricultural land availability is declining in the plains due to rampant industrialisation, and in hills, due to the rise in out-migration.
- Agricultural land in the hills is very fragmented and the plots are small and scattered. The size of the average landholding ranges from 0.81 ha in the hills to 1.06 ha in the plains. Around 73.6 per cent of the holdings are marginal. Further, 17.24 per cent of the operational holdings are small and operate on an area of less than 2 hectares. This makes it difficult to avail of scale economies, which, in turn, makes crop husbandry an unviable occupation.
- There is a need to control wild animals as they destroy crops.
- Climate change, especially manifested through the increasing frequency of droughts, has adversely affected the behaviour of both crops and pollinators, bringing in its wake new diseases, insects, and races of pathogens.
- There is a 35 per cent shortage of fodder. Crop residues are either burnt or sent to paper mills. Burning of these residues adds to pollution, especially in the Terai region. On the other hand, traditional crop-cutting, which is mostly done in the hills, does not leave any residue. Agriculture in the hills also faces the problems of a low Seed Replacement Rate (SRR) and the lack of availability of quality seeds in the hills.
- There is inadequate infrastructure for setting up soil testing laboratories and computers, and marketing, post-harvesting technology and storage represent problem in the hills.
- There is low cropping intensity in the state.
- Farmers are getting adversely affected by price fluctuations. Farmers engaged in horticulture activities have been adversely affected by fluctuations in market prices despite the implementation of the Market Intervention Scheme (MIS) by the government.

Strategy for Target 2.1

The specific strategies proposed to be adopted by the state to attain Vision 2030 for Target 2.1 are as follows:

- Storage will be improved by modernising the godowns and equipping them with electronic devices, and new godowns of a large capacity (5000 mt) will be built in the plains. In order to effectively reach the foodgrains in the far-flung areas of the state, godowns and approach roads will be built in remote hilly locations. Currently, Fair Price Shop (FPS) outlets in the hilly areas, in particular, lack access to proper weighing devices, which will be rectified.
- In order to arrest the post-harvest losses of horticultural and non-horticultural produce, there is need to develop infrastructure facilities for storage, including cold storage, logistics and cold chain handling, transportation, processing, packaging and distribution, and to provide integrated cold chain and preser-

vation infrastructure facilities from the farm gate to the consumer or from the production site to the market. In this context, the Ministry of Food Processing Industries is implementing the scheme of Cold Chain, Value Addition and Preservation Infrastructure, which is primarily driven by the private sector. Here, financial assistance @ 75per cent of the total cost of plant and machinery and technical civil works is given for the North-East region and difficult areas (this category includes Uttarakhand).

Strategy for Targets 2.2, 2.3 and 2.4

The broad strategy will focus on the provision of quality inputs, laying an emphasis on mechanisation of agriculture, cluster-based farming, 100 per cent seed treatment, increasing the hybrid seed area, expansion of irrigation, promotion of modern techniques of agriculture, reduction of post-harvest losses, and adoption of the Integrated Nutrient Management (INM) and Integrated Pest Management (IPM) approaches to enable utilisation of fallow land for increasing production. The detailed strategies for achieving these targets are as follows:

- **To achieve self-sufficiency in pulses and oilseeds:** This can be attained by bridging the demand–supply gap through the use of cultivable fallow and current fallow land, as well as by focusing on farming in accordance with the cluster-based cropping system. Schemes with a cluster approach (a cluster is about 10 hectares in size) involve Farmers' Interest Groups (Figures), which are able to exploit the scale-up resulting from clustering. Instead of leaving farmers to deal with matters individually, the government does the registration for the Figures and facilitates link-ups of the supply chain with other schemes like the Mid-Day Meal Scheme (MDMS), as also access to hospitals and other services. The Government also provides subsidy, and in the case of finger millets, a bonus.
- **To establish Uttarakhand as a seed state:** The state government would need to: (i) promote local nutritive crops through the distribution of seeds at a 75 percent subsidy, which would enhance the Seed Replacement Rate (SRR); (ii) promote locally growing crops with nutritional and medicinal value such as mandua, sanwa, amaranthus, bhatt, and rajma, by providing a production bonus to farmers after constituting Figures; and (iii) increase the SRR to meet national targets.
- **To develop Uttarakhand as an organic state:** For sustainable agriculture, area under organic farming can be expanded by suitably identifying crops for each agro-climatic zone, and utilising fallow land. In this context, soil health management is extremely important. The soil in the hilly areas is shallow and coarse. Besides, the use of organic manure (mixed with oak and chir pine leaves) increases the acidity of the soil. In the plains, the use of heavy chemicals has led to decreasing humus content in the soil. Thus, there should be judicious use of pesticides and fertilisers. In addition, in the organic certification areas, third party certification is needed for any exports and concerted efforts need to be taken in this area. There is also need for branding organic products from the state. Aromatic and medicinal plant cultivation represents a potential area for diversification.
- **To diversify beyond traditional crops into horticulture, vegetable, livestock, poultry and fisheries:** Agricultural diversification in the hilly regions can be achieved by promoting horticulture through the adoption of location-specific technologies. Simultaneously, there is need to fix the Minimum Support Prices (MSPs) of these products. In view of climatic changes, farmers would benefit by adopting an integrated approach to farming comprising integrated nutrient management, weed management, and watershed management. The integration system, wherein the output of one system is used as an input for another, would particularly benefit small and marginal farmers. Livestock and poultry constitute the other potential areas for diversification (See Box 2.8 for 'One Village One Farm' experience in Uttarakhand).
- **To commercialise the cultivation of conventional/local crops:** The main conventional crops of Uttarakhand are soybean (black), horse gram, rajma, chaulai, finger millet, and sanwa. In or-

der to commercialise these crops, emphasis is laid on ensuring the availability of seeds, and dissemination of new techniques to increase the acreage under such crops. Farmers are also being encouraged to engage in contract/cooperate farming through the development of post-harvest techniques and marketing facilities.

- **To reduce post-harvest losses:** The strategy for achieving this objective would be to provide facilities for cleaning/grading, drying, storage, extraction, milling, fortification, packaging, transportation and handling of the produce at the farm level or in nearby locations. The crop in the field can be protected from wild animals with the help of fences.
- **To reduce the workload/burden of women in agriculture:** Promoting farm mechanisation would not only improve the efficiency of field operations and ensure the effective application of agricultural inputs, but would also have the direct impact of reducing the work burden of women in the hilly areas. Small and easy-to-use implements would be more suitable for the hilly regions and a system of hiring out implements can be sued. Subsidies are already being provided in central schemes for the purchase of power tillers, power weeders, threshers, and water lifting pumps, among other such equipment, in the state.
- **To expand irrigation facilities for promoting rainfed agriculture:** More than 50 per cent of the cultivated land in the State is rain-fed. The adoption of a watershed approach and various soil and water conservation measures, including the construction of water harvesting structures, activities for prevention of soil erosion, forestation terracing, and land development are necessary for achieving efficient development of rain-fed agriculture in the state. The Centrally sponsored Pradhan Mantri Krishi Sinchai Yojana (PMKSY) scheme is being implemented in the state since 2015–16, and presently, the Village Irrigation Plan (VIP), Block Irrigation Plan (BIP), District Irrigation Plan (DIP) are being developed under this scheme. Further, the State Irrigation Plan (SIP) is being prepared on the basis of the DIP.
- **To increase cropping intensity:** The net sown area in the state accounts for only 12.59 per cent of the geographical area, and out of this area, 58 per cent of the area was sown more than once during 2013–14. This cropping intensity is low in comparison to the agriculturally developed regions like Punjab and Haryana, and needs to be increased.
- **To develop an agriculture market:** There is need for a network for local crops as well as medicinal and aromatic plants for connect-

Box 2.8 One Village One Farm: Supporting Sustainable Livelihoods for Mountain Communities of Uttarakhand

The story of 'Gauri', a Self Help Group, started in Gaurikot, a small village situated 9 km from Paudi, the head-quarters of Garhwal. Migration is a harsh reality for the people of the hills, and this prompted some women of this village to form a group on June 1, 2013. Soon eighteen women became members and with the help of this SHG, they vowed to cultivate the fallow land near the village.

The Integrated Community Development Programme (ICDP) under the co-operative department encouraged them to opt for an integrated farming approach, where off-season vegetables, broiler poultry, fishery, horticulture, etc. are all pursued under an integrated approach.

To begin with, there were challenges of land consolidation, arranging capital, etc. The initial cultivation started on 4 acres of fallow land, which has become entirely productive now. The women also received a co-operative loan of Rs 5 lakh. Overall, Gauri SHG has not only made fallow land productive, but has also made such integrated farming into a profitable venture, encouraging people in other villages to replicate such efforts.

Source: Government of Uttarakhand

ing the market with the producers. Moreover, farmers often do not getting remunerative prices. The new agriculture policy came into force after the government approved the passage of the new APMC Act, which seeks to promote private players in the agriculture sector and allows for the setting up of private mandis.

- To increase focus on extension and awareness programme: It is imperative to ensure the dissemination of useful and modern practical information relating to agriculture, including improved seeds, fertilisers, implements, pesticides, improved cultural practices, dairying, poultry, nutrition, and weather watch, and to obtain feedback about the latest scientific technologies from the end-user. Various methods like networking with individual and group contacts, and establishing mass contacts, through means like demonstration, exhibition, campaigns, use of media like radio and television, visit programmes, visual aids, micro-computers, and e-mail may also be considered for facilitating the transfer of technologies.
- To consolidate land: Land consolidation, achieved in accordance with the existing laws, can help in achieving increased agricultural production and productivity. The promotion of contract farming may be another solution under the small and marginal farming system. Realising the importance of land consolidation, the Uttarakhand government is working on preparing a separate land consolidation policy for the hill districts while the remaining two districts comprising the plains will continue to be governed by the Uttar Pradesh policy (1953) adopted by Uttarakhand.
- To ensure the convergence of all agricultural departmental schemes: The various centrally sponsored schemes being implemented in the state include the National Food Security Mission (NFSM), National Mission for Sustainable Agriculture (NMSA), Rashtriya Krishi Vikas Yojana (RKVY), Sub-mission on Agricultural Mechanisation (SMAM) and Sub-mission on Seed and Planting (SMSP),and state sector schemes such as the Agricultural Development Programme in SC/ST-dominated villages, and district plan, among others. While subsidies on different inputs are being provided as per the guidelines of the scheme, various agricultural implements are also being distributed to the farmers at subsidised rates as per the Government of India's guidelines. Apart from the subsidy given by the Central Government, the state government too has hiked the subsidy patterns for various agricultural implements by up to 90 per cent in areas affected by natural calamities, and by up to 80 per cent in the other areas of the hilly region. Thus, the subsidy provided by the Government of India has been integrated with the subsidy given by the state government, and in this way, the integration of subsidy will be considered for the seed component.
- To invite participation of the private sector, NGOs, and volunteer organisations: There is need to seek the participation of the private sector and Non-Governmental Organisations (NGOs), among others, for developing hill varieties, providing information technology, promoting agri-clinic and agri-business contract farming, imparting extensions training, and enabling post-harvest and marketing operations.

SDG 8

Promote Sustained, Inclusive and Sustainable Economic Growth, Full and Productive Employment and Decent Work for All

Uttarakhand Vision for SDG 8

By 2030, the Uttarakhand economy will continue to grow at a high rate in an environmentally sustainable manner, and all men and women from all walks of life, including the disabled and those from disadvantaged families, will be able to access decent employment.

DECENT WORK AND ECONOMIC GROWTH

Uttarakhand Today

- High annual average growth (at constant prices) of around 7 percent during 2011-12 to 2017-18
- High growth coming from labour intensive manufacturing and construction in secondary sector and trade, hotel & transport, communication in tertiary sector
- Self-employment dominates (65.7 per cent) in state followed by regular and casual employment
- MSME sector employed 2.5 lakhs people in 2016-17
- Unemployment increased from 2005 to 2012, and is relatively higher for women
- Work participation rate of women is almost one-third compared to men, and they are more deprived in hilly areas. Migration has resulted in more work for women in hills
- Youth unemployment rate was more than double (14.3 per cent) in the state compared to all India (7.6 per cent) in 2012

Focus for Tomorrow

- To maintain the high growth rate and increase share of consumption expenditure of bottom quintile in total consumption for inclusive growth
- To increase the growth rate of agriculture and allied sectors and maintain growth in construction and manufacturing sector
- To increase workforce participation in non-agriculture sector
- To reduce unemployment and underemployment; to focus on MSME sector to boost employment
- To enhance women's work participation, including in non-agriculture sector
- To reduce the share of youth not in education, training or employment by expansion of skill training in vocational trades.
- To develop Uttarakhand as a comprehensive, world class tourism destination by realizing the untapped potential of sustainable tourism, through design of innovative tourism products.

Targets for 2030

- Enhance share of consumption expenditure of the bottom quintile in total consumption to above 9.7 percent
- Increase the growth rate of agriculture and allied sectors to above 1.4 per cent p.a.
- Maintain growth rate of construction sector at 7.7 percent and achieve growth rate in manufacturing sector at more than 7.3 percent
- Increase the number of MSME units and employment in MSME to 170 thousand and 850 thousand respectively
- Increase domestic and foreign tourist arrivals by three times compared to present levels

SECTION 2.3

SDG 8: Promote Sustained, Inclusive and Sustainable Economic Growth, Full and Productive Employment and Decent Work for All

It is argued that high economic growth helps in generating more revenue and investment, and in financing critical public welfare schemes.[27] This results in inclusiveness with an equitable distribution of income across various groups and regions. In this process, the economy also generates additional jobs to provide employment opportunities to unemployed youth and other new entrants in the labour market. However, in order to be productive and decent, these jobs should be well-paid and regular, offering social security benefits and better employment conditions, among other benefits [28] to contribute to the growth of the economy. According to past literature and recent surveys, there have been reports of large-scale outmigration by the local population in search of livelihood both within and outside the state.[29] In this context, Goal No. 8 is important for sustainable development in mountainous states like Uttarakhand.

The overall vision for Goal No. 8 for 2030 for the state of Uttarakhand is as follows:

> ***By 2030, the Uttarakhand economy will continue to grow at a high rate in an environmentally sustainable manner, and all men and women from all walks of life, including the disabled and those from disadvantaged families, will be able to access decent employment.***

The vision for targets of Goal No. 8 are presented in Appendix 2.3.1, followed by values for indicators (baseline and vision 2030) in Appendix 2.3.2, and Appendix 2.3.3 contains the schemes applicable for Goal no. 8. Annexure 8 contains the detailed information regarding indicators for Goal no. 8 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

Targets 8.1 and 8.2 relate to economic growth and are discussed first. This is followed by a discussion of Targets 8.3, 8.5, 8.6, 8.7 and 8.8, all of which relate to employment. Target 8.9 relates to employment in the tourism sector, in particular, and is discussed separately. In order to understand the patterns and trends of the targets pertaining to the state's economy, the Gross Domestic Product (GDP)[30] and Gross State Domestic Product (GSDP)[31] data at 2011–12 prices and at 2004–05 prices have been used. The employment and unemployment analysis is based on National Sample Survey data for 2004-05 and 2011-12, and uses the usual principal status (UPS).

Target 8.1 Sustain per capita economic growth

Baseline for Uttarakhand

Gross State Domestic Product

As discussed in Chapter 1, the state economy has made healthy progress since its inception. Between 2011-12 and 2017-18, the GSDP (at constant prices) grew at a CAGR of 7.1 per cent. This has broadly been in tandem with the average GDP growth at the national level. Earlier, economic growth in the state was high (15.4 per cent) during the period 2005-10 and slowed down to 8.9 per cent during the period 2011-15.

Per Capita GSDP

The per capita income in the state (at current prices) for 2017–18 (advance estimates) is Rs. 1,77,356, which is much higher than the corresponding national average of Rs. 1,12,764. [32] The real per capita income of the state increased from Rs. 1,13,000 in 2011-12 to 1,40,405 in 2017-18 at 2011-12 prices.

Income contribution of the poorest

The result of high economic growth is reflected in the lower incidence of poverty, which fell by almost three times from 32.7 per cent in 2004-05 to 11 per cent in 2011-12. However, the important ques-

27. Growth building jobs and prosperity in developing countries, DFID (2010) accessed from http://www.oecd.org/derec/unitedkingdom/40700982.pdf

28. Economic growth, employment and poverty reduction, Katy Hull (2009), report on 'Promoting Pro-Poor Growth: Employment', OECD

29. Around 25 per cent people out-migrate from their native places for employment (14.8 per cent) and trade/business activities (10.5 per cent), Migration Population Survey, 2011-12, Uttarakhand, Directorate of Economic and Statistics, UK.

30. CSO, Government of India, 2017.

31. Directorate of Economic and Statistics, UK, 2017.

32. Ibid.

tions to be addressed are: Is this faster growth is inclusive or not? What is its impact on inequality in terms of reducing or widening the gap between the rich and the poor? These questions can be analysed on the basis of the distribution of income as the share of the bottom household (in the 20 per cent quintile) in the total expenditure from national sample survey of 2004-5 and 2011-12. The data show that poorest households (in the bottom 20 per cent quintile) accounted for only 9.7 per cent of the total consumption in 2012, which has increased marginally by 0.4 percentage points from 2005 onwards. This indicates that the benefit of the high growth rate attained by the state during the last decade has not percolated down to the poorest in terms of improving their income levels.

Target 8.2 Achieving higher levels of economic productivity

Baseline for Uttarakhand

Economic Structure

The change in economic structure from a relatively low productive farm sector to high-value or productive non-farm sectors is an important indicator of economic development. This process of structural transformation can be seen in the respective shares of the three broad sectoral classifications of the economy, namely the primary, secondary and tertiary sectors. According to the earlier classification (used before 2011-12), the highest contribution to the economy in 2014-15 was made by the tertiary sector (49.1 per cent), followed by the secondary sector (36.5 per cent), and the lowest by the primary sector (14.4 per cent). However, according to the new classification brought into force from 2011-12 onwards, the economic structure of the state shows a different pattern, with the secondary sector dominating in the state, whereas at the all-India level, the services sector contributes the most to the economy. In 2015-16, the contribution of the secondary sector to the state economy was the highest (51.2 per cent), followed by that of the tertiary sector (37.2 per cent) and the primary sector (11.5 per cent) (Figure. 2.12). The contribution of primary sector has also declined following the new classification, from 14 per cent in 2011-12 to 11.5 per cent in 2015-16. The share of the secondary sector declined marginally from 52 per cent in 2011-12 to 51.2 per cent in 2015-16, whereas the contribution of the tertiary sector increased from 34 per cent to 37.2 per cent during the same period. Hence, in the long term, an economic structural shift has taken place from the primary to both the secondary and tertiary sectors, with the growth graph veering more towards the tertiary sector every year since 2011-12.

Growth of the Agricultural Sector

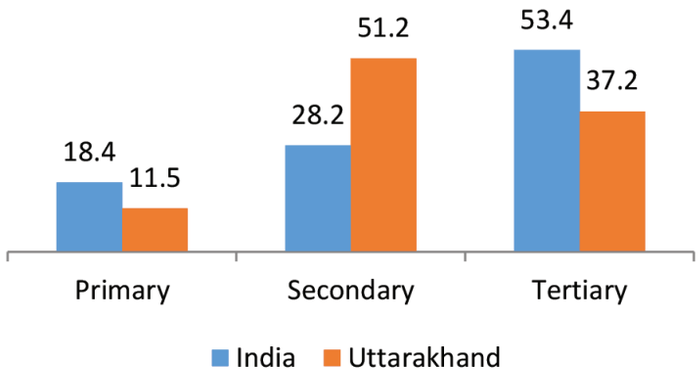
The agriculture sector plays an important role in the state economy. About 70 per cent of the state's population lives in rural areas, and 52 per cent of the total workers in the state were engaged in agriculture for livelihood in 2011 (Population Census, 2011). Inclusive growth cannot be achieved by keeping the agriculture and allied sectors in isolation. It is also argued that the poverty-reducing impact of agricultural growth is twice that of the other sectors (World Bank, 2008). However, this sector contributes only around 10 per cent to the state economy, with its annual average growth being just 1.4 per annum during the period 2011-12 to 2017-18. The prevalence of small and fragmented landholdings is adversely affecting crop productivity. The contribution of the livestock, and forestry and logging segments has, on the other hand, been almost stable though growing at higher average annual growth rates of 4.6 per cent and 2.4 per cent, respectively, during the same period.

Growth of the Non-Farm Sectors

The high economic growth of the state has been attributed to the high growth of the non-farm sub-sectors such as labour-intensive manufacturing and construction from the secondary sector and trade, hotel and transport, and communication from tertiary. The backward and forward linkages of these sub-sectors have also helped in the growth of the other non-farm sectors. The contribution of manufacturing (38.3 per cent) in the state economy is almost twice as compared to that in most other states and the all-India Figure (17.5 per cent) in 2015-16, which was fluctuating around 38 per cent for the economy as a whole (Figure. 2.13). The average annual growth rate of manufacturing during the period 2011-12 to 2017-18 was 7.3 per cent, which fluctuated greatly over the years.

The contribution of construction, on the other hand, has been rising continuously, from 8.1 per

Figure 2.12: Structure of the Economy with Sectoral Shares in GSDP (%) , 2015-16



Source: CSO, Government of India, 2017

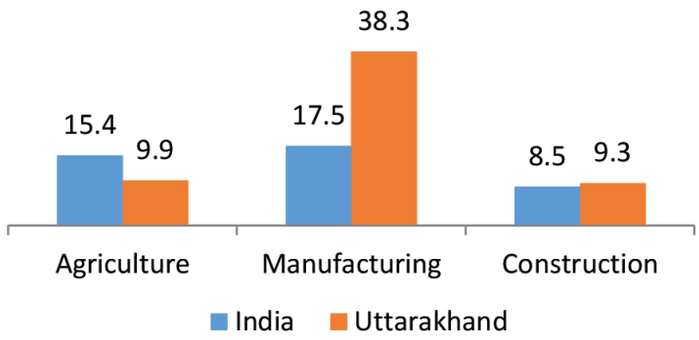
cent in 2011-12 to 9.3 per cent in 2015-16, which is also higher than the corresponding all-India Figure (8.5 per cent). The annual average growth rate of the construction sector was 7.7 per cent during the period 2011-12 to 2017-18. In the services sector, the sub-sector of trade, hotels and restaurants contributes the most (11.3 per cent) to the state economy, and propels growth because Uttarakhand is a popular tourist destination. This is followed by the contribution of the transport, storage and communication sub-sector (7.4 per cent) to the economy.

Vision 2030 for Targets 8.1 and 8.2

The target set by the UN at the country level is to maintain an annual growth rate of at least 7 per cent per annum. The state has achieved this rate of growth in GSDP during the period 2011-12 to 2017-18, although the growth has been fluctuating. The vision of the state is to maintain a growth rate of 7.1 per cent annually till 2030, since this is the average growth rate achieved as mentioned. With this rate of growth the GSDP (at 2011-12 prices) is expected to reach Rs 3,67,607 crore by 2030. Increasing the share of the bottom quintile in the total consumption of the population will help in bridging the gap between the rich and the poor, thereby reducing inequality and facilitating equitable distribution of income or inclusiveness across the society.

For attaining Target 8.2, there is a need to enhance overall agricultural growth, for which the

Figure 2.13: Share of Agriculture, Manufacturing & Construction in GSDP (%), 2015-16



Source: CSO, Government of India, 2017

contributions of agriculture and the allied sectors, including horticulture and animal husbandry, need to grow at par with the corresponding growth rates in Himachal Pradesh. The targeted annual average growth rate of the agricultural sector needs to be more than 1.4 per cent by 2030. As discussed, the high economic growth of the state is attributed to the high growth of the non-farm sub-sectors such as the labour-intensive manufacturing and construction sectors. The construction sector has been achieving 7.7 percent annual growth rate, and the vision for 2030 is to maintain this high growth rate till 2030. As regards the manufacturing sector, the target is to focus more on high-value manufacturing in order to augment the growth rate to more than 7.3 per cent by 2030.

Challenges for Targets 8.1 and 8.2

Disparity between the Hills and the Plains:

There is a huge regional disparity between the districts in the hills and the plains, with around 90 per cent of the population in the former residing in rural areas and being predominately engaged in low productive agriculture-related activities. This is a matter of great concern as it has been manifested in the form of under-employment and disguised unemployment. The districts in the plains in Haridwar, Udham Singh Nagar, some parts of Nainital and Dehradun contribute around 65-70 per cent to the state economy. The per capita income of the districts in the hills is significantly less than that in the districts in the plains.

Industrialisation is Limited to the Plains:

Although a majority of the people in the state are engaged in agriculture for their livelihood, this sector contributes only around one-tenth to the economy, especially due to the sluggish growth of the crop sector in the recent past. Most enterprises are located in the plains in the state. Even the Integrated Hill Industrial Development Policy has hardly been able to attract any industry or investment to the hill areas.

Strategies for Attaining Vision 2030 for Targets 8.1 and 8.2

A number of central and state government schemes have been operative in the state to provide productive assets and employment opportunities to the people, as listed with each of the targets in the Appendix 2.3.3. The state government needs to ensure the proper implementation and monitoring of all the schemes in order to meet the stipulated targets. In addition, the government needs to revisit some of the challenges mentioned above. The following strategies, with assistance from these schemes will help achieve the SDG targets set till 2030.

The Industrial Policy for the Hill Areas of the State has almost remained ineffective in attracting investment and thus needs to be re-examined. The real policy challenge is to create an environment-friendly micro and small enterprises sector in the hilly region. In particular, it is imperative to create an industry-friendly environment for attracting new investment and linking locally based industries with the local market. In this context, the 'MSME Policy 2015, 'Mega Industrial and Investment Policy 2015' and 'Start-up Policy 2016' could provide a supportive regulatory environment for boosting employment. The Mukhya Mantri Gram Swarozgar Yojana for industries based in the rural areas with investment worth Rs. 4-5 lakh has also been introduced to encourage employment, particularly for rural women entrepreneurs. Further, the government introduced a New Policy for Women Entrepreneurs and set up the Women Entrepreneurs Park in 2016. However, the MSMEs need to be equipped with the relevant skills and knowledge to be able to produce goods for both the domestic and export markets. The MSMEs also need to be provided support in the form of Effective market linkages and appropriate financial assistance. This will help in achieving sustainable growth of the manufacturing sector and providing productive employment to the youth.

There ongoing and proposed diversification in agriculture (discussed in detail in Part I) need market linkages with well-connected roads for realizing the full potential. The government also needs to provide comprehensive insurance of crops, to take steps to protect the crops from wildlife, to establish market linkages, and to ensure access to financial institutions using ICT while building partnerships with the private sector and the academic community for enhancing crop productivity to achieve the targets. The experience of Himachal Pradesh is worth emulating in this regard for promoting the development of horticulture. These steps will help in achieving a higher growth rate of agriculture and the allied sectors,

reduce employment and under-employment, and enhance the women's work participation rate in the state.

Target 8.3: Promote development-oriented policies to support decent job creation, entrepreneurship, and growth of micro-, small- and medium-sized enterprises

Baseline for Uttarakhand

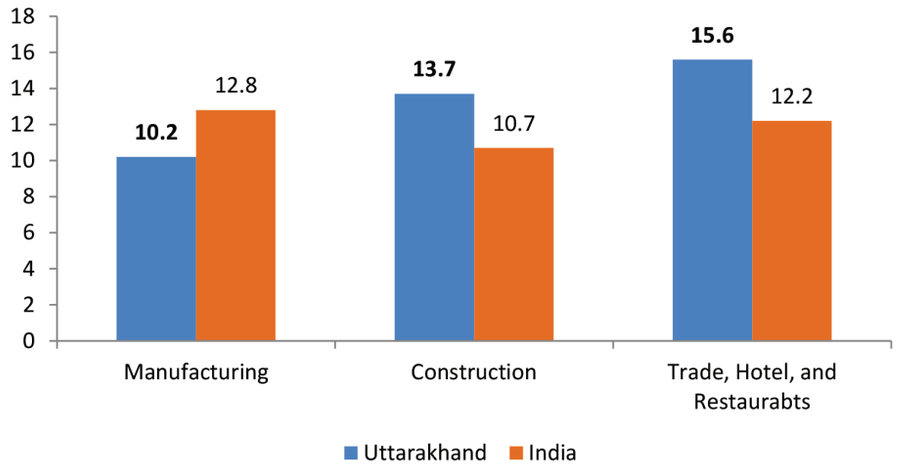
The structural transformation in any economy is successful if changes in the structure of the income are accompanied by corresponding changes in the structure of employment. In this context, the additional jobs created in the secondary and tertiary sectors should be productive and decent.[33] Entrepreneurship, creativity and innovation can also generate productive and formal employment.

Non-farm Employment

The national sample survey data show that 43.8 cent of the total principal workers were still involved in low productive agriculture or the farm sector in 2011-12. Faster movement of workers from the farm to non-farm sectors was observed during the period 2004-05 to 2011-12, which increased from 38.5 per cent in 2004-05 to 56.2 per cent in 2011-12. In the non-farm sector, 24.7 per cent of the total workers were involved in the secondary sector and 31.6 per cent were in the tertiary sector. The share of the secondary sector (10.8 percentage points) in the state economy increased more than that of the tertiary sector (6.9 percentage points) during the period 2004-05 to 2011-12. The rise in the share of the secondary sector's employment has been attributed to the construction (13.7 per cent) and manufacturing (10.2 per cent) sub-sectors (Figure. 2.14). However, the share of manufacturing in employment is almost one-fourth of its contribution in the economy, which is less than the corresponding all- India Figure (12.8 per cent).

The manufacturing sector has not been able to provide enough employment opportunities for the state's labour force. On the other hand, the contribution of the construction sector in the total employment of the state is higher than that at the all-India level, and this sector has also been providing higher employment than its share in the economy. This has been possible due to the rise in construction activities in infrastructural buildings, road constructions, and public programmes such as MGNREGS, all of which have contributed to an increase in employment in the construction sector. Employment in the service sector has also increased, with two sub-sectors, viz. trade, hotels and restaurants and transport, storage and communication contributing more to the economy than the others. In particular, activities in the trade, hotels and restaurants sub-sector have been contributing to a rise in employment more than

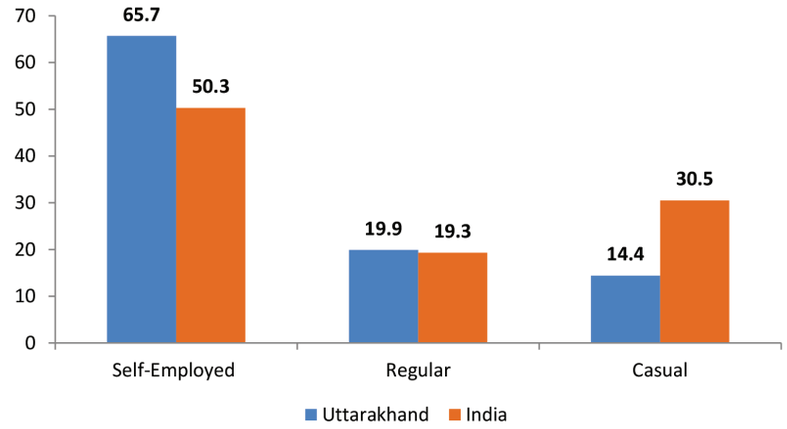
Figure 2.14: Shares of Manufacturing, Construction & Trade, Hotel etc in GSDP (%) , 2011-12



Source: CSO, Government of India, 2017

33. Decent work involves opportunities for work that are productive and deliver a fair income, security at the workplace and social protection, better prospects for personal development, social integration and freedom for people to express their views (ILO, 2015).

Figure 2.15: Employment Status for Uttarakhand and India, 2011-12



Source: National Sample Survey, 2011-12

the all-India Figure, with tourism being one of the growth engines of the state.

The MSME sector has a huge potential to create employment for the unemployed youth in the state. This is evident from the fact that 53,000 MSMEs generated employment for 2.5 lakh people in the state in 2016-17.

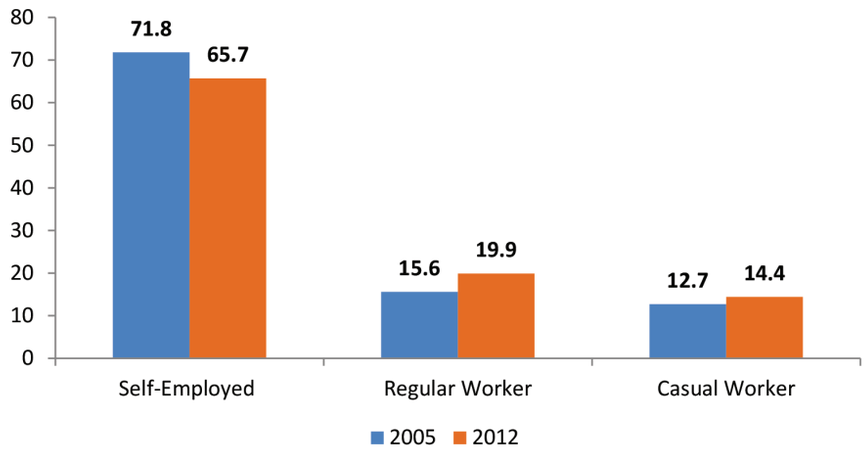
Regular Employment

One of the important dimensions for measuring decent, productive or high-quality employment is the employment status of the workforce. In the NSS, employment status is categorised as regular employment, which is considered to be better quality work due to its more secure nature and regular terms of payment. This is followed by self-employment and casual employment. Self-employment is considered to be better than casual employment, even though incomes from certain self-employed activities are low and even uncertain, whereas in the case of casual work, both the duration of employment and income are uncertain.

In Uttarakhand, self- employment dominates (65.7 per cent of the total employment), followed by regular and casual employment (Figure. 2.15). The self-employment in the state was significantly higher than all-India and casual employment less than half of all-India in 2011-12.

The share of self-employment fell by 6.1 percentage points during the period 2005-12, while the share of regular workers increased by almost 4.4 points and that of casual employment went up by 1.7 points during the same period (Figure. 2.16). It may be noted that a large part of the self-employed workforce, particular-

Figure 2.16: Employment Status for Uttarakhand, 2005 and 2012



Source: National Sample Survey, 2011-12

ly in the agriculture and allied sectors may be either under-employed in engaged in low productive farm activities or involved in some other non-farm activities generating low earnings.

Target 8.5: By 2030, achieve full and productive employment and decent work

Baseline for Uttarakhand

The status of full employment in the state can be assessed from information on the unemployment rate of the labour force. Various measures of unemployment are provided by national level surveys. Unemployment by the usual principal or main status of any individual during the last 365 days is used to assess the level of unemployment prevalent in the state. This applies for both males and females of the working age group (15-59 years) and youth (15-29 years), who enter the labour market in search of gainful or productive employment. In addition, it is also important to assess the level of under-employment to identify the hidden unemployment in the state.

Unemployment and Under-employment (15-59 years)

The rate of unemployment among the labour force of the working age was 4.3 per cent in 2012, going up from 2.8 per cent in 2005. This rate was seen to be higher among females (7.3 per cent) as compared to males (3.1 per cent) in the state. These Figures show that enough jobs are not being created to provide employment opportunities for the state's growing labour force. The other important issue that needs to be addressed is that of under-employment, particularly in the hill region of the state, where more people are still engaged in farm-related activities and are thus seek additional employment opportunities.

These Figures are also endorsed by the fact that labour productivity (GSDP per worker) in the non-agriculture (Rs. 5,20,881) and manufacturing (Rs. 1,310,968) sectors was 3.5 times and 14 times higher, respectively, than that in the agriculture sector (Rs. 93,439) in 2011-12, whereas the agriculture and manufacturing sectors accounted for employment of 43.8 per cent and 10.2 per cent, respectively, of the total employment during the same period.

Women Workers in Total and Non-agricultural Employment (15-59 years)

The women's work participation rate for the working age group (15-59 years) was 26.3 per cent in 2012 and declined from 39.8 per cent in 2005. The work participation rate of women is almost one-third that of men (73.1 per cent), with the women being more deprived of employment opportunities in the hilly areas. Rise in the incidence of migration in the hilly areas has compelled more and more women in these families to do all sorts of jobs; within the family and outside. Thus, the women end up bearing the burden of both household chores and outside work such as farm activities, fetching of water and wood, and caring for animals, among others. The latest time use survey of the state government reveals enormous drudgery of work borne by women in the hilly areas, as they have to work for about 12-14 hours per day to sustain their families.

The involvement of women in non-farm activities was low, at 18.5 per cent, as compared to that of men, at 72.4 per cent, in 2012. As mentioned earlier, women are still largely involved in agriculture and other non-productive activities due to the non-availability of jobs in the non-farm sectors.

In addition, the wage rates of both male and female workers, both in regular work and casual work, also show that their average earnings/wages per day that are lower than their male counterparts. In 2011-12, the daily average earnings/wages of females engaged in both regular work (female, Rs. 420 and male Rs. 453) and casual work (female, Rs. 128 and male Rs. 177) were was less than those of males.

Target 8.6: By 2020, reduce the proportion of youth not in employment, education or training

Baseline for Uttarakhand

Youth (15-29 years) Unemployment and Under-employment

The rate of youth unemployment rate is substantially higher than that of the overall open unemployment in the state, as the unemployment among youth was more than double (14.3 per cent) of the corresponding all-India Figure (7.6 per cent) in 2012, going up from 6.0 percentage points since 2005. The unemployment rate is even higher (17.2 per cent) among youth who have been educated up to the secondary and above levels in the

state. Micro level studies have also highlighted that this high unemployment rate among youth is responsible for the high rate of outmigration from the state (Bora, 1996; Awasthi, 2012). Again, the under-employment rate among youth, at 7.1 per cent, was also relatively higher than that of others in 2012.

Youth Not in Education, Training or Employment

Youth in the state are acquiring neither education nor training, and nor are in employment, need to be guided since otherwise they might be misled towards involvement in criminal activities or other forms of violence. Although the share of such youth declined from one-third (32.9 per cent) in 2005 to almost one-fourth (24 per cent) in 2012, the fact that a large proportion of the youth in the state are not engaged in either education or any productive activity poses a serious socio-economic problem for the state.

In this context, the conduction of sports and vocational training programmes by the Youth Welfare Department of Uttarakhand assumes importance. This department has been conceived to act as a platform for youth empowerment programmes and to equip the local youth with the skills to find new opportunities globally. The development of sports infrastructural facilities in the rural areas, too, has been going on apace with the objective of identifying hidden talent in such areas and giving them a chance to participate at the district, state and national level sports competitions. In 2015-16, the state won 38 medals at the national level Rural Sports Competition. The number of youth trained in vocational trades by the Youth Welfare Department as of 2015-16 is 429.

Another wing of the Prantiya Rakshak Dal trains volunteers with the objective of strengthening their self-confidence, self-reliance, and discipline, and promoting communal harmony as well as helping the police in maintaining peace and security, thereby raising a strong group of volunteers. There are almost 8500 Prantiya Rakshak Dal volunteers, who are paid Rs. 400/day.

Target 8.7: End child labour

Baseline for Uttarakhand

The child labour in the state is almost negligible and just around 1 per cent in 2012.

Target 8.8: Protect labour rights and promote safe and secure working environments

Baseline for Uttarakhand

A large number of informal and migrant workers within the state, comprising both men and women, are engaged in low-paid and insecure jobs. They are not provided any social security benefit or a suitable working environment. An estimation of latest migration report says that around 85 per cent of the migrants are engaged in whatever jobs are available and only a few of them have switched to better quality jobs.

Vision 2030 for Targets 8.3, 8.5, 8.6, 8.7 and 8.8

The vision for Target 8.3 is that the percentage share of the workforce in non-agriculture would be increased beyond the baseline value of 56 per cent (see Appendix 2.3.2 and the Annexure 8 or the details of the indicator values under each target). The share of regular and formal employment is expected to increase in the coming years. The number of MSME units is also likely to increase to 1,70,000 with the concomitant employment increasing to 8,50,000 by 2030.

The vision for Target 8.5 is that the unemployment and under-employment rates would be reduced from the baseline levels and the share of women workers in the total employment and in non-farm employment would be enhanced. The vision for Target 8.6 is that the youth unemployment and under-employment rates would be reduced from the baseline levels and that the share of youth who are currently not involved in education, training or employment would be brought down from the baseline levels of 24 per cent and the number of youth trained in vocational trades by the Youth Welfare Department would will increase to 5600 by 2030. The vision related to Target 8.7 is that child labour would will be fully eliminated.

Challenges for Targets 8.3, 8.5, 8.6, 8.7 and 8.8

Not enough job creation in manufacturing:

The contribution of the manufacturing sector to the economy is around 42 per cent but it is able to generate only 10 per cent of the total employment. This is due to the high concentration of large manufacturing units in only some of the districts in the plains. Even the latest economic census of 2015 also shows that about 62 per cent of the enterprises are concentrated in the districts in the plains.

Bias in credit flow:

The persistent bias in credit flow for the priority sectors is yet another area of concern, wherein the banking sector prefers to finance only the developed districts and is hesitant to take risks in the hilly districts. Consequently, the gap in development between the hills and plains is bound to widen.

Inadequate employment opportunities in the hills:

Although the advent of MGNREGS has provided wage employment to people from the rural and hilly areas, it has not been able to create enough employment to be able to allow them to move out from agriculture to other sectors of the economy. The average employment per household under MGNREGS during the last six years was below 40 (about 38 days). This is minuscule in view of the existing situation of under-employment and unemployment in the rural and hilly areas of the state.

The state has also not been able to exploit the advantages offered by its lucrative sectors such as tourism and Information Communication Technology (ICT) for its large number of educated unemployed youth.

The self-employment programmes implemented in the state such as the National Rural Livelihood Mission or the Aajivika Mission have had no visible impact in enterprise development. The growth in the number of private enterprises was very low (at around 5 per cent) in the hilly districts during the period 2005-2013, whereas it was much higher at 53 per cent in the districts in the plains. The other self-employment programme initiated by the state government for promoting employment in the tourism sector, viz., the VCSG Self Employment Scheme in Tourism, has also managed to provide employment to barely 1100 people during the last six years.

High rate of youth unemployment:

There is a huge incidence of youth unemployment, particularly among the high-educated youth, compelling them to out-migrate or remain unemployed due to the unavailability of proper jobs for them in the state.

Low female work force participation:

There is also a very low female work participation rate in the state, with the women mostly spending their time in unproductive activities.

Strategy for attaining Vision 2030 for Targets 8.3, 8.5, 8.6, 8.7 and 8.8

There is a relatively high rate of unemployment among the higher educated youth in the state, who can be potential employees for the knowledge-based IT industry. The government should encourage IT and IT-enabled services firms in the state to expand their communication networks by providing them better infrastructure, more electricity, and comparatively cheap land. This will help in creating decent jobs for highly educated youth, resulting in a reduction in their high unemployment rate. The Skill Development Mission and Skill Hub for skilling and employment of youth can help in generating the soft skills required.

Women should be given more rights such as land ownership, particularly in the hilly and rural areas, as without ownership of land, they suffer from disadvantages terms of securing credit, entering into contracts, or undertaking other activities of agricultural management. Women have equal entitlement to ancestral land as per the Hindu succession law, but this remains largely unimplemented. Encouraging women's ownership of land is a key measure that could improve and encourage women's entrepreneurship and promote their participation in productive activities.

Most of the women in the hilly areas are engaged in various domestic and household-related activities, which are not accounted for in economic activities. Hence, the strategy should be to motivate them to take up training or skill upgradation from the concerned department to enable them to engage in gainful employment. Various self-employment schemes are run by different departments in the state. Attempts need to be made to make them aware of these programmes and to impart training and skills to them, so that they can benefit from such schemes.

The Mahila Mangal Dal and The Yuva Mangal Dal, at the village level, shall also be motivated through workshops to create self-help groups (SHGs) and to undertake the required skill upgradation or training so that they can benefit from the various employment generation schemes of the different government departments. Some youngsters will be trained by ex-Army personnel at the block level to facilitate their entry into the Army.

The government needs to ensure the protection of labour rights and promotion of a safe and secure working environment for all workers through proper monitoring and implementation of the existing norms.

The share of the self-employed is significantly high in the state, at 65.7 per cent of the total workforce. Most of these are women, engaged in low-productive agriculture and low-earning allied activities. The state government should endeavour to encourage youths to move from the existing subsistence cereal-based production in agriculture to market-linked enterprises. For this, the government needs to link these youths to various agro-based schemes run by the government departments. The departments of MSME, rural development, and tourism, among others, are running various employment generation schemes. The employment department has devised the following strategies for generating employment, particularly among the unemployed youth.

(i) The employment department avers that they are registering unemployed youth, who would be asked to identify their areas of interest wherein they would like to acquire skill upgradation and training. Accordingly, their details would be forwarded to the concerned departments so that they can benefit from the self-employment schemes run by these departments. (ii) The department shall organise job fairs at the district level at regular intervals to facilitate the placement of these youths in various private sector enterprises. (iii) The department shall conduct career counselling through psychometric or aptitude tests to help students choose their careers as per their skills and abilities. (iv) These career counselling sessions shall also be conducted in the far-flung areas of the state through outreach activities.

For employment in formal sector jobs, apart from encouraging private services and industries, the state government has devised the following strategies: (1) The state government is striving to fill up the posts that are lying vacant across various departments. This shall provide regular employment to the people of the state. (ii) The department of employment has been organising job fairs in different districts of the state. In 2016-17, the department organised 106 job fairs that provided job opportunities to 2773 unemployed people. The department plans to organise such job fairs regularly, with a target of at least 696 job fairs in the year to provide employment to about 14,000 unemployed youth.

A huge number of youth are currently neither working nor acquiring any training or education. These youth need proper skills and vocational training to get gainful employment to be able to contribute to the economy. Apart from skill development, effective public-private or industry partnership is also necessary for imparting training to them and generating gainful employment for them.

The Department of Youth Welfare is taking care of various aspects of student welfare like student counselling, training, NSS, government and non-government sponsored youth projects, financial aid and scholarships, healthcare, games and sports, and cultural activities, among other things. A national integration programme is being conducted to promote a sense of national, cultural and emotional oneness among the youth. The Central government is supporting youth exchange programmes and adventure programmes comprising trekking, climbing, and water sports, among others. Under a Career Guidance Programme, the Youth Welfare and PRD Department has proposed to establish career guidance centres along with each district office. The department also plans to establish a state level training centre and to conduct regular training and vocational programmes in collaboration with the National Open School, Uttarakhand Open University and Indira Gandhi National Open University (IGNOU), among others.

The level of literacy and enrolment in higher education in the state is higher than the national average but this has not been transformed into employment opportunities as these youth lack technical/professional skills that are essential to get linked with the requirements of the job market. Due to the lack of the required skills in accordance with their aptitude, these youth fail to optimise their as a result of which they end up in low productive jobs, leading to under-employment. The department plans to link these unemployed or under-employed youth with placement-linked skill training run by the Uttarakhand Skill Development Mission. The youth registering with the

employment exchange shall be asked to specify their areas of interest in which they wish to make their careers and accordingly their names shall be forwarded for training to the skill mission.

The names of these people shall also be forwarded to various departments running employment/self- employment schemes to enable them to enter the job market in the areas of their interest.

Target 8.9 By 2030, devise and implement policies to promote sustainable tourism

Baseline for Uttarakhand[34]

The number of tourist arrivals to Uttarakhand increased from 16 million in 2005 to 31 million in 2010. It dipped slightly afterwards, but the natural disaster of floods and landslides that struck the state in 2013 took its toll and tourist arrivals plunged to 20 million in that year. However, in 2015, there was a recovery to 30 million arrivals, almost touching the level attained in 2010. While the state is ranked ahead of Himachal Pradesh as a tourist destination for domestic tourists, it still accounts for just 2 per cent of the all-India tourist arrivals and has a long way to go to become the most visited destination (See Table 2.2). As regards foreign tourists, the development of this sector in Uttarakhand is lagging considerably behind the other states despite the even greater scope of improve its share in the state.

In order to provide the necessary fillip to tourism, the state needs to acquire many attributes, as identified by the 2008 Tourism Master Plan for the state (see Box No. 2.12). Some of these include improvements in accessibility, connectivity within the state, predictability of transport time, quality of accommodation, food, education and training of tourism sector workers, and sanitation, among other things. Today's average tourist accords very high importance to Internet/mobile connectivity at the tourist destination, which should be added to this list of desirable areas of improvement. In fact, over and above the typical tourist on a personal holiday or pilgrimage, the scope for making Uttarakhand a get-away for official weekend meetings and events would increase manifold if it has good Internet and mobile connectivity. There is also a need to dedicate sufficient resources to the development of tourism in the state. At present, the expenditure on tourism as a percentage share of the expenditure on all sectors is just 0.146 per cent, according to a recent survey, giving the state sixth rank, as compared to the top-ranking state Sikkim, which spends 2.8 per cent of the entire state expenditure on tourism.[35] The state also has a relatively poor 15th rank in terms of effective marketing.

Pilgrimage is a driving factor of tourism in the state, as the main purpose of visiting the state for 44.2 per cent of the domestic tourist visits is pilgrimage/religious while holiday/sight-seeing accounts for 43.6 per cent of the tourist visits, according to a snap survey conducted by the United Nations World Tourism Organization (UNWTO).[36] Tourists visiting the state for a holiday are attracted by its natural beauty and trekking opportunities. The inflow of tourists is from the states of Delhi, Uttar Pradesh, West Bengal, Punjab, Uttarakhand, Haryana, Gujarat, Rajasthan, and Maharashtra in that order, and the most popular destinations for domestic tourists are Haridwar, Rishikesh, Nainital, Badarinath, Kedarnath, Gangotri, Uttarkashi, Mussoorie, Yamunotri, Almora, Ranikhet, and Dehradun.

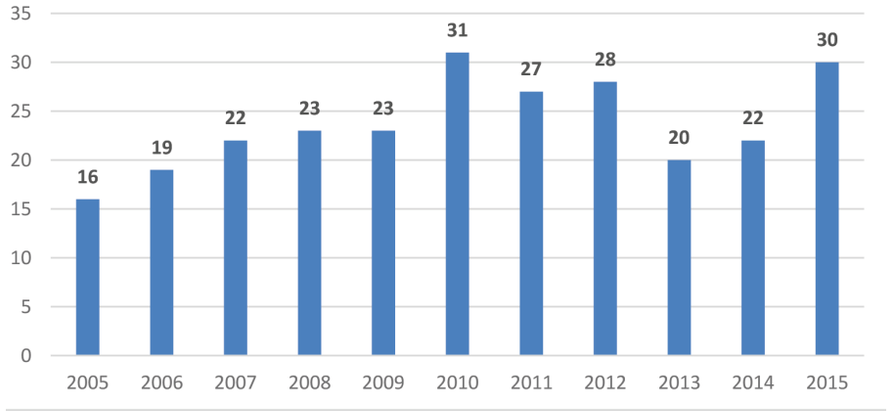
In the case of foreign tourists, on the other hand, the reason for holiday/sight-seeing accounted for the bulk (58 per cent) of the foreign tourist visits, while 21.9 per cent of the visits were found to be for health/yoga and about 19.4 per cent for pilgrimage/religious functions. Foreign tourists mostly come from the United States of America, Israel, Australia, Italy, Germany, and Nepal, and the destinations popular with them are Rishikesh, Haridwar, Gangotri, Uttarkashi, Kedarnath, Badrinath, Auli, Nainital, and Gaumukh.

34. The tourism sector has been discussed in detail in Part I.

35. HVS State Ranking Survey 2015, available at http://www.hospitalitynet.org/file/152005708.pdf, accessed on April 15, 2017.

36. Available at http://www.uttarakhandtourism.gov.in/inviting-suggestions-uttarakhand-tourism-draft-policy-2016.pdf , accessed on March 24, 2017.

Figure 2.17: Tourist Arrivals in Uttarakhand (millions)



Source: Government of Uttarakhand

Box 2.9: Important Pre-conditions for Realising the Full Potential of Domestic and International Tourism in Uttarakhand

The state needs to bring about an improvement in the following areas to optimise its potential for domestic and international tourism:

> Accessibility by air, road and rail to Uttarakhand from other parts of India and abroad

> Connectivity within the state by air, road and rail where applicable

> Predictability in terms of both transportation time and what can be expected from the different tourism destinations and products

> Selection and quality of accommodation facilities, food and beverage, entertainment and general service level for all standards and types of outlets

> Education and training of public and private tourism industry workers and entrepreneurs of all sectors and rank at central, state and local community level

> Marketing and information material and interpretation at tourism locations

> Local community understanding of and participation in tourism and awareness of what it entails in terms of opportunities and threats.

> Urban and rural infrastructure, environmental services and utilities operation and management

> Basic sanitation, urban management and design quality in major towns, some of which could perform useful gateway functions

> Simplification of the institutional framework for tourism administration and operation among others to foster greater cooperation between all stakeholders in the tourism industry.

> Public–private cooperation and partnership in the state within all sectors of the tourism system.

Source: 2008 Tourism Master Plan, Uttarakhand

Vision 2030 for Target 8.9

To develop Uttarakhand as a comprehensive, world class tourism destination by realising the untapped potential of sustainable tourism, through the design of innovative tourism products that build on the inherent strengths of the state as a natural destination catering to all categories of tourists.

Uttarakhand needs to brand and position the experience of holidaying in the state in a planned manner so that it can be counted among the top national and international tourist destinations in the coming fifteen years. The action plan is to make the state among the top 10 tourism destination states of the country by 2020, up from its present rank of 12. The aim is to reach a place among the top 5 destination states by 2024, and finally to reach among the top 3 destination states by 2030.

The vision is to promote adventure tourism, eco-tourism, and rural tourism in a big way in the

state, and to protect the most frequented tourist destinations, which are already over-exploited to make them sustainable tourist destinations. The attraction of the state as a pilgrimage site is already well-established, but there is still a great deal of scope to promote the state as a destination for spiritual purposes, yoga, and wellness, also as a destination for trekking, mountaineering, river-rafting, and such adventurous activities.

Rural tourism and eco-tourism can be encouraged as has been done in other states, provided the needs for infrastructure and connectivity, skill training, accreditation of dhabas/restaurants, and service providers are met. Thereafter, tourist destinations in the upper reaches of the state can also be developed, providing employment opportunities to the local youth (see Box no. 2.10 and 2.11). These aspects have been incorporated in the indicators developed for the Target 8.9, and have been presented in the Annexure 8, with baseline values as well as values for the interim timelines of 2019-20, 2023-24, and the final timeline of 2030. Appendix 2.3.2 presents a snapshot of the targets/indicators for the baseline and 2030 and Figure 2.18 presents the status for selected indicators.

Challenges for Target 8.9

Connectivity: The need for robust physical infrastructure, and, increasingly, an effective telecom and cellular infrastructure, for tourism development cannot be over-emphasised. For the tourism sector, all avenues of infrastructure and transport, including road, rail and air, are important. This is one area wherein Uttarakhand does indeed have a considerable distance to cover, in view of its hilly terrain. The cost of building infrastructure also increases due to the topography, thereby adding to the challenge. The recent calamity in 2013 has set the state back in terms of infrastructure and connectivity.

Disaster-prone Areas: The state has a geographically fragile mountain economy, which, while accounting for its unique features and attraction, also makes it extremely prone to natural disasters such as cloud-bursts, landslides, and flash floods, which pose grave challenges for any type of construction, including road construction. Unfortunately, as a result of unplanned development, many tourist facilities have been built in disaster-prone high-risk areas, such as hotels along the banks of the river Ganga in Rishikesh.

Inadequate Accommodation Facilities: Presently, the availability of branded rooms in Uttarakhand is just 2.41 rooms per 100 sq. km., which needs to be augmented. [37] A particular problem here is with regard to a huge floating tourist population as well as the high density of the footfall of tourists, especially religious tourists, during particular festivals. The pressure on the demand for hotels and other accommodation can witness a sudden spike, which is why adequate plans must be implemented to develop and upgrade tourist facilities in the popular destinations such as Mussoorie and Nainital, among other destinations.

Planning Needed to Combat Unplanned Growth in Religious Tourism: As discussed earlier, pilgrimage is the main driver of domestic tourism for destinations such as Char Dham and Haridwar. The excessive tourist footfall in the state has had

Box 2.10 Home Stay: Village Ways—Connecting Villages with the World

Home stay is one of the means by which the problem of migration can be addressed. 'Village Ways' is an organisation which is trying to make home-stays popular in Uttarakhand. The Home Stay venture of Village Ways started in Binsar in Almora district.

In the holiday experience offered by Village Ways, small village guest-houses are offered for the tourists, rather than the villagers' homes. The hosts come to the guest-houses from their own homes and return at night. This gives the tourists more independence , while not disturbing the regular family life of the village communities.

This award-winning organisation offers holiday experiences combining nature walk, culture and discovery of the village life. Such initiatives go a long way towards providing sustainable livelihoods for the locals and help to stem migration.

Source: Government of Uttarakhand

37. HVS State Ranking Survey 2015, available at http://www.hospitalitynet.org/file/152005708.pdf, accessed on April 15, 2017.

Figure 2.18: Vision 2030 for Selected Indicators for Tourism Sector in Uttarakhand

	Baseline 2016-17	Vision 2030
Tourist Arrival	Increase by 3 times	
Increase in no. of tourists to lesser known destinations	19%	33%
Registration of Hotels under Tourism & Travel	875 (no.)	100%
No. of Gram Panchayats to be developed for Rural Tourism	73	500
Development of new homestays(No.)	256	5000
Development of Trekking/ Mountaineering routes/ Mountain Trail biking Routes	32	200

Source: Based on information provided by Government of Uttarakhand

an adverse impact on the maintenance of cleanliness of the sites, and the conditions of these sites has also been worsening. An added challenge is that many of the tourist visits are of short durations, and do not generate enough revenue for the state.

Environmental Sustainability: Unplanned development of tourism in the state has struck at the very heart of the fragile mountain ecosystem of the state, which lies in the most active seismic zone. Parts of Uttarakhand fall in seismic zone-5. In addition, the increased volume of solid waste, including untreated waste water resulting from tourism and related activities, often gets dumped in the Ganga, adding to the pollution of the river, which is the lifeline of not only Uttarakhand but of the entire Gangetic plains area.

Departmental Co-ordination: Tourism efforts in a state can be truly successful only when several departments such as those of Tourism, Urban Development, Road Transport and Highways, Railways, Power, Water and Sanitation, and PWD, all operate in tandem with each other. Several initiatives of the tourism department may not bring the expected results if there are bottlenecks in any of the departments mentioned, and in others not mentioned here.

Need for Dedicated Finance and Land Availability: If tourism in the state is to be catapulted to world class standards, it must have the necessary financial investment. The share of tourism (presently at only about 1.5 per cent) in the total budget expenditure of the state government is very low, which needs urgent attention[38]. The revenue generated by the department would be grossly inadequate

38. Uttarakhand socio-economic mirror, September, 2016 page 13

Box 2.11: Best Practices in Tourism

Himachal Pradesh	Sikkim	Meghalaya	Kerala
Rural Tourism: Successful promotion of villages through the 'Har Gaon ki Kahani' scheme, which attracts through local tales, folklores and anecdotes, and provides tourists an authentic rustic experience.	Organic and Cleanest State: Sikkim became the first fully Organic State in 2016. It was also adjudged as the cleanest state by the Ministry of Tourism.	Community-based Tourism: The state government is promoting community tourism since land tenure is tilted towards the community with very little land held by the government.	Inter-state Co-ordination: The state government has promoted Regional Tourism Circuit with effective co-operation from other Southern States.
Institution Funding: The state has received direct foreign assistance from ADB	Eco-tourism: Sikkim is the first state to frame an eco-tourism policy based on the GSTC criteria. The major projects being implemented include the Sikkim Biodiversity Conservation and Forest Management project, and Sikkim Himalayan Homestay Programme.	Institution Funding: The state has been able to attract funding from JICA for infrastructure.	Responsible Tourism: The government has formulated Responsible Tourism Classification for registration of hotels and resorts in line with GSTC criteria
Eco-tourism: The eco-tourism policy, 2016, has been formulated, which aims to attract at least 10 per cent of all tourists visiting by 2030. The forest department of the state acts as a nodal department for promoting eco-tourism.	Adventure Tourism: This is being promoted through a collaboration with the Indian Mountaineering Federation for trekking, mountaineering and other adventure activities around Mt. Kanchenjunga.	Adventure tourism: The state has formulated safety and security guidelines for adventure tourism.	Eco-tourism: The state forest department has taken community-based eco-tourism initiatives and effective forest management through the involvement of tribal people who are employed as tourist guides and forest watchers.

for the purpose of overhauling tourism in the state in a big way. In a similar context, given that 70 per cent of the land in Uttarakhand is under forest cover, scarce land needs to be released for the department to build tourist hotels/accommodation, restaurants, restrooms, parking and entertainment facilities, to name a few.

Strategy for attaining Vison 2030 for Target 8.9

- The state will follow the broad strategy of developing the rural tourism, sustainable tourism destinations and trekking/mountaineering tourism as well as spiritual/yoga/wellness tourism destinations alongside the more frequented destinations or hotspots. This will be a sustainable approach, since the hotspots already have considerable footfalls and are over-exploited, rendering the surrounding environment even more susceptible to damage. It would be necessary to ascertain that tourist visits in these areas do not exceed the existing carrying capacity. The focus on developing the less explored and less frequented destination implies a reduced risk of environmental damage and by generating greater aware-

ness regarding sustainability, better planning can be done for the development of tourism in such destinations, with close coordination and planning with disaster management department for assessment of risks.

- The strategy for the initial three-year period till 2020 should be that of taking stock of the existing strengths and weaknesses, as well as detailed planning for the development of a new segment of tourist markets in the medium and long terms. Work should be initiated for short duration projects too, and the existing infrastructure and connectivity should be maintained and consolidated. At the same time, there should be a plan to position 'Brand Uttarakhand' in the domestic and international markets.

  The medium term should see the realisation and execution of detailed plans made in the short term, along with an improvement in the existing facilities. The brand of the state should be publicised and marketed to a larger number of countries, as more potential tourists become aware of the attractiveness of Uttarakhand as a tourist destination. The long-term strategy would involve further expansion depending on the success achieved in the medium term.
- Theme-based circuits that have potential to be showcased as world class tourism products can be developed in consultation with the stakeholders (Annual Report of Ministry of Tourism, 2015-16). Here, it will be necessary to ensure that the development of theme-based circuits adheres to the sustainability and carrying capacities of the destinations. A framework for classifying infrastructural gaps can be developed to identify the existing bottlenecks so that the potential of these circuits can be unlocked. The adoption of an integrated approach for planning these circuits, along with a comprehensive area development approach to ensure the availability all required facilities in those circuits, is also essential.
- Regarding the specific challenges faced by the state, state-level co-ordination is required to improve inter-state connectivity. Homestays in rural areas and serviced apartments in urban areas can be the means for supplementing tourist accommodation, over and above the development/upgradation of facilities. Tourist flows in popular religious destinations can be managed through real-time online registration and the provision of safe facilities for tourists. Simultaneously, a strategy for promoting nature-based tourism can be adopted to encourage tourists to disperse throughout the state, aided by the creation of wayside amenities.
- The inter-departmental co-ordination challenges can be met by the creation of project-specific committees comprising members from all the concerned departments such as water and sanitation, PWD, urban development, IT, etc. Better planning can be done for the development of tourism in hill destinations, with close coordination and planning with the disaster management department for the assessment of risks.
- For generating financial resources, the state government can explore multi- and bilateral funding agencies such as JICA, ADB, and the World Bank, over and above resources from the Central/state governments.
- There is a plan to develop thirteen new destinations in thirteen districts of the state based on various themes like adventure, leisure, rural, spiritual, and wellness in the long term. Schemes like Pt. Deen Dayal Upadhyay Samekit Gramin Paryatan Vikas Yojana will be implemented with the participation of the concerned departments for providing self-employment and for preventing and/or reducing immigration from the hilly areas.

SECTION 2.4

SDG 9: Build Resilient Infrastructure, Promote Inclusive and Sustainable Industrialization and Foster Innovation

A robust physical infrastructure is the bedrock of an industrialised economy and is an essential requirement for the mountainous state of Uttarakhand. Industrialisation drives the growth process in an economy and leads to employment opportunities that are critical for economic growth, particularly for developing countries. Innovation is imperative for the enhancement of technological capabilities and building of skills and expertise.

The progress of industrialisation is captured by the share of manufacturing in value added in terms of GDP, and this share has increased only marginally for developing countries over the period 2005-15, from 19 per cent to 21 per cent. This structural shift has implications for jobs in developing countries, and the small-scale industries sector can help in much-needed job creation in such countries while providing a thrust to greater inclusion in an industrialised economy.

Uttarakhand is highly vulnerable to periodic natural disasters like floods, earthquakes, landslides, torrential rainfall, and snowstorms and thus would benefit greatly from improved infrastructure. Access to various services such as healthcare and education in the remote hilly reaches of the state is adversely affected by the lack of a sturdy and resilient network of road–rail air linkages. These geographical hurdles also constrain the expansion of employment opportunities. Building and maintaining infrastructural facilities in terrain that is undulating and exposed to the vagaries of nature is an expensive proposition. This also has adverse implications for tourism development, which is one of the main growth planks for Uttarakhand economy.

Consequently, industrialisation in the state is largely confined to the plains, with the hilly areas being bypassed by this growth due to their hostile topography. In this backdrop, small-scale industries signify an avenue for providing employment to those excluded from the benefits of large-scale industrialisation.

The vision for Goal No. 9 for the state of Uttarakhand is as follows:

> ***By 2030, safe, reliable and modern transport will be available for all citizens of the state and an environmentally sustainable process of industrialisation will be attained such that resources are fully utilised and the maximum possible employment is generated.***

The vision for targets of Goal No. 9 are presented in Appendix 2.4.1, followed by values for indicators (baseline and vision 2030) in Appendix 2.4.2, and Appendix 2.4.3 contains the schemes applicable for Goal no. 9. Annexure 9 contains the detailed information regarding indicators for Goal no. 9 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

In the present section, the targets for Goal No. 9 have been discussed by focusing on Target 9.1, followed by a discussion around Targets 9.2 and 9.3.

Target 9.1 Developing resilient infrastructure and equitable access for all

Baseline for Uttarakhand

Ensuring accessibility to a state from outside as well as connectivity within it by road/rail/air links is of paramount importance for optimising the potential of industrialisation and tourism promotion in the state. Providing connectivity via all-weather roads (along with bridges) would also play a major role in marketing the agricultural produce as well as in developing the far-flung areas in the mountains. In view of its mountainous terrain, Uttarakhand is largely dependent on roads for transportation, with minimal presence of air and rail links. The vision for road expansion in the state will be closely linked with the strategy for industrialisation, especially since it would aim to provide adequate and efficient connectivity to all the demand drivers, including tourism, industries, agriculture, and urban centres.

Uttarakhand has expanded its road network significantly since its inception in 2000. In 2012-13, the state had 580.41 km of road for a population of one lakh as compared to the corresponding national average of 354.54 km. However, in terms of the length of roads per 1000 sq. km of area, at 1107.81 km, it is lower than the national average of 1317.90 km. This is because nearly 70 per cent

SDG 9

Build Resilient Infrastructure, Promote Inclusive and Sustainable Industrialization and Foster Innovation

Uttarakhand Vision for SDG 9

By 2030, safe, reliable and modern transport will be available for all citizens of the state and an environmentally sustainable process of industrialization will be attained such that resources are fully utilized and maximum possible employment is generated.

INDUSTRY, INNOVATION AND INFRASTRUCTURE

Uttarakhand Today

- In 2016, state at 9th position in Ease of Doing Business
- Pucca road length is 322.93 km per lakh population. 67 percent villages have access to all-weather roads.
- Nearly 70 percent forest area and cost build-up due to hills and natural calamities major challenge
- Mobile connectivity in villages is 55 percent and 10 percent of the Gram Panchayats are connected by internet
- Industrial activity has been concentrated in the plains
- Key industries are agro-based industries & food processing, ICT, floriculture, horticulture, pharmaceuticals & biotechnology, hydropower, engineering and allied industries, FMCG
- Concessional Industrial Package with provision of fiscal incentives to industrial units and subsequently Industrial Development Policy for Hills in 2008 provided some boost to industry

Focus for Tomorrow

- To connect Rural areas with cities by good road transport system.
- To upgrade technology and automation in testing tracks and examination centres for vehicles.
- To encourage firms to sponsor skill development centres or students through fellowship in the technical institutes and get them trained
- Providing good quality pre-investment and post-investment services to investors
- To give boost to organic sector based food processing
- To create a sustainable and equitable system in MSME sector for employment oriented growth
- Accelerating the efforts for establishment of Biotechnology Parks and Advanced centres of Molecular Diagnostics and other areas of research in Biotechnology
- Expansion of scientific research in the area of agriculture forecasting, water quality mapping, GIS based monitoring for cities, etc. in the area of space technology application

Targets for 2030

- 100 percent internet connectivity for all Gram Panchayats
- City transport system to be expanded beyond Dehradun to other cities
- Setting up Automated testing tracks for testing drivers and automated testing lanes for computerised examination centres for vehicles
- Generation of employment of 850 thousand people in MSME sector
- Develop Organic sector based food processing industries as a thrust area

of the state is covered by forests and therein lies the main constraint to the expansion of infrastructure in this mountainous state. The unplanned expansion of infrastructure, including that of road networks, can wreak havoc on the fragile mountain environment. Experts claim that the devastating natural calamity in 2013 had much to do with the unchecked construction in the state, including the construction of roads, flyovers and other infrastructure. The floods of 2013 destroyed a large part of the roads in the state. Currently, the length of pucca roads in the state is 322.93 km per population of one lakh, and around 67 per cent of the villages have access to all-weather roads.

While there is 55 per cent mobile connectivity in the villages, 10 per cent of the Gram Panchayats (as a percentage of the total number of villages) are connected by Internet. The number of wireless and Internet subscribers in the state as of May 2016, according to data provided by the TRAI, including the numbers for Uttar Pradesh (West), were 152,222,711 and 37,040,000 respectively.[39]

Vision 2030 for Target 9.1

The vision is to provide a safe, reliable and sustainable road and rail transportation system for all citizens of the state. By 2030 length of pucca roads per lakh population will reach 461.29 km. All villages will have access to all-weather roads by 2030 (Figure 2.19). The transport infrastructure must be made resilient for this purpose and also be modernised. Loss of life due to road accidents and pollution from vehicles are to be minimised. By 2030, all villages and uncovered areas along state highways will have mobile connectivity and all Gram Panchayats will be connected by Internet.

As discussed in the baseline section for Target 9.1, the state has achieved progress in infrastructure development but has still not been able to create an efficient transport system. A large part of this is due to the difficult mountainous terrain, which includes disaster-prone areas and entails unpredictability of the weather conditions. However, other problems like poor traffic management in the villages and towns have also affected the pace of economic growth in the state. In general, the long-term vision for road infrastructure would include expanding the road transport network, improving road safety, and ensuring regularity and punctuality of the transport system.

The state also has a limited railway network, which caters only to the districts lying mainly in the plains, that is, Udham Singh Nagar, Haridwar and the plains of Dehradun and Nainital districts. Even if there is an improvement in the road and rail networks in the state in future, there is still need for a high-capacity reliable air transport system to meet the rising demand for access to important international and domestic markets for the state's entrepreneurs. There are two proposed international (Jolly Grant and Pantnagar) and three domestic (Chinyalisaur, Gauchar and Naini Saini) airports in the state, which are already located at suitable locations throughout Uttarakhand, and when commissioned, these will improve access and connectivity throughout the state.

Mobile and Internet connectivity will be greatly enhanced in the coming 15-year period, with the share of villages having mobile connectivity increasing from a baseline of 55 per cent to 70 per cent by 2019-20, and 100 per cent by 2023-24 (Figure 2.20). By 2030, the government proposes to provide a mobile network even along the state highways. Internet connectivity will be expanded to all the Gram Panchayats in a phased manner, covering 30 per cent of them by 2019-20, 70 per cent by 2023-24, and 100 per cent by 2030.

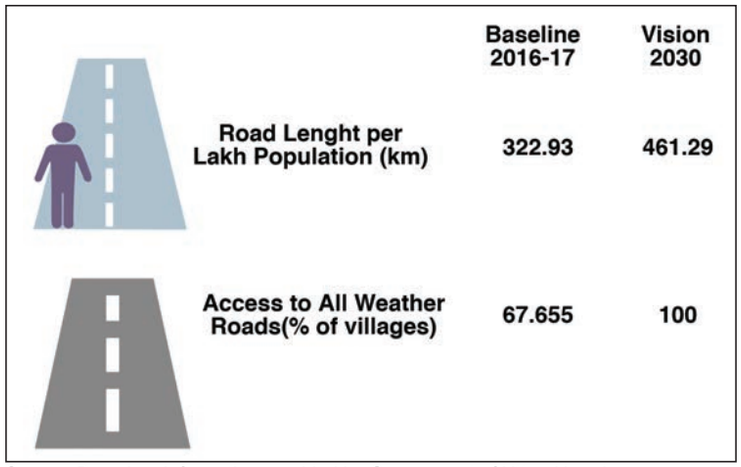
Challenges for Target 9.1

Poor Connectivity of Villages in the Hills with the Cities

Urbanisation is a rising phenomenon globally as well as in India and Uttarakhand is no exception. Industrialisation and urbanisation usually go hand in hand, and the services sector has also increasingly been providing the impetus for growth and employment that accompany urbanisation. In the mountainous regions of Uttarakhand, however, rising urbanisation has led to massive out-migration from the hills towards the plains within the state, as also migration outside the state. This has literally converted many villages into 'ghost villages' with most of the villagers having left their erstwhile homes in the hills. Thus, the inherent contradiction in the development graph of Uttarakhand is that though it needs industriali-

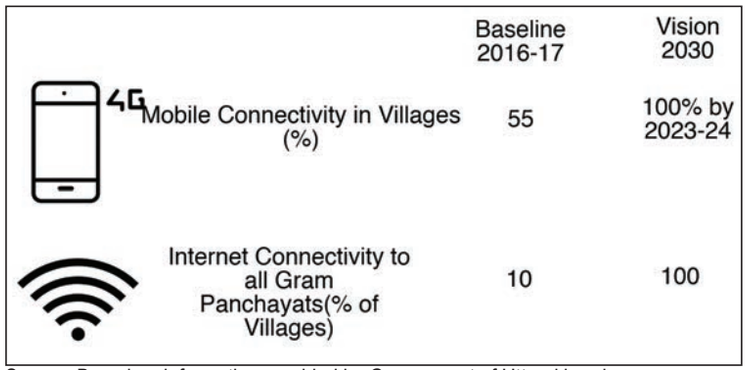
39. Source: https://www.slideshare.net/IBEFIndia/Uttarakhand-state-report-december-2016 accessed on April 24, 2017.

Figure 2.19: Vision 2030 for Selected Indicators for Road transport in Uttarakhand



Source: Based on information provided by Government of Uttarakhand

Figure 2.20: Vision 2030 for Selected Indicators for Mobile and Internet Connectivity in Uttarakhand



Source: Based on information provided by Government of Uttarakhand

sation to meet the aspirations of the people, and to provide them jobs and ensure their prosperity, yet this very industrialization and the concomitant urbanisation are causing a withering of the hill economy through migration.

One way of dealing with this crisis is to provide local livelihood options in the hills, along with the provision of a sustainable physical and social ecosystem in the hills to prevent migration. In this context, the tourism sector offers a huge potential for economic growth and employment generation. The other options entail increasing connectivity between the villages and towns as well as creating opportunities for self-employment among the local population.

A related challenge for the state is to build a solid infrastructural base to support industrialisation. In order to build this in a sustainable and environment-friendly manner, a hilly state must balance the requirements of a road–rail–air link network with the vulnerabilities of a mountainous region. This is not an easy task, given the fact that 70 per cent of the land in Uttarakhand is covered by forests, which limits the availability of land both for developing infrastructure as well as for setting up industrial units. The state does not receive any 'Green Bonus' for maintaining its forest cover, which provides precious mountain ecosystem services for the rest of the country, and for balancing the process of infrastructure creation and industrialization with conservation of the environment.

Paucity of Funds

The undulating terrain, coupled with low population density makes road-building in the state a highly expensive exercise, especially in the hilly region. The state government also does not have access to an adequate budget for expanding the road networks in the villages. The shortage of funds is also constraining plans to build bus ter-

minuses in the cities of Haldwani and Bageshwar, among others.

Strategy for Target 9.1

Augmenting the Transport Infrastructure

The plan for augmentation of the transport infrastructure in the state includes the following measures:

- Rural areas must be connected with cities by a good road transport system for ensuring their all-round development, and for boosting tourism in the state. The railway network too needs to be extended as far as the topography of the region permits.
- At present, the city transport system exists only in Dehradun but it is proposed to expand it to other cities in the state including Haridwar, Haldwani, Hrishikesh, Roorkee, Kashipur, Rudrapur, Almora and Pithoragarh.
- It is recommended to invite experts to explore different viable options for expanding the railways network beyond the plains.
- There are proposals for setting up automated testing tracks for testing drivers in various departments and for setting up automated testing lanes for computerised examination centres for vehicles. The use of simulators for testing drivers as well as the overall strengthening of the transportation system comprise important strategies for enhancing the transport infrastructure in the state over the next 15 years.

Augmenting the Information Technology Sector

Information Technology (IT) and IT-enabled services (ITES) can facilitate growth through the reduction of transaction costs and the consequent efficient use of resources. It can also play a role by fostering productivity gains or the speedy delivery of services. The effective use of IT in public administration would make it Simple, Monitored, Accountable, Responsive and Transparent (SMART).

The IT industry has a significant impact on development and is expected to generate not only direct employment and huge indirect employment through inter-sectoral linkages and the generation of demand impulses in the economy but also a rise in consumption as well as production demand. This, in turn, will boost the growth of the rest of the economy, promote direct employment generation for the educated and skilled workers, and lead to the generation of secondary/indirect employment in the services sector.[40]

Present Status of IT sector

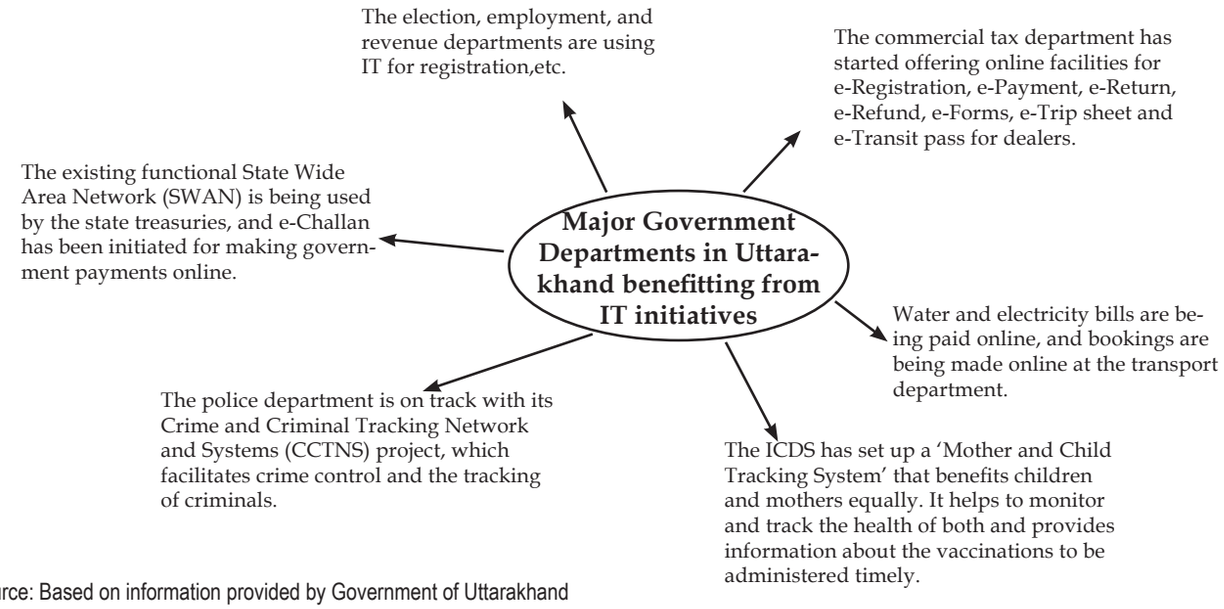
The state of Uttarakhand is an ideal location for IT sector. This is because the ambient temperature in the state is suitable for setting up data centres since 40-50 per cent of the cost in these units goes into maintaining a suitable temperature. Secondly, some urban centres in the state such as Dehradun are already functioning as knowledge and education hubs and would be ideally suited for supplying educated and skilled human resources to meet the requirement of the IT sector as it develops.

The IT sector in Uttarakhand has already undertaken various initiatives, as detailed below.

- Wi-Fi services would be provided for citizens in the state. The pilots for this service have been undertaken in Nainital and Mussoorie, in particular, for supporting tourism.
- Common Service Centres (CSCs) have been set up in all the 13 districts of the state under a state-wide rollout of the e-District project, in order to provide government services to the people electronically. A total of 6950 functional CSCs have been registered in the state, out of which around 3900 are functional. Certificates relating to caste, birth, death, permanent residence, income, and various types of pensions, are also available through CSCs.
- UIDAI has been implemented in all the 13 districts in the state. Aadhar cards have been made for all those above the age of 18 years (the number of cards issued is 72,88,675) and enrolment for those in the age group of 0-5 years is under progress, with 65 per cent coverage achieved so far as well as for those in the age group of 5-18 years, with 83 per cent coverage achieved in this category. In all, 98 per cent of the total population has been covered for issuance of Aadhaar cards.
- Many government departments have benefited extensively from IT initiatives(Figure 2.21).

40. This section relies on Joshi, S. (2009), and on 'Technology Vision-2020: IT in Services' by S. Biswas and G. Srikanth, accessed at http://tifac.org.in/index.php?option=com_content&view=article&id=779:technology-vision-2020-it-in-services&catid=121:general&Itemid=1381 on April 10, 2017.

Figure 2.21: IT Initiatives in Uttarakhand



Source: Based on information provided by Government of Uttarakhand

The IT sector has the Vision to use Information and Communication Technology & Electronics as a vehicle for economic development of Uttarakhand with all round inclusive growth to create a vibrant society with high quality of life. The broadly defined goals for the sector are as follows:

1. Make the state of Uttarakhand a fully digitised and networked society where information flow and access across all sections of the society would be enabled through effective ICT infrastructure that would propel the economic growth of the state.
2. Given the fairly high literacy rate of 78.82 per cent (higher than the national average) in the state, the Government aims to reduce unemployment by encouraging ICT, ITES and electronics manufacturing units to establish their enterprises in Uttarakhand.
3. To establish Uttarakhand as the most preferred destination for investment in the Electronics System Design and Manufacturing (ESDM) industry.

There is a need to set up and enhance electronics manufacturing units within the state under the umbrella of the "Make in India" initiative of the Government of India. This would reduce the cost of various components that are currently being procured ex-import. The electronics hardware industry consists of electronic systems design and manufacturing, including semiconductor design, high-tech manufacturing, electronic components, and electronic system design for consumer electronic products, telecom products and equipment, and IT systems and hardware. The electronics industry is reported to be the largest and fastest growing manufacturing industry in the world. Some specific targets and strategies for the IT sector are presented in Appendix 2.4.4.

The key stakeholders in the state include not only the IT department but also many other departments of the state including the police department, industry representatives from associations, institutes/universities offering higher education and the technical education department and citizens of the state.

Challenges for the IT sector

The IT initiative in Uttarakhand faces the following challenges:

- A major challenge for expanding the IT and communication activity is that high-tech cables/wires (optical fibre lines) laid for connecting villages can be disrupted easily because of the activity for laying cables/pipes, by the National Highways Authority of India (NHAI), and for piped gas, among other facilities.
- CSC 2.0 was started in April 2015 by the Government of India's telecom department and

MEIT. However, 3000 out of around 8000 Gram Panchayats, mostly in the hills, still do not have access to 3G and other connectivity.

- Five districts in the state have borders with Nepal and China, and are thus located in strategic zones, yet these places have no connectivity.
- While Internet protocol version 6 (IBP6) is slated to be used in the state, it is not clear whether and to what extent smart the grid and smart meters will be IPB6-compliant.

Strategies for the IT sector

The following broad strategies can be used to deal with the challenges confronting the IT industry:

- The disruption in communication due to the simultaneous laying of pipes and other infrastructure by various departments can be tackled by the use of a common duct through which all cables run, as well as with co-ordination between various departments to ensure that the activity is suitably planned.
- The Government of India can provide VSAT services to connect the hilly areas in the state.
- The power department needs to be apprised regarding the IPB6 compatibility to ensure that the issue is addressed.

Target 9.2 Promote inclusive and sustainable industrialisation

Baseline for Uttarakhand

The industrial sector, comprising manufacturing, construction and water, gas and electricity, has a major share in the GDP (at constant prices) of the state. Its share is around 49.14 per cent, according to the 2013-14 provisional estimates, and 48.36 per cent, according to the 2014-15 quick estimates (Economic Survey, 2015-16). Manufacturing is the main component of the sector, accounting for a share of around 36-37 per cent of the GSDP. Construction also accounts for a sizeable share around 8 per cent.

The state government is committed to making industry a vehicle for the sustainable development of the state. Earlier, the government was providing provided a boost to industry in the state by implementing the Concessional Industrial Package (CIP) with the provision of fiscal incentives to industrial units, and subsequently the Industrial Development Policy for Hills in 2008 (amended in 2011).

However, till date, industrial activity has been concentrated in the plains and has not spread throughout the state. The key industries in Uttarakhand are agro-based industries and food processing, ICT, floriculture, horticulture, pharmaceuticals and biotechnology, hydropower, engineering and allied industries, and fast moving consumer goods. Many Agri Export Zones (AEZ) have already been declared under the AEZ scheme of the Central Government, which mainly include the cultivation of litchi, floriculture and horticultural herbs, medicinal plants and basmati rice. Mega food parks in Haridwar and Udham Singh Nagar are expected to generate direct and indirect employment for approximately 30,000 and 2,90,000 people, respectively, by 2018. In addition, food processing units, cold storage units, and food parks are being planned. The key players to set up ventures in the engineering and allied industries in the state include Tata Motors, and Bharat Heavy Electricals Limited, among others.[41]

Recently, the Uttarakhand government has greatly improved its rank among the states in the Ease of Doing Business index, moving up from the 23rd position in 2015 to the 9th position in 2016. The Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry, in partnership with the World Bank, conducted an assessment of the implementation of business reforms by states, which studies the extent to which various states have implemented DIPP's 340-point Business Reform Action Plan (BRAP) for States/UTs covering the period July 1, 2015 to June 30, 2016.

Micro, Small and Medium Enterprises

The MSME sector plays a crucial role in the economic and social development of the state as this sector is the nursery of entrepreneurship. This sector also has a high potential of providing livelihoods with low capital investment and high utilisation of local resourc-

41. Source: https://www.slideshare.net/IBEFIndia/Uttarakhand-state-report-december-2016, accessed on April 24, Accessed on 24 April 2017.

es. Prior to the formation of the state in 2000, just 38,500 thousand people derived their livelihood from this sector, which had an investment of Rs. 700.29 crore. At present, this investment has grown to Rs. 10,960 crore and the sector provides employment to around 2.58 lakh people. This sector is thus a major provider of employment in the state and promotes inclusive industrialisation.

The Department of MSME in Uttarakhand is providing livelihoods in the Handloom, Handicraft, Khadi and Village industries sector by implementing various schemes like the MSME Policy 2015, PMEGP, the Chief Minister Swarojgar Yojana, and Rural MSME Haat, as well as by organising various marketing events. This sector also provides assistance to the local weavers and artisans for participation in national and international marketing events/fairs.

Vision 2030 for MSME

To create a sustainable and equitable system in the MSME sector, which can maximise the utilisation of resources and widen the areas of operation to make Uttarakhand's growth inclusive sustainable and employment-oriented.

Development Targets for the MSME Sector:

(a) To promote the MSME sector in the entire state with a special focus on the hilly regions for promoting a self-sustaining economic model.

(b) To focus specially on the micro sector, which has a tremendous potential to provide employment at the mass level at minimum capital investment.

(c) To provide a marketing platform to the state's MSMEs, cottage, khadi, handloom and handicraft producers of the state.

(d) To boost entrepreneurship among potential businesswomen and offer them financial support through the banking system to enable them to become self-employed.

It is estimated that the development objectives of the sector will be met in the next fifteen years, according to the state's plan including the number of units to be established, the amount of capital to be invested, and employment generation planned in this sector, as presented in Table 2.10.

Thus, the state government envisages massive expansion in the sector, which would increase employment successively from the present number of 2.58 lakh people to 3.2 lakh people by 2019-20, to 4.6 lakh by 2023-24, and finally to a massive 8.5 lakh people by the year 2030.

Large Industries

The mandate for promoting industrial development in the State of Uttarakhand through the building and managing of world-class integrated infrastructure to attract industries from India and abroad lies with the State Infrastructure and Industrial Development Corporation of Uttarakhand Limited (SIIDCUL), which is thus responsible for developing industrial estates in Uttarakhand. This organisation also facilitates the setting up of industrial units in accordance with the comprehensive policy framework of the state. At present, there are 1828 industries in the state with a capital investment of Rs. 21,826 crore, and employing 1,68,718 people.

The state government has formulated the Mega Textile Park Policy 2014 and the Mega Industrial and Investment Policy 2015 to attract and facilitate investments in Uttarakhand. The former is valid up to March 2021. It has a state capital subsidy up to a maximum limit of Rs. 30,00,000 and an interest subsidy of 7 per cent, along with the provision of 100 per cent VAT concession to the textile industries on raw material, packaging, and finished products. There is also full rebate in

Table 2.10: Sectoral Indicators for Vision 2030 for the MSME Sector

Indicators	Current Status	Target to be achieved by		
		2019-20	2023-24	2029-30
No. of MSME units established	53,000	68,000	94,000	1,70,000
Capital Investment (in Rs. crore)	10,960	14,000	19,400	36,000
No. of Employment generation	2,58,000	3,20,000	4,60,000	8,50,000

Source: Government of Uttarakhand

Table 2.11: Sectoral Indicators for Vision 2030 for the Heavy Industries

Indicators	Current Status	Target to be Achieved by		
		2019-20	2023-24	2029-30
No. of industrial unit established	1828	1998	2618	4510
Capital Investment (in Rs. crore)	21,826	23,155	30,351	53,769
No. of Employment generation	1,68,718	1,84,363	2,48,438	4,44,123

Source: Government of Uttarakhand

electricity duty for the initial period of 7 years, stamp duty on purchase of land for textile units, and on CST to textile industries on the sale of finished goods. Further, there is a 75 per cent rebate in the Mandi tax for textile units.

The Mega Industrial and Investment Policy 2015 is valid till March 2020. Under this policy, land is available at nominal rates with a subsidy of up to 30 per cent, and there is a state capital subsidy up to a maximum of Rs. 30,00,000, along with an interest subsidy of 7 per cent. The other features of this policy are as follows: 100 per cent rebate on electricity duty for 5 years, 50 per cent rebate on stamp duty, concession in land registration fee, as well as 75 per cent rebate on Mandi tax and VAT exemption up to 50 per cent.

Vision 2030: To develop world class Industrial Estates with state-of-the-art facilities in order to boost investment in the industrial sector, and also to promote industrial production and productivity through systematic facilitation and implementation of investor-friendly policies.

Development Targets for the Sector:

(a) To develop sector-specific parks in order to attract investment in the emerging areas of the state's economy such as textiles, plastics, electronics/ESDM, food processing, and solar energy, thereby generating employment opportunities in these sectors.

(b) To upgrade the existing industrial and ancillary infrastructure as per the environmental norms—SIIDCUL (the Industries Department) is working towards upgrading the existing CETPs in the Haridwar and Pantnagar Industrial Estates with Zero Liquid Discharge Facility under the Modified Industrial Infrastructure Upgradation Scheme (MIIUS). SIIDCUL has also been playing a prominent role in investors' facilitation and in promoting Ease of Doing Business in the state.

(c) To develop country-specific enclaves for foreign nations including China, Japan, South Korea, Thailand, and the US.

(d) To develop newly acquired Integrated Industrial Areas such as Khurpia and Nepa as hubs for high-potential industries.

The anticipated growth of the industrial sector as envisaged by SIIDCUL, is outlined in Table 2.11.

The above estimates indicate that the number of industries in the state is slated to grow from the current Figureure of 1828 to 4510 by 2029-30. This will enhance employment generation progressively from 1.69 lakh at present to 1.84 lakh people by 2019-20, 2.48 lakh by 2023-24, and 4.44 lakh people by the year 2029-30. Thus, employment generation from the development of large industries in the state is expected to be around half of that envisaged for the MSMEs.

Challenges for Target 9.2

Limited Impact of the Special Industrial Package on Local Employment

A study on the impact evaluation of the package meant for the special category states of Jammu & Kashmir, Uttarakhand, and Himachal Pradesh shows that almost 50 per cent of the organisations reported difficulty in finding local employees. The condition of ensuring at least minimum employment to the bona fide residents in the special category states is often violated by industries.[42]

Strategy for Target 9.2

Inclusive industrialisation

- The firms may sponsor skill development centres or some students through fellowships in the technical institutes and get them trained according to their requirement, in order to

42. Study submitted by Stellar Society (Trivenee School of Excellence Research Institute) to the Planning Commission, Accessed at http://planningcommission.nic.in/reports/sereport/ser/ser_pack0511.pdf on April 23, 2017.

boost local employment. This necessitates greater interface between industry and skill development institutes. Current and future skill gaps in the state also need to be identified as they should ideally be used as the basis for developing training initiatives. The industrial package should thus also include a budget aimed at developing skill levels among the labour force.[43]

- Providing good quality pre-investment and post-investment services to investors is important for ensuring the effectiveness of the industrialisation initiatives.

Sustainable industrialisation

- The organic sector-based food processing industries should be a thrust area for promoting sustainable industrial development practices as well as for optimally utilising the natural resources of the state.

Target 9.3 Increase access of small-scale industrial and other enterprises to financial services

Baseline for Uttarakhand

As discussed in the section above, the MSME sector already has an investment to the tune of Rs. 10,960 crore. Usually small units find it difficult to access credit and identify lack of access to financial services as one of the key constraints to growth and investment (Malhotra, et al., 2007). However, a new industrial policy for the MSME sector being implemented since 2015 makes it easier for these units to access funds. The policy also promotes inclusive, green and sustainable growth, as well as manufacturing activities by linking the provision of incentives to location in the hilly areas, to non-polluting manufacturing industries falling in the green and orange categories, vocational training, and horticulture, among other things (see Box No. 2.12).

Vision 2030 for Target 9.3

The vision to would be to substantially improve the access of small-scale industrial and other enterprises to affordable credit by 2030.

Challenges for Target 9.3

The Small and Medium Industries (SMEs) are usually more credit-constrained than other segments of the economy because of the inherent risk of lending to SMEs, financial sector policy distortions, and information asymmetries, such as the lack of audited financial statements (Malhotra, et a., 2007).

Strategy for Target 9.3

The fiscal incentives and concessions offered under the new policy for MSMEs will include: a capital subsidy in the form of Investment Promotion Assistance, interest subsidy, reimbursement of VAT, concession on stamp duty, reimbursement of electricity bills, and special state transport subsidy.

Target 9.5 Enhance scientific research and encourage innovation

It is important for any nation aiming for progress to promote scientific research and harness its available resources efficiently and in a sustainable manner. Despite being a young state, Uttarakhand has not lagged behind others in this respect, and has embarked on major research initiatives in two areas in particular: bio-technology and space application. These two areas together account for a major share the budget of the state's Science and Technology Department at present.

Bio-technology

Baseline for Uttarakhand

Recognising that bio-technology is a rapidly growing field of applied science with application in the entire spectrum of human life, the state set up the Uttarakhand Council for Bio-technology (UCB) in 2014. In view of the need to preserve its fragile but unique ecosystems, environment and rich biodiversity, the state is expected to greatly benefit from in research in biotechnology. The areas which are likely to be impacted by these applications and innovations and research comprise diverse fields such as agriculture, floriculture and horticulture, medicinal and aromatic plants, the forestry sector,

43. Ibid.

Box 2.12: The Uttarakhand Micro, Small, and Medium Enterprise Policy, 2015

This policy aims to promote investment in the MSME sector by providing incentives towards this end. The policy aims to utilise local resources, to generate employment opportunities and promote self-employment, and to boost skill development among the youth.

The state has been divided into four categories, viz., A, B, C and D for the provision of incentives and subsidy.

The following activities have been identified under the manufacturing/services sector, which are eligible for fiscal incentives:

- Non-polluting manufacturing enterprises in the green and orange categories.
- Thrust sector industries/activities as notified under the Special Industrial Package.
- Activities which have been granted the status of industry by the state government, viz. poultry farming and tourism activities.
- Following activities included in the Special Industrial Package announced for the North-Eastern states:

- Hotel, adventure and vocational sports, rope-way.

- Nursing home with health and medical facilities.

-Vocational Training Institute, viz. Hotel Management, Catering and Food Craft, Entrepreneurship Development Training, Nursing and Paramedical, Civil Aviation related Training, Fashion Designing and Skill Development Training.

- Biotechnology.
- Protected agriculture and horticulture, and cold storage activities.
- Petrol–diesel pumping station/gas godown.

soil fertility management, microbial products, traditional fermented foods and beverages, vaccine production, animal health including reproduction and nutrition, aquaculture, and human health and welfare including the promotion of balanced nutrition, in addition to gene pool conservation and utilisation, issues related to Intellectual Property Rights (IPR) and a cleaner environment.[44]

One of the major concerns of the UCB is to create awareness regarding biotechnology packages for income generation and better health care in both urban and rural areas. It also aims to disseminate the use of biotechnological processes and tools for creating new avenues of employment in rural areas, particularly for women and the weaker sections of the society. The Council is also slated to impart training and organise demonstrations in various areas such as wasteland utilisation, vermiculture and vermicomposting, mushroom cultivation, floriculture, biofertiliser use, aqua farming, applications of medicinal and aromatic plants including cultivation of natural dye plants, and bioenergy, for improving the socio-economic status and standard of living of people in the state. The initiatives that have already been taken up by the Council are detailed below.

1. In 2016-17, the Council distributed plants for kiwi fruit, orchid, guava, and tamarillo, developed through tissue culture in selected villages, which would be developed as bio-villages.
2. The Council has also prepared a bio-mosquito repellent using herbs found locally in Uttarakhand.
3. It is providing training to around 100 researchers/scientists in the Dehradun bioinformatics laboratory.
4. It is imparting training both to PhD as well as lower level students.
5. It has started hydroponic/aquaponic-based farming, which involves a technique of growing plants without soil, using mineral nutrient solutions in a water solvent.
6. The Council's activities are designed to focus on the development of Navagraha and Nakshatra Vatikas in order to protect the bio-diversity of the state.
7. The Council is conducting research to examine water quality and plans to build a laboratory for this purpose at the state level.

44. http://ucb.uk.gov.in/wp-content/uploads/2016/07/Booklet.pdf and http://ucb.uk.gov.in/ accessed on September 21, 2017.

Vision for bio-technology sector

The vision for the UCB is to:

> ***Deploy, use, utilise and leverage biotechnology as an effective tool for catalysing the accelerated economic growth of Uttarakhand by substantially harnessing and converting its bio-wealth into economic wealth.***

The main objectives of the UCB are to:

- Upgrade and provide infrastructural support for its own R&D and to other institutions to generate skilled human resources in biotechnology and nano-biotechnology.
- Intensify R&D work in the potential areas of biotechnology and its interventions, including in agriculture, horticulture, animal husbandry, and human healthcare.
- Map the rich biodiversity of the state, including landraces and lesser known crops, and create an exhaustive/extensive database to facilitate ex-situ and in-situ conservation, and scientific management, and to prevent the reckless exploitation of the state's natural resources.
- Conserve and commercially exploit the bio-resources of the state for sustainable development and economic upliftment.
- Promote agro and organic farming and encourage the cultivation (conservation) of medicinal and aromatic plants/herbs through an intensive training programme.
- Promote pharmaceuticals, nutraceuticals and such other industries based on medicinal and aromatic plants.
- Attract entrepreneurs for setting up biotechnology-based industries in the state either in an Industrial Estate mode or dispersed in smaller pockets throughout the state.
- Sensitise people and promote "clean and green" technologies for livelihood and environmental protection.
- Set up biotechnology park(s) and incubation centres in the state.

Challenges for bio-technology sector

The biotechnology sector is a fledgling sector in Uttarakhand, and the challenges it faces in ensuring the implementation of various plans and programmes will come to the fore in a few years' time.

Strategy for bio-technology sector

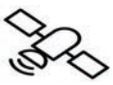
Following are the priority areas for the way forward in the bio-technology sector:

- Accelerating efforts for the establishment of more biotech parks/centres.
- Establishment of advanced centres for various activities in the spheres of molecular diagnostics, bioprospecting-cum-analytical, nano-biotechnology, bioinformatics, tissue culture, nano-toxicity, fingerprinting, structural and molecular biology, biomedical and bioengineering, in addition to the conduction of these activities at the Centre of Excellence in Mountain Biology (CEMB) at Haldi.

The CEMB is expected to provide much-needed biotechnology and nano-technology based R&D support and leadership, which is highly relevant for Uttarakhand and its mountainous region, and to develop methods for the commercial utilisation, conservation, and protection of rich bio-resources. In this context, the Centre plans to recruit scientists, staff, and PhD scholars for planned operations at its eight laboratories in the state.

Following are some of the other strategies that need to be adopted for promoting growth of the biotechnology sector in Uttarakhand:

- Establishing Model Bio-villages (utilising clean and green technologies), including at least one in each district.
- Establishing Knowledge Cities, with provisions for application of cutting edge technologies in all walks of human life. This would entail the setting up of state-of-the-art biotechnology laboratories/centres for Environmental Biotechnology and Bioremediation, Industrial Biotech and Bio-processing Engineering, Bioinformatics and Data Processing, Nano-biosciences, and Conservation of Biodiversity



Space Application

Baseline for Space Application

The Uttarakhand Space Application Centre (USAC) is the nodal agency in Uttarakhand state for undertaking space-technology related activities and has the mandate to employ space technology for the benefit of the state and its people. It was constituted as an autonomous organisation in 2005, under the Department of Science and Technology, Government of Uttarakhand. The prime objective of USAC

is to explore and deploy geospatial technology for the development of the state.[45]

The main areas of space application include are natural resource management, water resource management, glacier studies, environmental monitoring, land use and urban planning, disaster mitigation, web-based school information systems, and health information systems, among others. Some of the notable programmes that USAC has been implementing on an ongoing basis are the State Natural Resource Management System (SNRMS), Forecasting Agriculture using Space, the Agrometeorology and Land-based Observations (FASAL) programme, Coordinated Programme on Horticulture Assessment and Management using geoinformatics (CHAMAN), and the Development of national forest fire danger rating, among others. The existence of diverse areas of space application implies that this sector can contribute to many SDGs. Table 2.13 contains a matrix highlighting the SDGs wherein space application can contribute, including to the attainment of SDG 9, under which it is discussed.

The major objectives of the Uttarakhand Space Application Centre are to:

- Undertake, promote, guide, coordinate and aid research and development in the field of remote sensing and satellite communications.
- Carry out surveys for the monitoring and assessment of the entire gamut of natural resources sectors using space technology.
- Carry out spatial temporal surveys to monitor changing land use patterns, environmental changes, irrigation systems, forest resource and crop disease surveillance using space technology.
- Develop an efficient data acquisition and retrieval system and to act as a repository of data on various natural resources of the state.

Vision for Space Application

The Vision for the Uttarakhand Space Application Centre is to expand its research activities in various areas such as agriculture forecasting, water quality mapping, GIS-based monitoring for cities, mapping and monitoring of snow/glaciers, and assessment of alpine meadows, over the years till 2030. The detailed targets for the interim timelines of 2020 and 2024, and the final target for 2030 are presented in Appendix 2.4.5, and some appropriate indicators under overall Target 9.5 are shown in Appendix 2.4.2.

Table 2.12: Potential Areas of Space Applications

SDGs		Present Status
2	Zero Hunger	Forecasting agriculture statistics with Land-based and Meteorological Data (FASAL)
6	Clean Water and Sanitation	Water quality mapping in 13 districts of Uttarakhand
9	Industry, Innovation and Infrastructure	GIS-based city information system for Kotdwara city (e-Kotdwara)
11	Sustainable Cities and Communities	Training and capacity programme at the school level under the theme Science of Survival (SOS) at the district level, initially for the districts of Chamoli and Pithoragarh
13	Climate Action	1) Mapping and monitoring snow and glaciers in the Alakhnanda, Bhagirathi and Yamuna basins 2) Automatic snow and grain size mapping of the Dundi glacier using hyperspectral remote sensing
15	Life on Land	Assessment of alpine meadows for medicinal and aromatic plants, NTFPs/RET and development of web-based information system, [this would also address SDGs 12 and 13] Detailed vegetation resource maps (species level) and change studies at the district level [this would also address SDGs 12 and 13]

Source: Government of Uttarakhand

45. http://www.u-sac.in/, Accessed on September 21, 2017.

Appendix 2.1.1

Vision for Targets under SDG 1: No Poverty

Targets for SDG 1	Vision 2030 for Targets
1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day.	Extreme poverty will be eliminated by reducing the number of deprived people to zero by 2030 with the twin support of livelihood opportunities and social protection. No one in the state will remain homeless by 2030.
1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions, according to national definitions.	Reduce the proportion of people below the state poverty line to 5.63 per cent, by 2030.
1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030, achieve substantial coverage of the poor and the vulnerable.	Extend social protection with the help of pension and other schemes to all poor and vulnerable people by 2030.
1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.	Achieve full financial inclusion by covering all the remaining households in the state under the Jan Dhan Yojana till the year 2030.
1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.	Minimise the loss of lives and property of people due to natural disasters and to improve their resilience while coping with this vulnerability.

Appendix 2.1.2

Targets and Indicators for SDG 1: No Poverty

Targets/Indicators for SDG 1	Baseline 2016–17	Vision 2030
Target 1.1: By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on an income of less than $1.25 a day.		
1.1a Households (No.) that are deprived (SECC) (lakhs) rural	429888	0
1.1b Population who are deprived (SECC) (lakhs) urban	NA	NA
1.1c No. of homeless households		
1.1d Population below US $1.25 per day (PPP value) (%)	21,930	0
1.1e Per capita state domestic product (in Rs.) (at 2011-12 prices)	140405	217562
Target 1.2: By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.		

Contd...

Appendix 2.1.2 Contd...

Targets/Indicators for SDG 1	Baseline 2016–17	Vision 2030
	11.26	
1.2a Population below state poverty line (%)	11.6	
1.2b Population below state poverty line (lakhs)		
1.2c No. of people (lakh) below poverty line (rural)	8.25	Reduce to at least 5.63%
1.2d % of people poverty line (rural)	11.62	
1.2e No. of people (lakh) below poverty line (urban)		
1.2.1f % of people poverty line (urban)	3.35	
	10.48	
Target 1.3: Implement nationally appropriate social protection systems and measures for all, including floors, and by2030, achieve substantialcoverage of the poor and the vulnerable.		
1.3b 1 Beneficiaries (no.) under Old age pension scheme	4,25,962	5,55,000
1.3b 2 Beneficiaries (no.) under Widow pension scheme	1,39,381	1,80,000
1.3b 3 Beneficiaries (no.) under Disability pension scheme	64,921	80,000
1.3b 4 Beneficiaries (no.) under Farmer pension scheme	19,469	25,000
Target 1.4: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property inheritance, natural resources, appropriate new technology and financial services, including microfinance.		
Financial Services: 1.4a Number of Jan Dhan Yojana accounts opened till February 2017	21,70,963	Cover all unreached households
Target 1.5: By 2030, build the resilience of the poor and those invulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters		
1.5a Houses fully damaged due to natural disaster (to be reconstructed, in number)	806	100
1.5b Houses partially damaged due to natural disaster (to be reconstructed, in number)	2440	200
1.5c Loss of lives from disasters (number)	126	0
1.5d Injuries due to natural disaster (in number)	100	0
1.5e Loss of animals (big) due to natural disaster (in number)	394	50
1.5f Loss of animals (small) due to natural disaster (in number)	1070	100
1.5j Disaster warnings through SMS (% villages)	Nil	100% by 2025

Appendix 2.1.3

Schemes for SDG1: No Poverty

Targets	Centrally Sponsored Schemes/State Sector	Direct Intervention Schemes
Target 1.1	Mahatma Gandhi National Rural Employment Guarantee Schemes (MGNREGA)	
Target 1.2 and 1.3	National Rural Livelihood Mission (NRLM) National Urban Livelihood Mission (NULM)	Pradhan Mantri Jeevan Jyoti Bima Yojana Atal Pension Yojana Jeevika Avsar Protsahan Yojana (Living Opportunity Incentive Scheme (for SCs and STs)
Target 1.4	Externally aided programmes Integrated Livelihood Support Programme (IFAD) Japan International Cooperation Agency–(JICA—UVSPP)	Pradhan Mantri Jan Dhan Yojana Multi-sectoral Development Programme for Minorities Self-employment scheme in tourism
	State sector Social Assistance Programme of the Social Welfare department	Old Age Pension Widow Pension Disability Pension Farmers' Pension
Target 1.5	The programmes run at the Disaster Mitigation and Management Centre include mock exercises, search and rescue programmes, earthquake-resistant building construction programme for masons and engineers, awareness programmes for schools, and an IRS training programme.	

Appendix 2.2.1

Vision for Targets under SDG 2: Zero Hunger

Targets for SDG 2	Vision 2030 for Targets
2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.	Improve access to foodgrains by increasing the food collection from the present 101 million tonnes to 150 million tonnes per year, by 2030, and by reaching foodgrains effectively to remote hilly regions with better infrastructure. The per hectare production of foodgrain is expected to increase from the baseline level of 18,43,785 mt to 20,76,303 mt.
2.2 By 2030, end all forms of malnutrition, including achieving by 2025 the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women, and older persons.	(i) Reduce the number of malnourished and severely malnourished children successively for the three timelines till 2029–30 and (ii) reduce the incidence of anaemia among women of reproductive age from the baseline level of around 45 per cent to 15 per cent by 2029–30 and that for children aged 6–59 months old from a baseline level of around 60per cent to 20 per cent by 2029–30.
2.3 By 2030, double the agricultural productivity and the incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets, and opportunities for value addition and non-farm employment	Double agricultural productivity and farmers' income in the agriculture and allied sectors by 2030 through the adoption of an integrated approach to agriculture, efficient nutrient management and diversification.

Contd...

Appendix 2.2.1 Contd...

2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production; that help maintain ecosystems; that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters; and that progressively improve land and soil quality	Promote sustainable development by expanding irrigation, substantially increasing the share of land under organic farming, and enhancing the use of bio-fertilisers, among other measures, by 2030.
2.5 By 2020, maintain genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and ensure access to and fair and equitable sharing of benefits arising from the utilisation of genetic resources and associated traditional knowledge as internationally agreed upon.	Attainment of the long-term objective of a 15 per cent annual average growth rate by the seed bank at USTDC.

Appendix 2.2.2

Targets and Indicators for SDG 2: Zero Hunger

Targets/indicators for SDG 2	**Baseline 2016–17**	**Vision 2030**
Target 2.1 **By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round**		
2.1b Per hectare foodgrain production (mt)	18,43,785	20,76,303*
2.1c Percentage share of Antyodaya and BPL households in the total households (BPL replaced by priority households)	24%	0
Target 2.2 **By 2030, end all forms of malnutrition, including achieving, by 2025,the internationally agreed targets on stunting and wasting in children under 5 years of age, and addressing the nutritional needs of adolescent girls, pregnant and lactating women, and older persons**		
2.2a (i) Prevalence of underweight children <5 years (-2SD) (%)	26.60	<5
2.2a (Ii) Prevalence of underweight children <5 years (-2SD) (%) (Urban)	25.60	<5
2.2a (iii) Prevalence of underweight children <5 years (-2SD) (%) (Rural)	27.10	<5
2.2b (i) Prevalence of stunted children <5 years (-2SD) (%)	33.50	<5
2.2b (ii) Prevalence of stunted children <5 years (-2SD) (%) (Urban)	32.50	<5
2.2b (iii) Prevalence of stunted children <5 years (-2SD) (%) (Rural)	34.00	<5
2.2c (i) Prevalence of wasted children <5 years (-2SD) (%)	19.50	<5
2.2c (ii) Prevalence of wasted children <5 years (-2SD) (%) (Urban)	18.60	<5
2.2c (iii) Prevalence of wasted children <5 years (-2SD) (%) (Rural)	19.90	<5
2.2d (i) Prevalence of anaemia among women of reproductive age (15–49 years) (%)	45.20	<10
2.2d (ii) Prevalence of anaemia among women of reproductive age 15–49 years) (%) (U)	43.40	<10
2.2d (iii) Prevalence of anaemia among women of reproductive age (15–49 years) (%)(R)	46.20	<10
2.2e (i) Prevalence of anaemia among children (6-59 months) (%)	59.80	<5

Contd...

Appendix 2.2.2 Contd...

Target 2.3 **By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment**		
2.3aTargeted seed distribution rice (quintal) 2.3b Targeted seed distribution wheat (quintal) 2.3c Crop insured (farmers covered) 2.3d Crop insured (area covered) (hectare) 2.3e Land productivity for fruits (metric tonnes per hectare) 2.3f Land productivity for vegetables (metric tonnes per hectare) 2.3g Land productivity for potato (metric tonnes per hectare) 2.3h Land productivity for spices (metric tonnes per hectare) 2.3i Area under flower production (hectare) 2.3j Productivity(per hectare production of cereals) 2.3k Productivity(per hectare production of pulses) 2.3l Productivity(per hectare production of millets)	18,464 1,20,337 3,75,000 85,790 3.83 9.13 16.14 6.38 1400 21.69 10.48 16.17	34,490 1,22,000 5,50,000 2,57,909 5.0 10.0 16.88 8.4 5000 24.02 12.93 17.39
Target 2.4 **By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production; that help maintain the ecosystem; that strengthen the capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality**		
2.4a Agricultural land (foodgrain) at the present level ('000 hectare) 2.4b Agriculture productivity (quintal per hectare) 2.4c Organic agriculture productivity (quintal per hectare) 2.4d Bio-fertilisers in agricultural production (kg/Ha) 2.4e Area under organic certification (thousand hectares) 2.4f Land under horticulture (lakh hectare) 2.4g Soil testing status (per 1000 hectare) 2.4h Soil treatment (per 1000 hectare) 2.4i Number of soil cards distributed 2.4j Number of farmers adopting the soil test practice	900.197 20.48 16.03 0.3 35.0** 3.194 79,678 63.3 4,59,917 4,59,917	911.49 22.78 20.0 0.6 250 4.95 8,82,284 63.3 59,32,225 59,32,225
Target 2.5 **By 2020, maintain the genetic diversity of seeds, cultivated plants, and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and ensure access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed**		
2.5a Establish a DNA bank for a variety of seeds 2.5b Establish a DNA bank for a variety of animals 2.5c Establish a DNA bank for a variety of animal species		Seed bank Uttarakhand Seeds and Terai Development Corporation (USTDC) has a long-term objective of achieving a 15 per cent annual average growth rate

*The figure is for 2014–15. This is slated to increase to 50,000hectares by 2015–16 and to 75,000hectares by 2015–16.
**The value is for 2014-15, as per State Government and this area is slated to increase successively to 50 thousand hectares in 2015-16 and to 75 thousand hectares by 2016-17.

Appendix 2.2.3

Schemes for Targets under SDG 2: Zero Hunger

	Centrally Sponsored Schemes/ State Sector	**Direct Intervention Schemes**
Targets 2.1 and 2.2	1. National Mission for Sustainable Agriculture (NMSA)	1. Rainfed Area Development (RAD) 2. Soil Health Management --2.1 Soil Health Card --2.2 Soil Health Component --2.3 Paramparagat Krishi Vikas Yojana
	2. National Food Security Mission (NFSM)	1. NFSM-Rice 2. NFSM-Wheat 3. NFSM-Coarse Cereals 4. NFSM-Pulses 5. NFSM-Sugarcane
	3. National Mission on Oilseeds and Oilpalm	Mini mission 1st on oilseeds
Target 2.4	National Mission on Agriculture Extension and Technology	1. Sub-mission on agriculture extension 2. Sub-mission on seed and planting (material) 3. Sub-mission on agriculture mechanisation
	Pradhan Mantri Krishi Sinchai Yojana (PMKSY)	1.Accelerated Irrigation Benefit Programme 2.PMKSY-'*Har Khet ko Pani*'—creation of new water sources through minor irrigation 3.PMKSY-per drop more crop—promoting efficient water conveyance and precision water application techniques 4.PMKSY watershed development—effective management of runoff water and improved soil and moisture conservation activities
Target 2.5	Rashtriya Krishi Vikas Yojana (RKVY)	1.Integrated farming system based multipurpose water harvesting projects 2.Promotion of organic farming and soil health management 3.Promotion of farm mechanisation 4. Integrated project of agriculture and soil conservation and natural resource management 5.Protection of agricultural land and crops from wild animals in Uttarakhand 6. Krishak Mahotsav in the *rabi* and *kharif* seasons for creating awareness and extension purpose

Appendix 2.3.1

Vision for Targets Under SDG 8: Decent Work and Economic Growth

Targets for SDG 8	Vision 2030 for Targets
Target 8.1. Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 percent gross domestic product growth per annum in the least developed countries.	Maintain a growth rate of above 5.9 per cent per. annum. The share of consumption expenditure of the bottom quintile in the total consumption will be enhanced to above 9.7 per cent.
Target 8.2. Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value-added and labour-intensive sectors.	Increase the growth rate of the agriculture and allied sectors to above 1.4 per cent per. annum. The construction sector needs to maintain 7.7 percent growth rate while the manufacturing sector is expected to achieve a growth rate of more than 7.3 per cent by 2030.
Target 8.3. Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.	The share of the workforce in non-agriculture would be raised above the baseline value of 56 per cent, and that the shares of regular and formal employment would increase by 2030. The number of MSME units and employment in MSME would increase to 1,70,000 and 8,50,000, respectively, by 2030.
Target 8.5. By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.	Unemployment and under-employment rates would be reduced to below 4.2 per cent and 5 per cent, respectively, by 2030. The women's work participation rate is slated to increase beyond the baseline value of 26.8 per cent and the share of women workers in non-farm activities would increase beyond the baseline value of 18.5 per cent by 2030.
Target 8.6. By 2020, substantially reduce the proportion of youth not in employment, education or training.	Youth unemployment and under-employment rates would be reduced from the baseline levels of 14.3 per cent and 7 per cent, respectively, by 2030, and the share of youth not currently engaged in education, training or employment would be brought down from the baseline level of 24 per cent by 2020. The number of youth trained in vocational trades by the Youth Welfare Department would increase to 5600 by 2030.
Target 8.7. Take immediate and effective measures to secure the prohibition and elimination of the worst forms of child labour, eradicate forced labour and, by 2025, end child labour in all its forms, including the recruitment and use of child soldiers.	The already negligible incidence of child labour in the state will be completely eliminated by 2030.
Target 8.8. Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.	
Target 8.9. By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.	To develop Uttarakhand as a comprehensive, world class tourism destination by realising the untapped potential of sustainable tourism, through the design of innovative tourism products that build on the inherent strengths of the state as a natural destination catering to all categories of tourists.
Target 8.10. Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all.	

Appendix 2.3.2

Targets and Indicators for SDG 8: Decent Work and Economic Growth

Targets/Indicators	Baseline	Vision 2030
Target 8.1		
8.1a GSDP at 2011-12 prices (Rs crore)	173444 Rs cr (2017-18 advance estimate)	367607 Rs cr
8.1b: Per capita GDP growth (%)	7.1% annual average (2012-18)	>7.1%
8.1c: Share of bottom quintile consumption in total consumption (%)	9.7% in 2011-12	>9.7%
Target 8.2		
8.2a: Growth of the agricultural sector (%)	1.4% annual average (2011-12 to 2017-18)	>1.4%
8.2b: Growth of construction sector (%)	7.7% annual average (2011-12 to 2017-18)	Maintain the growth rate
8.2c: Growth of manufacturing sector (%)	7.3% annual average (2011-12 to 2017-18)	>7.3%
8.2d: Labour productivity in agriculture sector	Rs. 93,439 (2011-12)	> Rs. 93,439
8.2e: Labour productivity in non-agriculture sector	Rs. 359,542 (2011-12)	>Rs. 93,439
8.2f: Labour productivity in construction sector	Rs. 198,343	> Rs. 198,343
8.2g: Labour productivity in manufacturing sector	Rs. 1,310,968	Maintain the productivity
Target 8.3		
8.3a: Share (%) of workforce in non-agriculture	56% in 2011-12	>56%
8.3b: Share (%) of regular employment	19.9% in 2011-12	>19.9%
8.3c: Share (%) of formal employment	10.5% in 2011-12	>10.5%
8.3d: Share (%) of Regular Workers in (Public/Government Sector)	44.6% (2011-12)	
8.3e: MSME (numbers)	53 thousand (2016-17)	
8.3f: MSME (employment)	2.5 lakhs (2016-17)	
Target 8.5		
8.5a: Unemployment (15-59 years) (%) \	4.2% in 2011-12	<4.2%
8.5b: Under-employment rate (15-59 years) (%)	5.0% in 2011-12	<5%
8.5c: Share (%) of women employment (15-59 years) in total	26.8% in 2011-12	>26.8%
8.5d: Share (%) of women workers (15-59 years) in non-farm	18.5 % in 2011-12	>18.5%
8.5 e: Share(%) of women workers in regular work (UPS)	12.8% in 2011-12	>12.8%
Target 8.6		
8.6a: Youth unemployment (15-29 years) rate (%)	14.3% in 2011-12	<14.3%

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Appendix 2.3.2 Contd...

8.6b: Unemployment per cent for high educated youth (secondary and above)	17.2% in 2011-12	<17.2 %
8.6c: Youth (15-29 years) underemployment rate (%)	7.0 % in 2011-12	<7%
8.6d: Share (%) of youth (15-29 years) not in education, training or employment.	24% in 2011-12	<24%
8.6e: Number of youth trained in vocational trades (Youth Welfare and PRD Department)	429 in 2015-16	5600
8.6f: Average daily earnings male (regular work)	Rs 453/- in 2011-12	> Rs. 453/-
8.6g: Average daily earnings female(regular work)	Rs 420/- in 2011-12	> Rs. 420/-
Target 8.7		
8.7a: Incidence of child labour (%)	1.0%	nil
Target 8.9		
8.9a1: Tourist arrivals (lakh) in 2016	317.77	
8.9a2: Tourist arrivals (domestic) (lakh)	316.69	3 times
8.9a3: Tourist arrivals (foreign) (lakh)	1.13	3 times
8.9b1: Increase in tourists to lesser known unexplored destinations	19%	33%
8.9b2: Religious tourist destinations (in % of existing tourist destinations)	70	60
8.9 b3: Accommodation (Calculated on the basis of 65 per cent occupancy)	154851	406575
8.9b4: Registration of hotels (under TT) (in % of existing hotels)	875 Nos.	100%
8.9b5: Registration of TA/TOs** (under TT) (in percentage of existing hotels)	172 Nos.	100%
8.9c1: Accreditation (under SRT norms) for hotels (in percentage of total number of hotels)	0	25
8.9c2: Accreditation (under SRT norms) for TA/TOs (in percentage of total number of hotels)	0	25
8.9c3: Accreditation (under SRT norms) for dhabas, eateries and other tourism units (in percentage of total number of hotels)	0	25
8.9d1: Recognition of prior learners and other capacity development measures for mountain and destination guides (Paryatan Mitra), bird watching guides, dhaba owners, porters, cooks, waiters, drivers, etc.	0	20000
8.9d2: Registration of new entrants for mountain and destination guides (Paryatan Mitra), bird watching guides dhaba owners, porters, cooks, waiters, drivers, etc.	330	10000
8.9d3: Registration of existing homestays (%)	NA	100
8.9d4: Development of new homestays (no.)	256	5000
8.9e: No. of Gram Panchayats to be developed for rural tourism	73	500

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Appendix 2.3.2 Contd...

8.9f: Development of 13 new destinations in 13 districts	0	13
8.9g: Tourism development authority/destination management committees	2	25
8.9h1: Infrastructure--Toilet complexes only (no. of seats)	192(1949)	445(3406)
8.9h2: Infrastructure-- Wayside amenities complexes	0	25
8.9h3: Infrastructure--Parking	4	50
8.9h4: Infrastructure—Solid and liquid waste management in Tourist destination	0	50
8.9i: Development of trekking/mountaineering routes /mountain trail biking or MTB) routes (new)	32	200
8.9j: Safety and security—Tourist tracking (% of total tourists)	0	100

Notes: ** TA is Travel Agent and TO stands for Tour Operator. All values for Target 8.9 from 8.9b1 onwards refer to the year 2019-20.

Appendix 2.3.3

Schemes for SDG 8: Decent Work and Economic Growth

Targets	**Centrally Sponsored Schemes/state sector/Direct Intervention Schemes**
Target 8.1: Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	National Service Scheme (NSS)/ VCSG Self Employment Scheme in Tourism/ National Rural Employment Guarantee Schemes(MGNREGA)/National Rural &Urban Livelihood Mission
Target 8.2: Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value-added and labour-intensive sectors	Skill Development Mission/ Jeevika Protsahan Yojana/National Mission on Sustainable Agriculture/Farmer Information Centre at Block Level and Input stores at Nyay Panchayat Level/Promotion of organic farming through UOCB/National Mission on Agriculture Extension and Technology/ National Horticulture Mission/ Organic Finger Millet production programmes
Target 8.3: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalisation and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Social Security for Unorganised Workers including Rashtriya Swasthya Bima Yojana/ Self Helps Schemes/National Rural Employment Guarantee Schemes(MGNREGA)
Target 8.4: Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	Shilpy Gram Yojana/ Self Help Group Scheme
Target 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Integrated Industrial Development Policy for Hills/ Mahila Dairy Vikas/National Rural Employment Guarantee Schemes(MGNREGA)/National Rural &Urban Livelihood Mission/Mukhya Mantri Mahila Satat Ajeevika Yojana
Target 8.6: By 2020, substantially reduce the proportion of youth not in employment, education or training	Self Employment Schemes for Minorities/ Self Employment Scheme In Tourism/Mukhya Mantri Shilp Vikas Yojana/Support from EDI (Entrepreneurship Dev. Institute)/ Mobile Career Consulting Unit. National Integration Programme, Youth Exchange Programme, Adventure Programme, Career Guidance programme conducted by Youth Welfare and PRD Department.

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Target 8.7:Take immediate and effective measures to secure the prohibition and elimination of the worst forms of child labour, eradicate forced labour and, by 2025, end child labour in all its forms, including the recruitment and use of child soldiers	Kaushal Vridhi Yojana/ Establishment of Child Labour Care Centre
Target 8.8: Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment	Mobile Career Consulting Unit
Target 8.9: By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products	VCSG Self Employment Scheme in Tourism Pt. Deendayal Upadhyay Samekit Gramin Paryatan Vikas Yojana. Home Stay Registration Scheme.
Target 8.10: Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all	-

Appendix 2.4.1

Vision for Targets under SDG 9: Industry, Innovation and Infrastructure

Targets for SDG 9	Vision 2030 for Targets
Target 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Target 9.1 The vision is to provide a safe, reliable and sustainable road and rail transportation system for all citizens of the state. The transport infrastructure must be made resilient for this purpose and also be modernised. Loss of life due to road accidents and pollution from vehicles are to be minimised. By 2030, all villages and uncovered areas along state highways will have mobile connectivity and all Gram Panchayats will be connected by Internet.
Target 9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	The vision is to create a sustainable and equitable system in the MSME sector, which can maximise the utilisation of resources and widen the areas of operation to make Uttarakhand's growth inclusive, sustainable, and employment-oriented. The large industries sector is also expected to boost employment generation.
Target 9.3 Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets	Substantially improve the access of small-scale industrial and other enterprises to affordable credit by 2030.
Target 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	
Target 9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	Deploy, use, utilise and leverage biotechnology as an effective tool for catalysing the accelerated economic growth of Uttarakhand by substantially harnessing and converting its bio-wealth into economic wealth. Research activities by Uttarakhand Space Application Centre is to expand in areas such as agriculture forecasting, water quality mapping, GIS-based monitoring for cities, mapping and monitoring of snow/glaciers, and assessment of alpine meadows, over the years till 2030

Appendix 2.4.2

Targets and indicators for SDG 9: Industry, Innovation and Infrastructure

Target 9.1 ***Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all***	Baseline 2016-17	Vision 2030
9.1a Road length per lakh population (km)	322.93	461.29.
9.1b Access to all-weather roads (% villages)	67.665	100
9.1c Telephone connections by (incl WLL) BSNL only	168630	
9.1d Mobile connectivity in villages (%)	55	100% by 2024 and by 2030, uncovered areas along state highways
9.1e Internet connectivity to all Gram Panchayats (% of villages)	10	100
Target 9.2 ***Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries***		
9.2a Industry share in GSDP (%)	48.36	
9.2c Employment generation in the MSME sector (number)	258000	850000
9.2d Employment generation in large industry (number)**	168718	444123
9.3e Number of MSMEs	53000	170000
9.3f Capital investment in MSMEs (Rs crore)	10960	36000
9.3g Number of heavy industries**	1828	4510
9.3h Capital investment in large industries (Rs cr)**	21826	53769
Target 9.3 ***Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets***		
9.3a Households (%) with bank accounts (lakh)	62.71	
Target 9.4 ***By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities***		
Target 9.5 ***Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and increasing the number of research and development workers per 1 million people and public and private research and development spending***		
9.5a Mapping of soil map by USAC	NA	1:4k
9.5b Mapping of waste water sources and sewage by USAC in towns	NA	60
9.5c GIS based city information system developed by USAC in towns	1	20

Appendix 2.4.3

Schemes for SDG 9: Industry, Innovation and Infrastructure

Targets	Centrally Sponsored Schemes/state sector	Direct Intervention Schemes
9.1 to 9.5	1.National Handloom Development 2. Pradhan Mantri Gram Sadak Yojana (PMGSY)	SS 1.Integrated Industrial Policy for Hills 2. Mera Gaon Meri Sadak Yojana 3. Mukhya Mantri Shilp Vikas Yojana 4. Establishment of Hari Ram Tamta Shilp Unnayan Sanshthan
	SS. 1.SIDCUL 2.Udyog Mitra 3.EDI (Entrepreneurship Development Institute)	

Appendix 2.4.4 IT Perspective of Government of Uttarakhand for Vision 2030

	2016	2020	2025	2030	Remarks
Communication					
1.Mobile connectivity across the state (% of villages)	55	70	100	Uncovered areas along state highways	Incentives to mobile service providers
2.Internet connection to all GPs (% of villages)	10	30	70	100	Incentives to internet service providers (ISP)
3.Permission to private ISPs to provide connectivity on leased line	yes	yes	Private ISPs to create infrastructure across the state		
4.Disaster warning through SMS (% of villages)	Nil	70% (high disaster-prone areas)	100		
5.Automated grievance redressal mechanism for all departments (% of departments)	Nil	40	40	100	
Digital Literacy					
1.At least one digitally literate member in a family (% of families)	Nil	70	100		
2.Compulsory computer education-Secondary Schools (% of schools)	10	50	100		
Infrastructure and Industries					
1.Formulation of investor friendly ICT&E policy	Implemented	Valid up to 2025 (review every 3 years)		New policy	Currently under cabinet approval
2.Setting up of IT and education hub at Kashipur	Invitation to Co.s for setting up proposal in state. Addressing the same through IT policy rolled out	Finalization for plan, approval and contract award	Completion by 2025	Commercialization w.e.f 2025	
3.Setting up 3 EMCs in the state	Invitation to Co.s for setting up proposal in state. Addressing the same through IT policy rolled out	1xEMC	2xEMCs	More areas to be identified based on success	

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4.Corporate houses to set up Data Centre Clusters in hilly areas of state	Invitation to Co.s for setting up proposal in state. Addressing the same through IT policy rolled out	1xDC	2-3xDCs	2-3xDCs	
5.Boost to ICT&E industry in Government projects	Establishment of SDC,SSDG, USSWAN and State Portal formalization. Empowerment of ITDA with resources viz. NIC, SeMT, UIDAI,CSC.	Based on success of setting up of industries and prevailing policy guidelines in vogue			
6.Provisioning of G2C services through internet and mobile applications (achievement in % of services)	18	40	70	100	
7.State departments to undergo GPRs and automation of offices thereby resulting in e-governance	5	20	60	100	
8.Inter-departmental G2G services to be done electronically	5	20	60	100	
9.Cashless payment for all G2B and G2C services (% of departments)	Nil	20	60	100	

Appendix 2.4.5 Vision for Uttarakhand Space Application Centre, Department of Science and Technology

Baseline	Targets for year 2020	Targets for year 2024	Targets for year 2030
Forecasting Agriculture Statistics with Landbased and Metrological Data (FASAL)	District level land capability map for all existing crops in Uttarakhand state. Pre-harvest Acreage and production estimation for Wheat, Rice, Sugarcane and pulses in 13 districts of Uttarakhand state Mapping of existing Horticulture crops in Uttarakhand state. Use of SWAT model for impact of climate change on production of Wheat and Rice crop in Uttarakhand state. (Also addresses SDG 13) Mapping of Irrigation system in Uttarakhand state. Mapping of soil map at 1:50k in Uttarakhand state. Field based Geo-spatial mapping of Agriculture area at 1:10k scale using high resolution satellite data in Uttarakhand state. Suitable site identification for cultivation and livelihood generation.	Village level land capability map for all existing crops in Uttarakhand state. Block level pre-harvest Acreage and production estimation for Wheat, Rice, Sugarcane and pulses in Uttarakhand state. Identification of suitable sites for Horticulture and Medicinal plants cultivation in Uttarakhand state. Assessment of Run-off, Sedimentation yield and nutrient loss and their impact on crop yield and land adaptation across altitude gradient by using SWAT model in 5 watersheds of Uttarakhand state. Estimation of Irrigation crop water demand in Uttarakhand state. Mapping of soil map at 1:10k in Uttarakhand state. Creation of Digital maps of traditional crops (Ramdana, Mandua and Sanva etc.) in Uttarakhand state. Site development and leading toward poverty alleviation	Mapping of changing pattern in agriculture crops over the period. Village level pre-harvest Acreage and production estimation for Wheat, Rice, Sugarcane and pulses in Uttarakhand state. In suitable sites, monitoring and management practices will be suggested for Horticulture and Medicinal plants in Uttarakhand state. Assessment of Run-off, Sedimentation yield and nutrient loss and their impact on crop yield and land adaptation across altitudinal gradient by using SWAT model in watersheds for Uttarakhand state. Monitoring and Development of management practices for agriculture and irrigated systems in hilly region of Uttarakhand. Mapping of soil map at 1:4k in Uttarakhand state. Identification of suitable sites of Traditional crops in Uttarakhand state. Agricultural field mapping at 1:4k using high resolution satellite data in Uttarakhand state. Change area assessment in Agriculture area during last 50 years in Uttarakhand state. 10) Sustainable development studies for formulation and implementation toward poverty alleviation
Water quality mapping in 13 districts of Uttarakhand	1) Mapping of Pre and Post water quality parameters 2) Mapping of waste water sources and sewage in 5 towns 3) Identification of potential agriculture irrigation zones in Uttarkashi and Pauri districts.	1) Continuous mapping and Monitoring of water quality 2) Town wise mapping of fifty towns 3) Identification of potential agriculture irrigation zones in eight districts of Uttarakhand 4.) Watershed prioritization using Morphometric techniques and identification of vulnerable watershed	1) Continuous mapping and Monitoring and assessment of water quality parameters using GIS 2) Town wise mapping of 60 towns 3) Assessment and water recharge zone identification of potential agriculture zones of Uttarakhand district 4) Development of GIS based Watershed Monitoring Mechanism for sustainable development of natural resources. 5) Mapping condition and trends of streams and drainage for vulnerable watershed and identification of fast dwindling rivers for rejuvenation

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GIS based city information system for Kotdwara city (e-Kotdwara)	GIS based city information system for Dehradun and Haridwar City	GIS based city information system for 10 major cities of Uttarakhand	GIS based city information system for 20 cities/towns of Uttarakhand
Training and capacity program at school level under the theme SOS (Science of Survival) at District level, initially for Chamoli and Pithoragarh District)	1) Mapping, inventorying change analysis and climate change studies 2) To develop web based urban information system to make easier use of the information to the users. 3) Conducting training and capacity program under the theme SOS (Science of Survival) at all 13 District level	1) Impacts on livelihood and economic upliftment 2) Large scale mapping of urban local bodies will be carried out for urban developmental planning using advanced DGPS instrument and very high resolution satellite data. 3) Conducting training and capacity program under the theme SOS (Science of Survival) at city/town level	1) Development Impacts on livelihood and economic upliftment 2) Development of geospatial database for various levels of urban/rural planning and decision support to meet requirements of urban/rural planning and management. 3) Conducting training and capacity program under the theme SOS (Science of Survival) at Block/village level
1) Mapping and monitoring snow and glaciers in Alaknanda, Bhagirathi and Yamuna basin 2) Automatic snow and grain size mapping OF Dundi glacier using Hyperspectral Remote sensing	1) Snow cover mapping and Glacier retreat studies 2) Grain size mapping using NDSI and SAM methods 3) Climate change studies for policy intervention	1) Continuous mapping and monitoring snow and glaciers in Alaknanda, Bhagirathi, Yamuna and Dhauliganga basins. 2) Automatic snow and grain size mapping of major glaciers of Uttarakhand Himalaya using Hyperspectral Remote sensing 3) Climate change studies policy intervention and formulation	1) Assessment and continuous monitoring of snow and glaciers; retreat will be observed in major glaciers in Alaknanda, Bhagirathi, Yamuna and Dhauliganga basins; decadal analysis of snow cover 2) Assessment of Automatic snow and grain size of major glaciers of Uttarakhand Himalaya using Hyperspectral Remote sensing 3) Climate change studies for formulation and implementation
Assessment of alpine meadows for Medicinal and Aromatic Plants, NTFPs/RET & development of web based information system, [Also address the SDG 12, 13] Detailed vegetation resource maps (species level) and change studies at district level [Also address the SDG 12, 13]	1) Assessment of alpine meadows for Medicinal and Aromatic Plants, NTFPs/RET & development of web based information system, 2) Development of Gram Panchayat level geo-spatial resource maps of for one district (Pithoragarh) 3) Ecosystem Services assessment in selected Natural Sacred Sites (SNS). 4) Geospatial vegetation assessment of 5 Protected Areas of Uttarakhand 5) Development of important natural resource management system/plan (Banj oak: (Quercus sp.) for the Uttarakhand state. 6) Mapping, inventorying of forest resources including NTFP and Medicinal plants for site suitability and monitoring 7) To generate Land resource mapping database of Land Use/Land Cover, Wasteland, Land Degradation for the entire state of Uttarakhand at using latest date satellite data at 1:10K scale.	1) Decadal assessment of Alpine meadows of the Uttarakhand state 2) Geo-spatial vegetation resource map (species level) at Gram Panchayat for Uttarakhand state 3) Ecosystem services assessment of natural resources at district level 4) Geospatial vegetation assessment of all the Protected Areas of Uttarakhand 5) Development of species level natural (10 major tree species) resource management system/plan by using high resolution spatial data. 6) Mapping, inventorying of forest resources including NTFP and Medicinal plants for site suitability monitoring and conservation 7) To generate and update Land Use/Land Cover, Wasteland, Land Degradation database at 1:4K scale for the entire state using very high resolution satellite data.	1) Continuous monitoring of Alpine meadows and identify changes over the period 2) Monitoring and change analysis of species at landscape level. 3) Ecosystem services assessment of natural resources at state level. 4) Geospatial Biodiversity mapping assessment of all the Protected Areas of Uttarakhand 5) Development of species level natural resource management system/plan by using high resolution spatial data for the state 6) Mapping, inventorying of forest resources including NTFP and Medicinal plants for site suitability monitoring and conservation and management 7) To develop Land Resource Information System Geo-Portal for easy access of information to the users.

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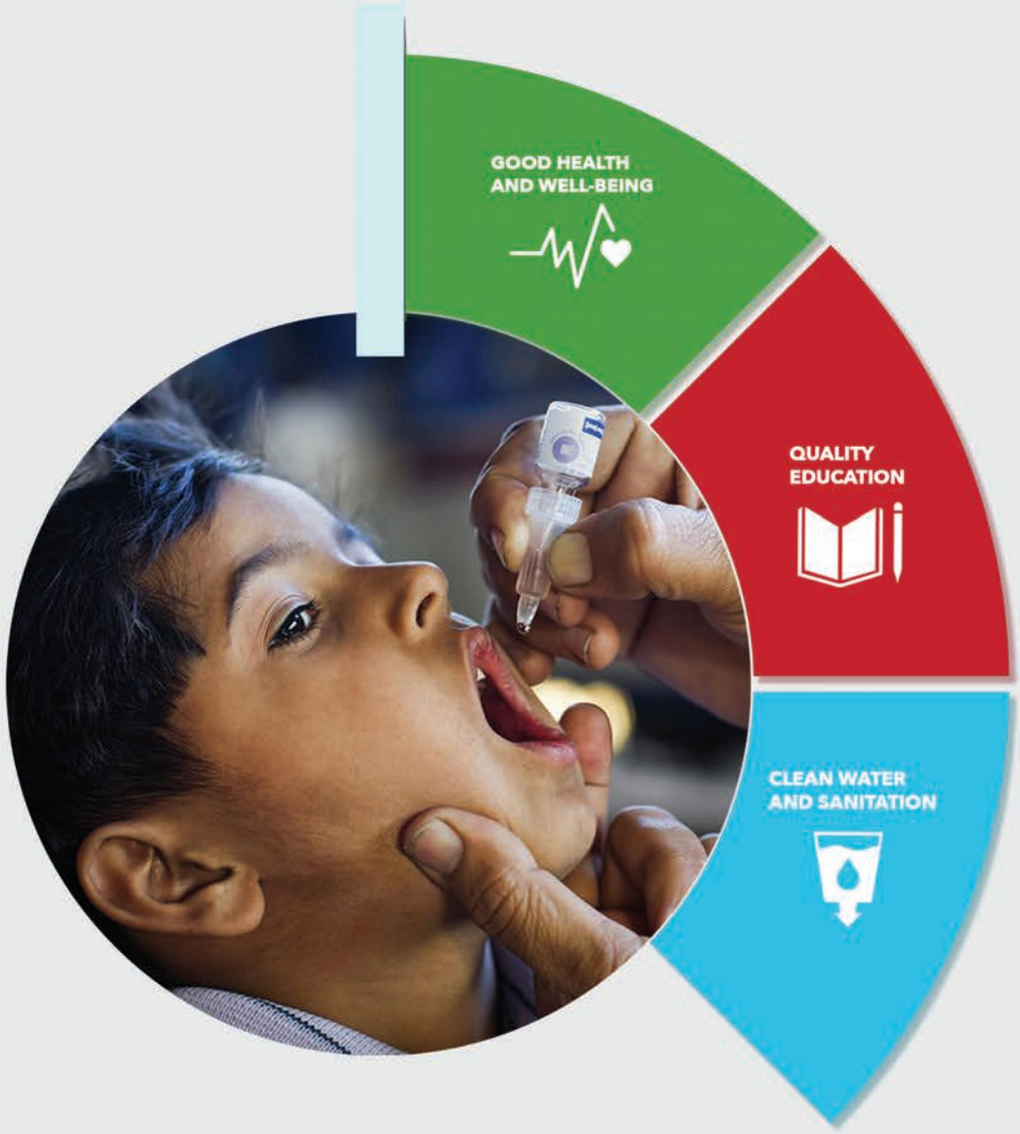
1) Geospatial mapping (geo tagging) of public assets (Infrastructure, Government, Human and livestock and natural resources) and integration in Government schemes of Pithoragarh district (Pilot district).	1) Geospatial mapping (geo tagging) of public assets (Infrastructure, Government, Human and livestock and natural resources) and integration in Government schemes of 3 districts 2) Partnership with Universities Technical Institutions, Departments to achieve the goal and giving training to them to disseminate and spread knowledge of Science and Technology. 3) Creation and management of digital geospatial temporal database at 1:50K and 1:10K for multi-thematic layers of Uttarakhand state i.e. Road, Settlement, Drainage, Land Use/ Land Cover, Wasteland, Land Degradation, Wetland, Forest Type, Geology, Geomorphology, DEM, Slope, Aspect etc. 4) Development & Publishing of Geospatial Service Portal (Level 1 : Visualization) for 8 themes – Base Map, Constituency Map, Land Resource Map, Tourism Map, Urban Information System, Village Map, Disaster Services, Char Dham Route Map. 5) Year wise procurement & management of new multi-resolution & temporal satellite data.	1) Geospatial mapping (geo tagging) of public assets (Infrastructure, Government, Human and livestock and natural resources) and integration in Government schemes at state level. 2) Mapping, analysis and GIS preparation of target Partners. 3) To bring the entire geospatial database of various layers in uniform scale, projections and datum using satellite data, GPS/DGPS in GIS environment. To create Seamless data base for all districts of the State at 1:10K & 1: 4K scale of all the themes. 4) Development & Publishing of Geospatial Service Portal (Level 2 : Data Editing) for 8 themes i.e. Base Map, Constituency Map, Land Resource Map, Tourism Map, Urban Information System, Village Map, Disaster Services, Char Dham Route Map. 5) Year wise procurement & management of new multi-resolution & temporal satellite data.	1) Updation of public assets and integration with the Central and State Government schemes. 2) Partnership with Universities Technical Institutions, Departments to achieve the goal and giving training to them to disseminate and spread knowledge of Science and Technology. Mapping, analysis and GIS preparation of target Partners. 3) To bring the entire geospatial database of various layers in uniform scale, projections and datum using satellite data, GPS/DGPS in GIS environment. To create Seamless data base for all districts of the State at 1:10K & 1: 4K scale of all the themes. 4) Development & Publishing of Geospatial Service Portal (Level 2 : Data Editing) for 8 themes i.e. Base Map, Constituency Map, Land Resource Map, Tourism Map, Urban Information System, Village Map, Disaster Services, Char Dham Route Map. 5) Year wise procurement & management of new multi-resolution & temporal satellite data.

Chapter 3

Human Development



The concept of human development was originally introduced in the 1990s to define development in terms of people's capabilities and freedom to access a wider range of choices that had been till then limited to economic development and its concomitant choices. The three basic tenets of human development were education, health, and income, indicating that all of them were important for assessing a nation's progress in terms of human development. Later, many other aspects such as access to basic services such as water, sanitation and housing, as well as features related to gender, and inequality came to be added to the human development indicators.

SDG 3 concerns Good Health and Well-Being, SDG 4 concerns Quality Education, and SDG 6 concerns Clean Water and Sanitation. These three goals are considered together under the category 'Human Development' for further discussion in the context of the state of Uttarakhand. The economic growth aspect of human development has been subsumed in many other goals such as SDG 8, SDG 9 SDG 1 and SDG 2, in terms of access to basic food, and remaining out of poverty, among other indicators

SECTION 3.1

SDG 3: Ensure Healthy Lives and Promote Well-Being for All at All Ages

Ensuring the health and well-being of people at all ages lies at the heart of sustainable development. Morbidity and mortality have an impact on well-being at both the individual and community levels. An increase in the number of healthy years in the lives of its people strengthens the economic growth and prosperity of a nation. SDG 3 deals with the issues that ensure a healthy life and promote well-being for all. It addresses all the major health priorities, including reproductive, maternal, and child health; communicable, non-communicable, and environmental diseases; universal health coverage; and access for all, to safe, effective, high-quality, and affordable medicines and vaccines.

The Vision for Goal no. 3 for the state of Uttarakhand is as follows:

> ***By 2030, good health and well-being will be ensured for all citizens of the state by attaining robust child and maternal health, reduction or elimination of communicable and non-communicable diseases as well as expansion of healthcare services.***

The vision for targets of Goal No. 3 are presented in Appendix 3.1.1, followed by values for indicators (baseline and vision 2030) in Appendix 3.1.2, and Appendix 3.1.3 contains the schemes applicable for Goal no. 3. Annexure 3 contains the detailed information regarding indicators for Goal no. 3 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

In the present section, Targets 3.1 and 3.2 have been discussed together, followed by the other targets that have been discussed individually. This is followed by an analysis of the baseline situation, and an outline of the vision for 2030 for the state. The challenges and strategies for the health sector have been discussed at the end.

Reproductive, Maternal, New-born and Child Health

A reduction in maternal and child mortality is among the most important health goals of the Government of India. In order to achieve these goals, the Government of India has been devising different action plans in the form of programmes under the National Rural Health Mission (NRHM),which was initiated in 2005. In 2013, the Reproductive, Maternal, New-born, Child and Adolescent Health (RMNCH+A) approach was launched to address the major causes of mortality among women and children as well as the delays in the accessing and utilization of health care and services. SDG 3.7 pertains to access to sexual and reproductive healthcare services, including family planning.

Target 3.1 By 2030, reduce the maternal mortality ratio to less than 70 per 100,000 live births

Target 3.2 By 2030, end preventable deaths of new-borns and children under 5 years of age, and aim to reduce neonatal mortality and under-5 mortality

Baseline for Uttarakhand

At the national level, the Maternal Mortality Ratio (MMR) declined from 254 in 2005 to 167 per

SDG 3

Ensure Healthy Lives and Promote Well-Being for All at All Ages

Uttarakhand Vision for SDG 3

By 2030, good health and well-being will be ensured for all citizens of the state by attaining robust child and maternal health, reduction or elimination of communicable and non-communicable diseases as well as expansion of healthcare services.

Uttarakhand Today

- The current (2012-13) MMR in Uttarakhand is 165 per 100000 live births compared to 167 at the national level (2011-13)
- In 2015-16, both IMR (40 per 1000 live births) and U5MR (47 per 1000 live births) in the state were lower than the corresponding national averages
- Incidence of Non-communicable disease is an emerging area requiring attention
- There is severe shortage of health personnel, especially in the hills, for doctors, surgeons, etc. at PHCs and CHCs

Focus for Tomorrow

- To reduce maternal mortality and child mortality
- To reduce the incidence of communicable diseases such as TB and malaria
- To tackle the incidence non-communicable disease with the help of alternative medicines such as ayurveda, yoga, homeopathy, naturopathy, unani, Siddha etc. (AYUSH).
- To increase universal health coverage as reflected in Ante-natal Care, Post-natal Care, share of institutional delivery, etc.
- To plug the gaps between the health services personnel requirement and availability

Targets for 2030

- Reduce MMR from 165 to 70 per 100,000 live births
- Reduce Under Five Mortality Rate from 47 to 25 per 1000 live births
- Attain immunization of more than 95 percent of children
- Eliminate malaria from the state

1,00,000 live births[1] in 2011-13. In Uttarakhand, the current MMR is 165 per 1,00,000 live births (AHS, 2012–13).There is disparity between the two divisions of Kumaon Headquarters and Garhwal Headquarters, with the former recording a value of 182 as compared to just 158 for the Garhwal region.

Globally, 76 lakh children died in 2010 before reaching their fifth birthdays and India accounts for nearly 20 per cent of the world's child deaths (MoHFW, 2013). Table 3.1 shows the levels of Infant Mortality Rate (IMR) and the Under 5 Mortality Rate (U5MR) for Uttarakhand, and the all-India levels for 2005-06 and 2015-16, along with rural–urban differences.

Table 3.1 shows that Uttarakhand had better health indicators than the national average, in terms of the IMR and U5MR for both years under consideration. In both cases, the levels of IMR and U5MR declined over the intervening ten years between the two NFHS rounds, but the decline in IMR in Uttarakhand was very marginal during this period, which is a matter of concern. However, while the rural indicators in the state for 2015-16 are better than those for the urban ones, the opposite is true at the all-India level. Immunization is extremely important for child survival and the baseline value for the indicator of the percentage share of fully immunised children is 79.6 per cent.

Vision 2030 for Targets 3.1 and 3.2

The vision for **Target 3.1** is to reduce the maternal mortality ratio to less than 70 per 1,00,000 live births gradually by 2030, down from the baseline level of 165. The interim targets aimed at are 141 by 2019-20, and 94 by 2023-24, respectively.

The vision for Target 3.2 is to reduce the preventable deaths of new-borns and children under 5 years of age to 25 per 1000 live births. Given the baseline levels of the total IMR at 40 (rural 39, urban 44), the interim targets would be to reduce the total IMR to 36 (rural 36 and urban 39) by 2019-20, and to attain a level of 29 (rural 29, urban 30) by 2023-24.

As regards the U5MR, the interim timelines have the following targets: from a baseline of 47 (rural 46, urban 49), the U5MR will be reduced to 42 (rural 41, urban 43) by 2019-20, and to a level of 31 (rural 30, urban 31) by 2023-24.

The immunisation baseline is fairly high at nearly 80 percent in Uttarakhand, and the vision is to increase the share of the fully immunised child population gradually to 85 per cent by 2019-20, and to 95 per cent by 2023-24, and to cover more than 95 per cent by 2030.

Figure 3.1: Vision 2030 for selected Indicators for Maternal and Child Health in Uttarakhand

Source: Based on information provided by Government of Uttarakhand

Table 3.1 Child Health Indicators for Uttarakhand and All-India

	Uttarakhand				All India			
	2005-06	2015-16			2005-06	2015-16		
	Total	Rural	Urban	Total	Total	Rural	Urban	Total
IMR	42	39	44	40	57	46	29	41
U5MR	56	46	49	47	74	56	34	50

Source: National Family Health Surveys Rounds 3 and 4

1. SRS for various years.

Infectious Diseases and Non-communicable Diseases

Target 3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical

Target 3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

Box 3.1 Best Practices for Maternal and Child Health

Odisha's Mamata scheme is a maternity benefit cash transfer scheme for pregnant and lactating women aged 19 years and above This scheme does not entail any income criterion for assessing eligibility of the beneficiaries. Implemented through the existing Integrated Child Development Services(ICDS) programme, the scheme monitors the fulfilment of 20 verifiable conditions from the second trimester of pregnancy till the infant completes nine months of age, with the anganwadi workers and Auxiliary Nurse Mid-wives(ANMs) providing the necessary services.

This scheme was introduced with the following aims:

- To provide partial wage loss compensation for pregnant and nursing mothers;
- To increase utilisation of mother and child healthcare services; and
- To improve mother and childcare practices.

This scheme uses the Mother and Child Protection (MCP) card as the main source of verification of the fulfilment of conditions. The ANMs and anganwadi workers fill up some of the information in the card, as the entries in the MCP card require the signatures of both. This card helps to track pregnant women for ante-natal and post-natal care, the immunisation status of children, and their growth and nutritional status.

Source: Endow, et al., 2015.

Table 3.2 Baseline Infectious Diseases

Indicators	Baseline status
3.3aPrevalence of HIV and AIDS across different types of high-risk categories.	The estimations of the Human Immunodeficiency Virus (HIV) have regularly been undertaken in India since 1998.According to the India HIV report (2015) by the National AIDS Control Organization (NACO) and National Institute of Medical Statistics (NIMS), the epidemic in India is overall declining, from an estimated peak of 0.38per cent in 2001-03 through0.34per cent in 2007 and 0.28per cent in 2012 to 0.26per cent in 2015. A similar pattern has been observed for both males and females at the national level. It shows decreasing trends in HIV prevalence, but new HIV infections and AIDS-related deaths persist at the national level. However, the dynamics and patterns of the epidemic are not uniform across the country. In Uttarakhand, the current HIV prevalence among the adults for the age group 15-49 years is 0.11 per cent.
3.3bPrevalence of tuberculosis (TB) per 100,000 population	India accounts for one-fourth of the global TB burden[a]. In 2015, the estimated number of TB cases in India was 28 lakhs, and number of deaths due to TB was 4.8 lakhs, though both the incidence and the mortality related to TB have declined over the years. At present, the incidence of TB in Uttarakhand is 147 per 1,00,000 population.
3.3cConfirmed malaria cases (number)	Over time, the burden of malaria has reduced significantly in the country as a whole. In the last 10 years,the total number of malaria cases in the country declined by 42 per cent[b]. As per the National Framework for Malaria Elimination in India, 2016-2030,in Uttarakhand, the total number of malaria cases declined from 2008 to 1171 between 2000 and 2014, while the number of Plasmodium Falciparum(PF) cases, referring to cases of 'cerbral malaria' fell from 424 to 89, and the number of malaria-related deaths during that period was zero.

3.3d Registered prevalence rate (per 1,00,000 population) for leprosy	Leprosy is considered as a neglected tropical disease. India accounted for 58.85per cent of the global leprosy burden in 2013[c]. As compared to the all-India prevalence rate of 0.69 of leprosy, the prevalence rate for the state of Uttarakhand is 0.35 in 2014-15[d]. For the same year, the new disability case rate due to leprosy in the state was 1.01 per million population (as compared to the rate of 4.48 at national level). The number of child leprosy cases detected in the UK in 2014-15 was 0.17 per 100000 population, whereasthe corresponding all-India rate was 0.88. The child disability case rate in Uttarakhand was 0.01 per 1,00,000 population as compared to the rate of 0.019 at the national level.
3.3e Confirmed cases of Hepatitis A and Hepatitis B	At present in Uttarakhand, the confirmed cases of Hepatitis A and Hepatitis B are 10,677 and 254, respectively.
3.3f Annual incidence of diarrhoea (per 1000)	In the state The annual incidence of diarrhoea in the state is 10.3 per 1000 population.

Source:
[a] Annual TB report of India (2017).
[b] National Framework for Malaria Elimination in India 2016-2030.
[c] WHO (2013).
[d] Monthly progress report for the year 2014-15.

Baseline for Uttarakhand

As regards the diseases included under Target 3.3, dealing with hepatitis, water-borne diseases, and other communicable diseases would also include the challenges related to some aspects of infectious disease control such as Target 3.8 (universal health coverage), Target 3.9 (reduction of mortality due to environmental factors), and SDG 6 (improving water and sanitation).

Vision 2030 for Target 3.3

The Vision 2030 for infectious diseases is presented in Table 3.3.

Table 3.3 Vision 2030 for Infectious Diseases

Indicators	Baseline	2019-20	2023-24	Vision 2030
3.3aPrevalence of HIV and AIDS across different types of high-risk categories (%).	0.11	0.08	0.03	0
3.3bPrevalence of tuberculosis (TB) per 100,000 population	145	118, Reduction by 20%	73, Reduction by 50%	29, Reduction by 80%
3.3cConfirmed malaria cases (number)	914	500	Near to elimination	Near to elimination
3.3d Registered prevalence rate (per 100,000 population) for leprosy	0.24	0.19	0.12	Near to elimination
3.3e1Confirmed cases of Hepatitis A	10677	9609	8648	7783
3.3e2Confirmed cases of Hepatitis B	254	229	206	185
3.3f Annual incidence of diarrhoea (per 1000)	10.3	9.27	8.34	7.51

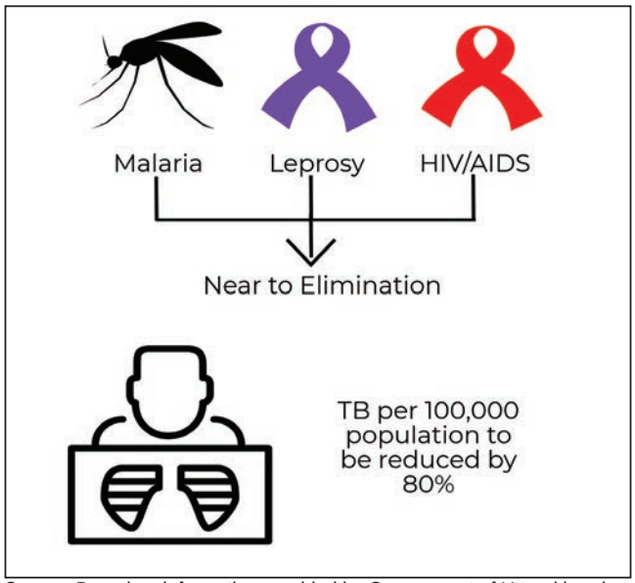
Source: Government of Uttarakhand

Target 3.4 By 2030, reduce by one-third premature mortality from non-communicable diseases and promote mental health and well-being

Baseline for Uttarakhand

Target 3.4 includes targets for the reduction of non-communicable diseases (NCD)-related

Figure 3.2: Vision 2030 for Selected Indicators for Infectious Diseases



Source: Based on information provided by Government of Uttarakhand

mortality and promotion of mental health. Each year, 16 million people die prematurely, that is, before the age of 70,from heart and lung diseases, stroke, cancer, and diabetes.[2] Reportedly one in four Indians face the risk of death from an NCD before they reach the age of 70. Further, depression and anxiety cause mental disorder, and at its worst, depression can also lead to suicide.

According to the Indian Council of Medical Research (ICMR) Survey (2008-09) in Uttarakhand, in the case of hypertension, 32 per cent of the respondents suffering from the disease were normal, 49 per cent fell in the category of pre-hypertension, 14 per cent were suffering from stage I hypertension, and only 5 per cent from stage-II hypertension. The survey revealed that only 1.2 per cent of the respondents were diabetic. In contrast, the survey for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS) (2012) reported a prevalence of 5.7per cent for these diseases as compared to a national prevalence of about 7 per cent.

The latest available estimate for the mortality rate for the state attributable to various NCDs is quite high, at around 48 per cent.3 The baseline estimates for the share of people with high blood cholesterol is 13.9 per cent4 and for the share of people aged 15-69 years with high blood pressure is 26.8 per cent,5 in the state.

Vision 2030 for Target 3.4

The vision is to reduce mortality from NCDs to 16 per cent by 2030, with interim targets of 42 per cent by 2019-20, and 35 per cent by 2023-24.Mortality from NCDs can also be reduced through prevention and treatment. The share of people with high cholesterol levels will be successively brought down from the baseline value to 11per cent by 2019-20, 8 per cent by 2023-24, and 4.5per cent by 2030. Another indicator for this target is the percentage of people aged 15-69 years with high blood pressure in order to capture a commonly prevailing NCD. This share will be consecutively brought down to 21per cent by 2019-20, 16 per cent by 2023-24, and 9 per cent by 2030. The government will aim to reduce the share of people with mental health problems by 10 per cent, 15per cent, and 30 per cent, for the three timelines, respectively.

It is also posited that Ayurvedic, Unani, homeopathy and such traditional modes of treatment

2. WHO Report (2015) on NCDs.

3. Provided by the state government based on GBD 2014 estimates.

4. Provided by the state government based on ICMR estimates.

5. Provided by the state government based on NFHS 2015-16 estimates.

can provide an effective alternative to the accepted allopathic route of treating patients. This fledgling sector, which has an immense potential, is also developing rapidly in the state (see Box No. 3.2 and Appendix 3.1.4 for vision for AYUSH).

Target 3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol

Baseline for Uttarakhand

The estimated number of hard drug users in Uttarakhand in 2007 was is around 3000.[6]

Vision 2030 for Target 3.5

The vision for Target 3.5 is that the estimated number of hard drug users will be halved from the baseline level of 3000 to 1500 by 2030.

Target 3.6 By 2020, halve the number of deaths and injuries from road traffic accidents

Baseline for Uttarakhand

As per data for the period January to October 2016, the number of road accidents occurring in the state was 1342, the number of deaths due to accidents was 801, and the number of cases of injuries was 1497.

Box 3.2: AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy) and NCDs

As the lifestyle of people, especially city dwellers, becomes more complex and ridden with stress, people are turning to alternative medicines such as ayurveda, yoga, homeopathy, naturopathy, unani, and so on. These systems of medicine have proved to be highly useful for preventing and tackling NCDs such as diabetes, hypertension, arthritis, and age-related disorders, among others. The Panchakarma therapy and Kshar-sutra are especially effective treatment for diseases like piles and fistula. Yoga is now internationally renowned for guiding people to a healthy way of living and consequently, the popularity and scope of practices like yoga and pranayamaare increasing daily. Thus, the department of AYUSH is gaining increasing importance in maintaining good health and treating NCDs.

The following facilities and units are currently operative in the state with regard to the AYUSH system of medicine:

- 549 Ayurvedic and Unani dispensaries and 97 Homeopathic dispensaries;
- 8 upgraded Ayurvedic and 1 Homeopathic hospital;
- 38 Panchakarma units;
- One Ayurvedic University equipped with three campuses along with attached hospitals;
- One Ayurvedic Pharmacy each under the state government and the Central Government, producing high quality Ayurvedic drugs using local herbal drugs. In addition, 247 Ayurvedic pharmacies are manufacturing Ayurvedic and Unani drugs in the private sector.
- At present,there are 110 state homeopathic hospitals with 105 medical officers and 105 pharmacologists. There are also 5 Reproductive Child Health (RCH) units and 4 skin disease clinics in the state.

The strengthening of AYUSH will not only help the state in attaining Goal No. 3, and in tackling NCDs, in particular, but will also have a positive impact on the attainment of other SDGs. For instance, it is expected to augment the cultivation of medicinal herbs in the hills on a large scale, which will be bought by the Ayurvedic and Unani pharmacies working both inside and outside the state. This will assist in boosting farmers' income and reduce migration from the state.

The strengthening of AYUSH can also help promote tourism. Yoga and Panchkarma centres have been proposed in the National AYUSH Mission document. This initiative, with co-operation from the tourism sector, can attract a large number of tourists. Medical tourism can be further enhanced by developing centres such as AYUSH Grams, Yoga Grams, and Wellness Centres, and the government can also opt for private sector participation in this sphere. Local employment and income will get a boost through such initiatives.

Herbal drug cultivation is being promoted by a Herbal Research and Development Institute in Chamoli district. Village clusters have been developed by this centrally aided institute for cultivating 6 medicinal herbs in 73 acres of land. There is considerable scope for expansion of this activity.

Source: Government of Uttarakhand

6. Raman Development agency selected by NACO for Injection Drug Uses (IDUs), (2007) cited by the state government.

Vision 2030 for Target 3.6

The baseline (January-October 2016) levels of accidents (1342), deaths due to accidents (801), and injuries (1497), are to be gradually reduced to 671 (accidents), 400 (deaths due to accidents), 748 (injuries) by 2019-20, and thereafter to 336 (accidents), 200 (deaths due to accidents), 370 (injuries), and eventually to a low level of 168(accidents), 100 (deaths due to accidents), and 175 (injuries), respectively.

Target 3.7 By 2030, ensure universal access to sexual and reproductive healthcare services, including for family planning, information and education

Baseline for Uttarakhand

According to NFHS reports, the current use of family planning methods in Uttarakhand among the currently married women in the age group of 15-49 years has decreased from 59.3 per cent in the year 2005-06 to 53.4 per cent in the year 2015-16.With reference to the use of any modern family planning method, the share has decreased from 55.5 per cent to 49.3 per cent. In 2015-16, the difference was not very significant between rural (49.8 per cent) and urban (48.4 per cent) areas with regard to the share of currently married women using any modern family planning method.

Antenatal care is important for monitoring the progress of foetal growth and maintaining the health of the mother. Currently, the number of women accessing the complete antenatal package, that is, mothers who had at least four antenatal care visits in Uttarakh and is quite low, at 31 per cent, with very poor rural coverage (26 per cent) (NFHS-4, 2015-16). In contrast, the urban coverage is much higher, at 41 per cent. Institutional delivery reduces the risk for both child and mother during delivery. Thus, the number of institutional deliveries is an indicator of safe delivery and a precondition for ensuring the mother's health and the birth of a healthy baby. In Uttarakhand, the proportion of institutional births is around 69 per cent (NFHS-4, 2015-16), which is less than the national average of 79 per cent. The incidence of institutional births is lower in rural areas, at 64 per cent than in urban areas, at 79 per cent.

Post-natal care (PNC) is critical for the survival of the newborn and the mother. The coverage of PNC, that is, mothers who received postnatal care from a doctor/nurse/Lady Health Visitor (LHV)/ANM/midwife/other health personnel within two days of delivery, is 55 per cent in Uttarakhand, with the figure being 49 per cent for rural areas, and 66 per cent for urban areas (NFHS-4, 2015-16). Here, too, the corresponding coverage of Uttarakhand is lower (62 per cent) than the national level.

According to the NFHS-4 (2015-16) data, the Total Fertility Rate (TFR) in Uttarakhand is 2.1, with the rural and urban TFRs being 2.2 and 1.8, respectively.

Vision 2030 for Target 3.7

The vision is as follows:

3.7a By 2030, increase the contraceptive prevalence rate to 66 percent.

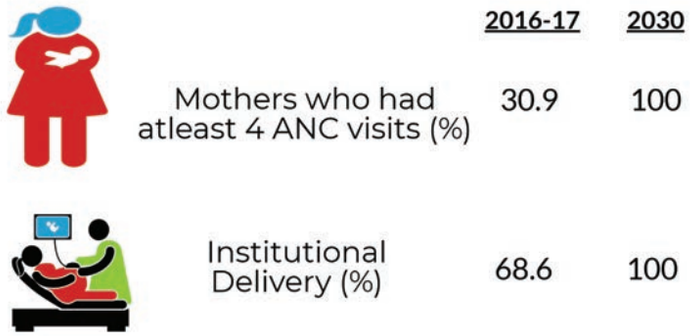
3.7b By 2030, increase the ANC coverage (at least 4 visits) to 100 percent

3.7c By 2030, increase the institutional delivery to 100 percent

3.7d By 2030, increase the PNC coverage for Mothers to 100 percent

3.7e In 2030, maintain the TFR at the current level, 2.1.

Figure 3.3: Vision 2030 for Selected Indicators for Reproductive Health Care in Uttarakhand



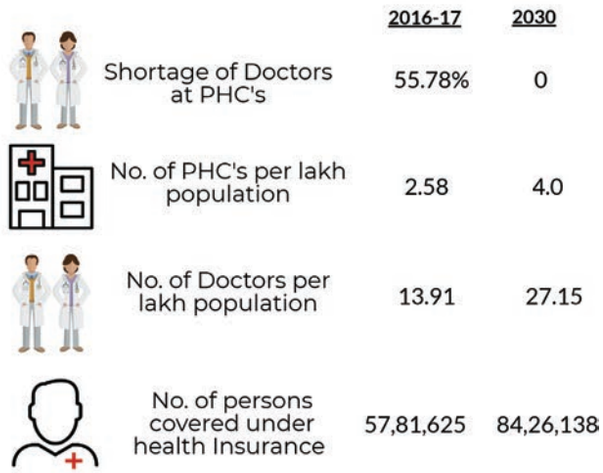
Source: Based on information provided by Government of Uttarakhand

Table 3.4: Existing Availability of Health Personnel in Uttarakhand

Cadre	Sanctioned	In Position	Vacant	Vacant as a Share of Sanctioned Posts (%)
Allopathic Doctors at PHC	147	65	82	55.78
Surgeon at CHC	83	6	77	92.77
OBG at CHC	79	7	72	91.00
Physician at CHC	79	5	74	93.67
Paediatrician at CHC	80	14	66	82.50
Total Specialists at CHC	321	32	289	91.00

Source: Government of Uttarakhand

Figure 3.4: Vision 2030 for Selected Indicators for Availability of Health Services in Uttarakhand



Source: Based on information provided by Government of Uttarakhand

Target 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

Baseline for Uttarakhand

Health systems need to be strengthened as well as adapted to meet the shifting health priorities associated with demographic and epidemiological transitions, rapidly developing technologies, and changing public expectations. The existing availability of health personnel in the Uttarakhand public health service is in an alarming state, as shown in Table 3.4. It shows that there is an acute shortage of 91 per cent of specialist doctors in Community Health Centres (CHCs).

Vision 2030 for Target 3.8

The vision for the state health services is that the gaps in availability of health personnel will be sought to be filled in the coming years, for doctors and paramedicals, in particular (see Table 3.5).

Challenges for the Health Sector[7]

- Health is not a stand-alone issue and there has to be coordination with other departments. For instance, there is a huge requirement of doctors for reducing the MMR, but the number of doctors and health personnel available is inadequate, especially in the hilly districts. Access in the hills is a major challenge and retention of doctors is even more of a hurdle.

7. Much of the material here has been obtained from an interview with the Secretary, Health Department and state government health officials.

Table 3.5: Vision for the Availability of Health Services in Uttarakhand

Health Personnel	Base Line (2016)	2019-20	2023-24	2029-30
No. of doctors per lakh population (hills and plains)	13.91	14.19 (2% Increase)	23.58 (5% Increase)	27.15 (7% Increase)
No. of paramedicals per lakh population (hills and plains)	38.57	39.34 (2% Increase)	40.50 (5% Increase)	41.27 (7% Increase)
No. of hospitals beds per lakh population (hills and plains)	1032	1270	1508	1750
No. of PHC per lakh population (hills and plains)	2.58	3.08	3.58	4.00
No. of maternity and child care centre per lakh population (hills and plains)	18.97	21.47	23.97	26.50
No. of other health centres per lakh population (hills and plains)	3.44	5.62	7.80	10.00
Number of persons covered under health insurance(R)	24,28,275	29,40,000	31,98,542	35,38,978
Number of persons covered under health insurance(U)	33,53,350	40,60,000	44,17,035	48,87,160
Number of persons covered under health insurance (T)	57,81,625	70,00,000	76,15,577	84,26,138

Source: Government of Uttarakhand

- As regards the IMR, there are some complicated cases wherein complications often arise due to post-partum haemorrhage (PPH). This needs specialised attention and may involve a situation wherein the mother needs to stay in the hospital for at least two days. However, many of the patients are from a poor socio-economic background and cannot afford to stay in the hospital as that would entail foregoing their wage earnings.
- The level of public health expenditure in Uttarakhand is low, at less than 1 per cent of the GSDP as compared to a requirement of around 3 per cent. Hills need more manpower and infrastructure than the plain areas because there is a shortage of 75 per cent with regard to medical infrastructure in the hills as compared to an overall corresponding figure of around 60 per cent for the state. There is also a severe shortage of doctors and lack of facilities for surgery though the shortage of other infrastructure in terms of buildings and medicines, among other things, is not significant.
- As regards public health facilities, there is infrastructural shortage of human resources, bed strength, and the total number of facilities.

Strategy for attaining the Vision 2030 for the Health Sector

Maternal and child health: Targets 3.1 and 3.2

In order to combat the situation of maternal and child death, presently two Centrally Sponsored Schemes are functioning in Uttarakhand, viz., the Pradhan Mantri Swasthya Suraksha Yojana (PMSSY), and the Integrated Child Development Services (ICDS). For achieving the targets by 2030, the state government has to work hand in hand with the Central Government to execute the centrally sponsored schemes effectively. For improving the ANC as well as PNC coverage and institutional delivery, the state should focus on strengthening the health facilities in terms of human resources, infrastructure, and equipment, among other facilities.

In order to ensure safe delivery and reduce delivery-related complications, there is a need to increase the number of delivery facility points that can work round the clock, with a special focus on the rural areas. The increase in awareness among the public regarding various programmes also entails a rise in the coverage of institutional deliveries by ensuring a minimum stay of 48 hours for

the new mother at a health facility. Post-natal care should focus on the starting of breastfeeding within one hour of birth and exclusive breastfeeding up to the infant's age of six months.

According to NFHS reports, the current use of family planning methods among the currently married women in the age group 15-49 years has decreased by 6per cent over the years 2005-06 to 2015-16. This is a very striking and unusual development. It is thus imperative for the State Government to properly monitor the existing family planning programmes in order to enhance the use of family planning practices. One of the key strategies for controlling the TFR is to strengthen family planning services in the districts where the TFR exceeds the national average. In addition, the use of contraceptives will be promoted in the rural areas.

On the basis of the existing maternal and child mortality situation, in order to attain the targets of Goal No. 3, the state needs to ensure the following by 2024:

a. Decrease in the MMR from 165 to 94 per 1,00,000 live births by 2024;
b. Decrease in the U5MR from 47 to 31 per 1000 live births by 2024;
c. Decrease in the IMR from 40 to 29 per 1000 live births by 2024;
d. Increase in the current use of modern family planning methods among the currently married women in the age group 15-49 years from 49 per cent to 59 per cent by 2024;
e. Increase in the ANC coverage to 83 per cent by 2024;
f. Increase in the coverage of institutional delivery to 92 per cent by 2024;
g. Increase in the PNC coverage to 89 per cent by 2024; and
h. Maintenance of the TFR at the rate of 2.1 by 2024.

The SDG targets are not independent from each other. In order to achieve the targets of SDG 3.1 and 3.2, it is essential to focus on the SDG targets 2.2 (on child nutrition), 6.1, and 6.2 (on safe drinking water and sanitation).

Communicable Diseases: Target 3.3

For combating HIV/AIDS, the state government should focus on increasing awareness among the general population, especially the youth. There should also be a focus on intervention for the use of preventive measures, especially for the high-risk population group. It is essential to augment the available HIV test facilities to enable everyone to access them easily, and for HIV-positive people, it is essential to increase facilities for the provision of Anti-Retrovial Drugs (ART).

For reducing the incidence of TB, early diagnosis, including universal drug-susceptibility testing and systematic screening of contacts and high-risk groups, is required. The state government should take the initiative to increase preventive measures including vaccination. In India, the National Tuberculosis Programme (NTP) was initiated in 1962to combat TB. This programme was revised in 1997 as the Revised National Tuberculosis Control Programme (RNTCP) that used the WHO-recommended DOTS (Directly Observed Treatment, Short-course Chemotherapy) strategy. As regards the coverage of the programme, since its inception till December 2016, more than two crore patients have received treatment and more than 35 lakh additional lives have been saved. In March 2016, the RNTCP revised its technical and operational guidelines in terms of strategies for the treatment of TB. These TB control programmes are Centrally Sponsored Schemes and are being implemented at the state level through the National Health Mission.

The fight against malaria necessitates strengthening of early detection and prompt treatment facilities up to the sub-central level. There is a need to enhance awareness and preventive measures programmes. Monitoring of the existing malaria control programmes should also be prioritised. The malaria burden has been reduced with the intervention of case management and vector control programmes, namely, Rapid Diagnostics Tests (RDT), Artemisinin- based Combination Therapy (ACT), Long Lasting Insecticidal Nets (LLINs), and effective monitoring and evaluation.

For combating leprosy, initiatives need to be taken on active case finding, focused leprosy campaigns, and case findings in the hard-to-reach areas to ensure early detection, and complete treatment to cut the chain of transmission in community.

In order to reduce the prevalence of Hepatitis, the state government should focus on increasing the vaccination outreach for both Hepatitis A and B. It also needs to initiate training programmesfor promoting the practice of hand washing.

For combating diarrhoea, there is need to place emphasis on the chlorination of drinking water in the diarrhoea-prone areas. Besides this, the state government needs to arrange workshops and training programmes on preventive measures against diarrhoea in daily life.

Non-communicable Diseases: Target 3.4

To reduce the burden of non-communicable diseases, there is need to focus on the establishment of District Wellness Centres in all hospitals for achieving early detection, treatment and referral of NCDs. The situation can also be tackled through mass screening and spreading awareness about NCDs (including diabetes, hypertension, oral cancer, breast cancer, and cervix cancer) through ASHAs for population aged above 30 years may help to combat the situation. For implementing these, it is essential to strengthen all health facilities by providing human resources and other infrastructural facilities to ensure early detection and treatment. For promotion of mental health and well-being in the community, there is need to generate awareness about mental illness and augment treatment facilities for mental patients.

Traffic-related Accidents/Deaths/Injuries: Target 3.5

The following measures are required to deal with road accidents:

- Establishment of trauma centres in government hospitals
- People/NGOs/villagers residing near national highways to be trained in administering first aid to injured persons.
- According to Central Motor Vehicle Act 1889, all drivers and cleaners of all heavy vehicles to be trained in administering about first aid and to make it mandatory for such vehicles to carry first aid boxes.
- Establishment of model emergency care facilities in accident-prone areas.

Universal Health Coverage: Target 3.8

- To achieve the target by 2030 it is essential to fill the present shortage in human resources by recruiting new doctors and paramedical staff in public health services. New PHCs, sub-centers and CHCs also need to be established to fill the gaps and address shortage of facilities in public health infrastructure. The coverage of health insurance can be increased by enrolling those among the targeted families that have hitherto been left out of coverage of the scheme.
- Strengthening district hospitals and developing these as training hubs: A district hospital is an essential component of the district health system, and is envisaged to function as a secondary level of healthcare which provides curative, preventive, and promotional health services to the people. It is expected to have good linkages with the referral facilities below the district levels, that is, Sub-divisional Hospitals (SDHs), CHCs, and PHCs, as well as external institutions run by NGOs and private voluntary health organisations.

  At present, the district hospitals in Uttarakhand offer only a limited range of services based around clinical service delivery, but many essential communicable and non-communicable diseases cannot be diagnosed and treated in these hospitals. The shortage of manpower, especially specialists, is the most pressing problem faced by these hospitals.

  However, district hospitals can become the focus units for strengthening the delivery of healthcare as they have the requisite technical resources in terms of laboratories and skills to diagnose disease outbreaks and to provide inputs for district level planning, data analysis and management, among other functions. A district hospital can serve as a model for providing high-quality care with respect to patient amenities, patient safety, and hospital management practices. Once the services provided by these hospitals have been strengthened by addressing their needs in terms of the hiring specialists, infrastructural development, and procurement of the requisite equipment, the hospitals can become preferred sites for both 'in-service skill building' and 'pre-service educational programmes' such as nursing diploma courses and paramedical courses, which focus on developing skilled service providers to serve within the same district.

SECTION 3.2

SDG 4: Ensure Inclusive and Equitable Quality Education and Promote Lifelong Learning Opportunities for All

Education is viewed worldwide as a key ingredient for achieving progress in human development. Yet as late as in 2013, the latest year for which data are available, globally 59 million children of primary-school age were out of school.[8] Thus, access related challenges for education still exist alongside challenges of quality and equity. If learning achievement is measured in the early grades, it will help in identifying gaps and formulating appropriate remedial action plans. Even as completion rates have been rising at both the primary and secondary levels in countries around the world, as in the case of the state of Uttarakhand as well, the above-mentioned challenges of access, inclusion, equity and quality, need to be addressed fully.

The vision for Goal No. 4 for Uttarakhand is:

By 2030, all children and youth of Uttarakhand, irrespective of their socio-economic backgrounds, will benefit from quality education at all levels, both general and technical, enabling them to realise their full potential.

The vision for targets of Goal No. 4 are presented in Appendix 3.2.1, followed by values for indicators (baseline and vision 2030) in Appendix 3.2.2, and Appendix 3.2.3 contains the schemes applicable for Goal no. 4. Annexure 4 contains the detailed information regarding indicators for Goal no. 4 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

The education-related targets have been discussed together in this report, given that the issues of access, and quality are somewhat similar across different levels and types of education.

Baseline for Uttarakhand

The state of Uttarakhand has consistently focused on providing free, compulsory, and high-quality basic education to all children. The literacy rate in the state, at 78.8 per cent, is higher than the corresponding national average of 74.04 per cent. The per capita public expenditure on education is the highest in the country at around Rs. 1 lakh.

Uttarakhand is generally considered to be an education hub, with a proliferation of educational institutions that have come up particularly in the plains, including some of the premier institutes of education in the country, such as Indian Institute of Technology (IIT) at Roorkee, and the Doon School.

Target 4.1 By 2030, ensure that all girls and boys complete free, equitable, and quality primary and secondary education leading to relevant and effective learning outcomes

Access to education has expanded considerably over time, leading to a Net Enrolment Ratio (NER) of 89.18 per cent for primary and 71per cent for upper primary levels (see Appendix 3.2.2 and Annexure 4). The school completion rate is 100per cent for the primary level and is very high at 96.76per cent at the upper primary levels, while the incidence of transition from the primary to upper primary levels is as high as 94.25 per cent.

At present, the shortage of teachers is not a constraint as observed from the low student–teacher ratios (15.63 for the primary and 12.14 for the upper primary levels). Rather, the efficiency of running schools for only a few children is more of a challenge. There are 2000 schools in the state with less than 10 students enrolled in them.

The quality of education is a matter of serious concern as can be seen from the learning scores of students at the end of the primary and of those at the end of the lower secondary levels, especially for mathematics. These are based on State Level Achievement Surveys (SLAS) along the lines of the National Achievement Survey (NAS),which shows that 50per cent of the districts exhibit performance that is less than the national average.

Education for the girl child has been made free up to the graduation level. The NER at the secondary level, at just 51.28 per cent, is much lower than that at the elementary stage, though the retention rate is quite high at 87.35 per cent. The quality of

8. Source: https://sustainabledevelopment.un.org/sdg4

SDG 4

Ensure Inclusive and Equitable Quality Education and Promote Lifelong Learning Opportunities for All

Uttarakhand Vision for SDG 4

By 2030, all children and youth of Uttarakhand, irrespective of their socio-economic background, will benefit from quality education at all levels, both general and technical, enabling them to realize their full potential.

Uttarakhand Today

- Net Enrolment Ratio (NER) high at 89.18 percent (primary) and 71 percent (upper primary)
- School completion rate is 100 percent (primary level) and 96.76 percent (upper primary level)
- NER in the secondary level is much lower at just 51.28 percent
- Quality of education biggest challenge for state at present
- Pre-school learning is not adequate
- Need for rationalization of teacher deployment as 2000 schools with less than 10 students
- Cost of education delivery in hills is higher than in plains and leads to a cost of service delivery in education sector in the state that is much higher than the national average.
- Low budget in vocational streams
- Gender Parity Index (GPI) at primary and secondary levels are 0.89 and 0.92 respectively

Focus for Tomorrow

- Strengthen pre-primary education
- Monitor education quality with frequent quarterly standardized assessment
- Innovation in teacher training with 4 year integrated teacher training cum graduation course
- To redress hills-plains imbalance, allocate more resources for education sector
- To universalise secondary education, provide access to unserved habitations by opening new schools or upgrading existing junior high schools
- To expand vocational education & skill training in relevant areas and more resource mobilization

Targets for 2030

- Increase NER to 100 percent for primary and upper primary levels
- Increase NER to 80 percent for secondary level
- Constitution of a Teacher Recruitment Board will be undertaken to ensure zero vacancy in schools
- Gender Parity Index will be raised to unity for both primary and secondary levels

education imparted is a major challenge as indicated by the relatively poor performance in a national level assessment, especially for mathematics.

In a move designed to provide encouragement to the education sector, the government has introduced Information and Communication Technology (ICT) in secondary education.[9] However, the aim of implementing ICT in 500 out of 625 schools has not yet been achieved.[10] The government is also implementing training and orientation programmes for the teaching and administration staff serving these schools, in collaboration with Microsoft India. The objective of introduction of vocational education in 80 schools has, however, not yet been achieved.[11]

Target 4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education

The incidence of pre-school enrolment of 3-5 year olds in the hills and plains is quite encouraging, at 98,911 and 1,00,183 respectively. However, the enrolment figures per anganwadi enrolment show that an anganwadi must run for only eight children, on an average in the hill districts, and for around 14 students in the plains.

Target 4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

The percentage share of women in diploma seats has a baseline value of 30 per cent and the number of diploma seats for women in the state is 6200.

Target 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

Uttarakhand has become a hub for technical and vocational education with the setting up of many new polytechnics and Industrial Training Institutes (ITI s). Thus, the availability of technically trained persons in the state has increased. Usually polytechnics offer three-year generalised diploma courses, which are now expanding out of the traditional engineering areas to electrical and electronics, instrumentation, computer sciences, and IT, among others. The aim of polytechnic education is to create a pool of skilled people who can provide a link between engineers and technicians. Such professionals are reportedly in great demand in the MSMEs. At present, there are 131 polytechnics, 20,604 diploma seats, and 32 courses in the state while 34 polytechnics are operating in the backward/rural areas of the state. Another indicator of the availability of technical and vocational skills is the student–teacher ratio in technical education, which currently stands at 20:1.

Given the serious shortage of doctors and other medical staff in Uttarakhand, the state urgently needsa good medical education system. However, at the time of creation of the state in 2000, it lacked medical colleges and nursing institutions. The state inherited 5 ANM (Auxiliary Nursing and Midwifery) Schools and 1 GNM (General Nursing and Midwifery) school at the time of creation. Subsequently, the Srinagar Medical College was established in 2008 and since 2010, the erstwhile Forest Trust Medical College in Haldwani has been converted into a fully Government-owned Medical College. Both these colleges offer post- graduate medical education ending in the award of MD/MS degrees.

Target 4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

The indicators for Target 4.5 point to a high level of gender parity in primary and secondary schools, at 0.89 and 0.92, respectively. The baseline level for higher education is the highest for the state at 0.94. Girls' education has been made free till the graduation level, thereby providing a boost to the effort to bridge gender gaps.

9. Source: http://www.mapsofindia.com/uttarakhand/education/

10. Minutes of meeting held on April 28, 2016 conducted by the MoHRD, Government of India.

11. Ibid.

Target 4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy

The level of literacy among youth aged 15-29 years in the state is high and has a baseline level (2011-12) of 94.8 per cent, while the literacy level of young women aged 15-29 years is 93.6 per cent. There is a considerable gender gap of 17.4 per cent in adult literacy with the literacy levels for males and females being 87.4 per cent and 70 per cent, respectively, though the literacy level of 78.8 per cent in Uttarakhand is higher than the national average (as per the 2011 Census). The gender gap is relatively higher in Tehri, Uttarkashi, Rudraprayag, Bageshwar, Almora, Champawat, and a few other districts. The hill districts have a much higher literacy of 81.8 per cent, on an average, as compared to the corresponding figure of 73.3 per cent in the plains. The efforts of the state for inclusion are reflected in the fact that literacy levels for the SC (74.4 per cent) and ST (73 per cent) communities are not very far behind the state literacy averages. However, ensuring parity in education among various socio-religious groups is as yet an unfinished agenda.

Vision 2030 for Uttarakhand

By 2030, the state not only aims to provide free and equitable primary and secondary basic education, but also intends to ensure that around 90-95 per cent children reach a minimum level of proficiency in basic language and mathematics. The vision for the individual segments of the education sector is presented in Table 3.6.

By 2030, Uttarakhand will be an important hub for education and skill development in the country, boasting of educational institutions imparting education of high and consistent quality. Towards this end, at the foundation level, by 2030, the state aims to provide all children access to age-appropriate schooling till the upper primary level.

Vision 2030 for Target 4.1

The vision is to attain 100 percent NER for both primary and upper primary levels by 2030. The state may well attain the target for primary enrolment before 2030, given its current high figure of 89.18 per cent, but for the upper primary level, a steeper ascent will be needed towards the target from a baseline of 71 per cent. At the secondary level, the aim is to attain an NER of 80 per cent by 2030 from a baseline of 51.28 per cent, and attaining the jump of 14 percentage points from 66 per cent in 2023-24 to 80 per cent in 2029-30 is a challenge, requiring concerted efforts. The provision of free secondary education for girls is a great boost for gender equity in this context. The state is placed ahead of most other states in the area of higher education with a GER of 33.1 per cent. It presently has 29 post-graduate institutions and 72 universities.

Table 3.6: Vision for the Education Sector

Education Segment	Vision 2030
Elementary and Secondary	By 2030 ensure that all girls and boys complete free, equitable and quality secondary education By 2030 eliminate gender disparities in education and ensure equal access to all levels of education
Higher Education	To convert Uttarakhand into a model state which promotes a very high level of educational attainments for its population, and arts, science and culture, ensures every individual's personal development to its full potential, and eradicates poverty and unemployment through appropriate training in employable skills of all who need them To create an ambience and infrastructure for the growth of centres of excellence in education and research as well as in the application of science and technology for development.
Technical Education	Impart qualitative, employment-oriented modern technical education in working, and hands-on training mode to youth at low and affordable cost.

Source: Government of Uttarakhand

The quality of education has been mentioned as a major challenge area for the state. Thus, the learning outcome targets are somewhat more challenging than those for enrolment because learning outcomes depend crucially on the quality of the learning–teaching process within the school, though other inputs such as infrastructural facilities, the availability of a sufficient number of teachers, and their competence and training, and the home backgrounds of pupils would also have some impact. Schools in Uttarakhand are well-placed in terms of the provision of drinking water and sanitation, though there is a need to add ramp availability for disabled children as well as access to computers and electricity, to some extent, as can be seen from the data in the Annexure. The availability of trained teachers, on the other hand, can be seen to be quite good.

In the context of the targets for language and mathematics, those for mathematics at the lower secondary level would need substantial improvement between all the time lines. There may be a need to revise the targets depending on the levels achieved by 2019-20. The drop-out shares for the primary and upper primary levels certainly seem achievable, but at the secondary level, it may not be as easy to wipe out the drop-out share of 12.65 per cent soon. This is particularly so because, at this level, a number of barriers work against children preventing their continuation of studies, such as the pressure to get married or join earning work, and pushing them into shouldering more and more home responsibilities, including household chores and unpaid care.

However, given that the only reliable way to assess quality is the periodic objective assessment of learning outcomes, a set of 'learning outcomes' parameters that is being devised by the NCERT to assess learning levels of Class 1 to 8 students, will be useful for the state.[12] Reportedly, if the draft report is finalised, and accepted by states, the states will be required to incorporate these parameters into the teaching methodologies of their respective states. The move will shift the focus from rote learning to competence-based learning.

Vision 2030 for Target 4.3

The state also aims to ensure equal access for all women and men to affordable and quality as well as inclusive technical, vocational and tertiary education, including university education. The share of women in diploma seats will increase from the baseline 30 per cent to 40 per cent by 2030, and the number of diploma seats for women will increase from 6200 to 20,000 by 2030.The access for higher education will also increase, as reflected in rise in the GER from the baseline level of 33.9 up to 60 by 2030. The student–teacher ratio in the fifteen-year period is slated to improve from 142:1 to 20:1.

Vision 2030 for Target 4.4

By 2030, the access of youth and adults to skills, as well as their access to decent jobs and entrepreneurship, must be improved. The skills thus acquired must promote sustainable development. The state plans to train 6.5 lakh youth and to provide employment via the Uttarakhand Skill Development Mission (UKSDM), which was started in February 2013. The plans are to provide skill training to 44,000 youth up to 2020, followed by training for 79,199 youth up to 2024, and finally, to impart skill training to a total of 1,51,920 youth up to the year 2030.

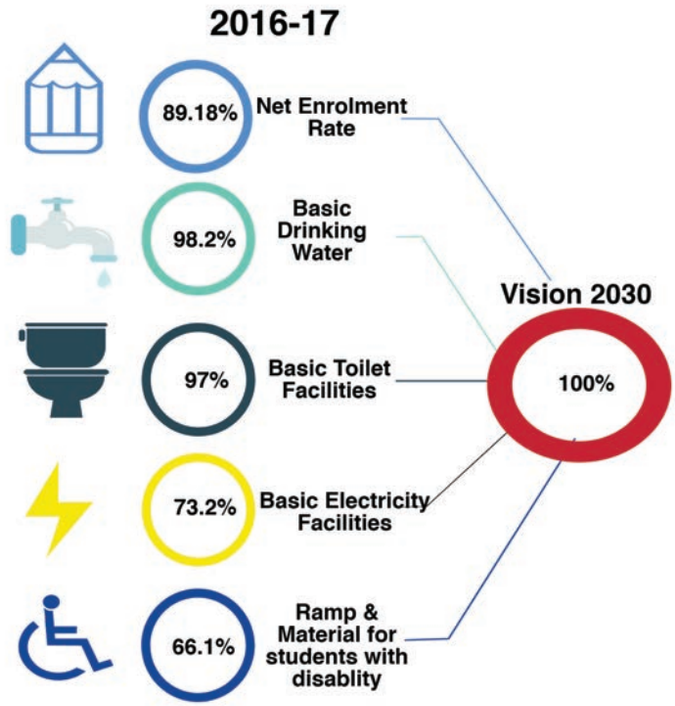
It is envisaged that the number of polytechnics will go up from the baseline figure of 131 to 200 by 2030, and the number of polytechnics in backward/rural areas will go up to 50. The problem of inadequacy in teaching is sought to be addressed by not only improving the student–teacher ratio to 10:1 through the creation of new teaching posts, but also by aiming to improve pedagogy and introducing new teaching methodologies like ICT (for increasing the computer/student ratio), interactive mode teaching, and curriculum revision, among others. There are plans to increase the provision of industrial visits from the present level of 2 per semester to 6 per semester by 2030, and the number of industrial training programmes from one to four per year.

For medical education, the vision is to completely do away with the shortage of doctors and health personnel in the state by 2030.

The level of entrepreneurship in higher education, as reflected in the number of EDPs, will

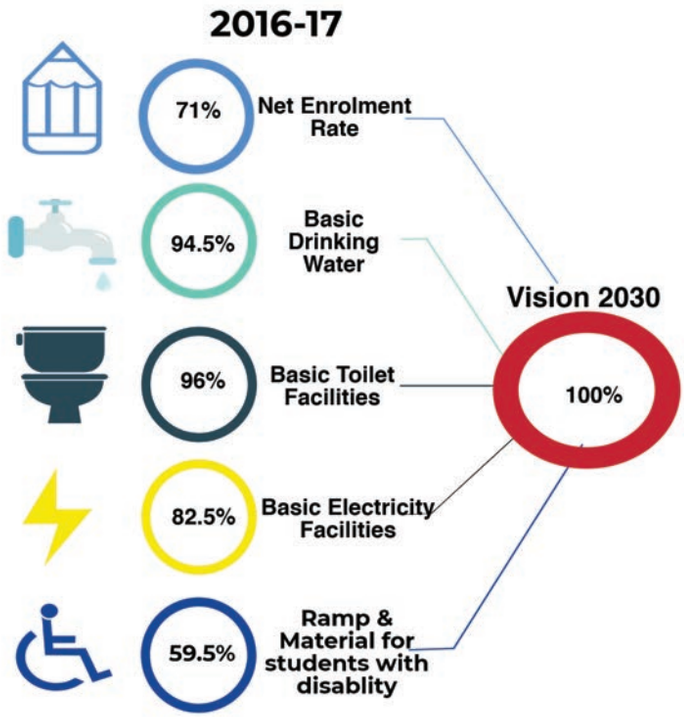
12. Source: http://www.hindustantimes.com/education/ncert-proposes-survey-to-test-children-s-learning-skills/story-BfAS0iUgDctKPgBQclKFbM.html

Figure 3.5: Vision 2030 for Selected Indicators for Primary Education in Uttarakhand



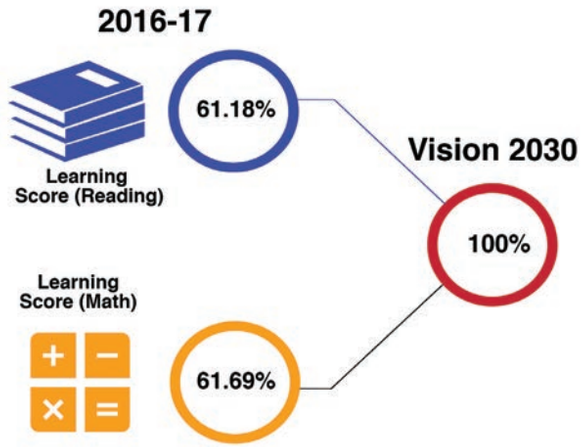
Source: Based on information provided by Government of Uttarakhand

Figure 3.6: Vision 2030 for Selected Indicators for Upper Primary Education for Uttarakhand



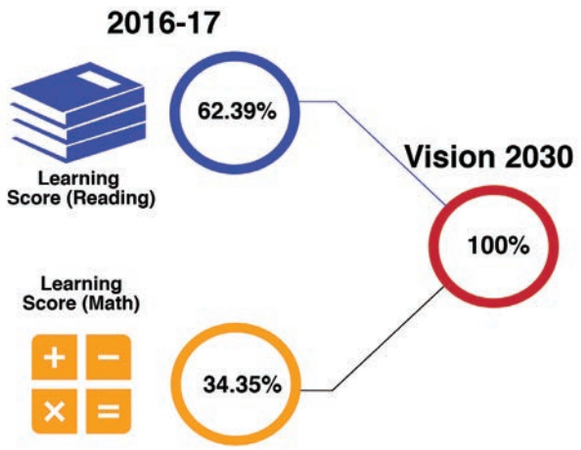
Source: Based on information provided by Government of Uttarakhand

Figure 3.7: Vision 2030 for Learning Performance at the End of Primary Level (Class 5) for Uttarakhand



Source: Based on information provided by Government of Uttarakhand

Figure 3.8: Vision 2030 for Learning Performance at the End of Lower Secondary Level (Class 8) for Uttarakhand



Source: Based on information provided by Government of Uttarakhand

also be enhanced from the present figure of 20 to 40 by 2030, and the government seeks to attain an employability ratio of 60 per cent by 2030.

The UKSDM has been an important initiative in the area of skill development.[13] A Memorandum of Understanding (MoU) has also been executed with 30 Sector Skill Councils (SSCs) wherein a total of 29,692 trainees have currently registered for the skill development mission, with the bulk of the trainees being in the age group of 21-30 years. A total of 132 batches have been allotted across 30 sectors for training 3960 youth. The majority of the youths have opted for training in the IT, hospitality, retail and medical nursing sectors. Accordingly, in the pilot phase, UKSDM started the skill training programme in 12 sectors for 2034 enrolled youth. Training under this programme was imparted by 33 private training partners in 68 batches. The UKSDM has to follow a mandate whereby the training partner has to ensure placement for 70 per cent of the passed students.

Among other measures to promote skilling in the state, a Skill Development Initiative Scheme (SDIS) of the Vocational Training Provider (VTP) has been started. The state also participated in the Skill India Mission Operation (SIMO) under the guidance of National Skill Development Mission (NSDM) to discuss Disbursement Linked Indicators (DLIS).

Vision 2030 for Target 4.5

The vision is to attain gender parity of unity for both primary and secondary level, up from baseline levels of 0.89 and 0.92 respectively by 2030. For higher education, the vision is to reach the Gender Parity Index to reach 1.44 by enrolling more females.

Vision 2030 for Target 4.6

The vision is that all youth (15-29 years) will attain full literacy of 100 percent by 2030.

Challenges for Education Sector

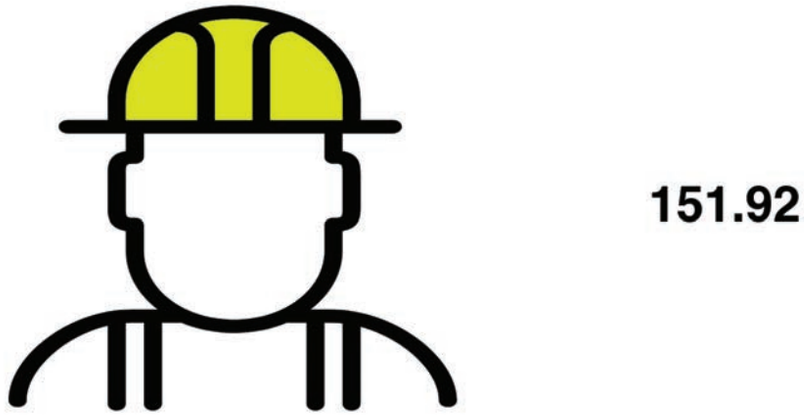
The challenges faced by the state in the education sector have been detailed below.

General Education

- Attaining quality learning outcomes is one of the biggest challenges facing the state and in this context, teacher absenteeism needs to be curbed.
- Pre-school learning is not adequate.
- Infrastructure gaps remain, particularly in the provision of electricity and arrangements for disabled students. There is an inadequate number of toilets at the secondary level.
- Although the Mid-Day Meal Scheme is functioning well, it is riddled with problems like water scarcity and low wages of cooks.

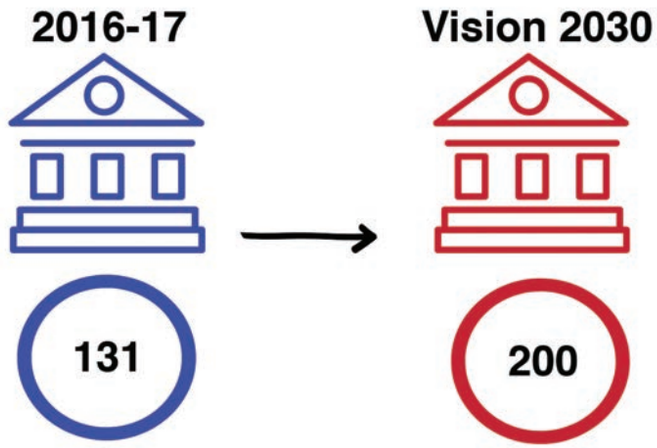
13. www.uksdm.org, accessed on July 17, 2017.

Figure 3.9: Vision 2030 for Skill Capacity (000) in Uttarakhand



Source: Based on information provided by Government of Uttarakhand

Figure 3.10: Vision 2030 for Number of Polytechnics in Uttarakhand



Source: Based on information provided by Government of Uttarakhand

- The student–teacher ratio is 17:1, and there are 2000 schools with less than 10 students.
- There is a high incidence of drop-outs at the secondary level due to long distances between the high schools and students' homes.
- For higher education, maintenance of quality and ensuring the employability of graduates are key issues. In this context, the state government is taking measures such as enhancement of soft skills, promotion of English-speaking courses, and enhancing computer literacy, and the provision of training for self-employment at the National Institute for Entrepreneurship and Business Development (NIESBUD).
- Higher education institutions have unfilled vacancies for the post of Principals.
- In large urban centres such as Dehradun, imparting tertiary education has been left to private institutions entailing payment of high tuition fees, which prevents the marginalised classes from accessing high-quality education for their children.
- The remote areas of the state face the problem of Internet access and lack of laboratories for students.

Technical education

The major problems faced by the polytechnic education system are:

- Allocation of a very low budget for the vocational streams;
- Inadequate infrastructure facilities and obsolete equipment;
- Lack of quality teachers;
- Inadequate policies for training teachers;
- Non-availability of courses in the new and emerging areas;
- Inadequate industry linkages; and
- Lack of R & D in technical education.

Medical education

- In view of the severe shortage of doctors and other medical staff in Uttarakhand, aggravated by the absence of any kind of medical colleges and nursing institutions in the state since its very inception in 2000, it is crucial to develop a system of medical education in Uttarakhand.

Strategy for Attaining Vision 2030

The following strategies are suggested for dealing with the challenges in education at different levels in the state to attain the vision for 2030:

Pre-primary Education

- Discussions with stakeholders have revealed the need for consolidating the pre-school education component in the hills , so that the anganwadis, under the jurisdiction of the ICDS department, can be run in an efficient manner. It has also been suggested that separate guidelines should be issued for anganwadis in the hills, distinct from those in the plains, to enable their efficient functioning.
- There are plans to provide pre-school kits and a curriculum for all anganwadi centres (AWCs) and to promote capacity building of supervisors and anganwadi workers (AWWs).
- Increased community participation can be achieved through measures such as celebration of occasions like the Early Childhood Care and Education (ECCE) Day.
- Making pre-primary education a tier of schooling instead of a part of an anganwadi can improve learning outcomes at that level. The pre-primary segment will include nursery, Lower Kindergarten (LKG) and Upper Kindergarten (UKG) classes with the provision of qualified nursery teachers.

Elementary, Secondary and Higher Secondary Education

- In order to improve the quality of education, residential co-educational institutes named Rajiv Gandhi Navodaya Vidyalayas have been set up in every district of the state, in addition to model schools for every block that could inspire improvements in education in the neighbouring schools in the block. There are suggestions to increase the number of model schools in the state, as these schools are envisaged to act as a hub of activities such as science exhibitions, competitions in the arenas of sports, drawing and painting, and other academic/ co-curricular activities. Each model school has a minimum of five teachers at the primary level to impart quality education as compared to just two teachers in normal schools.
- The quality of education being imparted will be monitored with the help of frequent quarterly standardised assessments and the results will be displayed on a portal.
- At the primary school level, the government aims to provide the option of one teacher per class on the lines of model schools, and improvement of infrastructural facilities as well, while ensuring the provision of at least one room per class at the elementary level.
- A strengthened monitoring mechanism as well as the recruitment of Head Teachers wherever they are absent would be a means for improving regularity in the schooling process and in teacher attendance. The use of biometric machines for recording attendance has already been started in 200 schools and is slated to reach other schools in future. Constitution of a Teacher Recruitment Board to ensure zero va-

cancy in schools is a strategy that could help create a pool of candidates through the conduction of a merit-cum-aptitude test.

- The option of using solar energy could be explored to address the challenge of providing electricity to all schools.
- Private participation is being tried for improving the quality of education in primary schools, especially for subjects like mathematics and English. There have been successful pilots for running SMART classes in many schools, which can also be scaled up.
- Innovative teacher training can be started with a four-year integrated teacher training-cum-graduation courseto facilitate effective training of teachers under the system.
- In order to universalise secondary education, the state government plans to provide access to the unserved habitations by opening new schools or upgrading the existing junior high schools.
- The government also needs to expand its presence in higher education with the establishment of multi-faculty government colleges up to the post-graduate (PG) level.
- There is need for planning for physical infrastructure before opening up a college for admission.
- E-learning can be used for higher education to reach remote areas in the state.
- Vocational education can be started even at the middle school level, running in parallel with the general lessons.
- Involving NGOs can be a fruitful exercise, in view of low budget allocation. For instance, one NGO has offered enormous support to the state government's efforts by providing mathematics learning kits and access to laboratories for practical lessons, besides promoting English speaking among students.
- In keeping with the general preference for English-medium schools, a programme called 'Unnati', aimed at improving the spoken English of secondary level students, is slated to be run in all government schools in the state.

Technical and Vocational Education

- In the sphere of vocational education, it has been proposed to set up 120 secondary schools offering three regular subjects from six streams along with two vocational subjects.
- For promoting technology-enabled education, there are plans to collaborate with the Indian Institute of Technology (IIT, Mumbai), and a private university, under the aegis of Uttarakhand Science Education and Research Centre (USERC), an autonomous organization under the Department of Science and Technology, Government of Uttarakhand. The aim is to devise ways of grappling with problems like the lack of laboratories in remote areas.
- The cost of education delivery in hills is higher than in the plains, which leads to higher costs in the education sector in the state of almost 2–3times the national average.[14] This imbalance can be redressed by providing more finances for the education sector in the hill state.

Medical Education

- The shortage of doctors and nurses in the state is being tackled by setting up five medical colleges and five new nursing colleges in Tehri, Almora, Pauri, Pithoragarh, and Chamoli, as well as one nursing college at the medical college at Haldwani. While three General Nursing and Midwifery (GNM) schools are also being established,the in-take capacity is being increased in the existing medical colleges.

14. Uttarakhand 2013-14.pdf from PPT (state government).

SECTION 3.3

SDG 6: Ensure Availability and Sustainable Management of Water and Sanitation for All

Water and sanitation are critical to the survival of people and the planet. Goal No. 6 addresses the issues relating to drinking water, sanitation and hygiene, and shifts the focus on to the issue of quality and sustainability of water resources.

In the year 2010, the United Nations General Assembly explicitly recognised the human right to water and sanitation through Resolution 64/292, and acknowledged that clean drinking water and sanitation are essential to the realisation of all human rights. The Resolution calls upon States and international organisations to provide financial resources, and help in capacity-building and technology transfer to member countries, in particular the developing countries, to provide safe, clean, accessible and affordable drinking water and sanitation for all.[15]

Unsafe management of faecal waste and wastewater continues to pose challenges for public health and the environment.[16] Although access to drinking water has seen vast improvement in recent years, there is still a long way to go to cover the entire population. Further, 'water stress', calculated as the ratio of total fresh water withdrawn by all major sectors to the total renewable fresh water resources in a particular country or region, adversely impacts many countries in the world, wherein not enough replenishment of usable water takes place. This affects both the sustainability of natural resources, as well as development.

In Uttarakhand, in the upper reaches of the Himalayas, there are around 917 glaciers which are the source of all perennial rivers of northern India. As such, this mountainous state is supplying freshwater to all the population in the lower reaches of northern India, and is also the source of a number of eco-system services such as wood, fibre, fuel, food and helps to regulate the climate and pollution. However, despite the presence of glaciers and perennial rivers in the state, in addition to the plenty of rainfall it gets, the availability of water in the state is not up to expectations, particularly because water runs off in the hilly terrains instead of getting accumulated. This compels women to walk long distances in the mountainous region merely to access water, which has, in fact, become an inherent part of their lifestyle. Therefore ensuring the sustainability of water sources, water management and water recycling are crucial issues for this state. Sanitation and water supply are intertwined issues and improving public hygiene is of paramount importance both for enhancing human development, as well as preserving the environment. Thus Goal No. 6 completes the triad of goals considered here for focusing on human development.

The vision for Uttarakhand state for Goal No. 6 is as follows:

> ***By 2030, Uttarakhand economy will provide all its citizens with safe drinking water and access to sanitation such that open defecation is ended and successful water management practices will ensure conservation of this scarce resource and reduce pollution.***

The vision for targets of Goal No. 6 are presented in Appendix 3.3.1, followed by values for indicators (baseline and vision 2030) in Appendix 3.3.2, and Appendix 3.3.3 contains the schemes applicable for Goal no. 6. Annexure 6 contains the detailed information regarding indicators for Goal no. 6 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

Target 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all

Baseline for Uttarakhand

The provision of water supply and sanitation in the state is managed by a few autonomous bodies specifically created for this purpose, including the Uttarakhand Pey Jal Sansadhan Vikas Evam Nirman Nigam, Uttarakhand Jal Sansthan, and Uttarakhand Rural Water Supply and Environment Sanitation Project (Swajal). The Pey Jal Nigam is primarily responsible for the preparation and construction of water supply schemes, while the Jal Sansthan is responsible for operation and maintenance as well as tariff

15. Source: http://www.un.org/waterforlifedecade/human_right_to_water.shtml

16. Source: https://sustainabledevelopment.un.org/sdg6

SDG 6

Ensure Availability and Sustainable Management of Water and Sanitation for All

Uttarakhand Vision for SDG 6

By 2030, Uttarakhand economy will provide all its citizens with safe drinking water and access to sanitation such that open defecation is ended and successful water management practices will ensure conservation of this scarce resource and reduce pollution.

Uttarakhand Today

- In rural areas, 54 percent habitations have water at the standard norms
- In urban areas, 23 percent Urban Local Bodies have water at the standard norms
- Natural sources of water are getting depleted and sometimes habitations with adequate water supply can slip back to their earlier water-deprived state due to drying up of rivers
- Solid waste management needs improvement with very low proportion of municipal solid waste being processed
- Uttarakhand has been declared Open Defecation Free state

Focus for Tomorrow

- Safe and adequate drinking water for all households in rural and urban areas, including people from all socio-economic groups
- To reach households remaining unreached by sanitation services
- Augment water supply in rapidly expanding peri-urban areas
- To raise public awareness about the need for maintaining cleanliness
- Private sector participation in funding water and sanitation projects to be encouraged
- Give priority to liquid and solid waste management/treatment minimization of hazardous chemical waste generation along with its proper disposal
- Give priority to Monitoring and evaluation of schemes

Targets for 2030

- Reach improved drinking water and piped water supply to all households in rural and urban areas
- Provide individual/community toilets to all house-holds, rural and urban, and expand public sewerage facilities to all villages and towns
- Improve efficiency of water-use

collection. The Swajal project is meant to oversee community-based drinking water schemes and sanitation facilities supported by the World Bank.

The Swajal project was initiated with a reform in approach focused on service delivery, to a Sector Wide Approach (SWAp), which envisaged that the rural local government, in partnership with rural communities, would plan, design, construct, operate, and maintain their water supply and sanitation schemes to ensure access to potable water for them, in turn, providing them health and hygiene benefits. Under this programme, the ownership of water supply is transferred to the communities after the capacity building of gram panchayats to prepare them to handle the water supply scheme successfully. It is also envisaged to set up water user associations to ensure the success of water management programmes. This project aims to support the state's sector reform process by augmenting its institutional capacity to implement, manage, and sustain the state's sector development programme in water management while also contributing towards total sanitation.[17]

The indicators for Target 6.1 refer to the statistics provided by the state government for the coverage of habitations as per the norms of water supply, outreach of the National Rural Drinking Water Programme, and outreach of piped water supply (see Annexure 6).

Rural areas: The government of Uttarakhand is committed to supply clean drinking water to each and every habitation as per the standard norms of 40 LPCD, a target arrived at by taking the following components into account: water needed for drinking (3 LPCD), cooking (5 LPCD), bathing (15 LPCD), washing utensils and clothes (7 LPCD) and sanitation (10 LPCD). The government is also considering a proposal to raise the water consumption norm from 40 LPCD to 70 LPCD.

Presently, out of a total number of 39,209 habitations, only 21,345 habitations or 54 per cent of the total have access to water at the standard norms. The number of habitations getting less than 40 LPCD is 17,864, out of which, a total of 6204 habitations have partial coverage at 75 per cent to less than 100 per cent, and 5586 habitations have partial coverage at 50per cent to less than 75 per cent. The rest have coverage of even less than 50 per cent. The total number of habitations affected by poor quality of water is 18.

Although only 64.3 per cent of the habitations in the villages has access to drinking water, the fact that the relatively disadvantaged communities such as SCs and STs have better access to this vital resource is an encouraging sign. As of October 2016, around 5,82,000 households had piped water supply connections, out of which around 2,80,000 were rural households.

Urban areas: Out of a total number of 91 ULBs, just 21 or 23 per cent of the total ULBs have access to 135 LPCD of water supply as per the norms.[18] While 37 ULBs have access to 70–135 LPCD of water supply,33 ULBs do not get even 70 LPCD.

As regards piped water connections, even though 30 per cent of the population in the state lives in urban areas, the situation pertaining to piped water supply in urban areas is better than that of rural areas with 3,00,000 urban households having access to piped water, much higher than the corresponding number of rural households.

Vision 2030 for Target 6.1

The 2030 vision for the provision of water supply is to reach improved drinking water and piped water supply to all households in rural and urban areas, including people from all socio-economic groups by 2030. Thus it is primarily aimed at expanding coverage, considering the somewhat limited access to water at present, assuming that the planned sources of finance from the State, Centre and external agencies continue to be available. Regarding Target 6.1, the 17,864 rural habitations, which currently do not get the requisite 40 LPCD of water supply, are to be gradually covered entirely by 2030. In the short-run, by 2019-20, an additional 6074 habitations will be covered, followed by a total of 11,660 (including an additional 5586 habitations) by the midterm, that is, by 2023-24. In the subsequent years till 2030, the remaining 6204

17. Inputs fromhttp://ahec.org.in/wfw/web%20ua%20water%20for%20welfare/water/Arun_Dobhal.pdf and http://www.indiawaterportal.org/articles/water-management-through-communities-uttarakhand-neelima-garg

18. The towns getting a water supply of at least 135 LPCD are Dehradun, five towns in the Haridwar district, four in Pauri, New Tehri, two towns in Chamoli, Uttarkashi, two towns in Udham Singh Nagar, and five towns in Nainital.

Figure 3.11: Vision 2030 for Reaching Water Supply to All Habitations

	2016-17	Vision 2030
Habitations covered by Water Supply(Rural)	54%	100%
Habitations covered by Water Supply(Urban)	23%	100%

rural habitations will receive water supply of 40 LPCD, thereby covering all the 17,864 habitations.

Similarly, the gap of 70 ULBs faced by urban households will also be covered gradually. First, an additional 18 ULBs will receive water supply at 135 LPCD by 2019-20, followed by an additional 23 ULBs getting covered by 2023-24 in the medium term. The remaining 27 ULBs will be covered in the long term, that is, by 2030.

As per the other indicators under Target 6.1,the aim would be to reach all rural habitations in terms of safe drinking water under the National Rural Drinking Water Programme (NRDWP) programme by 2030, as compared to the baseline figure of 64.5 per cent. Similarly piped water too will reach all the unserved as well as under-served households in both rural and urban areas.

Target 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

Baseline for Uttarakhand

Uttarakhand has very recently been declared an open defecation free state. In general, however, sanitation outreach is not fully adequate in the state and there is rural–urban disparity as well in terms of sanitation as for the water supply. While the Uttarakhand government is committed to safeguarding public health and hygiene in its rural areas with the help of the Panchayati Raj Institutions (PRIs) as well as with community participation, the data for Census 2011 indicate that nearly half (45.5 per cent) of the rural households in the state did not have latrines just 7 years ago, while the corresponding figure in the urban areas was just 6.4 per cent (see Appendix 3.3.2 and Annexure 6). According to the state government, the total number of individual household and community toilets in urban areas at present is 1540. More updated information provided in 2015 survey[19] by the NSSO has ranked Uttarakhand eighth among 26 states on the basis of households having sanitary toilets and using them (see Table 3.7). Since the last Census (2011), and particularly after the launch of the Swachh Bharat Abhiyan in 2014, there seems to have been a vast improvement in sanitation in

Box 3.3: Some Best Practices for Augmenting Water Supply in Uttarakhand

- Solar-based dual pump: The solar pump-based schemes are based on prefabricated/readymade material and can be installed in a short time span of only 1-3 days. A water tank of 5000 litre capacity is proposed to be installed from which water will be further distributed to standposts. Electrical energy is not needed for running the pumps and moreover no manual labour is required for running the hand-pump.During the night hours when there is no sunlight, the hand-pump can be operated manually.
- Solar pumping scheme from surface sources: In places where the surface water is below the level of habitation/village, the surface sources are tapped by constructing a chamber and a solar-based pump is installed to pump the water to a higher level. In Uttarakhand,four solar-based pumping schemes (including two under the NRDWP and two under the district plan) are being constructed for a lift of about 100 metres.
- Riverbank filtration: Riverbank filtration has a profound impact on the lives of people living in the water-scarce hilly areas of Uttarakhand and this innovative intervention is set to continue in future. Presently, UJS is developing more than 5 RBF sites in Uttarakhand on the basis of its past experience with RBF. In fact, RBF has brought about a significant improvement in the year-round quality of pre-treated water in the state with respect to the removal of turbidity and pathogens by RBF as compared to direct surface water extraction.

Source: Government of Uttarakhand

19. The survey covered 73,176 households in 3788 villages in India.
Source: http://www.mdws.gov.in/sites/default/files/Swachh%20Survekshan%20Report%20Eng.PDF

the rural areas of Uttarakhand. In fact, as of 2018, Uttarakhand is one the few states in the country which has been declared as open defecation free, according to the Economic Survey 2017-18.

Under the Swachh Bharat Mission (SBM), some pit latrines are being built in rural areas, but these have no sewerage connection. Even in urban areas, out of 91 ULBs, only 26 ULBs or 28.6 per cent of the total are partially covered by sewerage connections, implying that 65 towns have absolutely no sewerage connection. Thus, the measures for improving public sanitation need to be adopted at an accelerated pace. With a rapidly rising urban population following massive migration to cities and the mushrooming of slums, the situation may be exacerbated in the future years.

Target 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

Table 3.7: State Ranking among 26 States as per NSSO Survey (2015) on Sanitation

Rank	State	% Households with Sanitary Toilets	% People Using Household/Community Toilets out of Households Having Toilets	% Households Having Access to Sanitary Toilets and Using Them
8	Uttarakhand	80.5	99.6	80.2
4	Himachal Pradesh	90.4	99.7	90.1

Source: Swachh Survekshan Gramin, 2016 accessed at http://swachhbharatmission.gov.in/sbmcms/writereaddata/images/pdf/report/Swachh-Survekshan-2016.pdf on 7th May 2017

Vision 2030 for Target 6.2

The state has already attained the vision of becoming a defecation free state[20]. The sanitation situation in the state has improved recently. Overall, for the Targets 6.2 and 6.3 on sanitation, the state government aims to focus on eradicating manual scavenging, adopting modern and scientific municipal waste management practices, bringing about behavioural change regarding healthy sanitation practices, generating awareness about sanitation and linking it with public health, augmenting the capacity of ULBs, and encouraging private participation in this sector.

The target of building 27,640 toilets by 2019–20 has already been achieved and open defecation has been removed. Similarly, the share of ULBs with sewerage connections (partial) will be increased from 28.6 per cent in the baseline to 100 percent by 2030.

Baseline for Uttarakhand

It is important to ensure efficient wastewater management and solid waste management to achieve the targets of SDG 6. Unregulated disposal of waste into water bodies, and rivers, can seriously contaminate and pollute water and affect water quality. Poor waste management also results in greenhouse gas emissions, and the loss of valuable resources.

An integrated waste management approach is thus a crucial part of sustainable development strategies. The 3R concept (Reduce, Reuse, Recycle) encapsulates well this life-cycle approach to waste. The following four main strategies should comprise the framework for waste management: i) minimise waste, ii) maximise environmentally sound waste reuse and recycling, iii) promote environmentally sound waste disposal and treatment, and iv) extend waste service coverage.

While waste prevention and minimisation are important, it is equally important to manage the remaining solid and hazardous wastes with effective measures. Hazardous waste, owing to its toxic, infectious, radioactive or flammable properties, poses an actual or potential hazard to the health of humans, other living organisms, or the environment. Solid waste recycling and composting constitute an important component of the sustainable approach to solid waste management. In addition to reducing the amount of waste, it also reduces the

20. Accessed at http://www.thehinducentre.com/multimedia/archive/03223/Economic_Survey_20_3223794a.pdf on 19th April 2018.

Box 3.4: Singapore Model of Recycling Sewage to Produce Drinking Water

Singapore's water project has become an important model for the entire Asia Pacific region.

Singapore is surrounded by oceans but lacks adequate clean water sources, which led the government to launch a project called "NEWater" in 2003. It involves recycling wastewater to make it highly purified water, providing a more cost-efficient and eco-friendly solution.

With NEWater, Singapore has quickly gained an international reputation for efficient recycling of wastewater. The initiative already supplies around one-third of the country's water demand, almost all of it for industrial purposes, and that number is expected to grow to more than half by the year 2060.

There are now four purification plants across Singapore, producing 430 million litres of NEWater a day. A majority of what is produced is consumed by industry or by big cooling facilities. The rest is combined with nutrient-rich reservoir water, purified again, and filled into bottles.

Source: https://www.watercorporation.com.au/water-supply/water-recycling/water-recycling-around-the-world and other websites.

Figure 3.12: Reduce, Reuse, Recycle: the Life-cycle approach to Waste

Source: Accessed at http://www.uncrd.or.jp/content/documents/47113R%20Brochure-20Jan2017.pdf

demand for raw materials, leading to a reduction in resource extraction. For waste that is not suitable for recycling or composting, incineration is often considered the next best option, provided the incineration plants comply with emission standards, and the recovery of energy is usually possible from waste incineration. If recycling, composting or incineration is excluded, waste can be landfilled on a controlled site. However, uncontrolled landfilling may lead to serious environmental problems for soil and ground water, and should be avoided.[21]

Solid waste management in Uttarakhand is as yet in a fledgling state, with just 0.5 per cent of the municipal solid waste being processed as of September 2015. In 431 wards, there is 100 per cent door to door collection and transportation of solid waste. The total hazardous waste generated for Uttarakhand in 2012 was 55,627 MT/year as compared to 34,033 MT/year for Himachal Pradesh in 2013 (except used oil and contaminated containers).[22] Considerable bio-medical waste is also generated in Uttarakhand at 2257 kg per day.

The Uttarakhand Jal Nigam has constructed several sewage treatment plants for treating wastewater at Haridwar, Srinagar, Tapovan, and Dehradun, among other locations, which are functional and are discharging effluents as per the design. Parameters are being monitored by a committee comprising members from the Jal Sansthan, Jal Nigam, and Pollution Control Board.

A recent survey by the Central Pollution Control Board (CPCB) has found that industries are largely responsible for polluting the river Ganga with their effluents and several such industries are located in Uttarakhand, among other states along the course of the river. This is the reason why the Namami Gange project, an Integrated Conservation Mission, launched by the Union Government in June 2014 with a budget outlay of Rs.20,000 crore,

21. Source: Agenda 21. www.un-documents.net/a21-21.htm , http://www.un.org/esa/dsd/resources/res_pdfs/publications/trends/trends_Chemicals_mining_transport_waste/ch4_waste_management.pdf and http://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/consumption_production/waste_treatment_disposal.pdf,

22. Estimate for Uttarakhand from Indiastat website and for Himachal Pradesh from http://hppcb.gov.in/HWI.pdf

has focused,to a large extent, on the construction of sewage management plants in the states where it is operative, including Uttarakhand. The twin objectives of this mega project are effective abatement of pollution, conservation and rejuvenation of the national river Ganga.

Vision 2030 for Target 6.3

Target 6.3 deals with the very crucial issue of liquid and solid waste management. The approach for future action here is to expand the coverage of the waste disposal mechanisms to all the wards. There is also preparation for segregating the municipal solid waste according to whether it is bio-degradable or not, as well as separating out hazardous waste and wet and dry bio-medical waste for its appropriate disposal. The scheme of 100 percent door-to-door collection and transportation of waste will also be expanded to all the wards in the coming 15-year period. A new initiative termed as Protocol Septage Management has been introduced following which each ULB and each Gram Panchayat will manage septage hygienically. There will be septage management units for collecting septage and disposing it hygienically. The District Magistrates (DMs) and Sub-Divisional Magistrates (SDMs) will be in charge of managing the entire programme.

Considering that unplanned and reckless disposal of solid waste poses a grave threat not only to our immediate environment, but also to precious natural resources such as rivers and water bodies, the Uttarakhand High Court has recently issued a detailed directive for the disposal of solid waste, in response to a Public Interest Litigation (PIL).[23] Among other directives, some are mentioned below:

- All officers of municipal corporations, Nagar Panchayats, municipal councils and PRIs must ensure that no garbage/rubbish is deposited in any street or public place.
- Municipal bodies may consider providing all households two dustbins free of cost for collecting wet and dry bio-medical waste.
- The state government is directed to prepare the state policy and strategy on solid waste management for the state in consultation with the stakeholders within three months, for both rural and urban areas.
- The state government is also directed to ensure that a separate place for segregation, storage, and decentralised processing of solid waste is demarcated in the development plan for group housing or commercial, institutional or any other non-residential building exceeding 200 dwellings.
- All local bodies and Gram Panchayats have been asked to prepare waste management plans.
- All local bodies and Gram Panchayats have been asked to ensure door-to-door collection of segregated solid waste from all households including slums and informal settlements, commercial, institutional and other non-residential institutions.
- There is a general direction to waste generators not to throw waste in the street, bury or burn waste in public spaces, and throw waste in water bodies/rivers, among other instructions, and also to segregate waste at source.
- Local bodies have been instructed to send segregated bio-degradable waste to processing facilities, and also to construct, operate and maintain sanitary landfills as per norms.

Thus, the apex body in the state judiciary system has provided the necessary thrust for the issue of solid waste disposal to be treated with the gravity it deserves. It has also underscored the need for raising public awareness regarding such issues, since the overall objective of ensuring public hygiene will be met only when each individual is aware and conscious about protecting the public health and the environment, and acts upon it.

Target 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of fresh water to address water scarcity and substantially reduce the number of people suffering from water scarcity

Baseline for Uttarakhand

Target 6.4 draws our attention to the burning issue of water scarcity and the need for a sustainable withdrawal vis-à-vis supply of freshwater. Various sustainability structures (350 numbers) such as rain

23. Source: http://www.livelaw.in/uttarakhand-hc-issues-landmark-guidelines-solid-waste-management-read-judgment/ posted on March 17, 2017, accessed on April 2, 2017

water harvesting tanks, check dams, percolation ponds, and the installation of solar dual pumping plants on hand-pumps, among others, have been proposed by the government.[24]

Vision 2030 for Target 6.4

This target deals with improving water use efficiency, and sustainable withdrawal so that water scarcity is mitigated. While no indicators have been devised for the same, certain initiatives are being proposed in order to improve water use efficiency. Some of these are as follows:

- The irrigation department has suggested rainwater harvesting using a cross-modular technical system to filter water.
- Sub-ground rainwater harvesting structures can be placed in a stable manner such that the natural soil cover is not disturbed. This water will move in the sub-soil level and keep the ground moistened during the dry periods. State irrigation is quite scanty—85-90 per cent of the irrigation in the hills depends on rain. Hence, this move will help protect the rabi crop while also aiding tourism, and ensuring benefits for overall agriculture.

Challenges for Water and Sanitation

Despite the efforts of the state and central governments and outside funding agencies to counter it, water scarcity persists in the state and there are issues regarding sanitation. The main challenges are detailed below.

Limited Outreach

- The coverage of water supply is still limited; 17,864 habitations in the rural areas are not getting even 40 LPCD of safe water.
- The peri-urban areas have seen a huge influx of people due to migration and face water-related challenges.

Depletion of Natural Sources of Water

- Gravity flow sources are preferred but these are getting depleted, which is why projects are increasingly opting for pump-schemes wherein the project implementation is slower and getting costlier. The comparative costs for multi-stage pump based supply are Rs. 8,000–25,000 per capita vis-à-vis just Rs. 3,000–6,000 per capita for gravity-based water supply.
- Sometimes habitations receiving adequate water supply can also slip back to their earlier water-deprived state (see Table 3.8). This slippage happens due to the drying up of rivers.

  Glacial retreat is said to have affected water availability in the upper mountain regions. This leads to problems of access to both drinking water and moisture for cultivation. With less than 40 per cent of the cultivated area in Uttarakhand being irrigated, irrigation of agriculture in Uttarakhand is quite limited. Although irrigation can be expanded through the extraction of groundwater, this is a doubly negative proposition. First, it requires the mining of groundwater; second, it usually uses diesel fuel. A better alternative would be to resort to rainwater harvesting for expanding irrigation in agriculture (Ahluwalia, et al., 2016).However, one of the factors that goes against the use of rainwater harvesting is the un-priced nature of groundwater along with subsidised diesel. Reforms are needed to remove perverse incentives for rainwater harvesting.
- Tubewells constitute the predominant source for drinking water in urban areas, which is resulting in the emergence of 'dark zones'.

Funds Crunch for Water and Sanitation

- The availability of funds for water projects has declined in urban areas. Funds for water conservation (chal-khal, etc.) have also been slashed.
- Around 5–8per cent of the water supply schemes are damaged each year due to natural disasters such as heavy snowfall, excessive rain, landslides, and earthquakes. Thus, there is a major requirement for renovation and restoration. The salaries paid to staff members are very high as compared to the revenues earned, leading to a paucity of resources for maintenance and upgradation even though these are needed for ensuring sustainability.
- Sewerage schemes are expensive, and tariffs require revision. The tariff was last revised in 2013 by 15per cent per annum, but more correction is needed in it. In this case, too, salary requirements are high, and tariff revisions are needed to generate funds for operations and maintenance (O & M).

24. NRDWP power point presentation provided by Peya Jal Nigam.

Table 3.8: Slipped Back Habitations in Uttarakhand

Region	Total Habitations	2013-14	2014-15	2015-16	2016-17	2017-18 (till date)
Garhwal	20,558	1924	221	3113	803	84
Kumaon	18,651	2210	49	1513	617	128
Total	39,209	4134	270	4626	1420	212

Source: Swachh Survekshan Gramin, 2016 accessed at http://swachhbharatmission.gov.in/sbmcms/writereaddata/images/pdf/report/Swachh-Survekshan-2016.pdf on 7th May 2017

Swajal Schemes Not Entirely Successful

The World Bank-supported PRI-partnered Swajal Yojana with the SWAp model has not delivered unqualified success. Although some of the assets are still functioning well and collecting tariffs,many PRIs are unable to meet the O&M expenses and are requesting the Government to take over.

Strategy for attaining Vision 2030

The broad approach to Vision 2030 has been discussed and the main strategies are mentioned for enabling the state to attain SDG 6, with the help of the existing schemes.

Water supply

The key strategy of the state government would be to increase the outreach of water supply over the 15-year period in a phased manner so that by 2030, all households and all unserved/underserved areas have access to not only safe drinking water, but also piped water connections. The expansion of water supply and sanitation services in the rural areas, in particular, is hindered by the hilly terrain of the state. This difficult terrain and the frequent occurrence of natural calamities also create challenges for maintaining water supply schemes smoothly. A portion of the planned budget should be kept aside for such contingencies so that the access to water services to citizens is not hampered round the year.

Sanitation

The state of Uttarakhand has been declared an Open Defecation Free state. Public sanitation facilities need imrovement, which implies that these issues must be addressed urgently.

Public awareness about the need for maintaining cleanliness should be raised, which should be linked to overall public health. The department of Panchayati Raj intends to stop the use of hands while using latrines. Effective implementation of the Swatch Bharat Abhiyan and bringing management of solid waste in a phased manner to all villages are also an important part of the strategy, as is the effective functioning of committees related to health, sanitation, and nutrition.

Finance

The Jal Nigam has envisaged the sourcing of finance from the existing sources of centrally sponsored schemes, state government schemes, and funding by agencies such as JICA, World Bank, and the Asian Development Bank (ADB). However, stakeholders in the sector have indicated decreasing availability of funds for water and sanitation projects. In view of this, private sector participation should be encouraged.

The Panchayati Raj department envisages the use of the resources from the Fourteenth Finance Commission for expanding the sewerage system in rural areas.

Land Allotment

The construction of sanitary landfills necessitates considerable land allotment. This is a problem for the forested and mountainous economy of Uttarakhand. However, in the interests of preserving/restoring its pristine environment including water bodies, and rivers, land must be provided for waste management.

Monitoring and Evaluation

The process of monitoring and evaluation must be built in at every stage for projects over the proposed 15-year period. In particular, there should be online monitoring of the functioning of sewage treatment plants to ensure that the release of effluents can be monitored continuously. The existing schemes should be reviewed carefully so that the lessons learnt can feed into future schemes and projects.

Appendix 3.1.1

Vision for Targets under SDG 3: Good Health and Well-Being

Targets for SDG 3	Vision 2030 for Targets
Target 3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births	Reduce MMR to less than 70 per 1,00,000 live births gradually by 2030, down from the baseline level of 165
Target 3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births	Reduce IMR from a baseline level of 40 to 25 per 1000 live births by 2030 and to reduce under five mortality rates from a baseline level of 47 to less than 25 per 1000 live births by 2030. More than 95 percent children will be fully immunized by 2030.
Target 3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	Eliminate HIV/AIDS, nearly eliminate malaria and leprosy, reduce incidence of TB by 80 % and substantially reduce incidence of Hepatitis A, B and diarrhoea by 2030
Target 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	Reduce mortality from non-communicable diseases gradually from baseline level eventually to 16% by 2030. For share of people (15-69) years with blood pressure, achieve a reduction to 9 percent by 2030. For the share of people with raised cholesterol the vision is to almost eliminate the problem by attaining a share of just 4.5% people with this problem by 2030. There will an aim for a 30% reduction by 2030 in the share of people with mental health problems.
Target 3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol	The estimated number of hard drug users will be halved from the baseline level of 3000 to 1500 by 2030.
Target 3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents	Drastically reduce the number of road accidents by 2030, so that the baseline of number of accidents (1342), deaths (801) and injuries (1497) are brought down to only 168, 100 and 175 respectively.
Target 3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes	By 2030, increase the contraceptive prevalence rate to 66 percent, the ANC coverage (at least 4 visits) to 100 percent, institutional delivery to 100 percent, the PNC coverage for Mothers to 100 percent and in 2030, maintain the TFR at the current level, 2.1.
Target 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all	The gaps in availability of health personnel will be sought to be filled in the coming years, for doctors and paramedicals, in particular.
Target 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	

Appendix 3.1.2

Targets and Indicators for SDG 3: Good Health and Well-Being

Targets/Indicators for SDG 3			Baseline 2016-17	Vision 2030
3.1		MMR (per 100,000 live births)	165	70/1,00,000 live birth
3.2		**By 2030, end preventable deaths of new-borns and children under 5 years of age**		
	a1	Infant mortality rate (per 1,000 live births) (Total)	40	NMR25 / 1,000
	a2	Infant mortality rate (per 1,000 live births) (Rural)	39	25/1000
	a3	Infant mortality rate (per 1,000 live births) (Urban)	44	25/1000
	b1	Under-five mortality rate (per 1,000 live births) (Total)	47	25 / 1000
	b2	Under-five mortality rate (per 1,000 live births) (Rural)	46	25 / 1000
	b3	Under-five mortality rate (per 1,000 live births) (Urban)	49	25 / 1000
	c	Immunization of children (fully immunized) (%)	79.6	>95
3.3		**By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases, and combat hepatitis, water-borne diseases and other communicable diseases**		
	a	Prevalence of HIV and AIDS across different types of high-risk categories	0.11	0
	b	Prevalence of TB per 100,000 population	145	29, 80%
	c	Confirmed malaria cases (number)	914	Near to elimination
	d1	Registered prevalence rate (per 10,000 of pop) for leprosy	0.24	Near to elimination
	d2	Kala-azar (visceral leishmaniasis) cases (number)	2	0
	d3	Average prevalence of lymphatic filariasis (%)	0	0
	d4	Cases of dengue (number)	2046	
	d5	People dying annually due to Japanese encephalitis (number)	0	0
	e1	3.3e1 Confirmed cases of Hepatitis A (number)	10677	7783
	e2	3.3e2 Confirmed cases of Hepatitis B (number)	254	185
	f1	Annual incidence of diarrhoea (per 1,000)	10.3	7.51
	g1	Confirmed cases of influenza (H1N1) (number)	20	
3.4		By 2030, reduce by one third premature mortality from non-communicable diseases (NCDs) through prevention and treatment and promote mental health and well-being		
	A	Mortality from non-communicable diseases attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease	48%	16%
	B	**By 2030,reduce by one third premature mortality from non-communicable diseases through prevention and treatment**	-	-
	b1	People aged 15–69 years with high total cholesterol (%)	13.9%	4.5%
	b2	People (aged 15–69 years) with high blood pressure (%)	26.8%	9%
	c	By 2030,promote mental health and well-being	-	-
	c1	Mental health problems (%)	-	30% reduction

Contd...

Appendix 3.1.2 Contd...

Targets/Indicators for SDG 3			Baseline 2016-17	Vision 2030
	c2	Suicide rate (per 100,000 population)	-	-
3.5		Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol		
	a	Hard drug users (estimated number)	3000	1500
3.6		**By 2020, halve the number of global deaths and injuries from road traffic accidents**	Road Accidents -1342,Deaths- 801,Injuries – 1497(January to October)	Road Accidents -168,Deaths- 100,Injuries – 175,
3.7		**By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes**		
	a	Contraceptive prevalence rate (modern methods) (%)		
	a1	Current use of modern family planning methods (currently married women aged 15–49 years) (Total)	49.3	65.96
	a2	Current use of modern family planning methods (currently married women aged 15–49 years) (Rural)	49.8	66.46
	a3	Current use of modern family planning methods (currently married women aged 15–49 years) (Urban)	48.4	65.06
	b	Antenatal care (ANC) coverage (at least four visits) (%)		
	b1	Mothers who had at least four antenatal care visits (%) (Total)	30.9	100
	b2	Mothers who had at least four antenatal care visits (%) (Rural)	25.7	100
	b3	Mothers who had at least four antenatal care visits (%) (Urban)	41.2	100
	c	Institutional delivery (%)		
	c1	Institutional delivery (%) (Total)	68.6	100
	c2	Institutional delivery (%) (Rural)	63.7	100
	c3	Institutional delivery (%) (Urban)	79.1	100
	d	Postnatal Care (PNC) for mothers (%)		
	d1	Mothers who received postnatal care from a doctor/nurse/LHV/ANM/midwife/other health personnel within two days of delivery (%) (Total)	54.8	100
	d2	Mothers who received PNC postnatal care from a doctor/nurse/LHV/ANM/midwife/other health personnel within two days of delivery (%) (Rural)	49.1	100
	d3	Mothers who received postnatal care from a doctor/nurse/LHV/ANM/midwife/other health personnel within two days of delivery (%) (Urban)	66.1	100
	e	Total Fertility Rate (TFR) (births per women)		
	e1	Total fertility rate (TFR) (births per women) (Total)	2.1	2.1
	e2	Total fertility rate (TFR) (births per women) (Rural)	2.2	2.1
	e3	Total fertility rate (TFR) (births per women) (Urban)	1.8	2.1

Contd...

Appendix 3.1.2 Contd...

Targets/Indicators for SDG 3			Baseline 2016-17	Vision 2030
3.8		**Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all**		
	a	Government health expenditure as % of GSDP		
	b	Shortage of doctors at PHCs	55.78 %	0
	c	Shortage of obstetricians and gynaecologists	91%	0
	d	Shortage in the number of functioning PHCs	94%	0
	e	Shortage in the number of ANMs	0	0
	f	Number of doctors per lakh population	13.91	27.15 (7% Increase)
	g	Number of paramedicals per lakh population (hills and plains)	38.57	41.27 (7% Increase)
	h	Number of hospitals beds per lakh population	1032	1750
	i	Number of PHCs per lakh population	2.58	4.00
	j	Number of maternity and child care centres per lakh population	18.97	26.50
	k	Number f other health centres per lakh population (hills and plains)	3.44	10.00
		Number of persons covered under health insurance(Rural)	24,28,275	35,38,978
		Number of persons covered under health insurance(Urban)	33,53,350	48,87,160
		Number of persons covered under health insurance(Total)	57,81,625	84,26,138
3.9		**By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination**		

Appendix 3.1.3

Schemes for SDG 3: Good Health and Well-Being

Targets	Centrally Sponsored Schemes/State Sector	Direct Intervention Schemes
3.1	National Health Mission including NRHM	Pradhan Mantri Swasthya Suraksha Yojana
3.2	HRD in Health and Medical Education	Integrated Child Development Services
3.3	National Mission on Ayush including Mission on Medicinal Plant	Mukhya Mantri Swasthya Suridrikaran Yojana
3.4	National Aids and STD control Programme	Cashless Health Scheme for Government employees
3.5		Mukhyamantri Bima Swasthya Yojana
3.6		Introduction of PPP-based health support system
3.7		State Health Mission
3.8		District Family Welfare Bureau
3.9		Child Survival and Safe Motherhood Programme

Appendix 3.1.4
Vision for Ayurvedic, Unani Services and Homeopathy

S. No.	Targets/Indicators	Baseline	2017-2020	2020-2024	2024-2031
1	Up to 50 bedded hospitals at the district headquarters	1 under construction	3	7	12
2	Establishment of Ayurvedic and Unani hospitals	549	10	30	80
3	Upgradation of running Ayurvedic and Unani hospitals	8	5	15	35
4	Conducting special medical procedures like panchkarma/ksharsutra in the already running Ayurvedic hospitals	38	10	30	80
5	Establishment of new Ayurvedic colleges in the Garhwal and Kumaon divisions	0	1	2	0
6	Establishment of a Unani college in Uttarakhand	1 under construction	3	7	12
7	Establishment of an AYUSH Gram in each district of the state	0	3	8	13
8	Training of medical officers and pharmacists	92	150	450	1150
9	Formation of herbal garden with the help of Centrally sponsored schemes	0	25	50	200
10	Establishment of an Ayurvedic Research Institute in Charakdanda, the birth-place of Maharishi Charak	0	1 First phase	Second phase	Third phase
11	Strengthening of the Rishikul Government Drug Testing Lab, Haridwar, as a high-technology drug testing Lab	1 500 medicine samples	500	1500	3000
12	Starting diploma courses in Panchkarma and in a fundamental subject in the Government Rishikul PG College, Haridwar	0	4	8	14
13	Construction of the buildings of all Government Ayurvedic and Unani hospitals	252	80	205	297
14	Increasing the manufacturing capacity of Rishikul/Gurukul Government Ayurvedic pharmacies	50 medicines	100	277	0
15	Organisation of an Aarogya mela and camp in each district for generating awareness about the Ayurvedic system of medicine	3	15	35	85
16	Identification, cultivation and marketing of herbal medicines along with herbs of the Sanjeevani family	0	1	0	0
17	To attract tourists, establishment of yoga grams at places identified by the government	0	12	22	42
18	Setting up homeopathic medical colleges		1		1 PG medical college
19	Setting up homeopathic Hospitals	110	In 20 CHCs and 14 PHCs. Also in Ayush grams	In 25 CHCs and 14 PHCs	Remaining 41 CHCs and 17 PHCs

Appendix 3.2.1

Vision for Targets under SDG 4: Quality Education

Targets for SDG 4	Vision 2030 for Targets
Target 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes	To attain NER of 100% for primary and upper primary levels and to attain NER of 80% at the secondary level. The drop-out rates will be reduced to zero at all the three levels, while the targeted learning outcomes, (for reading and mathematics) will be 95% for primary and lower secondary levels, except for 90% for mathematics at lower secondary level by 2030.
Target 4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education	
Target 4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university	To increase the share of women in diploma seats to 40% and the number of seats for women to 20,000 by 2030. The access to higher education will rise from 33.9 at present to 60 by 2030 and student teacher ratio will improve in the same period. The vision for Higher Education is to attain GER of 60% by 2030.
Target 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	To skill 151,920 youth up to 2030, and to increase the number of polytechnics to 200, and those in rural/backward areas to 50 by 2030. The student–teacher ratio in polytechnics will be improved to 10:1 by 2030 by creation of new teaching posts. New pedagogies will be introduced. Employability and entrepreneurship in higher education will be greatly enhanced. The vision for medical education is to fill the shortage of doctors and health personnel in the state by 2030.
Target 4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations	To attain gender parity of unity for both primary and secondary level, up from baseline levels of 0.89 and 0.92 respectively by 2030. For higher education, the vision is to reach the Gender Parity Index to reach 1.44 by enrolling more females.
Target 4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy	All youth (15-29 years) will attain full literacy of 100 percent by 2030.
Target 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development	

Appendix 3.2.2

Targets and Indicators for SDG 4: Quality Education

Target 4.1	By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes	Baseline 2016-17	Vision 2030
All girls and boys complete free, equitable primary and secondary education			
4.1a Net enrolment rate in primary education (%)		89.18	100
4.1b Net enrolment rate in upper primary education (%)		71.00	100
4.1c Primary cycle retention rate (%)		86.15	100
4.1d Upper primary cycle retention rate (%)		98.62	100
4.1e Primary level completion rate (%)		100	100
4.1f Upper primary level completion rate (%)		96.76	100
4.1g Net enrolment rate in secondary education (%)		51.28	80
Quality primary and secondary education			
4.1h Trained teachers in total number of teachers for primary education (%)		95.0	100
4.1i Trained teachers in total number of teachers for upper primary education (%)		100.0	100
4.1j School with access to basic drinking water facilities—Primary (%)		98.2	100
4.1k School with access to basic drinking water facilities—Upper Primary (%)		94.5	100
4.1l School with access to basic toilet facilities—Primary (%)		97.0	100
4.1m School with access to basic toilet facilities—Upper Primary (%)		96.0	100
4.1n School with access to basic electricity facilities—Primary (%)		73.2	100
4.1o School with access to basic electricity facilities—Upper Primary (%)		82.5	100
4.1p School with ramp and material for students with disability—Primary (%)		66.1	100
4.1q School with ramp and material for students with disability —Upper Primary (%)		59.5	100
Effective learning outcomes			
4.1r Learning score (reading) at the end of primary level (class 5)		61.18	100
4.1s Learning score (math) at the end of primary level(class 5)		61.69	100
4.1t Learning score (reading) for end of lower secondary level(class 8)		62.39	100
4.1u Learning score (math) for end of lower secondary level (class 8)		34.35	100
Dropouts			
4.1v Drop-out at the primary level (%)		3.16	0
4.1w Drop-out at the upper primary level (%)		1.69	0
4.1x Drop-out at the secondary level (%)		12.65	0
Target 4.2	***By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education***		
4.2a Enrolment (number) in pre-school education among 3-5+ year olds (hills)		2,86,546	NA
4.2b Enrolment per AWC in pre-school education among 3-5+ year olds (hills)		8	NA
4.2c Enrolment (number) in pre-school education among 3-5+ year olds (plains)		1,00,183	NA

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Appendix 3.2.2 Contd...

4.2d Enrolment per AWC in pre-school education among 3-5+ year olds (plains)		14	NA
Target 4.3	***By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university***		
4.3a Share of diploma seats for women (% of total)		30	40
4.3b Number of diploma seats for women		6200	20,000
4.3c Ratio of boys enrolment in technical and vocational education			
4.3d Gross Enrolment Ratio (GER) at higher education		33.9	60
4.3e Net Enrolment Ratio (NER) at higher education		NA	58
4.3f Pupil–teacher ratio at higher education		142:1	20:1
Target 4.4	***By 2030, increase by 75 percent the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship***		
4.4a Number of students taking technical education in polytechnics (000)		20.604	50
4.4b Present skill training capacity (000) (State Skill Development Mission)			151.92
4.4c Number of polytechnics		131	200
4.4d Number of polytechnics in backward/rural areas		34	50
4.4e Students/teachers ratio in technical education		20:1	10:1
4.4f Entrepreneurship (no. of EDPs) in higher education		20	40
4.4g Employability ratio		40	60
Target 4.5	***By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations***		
4.5a Gender Parity Index (GPI) (primary school)		0.89	1.00
4.5b Gender Parity Index (GPI) (secondary school)		0.92	1.00
4.5c Gender Parity Index (GPI) Higher Education		0.94	1.44
Target 4.6	***By 2030, ensure that all youth and at least 95 percent of adults, both men and women, achieve literacy and numeracy***		
4.6a Literacy rate of youth 15-29 years (%)		94.8	100.0
4.6b Literacy rate of youth 15-29 years (women) (%)		93.6	100.0
4.6c Numeracy all (15 years and older) (%)			
4.6d Numeracy female (15 years and older) (%)			
Target 4.7	***By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development***		
IEC , Education and Awareness on SDGs	4.7a Number of seminars/workshops/trainings on SDGs		
	4.7b Number of seminars/workshops/trainings on human rights		
	4.7c Number of seminars/workshops/trainings on gender equality		
	4.7d Number of programmes for promotion of culture of peace and non-violence		
	4.7e Number of programmes on cultural diversity		

Appendix 3.2.3

Schemes for SDG 4: Quality Education

Centrally Sponsored Schemes	**Direct State Intervention Scheme**
Sarva Shiksha Abhiyan (SSA)	Free textbooks and uniforms
Mid Day Meal Programme	Establishment of Rajiv Gandhi Navodaya Vidyalayas
Rashtriya Madhyamik Shiksha Abhiyan (RMSA)	Establishment of Kasturba Gandhi Balika Vidyalaya
Support for educational development including teachers' training and adult education	Free reimbursement of fees under RTE
Free education for girls up to intermediate	Implementation of ICT in Government schools
Scheme to provide education to madrasas, minorities and disabled	Hostel for girls
Rashtriya Ucchatar Shiksha Abhiyan (RUSA)	Free textbooks and uniforms
	Uttarakhand Skill Development Mission

Appendix 3.3.1

Vision for Targets under SDG 6: Clean Water and Sanitation

Targets for SDG 3	Vision 2030 for Targets
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.	To reach improved drinking water and piped water supply to all households in rural and urban areas, including people from all socio-economic groups by 2030.
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.	Provide individual/community toilets to all house-holds, rural and urban, and to expand public sewerage facilities to all villages and towns, by 2030. State achieved Open defecation free status in 2018.
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.	Liquid and solid waste management/treatment will be given priority so that the natural water sources such as water bodies, rivers, lakes, etc. are not contaminated and hazardous chemical waste generation will be minimised and such waste disposed of properly.
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.	
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.	
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.	

Appendix 3.3.2

Targets and Indicators for SDG 6: Clean Water and Sanitation

Target/Sub-target and Indicators		
Target 6.1 ***By 2030, achieve universal and equitable access to safe and affordable drinking water***	Baseline 2016-17	Vision 2030
6.1a1 No. of rural habitations covered by water supply of 40 LPCD (litres per capita per day)	21,345	17,864*
6.1a2 No. of urban ULBs covered by water supply of 135 LPCD	21	70*
6.1bTotal rural habitations using safe drinking water (%)	64.3	100
6.1b1 SC-dominated rural habitations using safe drinking water (%)	70.8	100
6.1b2 ST-dominated rural habitations using safe drinking water (%)	100	100
6.1c Households with access to piped water supply** (number)	5,82,621	All house-holds
6.1c1 Households with access to piped water supply (no.) (Rural)	2,79,964	All house-holds
6.1c2 Households with access to piped water supply (number) (Urban)	3,02,657	All house-holds
Target 6.2 ***By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations***		
6.2c ULBs with partial sewerage (%)	28.6	100
Target 6.3 ***By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing hazardous chemicals and materials, halving the proportion of untreated waste water and increasing recycling and safe reuse***		
6.3a Municipal solid waste processing (total) (%) under Swachh Bharat Mission (SBM)^	0.5	
6.3b Municipal solid waste processing (equivalent) (%) under SBM^	5.07	100
6.3c No. of wards with 100% door to door collection and transportation of solid waste^^	431	703
6.3d Amount of hazardous waste generation (metric tonne per annum)	55,627	0
6.3e Amount of bio-medical waste generation (kg/day)	2257.41	
Target 6.4 ***By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of peoplesuffering from water scarcity***		
Target 6.5 ***By 2030, implement integrated water resources management at all levels, including through trans-boundary cooperation as appropriate***		

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Target 6.6$ ***By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes***		
6.6a Afforestation (hectare)	2110	14604
6.6b Afforestation survival rate	78%	
6.6c Soil conservation work(hectare)	21450	60060
6.6e Afforestation for water bodies(hectare)	Included in 6.6 a	
6.6h Afforestation for lakes (hectare)	Included in 6.6 a	
6.6i Afforestation survival rate for lakes		
6.6j Number of *chal-khal* (pits and ponds) constructed	15,312	1,14,715
6.6k Area covered under pits and ponds (chal-khal) (hectare)	168	1271

**Source: State government. Refers to Piped water into dwelling/yard/plot, public tap/standpipe, tubewell or borehole, protected dug well or spring, rainwater, community RO plant.
Notes:* Refers to additional habitations to be covered for all years except the baseline.
^Data upto September 4, 2015 from Handbook of Urban Statistics 2016, GoI; ^^Data from Handbook of Urban Statistics, GoI, is 87
$: The information is based on the following assumptions:
6.6 a Afforestation (hectare): Actual for the year 2016-17 and target for the remaining period in the GPWDP.
6.6 b Afforestation survival rate: Based on the sample study.
6.6 c Soil conservation work (hectare): 10% of the total area of non-arable land within a microwatershed.
6.6 j Number of chal- khal (pits and ponds) constructed: Actual for the year 2016-17 and target for the remaining period in the GPWDP.
6.6 k Area covered under pits and ponds (chal-khal) (hectare): Calculated on the basis of the area under the recharge pit (1cum) 1sq.m. and area under the water pond (125 cu.M.) 96 sq.m.

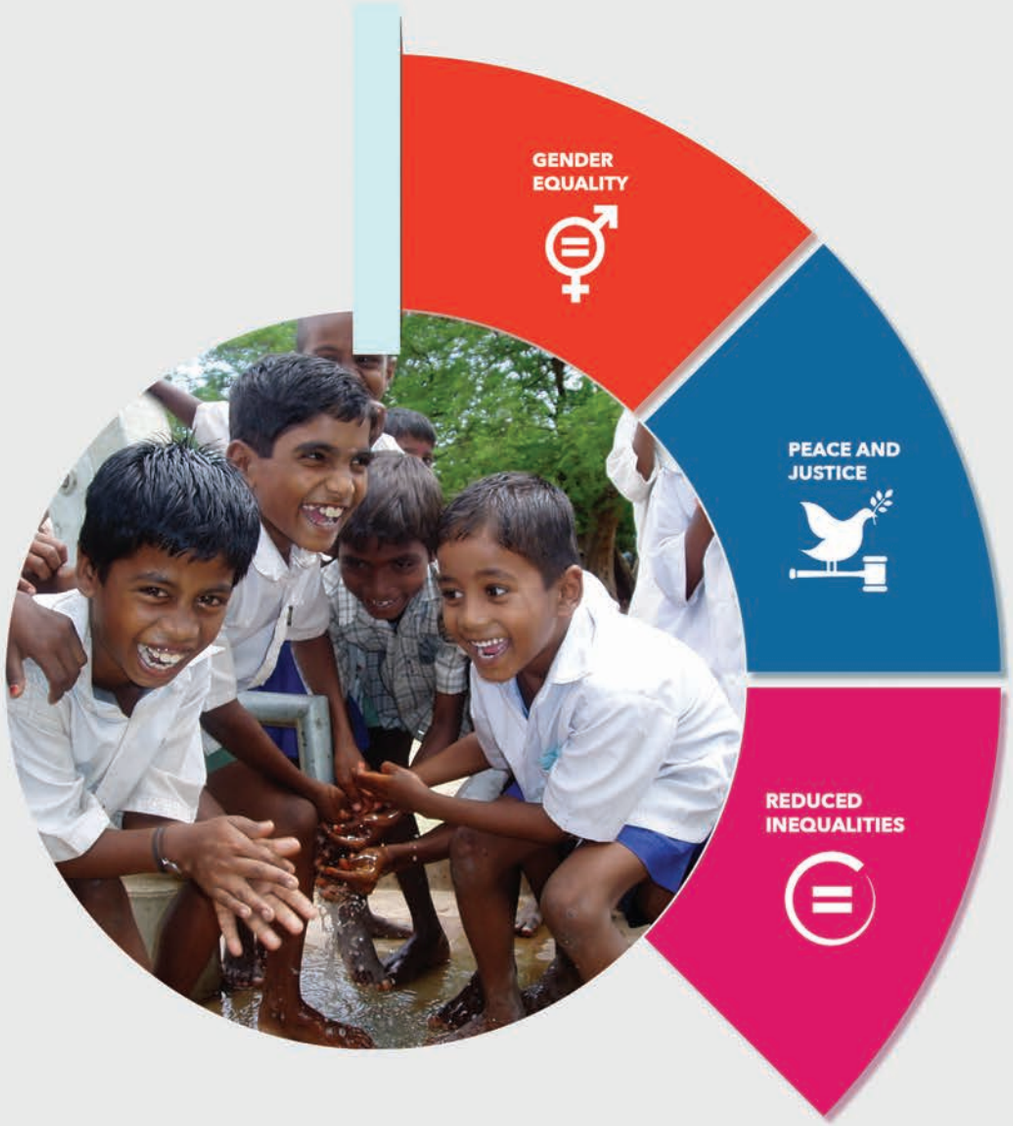
Appendix 3.3.3

Schemes for SDG 6: Clean Water and Sanitation

Targets	Centrally Sponsored Schemes/State Sector	Direct Intervention Schemes
Target 6.1	Swachh Bharat Abhiyan	
Target 6.2	National River Conservation Programme Swajal Dhara	
Target 6.3	Namami Ganga Solid Waste Management	
Target 6.4	Urban Sewage Treatment Plants	Strengthening of river bank filtration technology in urban areas
Target 6.5	Rural Water and Sewerage Scheme	Nagariya awasthapana suvidhaun ka vikas
Target 6.6	Jalagam/Watershed Management Plans	

Chapter 4

Social Development



No society is entirely homogeneous and the fruits of economic development are often not shared equitably among various segments of the populace. Social development is, therefore, an important area of focus for policy-makers as all the axes of exclusion must be addressed. These axes of exclusion could comprise gender, socio-economic background including religion and caste, location, region, and so on. The three SDGs considered under the theme of Social Development encompass different areas as well as the manifestation of exclusion: SDG 5 (Gender Equality), SDG 10 (Reducing Inequalities), and SDG 16 (Peace, justice and strong institutions). These three goals are discussed in detail in this chapter.

SECTION 4.1

SDG 5: Achieve Gender Equality and Empower All Women and Girls

Since the Declaration on the Equality of Women and Their Contribution to Development and Peace in Mexico in 1975 under the aegis of the United Nations, gender issues have found centre-staging in all development forums, in declarations and action. Public policy for the last several decades has been expected to be gender-sensitive in all its facets, though local/regional sensibilities have been accounted for. As of now, the Sustainable Development Goal No. 5 is devoted to this issue.

Goal No. 5 builds on some of the targets that began with the Millennium Development Goals, specifically MDG 3, which made some strides but did not fully succeed in providing a springboard for development policy and practices that promoted gender equality and the rights of women and girls. Women and girls continue to face discrimination across economic, social and political spheres in different parts of India and the world, and entrenched gender disparities remain major drivers of poverty and inequality. SDG 5 is thus expected to promote socio-political transformation at both the local and national levels.

The vision for Goal No. 5 for the state is:

> ***By 2030, the society in Uttarakhand will have gender parity in education, health and employment. Gender-based violence and discrimination will end and women will be empowered as a result of stronger laws and better participation in leadership in all spheres.***

The vision for targets of Goal No. 5 are presented in Appendix 4.1.1, followed by values for indicators (baseline and vision 2030) in Appendix 4.1.2, and Appendix 4.1.3 contains the schemes applicable for Goal no. 5. Annexure 5 contains the detailed information regarding indicators for Goal no. 5 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

In this section, Targets 5.1, 5.2 and 5.3, which deal with ending discrimination, are discussed first. Next Target 5.4, which refers to the economic empowerment of women, is addressed, and finally Targets 5.5 and 5.6 are discussed together, broadly addressing the issue of the political empowerment of women. At the end, the challenges and strategy for attaining the vision are discussed for all the targets together.

The Conceptual Context

The following features are important with regard to the gender issues in Uttarakhand (Mehta, 2008; Mamgain, 2007):

1. As per the global trend, agriculture is being increasingly integrated with markets, in the case of both input markets and produce markets.
2. There is increased incidence of out-migration among male workers. Although this has been going on for many years, the phenomenon of migration per se requires underscoring since it results in the feminisation of agriculture.
3. There is significant invisibility of women's work.
4. There is widespread male (child and adult) preference in society.

These factors have reinforced the patriarchal character of Indian society, and the state of Uttarakhand is no exception. Since women are engaged in subsistence agriculture (largely non-monetised), along with domestic work (including care of children and the elderly), their control over cash resources is limited, which leads to an extension of patriarchal values, notwithstanding the significant work burden borne by womenfolk both within and outside the home.

SDG 5

Achieve Gender Equality and Empower All Women and Girls

Uttarakhand Vision for SDG 5

By 2030, the society in Uttarakhand will have gender parity in education, health and employment. Gender based violence and discrimination will end and women will be empowered as a result of stronger laws and better participation in leadership in all spheres.

Uttarakhand Today

- Overall sex ratio is higher than national average, but child sex ratio is low
- Large scale male migration has led to feminisation of agriculture in hills, increasing women's burden
- 34 percent women workers against 66 percent male workers
- Share of women workers in non-agriculture sector is only 16.8 percent (2011-12)
- Gender gap in literacy with males at 87.4 percent and women at 70 percent
- Legislation in favour of women not implemented adequately
- Some incidence of domestic violence against women and child marriage from NFHS data

Focus for Tomorrow

- To improve child sex ratio
- Economic empowerment of women with better access to livelihood in non-agriculture
- End discrimination against women by better implementation of laws
- To provide safer environment for women in private and public spaces

Targets for 2030

- Increase gender parity to unity at primary and secondary levels of education
- Raise the share of women workers in non-agriculture sector to 50 percent
- Raise the sex ratio at birth to unity throughout the state
- Maintain the seat share of women in Panchayat bodies at 50 percent
- Increase share of women in public service posts and share of women entrepreneurs to 50 percent

Box 4.1: Giving Identity to Women – International Conventions

Since the past two decades, the issues of women have attracted the attention of the entire world. The year 1975 was a milestone in the history of the women's movement when the United Nations Organisation (UNO) declared 1975-85 as the International Decade for Women. This led to the adoption of the Women in Development (WID), Women and Development (WAD), and Gender and Development (GAD) approaches at the national and international levels for promoting women's development and advancement.

Recently, gender mainstreaming and rights-based approaches to women's empowerment have gained momentum. The concept of these approaches stems from declarations and documents emerging from a number of international conventions and conferences, specifically the World Conference on Human Rights (Vienna, 1993); International Conference on Population and Development (Cairo, 1994); World Summit for Social Development (Copenhagen, 1995); Fourth World Conference on Women (Beijing, 1995); Second UN Conference on Human Settlements (Istanbul, 1996); World Food Summit (Rome, 1996); and the five-year reviews of these conferences. The Convention on Elimination of all Kinds of Discrimination against Women (CEDAW) has also been recognised as an international instrument for addressing the gender-based discrimination prevailing in most of the societies in the world.

The recommendations in international documents, made by the international community, coupled with women's movements, have pressurised nations into taking affirmative actions which address the centuries-old practices of unequal sharing of rights, powers, resources, and opportunities among men and women, and promote empowerment processes that enable women to take control over their life, destiny and actions. Consequently, the government has initiated concerted efforts to foster the socio-economic and political empowerment of women.

The Himalayan Action Research Centre has carried out a major study to examine various aspects of empowering women in the Uttarakhand region.

Source: Himalayan Action Research Centre, http://www.harcindia.org/index.php/69-cooperative-study

Agriculture: A majority of the villagers cultivate small and scattered holdings to produce a variety of traditional crops (see Ahmed, 2004, for the intersection of gender and agriculture). Women play a significant role in cultivating these small and marginal farms but the productivity of their work is low as the farms are scattered. In most districts, commercial cultivation accounts for a small share in the overall agricultural production, which further thwarts productivity.

Agricultural practices in the hill districts in Uttarakhand have remained relatively backward. Even in cases where modern inputs are applied and/or the product is marketed, the gains of development are mainly taken away by traders, and farmers gain little. Since the farms are largely tilled by the women, they are the ones most impacted adversely by the low productivity and low incomes.

Migration: The issue of migration has been discussed in Chapter 1. Migration is a major livelihood option for rural households in all the hill districts. It is driven by the lack of locally available employment in the rural areas due to the diminishing subsistence production and increasing population pressure as well as aspirations among the local population for better education and a better life. Out-migration is gender-specific, with relatively more young men leave their villages, while women remain behind to maintain their family farms and look after their families.

While migration has many beneficial aspects for the families involved, the absence of young/able-bodied men for considerable lengths of time, coupled with growing accessibility to primary and secondary education, represents a significant reduction in the availability of household labour: women, children (and particularly female ones), and the elderly tend to be the ones who have to pick up the slack. This situation, in turn, intensifies women's drudgery. This is borne out by the findings of the Baseline Survey (cited in Footnote 1, Mehta, 2008), which highlights the adverse effects of migration on the families left behind: women's heightened work burdens and the increased responsibilities of having to carry out work, without access to the necessary support such as the financial resources needed to hire labour for agricultural work.

Feminisation of Agriculture: The growing feminisation of agriculture resulting from male out-migration underscores a key contradiction in the lives of the local women: their centrality to the running of households and family farms, on the one hand, and their social, economic and political marginalisation, on the other (Mehta, 1994). This tension is becom-

Table 4.1: Selected Statistics for Demographics, Women's Literacy and Work in Uttarakhand

	Total	Male	Female
Proportion in total population (%)	100.0	50.94	49.05
Proportion in rural population (%)	100.0	50.0	50.0
Proportion in urban population (%)	100.0	53.1	46.9
Population sex ratio (per 1000 males)	963		
Child sex ratio (per 1000 male children)	890		
Literacy rate (%)	78.82	87.4	70.0
Literacy rate (SC) (%)		84.3	64.1
Workers (% of total)		65.9	34.1

Source: Source: Government of Uttarakhand, 2013-14.

ing more sharply defined as the market economy and institutions of the state—to which men are the main conduits—come to play an increased role in the lives of households. In this context, women often become de facto heads of households, but at the same time, they lack control over land, cash and productive resources, which prevents them from becoming efficient managers of the domestic and farm economies, or exercising the authority needed to draw attention to their requirements. Despite the socio-economic changes, which have, over the course of the last quarter of the twentieth century, brought the hill society ever closer into the orbit of state institutions and market relations, as a constituency, mountain women remain extremely marginalized and have limited or no control over productive resources and decision-making processes.

Social Issues of Invisibility and Male Preference: The status of women in Uttarakhand is typically subservient to their male counterparts, as witnessed elsewhere in India. The population sex ratio is 963, while the child sex ratio is only 890 (Table 4.1)1. The low child sex ratio appears to be largely accounted for by urban data, if we consider the NFHS-Round 4 data for 2015-16, according to which rural child sex ratio is 924, as opposed to just 821 for the urban counterpart, the average for the state being 888. The very low child sex ratio in urban areas is indicatives of persistence of the practice of sex selection in these areas. Women are less literate than men by a full 17 percentage points, and their work participation rate is about half as compared to that of men. As stated earlier, in the upper ridges, a large number of male workers migrate out for work, and the women there are saddled with both farming as well as house-work. Given that the TFR has dropped to 2.1 only in the last 3-4 years, child care is still a burden. Further, though the poverty ratio is only 11-12 per cent in the population, a large number of people in the hill region fall within or not too far above the poverty line.

A significantly large number of rural households also do not have access to cooking gas, and rely on wood as cooking fuel. Similarly, about 35 per cent of the rural habitations are not covered by safe/piped drinking water and potable water, wherein water has to be fetched from long distances. All these factors add to the women's domestic burden, particularly in the tough mountainous terrain characterised by uneven pathways and steep slopes. It is not only adult women who bear the burden but younger girls are also drawn into this work, which adversely affects their education as well as health.

Another important aspect that needs to be considered as part of the socio-economic framework of the state is domestic violence: NFHS-4 data report that around 12.7 per cent of ever-married women have experienced marital violence. There are also less obvious forms of oppression in the domestic sphere,which are difficult to capture through quantitative surveys. There are the issues of economic well-being of women, who are usually in an economically weak position and unable to find seek succour either from their own or community means. One of the categories of such women includes poor and old women without family support or any means of livelihood. Appendix 4.1.3 provides a bird's eye-view of the existing programmes that are expected to aid women from various socio-economic backgrounds to strive towards equity and equality of opportunity in the society.

1. Data in this section are drawn from Government of Uttarakhand, 'Uttarakhand at a Glance', 2013-2014,and child sex ratio is from Census, 2011.

Target 5.1 End all forms of discrimination against all women and girls everywhere

Baseline for Uttarakhand

The task of ending discrimination against women and girls would draw power from the sound legal basis for women's empowerment, for which the Indian Constitution makes provisions. The principle of gender equality is also enshrined in the Indian Constitution, which empowers the State to adopt measures of positive discrimination in favour of women.[2] Fundamental rights, among others, ensure equality before the law and equal protection of law; prohibit discrimination against any citizen on grounds of religion, race, caste, sex or place of birth; and guarantee equality of opportunity to all citizens in matters relating to employment (see Box No. 4.2 on Constitutional privileges for women). Within the framework of a democratic polity, laws, development policies, and programmes have focused on women's progress. India has also ratified international conventions and human rights instruments committed to securing equal rights for women, notably CEDAW. Some other initiatives in this direction are detailed below.

(i) National Commission for Women

In January 1992, the Government set up the National Commission for Women, a statutory body with a specific mandate to study and monitor all matters relating to the constitutional and legal safeguards provided for women, and review the existing legislation to suggest amendments wherever necessary, among other measures required to empower women and safeguard their rights.

(ii) Reservation for Women in Local Self-government

The 73rd Constitutional Amendment Acts, passed in 1992 by Parliament, ensure that one-third of the total seats be reserved for women in all elected offices in local bodies, whether in rural areas or urban areas.

(iii) The National Plan of Action for the Girl Child (1991-2000)

The plan of action is to ensure survival, protection, and development of the girl child with the ultimate objective of building a better future for the girl child.

(iv) National Policy for the Empowerment of Women, 2001

This policy was prepared by the Department of Women and Child Development in the Ministry of Human Resource Development in 2001. The goal of this policy is to bring about the advancement, development, and empowerment of women.

The Uttaranchal State Commission for Women Act, 2005, was passed by the State legislative assembly in November 2005 to form the Uttaranchal State Commission for Women. The functions of the Commission include, among others:[3]

- Investigate matters that relate to safeguards provided for women under the Constitution and other laws;
- Take up cases of violation of the above safeguards with the appropriate authorities;
- Look into pertinent matters including deprivation of women's rights, and non-implementation of laws enacted to protect women, in order to achieve the objectives of equality and development;
- Participate in and render advice on the planning process of the socio-economic development of women; and
- Collect information relating to offences against women.

The legislative framework against gender-based discrimination may be somewhat in place, but the extent to which it is reflected in real life for women is also under probe, as per Target 5.1. The issues that have been discussed include areas of health and employment, increased work burden of women in rural areas, and the social marginalisation of women due to the prevalent patriarchy. Some indicators are easier to monitor in this context, and education-related indicators show considerable gender parity at present for access to education. The ratios of girls to boys in primary as well as in secondary education are high at 0.89 and 0.92, re-

2. From the National Legal Research Desk, posted on February 11, 2012, available at http://nlrd.org/constitutional-and-legal-provisions-for-women-in-india/#comment-1006, accessed on April 15, 2017.

3. Gazette notification of Uttaranchal, dated November 11, 2005, furnished by PRS Legislative Research, available at http://www.lawsofindia.org/statelaw/1374/TheUttaranchalStateCommissionforWomenAct2005.html , accessed on April 15, 2017.

Box 4.2: Constitutional Privileges for Women

(i) Equality before law for women (Article 14)

(ii) The State not to discriminate against any citizen on grounds only of religion, race, caste, sex, place of birth or any of them (Article 15 (i))

(iii) The State to make any special provision in favour of women and children (Article 15 (3))

(iv) Equality of opportunity for all citizens in matters relating to employment or appointment to any office under the State (Article 16)

(v) The State to direct its policy towards securing for men and women equally the right to an adequate means of livelihood [Article 39(a)]; and equal pay for equal work for both men and women [Article 39(d)]

(vi) To promote justice, on the basis of equal opportunity and to provide free legal aid by suitable legislation or scheme or in any other way to ensure that opportunities for securing justice are not denied to any citizen by reason of economic or other disabilities (Article 39 A)

(vii) The State to make provision for securing just and humane conditions of work and for maternity relief (Article 42)

(viii) The State to promote with special care the educational and economic interests of the weaker sections of the people and to protect them from social injustice and all forms of exploitation (Article 46)

(ix) The State to raise the level of nutrition and the standard of living of its people (Article 47)

(x) To promote harmony and the spirit of common brotherhood amongst all the people of India and to renounce practices derogatory to the dignity of women [Article 51(A) (e)]

(xi) Not less than one-third (including the number of seats reserved for women belonging to the Scheduled Castes and the Scheduled Tribes) of the total number of seats to be filled by direct election in every Panchayat to be reserved for women and such seats to be allotted by rotation to different constituencies in a Panchayat [Article 243 D(3)]

(xii) Not less than one- third of the total number of offices of Chairpersons in the Panchayats at each level to be reserved for women [Article 243 D (4)]

(ix) Not less than one-third (including the number of seats reserved for women belonging to the Scheduled Castes and the Scheduled Tribes) of the total number of seats to be filled by direct election in every Municipality to be reserved for women and such seats to be allotted by rotation to different constituencies in a Municipality [Article 243 T (3)]

(x) Reservation of offices of Chairpersons in Municipalities for the Scheduled Castes, the Scheduled Tribes and women in such manner as the legislature of a State may by law provide [Article 243 T (4)]

Source: National Legal Research Desk, available at http://nlrd.org/constitutional-and-legal-provisions-for-women-in-india/, accessed on July 10, 2017.

spectively (see Annexure 4). The share of women workers in the non-agriculture sector, according to 2011-12 NSS data, is just 16.8 per cent, in keeping with the prevalent trend of low female work participation across India.

Vision 2030 Target 5.1

The human development aspirations of a people cannot be fulfilled entirely till all gender-based discrimination and violence come to an end, and till all are equally empowered in the economic, political, and social spheres of life. The government of Uttarakhand would thus need to address the root causes of inequality faced by women and girls, and to find solutions. The outcomes of such an exercise are expected to reflect changes at both the individual level as well as at the level of institutions, with the latter providing an equal 'playing field' for all genders.

In terms of Target 5.1, the legislations should be effective and implemented on the ground. Various bodies and authorities overseeing this area such as government servants, police personnel, and the State Women Commission need to be vigilant to ensure that the law is more effectively enforced and that it does not remain merely as words on paper. Other indicators under this target entail the attainment of full gender parity of unity at the primary and secondary levels. The vision for the share of women workers in the non-agricultural sector is that it is raised from a low of 16.8 per cent at the baseline to 50 per cent by 2030.

Target 5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation

Baseline for Uttarakhand

The sex ratio at birth is much lower in the urban areas of the state as compared to the rural areas, possibly signifying deliberate sex selection process in the urban areas, as discussed earlier. This shows that the legal rights provided for women may be circumvented and even violated in the face of weak implementation and poor governance. In fact, as the discussion under SDG 16 shows in Section 4.3, incidents of rape and molestation/assault on women with the intent to outrage their modesty have increased in Uttarakhand in the last few years. Violence against women is also captured by the indicators presented for SDG 5 in Appendix 4.1.2 and Annexure 5, with some data sources (NFHS-4) suggesting higher incidence of violence in the domestic sphere. As discussed earlier, non-reporting of domestic violence is also a problem to contend with.

Vision 2030 for Target 5.2

The vision for the coming years till 2030 would include raising the sex ratio at birth to unity in both the urban and rural areas, and ending/mitigating violence experienced in any form by women, in the public and domestic spheres, at least to levels below the baseline. Women and girls must also be encouraged to come out in the open about the violence faced by them and to seek help from police and/or legal redressal, and also be provided assurance that this would not result in any negative outcome for them.

Target 5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation

Baseline for Uttarakhand

The incidence of child/early marriage and other harmful practices, relating to Target 5.3, is negligible in the state, according to official sources. The NFHS-4 data, however, has found some incidence of child marriage in the state, at 13.9 per cent for women aged 20-24 years.

Vision 2030 for Target 5.3

The vision is to completely eliminate any remaining incidence of child marriage in the state, by 2030.

Target 5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate

Baseline for Uttarakhand

The share of women workers in non-agriculture is only 16.8 per cent, according to NSS 2011-12 data. In almost all the countries and regions, women and girls do the bulk of unpaid work such as care for children and the elderly, and household chores such as cooking and cleaning. In a mountainous state like Uttarakhand, this also includes fetching water and wood for fuel from a distance. More than half the women among the total women engaged in domestic work were engaged in collecting water/wood, according to NSS data for 2011-12. The responsibilities of such unpaid care and domestic work, combined with paid work, translate into a greater work burden for women and girls, and reduced time for rest and for taking care of one's own self. This also hampers opportunities and time for accessing better education or employment.

Vision 2030 for Target 5.4

The vision for Target 5.4 would be to increase the ratio of women workers in the non-agricultural sector from 16.8 per cent (2011-12) in the baseline to 50 per cent in 2030. The opportunity to engage effectively in economic activities would materialise for women only when they are freed of the enormous burden of unpaid domestic and other chores. Hence, the vision is to reduce the share of women engaged in collecting water/wood to half from the baseline by 2030.

Target 5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life

Baseline for Uttarakhand

The indicators under this target show that at present, the empowerment of the women, as far as the political sphere is concerned, is fairly good, with 50 per cent of the seats in Panchayat bodies being held by women, though these numbers do not always capture the real decision-making power centres in the panchayats. The share of women in public service posts is 30 per cent. According to the Sixth

Figure 4.1: Vision 2030 for Selected Indicators for Women's Empowerments

Source: Based on NSS data and data provided by Government of Uttarakhand

Economic Census, the share of women entrepreneurs, which would reflect women occupying positions of leadership and of decision-making in the economic sphere, is very low at just 9.26 per cent.

Vision 2030 for Target 5.5

The vision is to enhance the political empowerment of women, particularly in the public service posts and in the share of entrepreneurs to 50 per cent and 33 per cent, respectively, from the baseline levels of 30 per cent and 9.26 per cent. The share of seats in Panchayat bodies is already 50 per cent for women, which needs to be maintained. There is also a need to ascertain that the reservation of seats translates into actual decision-making power for women, and that they are not mere figureheads in such positions.

Challenges for gender equality

A lot of attention has been paid to women's issues at the national and sub-national levels, legislative provisions have been made, and commissions have been formed to protect the interests of women, but all the available information points at the persistence of the following challenges:

- The sex ratio at birth is especially skewed in urban areas, indicating the misuse of technology for sex selection to fuel the preference for a male child. Unless the survival of the girl child is ensured, the very aim of gender empowerment would be defeated.
- There is not adequate enforcement of legislations in favour of women, as reflected in the increasing crimes against women.
- Women's participation in economic work is very low, part of which may be attributed to the huge burden of unpaid work shouldered by women, especially in the rural areas, and possibly discrimination at the workplace and the lack of suitable employment opportunities.
- Political empowerment has begun at the Panchayat level, though the jury is out on whether women are actually empowered or are just figureheads. However, in the business sector and in public services, the representation of women is very low.

Strategy for attaining Vision 2030

The following strategies need to be adopted for dealing with the above issues:

- Spreading awareness among the community and among pregnant women about the declining child sex ratio and schemes such as 'Beti Bachao, Beti Padhao', along with celebration of the birth of a girl child at the Panchayat level to highlight the value of the girl child;
- Conducting special awareness programmes for pregnant women who have registered for their second or third pregnancy;
- Organising regular meetings with adolescent girls to sensitise them regarding pre-natal sex determination linked to female foeticide;
- Effectively implementing existing schemes to end discrimination against women, especially enforcement of the Pre-Conception and Pre-Natal Diagnostic Techniques Act (PC & PNDT Act).
- Combating domestic violence against women, by providing a toll-free number, 181, operating 24x7, to be used as a Women's Helpline for offering them emergency services and information for assistance in case of need;
- Recognising women's positive contribution to agriculture, and extending to women all the benefits that government schemes offer to small and marginal farmers;
- Taking women's work participation away from part-time and unpaid work towards full-time gainful employment; and
- Enhancing access to education at the secondary as well as post-secondary levels, and eliminating gender disparities in education.

SECTION 4.2

SDG 10: Reduce Inequality Within and Among Countries

Inequality is the difference found in various measures of socio-economic well-being among individuals in a group, among groups in a population, or among countries and regions. Inequality can arise out of differences based on income, age, sex, disability, race, ethnicity, origin, religion or socio-economic or other status within a country. There can also be inequalities among countries, such as those based on representation, migration, and development assistance. Goal No. 10 focuses on reducing all such inequalities.

It is well-documented that income inequality is rising globally, with the richest 10 per cent earning up to 40 per cent of the total global income.[4] The poorest 10 per cent earn only between 2 per cent and 7 per cent of the total global income. Widening disparities underscore the need to adopt sound policies to empower the bottom percentile of income earners, and to promote economic inclusion for all segments of the population, regardless of sex, race, or ethnicity.

Economic inequality is usually measured in terms of income, or, the data that is more easily available, that is, consumption expenditure. There is evidence that the Gini coefficient of consumption distribution has been on the rise during the period 1993-94 to 2009-10 for India in what was a high GDP growth period (Himanshu, 2015). Banerjee and Piketty (2005) have demonstrated that income became more unequally distributed after liberalisation in India in the 1990s. The gradual liberalisation of the Indian economy did make it possible for the rich (the top 1 per cent) to substantially increase their share of the total income, and what is more, in the 1990s, the big income gains went only to those falling in the top 0.1 per cent of the income graph. The rise in the number of billionaires and millionaires in India, on the one hand, and stagnant wages of low wage workers on the other, are evidence of this (Acharya, 2016).

It is thus important to unpack aggregate statistics because even in the face of aggregate per capita income growth, inequality may be rising and the gap between different sections of the population may be widening. This can have serious consequences for development outlook, apart from being undesirable in a value-based context.

In this chapter, we have earlier discussed one aspect of inequality that arises from gender dimensions (in the discussion on SDG 5). Some other axes of inequality are discussed under Goal No.10. The vision for Goal No. 10 for Uttarakhand is:

> ***By 2030, Uttarakhand will become a more egalitarian state with substantial improvement in the income of the bottom 40% of the population, and see improvement in basic services supply to ensure equitable access for all, including the backward communities.***

The vision for targets of Goal No. 10 are presented in Appendix 4.2.1, followed by values for indicators (baseline and vision 2030) in Appendix 4.2.2, and Appendix 4.2.3 contains the schemes applicable for Goal no. 10. Annexure 10 contains the detailed information regarding indicators for Goal no. 10 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

Target 10.1 is discussed first, followed by Targets 10.2 and 10.3 together. The other targets, whichever appropriate, are discussed thereafter.

Target 10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average

Baseline for Uttarakhand

In order to reduce inequality in the state, the income of the poorer sections of the populace needs to grow at a rate higher than the average income of the entire population. In this context, several indicators can reflect the inequality in the state as well as the income status of the people in the lower income groups. The baseline (2011-12) value of the Gini coefficient[5] is not very high for Uttarakhand at 0.35 and is comparable to the national average (35.1) as presented in the Human Development

4. Source: http://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-10-reduced-inequalities.html

5. The Gini coefficient is a widely accepted measure for inequality, which shows how equitable is the distribution of income, consumption or wealth in a given society. A zero value for the Gini coefficient implies perfectly equal distribution and unity implies perfectly unequal distribution.

SDG 10

Reduce Inequality Within and Among Countries

Uttarakhand Vision for SDG 10

By 2030, Uttarakhand will become a more egalitarian state with substantial improvement in the income of the bottom 40% of the population, and see improvement in basic services supply to ensure equitable access for all, including the backward communities.

REDUCED INEQUALITIES

Uttarakhand Today

- Gini coefficient (2011-12) for the state is 0.35 and comparable to national average
- But Palma ratio at 1.8 is higher than national average of 1.5, showing more concentration of wealth among the richest
- Hills-plains disparity in per capita income and in access to health/education is high
- SC/ST communities are disadvantaged in terms of access to housing and basic services
- Slum-dwellers are at disadvantage vis-à-vis mainstream population
- Muslims are main minority with 12 percent share in population and have schemes for their upliftment
- State government scholarship scheme for classes 1-10 benefited 26440 people in 2016-17
- Under the CM Skill Development Scheme, Rs 200 lakh spent in 2016-17 for 425 beneficiaries
- Schemes such as MSDP, Pradhan Mantri LPG subsidy Pahal Yojana have benefited marginalised segments of population

Focus for Tomorrow

- To increase income of bottom 40 percent at a faster rate than state average
- To improve provision of basic services such as water, sanitation, housing, education, health, such that access improves for hill areas, SC/ST and minority communities and all other vulnerable sections of society such as slum population
- To dedicate resources for marginalised and vulnerable population and expand scope of existing schemes for them

Targets for 2030

- Reduce inter-district disparity reflected in ratio of per capita income of district with highest value to that of district with lowest per capita income value from 2.05
- Provide education and employment opportunities to youth both in rural and urban areas, even in the remote hilly villages
- Close gap between slum population, SC/ST and minorities with mainstream

Report 2016 by UN (UNDP, 2016).[6]

Another indicator for income inequality is the baseline (2011-12) share of the bottom 40 per cent of the population in the total consumption, which shows that the bottom 40 per cent of the population accounts for only 23 per cent of the total consumption in Uttarakhand. This is higher than the corresponding national average (2011-12) of 19.6 per cent (Himanshu, 2015).

There are views that the Gini is unable to always capture the changes in inequality over time. The third indicator used to capture Target 10.1 is the Palma ratio, which shows the ratio of the share of the richest 10 per cent in the total consumption to the share of the poorest 40 per cent in the total consumption, or the income concentration in the society. The baseline (2011-12) value for the Palma ratio for the state is 1.8, showing greater income concentration with the rich relative to the corresponding national average of 1.5 (UNDP, 2016).

Vision 2030 for Target 10.1

The vision for inequality is the same worldwide, that is, to reduce inequality as far as possible and eventually aim at wiping it out altogether. For Uttarakhand, in particular, the focal point of the long-term vision is to bridge the gap in development and access to services between the hills and the plains. Thus, vis-à-vis Target 10.1, the aim for the chosen indicators would be as follows. The Gini coefficient should not be allowed to climb beyond its present levels, the share of the bottom 40 per cent people in consumption should be increased on the basis of targeting their income growth at rates projected at rates higher than the average GDP growth rates projected for 7 per cent per annum and for 10 per cent per annum by 2030. The Palma ratio must be reduced to 1.5 or below by 2030.

Target 10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status

Target 10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard

Baseline for Uttarakhand

Both the targets relate to overall inclusion in the economy, so that all segments of the populace have access to equitable opportunities and have the potential to enjoy a decent life. An important axis of inequality in Uttarakhand is the difference between the hills in the development trajectory. The state has three districts which lie mainly in the plains, namely Dehradun, Udham Singh Nagar, and Haridwar. The rest of the thirteen districts lie primarily in the hilly region. Yet, as mentioned in Chapter 1, these three districts account for nearly 52 per cent of the population and much of the growth in the state has taken place in the plains, bypassing the upper reaches of the state. This is reflected in the district-wise per capita income figures for 2013-14, which are Rs. 1,22,804 in Dehradun, Rs. 1,22,172 in Haridwar, and Rs. 1,15,543 in Udham Singh Nagar, in contrast to less than half of the per capita income levels of Rs. 59,791 in Uttarkashi, Rs. 68,730 in Bageshwar, and Rs. 69,401 in Rudraprayag (see Figure 4.2).7 In fact, the ratio of the per capita income of the highest and lowest income districts has risen from 1.6 times in 2004-05 to 2.05 times in 2013-14.8

One of the indicators for Target 10.2 thus has been taken as the ratio of per capita income (PCI) of the highest PCI district to the per capita income of the lowest PCI district (see Appendix 4.2.2 and Annexure 10). As discussed above, the baseline value for this indicator is 2.05. The differential estimates of poverty lines as shown in Table 4.2. also capture the inequality across districts (GIDS, 2017).

As discussed in Chapter 1, many villages in the hilly regions of the state are reported to be becoming 'ghost villages' with all or most families having migrated out. The Census 2011 has reported 1048

6. In 2013, the Gini for India was 33.9 (source: http://hdr.undp.org/en/content/income-gini-coefficient).

7. Numbers at current prices. Source: Statistical Diary, Uttarakhand, 2014-15.

8. With inputs from http://www.catchnews.com/india-news/addressing-inequality-in-uttarakhand-what-s-the-way-ahead-55654.html, Accessed on April 5, 2017.

Figure 4.2: District-wise Per Capita Income (2013-14) in Uttarakhand

Source: Statistical Diary, Uttarakhand, 2014-15.

villages which have thus been emptied of residents.9 In the villages where people do remain, households increasingly comprise women members living alone since men have migrated. There are also tribal-dominated villages where the people spend six months out of a year, moving to the lower reaches during the winter months.

The far-flung villages are also deprived of basic health services, good educational institutions, and above all, good livelihood opportunities. Thus, for people living in the heart of Uttarakhand, the hills, there is need to pay attention towards development-related issues in order to bring these regions at par with the plains. There is research evidence for Uttarakhand that there is significant inequality in income opportunities between the rural and the urban sectors, with the rural areas facing an adverse bias due to the differences in the people's education levels and also because the returns from various levels of education too are relatively lower in the rural sector (Ghosh, Kar and Sharma, 2007). The results of this study based on a primary survey in the Dehradun, Nainital and Uttarkashi districts also show that income is somewhat lower in a family that has a higher share of women in the working aged population. Since there is a lot of male migration in Uttarakhand, this gender-based disparity may hurt a number of households in this state. Most importantly, differences are observed in the nature of the inequalities between the hilly areas and the plains, any policy to promote equality in income opportunity throughout Uttarakhand should be based on an understanding of the nature of the inequalities, which varies regionally.

Another indicator for Target 10.3 has been selected as the ratio of the percentage share of 'good'[10] houses among the urban and rural population, reflecting the urban–rural differential in this basic facility of shelter. The baseline (2011) value for this is 1.17 (see Table 4.3 and Annexure 10).

The condition of housing reflects the highest urban–rural disparity for the ST community, and some disparity for the other groups. The housing occupied by the STs is closer to the average situation in urban areas, which implies that the disadvantage faced by them is greater in the rural areas. The SC households have a distinct disadvantage vis-à-vis the average for both rural and urban areas.

As observed from the shelter situation, an axis for potential inequality in the state is that of the dalit and tribal populations. There is a sizeable share of SC population in Uttarakhand at 18.8 per cent. The tribal population, though present in some of

9. Cited in http://www.hindustantimes.com/india-news/growth-inequality-is-emptying-out-entire-villages-in-uttarakhand/story-8WKFLavV9OOkqR1uQsIb-WM.html, published March 10, 2017.

10. 'Good' refers to the Census 2011 categorisation for housing.

Table 4.2: District-wise Estimates of Price-Adjusted Poverty Lines: Uttarakhand 2011-12 (Rs.) (at state-level prices)

District	Rural	Urban
Uttarkashi	903.58	1093.03
Chamoli	937.23	1112.09
Rudraprayag	918.70	1077.38
Tehri Garhwal	881.75	1073.39
Dehradun	958.30	1141.12
Pauri Garhwal	919.71	1081.47
Pithoragarh	867.91	1058.54
Bageshwar	853.74	1067.47
Almora	803.11	1036.50
Champawat	916.03	1129.75
Nainital	869.71	1100.08
Udham Singh Nagar	865.72	1066.69
Haridwar	913.83	1128.62
Nainital Hills	899.68	1144.84
Dehradun Hills	942.58	1041.82
State	880.00	1082.00

Source: GIDS (2017).

the hilly regions such as Champawat, is otherwise small in size, accounting for around 2.9 per cent of the total population. There is some disparity in literacy between the SCs/STs and other communities, but it is relatively small, as shown in Chapter 3. As can be seen from Table 4.4, the SC and ST communities are at a disadvantage vis-à-vis the other communities, as reflected in all the state averages in terms of access to tap water from treated sources, and the disadvantage is essentially seen in the rural areas. In the urban areas, the statistics reflect greater equality of access. The rural–urban disparity in access to tap-water is high, at 1.58 for all households, and even worse at 1.80 and 1.91 for the SC and ST communities, respectively.

Within the districts dominated by plains, a burgeoning area of inequality is evident in the slums that are mushrooming because of massive in-migration for livelihood opportunities. The slum population usually have poor access to water, sanitation, and other basic services, along with limited opportunity for education, and health, among other things. The access of households to treated water among the slums, according to Census 2011 data, is 68.2 per cent, whereas the corresponding average for urban households (Table 4.4) is 72.7 per cent. A high percentage of slum households in the state, that is, around 91.7 per cent, do have latrine facilities within their premises, but just 29.8 per cent of the households have closed drainage for waste water outlets. A majority (64.4 per cent) have open drainage, while 5.8 per cent have no drainage at all.

As regards the socio-religious categories in Uttarakhand, Muslims constitute the main minorities, accounting for a share of 12.09 per cent in the population, followed by Sikhs, with a share of 2.5

Table 4.3 Share of Households (%) with 'Good' Condition Houses in Uttarakhand (Census 2011)

	Total	Rural	Urban	Ratio Urban/Rural
All Households	66.8	63.6	74.4	1.17
SC households	55.1	52.8	63.1	1.19
ST households	58.2	54.8	71.8	1.31
Ratio all households to SC households	1.21	1.20	1.18	
Ratio all households to ST households	1.15	1.16	1.04	

Source: Census 2011

Table 4.4: Share of Households (%) Getting Tap Water from Treated Sources in Uttarakhand (Census 2011)

	Total	Rural	Urban	Ratio Urban/Rural
All Households (%)	53.9	46.0	72.7	1.58
SC households (%)	46.1	39.1	70.3	1.80
ST households (%)	42.96	36.35	69.31	1.91
Ratio all households (%) with access to water to SC households (%) with access to water	1.17	1.18	1.03	
Ratio all households (%) with access to water to ST households (%) with access to water	1.25	1.27	1.05	

Source: Government of Uttarakhand.

per cent.[11] The government is committed to their welfare and all-round inclusion in development.

Vision 2030 for Targets 10.2 and 10.3

Targets 10.2 and 10.3 refer to inclusion and the vision for 2030 is that all households, irrespective of whether they are living in rural or urban areas, hills or plains, or in slums, or whether they are from the SC or ST communities, must have access to basic services such as shelter, water and sanitation, education, and health facilities. For all indicators which capture disparity, such as per capita income, housing condition, and access to tap-water, the aim for 2030 would be to bridge the gap between the hills and plains, rural and urban, and the SCs/STs and other communities.

Target 10.3 specifically deals with policies, schemes, and laws dealing with minorities, backward communities, disabled and other disadvantaged segments of the population, which are intended to ensure their inclusion in the society and to protect their interests (see Appendix 4.2.3). As mentioned earlier, the Muslim community comprises the main minorities group in the state. The government aims to ensure their social, economic and educational upliftment with the aid of development schemes. Education is particularly in focus and there are scholarship schemes, schemes intended to reduce drop-outs, computer training, and modernisation of madarsa education, among other things. In this context, it is also important to consider the Multi Sector Development Programme (MSDP) and schemes related to self-employment.

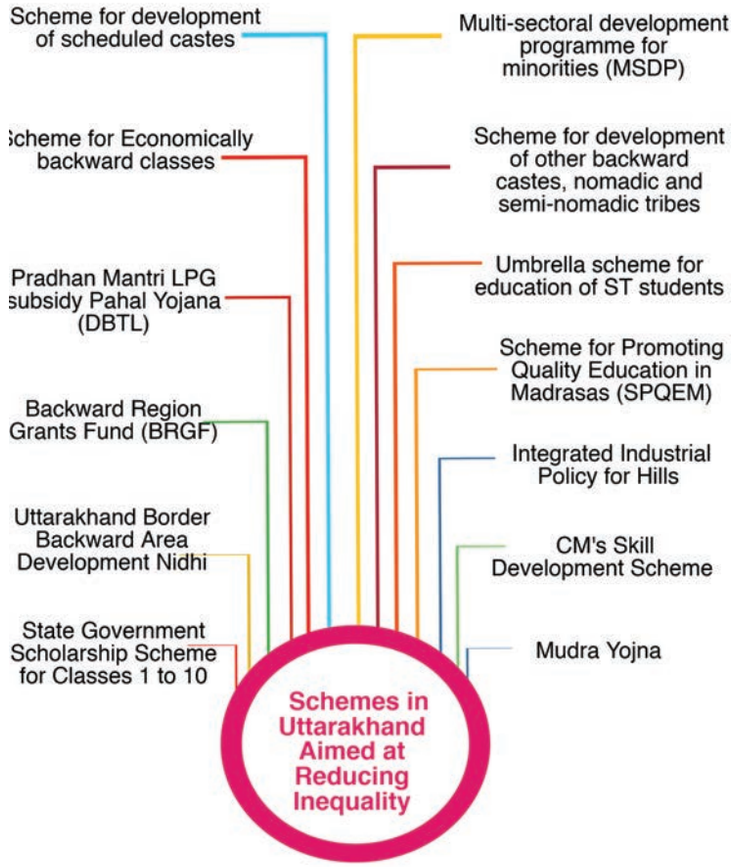
The MSDP captures the spirit of Target 10.3 as this programme aims at improving the socio-economic conditions of the minorities and providing basic amenities to them for improving the quality of life of the people and reducing imbalances in the identified minority concentration areas. Under this programme, projects related to the provision of better infrastructure for education, skill development, health, sanitation, pucca housing, roads, and drinking water, among others, are taken up besides schemes for creating income-generating opportunities.[12] The Ministry of Social Justice and Empowerment has several schemes for the social, educational, and economic development of SCs and other backward communities. The Direct Benefit Transfer of LPG (DBTL) or Pradhan Mantri LPG subsidy, Pahal Yojana (DBTL) is a direct benefit transfer gas subsidy scheme now being implemented throughout India, which has benefited consumers by providing them LPG at a subsidised price, with the difference between the market price and the subsidised price getting transferred to their bank account. The Integrated Industrial Development Policy for the hills tries to pull in the hilly regions, which have been bypassed in the process of industrial development.

A state government scholarship scheme is also in operation for classes 1 to 10. In 2016-17, the total number of beneficiaries under this scheme numbered 26,440 while a total amount of Rs. 103.37 lakh was spent on it. Under the CM Skill Development

11. http://ukmc.in/minority_population.html accessed on October 3, 2017.

12. Source: http://www.minorityaffairs.gov.in/sites/default/files/guideline.pdf

Figure 4.3: Major Schemes for Promoting Inclusion in Uttarakhand



Source: Based on information provided by Government of Uttarakhand

Scheme, an amount of Rs. 200 lakh was spent in 2016-17 for 425 beneficiaries. The grant for self-employment to minorities saw an expenditure of Rs. 100 lakh in 2016-17 for 95 beneficiaries while Rs. 1500 lakh was spent in 2016-17 for building boundary walls for a kabristan (cemetery) for 146 beneficiaries.

Targets 10.5, 10.6 and 10.7 are not applicable at the state level.

Challenges for reducing inequalities

Continued divide between the hills and plains, and migration from the hills to the plains

- The agriculture sector in the hills is dominated by small and fragmented landholdings. Agriculture on fragmented land does not provide adequate returns to farmers.
- The infrastructure in the hills is not only inadequate but is also more vulnerable to the devastations caused by natural disasters than the infrastructural facilities in the plains. Women still have to toil for water and fuel. The farmers in the hilly areas cannot reach their produce easily to the bigger market in the lower regions due to poor connectivity, nor can they store the perishables due to inadequate availability of chilling and storage/containerisation facilities.
- Not enough employment opportunities are available in the hills to keep the people, particularly the youth, and to prevent their out-migration.
- The provisioning of services, especially health services, is badly affected by the non-availability of doctors. The number of good schools and higher education facilities in the hills is also inadequate.
- Thus, a combination of factors is responsible for the hill region lagging behind the plains and fosters continued migration to the plains and urban areas from villages in the upper reaches of Uttarakhand.

Within the plains, the slums lag behind mainstream urban development

As migration continues to the districts in the plains, and there is in-migration from other states as well in search of livelihood, slums have mushroomed in Dehradun, Udham Singh Nagar, and Haridwar, among other districts, which lack basic amenities like proper housing and sanitation, and deepen the inequities in development within the urban areas.

SC and ST communities and minority communities such as Muslims still lag behind the mainstream in terms of development

The SC community has a sizeable share in the state population and lags behind the others in terms of access to basic amenities. Among the tribals, some live in the higher reaches of the mountains and have a somewhat nomadic lifestyle. They spend five to six months taking their cattle for grazing in the mountains, and come down to the plains during the winter. These people thus pose special challenges in terms of inclusion. The social, economic and educational inclusion of Muslims in the main development trajectory is a major challenge for the government.

Strategy for attaining Vision 2030

The reduction of inequality depends on all aspects of development in the state, such as the rate of economic growth, employment generation, the provision of public services, infrastructural growth, and the satisfactory functioning of social protection schemes. The following measures may be considered for achieving this reduction:

- Dedicated resources are needed for backward segments of the population if inequality is to be bridged. As discussed above, many schemes are operative and resources have been allocated for them. However, these do not seem to have achieved the desired results as yet, which necessitates a review of the existing schemes and the need for effective governance.
- The pace of economic growth must be sustained in the state, and more importantly, the returns from growth must find their way to the poorer sections of the population at an accelerated pace. Towards this end, it is imperative to provide education and employment opportunities to youth both in the rural and urban areas, including in the remote hilly villages. This is particularly important for stemming the unabated migration of working age males, especially youth, from the upper reaches in the state. The vision for employment opportunities has been discussed at length in Chapter 2, and partially also in Chapter 1.
- The provision of quality health and education facilities, along with doctors, in the hill districts is also crucial for retaining people, as is the building of good infrastructure to improve connectivity with the plains.
- Urban areas, by and large, have better access to amenities than rural areas. Yet within urban areas too, there is a dichotomy between the slums and the rest of the city areas. Slum housing, as its very name suggests, is of poor quality, and sanitation in these areas, in terms of access to drainage, is also very poor. This inequality needs to be addressed by providing slum dwellers with better housing, and water and sanitation facilities.[13]
- For public service provisioning specifically, both the state and Central governments have undertaken initiatives such as enactment of the Right to Services Act, and e-Governance programmes (discussed under SDG 16), which give consumers the right to these services. Technology is also being used in an innovative manner to reach these services to all the citizens. Such technology-dependent service provisioning provided in a rights-based framework can mitigate inequality to a great extent, since technology does not differentiate between consumers.
- As mentioned above, various schemes are being utilised by the government to bridge the gap between the minorities, SC/ST communities, and the majority communities in the state. These schemes need to be operated efficiently and need to be target-driven, to ensure that the funds reach the intended beneficiaries. The effective implementation of such schemes, however, needs proper monitoring and evaluation.

13. This is discussed in greater detail in the section on SDG 11.

SECTION 4.3

SDG 16: Promote Peaceful and Inclusive Societies for Sustainable Development, Provide Access to Justice to All and Build Effective, Accountable and Inclusive Institutions at All Levels

The SDG 16 deals with the central issues of building peaceful, just and inclusive societies, while also focusing on effective and accountable institutions, which work for every citizen in the society. Globally, many countries and regions suffer from persistent violence and armed conflict. Within India, too, large parts of the country are facing persistent armed conflict and violence perpetrated by extremists.

Uttarakhand, a relatively young state born in the year 2000, is known as 'Dev Bhoomi' or The Abode of the Gods because of its tranquil environs, majestic natural beauty resonating from its snow-clad mountains, icy glaciers, verdant valleys, and perennial rivers. The state is also relatively peaceful and free from any incidence of armed conflict and violence.

The vision for Goal No. 16 for Uttarakhand state is:

> ***Uttarakhand will continue to be a peaceful state and by 2030, present low crime rates will be reduced further. The state will have inclusive and just institutions by strengthening of governance and progressive acts such as Right to Information and Right to Services Act.***

This section outlines the targets for Goal No. 16 specifically for Uttarakhand though the various aspects of this SDG may not be as easy to quantify and assess as for the other SDGs. The vision for targets of Goal No. 16 are presented in Appendix 4.3.1, followed by values for indicators (baseline and vision 2030) in Appendix 4.3.2, and Appendix 4.3.3 contains the schemes applicable for Goal no. 16. Annexure 15 contains the detailed information regarding indicators for Goal no. 16 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

Targets 16.1 to 16.4 have been discussed as a group, since these refer to similar topics. Thereafter, Targets 16.5 to 16.7 have been discussed together. Target 16.8 is not applicable for a state. Finally, Targets 16.9 and 16.10 have been discussed together.

Target 16.1 Significantly reduce all forms of violence and related death rates everywhere

Target 16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children

Target 16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all

Target 16.4 By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime

Baseline for Uttarakhand

All the four targets listed above deal with the need to build a peaceful society and end any form of violence and crime. Uttarakhand is a relatively crime-free state compared to the other states in India, as can be observed from the comparative statistics for crimes falling under the Indian Penal Code (IPC), presented in Table 4.5. The table contains indicators for the all-India average, statistics for Uttarakhand, and statistics for the comparable mountainous state of Himachal Pradesh.

For almost all types of major crimes, Uttarakhand has far superior statistics as compared to the national average, and, for many indicators, it is even better placed than the state of Himachal Pradesh. For crimes against public order and economic crimes, however, the data for Uttarakhand are nearly comparable to the national average. Another set of crimes pertinent to the state are those falling under the Special and Local Laws (SLL). These SLL crime statistics usually represent preventive policing or better policing efforts. The SLL category includes the Arms Act, Excise Act, Gambling Act, Narcotic Drugs and Psychotropic Substances Act, and the Protection of Civil Rights Act, among others. The crime rate for cases per 100,000 population for SLL for Uttarakhand is very high at 840.5 vis-à-vis 347.6 for All-India and just 45.5 for Himachal. However, as mentioned, this also reflects better law enforcement.

As the Figures 4.4 and 4.5 show, though the baseline violence and crime is relatively low in the state, with an appreciable law and order situation

SDG 16

Promote Peaceful and Inclusive Societies for Sustainable Development, Provide Access to Justice to All and Build Effective, Accountable and Inclusive Institutions at All Levels

Uttarakhand Vision for SDG 16

Uttarakhand will continue to be a peaceful state and by 2030, present low crime rates will be reduced further. The state will have inclusive and just institutions by strengthening of governance and progressive acts such as Right to Information and Right to Services Act.

Uttarakhand Today

- Uttarakhand is relatively crime-free with crime rate of 97.2 per 100,000 population compared to all-India average of 234.2
- Crimes against women have been on the rise since 2012
- Under e-governance initiative, state government rolled out e-portal services with 5 services in 13 districts by March, 2015. These are now being increased.
- State has 7950 Gram Panchayats, with a mandate to open one Devbhoomi Jan sewa Kendra or Common Service Centre in each GP. As of now around 4000 CSCs have been established
- Uttarakhand introduced the Right to Services Act in 2011. The Uttarakhand Right to Service Commission (URTSC) has been constituted to strengthen service delivery mechanism

Focus for Tomorrow

- To reduce crimes against women
- To reduce economic crime, including technology-based crime
- To modernize and strengthen the police force, and induct more women into the police-force
- To expand and strengthen e-governance in the state
- To spread awareness about e-governance programme, Right to Information and Right to Services

Targets for 2030

- Establish separate women police stations in all districts
- Establish Anti-narcotics cell, Anti-Human Trafficking cell, Economic Offences Wing, etc.
- Provide more police services through web-enabled services and mobile based applications
- Establish CSC in each Gram Panchayat
- Obtain VSAT for providing connectivity to the remote hilly areas, including sensitive and strategic districts with international borders

is not bad, the incidence of crime shows a slightly increasing trend over time since the inception of the state in 2000, till 2015, albeit with fluctuations.

Among major categories of crime against women, while the number of dowry deaths shows a declining trend, it is disturbing to note that the cases of rape and molestation/assault on women with an intent to outrage their modesty show an upward trajectory since 2012.

The indicators selected for the first four targets (see Appendix 4.3.2 and Annexure 15) are for the Targets 16.1 and 16.2, which deal with crimes against body, women, SCs and STs. These represent the main types of crimes perpetrated against important segments of the population, and capture the state of violent crimes in the state.

Vision 2030 for Targets 16.1 to 16.4

Uttarakhand state aims to move towards a situation where it is free of violence and crime, and with a much more transparent and effective system of public service delivery. As regards Targets 16.1 to 16.4, it was noted that the baseline levels of major crimes already exhibit a fairly low incidence in the state. The vision 2030 is to reduce the crime rates from their present baseline levels in the coming 15-year period. However, since there has been a spurt in crimes against women in the last few years, the focus will especially be on the reduction of such crimes. In addition, there is a relatively high incidence of economic crimes in the state, which necessitates attention towards the reduction of such crimes as well.

The next set of targets, namely Targets 16.5, 16.6 and 16.7 broadly deal with governance issues. Target 16.7 has to do with democratic decision-making in the economy.

Target 16.5 Substantially reduce corruption and bribery in all their forms

Target 16.6 Develop effective, accountable and transparent institutions at all levels

Target 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels

Baseline for Uttarakhand

Corruption is widespread in India, with most of the states being affected by it. One area wherein corruption particularly affects the average citizen is that of the provisioning of public services. In view of the lack of transparency in the functioning of many public institutions, the consumer finds it difficult to effectively access public services. Sometimes even if there is access to public provisions, it entails inordinate delays due to the inefficiency inherent in the process. Such gaps in the delivery and functioning of public services affect people in all walks of life in their daily transactions, impacting the common citizen the most, who is unable to gain easy access to costlier private service providers.

E-governance is a landmark initiative by the central government to bring about transparency and efficiency in dealing with public service providers. The basic objective is to "Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realise the basic needs of the common man".[14]

The Government approved the National e-Governance Plan (NeGP), comprising 31 Mission Mode Projects (MMPs) and its eight components, in 2006.[15] The NeGP seeks to lay the foundation of and provide an impetus for the long-term growth of e-Governance within the country. This section provides information on the creation of the right governance and institutional mechanisms, setting up of the core infrastructure and policies, and implementation of a number of MMPs at the Central, State and integrated service levels.

E-district is one of the MMPs under the NeGP. This programme aims at providing support to the basic administrative unit, that is, the district administration to enable content development of Government to Citizen (G2C) services, which would help deliver services to the citizen at his doorstep.[16] In the context of an e-District, the district administration refers to the administrative set-up led or coordinated by the District Collector/Magistrate in-

14. Source: http://meity.gov.in/divisions/national-e-governance-plan, accessed on April 13, 2017.

15. Source: http://digitalindia.gov.in/content/ekranti-electronic-delivery-services, accessed on April 13, 2017.

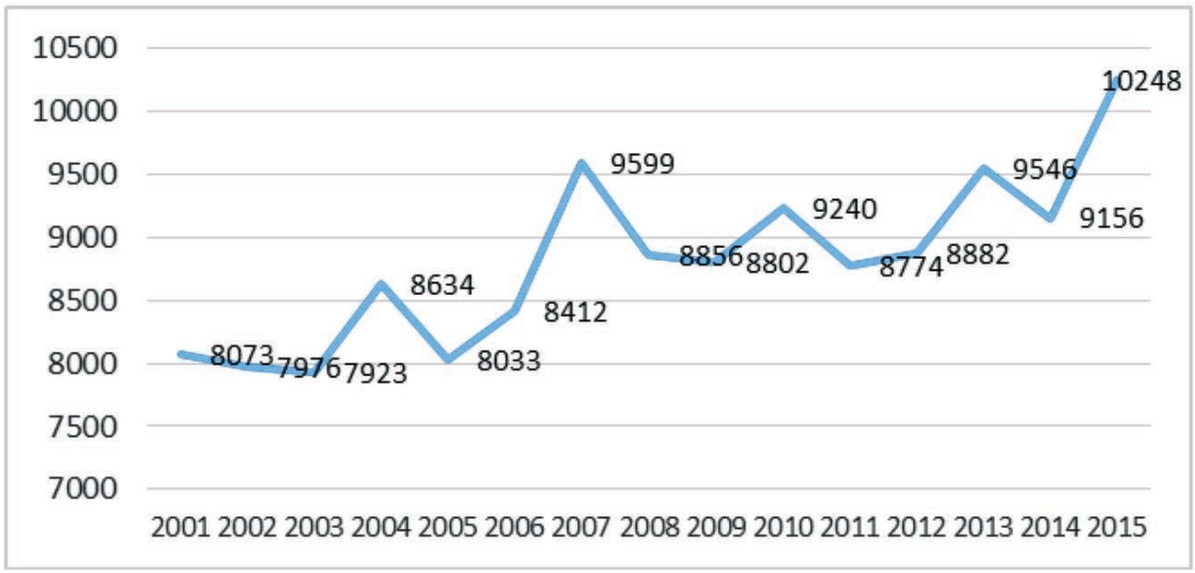
16. Source: http://www.meity.gov.in/content/e-district-frequently-asked-questions-faq , http://www.nic.in/projects/e-district-uttarakhand, accessed on April 12, 2017.

Table 4.5 Crime Rate (per 100,000 population) of IPC Crimes During 2015

Type of Crime	All India	Uttarakhand	Himachal Pradesh
All IPC crimes	234.2	97.2	198.5
Crime against women^	53.9	28.2	37.4
Crime against children^^	21.1	16.5	22.1
Crime against Scheduled Castes	22.3	4.9	5.5
Crime against Scheduled Tribes	10.5	2.1	1.5
Crime against body*	68.1	25.3	57.0
Crime against public order**	11.9	10.1	8.0
Economic crimes$	11.9	10.1	8.0

Source: National Crime Record Bureau.
Notes:
^Rape, Assault on women with intent to outrage her modesty, Insult to the modesty of women, Cruelty by husband or relatives
^^ Foeticide, Infanticide, Procuration of minors, Murder, Exposure and abandonment, Offences under the POCSO Act, the Prohibition of Child Marriage Act, etc.
*Murder, attempt to commit murder, culpable homicide not amounting to murder, attempt to commit culpable homicide, kidnapping and abduction, grievous hurt, causing death by negligence, causing injury due to rash driving/road rage, dowry death and human trafficking.
** Riots, Arson, Unlawful assembly and Offences promoting enmity between different groups;
$ Criminal breach of trust, Cheating, Forgery and Counterfeiting;

Figure 4.4: Total Cognizable IPC Crimes in Uttarakhand (2015) (Registered Crimes)

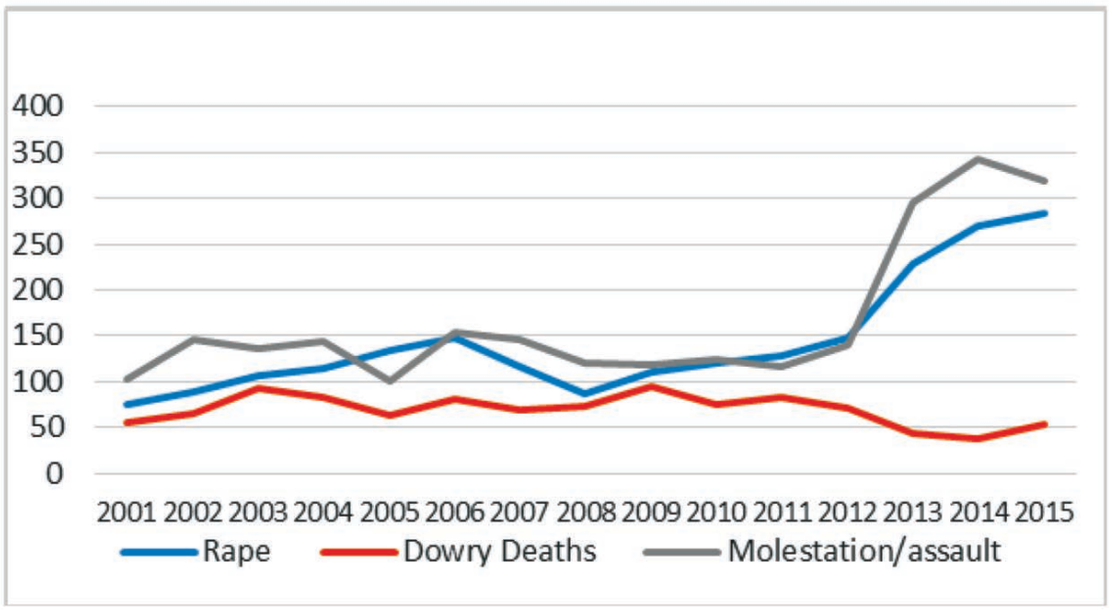


Source: National Crime Record Bureau.

cluding Sub-division/ Tehsil/Block/Village level units responsible for service delivery.

In the long run, the services are expected to be delivered via the proposed Common Services Centres (CSCs), which constitute a strategic cornerstone of the Digital India Programme. More than service delivery points in rural India, these have been positioned as change agents, promoting rural entrepreneurship and building rural capacities and livelihoods. The CSCs are meant to carry out the following services:

Fig. 4.5 Major Crimes Against Women in Uttarakhand (2015) (IPC Registered Crimes)



Source: National Crime Record Bureau.

(i) Issue of Certificates including services: Domicile, Character, Caste, Income, Solvency, Hill Area, Uttarjivi, Birth, Death etc.

(ii) Social Welfare Schemes including services – Social welfare Pensions (Old age, Widow and Handicap)

(iii) Revenue Court including services – including Final order copy, daily cause list, Case Status details. Government dues and recovery, changes in khatauni and mutation process, etc.

(iv) Panchayat Raj- pariwar register copy, pariwar register entry

(v) Disaster management – Compensation for damage due to disasters, and

(vi) Ration card related services, including services change of address, additions, deletions of members, application for issue of duplicates, etc.

The Uttarakhand government started the e-District portal in 2010, and the pilot was in Pauri. By March 2015, the state had rolled out e-portal services offering five services (for example, the provision of various Government certificates, paying of bills, banking services, etc.) in 13 districts. These are now being increased.[17]

Uttarakhand has 7950 Gram Panchayats, with a mandate to open one Devbhoomi Jan Sewa Kendra (CSC) in each GP. As of now, around 4000 CSCs have been established and these are providing seamless services to rural citizens (see Appendix 4.3.4 for list of services being provided to consumers through CSCs).

The CSCs are also providing employment to local village youth who are being trained by the Government to run the portal and who, in turn, train the villagers on the use of CSCs. The VLEs who run the portal, are now earning around Rs. 10,000–15,000 per month. The revenue comes from the fee amount of Rs. 30 paid by the citizens for the services. Out of the pooled fee, 10 per cent goes to the CSC for providing the software, 10 per cent to the IT department, and 80 per cent to the VLE. In this context, it is important to spread digital literacy among the people. As of now, 2,30,000 people have been enrolled for digital literacy, and 28,000 have been made digitally literate.[18]

The RTS Act is a legal provision which is being used by some states to ensure that certain public services are delivered to citizens in a time-bound manner, failing which, there are mechanisms by

17. Information based on an interview with an IT department official in Dehradun.

18. Ibid.

which the errant officer may be fined or punished. Such legislations are expected to fight corruption, make officials more accountable, and provide transparency in to the process of public service delivery, strengthening the institutions in the process and making them more efficient. The common framework of the legislations in various states includes, granting of "right to public services", which are to be provided to the public by the designated official within the stipulated time frame.[19]

The key provisions of the state laws on public service delivery are (Raha, 2012):

- Right to service within a specified time limit.
- Two-level appeals mechanism to seek relief for denial of or failure to provide service.
- Fining of government officers responsible for causing delay in delivery of service without sufficient and reasonable cause.
- Compensation that may be paid to the applicant of the service from the fine.

Uttarakhand State introduced the RTS Act in the year 2011. The Uttarakhand Right to Service Commission (URTSC) has been constituted with a view to strengthen the service delivery mechanism in the state. The government accords high priority to the matter of attending to citizen's applications in respect of notified services in a time-bound manner, and aims to deliver quality services. Necessary steps have been taken in this direction through enactment of the Uttarakhand Right to Service Act (URTS Act), 2011 and notification of various services related to the Department of Food and Civil Supplies, Revenue, Medical Health and Family Welfare, Housing including Urban and Village Planning, Transport, Drinking Water, Social Welfare, Urban Development, School Education and Home Department.[20]

As mentioned earlier, Target 16.7 concerns democratic decision-making and participation in the electoral process. The voter turnout in the 2017 elections in Uttarakhand was a fairly high at 68 per cent.

Vision 2030 for Targets 16.5 to 16.7

Regarding the Targets 16.5 to 16.7 concerning the reduction of corruption, and improving governance, it can be seen that the state has already initiated a number of measures to fight such menaces. The main instruments in this context are the e-Governance Programme and the RTS Act. The vision 2030 for these targets is to strengthen the functioning of such programmes and Acts, so that all the public services are delivered via the e-Governance programme, or specifically, through the CSCs, as well as to improve the delivery of services under the RTS Act.

Target 16.9 By 2030, provide legal identity for all, including birth registration

Target 16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements

Baseline for Uttarakhand

Registration of children at birth is the first step in securing recognition before the law and safeguarding individual rights and access to justice. Globally, children living in urban areas are around 1.5 times more likely to be registered than their rural counterparts.21 Uttarakhand also has taken the necessary steps to register the birth of children in the state. The percentage of registration of births is 100 per cent at present (2015), up from 82 per cent in 2014. The indicator for Target 16.9 is the percentage share of births registered in the state, which, as mentioned earlier, is already achieved in full. Some other indicators are the registration of mothers under the ICDS programme and registration of marriages (see Appendix 4.3.2 and Annexure 15). The number of mothers registered under ICDS presently stands at 13,12,450.

The RTI Act has a direct relation to Target 16.10. The RTI Act, 2005, mandates a timely response to citizens' requests for government information. The objective of this Act is to empower the citizens, promote transparency and accountability in the functioning of the Government departments, and reduce corruption.22 Uttarakhand was one of the earliest states in India that took the initiative to implement the RTI Act in 2005.

19. Source: https://en.wikipedia.org/wiki/Right_to_Public_Services_legislation

20. Source: http://urtsc.uk.gov.in, accessed on April 13, 2017.

21. Source: https://sustainabledevelopment.un.org/sdg16

22. Source: http://rti.gov.in/

There is an RTI Portal Gateway to the citizens for quick search of information on the details of first Appellate Authorities, and Public Information Officers (PIOs), amongst others, besides access to RTI-related information/disclosures published on the web by various public authorities under the Government of India as well as the state governments. This Act symbolises a significant big step towards keeping the citizens of the country informed about the Government's activities.

Vision 2030 for Target 16.9 and 16.10

Regarding Target 16.9, the vision would be to maintain the 100 per cent registration of births in the state in the coming 15 years till 2030. The aim would also be to increase the registration of mothers till at least 90 per cent by 2030.

The vision for Target 16.10 is to strengthen acts such as RTI so that people have full access to information in the true democratic spirit by 2030.

Challenges for peace, justice and strong institutions

Tackling Crime

The rise in crimes against women is an important challenge and needs to be dealt with by inducting more women police into the police force. Moreover, the state government has to deal with newer patterns of crimes that misuse technology and the rise in economic crimes. The police department needs to promote capacity building in terms of both personnel and augmenting the number of vehicles and other equipment it has to improve mobility.

E-Governance Programme

- CSC 2.0 was started in April 2015 in the state by the Government of India's Telecom Department and the Ministry of Electronics and IT (MEIT). But 3000 Gram Panchayats, mostly in hills, still do not have 3G and other connectivity.[23]
- Five districts have borders with Nepal and China, and are thus placed in a strategic location, but these places have no connectivity.
- State e-mission team (SEMT): The Central Government provides consultants to the state IT department for capacity building. A challenge facing this team is the extent to which smart grid and smart meters can be made compatible with the Internet Protocol version 6 (IPB6).

Right to Services Act

- Surveys conducted by some state governments have revealed that the awareness levels of citizens and those of service providers with respect to the provisions of the Act are quite low (Sahoo and Kapoor, 2012).[24] While there has been enthusiasm about the provision about guaranteeing services to people, the implementation on the ground level has not been satisfactory, especially in the rural areas. The bottlenecks in this regard stem from manpower, finance and infrastructure, especially power supply. In addition, while guarantees ate offered about the timely delivery of services, quality standards are lacking.
- One gap in the framing of the Act is that in the process of justifying the delay or denial of services requested for, there is no mention of a burden of proof in the legislation of Uttarakhand state, unlike in the Bihar and Himachal Pradesh Acts, which place the burden of proof either with the designated officer or the Appellate Authority (Raha, 2012).
- The role of the appellate authorities is very critical in actually granting the right of the citizen to public services. These authorities are to be notified by the State and are from within government departments, raising doubts about their independence. In Uttarakhand, and in most other states, penalty is imposed for delay only when it is shown that the delay was unjustifiable. In this context, since the grounds for delay are not specified, considerable discretion has been vested with executive authorities to make this assessment. Above all, if the appeals process is long-drawn, it is likely that citizens will stay away from accessing it for grievance redressal.

23. The plans of the IT department for the vision 2030 for providing connectivity to the entire state have been discussed in Chapter 2.

24. The observations are about states in India in general, such as Bihar, Madhya Pradesh and Punjab, and not specifically about Uttarakhand.

Box 4.3: Some Proposed Initiatives by the Uttarakhand Police

In view of increasing urbanisation as well as the increasing use of technology in daily life, the police department perceived the need for modernisation to cater to the present-day policing requirements and to meet the demands in the future. The wexpansion of the organisational structure of the police with the inclusion of more specialised wings is on the anvil.

The Proposed New Wings in the police would include the: Anti-narcotics cell, Anti-Human Trafficking Cell, Economic Offences Wing, Emergency Services (to subsume SDRF and Fire Services), Directorate of Technical Services (CCTNS, SCRB and Radio/Wireless), Training Directorate, Traffic Directorate, Legal Wing, Police Welfare and Housing Corporation, Sports Directorate, Smart Control Room and Motor Transport Unit.

Ensuring Responsive Transparent Administration or Smart Policing is another important strategy. The Uttarakhand Police is also committed to becoming a modern and smart police force and to providing more services through web-enabled services and mobile-based applications. Such services include:

Online FIR registration, passport verification and tracking, tenant verification, employee verification, procession request, event request, arms licence and tracking of request, e-challan payment, police clearance certificate, character verification report, and permission for use of loudspeakers, among others.

Source: Government of Uttarakhand

Right to Information Act

In January 2013, the Uttarakhand Government prepared a new set of RTI Rules combining the fees and cost rules and the appeals rules. A report by the Commonwealth Human Rights Initiative suggests that while the RTI Rules notified in 2005 were in harmony with the RTI Rules notified by the Central Government, some of the new RTI rules proposed by the Uttarakhand Government are likely to create confusion and increase the inconvenience levels for potential applicants and appellants (Daruwala, et al., 2013). If implemented, the changes will increase the litigation burden at the first and second appeal stages. In addition, the proposed rules seek to remove the Uttarakhand Information Commission's inherent powers to oversee compliance with its orders. The proposed rules, rather than favouring the citizens, lead to an adversarial interaction between the information-seeker and the public authority.

Strategies for attaining Vision 2030

Tackling Crime

The Uttarakhand Police aims to become a police force that is responsive, empathetic, and professional with the ability and capacity to implement the rule of law uniformly. The rise in crimes against women will be addressed with urgency and the underlying causes identified, along with an analysis of the regions where these are escalating in order to curb them on a war-footing. The department has plans to establish separate women police stations in all the districts. Helplines/helpdesks and women cells have been set up to provide assistance to women. More women may also be inducted into the police force for ensuring better management of such crimes. In addition, the disposal process must be expedited and conviction rates augmented.

Juvenile cells and separate police officers have also been established to deal with matters related to children. In order to speed up the recovery of 'missing children', the state police department has conducted 'Operation Smile' in all the districts.

The state must also ready itself to face newer crimes based on the misuse of technology as well as the rising tide of economic crimes. Here, police personnel trained in the latest technology would be deployed for curbing such sophisticated crimes, rather than following the traditional methods of crime investigation.

Governance

- e-Governance efforts are being strengthened in the state to ensure that the Vision 2030 can become a reality. The state government has requested the Central Government for a Very

Small Aperture Terminal (VSAT) for providing connectivity to the remote hilly areas, which is a major challenge.

- As regards the sensitive and strategic districts of the state located along the international borders, the Central Government has agreed to provide connectivity to 8 out of a total of 47 check-posts. The state government has, however, asked for connectivity in a total of 89 locations.
- The e-Governance programme is being implemented by VLEs, but it is imperative to spread greater awareness about it. This is particularly applicable for the Right to Services (RTS) Act and Right to Information (RTI) Act, as since people have very little awareness about their right to access public services and information. It is only when each and every citizen acquires full knowledge about all the features of these Acts, that they can optimally benefit from them, and become truly empowered citizens of the state.
- At the village level, the School Management Committee, committees for public health, sanitation and nutrition, Mata Samiti, etc. should be strengthened and brought under a strong leadership, and the department of Panchayati Raj needs to be actively engaged in this task.
- The Gram Sabha must be strengthened for facilitating its effective community participation in governance issues.
- For achieving better implementation of the various Acts and programmes guaranteeing rights to citizens to access public services, the existing infrastructure must be improved to reach all the unserved and under-served regions of the state, especially the sparsely populated and remote hilly regions.
- Capacity-building in terms of personnel must be undertaken, where required, and adequate funds earmarked for all such activities for effective governance.
- The RTS act suffers from some internal weakness in terms of the fact that those who oversee its execution and those who assess the delays and grounds for such delay belong to the same pool of officers. This issue could be addressed by bringing in third party assessment where possible.
- All programmes and implementation of Acts such as the RTS and RTI need periodic monitoring and review. Only such periodic evaluation of its democratic institutions and processes can help Uttarakhand become a truly democratic state by 2030.

Appendix 4.1.1

Vision for Targets under SDG 5: Gender Equality

Targets for SDG 5	Vision 2030 for Targets
Target 5.1 End all forms of discrimination against all women and girls everywhere	To strengthen the implementation of existing constitutional provisions and laws for ending gender-based discrimination, to increase gender parity to unity at the primary and secondary levels of education, and to raise the share of women workers in non-agriculture sector to 50% by the year 2030.
Target 5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation	To raise the sex ratio at birth to unity throughout the state, and to end or mitigate violence faced by women, in public and private spheres, by the year 2030. Women and girls must find a reassuring ambience such that they can seek redressal for the violence that they have faced, without any fear.
Target 5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation	To completely eliminate any remaining incidence of child marriage in the state, by 2030.
Target 5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate	The share of women in non-agriculture sector will be raised to 50% by 2030 and the share of women engaged in collecting water/wood in total women engaged in domestic work will be halved to 26% by 2030.
Target 5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life	To maintain the seat share of women in Panchayat bodies at 50%, and to enhance share of women in public service posts to 50%, as well as to enhance the share of women entrepreneurs to 33%.
Target 5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences	

Appendix 4.1.2

Targets and Indicators for SDG 5: Gender Equality

Target 5.1	***End all forms of discrimination against all women and girls everywhere***	Base line 2016-17	Vision 2030
5.1a Ratio of girls to boys in primary level education		0.89	1
5.1b Ratio of girls to boys in secondary level education		0.92	1.00
5.1c Ratio of literate women (15-24 years) to literate men (15-24 years)			1.00
5.1d Share of women workers in the non-agricultural sector (%)		16.8	50
5.1e. Ratio of women to men wage in casual farm work			
5.1f. Ratio of women to men wage in casual non-farm work			
Target 5.2	***Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation***		
5.2a1 Sex ratio at birth (female to male)		888	1000
5.2a2 Sex ratio at birth (female to male) (Rural)		924	1000
5.2a3 Sex ratio at birth (female to male) (Urban)		817	1000
5.2b Ratio of women to men in life expectancy		1.03	1.08
5.2c Women (15-49 years) who experience physical or sexual violence as reported (number)		1412	
5.2d Violence against women as reported January 1, 2016 to November 30, 2016		1896	<1,896
5.2e Ever married women who have experienced spousal violence (15-49 years) (%)		12.7	<12.7
Target 5.3	***Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation***	Negligible incidence	
5.3a Women aged <18 years who are married or in union (%)*		Negligible incidence	0
Target 5.4	***Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and family as nationally appropriate***		
5.4a % of women engaged in collecting water/wood out in total women in domestic work		52.7	26
5.4b. Average hours spent per day by women in domestic and care activities			
Target 5.5	***Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life***		
5.5a Seats held by women in Panchayat bodies (%)		50	
5.5b Women in public service posts (%)		30	50
5.5c Share of women entrepreneurs (%)		9.26	33
5.5d Seats held by women in legislature (%)			
Target 5.6	***Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of its review conferences***		
5.6.	Awareness about reproductive rights among girls and women (%)		

*According to NFHS-4 data (2015-16), around 13.9 per cent of the women aged 20-24 years were married before attaining 18 years of age.

Appendix 4.1.3

Schemes for SDG 5: Gender Equality

Targets	Centrally Sponsored Schemes	Direct Intervention Schemes
Target 5.1	National Mission for Empowerment of Women including Indira Gandhi Mattritav Sahyog Yojana	Gauri Devi Kanya Dhan Yojana
Target 5.2	Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (SABLA)	Kasturba Gandhi Balika Vidyalaya with hostel facilities
Target 5.3	Child Protection Commission	Protection of Women from Domestic Violence
Target 5.4		Training of Elected PRI Women Representatives
Target 5.5		Women Empowerment Mission
Target 5.6		Mukhya Mantri Mahila Satat Ajeevika Yojana

Some additional ongoing efforts of the state to address the issue of gender inequality and empowerment, including details of some of the schemes mentioned above, are as follows:

- The state has prepared a Gender Budgeting Document, which forms the basis for allocation of funds for gender-related activities.
- Ration cards and gas connections are being issued in women's names, since they are now being shown as heads of households.
- One of the important social security schemes launched for women is the Gaura Devi Kanya Dhan Yojana. Under this scheme, girls who have passed high school are eligible for receiving education-related benefits if they belong to the Below the Poverty Line (BPL) category. If they are Above the Poverty Line (APL), the urban/rural income cut-off line is used for determining their eligibility. They are given Rs. 50,000 in fixed deposits in banks, with a lock-in for five years, if they are enrolled in Government or private-aided educational institutions. For technical education, a sum of Rs. 25,000 per annum for engineering/ medical students for girls falling in the general category is offered.
- Widow pension is given to BPL widows, at Rs. 4,000 per month.
- Women belonging to the BPL category, who were injured while working, and have suffered a 20 per cent handicap, are given a disability pension at Rs. 1,000 per month.
- Abandoned women or mentally unstable women belonging to the BPL category get a pension of Rs. 1,000 per month.
- Marriage grants are given for girls, at Rs. 50,000 for low-income households.
- In case of inter-caste marriages too, a grant of Rs. 50,000 is given.
- A Nirbhaya cell (prakosth) has been set up comprising lawyers, and counsellors, among others, to provide services to women victims ranging from counselling to paralegal advice to filing of First Information Reports (FIRs). The cell is a One Stop Centre (OSC). Six new police stations (thanas) are being set up under the scheme in addition to the two existing ones, to deal with crimes against women.
- Nari Niketans or women's shelter homes have also been set up for women in need.
- There is a 30 per cent reservation for women in all jobs.
- A subsidy of 2 per cent is given for land/property registration to women.

Note: For further elaboration, see Uttarakhand, Uttarakhand Academy of Administration, http://uaoa.gov.in/index.php?-mod=content&page=75

Appendix 4.2.1

Vision for Targets under SDG 10: Reduced Inequalities

Targets for SDG 10	Vision 2030 for Targets
10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average	To reduce inequality in the state, by ensuring that the income of the bottom 40 percent of the population grows at a rate greater than the state average income growth (7-10%) and such that the concentration of income with the rich declines with a more egalitarian society being formed by 2030
10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status	To improve provision of basic services such as water, sanitation, housing, education, health, etc. so that all households have equitable access by 2030. The supporting policies and schemes in existence need continuation and/or strengthening to fulfil this objective of inclusive growth by 2030
10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard	
10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality	
10.5 Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations	
10.6 Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions	
10.7 Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies	

Appendix 4.2.2

Targets and Indicators for SDG 10: Reduced Inequalities

Target 10.1	***By 2030, progressively achieve and sustain income growth of the bottom 40% of the population at a rate higher than the national average***	Baseline 2016-17	Vision 2030
10.1a Consumption inequality (measured by Gini coefficient)		0.35	Reduce or arrest at present level
10.1b Share of bottom 40% of population in total consumption (%)		23.0	Improve the share to above 23% based on their income growing at rates above 7% p.a. and at above 10% by 2030
10.1c Palma ratio (Ratio of share of richest 10% in total consumption/ share of poorest 40% in total consumption)		1.8	Reduce the Palma ratio to at least or below 1.5
Target 10.2	***By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status***		
10.2a Ratio of male and female at panchayat level			
10.2b Ratio of male and female in the state assembly			
Target 10.3	***Ensure equal opportunities and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard***		
10.3a Ratio of per capita income of district with highest value to that of district with lowest per capita income value		2.05	Reduce from present level
10.3bRatio of households (%) living in 'good'* houses in urban areas to those in rural areas		1.17	1
10.3c Ratio of all households (%) with access to tap-water from treated sources in urban areas to those in rural areas		1.58	1
10.3d Ratio of share of all households (%) to share of SC households (%) with access to tap-water from treated sources		1.17	1
10.3e Ratio of share of all households (%) to share of ST households (%) with access to tap-water from treated sources		1.25	1
10.3f Slum households (%) with access to tap-water from treated sources		68.3	100
10.3g Slum households (%) with access to closed drainage for waste water outlet		29.8	100
10.3h Poverty ratio (rural vs urban)		1.11	
Target 10.4	***Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality***		
10.4a Growth of real wages			
Target 10.5	***Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations***		
Target 10.6	***Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions***		
Target 10.7	***Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies***		

Appendix 4.2.3

Schemes for SDG 10: Reduced Inequalities

Target No.	Centrally Sponsored Schemes	Direct Intervention Schemes
All	Multi-sectoral development programme for minorities (MSDP)	Uttarakhand Border Backward area Development Nidhi
	Scheme for development of scheduled castes	Integrated Industrial development policy for hills
	Scheme for development of other backward castes, nomadic and semi-nomadic tribes	CM Skill Development Scheme
	Pradhan Mantri LPG subsidy Pahal Yojana (DBTL)	State government scholarship scheme for classes 1 to 10
	Mudra Yojana	
	Scheme for Economically backward classes	
	Umbrella scheme for education of ST students	
	Backward Region Grants Fund (BRGF)	
	Scheme for Promoting Quality Education in Madrasas (SPQEM)	

Appendix 4.3.1

Vision for Targets under SDG 16: Peace, Justice and Strong Institutions

Targets for SDG 16	Vision 2030 for Targets
Target 16.1 Significantly reduce all forms of violence and related death rates everywhere	To reduce the present crime rates further till 2030. The focus will be on crimes against women and economic crimes.
Target 16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children	
Target 16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all	
Target 16.4 By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime	
Target 16.5 Substantially reduce corruption and bribery in all their forms	To make all public services available through CSCs, strengthen the functioning of Right to Services Act and make the state free of corruption.
Target 16.6 Develop effective, accountable and transparent institutions at all levels	
Target 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels	
Target 16.8 Broaden and strengthen the participation of developing countries in the institutions of global governance	
Target 16.9 By 2030, provide legal identity for all, including birth registration	To maintain 100% birth registration till 2030. The registration of mothers will also be increased under ICDS to reach 90% by 2030.
Target 16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreement	The vision for Target 16.10 is to strengthen acts such as RTI so that people have full access to information in the true democratic spirit by 2030.

Appendix 4.3.2

Targets and Indicators related to SDG 16: Peace, Justice and Strong Institutions

		Baseline 2016-17	Vision 2030
Target 16.1	***Significantly reduce all forms of violence and related death rates everywhere***		
16.1a Crime against body^ per 100,000 population		25.3	Reduce all forms of crime from baseline levels
16.1b Crime against women^^ per 100,000 population		28.2	
16.1c Crime against Scheduled Castes per 100,000 population		4.9	
16.1d Crime against Scheduled Tribes per 100,000 population		2.1	
Target 16.2	***End abuse, exploitation, trafficking and all forms of violence against and torture of children***		
16.2a Child labour (% of children age 5-17 years)			Reduce all forms of crime from baseline levels
16.2b Crime against children^^^over total crime		16.5	
16.2c Number of child abuse/trafficking cases			
Target 16.3	***Promote the rule of law at the national and international levels and ensure equal access to justice for all***		
	16.3a Threatened detainees over the overall prison population		
Target 16.4	***By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime***		
Target 16.5	***Substantially reduce corruption and bribery in all their forms***		
	16.5a Number of corruption /bribery cases 16.5b Number of trial against corruption/bribery		
Target 16.6	***Develop effective, accountable and transparent institutions at all levels***		
	16.6a Number of Common Service Centres	4000	7950
Target 16.7	***Ensure responsive, inclusive, participatory and representative decision-making at all levels***		
16.7a Voter turnout (%)		68	
Target 16.8	***Broaden and strengthen the participation of developing countries in the institutions of global governance***		
16.7a Voter turnout (%)			
Target 16.9	***By 2030, provide legal identity for all, including birth registration***		
16.9a Percentage of births registered (%)$		100	100
16.9b Registration of mothers under ICDS (number)		1312450	Attain 90%
16.9c Marriage certificate by gender and social groups			
16.9d Number of PAN cards issued			
16.9e Number of Aadhaar cards issued			
Target 16.10	***Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements***		

**Source:* National Crime Record Bureau. The baseline data refer to 2015.
^Murder, attempt to commit murder, culpable homicide not amounting to murder, attempt to commit culpable homicide, kidnapping and abduction, grievous hurt, causing death by negligence, causing injury due to rash driving/road rage, dowry death and human trafficking.
^^Rape, Assault on women with intent to outrage her modesty, Insult to the modesty of women, Cruelty by husband or relatives.
^^^Foeticide, Infanticide, Procreation of minors, Murder, Exposure and abandonment, Offences under the POCSO Act, the Prohibition of Child Marriage Act etc.
$ The birth registration of children whose births are reported registered under ICDS are 1905085 in number. This is proposed to be increased to 90% by 2030.

Appendix 4.3.3

Schemes for SDG 16: Peace, Justice and Strong Institutions

Targets	Centrally Sponsored Schemes	Direct Intervention Schemes
Target 16.1		Digital India
Target 16.2	Development of Infrastructure Facilities for the Judiciary	Right to Information (RTI)
Targets 16.3	Integrated Child Protection Scheme (ICPS)	Right to Service (RTS) Act
Target 16.4		
Target 16.5	Creation of the Suraj and Bhrashtachar Unmoolan Department created	
Target 16.6	Establishment of the Child Labour Care Centre	

Appendix 4.3.4 List of Services Currently Available on the Digital Seva Portal

1.Agricultural services	Kisan Point, mKisan Registration, VNR Seeds
2. B2C services	Lending Kart Loans for VLEs, Pump Kart, LED Kit and Raw Material Order, PVC Card Order, ePashu Chikitsa, eLegal Service, Videocond2h : Recharge and Set Top box , Income Tax Services , Order Devices from CSC , CBSE NEET Registration, CSC Bazaar, Uber Driver Registration, Kisan eStore, Life Certificate LIC
3. Banking	Pin Pad Device Payment, Bank Mitr Fee Payment, Aadhaar Seeding, Apna Dhan is now DIGI Pay, Bank Mitr Registration, Digital Financial Inclusion, Merchant Onboarding Form, Mudra Loan Registration
4. Education related services	CSC NIELIT Centre, Shankar Mahadevan Academy, Tally Certification Program, Basic Computer Course (BCC), Khan Academy, NIOS Registration for Examination, NIOS Online Admission (Stream 1, 2, 3, & 4), NIELIT Services , Sarkari Pariksha (Govt. Job Exam preparation), Dr. C V Raman University, iScholar i30 IIT-JEE 2017 1yr Online course, CSC School- Multimedia Content (6th to 10th), Tally Kaushal Praman Patra , Competitive Exam Prep- IIT/PMT/Banking (Embibe)
5. Election services	Election Commission Services - Uttarakhand
6. Electricity bill payment services	State electricity services
7. G2C services	NSDL - PAN Card Service, FSSAI Registration Service , Pradhan Mantri Awas Yojana – Urban, Jeevan Pramaan Certificate, Soil Health Card , Public Grievances, Swachh Bharat, National Pension System (Swavalamban Yojana) , Rashtrapati Bhavan Museum Visit, Passport, Jan Suraksha Yojana, UTIITSL - PAN Card Service, National Career Services , Birth and Death Certificate Registration, PVC Election Card Oder
8. Health services	Jiva Ayurveda, CSC Telemedicine, Apollo Tele Health, Hello Health
9. Insurance services	RAP Registration, Life Insurance Premium Payment
10. Mobile services	Mobile Recharge, Mobile Bill Payments, DTH Recharge, DataCard Recharge

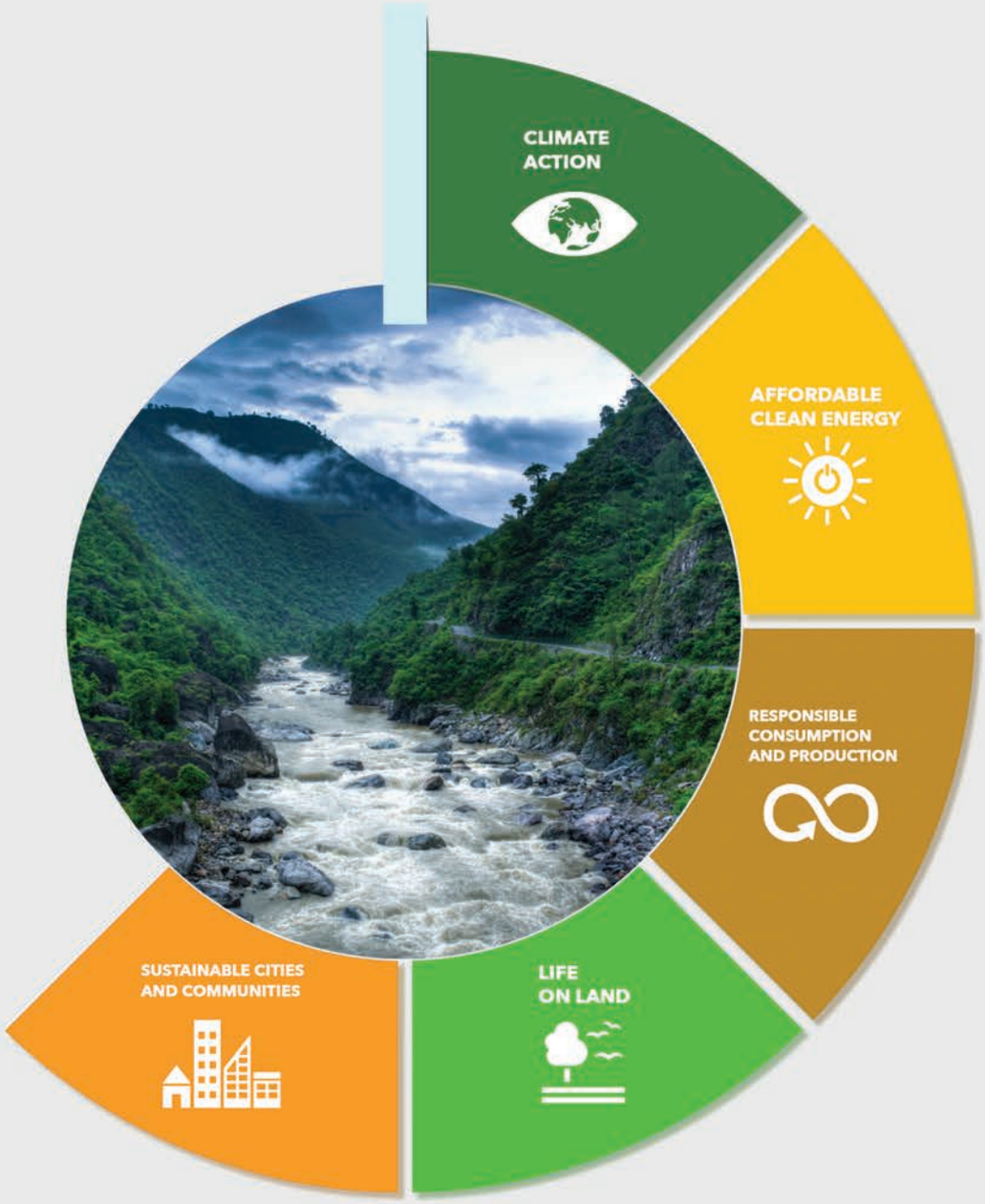
Contd...

Appendix 4.3.4 Contd...

11. Recruitment services	Indian Navy
12. Skill Development services	L&T Skill Courses Form, CAD Registration
13. State Government services	eChallan – Uttarakhand, eDistrict Uttarakhand
14. Training courses	Learn English: Certificate from British Council, Cricket Strokes (Learn Cricket Online), Animation Course, Online English Speaking Course
15. Travel services	Bus India - Govt. Bus Ticket Booking, IRCTC, CSC Travel (Air)
16. UID services	Aadhaar Demographic Registration, Aadhaar Demographic Update, Aadhaar Print – e-Know Your Customer (e-KYC), Best Finger Detection (BFD), Aadhaar Mobile Update, Aadhaar Print
17. Free services	eCourts, Online Results, Market Prices, Weather Information, Apply for Mandatory Free CCC Examination, CSC RAS
18. Information zone	Kiosk banking, insurance

Chapter 5

Environmental Sustainability



Human beings have made giant strides in terms of economic growth, harnessing all the natural resources at their disposal. However, in the process, they have also placed themselves in a position where they are being compelled to make an important choice: whether to maximise today's consumption at the cost of that of the future generation. Natural resources are getting depleted, and air and water pollution is increasing alarmingly. Unless human beings make a concerted effort to repair the damages to our natural ecosystem over the years, in future there will simply not be enough food, water, or clean air to go around for all the citizens of the world. Thus, it is important to ensure that the process of development, and patterns of consumption and production are environmentally sustainable.

In this chapter, five SDGs are discussed: SDG 7 (affordable and clean energy), SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production), SDG 13 (climate action), and SDG 15 (life on land).

Uttarakhand is a mountain state, which plays a pivotal role in providing many ecosystem services such as provisioning services, regulating services, and cultural services, among others. Yet as a mountain economy, it has its own specific vulnerabilities such as inaccessibility, fragility, marginality, and diversity. As this chapter shows, due to these vulnerabilities, the state has already been significantly affected by the process of climate change. Apart from weather-related extremities, the natural calamity which caused a huge loss in terms of lives and property in 2013, highlight the need for protecting the environment amidst rapid strides in development.

SECTION 5.1

SDG 7: Ensure Access to Affordable, Reliable, Sustainable and Modern Energy for All

Economic growth and energy consumption have a very close association.[1] As the world has progressed on higher growth trajectories and increased energy consumption, it has become increasingly clear that there are several pitfalls of generating energy via the conventional route with the help of fossil fuels such as coal, oil, and petroleum. Fossil fuel combustion leads to air and water pollution and adverse climate change. These add particulate matters to the atmosphere, lead to the rising emission of Greenhouse Gases (GHGs), and also add effluents and pollutants to water.[2]

The search for cleaner energy has led to the emphasis on using energy emanating from sources that can be naturally replenished such as wind, solar, and hydro-power, among others. Such sources are renewable or sustainable or green energy sources.[3] Energy is the dominant contributor to climate change, accounting for around 60 per cent of the total global greenhouse gas emissions. The SDG No. 7, 'Ensure affordable, reliable, sustainable and modern energy for all' is an important pillar of the set of 17 SDGs as energy is crucial for achieving almost all the SDGs, ranging from its role in eradicating poverty through achieving progress in health, education, water supply and industrialisation, to combating climate change. The agreement reached in Paris at the Conference of Parties (COP21) represents an important milestone for future changes in energy and climate policies, aiming at limiting global greenhouse gas emissions to sustainable levels.

The proportion of the global population with access to electricity has increased steadily, from 79 per cent in 2000 to 85 per cent in 2012, but 1.1 billion people in the world are still living without electricity. The proportion of the world's population with access to clean fuels and technologies for cooking increased from 51 per cent in 2000 to 58 per cent in 2014. However, there has been limited progress since 2010, and this progress has been

1. Elasticity of electricity consumption on GDP has been declining since the Third Plan period when it peaked at 5.04. The average elasticity from 1969–2012 (the Fourth Plan to the Eleventh Plan period) is calculated at 1.27. The Ministry of Power, Government of India, had forecast an elasticity of 0.9 for the Twelfth Plan (2012–2017) and 0.8 for the Thirteenth Plan (2017–2022). Based on this elasticity, the projection of energy requirement was pegged at 1403 BU at the end of the Twelfth Plan (2016–2017) and 1993 BU at the end of the Thirteenth Plan (2021–2022).

2. http://nebula.wsimg.com/a0ccc702e9ee3b4afad758e1a295668a?AccessKeyId=6CFD152CF7548226ACAF&disposition=0&alloworigin=1, accessed on April 20, 2017.

3. Large hydro-based plants with more than 25 MW capacity are not considered to be renewable sources of energy. While hydro-power is cleaner than conventional thermal power, other environmental issues such as displacement of people, diversion of the routes of rivers, the changing flow pattern/sedimentation, and disturbance of immediate ecosystems are matters of concern around the building of large hydro-power projects.

SDG 7

Ensure Access to Affordable, Reliable, Sustainable and Modern Energy for All

Uttarakhand Vision for SDG 7

By 2030, there will be deployment of green power in Uttarakhand for empowerment, security, affordability and equity

AFFORDABLE AND CLEAN ENERGY

Uttarakhand Today

- Electrification is almost 100 percent in urban areas, and 96.5 percent for rural households
- State per capita electricity consumption is 1279 kwh
- Hydro based capacity dominates with 76 percent share followed by thermal at 17 percent, gas based 3 percent, nuclear 1 percent and balance 3 percent constituting Solar and co-generation.
- Transmission and Distribution loss is 18.63 percent

Focus for Tomorrow

- To reach electricity to the last-mile households
- To increase share of renewable energy to meet total energy demand
- To increase energy-efficient lighting and equipment use
- To reduce T & D loss

Targets for 2030

- Meet 15 percent of energy demand from renewable sources
- Save up to 25 percent of energy consumption, to fulfil national commitment to source at least 40 percent of energy requirement from renewable sources
- Reduce T & D loss to 9 percent

outstripped by the global population growth. Moreover, the progress has been mostly limited to the urban areas.

The Uttarakhand Government is committed to improving the quality of life of its citizens by providing them the opportunity for higher electricity consumption. The joint initiative of the state and central governments of 'Power for All' is steadfast in its aim is to provide round the clock electricity to each household in the state. This is expected to not only accelerate economic development in the state, but also enhance the inclusive nature of development.

Small Hydro-power: Renewable Energy Sector

In India, hydro projects up to 25 MW station capacities have been categorized as Small Hydro Power (SHP) projects. The mandate for small hydro power (up to 25 MW) has been given to Ministry of New and Renewable Energy. Small hydro power projects are further classified as: Micro Hydro (Up to 100 kw), Mini Hydro (101-2000 kw) and Small Hydro (2001 to 25000 kw). Uttarakhand has a substantial potential capacity of 1707.87 MW which is 8.6 percent of the all-India capacity of 19749.44 MW, as of March, 2014. The state has an installed capacity of 174.82 MW installed capacity and projects under implementation with capacity of 174.04 MW.

The renewable energy sector, which includes SHP, also has considerable employment potential and it is expected that it can act as a significant growth driver. Employment in the renewable energy sector, excluding large hydropower, increased globally by 2.8 percent to reach 8.3 million in 2016, with China, Brazil, the United States, India, Japan and Germany being the leading job markets, according to a report by the International Renewable Energy Agency.[4] A large chunk of the employees in renewable energy sector worldwide were in Asia where renewable energy projects were on the rise. The agency expects that jobs in the sector could reach 24 million by 2030, more than offsetting fossil-fuel job losses and becoming a major economic driver around the world.

Another report by OECD views renewable energy sector as more of a growth driver, especially in rural areas.[5] This report maintains that renewable energy sector is more capital-intensive, rather than being labour-intensive. Most of the direct jobs for this sector are in operating and maintaining the installations. The largest share of long-term jobs is 'not in direct energy generation, but along the renewable energy supply chain – in construction, manufacturing, specialised services, and also rural activities such as farming, forestry, etc.' Whichever way the linkages lie, towards growth and/or employment, the renewable energy sector is clearly the rising sector of the future and holds a lot of promise.

Small Hydro Power Sector: Benefits and Challenges[6]

The Government of India has laid great emphasis on production of renewable power as a clean source of energy. Not only do the SHPs come under clean energy, but their contribution becomes more significant as SHPs require minimal submergence, rehabilitation and minimal impact to environment. Owing to the twin factors of scope of SHP development and its established methodology for CDM (Clean Development Mechanism) registration, SHPs have gained great significance in Uttarakhand. Other advantages of Small Hydropower Projects are that these help in promoting the local industries in remote areas and can assist in self-employment. The development of SHPs also need minimum rehabilitation and resettlement as well as environmental problems.

Uttarakhand state has several rivers and canals which spells tremendous potential for producing hydro-power energy in the state. This potential is enhanced not only by the availability of ice fed and rain fed rivers but also because of the natural incline in the state. It has been recognized that small hydropower projects can play a critical role in improving the overall energy scenario at the national level and, in particular, for remote and inaccessible areas. Thus for a hilly state such as Uttarakhand, this source of energy is particularly suitable. For

4. http://economictimes.indiatimes.com/jobs/renewable-energy-jobs-growing-worldwide-irena/articleshow/58848020.cms accessed on July 7, 2017.

5. OECD (undated).

6. This section has drawn on Singh and Rastogi (2006) and Joshi (2007)

instance, in the remote area of Badrinath, power is supplied with the help of an SHP.

However, there remain many challenges in the area of construction of SHPs as well as in their execution. For the former, there is lack of hydrological data, since SHPs are constructed mainly on small streams or tributaries of rivers. Secondly, given that a major part of Uttaranchal state is under seismic Zone-V, the state is susceptible to earthquakes. Structural design needs to take care of this feature, which in turn increases the cost. Uncertain geological conditions such as Loose River bed Material (RBM), Unstable Slopes, Land/Avalanche Slides, etc., as well as remote location, make construction difficult and costly. These conditions also pose steep challenges for smooth operations, as do weak grid connections.

The vision 2030 for the state for Goal No. 7 is:

By 2030, there will be deployment of green power in Uttarakhand for empowerment, security, affordability and equity.

The vision for targets of Goal No. 7 are presented in Appendix 5.1.1, followed by values for indicators (baseline and vision 2030) in Appendix 5.1.2, and Appendix 5.1.3 contains the schemes applicable for Goal no. 7. Annexure 7 contains the detailed information regarding indicators for Goal no. 7 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030. For this SDG, all the targets have been discussed together.

Baseline for Uttarakhand

As per the provisions of the Electricity Act 2003, the following three independent unbundled utilities are operational in the state:

(1) Generating Company—Uttarakhand Jal Vidyut Nigam Limited (UJVNL),

(2) Transmission Company—Power Transmission Corporation of Uttarakhand Limited (PTCUL),

(3) Distribution Company—Uttarakhand Power Corporation Limited (UPCL).

The power sector of the state is regulated by the Uttarakhand Electricity Regulatory Commission (UERC) while the Uttarakhand Renewable Energy Development Agency (UREDA) is the nodal agency for the promotion and implementation of various renewable energy programmes in the state.

Target 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services

The indicators presented in Appendix 5.1.2 and Annexure 7 show that presently, the level of electrification of households is almost 100 per cent in the urban areas and 96.5 per cent in the rural areas. This implies that despite having completed the implementation of the Ministry of Power's RGGVY scheme, the state still has 3.5 per cent (or 1,00,407) rural households that are yet to be electrified.

It may also be noted that the definition of rural electrification has recently been modified. According to the new definition of village electrification, which came into effect from the year 2004-05,[7] a village would be declared as electrified, if:

- Basic infrastructure such as distribution transformer and distribution lines are provided in an inhabited locality as well as in the dalit basti (hamlet) where it exists.
- Electricity is provided to public places like schools, panchayat offices, health centres, dispensaries, and community centres, among others.
- The number of households electrified should be at least 10 per cent of the total number of households in the village.

Thus, the percentage share of villages being electrified does not indicate that all the households in the village, or even a majority of the households in the village, are electrified. In addition, the definition does not mention the number of hours for which electricity is available, which can also lead to slightly more optimistic

7. Issued by MOP, vide their letter No. 42/1/2001-D(RE) dated February 5, 2004, and its corrigendum vide letter no. 42/1/2001-D(RE) dated February 17, 2004, according to the DDUGJY website, http://www.ddugjy.gov.in/mis/portal/definition_electrified_village.html, accessed on May 2, 2017

Table 5.1 Availability Mix of Energy from Firm Sources in FY 15 (in MW)

Source	MW Firm Entitlement	% age of Total Firm Availability
Own Generating Stations (OGS)		
Hydro	1134.96	48.02%
Small Hydro	32.70	1.38%
Subtotal – OGS	1167.66	49.40%
Private Generating Stations (PGS)		
Non Solar (R.E.)	213.30	9.02
Solar	6.6	0.28%
Vishnugarh (J.P.)	48.00	2.03%
Subtotal – PGS	267.90	11.33%
Central Generating Stations (CGS)		
Coal based	400.10	16.93%
Gas Based	69.64	2.95%
Subtotal-Thermal	469.75	19.87%
Nuclear	31.24	1.32%
Hydro Based	427.13	18.07%
Subtotal – CGS	928.12	39.27%
Grand Total	2361.08	

Source: PFA 24x7 document.

assessments regarding rural electrification, than may be the case on the ground.

The indicators for the percentage share of households using clean fuels (electricity, LPG/natural gas, bio-gas) for cooking shows considerable rural–urban disparity. In the urban areas, 86.6 per cent of the households use clean fuels, contrasted with a mere 31.1 per cent for the rural areas. This reflects the continued dependence of households on wood as a fuel in the villages in Uttarakhand.

The per capita consumption of electricity of the state, at 1154 kwh in 2014-15, was higher than the national average of 1010 kwh. At present, the state per capita consumption is 1279 kwh.

Target 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix

The electricity supply can come from either conventional sources or renewable sources. Currently, the state has a huge potential for hydro-electricity, with the total installed capacity as on March 31, 2015 (the allocated capacity in state, private, joint and central generating stations), at 2361.08 MW, out of which its own generating capacity is about half at 1167 MW (see Table 5.1). The hydro-based capacity dominates in the state, with a share of around 76 per cent, followed by thermal capacity at 17 per cent, gas-based at 3 per cent, and nuclear capacity at 1 per cent, and the balance 3 per cent constituting solar and co-generation capacity.

However, only around 10 per cent of the available hydropower has been harnessed in the state. Projects in the upper reaches of the Bhagirathi Valley have been stopped by the Central Government due to environmental concerns.

Micro, mini and small hydro power plants of up to 25 MW capacity are considered as renewable sources. Presently (as of FY 2016-17), the cumulative capacity for renewable energy in the state is 206 MW, in the state, the components of which are shown in Table 5.2. Further, 3.2 per cent of the energy demand of the state is met from renewable sources.

Target 7.3 By 2030, double the global rate of improvement in energy efficiency

One indicator for this target is the transmission and distribution loss (in percentage recorded in the state, the baseline value for which is 18.63 per cent.

Vision 2030 for Targets 7.1 to 7.3

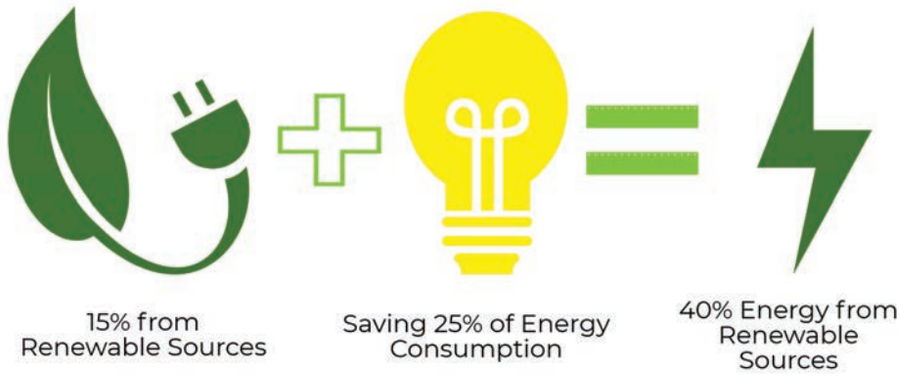
In the background of the vision 2030 for the deployment of green power in Uttarakhand, the

Table 5.2: Renewable Energy Capacity in Uttarakhand (MW)

Projects	Capacity (MW)
Grid connected projects	118.50
Of which –co-generation-based power plant --solar PV power plant -- micro/mini/small hydro-power plants	72.60 40.90 5.00
Off grid projects	87.73
Of which –rice husk and W2E biomass power projects --solar decentralised power projects -- micro/mini/small hydro-power plants (for village electrifications through 25-200 kw MHPs and watermill/gharat)	44.00 36.00 7.73
Total renewable energy capacity	206.23

Source: Government of Uttarakhand.

Figure 5.1: Vision for Renewable Energy in Uttarakhand



Source: Based on information provided by Government of Uttarakhand

broad goalposts for 2030 are:

1. **To meet 15 per cent of the energy demand from renewable sources from the present level of 3.2 per cent.**
2. **To save up to 25 per cent of energy consumption in order to fulfil the Government of India's commitment to source at least 40 per cent of its energy requirements from renewable sources.**

These goals are being supported on the ground by various Central and state government schemes and policies. Among them are DDUGJY of the Ministry of Power, the Uttarakhand 24 x 7 Power For All Initiative, the Uttarakhand Solar Power Policy 2013, the Uttarakhand Policy for Development of Micro and Mini Hydro Power Projects up to 2 MW by 2015, and the recent draft policy on mini and micro grids brought out by the Ministry of New and Renewable Energy.

Regarding Target 7.1, the vision is to cover the remaining households that still do not have access to electricity, as envisaged in the Uttarakhand 24x7 Power for All Initiative. Among the around one lakh un-electrified rural households, recent surveys have identified 54,015

Table 5.3: Changing Shares (%) of Components of Renewable Energy as Proposed in Vision 2030

Source of Renewable Energy (million units)	2016-17	2019-20	2023-24	2029-30
Micro hydel	18	74	95	151
Solar	70	351	409	601
Co-gen, biomass, W2E	284	821	922	1137
Total Renewable Energy (Million Units)	371	1246	1426	1889
Source of renewable energy (%)				
Micro hydel	4.85	5.9	6.6	8.0
Solar	18.86	28.2	28.7	31.8
Co-gen, biomass, W2E	76.54	65.9	64.7	60.2
% Renewable w.r.t. Total Demand	3.2	10.5	11.8	15.1

Source: Government of Uttarakhand.

households, and there are plans to bring them under the electricity grid system through the DDUGJY scheme of the Government of India. Another 2,229 households have been planned to be brought under for electrification through off-grid solutions, since it was considered un-economical to extend the grid to cover these households. The balance 44,163 households are undergoing scrutiny for inclusion under one of the two categories.

As mentioned above, the share of renewables is slated to increase substantially to 15 per cent by 2030 from the baseline share of 3.2 per cent (Target 7.2). Table 5.3 shows the planned increase in the renewable share along with the share of the individual components.

Under **Target 7.3**, which deals with ensuring energy efficiency, the government aims to reduce the Transmission and Distribution (T&D) loss from the baseline value of 18.63 per cent to 9 per cent in 2030. In the interim years, the targets are to be modified to 14 per cent by 2019-20 and further to 12 per cent by 2023-24.

Challenges for affordable and clean energy

- The state has laid out ambitious goals to increase the share of renewables in the generation mix. The state nodal agency, UREDA, has a critical role to play in the facilitation of different clearances required for renewable capacity additions. In effect, it is supposed to act like a single window clearance agency facilitating approvals from different line departments. Here, its capacity to fulfil this role may prove a constraint.
- The success of all the enabling policies and initiatives for creating last mile connectivity by micro-griding local renewable generation resources, will be achieved only when it is able to demonstrate maximum participation of the private sector or of Panchayati Raj Institutions (PRIs). As of now, the number of households/hamlets which may come under such micro-grids is not well identified. If the main grid does reach the isolated area before the investment of the micro-grid is recovered, it shall remain a risk for the investor. Even if there is a compulsory power purchase agreement with the main grid, factors like tariff structure, tariff cross-subsidisation, feed-in-tariff, and standards of interconnectedness in either case come into play, which necessitates careful considerations and policy tuning.
- The share of hydro generation, at 48 per cent of the total firm availability, has remained the mainstay for the state in its efforts to mitigate peak demand. Notwithstanding these efforts, 90 per cent of the potential still remains untapped. However, it is amply clear that unrestricted expansion of bulk hydro generation without adequate study, analysis and safe

guards to the ecology will not be sustainable. In this scenario, it is necessary to map the capacity addition programme with the demand growth, and put contingency plans in place for generation resource constraints. It is also important to undertake a risk analysis of the on-going hydro projects to determine the extent to which water shall be available in successive years.

- It has been observed that the share of renewable energy in the total energy demand has been planned for expansion, from the current 3.2 per cent to 15.1 per cent by 2030, mainly on the back of the expansion of mini hydro and solar capacity additions. This needs an adequate in-depth study of solar irradiance, land availability, and water resources.
- In order to facilitate the increased penetration of grid connected renewables and at the same time, to ensure the safety, security and stability of the grid under all operating conditions, it is necessary to equip the State Load Dispatch Centre with robust renewable resource forecasting solutions. This will enable the load dispatch system to schedule and manage the grid system from the adverse impacts of variable renewable power.

Strategies for attaining Vision 2030

In line with the first goalpost of increasing the share of renewable energy to 15.1 per cent, the interim goalposts planned include shares of 10.5 per cent in 2019-20 and 11.8 per cent in 2023-24.

The detailed strategy for achieving this goal is as follows:

- Electrification of remotely located habitations through renewable energy projects under the net-metering scheme through involvement of village communities.
- Harnessing 360 MW of solar power under the Uttarakhand Solar Power Policy and the Jawaharlal Nehru National Solar Mission (JNNSM).
- Capacity installations of mini hydro-power projects of up to a cumulative capacity of 43 MW under the "Policy for Development of Micro & Mini Hydro Power up to 2 MW, 2015".
- Training and capacity building of various stakeholders in the field of renewable energy and energy conservation.
- Generating publicity and awareness of renewable energy programmes and energy-efficient equipment.
- Accreditation of new renewable energy projects under the Renewable Energy Certificate (REC) mechanism.
- Timely establishment of renewable energy projects to fulfil the Renewable Purchase Obligation (RPO)) compliance[8] of obligated entities as stipulated by the Uttarakhand Electricity Regulatory Commission (UERC) from time to time.

The second goalpost attempts to bridge the remaining gap to achieve an overall share of 40 per cent energy from renewable sources. This goal identifies efficiency measures to achieve a 25 per cent reduction in energy consumption leading up to FY 2030.

The detailed strategy for achieving this goal is as follows:

- Replacement of incandescent lamps/CFLs used by consumers of UPCL with LED bulbs;
- Replacement of conventional street lights with LED street lights in ULBs;
- Replacement of inefficient equipment/devices with energy-efficient devices in buildings of ULBs;

8. RPO is a mechanism by which the State Electricity Regulatory Commissions (SERCs) are obliged to purchase a certain percentage of power from renewable energy sources. RPO is being implemented throughout the country to create demand for renewable energy.

- Installation of solar water heating systems in government offices, schools, colleges, hostels, housing complexes, hospitals, and hotels, and in industries where hot water is required for processing.
- Use of star labelled motor pumps, power capacitors, and foot reflex valves in the agriculture sector.
- Installation of an automatic power factor correction relay in all industries; and
- Implementation of energy conservation building codes.

There are various measures already in place to improve energy efficiency (as related to **Target 7.3**) such as the Perform, Achieve and Trade (PAT) scheme of the Central Government. Operating under the overarching National Action Plan on Climate Change (NAPCC), and under the National Mission for Enhanced Energy Efficiency (NMEEE), the PAT scheme is a regulatory instrument to reduce specific energy consumption in energy-intensive industries, with an associated market-based mechanism to enhance cost-effectiveness through the certification of excess energy saving which can be traded. Thus, energy-efficient practices in industry are encouraged and rewarded. In the coming years, there are plans on the anvil to 'deepen' the scheme by the inclusion of more units from sectors already included and to 'widen' the scheme by including new units from new industrial sectors.

Very recently in 2016, the Uttarakhand government joined the Ujwal DISCOM Assurance Yojana or UDAY scheme for attaining an operational turnaround of the DISCOMs. The aim is to bring down Aggregate Technical and Commercial (ATC) losses and to eliminate the gap between the cost of supply of power and realisation through various measures such as compulsory distribution transformer metering, consumer indexing, GIS mapping of losses, upgradation/change in transformers and meters, smart metering of high-end consumers, and feeder audits, among others.[9]

As the state power sector moves to provide power for all, the Power Transmission Corporation of Uttarakhand has commensurate plans and strategies to expand the power transmission capacity in the state. In the period from the baseline up to 2019-20, the strategy is to construct EHV transmission sub-stations with a capacity addition of 2655 Mega Volt Amp (MVA), along with the construction of associated transmission lines, among other plans. In the medium term period up to 2014, the strategy includes the construction of EHV transmission sub-stations of 400 KV sub-station, construction of GIS sub-stations as well as associated transmission lines. Duirng both periods, the strategy also includes plans to add transmission capacity at existing sub-stations. The overall vision for the period up to 2030 is to construct 400 and 220 KV transmission systems for evacuation of power from upcoming IPPs, as well as to construct one 132 KV sub-station of 50 MVA and associated transmission lines. There are also plans to construct a 765 KV sub-station at Rishikesh.

9. http://pib.nic.in/newsite/PrintRelease.aspx?relid=138496, accessed on October 16, 2017.

SDG 11

Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

Uttarakhand Vision for SDG 11

By 2030, the cities and human settlements of Uttarakhand will be inclusive and safe, with affordable housing for all in a clean environment such that every inhabitant also has access to safe public space

SUSTAINABLE CITIES AND COMMUNITIES

Uttarakhand Today

- Slum population low in state but high at 25 percent in urban areas
- Surfaced road length per lakh population in the state much lower than the national average
- Uttarakhand is an environmentally sensitive state where a lot of unplanned development has taken place posing severe ecological threat to the region
- Air, water and noise pollution with untreated discharge of industrial and municipal water are serious issues

Focus for Tomorrow

- Develop land from all sources with effective inter-departmental coordination.
- Hill areas to be made slum-free
- To plan small towns in hill areas
- Set targets for reducing air pollution from vehicular and industrial sources
- Dehradun is being developed as a Smart City
- Urban transport planning to be done depending on differential needs of large and small towns.
- Effective decentralization so that ULBs are actively associated with urban planning

Targets for 2030

- Increase share of Slum Households covered by Low-cost Housing Programmes to 90 percent, from a baseline of 25 percent
- Increase the geographical coverage of public transport to 70 percent, from baseline of 10 percent
- Build disabled friendly transport
- The number of SHGs will increase to 800, from a baseline of 250.
- Increase the share of sewage treated to sewage generated to 70 percent

SECTION 5.2

SDG 11: Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable

According to NITI Aayog estimates, though 68 per cent of India's total population lives in rural areas, by 2030, India is expected to be home to six mega-cities with populations above 10 million. Currently, 17 per cent of India's urban population lives in slums. Indian cities need to be prepared to meet the challenge of both spatial and economic inequalities to achieve the goal of sustainable development.

The state of Uttarakhand bears the national characteristics of low urbanisation till now. But its topography does not permit a very high degree of sustainable urbanisation. It is largely a hilly state, very rich in natural resources, especially water and forests, blessed with rare bio-diversity, and has an enviable stock of mineral deposits.

It has a vast potential of tourism, in adventure, leisure, eco-tourism, and religious tourism as four of the most revered Hindu Temples, Char Dham, are located here. A huge number of small-scale industries have come up in the state. Small-scale industries are growing at the rate of nearly 3 per cent annually while the rate of employment in this sector is around 2.4, with both figures being higher than the national average.

The state is much better placed as compared to the national average in terms of the major indicators of urban development. It should not face severe problems in directing the course of urbanisation with proper planning and forecasting. During its creation, the state took away a better part of the natural and human resources from the parent state, Uttar Pradesh. Although Uttarakhand has large rural areas, it is not crowded by too many polluting economic activities. Industries account for more than 50 per cent of the State Domestic Product (SDP). The state has moved up from the 23rd position in 2015 to the 9th in 2016 as per the Ease of Doing Business ranking of the Department of Industrial Policy and Promotion (DIPP), Government of India.

As per the Census 2011, around 70 per cent of the total population of the state lives in rural areas. However, the average rate of growth of the urban population (4 per cent) is more than three times that of rural growth (1.2 per cent) in the state. Urban population is concentrated in the cities of Dehradun (capital), Haridwar (religious city), Rudrapur, Roorkee, Kashipur, Nainital, and Haldwani, which are richly endowed with in agro-based and other industries. Dehradun grew at more than 4 per cent during the decade 2001-2011.

Apart from residents in urban areas, there is a large floating population in the towns of Mussoorie, Nainital, Rishikesh, Badrinath, and Kedarnath, among others. The tourist inflow figures into these cities were to the tune of 311.08 lakh and 268.09 lakh during 2010 and 2011, respectively, that is, nearly three times more than the total population of the state. This indicates the huge potential for growth in the state revenue and the resultant pressure on infrastructure as well.

The mountainous areas of the state experience heavy rainfall, making the shallow soil cover highly susceptible to erosion. These conditions necessitate conservation of the precious soil cover during the monsoons and harvesting of irrigation water for the dry months. Steep slopes and difficult terrain make both mobility and connectivity difficult. Areas with high seismic activities make the settlements vulnerable to disaster risks. In such areas, regulating construction activities is of prime importance in planning. Adherence to the seismic code needs to be made mandatory in the building designs. The phenomena of increasing urbanisation, industrialisation, and intrusion of commercial activities like tourism on the limited land cover in the state has led to encroachment of forest land and green cover, and construction on unsuitable land. There is need to generate awareness of these problems among local residents, and to evolve participatory planning and management with the involvement of local bodies.

The Urban Development Department is the administrative department for local self-government in the state. The Uttarakhand Housing Department and Urban Development Authorities cater to housing development while the Town and Country Planning Department is responsible for urban planning and development control. The Uttarakhand Pey Jal Nigam and Jal Sansthan under the Drinking Water Department provide water supply, drainage and sewerage services to the project

towns. The Uttarakhand Environment Protection and Pollution Control Board, and the Public Works Department are among the major organisations working in the state's urban areas. Often, there is overlapping of jurisdiction as well as the absence of networking, which leads to gaps in efficiency. The agencies are hesitant to share data.

The Town and Country Planning Department (TCPD) is responsible for preparing the Master Plans for the growing cities. Two Master Plans have been prepared till date, that is, the Dehradun Master Plan (2005 – 25) and the Haridwar Master Plan – 2025. Such plans for 19 more towns are on the anvil in the coming seven years. The process has already started for various cities and the progress is as follows: Firms have been empanelled for GIS survey in four cities, basic surveys for urban areas are complete for two cities and the total survey has been completed for two cities, Roorkee and Rishikesh. The TCPD plans to complete these activities by 2020. Master Plans for the remaining ten towns are slated to be taken up during seven years. In 2025, the plans for Dehradun and Haridwar will be revisited and the Badrinath plan will be completed.

The Mussoorie–Dehradun Development Authority (MDDA) was established in 1984 to control urban activities in these two expanding cities and in its adjacent 187 villages. It has been responsible for supplying housing to all income groups and providing related infrastructure in order to ensure ordered urban development. However, the rapid growth of the population has outnumbered the provisions of supply and slums have sprung up all over the city. Mussoorie has comparatively better controlled land use to prevent unauthorised construction but land regulations are not very effective in Dehradun. Increasing population is continuously encroaching on forest land with little state control. The MDAA is different from other urban agencies as it has to generate its own revenue to meet its expenditure. It does not get any state or central grant. The major source of revenue is from the sale of land and flats, development fees, and conversion fees, among others. As it is responsible for the provision of physical infrastructure, the levels of both capital and revenue expenditure are considerably high.

The Uttarakhand Urban Sector Development Investment Programme was conceived to support the Government of India and Government of Uttarakhand in the implementation of policy to ensure balanced regional development and poverty reduction through improvement in urban governance, management, and service provision throughout the urban sector in the state. It is an Asian Development Bank (ADB)-funded project, and controlled by the Urban Development Department of the state. The department has set up a state level Investment Programme Management Unit (IPMU) for overall monitoring, execution, and policy direction. It is registered as the Uttarakhand Urban Sector Development Agency (UUSDA). It also provides advice and technical support to ULBs and other state level agencies. In addition, it has the mandate to execute other externally aided programmes in urban areas.

The state has a total of 13 districts, of which 9 are totally hill areas, while 2 districts are totally in the plains area. The major thrust of urbanisation is felt in the four districts of Dehradun, Nainital, Udham Singh Nagar, and Haridwar. The last two districts are totally in the plains area while parts of Dehradun and Nainital are in the hills.

There are 92 ULBs in the state comprising 6 Municipal corporations, 39 Nagar Palika Parishads, and 47 Nagar Panchayats. Among the 92 ULBs, 44 are situated in the hills. This makes the provision of infrastructure quite challenging. Apart from the local residents, the infrastructural needs of pilgrims and tourists also need to be provided. This calls for

Box 5.1: Mussourie – Dehradun Development Authority Financial Resources Required (Rs. Lakhs)

Components	3 year Plan	7 Year Plan	15 Year Plan
Affordable Housing	1,20,500	2,40,500	3,90,700
Hospital	3000	5000	9000
Infrastructure	30,000	1,00,600	2,50,000
River Front Development			1,01,802.73

Source: MDDA Vision 2030.

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different strategies to meet different requirements. The topology and geographical features of the state are additional challenges for urban planners, and the multiplicity of organisations and complex institutional arrangements add to the complications.

There are six municipal corporations, that is, Dehradun, Hardwar, Roorkee, Haldwani, Rudrapur, and Kashipur, in the state. Dehradun is the most populated city in the state with a population of 5.74 lakh. The next populous city, a distant second, is Hardwar with a population of 2.31 lakh. Other cities have populations ranging between 1.18 lakh and 2.01 lakh people. The University town of Roorkee is the smallest city with a population of 1.18 lakh. The vision for Uttarakhand for Goal No. 11 is:

> ***By 2030, the cities and human settlements of Uttarakhand will be inclusive and safe, with affordable housing for all in a clean environment such that every inhabitant also has access to safe public space.***

The vision for targets of Goal No. 11 are presented in Appendix 5.2.1, followed by values for indicators (baseline and vision 2030) in Appendix 5.2.2. Annexure 11 contains the detailed information regarding indicators for Goal no. 11 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030. In the urban sector, Targets 11.4 and 11.5 are not applicable.Target 11.5 has been subsumed under disaster management.

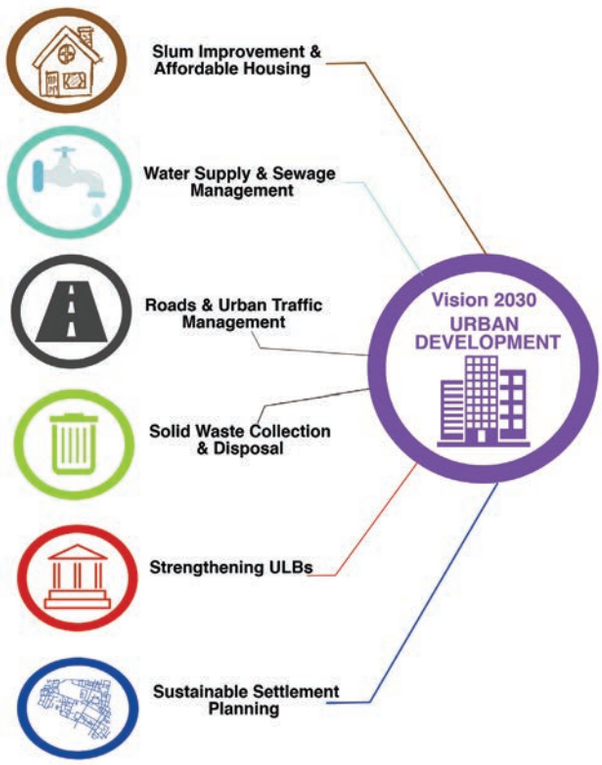
Target 11.1: Slum Upgradation and Affordable Housing

Baseline for Uttarakhand

A. Percentage of Slum Households in the Total Urban Households: 40
B. Percentage of Slums Denotified: 35
C. Percentage of Slum Households covered by Low-cost Housing Programmes: 25
D. Percentage of Slum Households living in Pucca Houses: 35
E. Percentage of Shelter Capacity to the Shelter-less Population: 0.8

The proportion of the slum population of the state (7.71 lakh) is low (7.08 per cent) as compared to the total population (1.08 crore) of the state, but significantly high (25 per cent) as compared to the total urban population (30.91 lakh), according

Figure 5.2: Priority Areas for Urban Development



to the Census 2011. However, the major cities of Uttarakhand have witnessed a large increase in the slum population. In the Rudrapur city of Udham Singh Nagar district, almost 60 per cent of the population lives in slums. The cities of Dehradun, Kashipur, and Roorkee accounted for 22, 20, and 19 per cent, respectively, of the total slum population, per the Census 2001. This figure increased to 26 per cent for Dehradun, as per the Census 2011. The state has conducted various slum surveys and BPL household surveys from time to time with assistance from the United Nations Development Programme (UNDP), ADB, and the Central Government. According to the latest survey, the state has about 1.53 lakh slum households, of which 57,500 are BPL households.

The ADB-financed Uttarakhand Urban Sector Development Investment Programme (UUSDIP) is a major programme for slum improvement that aims to cover 300,000 poor people, constituting nearly half of the slum population for providing basic amenities. A slum upgradation strategy is being developed by the UUSDA, stemming from a demand-based approach to provide infrastructure. The state is also working on a community-based participatory planning approach for the planning and maintenance of community assets involving community-based organisations (CBOs), NGOs, and ULBs. The programme aims to cover 69 slums in Dehradun, 20 in Haridwar, 10 in Nainital, and 16 in Rudrapur for the provision and upgradation of infrastructure. The slum population is spread over all the districts of the state except Rudraprayag. Dehradun has the highest number of slums (162), followed by Haridwar (122), Udham Singh Nagar (121), and Nainital (55). Besides these plain areas, slums are spread in eight hilly areas, with the number ranging from 7 to 21.

The state has a significant proportion of shelter-less population (around 3000) spread over 11 districts. However, the total number of functional shelters have a capacity of 628 persons only, with all of them being in the plains areas. There are proposals from all districts to construct shelters with an additional capacity of 880 persons. There is considerable delay in the sanctioning funds release of funds that results in a slow pace of construction. In FY 2016-17, only 62 per cent of the sanctioned funds have been released.

Vision 2030 for Target 11.1

The state is experiencing high urban growth in selected areas. It is endowed with abundant natural resources in terms of water, electricity, and land. It needs aggressive urban planning and speedy implementation to make the process of urbanisation a smooth one. The industrial vision of the state is following the objective of rapid industrialisation. This vision should be modified with controlled industrialisation and should be synchronised with a controlled urbanisation policy in such a way that the supply of basic services does not lag too far behind the demand as the city grows in terms of economic activities, while at the same time, keeping in mind the highly fragile environment of the state. Urban infrastructure is a late entry in the national reform agenda. Hence, it has been possible to cover various aspects carefully at the policy level. In the context of Uttarakhand specifically, the policy guidelines under the major urban schemes like Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and Pradhan Mantri Awas Yojana (PMAY) are highly relevant.

The vision and strategy for urban development should covers the following main priority areas (see Figure 5.2):

- Slum Improvement and Affordable Housing
- Water Supply and Sewage Management
- Roads and Urban Traffic Management
- Solid waste Collection and Disposal
- Strengthening of ULBs
- Sustainable Settlement Planning

For Target 11.1, the vision 2030 aims for a nearly slum-free future for Uttarakhand. The share of slum households would be gradually reduced, the number of denotified slums increased, nearly all the slum households covered by housing and provided access to pucca houses. Most importantly, concerted efforts will be made to provide shelters to every shelter-less citizen of the state. The 2030 vision for all indicators is shown below, and the values of the indicators for the interim timelines 2019-20 and 2023-24 are shown in the Annexure 11.

The vision for 2030 for Target 11.1 aims to:

- Reduce Slum Households in the Total Urban Households to 10% from a baseline of 40%.

- Increase the Slums Denotified to 80% from a baseline of 35%.
- Increase share of Slum Households covered by Low-cost Housing Programmes to 90%, from a baseline of 25%.
- Increase share of Slum Households living in Pucca Houses to 85%, from a baseline of 35%.
- Increase the percentage of Shelter Capacity to Shelter less Population to 50%, raised from a baseline of 0.8%.

Target 11.2 Roads and Urban Traffic Management

Baseline for Uttarakhand

The baseline values for the indicators for Target 11.2 considered appropriate for Uttarakhand are given below (also see Annexure). The data are not available for indicators B through to G.

A. Geographical Coverage of Public Transport (%): 10
B. Per capita Availability of Public Transport
C. Percentage of Road Network with Dedicated Bicycle Tracks
D. Availability of Passenger Information System
E. Availability of Traffic Surveillance System
F. Percentage of Traffic Intersections with Pedestrian Crossing Facilities
G. Percentage of Disabled-friendly Transport, for example, Low-floor Buses to Accommodate Wheelchairs

Since Uttarakhand is a hilly state, there is an urgent need for laying surfaced (all-weather) roads in the state to connect the scattered populations while minimising the risk to people's lives and livelihoods. However, the surfaced road length per lakh population in the state (123 km) was much lower than the national average (233.86 km) though it was higher than that of Uttar Pradesh (98 km) in 2001-02. In 2015-16, this figure increased to around 230 km for Uttarakhand, nearly doubling in 14 years but still below the national average. UUSDIP has covered roads and traffic management with the objective of improving traffic conditions, reducing traffic time, and improving traffic safety with a special focus on the vulnerable population. The mandate of UUSDIP covers road widening to reduce congestion, improving parking conditions, providing bus and truck terminals, and increasing safety standards for pedestrian movement.

Dehradun is trying to implement greenfield development as an educational hub under the Area Based Development (ABD) in Smart City Project. The entire development in the state has been planned as pedestrian-friendly, with limited loop vehicular traffic on the surface. The area has been designated to create a compact city amenable to walking. The total development is designed such that all transit nodes and activity zones are concentrated within a radius of a 400 m walk, along with multiple bicycle tracks. The plan for the city is to develop intelligent traffic management systems like dynamic traffic light sequences, which will help reduce congestion on the peripheral roads and improve road efficiency. This type of planning is the first of its kind in the state.

The city ABD is also planned to have video surveillance in public places to deter criminal activity, 24/7 monitoring by the central command centre for enabling a prompt reaction to emergencies, and the location of street level panic alarm systems at short intervals to help residents immediately. These measures are especially aimed to help the vulnerable sections, and there are plans to replicate them in other parts of the state.

Vision 2030 for Traget 11.2

The coverage of public transport will be increased to 70 per cent by 2030, increasing from the present baseline of 10 per cent. The interim targets are 20 per cent coverage for 2019-20, and 50 per cent for 2023-24. The vision is also to create green, walkable, limited vehicle zones in the cities to reduce traffic congestion, to create dedicated bicycle tracks with pedestrian-friendly areas, to pay special attention to disabled-friendly modes of transport, and to create various linkages for increasing connectivity.

Target 11.3: Sustainable Human Settlement Planning and Management

Baseline for Uttarakhand

A. Percentage Area Notified as per the Master Plan: 30
B. Number of Building Plans Sanctioned with Effective Planning Control: NA

C. Number of Active Ward Committees in Local Bodies: NA

D. Percentage of Women Councillors in ULBs: 10

E. Number of SHGs Formed: 250

F. Percentage of Consumer Grievances Addressed: 25

Uttarakhand is an environmentally sensitive region with rapid population growth. Unplanned development will pose a severe ecological threat to the region, especially since unplanned growth usually takes place much faster than planned growth. Although the TCPD is in charge of controlling urban growth, much of the urban development takes place in an unplanned way, contributing to the lack of proper urban amenities. Building plans are not sanctioned according to regulatory guidelines, nor is urban development spreading according to Master Plan provisions.

The state has taken a lot of initiatives to generate public and community awareness about the short-term inconvenience but long-term benefits of infrastructure projects. The beneficiaries are made aware of preventive care to avoid health-related hazards, to avoid wasting of water and issues related to user charges, and property tax reforms. In Dehradun and Nainital city, an NGO each has been nominated under the Community Awareness and Participatory Programme (CAPP) to handle public grievances and facilitate social and environmental safeguards at construction sites and labour camps. The modes of public transport facilities and their delivery are different in large towns and smaller towns. The National Urban Transport Policy has mentioned three delivery models for public transport in larger towns; (a) a fully integrated monopoly public service provider, (b) a combination of monopoly service provider and small private agencies providing services under contract, and (c) several service providers operating on an equal footing, regulated by an independent agency. For smaller towns, the road infrastructure needs to be upgraded by the state. Private agencies could be invited both for providing services provision as well as setting up new terminals. The choice of models will depend on the existing institutional structure and the level of financial support offered by the government.

The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) has provided Central funds for the development of to three cities of Dehradun, Haridwar, and Nainital. The UUSDIP also covers 31 cities including these three cities, and is trying to coordinate with the JNNURM while also internalising some of the latter's mandatory reforms. The main features of the UUSDIP are:

- Decentralisation of urban governance with implementation of the 74th Constitutional Amendment Act (CAA);
- Efficient and sustainable water supply and sewerage provision within the decentralised framework in line with Water Supply and Sanitation reform guidelines of the Central Government;
- Municipal finance reform with financial management; and
- Private sector partnership for the provision of services.

The institutional capacity building of 31 ULBs is one of the core agendas of the urban development programme. The Programme Performance Monitoring System (PPMS) for ADB projects is being updated on a monthly basis. The indicators for this system include:

(i) Physical progress for infrastructure works;

(ii) Institutional development and capacity building; and

(iii) Impact assessment indicators.

The formation of Self-Help Groups (SHGs) formation is an important component of participatory planning and implementation. However, till now, SHGs have been formed in only 12 of the 92 ULBs, which is far below the target. In these ULBs, only 135 (33 per cent) SHGs are operational as opposed to a target of 405, implying that only one-third of the target has been achieved. However, there is no record of regular meetings between the stakeholders and ULBs.

Vision 2030 for Target 11.3

The vision for 2030 for Target 11.3 aims to:

- Increase the share of Area Notified as per Master Plan to 100%, from the present 30%.
- Promote active participation of all ward committees in local bodies by 2030.
- Enhance the share of women councillors will

Table 5.4: Household Coverage of Basic Services in Major Cities in Uttarakhand

S. No.	City	No. of HHs	HH Level Coverage of Water Supply Connection (%)	Per capita Water Supply (LPCD)	Coverage of Latrines (%)	Coverage of Sewerage Network Services (%)	Coverage of Storm Water Drainage Network (%)	Incidence of Sewerage Mixing in Drains (%)	Incidence of Water Logging (%)
1	Dehradun	1,25,271	78	135	70	15	11	0	4
2	Haridwar	47,251	90	187	87	52	50	25	50
3	Haldwani Kathgodam	40,599	80	133	87	10	41	12	2
4	Rudrapur	29,662	11	49	100	0	--	--	--
5	Kashipur	22,908	15	45	90	0	60	50	40
6	Roorkee	22,806	48.18	109	99.80	23	60	75	15

Source: State Annual Action Plan for Implementing AMRUT in Uttarakhand (2015-16), Report submitted by Mission Director.

be increased to 50%, from a baseline of 10%.

- Augment the number of SHGs will increase to 800 by 2030, from a baseline of 250.
- Address all consumer grievances by the end of 2030, while increasing substantially from the present share of 25%.

Target 11.6: Environmental Concerns

Baseline for Uttarakhand

A. Percentage Reduction in the Level of Air Pollution: 20

B. Percentage Reduction in the Level of Noise Pollution: NA

C. Percentage of Garbage Collected and Transported to the Garbage Generated: 5.07

D. Percentage of Sewage Treated to Sewage Generated: NA

E. Percentage of Wastewater Treated to Generated: 30

F. Percentage of Households Connected to Drainage System: NA

G. Number of Wards with 100% Garbage Collection and Transportation: 431

H. Percentage of Households with 24/7 Access to Potable, Safe Drinking Water within the Premises: 50

I. Percentage of Households having 24/7 Access to Electricity within the Premises: 55

In the urban sector, the Green Agenda is as important as the Brown Agenda. The rapidly increasing population in some cities, coupled with unplanned growth and high tourist inflow, poses a serious challenge to the natural environment, causing degradation of natural resources. There is depletion of forest areas, loss of bio-diversity, and the threat of air, water and noise pollution, stemming from the untreated discharge of industrial and municipal water. The major rivers, which are sources of drinking water and irrigation, are being used as drains of the city. Similarly, lakes and water bodies and also being polluted with uncontrolled disposal of solid wastes. Cities like Dehradun are facing growing air, noise and water pollution of levels that are 125 to 200 per cent higher than the norms specified by the CPCB. Increasing urbanisation is also polluting the green environment. At the same time, the growing shortage of basic services, especially inadequate waste management, is making it difficult to follow the Brown Agenda for improving the quality of life.

The state is much better placed in terms of the supply of electricity as its electricity consumption per capita has increased from 824 kwh in 2009 to 1020 kwh in 2015-16, which is far above the national average. The per capita water consumption has also increased significantly but it is still farther

from the objective of providing water supply to all the households within the premises. Table 5.4 depicts the extent of deprivation in basic services in the six municipal corporations that accommodate 44 per cent of the urban population of the state.

There is wide variation in the level of direct water supply connection even among the most urbanised cities of the state. The Haridwar Municipal Corporation accounts for the maximum most household coverage in this component, while in Rudrapur city, only 11 per cent of the households have direct water supply connection. As regards the per capita water supply, only two cities are above the norm of 135 LPCD as per the Ministry of Urban Development (MoUD) guidelines. Three cities are way behind the norm while Haldwani Kathgodam is very close to achieving the standard. The average coverage of latrine services is satisfactory (88.96 per cent) with only Dehradun falling below the average, as the huge slum population in Dehradun increases the level of deprivation. Most of the cities show a pathetic performance in terms of the coverage of the sewerage network. The highest network coverage of 52 per cent has been identified in Haridwar, while Rudrapur and Kashipur have a negligible network coverage. Even in the capital city of Dehradun, only 15 per cent of the total households have sewerage network coverage.

The state has to seriously address the issue of solid waste management in order to fulfil the goal of Swachh Bharat by 2019. It tabled the Uttarakhand Anti Littering and Anti Spitting Bill, 2016, in the Assembly. The ULBs are working to evolve rules for the imposition of heavy fines on the violators but the supply machinery needs to be more effective. The facility of door-to-door garbage collection is effective in 431 out of the 706 wards of six Municipal Corporations. The ADB-financed project has focused on Investment in solid waste management, which includes a level of solid waste collection coverage of 50–72 per cent and effecting improvements in the collection method. It lays emphasis on: (a) segregation of waste at the household level, (b) improvement of management at the ward and town levels, (c) provision of waste collection and transportation equipment, and (d) construction of sanitary landfills.

Due to the irregular and limited water supply, around 69 per cent of the households in Dehradun and Haridwar have storage facilities with their own water tanks whereas in Nainital, only one-fourth of the households have this facility. It is generally felt that there is no shortage of water in the city but the water management is very poor. For example, water is equally distributed between hotels and houses but the consumption of water in former is considerably higher. In congested cities like Nainital, people are reluctant to get water pipelines laid across private property. In cities like Dehradun and Haridwar, more than half of households are willing to pay for new connections while the situation is the reverse in Nainital where people are willing to pay user charges if they get better quality of water.

The setting up of community toilets is the need of the hour as long as the households do not have attached toilets in the houses. Communities in many towns are ready to provide land and pay for using the toilets. The task becomes much easier when the community undertakes the responsibilities to maintain community assets. In Uttarakhand, many communities are willing to take that responsibility if they are convinced about the benefits. The financial data of the municipalities show that the ULBs do not utilise all the potential taxes, thereby weakening the existing resource base. The effective adaption of model municipal laws may be helpful in resolving such issues.

Vision 2030 for Target 11.6

Uttarakhand is a naturally beautiful state with a high quality of natural resources such as air and water. The vision 2030 would be to restore the pristine quality of these natural resources by reducing air and noise pollution, and sustainably treating and managing liquid and solid waste.

The vision for 2030 for Target 11.6 aims to:

- Increase the percentage reduction in air and noise pollution level to 70% by 2030.
- All the garbage generated will be collected and transported by the year 2030
- Increase the share of sewage treated to sewage generated to 70% by 2030
- All wards will have garbage collection and transportation by 2030
- All urban households will have sewerage connection by 2030
- All urban households to have 24x7 access to

Table 5.5 Norms for Green Space and Parks

S. No.	City	Per Person Open Space in the Plan Area (sq. m.)
1	Dehradun	3
2	Haridwar	0.31
3	Haldwani Kathgodam	2.13
4	Rudrapur	7
5	Kashipur	2.51
6	Roorkee	0.5

Sources: Urban and Regional Development Plans Formulation and Implementation (URDPFI), MoUD, GoI.

Potable, Safe Drinking Water within Premises by 2030

- All urban households to have 24x7 access to electricity within Premises by 2030

Target 11.7: Access to Safe Public Place

Baseline for Uttarakhand

The baseline values are not available for any of the indicators presented below for Target 11.7.

A. Per Capita Availability of Green Space

B. Average Distance of Accessing Public Space

C. Average Distance of Accessing Recreational Space

The MoUD has specified the availability of green space as indicated in Table 5.5. It implies that 15 to 18 per cent of the urban land need to be earmarked for open space.

The state has by default various open spaces as construction in the hilly areas is very expensive and not supported by supplementary infrastructure. However, open space does not mean deserted place. Open space is much needed in the cities as well, as these open spaces function as the lungs of the city. Open spaces need to be green, walkable, safe, and vehicle-restricted zones with only non-motorised vehicles being permitted here. The state at present does not have many such places with all of them being crowded with uncontrolled micro economic activities that spoil the character of the open space and pollute the environment. Dehradun has prepared a plan under the Smart City Project for innovative use of open space in its ABD. It intends to create a variety of open spaces with connectivity between them and various water bodies. The existing green spaces will be transformed into a dynamic community place. These open spaces need to have controlled retail activities, with dedicated zones for hawkers and street vendors to provide clean public space to the citizens. This space should be well connected and safe. If this project is implemented successfully, it will open up a wide scope for replication in other congested areas of the state.

Vision 2030 for Target 11.7

The Vision 2030 for Target 11.7 is to provide universal access to safe, inclusive and accessible, green and public spaces to all, especially women, children and disabled people, as per state norms. The state needs a robust vision for controlling indiscriminate urban development and increase in inequality. The unequal spread of opportunities often results in the expansion of smaller urban areas to the outskirts, thereby reducing the significance of ULBs. The state is already experiencing uneven urban growth. Master plans, housing needs, service delivery, and capacity of the ULBs are deeply interlinked. The ULBs need to play effective roles in city development in order to arrest the skewed trend of urbanisation. The ULBs in the state are not yet ready to take up this challenge, as observed earlier. The transitional towns, which maintain important linkages with villages and make the bottom of the pyramid stronger are declining in number. There is also a huge problem of spatial and economic inequality between the hill areas and the plains. It is time to realise that the Urban Vision in the state will remain incomplete without proper implementation of planned development and empowerment of local bodies.

Challenges for sustainable cities and communities

Target 11.1

- Slum improvement is a serious challenge as shortage of land makes relocation of slums difficult. Bulk water supply and sewer lines need to be provided at the entry of the slum areas. There are various Central Government schemes for financing slum improvement programmes but their implementation is delayed because matching state contributions are slow to come. The problems of slums are especially acute in the plains areas, but the hill areas too are not slum-free. It is very difficult to provide infrastructure in the hills and the major urban schemes are also concentrated in the plains. Slums in the hills pose a threat to both lives and the environment.
- The shelter-less population poses another challenge of urbanisation in the state. It is nearly impossible for people to survive without shelter in adverse weather conditions, especially in the hilly areas.

Target 11.2

Uttarakhand is an environmentally sensitive region with a rapid population growth. Unplanned development leading to unplanned vehicular use as well as traffic congestions pose a severe ecological threat to the region and signify major challenges for the transport department.

Target 11.3

It is imperative to have effective coordination between all tiers of governments for sustainable human settlement planning and management. Over time, the ULBs have seen an erosion in their power. Previously, the ULBs were running institutions like primary schools, dispensaries, and veterinary hospitals, while some of them were also looking after water supply. The cities of Mussoorie and Nainital were also generating and distributing electricity. Gradually, all these activities have been taken over by the state. All the properties and assets connected with these functions have also been transferred to the agency without any compensation being paid to the ULBs.

In the past, ULBs had the power to approve building plans as per their bye-laws and they ensured that the plans were followed in actual practice. This power has now been passed into the hands of the development authorities. The ULBs have lost some important sources of revenue like octroi and toll tax, which were abolished by the state, without adequately compensating the ULBs for the recurring loss. Development charges and fees for the approval of building plans are also no longer available to the ULBs. The ULBs have thus suffered a serious loss of independence and have become subordinate agencies of the state. They cannot make any appointments unless the state government has created the post and granted permission to the fill in the post.

The Nagar Palika Parishads (NPP) and Nagar Panchayats (NP) do not have any mandatory power to raise revenue unlike the Nagar Nigam (NN), which is empowered to levy property taxes, including water, drainage and conservancy taxes and the like.

The ULBs in the state have some special features which have a bearing on their financial situation. A large number of ULBs have a population of less than 25,000, and many of them have less than 10,000 persons. At the other extreme, out of 92 ULBs in the state, only six Municipal Corporations have population in excess of one lakh. Most of the ULBs in the hill districts fall in the lowest two classes described above. Almost the same situation exists with respect to the area of ULBs. These ULBs are totally dependent on the state as they do not have any self-generating sources of finance owing to the small areas and small number of inhabitants.

Target 11.4

The state faces the challenge of enhancing the vast tourism potential through the creation of awareness and coordination among the stakeholders, and generation of adequate capital expenditure in tourism and private sector participation. In order to attract tourists from all over the world, there is an an urgent need to create an efficient and modern infrastructure that adheres to environmental guidelines while catering to the specific needs of tourists of all categories. In this context, the availability of land is a major challenge in Uttarakhand.

Target 11.5

One major challenge faced by the government after the unprecedented disaster in 2013 was to restore the washed away power houses. The need for taking into account local environmental aspects while constructing hydro-power projects had never been so acutely felt. Disaster-prone areas need infrastructure like helipads, alternate roads, and tunnels for emergency operations. The potential areas vulnerable to landslides need to be identified and measures taken to avoid future disasters.

Being a huge tourist attraction, the state is also characterised by huge construction activities. Stone blasting weakens the overall strength of the rock and also degrades the environment and ecology of the area. Unsustainable mining activities are taking place in the riverbed areas. The development of tourism along the riverbed and the construction of hotels open up the areas to the threat of a large scale disaster.

Target 11.6

The state has to gear up both its administration and finances to face the tremendous challenge of improving the urban living environment. Land has always been a major bottleneck for the Urban Development Department, as 70 per cent of the state is covered by forest area. The ULBs suffer from a huge scarcity of funds and technical resources. Various Central Government schemes like AMRUT are operational, but still inadequate. There are not many options of generating additional resources. Many towns are situated on the bank of rivers and landfill sites are not permitted within a radius of 100 meters of the river.

The state is the source of origin of both the Ganga and Yamuna, yet people have to deal with an inadequate supply of drinking water, especially since the sources of natural water are drying up.

Target 11.7

On various occasions, the preservation and planning of open space may require land pooling and acquisition. If there are scattered owners of different parcels of land, it is challenging to reach a consensus. Inadequate land acquisition will affect project viability and cost estimates. Delay in land settlements will result in delay in project implementation.

It is very difficult to control the builder lobby if the public place is located in an area with a high commercial value. The TCPD thus needs to be very vigilant and effective in preventing any development in violation of the Master Plan.

Strategy for attaining Vision 2030

Target 11.1

- To develop land from all the available sources keeping in mind the difficulty in transferring forest land, and to facilitate coordination among various state departments in order to utilise any undeveloped land in the best possible way;
- To map all slum areas and households, especially BPL households;
- To provide basic infrastructure at the earliest so that slums can be denotified;
- To increase the supply of affordable houses so that new slums do not surface;
- To focus on the hill areas in order to make them slum-free;
- To expedite the construction of shelters so that there is no shelter-less population in the state;
- To pool all the financial resources from relevant central and state schemes; and
- To explore the scope for a Public–Private Participation (PPP) model,

The state government is working on a proposal to build towns in the hills so that people can access basic economic and social services there. One big challenge here is the transfer of land since much of the land belongs to the Forest and Horticulture departments. The timely release of funds and speedy construction of shelters is the need of the hour.

Target 11.2

Public transport facilities and their delivery are different in large towns and smaller towns. The National Urban Transport Policy has mentioned three delivery models for public transport in larger towns: (a) a fully integrated monopoly public service provider, (b) a combination of monopoly service provider and small private agencies providing services under contract, and (c) several service providers operating on an equal footing, regulated by an independent agency. For smaller

towns, the road infrastructure needs to be upgraded by the state. Private agencies could be invited for both service provision as well as for setting up new terminals. Both the public and private sectors can be consulted for networking route design and non-motorised transport form. A strategy for safe transport provision would involve using GIS to improvise the passenger information and traffic surveillance systems.

Target 11.3

There is a need to regulate settlement planning according to the Master Plan for controlled urbanisation and to plan for compact mixed use development with sufficient residential and commercial development for the future city growth requirements.

Decentralisation should be made effective so that ULBs can be actively associated with urban planning. It is important to initiate coordination among various urban development agencies for networking and data sharing with ICT-based solutions.

Under the AMRUT programme, the state government has prioritised the ULBs based on their financial strength to disburse monetary assistance to the financially weak ones. The ULBs with a higher proportion of urban poor have also been earmarked for prioritisation for financial disbursement. The state has made allocation to different ULBs within the state consistent with the urban profile of the state.

The state needs to explore all possible sources of funding including the PPP mode. There are several sectoral and financial programmes that need to be dovetailed like ADB, Namami Gange, Smart City Project, SBM, 14th Finance Commission grants, and the like. The Local Area Development (LAD) funds of Members of Parliament (MPs) and Members of the Legislative Assembly (MLAs) also need to be explored and combined. The state Urban Development Directorate needs to gear up as a nodal agency for coordination with the ULBs, parastatal agencies, and other stakeholders, and for disseminating information related to all government programmes.

There is a need to develop a performance monitoring system for the timely completion of projects. ADB has conducted baseline physical and socio-economic surveys including a benefit Monitoring and Evaluation Baseline survey in all the three initial project towns for preparing benchmark information. This needs to be replicated in all the towns.

Target 11.4

Establishment of a land bank for creating infrastructure for tourism is the need of the hour. The state needs to pull up unused public and private lands and to explore all possibilities for the development of a land bank.

Target 11.5

Reconstruction of dilapidated and damaged infrastructure needs to be the top priority. All development needs to be disaster-proof in order to attain the sustainability objective and ensure the sustainable development of the hill areas. Finance is a major challenge here. The state and central governments should earmark a significant proportion of the budget for this sector.

Target 11.6

It is encouraging that 30 ULBs have transferred land from other departments and another 12 are in the process of getting it in order to construct waste processing units. Rainwater harvesting and other means of water conservation need to be implemented urgently. Modern technology of water conservation and plugging of leakage need urgent attention. This need to be attempted with increasing functional responsibilities at ULB level. At present, in the three related areas of water supply, sewerage and sanitation, only the last is the responsibility of the ULBs. The state has decided to transfer the management of water supply and sewerage also to the ULBs to ensure effective service delivery.

The state needs to explore the possibility of using the PPP model in both state level agencies and ULBs for setting up services like water supply and sewerage schemes, and recreation centers. Effective Service delivery is a pre-requisite for the successful implementation of such a model for delivering satisfactory services to the beneficiaries. The PPP option should include appropriate performance standards as an integral part of the contract. The PPP operators would be required to procure the infrastructure and maintain the same till the cost is recovered and assets are transferred to the owner thereafter.

It is important to allocate and release funds on time for the timely implementation of projects. The ULBs can be financially strengthened through the levy of user charges. The quality of service will motivate the beneficiaries to pay for the services. It is also possible to improve finances under town-specific Revolving Funds in the pilgrimage centres through a levy on visitors exclusively in the particular towns where facilities need to be upgraded.

Other strategies to address the environmental concerns in the urban areas would include:

- Identification of sources of air and noise pollution and focusing on the use of technologies to reduce the levels of pollution;
- Identification of service level gaps in water supply and sanitation;
- Involvement of stakeholders for monitoring and management of the community assets generated;
- Development of a sewage treatment mechanism in every landfill site in order to save precious land; and
- Empowerment of ULBs for the management of water supply, sewerage and sanitation.

Target 11.7

In the hill state, any type of construction needs clearance from the environment department and the CPCB. This may be a lengthy and time-consuming process, which will delay the start of the project. It is advisable to design the project in order to consider all such aspects, and to associate the elected representatives with land deals through negotiations. This may help in preventing agitation by the landowners.

It is necessary to ensure 24/7 water supply and electricity to public places, otherwise, there will be lower footfalls and income generation. The other strategies are:

- To increase the per capita availability of green space as per the national norm;
- To focus on greenfield development for attaining a pollution-free sustainable living environment;
- To ensure that green cover is retained and not threatened by unauthorised construction;
- To develop public places into activity hubs so that sufficient footfalls are ensured
- To supply 24/7 energy-efficient street lighting to make the places safe; and
- To ensure a continuous and timely surveillance system using ICT.

Major Relevant Urban Development Schemes

Central Government Schemes

The main central government schemes are: (1) Pradhan Mantri Awas Yojana (PMAY), (2) Deendayal Antyodaya Yojana (DAY), (3) Prime Minister's New 15-point Programme for the Welfare of the Minority Community and (4) Twenty-Point Programme.

1. PMAY – Housing for All (Urban): The major components of this scheme are:

   - In-site slum Redevelopment-- Central grant of Rs. 1 lakh per slum house
   - Credit-linked subsidy scheme-- Beneficiaries to get interest subsidy of 6.5 per cent on a loan up to Rs. 6 lakh
   - Affordable housing in partnership with the private or public sector – Central assistance of Rs. 1.5 lakh per EWS house to be provided in the projects with at least 35 per cent of the houses falling in the EWS category and a single project having at least 250 houses.

   Beneficiary-led individual house construction/ enhancement – Central assistance of Rs. 1.5 lakh is available to the eligible EWS families[10].

2. Deendayal Antyodaya Yojana – National Urban Livelihood Mission (DAY-NULM)

   The Swarna Jayanti Shahari Rozgar Yojana (SJSRY) has been restructured into NULM since 2013. It aims at organising the urban poor into SHGs, imparting skill training to the urban poor for self and wage employment and helping them to set up self-employment ventures by providing credits at subsidised rates of interest. Shelters for the urban houseless and infrastruc-

10. An EWS family is defined as a family with an annual income of up to Rs. 3 lakh and an LIG family as one family with an annual income ranging between Rs.3 and -6 lakh.

Table 5.6: Targets and Achievements for Construction of Dwelling Units 2015-16

State	BSUP		IHSDP		Total	
	Targets	Achievement	Targets	Achievement	Targets	Achievement
Uttarakhand	132	48 (36%)				
Uttar Pradesh	3938	1718 (44%)	7489	2444 (33%)	11427	4162 (36%)
Himachal Pradesh	41	-	569	-	610	-
All India	86769	42,878 (49%)	63,231	31,811 (50%)	1,50,000	74,689 (49.7%)

Source: Ministry of Housing and Urban Poverty Alleviation, Annual Report 2015-16.

ture for street vendors can also be taken up under this mission.

It is being implemented in all the district headquarters and all other cities with a population of 100,000 or more as per the Census 2011. The scope of the mission has now been enhanced to include all statutory towns. It has been renamed as DAY-NULM.

3. Prime Minister's New 15 point programme for welfare of minorities include the following

- Swarn Jayanti Shahri Rozgar Yojana (SJSRY) restructured as NULM
- Schemes in 15 point for which flow of fund to minority concentration area is quantified.
- Integrated Housing and Slum Development Programme (IHSDP)
- Basic Services for the Urban Poor (BSUP)

4. The Twenty-Point Programme (1986) has been restructured in conformity with the priorities of the government, as contained in the National Common Minimum Programme, the Millennium Development Goals (MDGs), and the SAARC Social Charter. The restructured Programme called Twenty-Point Programme, 2006 (TPP -2006) has been operational since April 1, 2007.

The MHUPA is the nodal minority for the implementation of the following two projects: Garibi Hatao (Poverty Eradication), and National Urban Livelihood Mission (NULM). The achievement of the state under various central schemes is shown in Table 5.6.

State Level Schemes

UUSDIP is the major scheme for the state with major finance coming from the ADB, spreading across the period 2008-16. This programme has the following components: (i) Water supply (ii) Waste water management (iii) Slum Improvement (iv) Solid Waste Management, and (v) Road and Traffic Management.

Investment in water supply aims at improving the volume, availability and quality of water supply. It will try to reduce leakage in the system and illegal connections through the provision of water meters, augmenting supply, and extending distribution networks. It has targeted a coverage of 83 per cent to be achieved by the time the programme ends, by when it expects to supply potable quality water on a 24/7 basis to a majority of the households.

In waste water management, the programme aimed at improving environmental quality through the management of water bodies, collection and treatment of sewage through appropriate technology and extending service coverage to an average 60 per cent of the population by 2016. It is planned to cover populations of 50–90 per cent and 30-50 per cent for large and medium towns, respectively. In smaller towns, the option of using technology option will be dependent on the geographical and climatic features as well as the type and quality of sewage generated.

The towns shortlisted for UUSDIP have been selected on the basis of eight criteria including the population, population growth rate, enterprise

growth, administrative importance, education centre, location on the pilgrimage route, pilgrimage terminal, and financial soundness. A total of 31 towns have been selected for this programme, including six municipal corporations. This project will benefit around 3.8 million people expected to be living in these 31 cities and towns.

The UUSDIP has undertaken both financial and institutional reforms. In order to improve the municipal accounting system, they are preparing a manual on an accrual-based double entry accounting system that is globally accepted as transparent and efficient. Towards this end, it has internalised the major components of JNNURM, and brought the three cities identified under JNNURM, namely, Dehradun, Nainital and Haridwar, under the programme. Municipal reforms comprise one of the major focus areas of this programme.

Smart City Programme

The state capital, Dehradun has been chosen under the programme. It has two components: Area-based and Pan-city programmes. The city has chosen government land which has not been developed till now for greenfield development with the proposal of developing a Higher and Technical Education hub on around 2000 acres of land. Its Pan City proposal aims at creating a city level single window mechanism that can bring together the services of all city agencies and provide them through a mobile platform. The solution aims to address governance, quality of life and ease of business, covering all aspects of urban life. The programme is to be financed by a Central Government grant and the Special Purpose Vehicle (SPV), jointly formed by the MDDA and UHUDA, with equal contributions from each partner.

Jan Awas Yojana

The Uttarakhand Housing and Urban Development Authority (UHUDA) has decided to provide housing units to the people of Rudrapur under Jan Awas Yojana (JAY). An MoU has been signed between UHUDA and Water and Power Consultancy Services Ltd. (WAPCOS) for the construction of 2000 houses for people belonging to the Economically Weaker Sections (EWS) persons. These constitute the first phase in affordable category with a one BHK set at a price of Rs. 2.5 lakh per unit. The units are expected to be available by the middle of this year.

Development of Small Towns in Hill Areas

The state government has given the responsibility of planning small towns in the hill areas to Ernst & Young. The objective is to check outmigration from the hill areas by providing basic civic facilities to them. It is proposed to consider basic education, health, housing and employment in these towns so that people do not have to travel far to come to the plains for these services. However, these plans cannot be completed without providing transportation and other physical infrastructure. Coordination between departments like those of Horticulture and Animal Husbandry is necessary as they own large parcels of land some of which need to be transferred to the urban development department for city planning.

Box 5.2: Coverage of Slum Households by Low Cost Housing Programme

Percentage of Slum Households Covered by Loss Cost Housing Programme

1. Budgetary Provision for PMGY-HFA 2017-18	Rs. 95.00 crore
Total Funds Requirement for 2012-18 to 2019-20	Rs. 1600.00 crore
GoI Share	Rs. 600.00 crore
State Government share	Rs. 200.00 crore
Beneficiary share	Rs. 800.00 crore
Total Funds Requirement for 2012-18 to 2023-24	Rs.1400 crore
Government Share	Rs. 525.00 crore
State Government Share	Rs. 175.00 crore
Beneficiary Share	Rs. 700.00 crore
Total Funds Requirement for 2017-18 to 2030-31	Rs. 400.00 crore
GoI share	Rs. 150.00 crore
State Government Share	Rs. 50.00 crore
Beneficiary Share	Rs. 200.00 crore
11.6 Municipal Solid Waste Processing under SBM	
1. Budgetary Provisions for SBM in 2017-18	Rs. 78.00 crore
Total Funds Requirement for 2017-18 to 2019-20	Rs. 786.00 crore
GoI Share	Rs. 275.00 crore
State/Other Resources	Rs. 511.00 crore

Funds gap to be filled through NGBRAA under the Ganga Action Plan and through CSR

SECTION 5.3

SDG 12: Ensure Sustainable Consumption and Production Patterns

'The world has enough for everyone's need but not enough for everyone's greed'--- Mahatma Gandhi

The world has limited resources and judicious use must be made of these so that the planet is left in good shape for the coming generations and such that they do not want for resources. Over-exploitation of resources can jeopardise the future of the human race. In this sense, sustainable consumption and production aims at "doing more and better with less," increasing gains from economic activities by reducing the use of resources, as well as reducing degradation and pollution along the whole lifecycle, and simultaneously improving the quality of life. According to the United Nations Environment Programme (UNEP), sustainable consumption/production is: "…the use of products and services which respond to basic needs and bring a better quality of life while minimising the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product, so as to not jeopardize the needs of future generations."[11]

As the global population continues to burgeon by around 75 million annually, efficient management of our shared natural resources, and effective disposal and mitigation of toxic wastes and environmental pollutants become extremely important. A sustainable way of development involves sustainable methods of production and consumption, which would reduce our ecological footprints. Conserving the use of water in agriculture, for instance, is crucial, since this sector is the biggest user of water worldwide. It is also important to urge and convince industries, businesses and consumers to recycle and reduce waste. Thus the Goal No. 12 has numerous stakeholders including business, consumers, policy makers, researchers, scientists, retailers, media, and development cooperation agencies, among others. Sustainable agricultural practices (SDG 2), using resources such as water in a sustainable manner as well as sustainable sanitation practices, including solid and liquid waste management (SDG 6) are all linked to SDG 12. The use of sustainable and modern energy production processes (SDG 7), and sustainable industrial processes would also impact SDG 12.

For sustainable consumption, equality and equity are essential, an issue that is covered under SDG 10. Again, responsible consumption and production are intricately linked to ecology and the environment, showing links to SDGs 13 and 15. Quality education is likely to contribute to responsible consumption and production practices, since more educated consumers are more aware of these issues. Thus, it is evident that for effectively implementing SDG 12, nearly all other Goals would have to be implemented, thus underscoring the inter-dependent nature of the sustainable development goals, and especially, of Goal No.12.[12]

Since Uttarakhand is a mountainous state, the patterns of production and consumption in this state need to respect the fragility of the mountain ecosystem as the state continues on its development path towards 2030. The vision 2030 for Goal No. 12 for Uttarakhand is:

By 2030, Uttarakhand economy will adopt sustainable consumption and production patterns by enhancing sustainable management of natural resource use, sharp reduction in food waste including post-harvest losses, and achieve reduction in waste generation including use of plastics.

The vision for targets of Goal No. 12 are presented in Appendix 5.3.1, followed by values for indicators (baseline and vision 2030) in Appendix 5.3.2, and Appendix 5.3.3 contains the schemes applicable for Goal no. 12. Annexure 12 contains the detailed information regarding indicators for Goal no. 12 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

The present status in terms of sustainable production and consumption has been discussed for the state with respect to the individual targets of SDG 12. Target 12.1 is not applicable at the state level. Targets 12.2 and 12.3 have been discussed

11. See https://www.slideshare.net/IsuruAbeynayake/integrating-sustainable-consumption-production

12. This section has used information from http://www.un.org/sustainabledevelopment/sustainable-consumption-production/ and http://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-12-responsible-consumption-and-production.html, accessed on April 12, 2017.

SDG 12

Ensure Sustainable Consumption and Production Patterns

Uttarakhand Vision for SDG 12

By 2030, Uttarakhand economy will adopt sustainable consumption and production patterns by enhancing sustainable management of natural resource use, sharp reduction in food waste including post-harvest losses, and achieve reduction in waste generation including use of plastics.

RESPONSIBLE CONSUMPTION AND PRODUCTION

Uttarakhand Today

- Rapid industrialization likely accompanied by increasing use of natural resources
- High post-harvest losses
- The hazardous waste generation per year is 55627 MT per annum in the state

Focus for Tomorrow

- Cold storage infrastructure, logistics & cold chain handling, transportation, processing, packaging and distribution are areas that need improvement to reduce post-harvest losses
- Waste of food will be minimised at all levels of the production and supply chain
- Production processes should attempt to conserve raw materials, water and energy; eliminate toxic and dangerous raw materials; and reduce the quantity and toxicity of all emissions and waste material at source

Targets for 2030

- Natural resources will be used efficiently by increasing the use of bio-fertilizers from 0.3 kg/Ha gradually to 0.6 kg/Ha and also by enhancing the existing carbon sink in the forests in the state
- Post-harvest loss for all products will be reduced to less than 2 percent
- Minimise the release of harmful chemicals and other wastes into air, water, soil, and to reduce the use of plastics and the hazardous waste generation to zero

individually, followed by Targets 12.4 and 12.5 that have been discussed together. Finally, Targets 12.6, 12.7 and 12.8 have been discussed together.

Target 12.2 By 2030, achieve the sustainable management and efficient use of natural resources

Baseline for Uttarakhand

The UN discusses two measures, material footprint and domestic material consumption, which provide an accounting of global material extraction and use, as well as flows or consumption of materials in countries.[13] The material footprint reflects the amount of primary materials used to meet a country's needs, and is an indicator of the material standard of living of an economy. Domestic material consumption measures the amount of natural resources used in economic processes.

In 2010, the total material footprint in the developed regions exceeded that of the developing regions by a huge mar gin, at 23.6 kg per unit of the GDP versus 14.5 kg per unit of the GDP, respectively. The material footprint of developing regions increased from 2000 to 2010, with non-metallic minerals showing the largest increase. Domestic material consumption in the developed regions, at 15.3 tonnes per capita (2010), is far higher than the value for developing regions, at 8.9 tonnes per capita in 2010. Domestic material consumption per capita in Asia rose rapidly between 2000 and 2010 as a result of rapid industrialisation.

At the state level, there is no wherewithal as yet to estimate the material footprint in this manner, though Uttarakhand, too, has undergone rapid industrialisation in recent years. It achieved the second highest GSDP growth in the country. The key sectors include tourism and hydropower, but there are others too like biotechnology, pharmaceuticals and automobile component industries. During 2005–2006, the state successfully developed three Integrated Industrial Estates (IIEs) at Haridwar, Pantnagar, and Sitarganj; a Pharma City at Selaqui; an Information Technology Park at Sahastradhara (Dehradun); and a growth centre at Siggadi (Kotdwar). Also in 2006, 20 industrial sectors in the PPP mode were developed in the state.

The indicators used for Target 12.2 (see Appendix 5.3.2 and Annexure 12) are the use of bio-fertilisers in agricultural production, which is 0.3 kg/ha and an estimated carbon sink in forest area, for which the baseline is an estimated 537 MT. Two indicators which have not been measured so far, but which the state needs to develop in order to track the sustainable use of natural resources, are the consumption of energy from fossil fuel and firewood, both of which must be reduced in the interest of a better environment and conservation of resources.

Vision 2030 Target 12.2

For Target 12.2, the use of bio-fertilisers will be increased gradually from the baseline of 0.3 kg/ha to 0.4 kg/ha (2019-20), to 0.5 kg/ha (2023-24) and eventually to 0.6 kg/ha by 2030. The carbon sink should also be enhanced beyond the baseline level of an estimated 537.02 MT.

Target 12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

Baseline for Uttarakhand

Each year, an estimated one-third of all food produced globally ends up rotting in the bins of consumers and retailers, or spoiling due to poor transportation and harvesting practices.[14] The annual harvest and post-harvest loss of India's major agricultural produce was reported to be an estimated at Rs. 92,651 crore, according to the Ministry of Food Processing Industries.[15] The assessment, calculated by using production data of 2012-13 at 2014 wholesale prices, was based on a study by ICAR - Central Institute of Post-Harvest Engineering and Technology (CIPHET), Ludhiana, titled "Assessment of Quantitative Harvest and Post-Harvest Losses of Major Crops and Commodities in India". The percentages of post-harvest losses as estimated by the study are shown in Table 5.7.

13. Source: http://www.un.org/sustainabledevelopment/sustainable-consumption-production/, accessed on April 12, 2017.

14. Source: http://www.un.org/sustainabledevelopment/sustainable-consumption-production/ accessed on April 20, 2017.

15. http://pib.nic.in/newsite/PrintRelease.aspx?relid=136922, accessed on April 20, 2017.

Table 5.7: Post-harvest Losses for Select Products

Crops	Cumulative Wastage (%)
Cereals	4.65 – 5.99
Pulses	6.36 – 8.41
Oil Seeds	3.08 – 9.96
Fruits & Vegetables	4.58 – 15.88
Milk	0.92
Fisheries (Inland)	5.23
Fisheries (Marine)	10.52
Meat	2.71
Poultry	6.74

Source: Jha et al (2015)

Uttarakhand had a good representation in the sample in terms of the production of apples and citrus fruits. It is seen that fruits and vegetables, a major output of the state, suffered a very high post-harvest loss in the range 4.58-15.88 per cent.

Vision 2030 for Target 12.3

Target 12.3 deals with the wastage of food, including post-harvest losses, which are particularly high for some of the main products of Uttarakhand, that is, fruits and vegetables. The wastage of food even as some sections of the population go hungry is unacceptable, and the entire state machinery, as well as the public should be made aware of the need to minimise wastage of food. Innovative ways can be found of making good use of food that would otherwise be thrown away or disposed of. The vision would be to reduce the post-harvest losses to less than 2 per cent by 2030.

Target 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

Target 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

Baseline for Uttarakhand

Responsible consumption and production entail managing wastes that are harmful for the planet as well as minimising wastage generation, use of recycling, and using materials least harmful to the environment.

Plastics is one material that is widely used in the modern world, and yet which is potentially harmful for the environment. Plastics are non-biodegradable synthetic polymers. Some types of plastics absorb odours and flavours from food and drink. The recyclable plastics include PET, HDPE, LDPE, PP, and PVC, while the non-recyclable plastics include bakelite, multi-layer and laminated plastics, melamine, nylon, etc. However, plastics can be recycled only 2-3 times, because each time the recycled material is more harmful for the environment as compared to the virgin material. Although no firm estimates are available at the state level, at the national level, an estimated 15342 tons of plastic waste is generated each day (Envis Newsletter, 2015).

Hazardous waste, owing to its toxic, infectious, radioactive or flammable properties, poses an actual or potential hazard to the health of humans, other living organisms, or the environment. At the global level, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, and the Stockholm Convention on Persistent Organic Pollutants are established international frameworks to achieve the environmentally sound management of hazardous wastes,

chemicals and persistent organic pollutants.[16] India is a party to the Basel Convention.

The hazardous waste generation per year is 55,627 MT per annum in the state, as also discussed under Indicator 6.3d under SDG 6.

Sustainable production implies the continuous application of resource-conserving environmental strategies, products, and services to increase the overall efficiency, and reduce risks of irreversible damages to humans and the environment. For instance, if people worldwide switched to energy efficient light bulbs, the world would save US$120 billion annually. Cleaner production in a dynamic manner can be applied to processes used in industry as well as in various services. Efforts should also be made to avoid unnecessary cosmetic 'product improvement', when actually there is no real improvement in the product.[17] More specifically, production processes should attempt to conserve raw materials, water and energy; eliminate toxic and dangerous raw materials; and reduce the quantity and toxicity of all emissions and waste material at the source, during the production process.

Vision 2030 for Targets 12.4 and 12.5

Regarding Targets 12.4 and 12.5, the vision is to minimise the release of harmful chemicals and other wastes into the air, water, soil, and also to minimise the generation of waste and to manage the disposal of waste in an efficient and sustainable way. Specifically, the use of plastics should be brought to zero by 2030, and hazardous waste generation should also be brought down from the present level of 55,627 MT annually to zero by 2030.

Target 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

Target 12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities

Target 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

Baseline for Uttarakhand

The concepts of sustainable production and consumption, and, in general, of sustainable development are fairly new. The **Targets 12.6, 12.7 and 12.8** focus on the integration of such sustainable practices into corporate practices, including their reporting cycle, in public procurement as well as on wide dissemination among the public. As earlier discussed, the success of such sustainability efforts will depend on the engagement of various stakeholders and the general public. If each individual in the society behaves in a responsible manner vis-à-vis the consumption and production trends, the goal will be addressed effectively, and generating awareness is the first step towards the achievement of such a behavioural change. To wit, it can be observed that the younger generations are relatively more aware of environmental degradation and the need to preserve the same. Thus, the share of the population covered by campaigns regarding sustainable production and consumption is an appropriate indicator in this context, though no estimate of the same is available as of now.

Challenges for responsible consumption and production

Post-harvest losses: Post-harvest practices need to be improved in the following areas: infrastructure facilities for storage, including cold storage, logistics and cold chain handling, transportation, processing, packaging and distribution. There is a lack of processing facilities at the farm gate and few innovative on-farm preservation systems.[18]

Inadequate management of plastic waste: Plastic waste is non-biodegradable and if left in the environment or upon burning, can leach/emit dangerous toxins into the environment. The Uttarakhand Government had promulgated laws such as Plastic Waste (Management and handling)

16. Source: https://sustainabledevelopment.un.org/sdg12

17. See, Story of Stuff, at https://www.youtube.com/watch?v=9GorqroigqM

18. Slide on Post Harvest Logistics and Food Processing, available atwww.cgisydney.org/Images/pdf/10-agri-business.ppt, accessed on April 20, 2017.

Rules, 2011, laying certain conditions for manufacturing, stocking, sale and use of plastic carry bags and sachets, which were required to be monitored by the State Pollution Control Boards/ Municipal Authorities. However, these rules have not been properly implemented, and in fact, the use of plastics has expanded to rural areas as well. There was also no provision regarding ascribing responsibility on those generating waste.

Strategy for attaining vision 2030

- The Governmental strategy at the Centre has been to promote the food processing industry in the country to reduce the wastage of agricultural produce and minimise post-harvest losses. As a result, the Ministry of Food Processing Industries (MoFPI) is implementing various Central Sector Schemes, namely (i) Scheme for Development of Infrastructure for Food Processing having components of Mega Food Parks, Integrated Cold Chain, Value Addition and Preservation Infrastructure and Modernization of Abattoirs and (ii) Scheme for Quality Assurance, Codex Standards, Research & Development and Other Promotional Activities.

  In order to arrest post-harvest losses of horticulture and non-horticulture produce and to provide integrated cold chain and preservation infrastructure facilities from the farm gate to the consumer or from the production site to the market, MoFPI has been implementing the Central Sector Scheme of Cold Chain, Value Addition and Preservation Infrastructure since 2008-09. The scheme is primarily private sector-driven wherein financial assistance @ 50 per cent of the total cost of plant and machinery and technical civil works in the general areas and @ 75 per cent for the North-eastern region and difficult areas (North-eastern states, Sikkim, J&K, Himachal Pradesh and Uttarakhand), subject to a maximum grant-in-aid of Rs. 10 crore per project is provided for setting up the cold chain infrastructure in the country.
- While the state intends to industrialise for further developing and weaning young workers away from subsistence agriculture in the uplands, the associated industrialisation or increased service sector activity must also take care of sustainability of the environment by preventing the setting up of industries that pollute the air, water and earth. This is possible through measures like the introduction of modern, clean technologies; scientific waste disposal; waste re-cycling; and regular environmental audits. Taxes (polluter pay taxes) could be imposed to compensate for the pollution and the amount so recovered earmarked for reversing the environmental damages.
- Agriculture is a major sector in Uttarakhand and to make agriculture cleaner, the strategy would be to lower carbon emission from livestock, lower inorganic fertiliser/pesticide use, and increased bio-fertiliser use. Improved governance could reduce consumption of wood and timber. Much of the waste generated in the state can be recycled, which would also create employment as well as renewable energy. Uncontrolled land-use conversion from agriculture to non-farm activities is an important source of fuelling excess supply in real estate. While housing for the poor/ low-income urban populations should be a priority, in reality, large plots of land are increasingly being brought under realty sector developers, who indulge in all kinds of malpractices, which needs to be controlled.

SECTION 5.4

SDG 13: Take Urgent Action to Combat Climate Change and its Impacts

Climate change is a relatively new area for countries, leave alone state governments. This phenomenon has been defined in the Intergovernmental Panel on Climate Change (IPCC) as 'a change in the state of the climate that can be identified (eg. using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer' (IPCC, 2007, cited in INRM, et al., 2016). It can be caused by natural variability or due to human activity. But according to usage by the United Framework Convention on Climate Change (UNFCCC), it refers to a change attributed to human activity, whether directly or indirectly, that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods.[19]

The state of Uttarakhand is very vulnerable to climate mediated risks, according to the Uttarakhand State Action Plan for Climate Change (USAPCC) report (Government of Uttarakhand, 2014). Some of the reported climate change induced variations include: receding glaciers and upwardly moving snowline, depleting natural resources, erratic rainfall, irregular winter rains and reduction in snow, rise in temperature, increasing intensity and frequency of flash floods, advancing cropping seasons, fluctuations in the flowering behavior of plants, etc. A recent report on climate change in the state has observed consistent temporal trends of warming and increasing precipitation in Uttarakhand (INRM, et al., 2016).

The Vision for 2030 for Uttarakhand for Goal No. 13 is:

> ***By 2030, Uttarakhand state will strengthen its adaptive capacity to climate related hazards and mitigate the impact of climate change by reducing GHG and methane emissions, integration of climate change measures in national policies & planning, and by spreading awareness about such issues.***

The vision for targets of Goal No. 13 are presented in Appendix 5.4.1, followed by values for indicators (baseline and vision 2030) in Appendix 5.4.2, and Appendix 5.4.3 contains the schemes applicable for Goal no. 13. Annexure 13 contains the detailed information regarding indicators for Goal no. 13 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

Introduction

While the effects of climate change are being felt worldwide, and in the state of Uttarakhand, a data system has not yet been fully developed in the state to study the same. But some indicators can be mentioned, for which data collection methods have to be devised. These indicators should be tracked, at least on an annual basis, so as to get an idea of how the situation in the state is developing.

The IPCC (2007) summarises the following key factors that make mountain areas vulnerable:

1. Above average warming;
2. Shortened snow-melt resulting in downstream flooding;
3. In combination with reduced glacier extent, there are also water shortages;
4. Mountains being subject to soil loss;
5. High transport costs that reinforce resource-extractive livelihoods;
6. High levels of resource-extractive livelihoods resulting in loss of endemic species; and
7. Limited diversification of mountain livelihoods and low educational capacity levels, resulting in low adaptive capacity.

These factors of vulnerability yield the following set of indicators that need to be tracked in order to monitor vulnerability:

1. The extent of warming for different ecological zones of the state, viz., the Terai; low mountains, mid-mountains and high mountains;
2. Snow melt period;
3. Glacier extent;
4. Soil loss;

19. https://unfccc.int/files/press/backgrounders/application/pdf/press_factsh_science.pdf, accessed on July 10, 2017

SDG 13

Take Urgent Action to Combat Climate Change and Its Impacts

Uttarakhand Vision for SDG 13

By 2030, Uttarakhand state will strengthen its adaptive capacity to climate related hazards and mitigate the impact of climate change by reducing GHG and methane emissions, integration of climate change measures in national policies & planning, and by spreading awareness about such issues.

CLIMATE ACTION

Uttarakhand Today

- Uttarakhand is prone to many climate-change related problems such as water shortage and also excess monsoonal precipitations leading to severe floods. There is also glacial melting and glacial burst, etc.
- Existence of State Action Plan for Climate Change
- State does not have capacity to quickly respond to large-scale climate related hazards
- There is little integration of climate change measures into state polices as yet

Focus for Tomorrow

- Reduce, avoid and remove GHG emissions
- Eliminate emissions from cooking with solid biomass
- Increase adaptive capacity by diversification of livelihoods
- Increase adaptive capacity by promoting secondary and post-secondary education

Targets for 2030

- Reduce GHG emissions from cooking by switching to LPG or electricity as primary fuel: 50 percent by 2020 and eliminate by 2025
- Reduce methane emission through rice cultivation from present level by 30 percent by 2020 and 60 percent by 2030
- Eliminate GHG emission from public transport by 100 percent by 2020

5. Transport costs;
6. Loss of endemic species; and
7. Diversification of livelihoods; and educational attainment levels.

As mentioned at the outset, Uttarakhand is prone to a number of problems regarding climate change related problems (Uttarakhand Action Plan for Climate Change, 2016, Chapter 8, pp. 102-115). Recent years have seen: (1) water shortage - uncertainty in the precipitation patterns leading to severe drought conditions (for example, in 2007-08, 9 out of 13 districts were declared drought-affected); (2) excess monsoonal precipitations leading to severe floods (for example, flash floods in many river basins); (3) glacial melting and glacial burst (for example, the Chorabari Glacier and Lake in 2013); thus, there is a combination of water shortage and excess water situations; (4) changes in climatic parameters, which are affecting the state's biodiversity; some species are showing stress, while invasive species are establishing themselves; (5) with warming, some species are moving upwards, leading to a change in agricultural possibilities, as for instance, in the case of peaches, which are now cultivable at higher altitudes than earlier.

In dealing with the effects of climate change and building adaptive capacity or resilience, it should be noted that many of the changes have been caused by local actions, and are not just the result of distant trends, as in the case of global warming. Anthropogenic actions create the landscape and, in interaction with other natural processes, foster the problems that we face. This is what leads to the geological concept of the Anthropocene, wherein it is recognised that humans are also a force of nature. In a simple way, one may observe that the floods in the Char Dham pilgrimage region in 2013 were the result of not only unprecedented precipitation but also the interaction of high precipitation with the blocking of river channels through uncontrolled construction in these pilgrimage areas. Precipitation may not be affected in a major way by local conditions, but the capacity to absorb water is certainly related to the manner in which the local landscape is constructed. Consequently, in dealing with the disasters related to climate change, we need to not only cope with the disasters but also to build or re-build in a manner that reduces the risks of their recurrence. Local area planning has to take into account the greater variability in precipitation, with both severe shortages and excess rainfall likely to occur.

Baseline for Uttarakhand

The baseline situation for Goal No. 13, the vision 2030, challenges and strategies have been discussed in an integrated way, rather than according to individual targets, in view of the fact that the issue of climate change is new and complex. The baseline for this Goal is as follows:

- Existence of State Action Plan for Climate Change (SAPCC);
- Lack of State capacity to quickly respond to large-scale climate-related hazards; and
- Little integration of climate change measures into State polices.

Vision 2030 for SDG 13

The Vision 2030 for SDG 13 envisages that by 2030, Uttarakhand would have embarked on a growth trajectory that is inclusive, climate-resilient, and sustainable. It would have succeeded in eliminating the emission of harmful GHGs from different sources, substantially increased its adaptive capacity and resilience, and would have effectively integrated measures related to climate change in State policies.

Any action to combat climate change entails a combination of different kinds of measures. As is clear from the indicators for SDG 13, the first emphasis is on actions to reduce GHG emissions. Consequently, this discussion begins with the manner in which Uttarakhand can contribute to India's Nationally Determined Plan (INDP) to reduce the emissions intensity of the GDP. The following targets can be envisaged for elimination of GHG emission, including methane emission see Figure 5.3:

- Eliminate GHG emission from cooking by establishing LPG or electricity as the primary cooking fuel for 70 per cent of the households by 2020, and for all households by 2025.
- Reduce methane emission through rice cultivation by: (1) enabling a shift from rice to fruit cultivation on 25 per cent of the present area under rice by 2020, and 50 per cent by 2030, and (2) adopting AWD technologies to reduce methane emission in continuing rice

Figure 5.3: Strategies for Reducing Green House Gas Emmission in Uttarakhand

cultivation, at an estimate of 15 per cent by 2020 and 80 per cent by 2030.

- Eliminate GHG emissions from public transport by adopting CNG or electric energy, at an estimate of 50 per cent by 2020 and 100 per cent by 2025.

Reducing GHG Emissions

A sector can bring about an impact on GHGs in any one of the following ways:

- **Reduce emissions, as for instance, by changing the method of rice production or livestock production to reduce methane emissions;**
- **Avoid emissions, as by changing the fuel used in cooking; and**
- **Remove emissions, as through carbon sequestration in expanding the area under forest cover.**

The state government can deal with this issue by targeting some important sectors in the following way:

- Reduce emissions in agriculture and livestock production by 50 per cent each by 2030;
- Eliminate emissions from cooking with solid biomass by 100 per cent by 2030;
- Eliminate emissions from public transport by 100 per cent by 2030; and
- Add to the removal of emissions by increasing the carbon absorption by forests.

Uttarakhand contributes much more than its share (either measured by population or GDP) to India's nationally determined contributions. This is because the proportion of land under forests stands at 63 per cent in Uttarakhand as against the all-India average of 23 per cent. There is always a cost involved in setting aside land from direct productive use. This opportunity cost of the land set aside from cultivation for retention as forests is the production that could have taken place. For this production or income foregone, there is presently no compensation. To take some major examples of loss, all logging has been banned above the altitude of 1000 m, leading to a loss of possible income. Similarly, the hydro-electric generation potential of states is restricted by many areas being eco-sensitive zones.

The State Government had informed the 14th Finance Commission about the necessity for compensating Uttarakhand for income foregone in the interest of meeting India's nationally determined contribution to mitigating climate change. The Gadgil–Mukherjee formula for the transfer of funds from the Centre to the states is not in use; but some method needs to be worked out for compensating states recording an above-average performance for their contribution to public goods.

This opportunity cost exists not only in the case of setting aside forests for carbon sequestration, but also for other public goods such as water. Uttarakhand is the source of the Ganga–Yamuna river system, which sustains the agriculture and other livelihoods of the population of North and East India. The foregone use of this water for the own development of Uttarakhand is the opportunity cost that Uttarakhand bears for supporting the water systems of North and East India. It should be noted that Switzerland has a long established system where upstream communities are compensated for water provided to downstream hydro-electric power and irrigation systems. Some compensation of this kind to Uttarakhand for its contribution to carbon sequestration and water supply would provide an incentive for the state to increase its contributions in providing such public goods.

The Uttarakhand Government quotes studies that the value of ecosystem services provided by the state to the country amounts to between Rs. 25,000–.40,000 crore per annum. In lieu of these services, the state government has requested the Centre to provide a Green Bonus of just 10 per cent, or Rs. 2,000 crores per annum. According to recent media reports, the state government has now requested the Central Government for a higher amount of Rs. 4000 crore per annum, which is 10 per cent of the upper-end estimated value of ecosystem services provided by the state to the country, at Rs. 40,000 crore, as Green Bonus. A carbon market can be established where deficit states, such as the highly industrialised southern states, can purchase carbon credits from the surplus states, such as Uttarakhand.

Challenges for climate action

The challenges occur in the following areas of the economy:

- Reducing emissions from rice and livestock production—the present mode of rice production leads to methane and nitrous oxide production, and dairy cattle are a source of relatively more GHG emission;
- Eliminating emissions from cooking--there is still a great deal of preference for use of wood for cooking in the state;
- Eliminating emissions from public transport;
- Increasing carbon absorption by forests;
- Excessive dependence on traditional agriculture and the need to increase livelihood adaptive capacity; and
- Increasing efficiency of land use.

Strategy for Containing Emissions

The strategies for containing emissions for some important sectors are discussed in Table 5.8. It may be noted that the state and Central governments are already implementing some schemes, which deal with climate change and address this phenomenon. The major schemes are listed in Appendix 5.4.3.

The Energy Sector

Energy in Uttarakhand is a combination of hydro-electricity for office and factory use, diesel and petrol for transport, and LPG and solid biomass for cooking. There is no thermal or coal-based electricity generation in Uttarakhand. In addition, most of the electricity in the state is generated in run-of-river hydro plants, which eliminate or minimise flooding and the resultant rehabilitation of displaced families.

Fuel Switching in Cooking: The one area of energy supply (which is also simultaneously an area of energy demand) that can be transformed to reduce GHG emissions is that of the use of solid biomass, wood, and agricultural waste, as cooking fuel. Wood is the primary cooking fuel for 69.8 per cent of the rural households in Uttarakhand, which is a little higher than the all-India figure of 67.3 per cent of rural households (NSSO, 2011-12). The burning of wood has two negative effects. First, it increases the emissions of GHGs (carbon dioxide, carbon monoxide and black carbon) into the atmosphere. Second, through the release of these gases and other particulate matter, it leads to household air pollution, resulting in respiratory, pulmonary, and vision problems. These negative health effects mainly affect women and children. Since solid biomass and agricultural residues account for 14.5 per cent of India's primary energy mix (Ahluwalia, et al., 2016, Table 3), fuel switching from solid biomass to LPG will entail a substantial contribution to reducing the emissions intensity of energy supply.

Thus, both as a contribution to INDP to reduce GHG emissions and even more as a measure to improve the health and well-being of rural women and children, it is necessary to bring about

Table 5.8 Strategies to Attain Emission-Related Targets

S. No.	Emission-related Targets for Vision 2030	Strategy
1	Reduce GHG emissions from cooking: 50% by 2020 and eliminate by 2025	Establish LPG or electricity as primary cooking fuel for 50% of rural households by 2020; and 100% rural households by 2025
2	Reduce methane emission through rice cultivation from present level by 30% by 2020 and 60% by 2030	Shift from rice to fruit cultivation on 25% of present rice area by 2020 and 50% by 2030 Adopt AWD* rice cultivation technology on 5% of rice area by 2020 and 80% of rice area by 2030
3	Eliminate GHG emission from public transport by 100% by 2020	Shift from diesel to CNG or electric vehicles for public transport

* AWD stands for Alternate Wetting and Drying.

a switch in cooking fuel from wood and other solid biomass to LPG or electricity. The Government of India's Ujjwala Yojana can be scaled up by the Uttarakhand Government to provide capital subsidies for LPG connections to poor women. But the experience of earlier LPG distribution projects and programmes has shown that capital subsidies alone lead to fuel stacking and not fuel switching, with wood remaining the primary fuel. It has also been argued that capital subsidies need to be supplemented by support to women's increased income earning activities (Nathan, et al., 2017).

Fuel Switching in Public Transport: Public transport, chiefly buses, taxis and rickshaws, run on diesel or petrol, both of which have high emission intensity, besides increasing outdoor pollution, particularly in urban areas. However, this problem can be countered by increasing the use of vehicles running on compressed natural gas (CNG). In Delhi, for instance, it has been made compulsory for all public transport to operate only with CNG or electricity. With the current limited battery capacity of electric vehicles, electric rickshaws can be promoted and even replace both diesel vehicles and cycle rickshaws. This will increase the share of electricity in the energy mix, electricity that can be generated through renewable sources.

Agriculture

In combating climate change and developing resilience, the Food and Agriculture Organization (FAO) now uses the concept of 'Climate Smart Agriculture' (CSA), which is "agriculture that sustainably increases productivity, resilience (adaptation), reduces/removes GHGs (mitigation) and enhances achievement of national food security and development goals" (FAO, 2011). Rice is the main cereal and a key crop in Uttarakhand. In the manner in which it is cultivated the fields are flooded leading to the production of methane and nitrous oxide. This system of cultivation also uses a lot of water, often pumped up with diesel engines. Recent studies suggest that rice cultivation is an important anthropogenic source of both methane and nitrous oxide (Reddy, et al., 2016). Methane is particularly important in global warning since it traps 84 more times heat than carbon dioxide (FAO, 2016).

Initiated by the International Rice Research Institute (IRRI), new 'climate smart rice production systems' have been developed (WRI, 2014, and Reddy, et al., 2016). There are a number of varieties of these systems, but the basic principle is of not keeping the rice fields continuously flooded, or as it is called 'alternate wetting and drying' (AWD). They are also called 'Systems of Rice Intensification' (SRI). These systems reduce the quantity of water used, increasing the 'crop per drop'. Such technologies have begun to be implemented in Uttarakhand as in other states. Water consumption can be reduced by up to 25 per cent (Reddy, et al., 2016: 208). The saved water could be put to other uses. A reduction in water needed for the staple rice crop is also important in the context of falling water availability in the hills and mountains.

The alternate wetting and drying interrupts the flooding of rice fields. This has been shown to reduce methane emissions by up to 50 per cent (Reddy, et al., 2016: 207). In reducing both water and methane emitted, these systems outperform conventional rice with respect to increasing adaptation to climate change (Geethalakshmi, et al., 2016: 254). But the

fact that AWD or other systems of rice intensification have not consistently increased yield per acre as compared to conventional flooded rice production poses a problem (Geethalakshmi, et al., 2016: 254).

While this means that more research is needed to develop less water using high yield rice, it is necessary to ask why a reduction in water used, i.e. a reduction in an input of up to 25 per cent, does not result in an adoption of the less input-intensive technology? The reason is that water itself is not priced and diesel, which is often used to draw the water, is subsidized. The free and subsidized nature of the inputs means that there will be no private incentive to reduce input use. A reform of the water supply system to price water drawn, whether from surface or ground sources, could promote the adoption of climate smart rice cultivation technology. Thus institutional reforms are required to overcome perverse incentive problems.

Livestock

Livestock constitute an important component of rural livelihoods. While the growth of large livestock (cattle, and buffalos) was quite subdued in the state, just 1 per cent and 1.6 per cent per annum respectively from 1997 to 2007 (Uttarakhand Climate Change Action Plan, 2016: 89), the large increases were observed in goats (13.3 per cent) and poultry (26 per cent). From a climate change point of view, this is a positive change, since cattle and buffaloes are major contributors to the 14.5 per cent anthropogenic GHG emissions accounted for by livestock (FAO, 2016: 6). Poultry, buffaloes and small ruminants all have much lower emissions intensity. Their contributions to global GHG emissions are quite small (612, 618, and 474 million tonnes of CO2 equivalent, respectively) as against 2,128 million tonnes for dairy cattle (FAO, 2016). As sources of protein, chicken, eggs and meat only have an emissions intensity of 42 (kg CO2 per kg. protein equivalent) as against 84 for cattle milk. Thus, a shift to egg and chicken would reduce GHG emission intensity.

Methane is the main GHG produced in the livestock value chain. Given that emissions intensity of buffaloes is lower than that of dairy cattle, a shift in favour of the former would itself have a positive effect in reducing emissions. But even more can be done to reduce emissions from buffalos and cattle. The sources of GHG emissions are mainly from enteric fermentation (39.1 per cent), feed (46.7 per cent) and manure management (9.7 per cent). Wider use of existing best practices and technologies in raising livestock could cut the sector's GHG emissions by 30 per cent (FAO, 2016: 13). Best practices are related to improving feed quality, health and husbandry and grazing practices can all contribute to making livestock raising more climate friendly.

Strategy for Disaster Response: Building Dynamic Resilience

The next important targets for the state to attain Vision 2030 would be to:

- Increase adaptive capacity by promoting secondary and post-secondary education and establishing universal connectivity; and
- Promote resilience by providing women the right to land, leading to increasing efficiency in land use.

A shock or disturbance is any event that can cause damage to a social system and some or all of its members. Resilience is "the ability of a system to absorb disturbance and still retain its basic function and structure" (Walker and Salt, 2006: 1). This is an ecosystem or eco-social system definition of resilience. In the context of a social system and its members, individuals or social groups, this definition of resilience can be modified with respect to either income or well-being. But, even with respect to income or well-being, which are static concepts, what underlies these outcomes is capabilities. Resilience can then be taken to be the capacity of a person, household or community to retain its basic capabilities. Resilience then is not just a manner of "…[returning] to the way it was [since] it risks recreating vulnerable and disaster-prone communities for the future" (Fordham, 2006: 175). Rather, it is necessary to link the notion of vulnerability with that of moving out of vulnerability, which means developing and not just maintaining existing capabilities.

Resilience then includes the component of adaptation. Adaptation "unlike coping is understood as a long-term process that also includes structural changes and measures, as well as strategies to deal with the negative impacts of natural hazards and future climate change impacts" (UNU-ADW, 2013: 47).

Table 5.9: Strategies for Reducing Vulnerability and Increasing Adaptive Capacity

S. No.	Targets for Vision 2030	Strategy
1	Increase adaptive capacity	By diversification of livelihoods By promoting secondary and post-secondary education— 70% of all students to complete high school by 2030; and 30% in post-secondary education by 2030
2	Increase efficiency of land use	By providing titles to women, since the men have migrated, legalise leasing of land

UNDP uses the term 'core capabilities'. "People are vulnerable when they lack sufficient core capabilities, since this severely restricts their agency and prevents them from doing things they value or coping with threats," (UNDP, 2014: 23). Capability, including core capability, is also multi-dimensional, including at least health, education and skills, besides income. It is necessary to analyse ways in which people, households and communities are and become resilient. This means that we need a dynamic analysis of the destruction and adaptation or creation of capabilities. The concept of core capabilities needs to be elaborated in a manner that would allow it to be used for empirical analysis. Core capabilities include education and health, command over material resources, and personal security (UNDP, 2014: 23). But it is necessary to identify the features of these variables. For instance, households lacking in the following could be said to lack core capabilities:

Education—(1) an illiterate, or only primary school educated, head of the household;

Health—(2) children without immunisation, or (3) social groups with a high incidence of infant mortality;

Economic—(4) high dependency ratio; (5) household income level below the poverty level or within the poverty level plus one standard deviation; (6) landless households

Personal security—(7) female-headed household.

Households with the above features (or, say, exhibiting 75 per cent of the above features) could be defined as lacking in core capabilities and thus vulnerable. The proportion of such households in an area (village, district, etc.) could be taken as the measure of the extent of vulnerability in the area.

Mountain Vulnerabilities and Diversification

The IPCC (2007) summarises the key vulnerabilities of mountain regions as follows: (1) The mountains have experienced above-average warming. (2) Related to this are shortened snow-melt and resulting downstream floods. (3) In combination with reduced glacier extent, there are water shortages. (4) With the relatively thin and fragile soils, mountain areas are subject to soil loss. (5) High transport costs reinforce the concentration on resource-extractive livelihoods (agriculture, livestock). (6) This, in turn, leads to high levels of soil losses combined with loss of endemic species. (7) Adaptive capacity is limited probably due to this limited diversification of mountain livelihoods in combination with poor educational levels.

Strategies to Reduce Vulnerability

The broad strategies to increase the adaptive capacity of the state and to increase land use efficiency in order to reduce vulnerability have been presented in Table 5.9, and are discussed at length thereafter.

There are a number of aspects of livelihood diversification to be considered such as a shift from subsistence rice farming to cultivating high-value fruit and vegetable crops in the temperate climate of Uttarakhand, education and connectivity. In a poorly connected state economy, it is understandable that people concentrate on the production of staple foodstuffs. Rice, therefore, has been a major crop in the state. But the state is now better-connected with the neigbouring states than earlier, though there are still issues of poor road connectivity, especially in some remote upper mountain areas.

In a situation of well-established road links, markets can perform reasonably well in moving

rice and other necessities into areas with demand. This makes it possible for mountain economies to specialise in areas where they have the advantage of a favourable climate. In rice production, mountain productivity would definitely be much lower than productivity in the plains of Punjab and Haryana. But by cultivating fruits like apples and pears in temperate climate, and vegetables in winter, the mountain farmers can secure higher productivity than those in the tropical plains. Remembering that Uttarakhand is a part of India, the state itself need not be too concerned about producing its own food; rather, the concern is with securing higher incomes, which can be used to purchase the necessary food. The adjoining mountain state of Himachal Pradesh followed just such a strategy of shifting from subsistence rice to high-value commercial fruits and has, as a result, secured a much higher per capita income for its population.

Such diversification into high-value fruits and vegetables, however, requires some specific support from the government. Villages that are still without all-weather road connections need to be connected to the main roads. Cold storage and warehouse facilities need to be set up. And there needs to be concerted extension to teach more farmers, particularly the women who manage the farms, on the cultivation methods and post-harvest processing involved.

Higher Education: Other areas that need attention for diversification are education and digital connectivity. Education is necessary to enable people to shift from low-income to high-income livelihoods. Even in the event of displacement by disasters and the destruction of old livelihoods (for example, by the deposition of gravel on agricultural lands) those with more education will be able to rehabilitate themselves better than those with hardly any education. The latter often end up as rickshaw pullers or porters in the urban centres, while the more educated can hope to look for better employment.

Digital Connectivity: Most people in the state would now own a mobile phone. But it is important to move from mere ownership of a mobile phone to access to broadband service for data and other digital connectivity. Digital connectivity not only provides access to education, thereby overcoming poor physical connectivity and remoteness, but it also promotes the development of new digital services, both for local and extra-local activities. Digital connectivity is also a necessity for developing homestays in off-beat locations, and it is important in building networks of all kinds of knowledge-based communities.

Increasing Efficiency of Land Use: Following the large male outmigration, women have become the actual cultivators in the Uttarakhand hills. But they do not own the land they cultivate. This restricts their ability to access loan facilities or even technical extension. In addition, the climate-smart technologies are knowledge- and management-intensive. Securing the required knowledge and checking up on good practices and technical advances requires a strong technical extension system, with good connectivity. This necessitates measures for enabling women to gain and access knowledge on a continuous basis.

Integrating Climate Change in State Plans

As mentioned above, the State has prepared a document on its Action Plan on Climate Change. As envisaged in the UAPCC, a State Climate Change Centre (SCCC), Uttarakhand, has been established to formulate climate actions with support from UNDP and other partners. The SCCC envisages to integrate Climate Actions, State Action Plan on Climate Change (SAPCC), Uttarakhand, Vulnerability and Risk Assessment (VRA), Sustainable Development Goals (SDGs), and Intended Nationally Determined Contributions (INDCs).[20] A Vulnerability Risk Assessment exercise has been undertaken by the SCCC to implement a climate change plan, prioritise climate action and integrate the same into state planning. The VRA is based on a total of 78 indicators. Some elements of the proposed Sectoral Agenda for Climate Action for a few major sectors are presented in Box No. 5.3.

20. http://www.sccc-uk.org/site/about accessed on July 10th 2017.

Box 5.3: Sectoral Agenda for Climate Action

Agriculture Sector

- Assess irrigation strategies and crop yield studies and revaluate guidelines for irrigation practices, espescially for vulnerable districts as well as promote climate-smart agricultural techniques which reduce dependence on natural resources
- Generate farm-level awareness of climate risk of climate insurance schemes, assess viability of climate resilient seeds and of switching to alternative, more resilient crops
- Examine viability of organic agriculture as a climate-resilient measure
- Organise capacity build-up training of agriculture extension teams to farmers regarding climate change impact and appropriate measures to protect crops.

Forest Sector

- Introduce conservation measures with specific focus on existing biodiverse forests to stem the rate of fragmentation; regulate invasive species as weeds expected to thrive with increased temperatures
- Facilitate appropriate measures to improve productivity and production of herbal and medicinal plant and their trade; increase focus on short rotation forestry where biomass expected improvement is expected to occur and improved livelihoods through targeted agro forestry programmes
- Review the ten-year Forest Development Corporation Management Plan and Green India Mission Perspective Plan for Uttarakhand; examine national level policies such as National Agroforestry Policy (NAP) and REDD-plus policy.

Water Sector

- Map availability, supply and demand for water at the basin level, focus on participatory irrigation management at the Gram Panchayat level, and develop as well as implement a multi-hazard early warning system
- Conduct scientific analysis of spring water dynamics in hilly districts and promote water saving and re-use schemes; improve flood forecasting through flood plain mapping and preparation of inundation maps for flood-prone areas
- Use VRA findings on stream flow dependability, to take advantage of when and where river flows are likely to be sustained year-round for planning project
- Ensure regular monitoring, evaluation and maintenance of dams/reservoirs, linked to EWS for better understanding of when and where flooding may occur
- Develop groundwater and surface water use schemes with an incentive or tariff system to discourage users from over extracting water

Source: State Government

SECTION 5.5

SDG 15: Protect, Restore and Promote Sustainable Use of Terrestrial Ecosystems, Sustainably Manage Forests, Combat Desertification, and Halt and Reverse Land Degradation and Halt Biodiversity Loss

Forests are crucial to the survival and prosperity of human and other species as they not only provide food security and shelter, but are also instrumental in fighting climate change, and protecting bio-diversity as well as the homes of indigenous populations. It has been observed that human actions are fundamentally, and to a great extent irreversibly, changing the diversity of life on earth. Most of these changes represent a loss of biodiversity.[21]

There are very few states in India with more than 60 per cent of the geographical area under natural vegetation cover and Uttarakhand is one of them (FSI, 2011, cited in Planning Commission, 2013). The state has a wide variety of forests ranging for the tropical to the alpine. There are also twelve National Parks and Wildlife Sanctuaries covering almost 14 per cent of the total area in the state. The number of species of flowering plants in Uttarakhand stands at around 4700 at present, and there are around 146 species of fodder plants.

It is evident that SDG No. 15, with its focus on the protection and conservation of forests, and arresting the loss of biodiversity, is of crucial importance to the people of Uttarakhand.

The vision for Goal No. 15 for the state is:

> ***By 2030, the state of Uttarakhand will attain a more sustainable use of terrestrial ecosystems by increasing carbon absorptive capacity, reducing degraded watersheds, containing loss of bio-diversity and promotion of rainwater harvesting.***

The vision for targets of Goal No. 15 are presented in Appendix 5.5.1, followed by values for indicators (baseline and vision 2030) in Appendix 5.5.2, and Appendix 5.5.3 contains the schemes applicable for Goal no. 15. Annexure 14 contains the detailed information regarding indicators for Goal no. 15 for baseline, short-term (2019-20), medium term (2023-24) and vision 2030.

The discussion begins by focusing on Targets 15.1–15.3 dealing with various aspects of protection of the forest and inland freshwater ecosystem, conservation, management, and arresting degradation. This is followed by a discussion of Targets 15.4 and 15.5, which deal with bio-diversity, and Target 15.7, which deals with poaching and trafficking of wildlife. Finally, Target 15.9 has been discussed, which deals with the integration of the issues covered by SDG 15, comprising local planning, and poverty reduction strategies, among other things.

Target 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

Target 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

Target 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

Baseline for Uttarakhand

Conservation of Forests, Afforestation and Reforestation

Uttarakhand already has much higher proportion of land under forest cover, at 63 per cent, as compared to the corresponding all-India figure of 27 per cent. Consequently there is limited scope

21. http://www.un.org/sustainabledevelopment/biodiversity/ and https://www.hcvnetwork.org/resources/folder.2006-09-29.6584228415/CommonVisionRefDoc.080910.pdf accessed on 11 July, 2017

SDG 15

Protect, Restore and Promote Sustainable Use of Terrestrial Ecosystems, Sustainably Manage Forests, Combat Desertification, and Halt and Reverse Land Degradation and Halt Biodiversity Loss

Uttarakhand Vision for SDG 15

By 2030, the state of Uttarakhand will attain a more sustainable use of terrestrial eco-systems by increasing carbon absorptive capacity, reducing degraded watersheds, containing loss of bio-diversity and promotion of rainwater harvesting

Uttarakhand Today

- Very high proportion of area in state is under forest, so that limited scope for expanding area under forest cover
- Area covered by dense forest as share of total forest cover is 34 percent
- Strong tradition of community forest management, by Van Panchayats, whose primary concern has been conservation of forests.
- Conservation of water bodies is important for the state and already 11 rivers/riverlets are covered under the Namami Gange project
- Maintenance of bio-diversity: baseline level for the mountain eco-systems covered by the protected areas is 20 percent at present
- Poaching of wildlife such as tigers and leopards persistent problem

Focus for Tomorrow

- Increase forest cover and turn part of moderately dense forest into dense forest, and part of the open forest into moderately dense forest.
- Increase soil and water conservation works
- Prevent extinction of threatened species including threatened fauna
- Curb poaching of wildlife
- Conservation plans for tigers, elephants and snow leopards will continue for the 15 year period
- For development of eco-tourism, the number of awareness centres, information centre/picnic spots etc. will increase

Targets for 2030

- An extra 2 percent forest cover would be attained by 2030
- Afforestation (including all types of plantations) is to reach 224,000 hectare by 2030
- The number of watersheds that have undergone adaptation practices for soil and water management is envisioned to double by 50 percent

for expanding the area under forest cover. The percentage change in forest cover at present is negative. The quality of forest cover is also important, and the baseline for the total land area covered by dense forests as a share of the total forest cover is 34 per cent. The baseline for afforestation (including all types of plantations) is 18,251 hectares, and at present there are 45 soil and water conservation works in the state. A total of 268 lakh seedlings are being grown currently and the area covered under different afforestation schemes is 3,05,248 hectares.

Uttarakhand is fortunate to have a strong tradition of community forest management, run by the Van Panchayats, whose primary concern has been the conservation of forests.

The conservation of water bodies is another area of importance for the state and already 11 rivers/riverlets are covered under the Namami Gange project, accounting for the afforestation of 1000 hectares of river/riverlets. The baseline value for the area covered under pits and ponds (chal-khal) is 215 hectares.

Land Degradation

The issues of land degradation and climate change are closely linked. Land degradation is exacerbated by climate change, resulting from extreme weather events (drought or sudden rain). Land degradation results in the loss of terrestrial carbon stores from soils and vegetation, and has microclimate effects, possibly reducing moisture absorption and retention. Consequently, measures to reverse land degradation not only have a local impact in terms of affecting crop productivity but also entail global implications by affecting carbon storage. Land management strategies, therefore, need to be seen with this dual perspective of local productivity and global carbon storage; they are simultaneously adaptive and mitigating strategies (see UNCCD, 2015).

Although Uttarakhand has been losing topsoil, the state has implemented many programmes for watershed management, which can be expected to substantially reduce land degradation.

Vision 2030 for Targets 15.1 to 15.3

The aim to attain the vision for Goal No. 15 vision, as outlined at the outset, is that an extra 2 per cent forest cover would be attained by 2030. It is important to improve the quality of the forest cover, that is, to turn some part of the moderately dense forest (accounting for 56 per cent of the total forest cover) into dense forest, and some part of the

Figure 5.4: Selected Indicators for Vision 2030 for Life on Land

	Baseline 2016-17	Vision 2030
Afforestation (ha)	18251	224000
Afforestation for Rivers and Riverlets(ha)	1000	29302
Growing of Seedlings (Lakh seedlings)	268	3780
Total Tree Cover achieved outside Forest area (sq.km)	752	850
Conservation of Watersheds(No.)	286	462

Source: Based on information provided by Government of Uttarakhand

open forest (accounting for 24 per cent of the total forest cover) into moderately dense forest. Dense forest cover could be expected to reach 35.5 per cent by 2030 from the baseline of 34 per cent (see Appendix 5.5.2 and Annexure 14 for detailed indicators and also Figure 5.4 for selected indicators).

The vision for afforestation (including all types of plantations) is to reach 2,24,000 hectares by 2030, with interim targets of 48,000 hectares by 2019-20, and 1,12,000 hectares by 2023-24. The number of soil and water conservation works is expected to go up from the present 45 to 7000 by 2030, reaching 1500 in the interim period by 2019-20 and 3000 by 2023-24. A total of 3780 lakh seedlings will be grown by 2030, and the area covered under different afforestation schemes is slated to increase by 73 per cent from the present 3,05,248 hectares to 5,29,248 hectares.

In addition to improving the quality of the forest cover, it is also necessary for the forests to yield income for those dwelling in and around the forests. Besides timber, there are many valuable non-timber forest products (NTFP), such as nuts (walnuts, pine nuts), medicinal herbs and plants, bamboo shoots, and high-value mushrooms. The Forest Department has issued instructions that 20 per cent of all new plantations should be those of fruit-bearing trees.

Under the Namami Gange project, the afforestation of river/riverlets will increase significantly from the present 1000 hectares to 3000 hectares by 2019-20, to 7000 hectares by 2023-24, and finally, to 14,000 hectares by 2030. The area covered under pits and ponds (chal-khal) will also increase substantially from 215 hectares to 3500 hectares by 2030.

The Van Panchayats already manage 40 per cent of the total forest area, and this arrangement is slated to continue till 2030. Although the primary concern of the Van Panchayats has been the conservation of forests, it is also possible to involve them in devising appropriate systems of extracting NTFP, carrying out re-planting, and management of the resources.

The number of watersheds that have undergone adaptation practices for soil and water management is envisaged to double by 50 per cent till 2030, with interim targets of a 20 per cent increase by 2019-20, and a 30 per cent increase by 2023-24.

Challenges for Targets 15.1, 15.2 and 15.3

The following are the challenges with respect to the implementation of Targets 15.1, 15.2, and 15.3:

- Increasing and improving the forest cover in the state;
- High rate of male migration in the Uttarakhand economy, especially because traditionally men have been part of the strategising for land management;
- Glacial retreat, which is reportedly affecting water availability in the upper mountain regions—this leads to problems pertaining to both drinking water and moisture for cultivation, while the lack of natural sources of water leads to excessive pumping of groundwater;
- Need to increase the incomes of forest-dwellers from forest needs—in the absence of some form of control, it is difficult to sustain the extraction of NTFP without the risk of degradation of forests; and
- Continued loss of top soil in the state, which makes it imperative to halt, and even revers, watershed degradation.

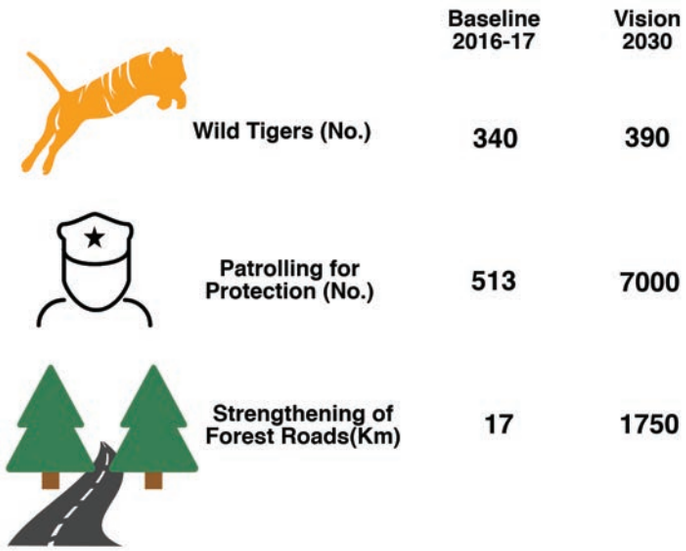
Strategies for attaining Vision 2030

- In dealing with land management strategies, as in many other areas of action, it is necessary to combine both formal and informal (or local) knowledge. Given the high rate of male migration out of the mountain economy, the utilisation of informal knowledge entails the inclusion of women in the discussion, and the decision-making and implementation processes.
- While the phenomenon of glacial retreat as a whole has to be dealt with by reducing global warming, local measures can be taken to recreate a small-scale, village level moisture retaining structure, as has been done in the Ladakh 'Ice Stupa'.[22]

22. For further details, see http://icestupa.org/ and 'Adventures in the Anthropocene' by Gaia Vince.

- The sustainable extraction of NTFP necessitates a well-managed system of production quotas, re-planting, and so on. Such a sustainable income-bearing relationship is necessary even for the protection of the forest itself, as in the absence of properly managed common property systems, the forests would turn into open access resources and soon be degraded. Climate change mitigation schemes, such as REDD+, as also the likely national carbon market, can be used for conservation to provide an income. The funds accumulated for afforestation, be they under the Compensatory Afforestation and Fund Management and Planning Authority (CAMPA) or the to-be Compensatory Afforestation Fund (CAF) should be allocated to the Van Panchayats in order to extend the role of communities in forest management.
- Women play an important part both in forest protection and the collection of NTFP. Their management roles in the Van Panchayats need to be strengthened. For income generation from forest areas, rather than clearing of forests for growing commercial crops, methods of agro-forestry can be tried, including the elaborate multi-tier, multi-species cropping systems which, to an extent, mimic natural forests. In addition to having high-value tree crops in the mix, mixed cropping with multiple species helps cultivators protect themselves against the inevitable output price fluctuations.
- The watershed management programmes in villages that are being implemented upstream of hydro-electricity generation plants can be utilised to reduce land degradation in the following way. These generation plants depend upon good quality water, that is, with sediments below a certain level. One way of securing this would be to pay upstream villages for providing water of the requisite quality. This system of payments for good quality water as an eco-system service has been tried out in hydro-electric plants in Nepal and has worked to reduce land degradation. Offering an incentive to provide good quality water, that is, water with low sediment, would strengthen watershed management in upstream villages. Further, the mitigating effects of better land management on carbon storage also need to be taken into account. Just as tree storage of carbon is recognised and rewarded under the UNFCC's REDD programme, similarly carbon stores in soil and vegetation also need to be recognised and rewarded.

Figure 5.5: Selected Indicators for Conservation of Mountain Eco-Systems and Bio-Diversity in Uttarakhand



Source: Based on information provided by Government of Uttarakhand

Target 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development

Target 15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

Baseline for Uttarakhand

The major threat to biodiversity comes from habitat loss due to human changes in land use, including the conversion of forests into agricultural land or of agricultural into urban land. The changed weather conditions brought about by climate change, and global warming also affect biodiversity, as many species are sensitive to warming temperatures. It is estimated that warming may be a greater threat to biodiversity than habitat destruction (Center for Health and the Global Environment, 2017.) Global warming effects cannot be overcome by Uttarakhand state alone, but the loss of habitats can be addressed at the state and local levels.

Although a complex area, some attempt has been made to capture the bio-diversity in the state with the help of indicators (see Appendix 5.5.2 and Annexure 14). The baseline level for the mountain ecosystems covered by the protected areas is 20 per cent, at present. The state government has also made a list of the extinction of threatened species, which includes the share of threatened fauna, estimated to be around 4.2 per cent. Among the list of currently endangered species (fauna), the number of wild tigers in the state is 340 at present. Indicators for various measures undertaken by the state government to prevent the extinction of threatened species, such as the construction of water holes, removal of lantana, patrolling, and building of boundary pillars, have also been provided in the Appendix 5.5.2 and Annexure 14.

Vision 2030 for Targets 15.4 and 15.5

The share of mountain ecosystems covered by protected areas will be maintained at 20 per cent in the timelines 2019-20, 2023-24, and the terminal year 2030. The number of tigers is slated to increase by 50 from the baseline level to 390 by 2030. Measures to prevent the extinction of threatened species including construction of water holes, removal of lantana, patrolling, and building of boundary pillars will be escalated. The quantitative targets for these measures have been provided in the Annexure 14 and selected indicators have been presented in Figure 5.5.

Target 15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products

Baseline for Uttarakhand

Poaching of wildlife has been a persistent problem in the state, according to various media reports. Tigers and leopards are especially vulnerable. At present, the number of poaching cases that have been prevented with the aim of curbing wildlife trafficking is 33, but there are no community-led anti-poaching units.

Vision 2030 for Target 15.7

The aim is to curb poaching over the coming years, such that it stops altogether. In this, community-led anti-poaching units are expected to contribute and it is planned to start three such units by 2019-20, which will increase to 7 by 2023-24, and finally to 14 by 2030.

Target 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

Baseline for Uttarakhand

The state government has been making concerted efforts to integrate conservation efforts into local planning. Currently tigers, elephants, and snow leopards are included under conservation plans.

Tourism as an economic activity can act as a poverty reduction strategy and be climate change smart, since it requires not extraction but the preservation of natural resources. However, nature tourism should be eco-tourism, or tourism de-

fined as that which provides for the conservation of biological and cultural diversity, includes meaningful community participation, and is economically sustainable (Committee on Biological Diversity, 2004). The baseline levels for various indicators provided by the state government for developing eco-tourism in the state such as the development and maintenance of awareness centres, information centres, picnic spots, and Van Chetna Kendras, are presented in the Appendix 5.5.2 and Annexure 14. Similarly, indicators have been developed for infrastructure facilities such as the strengthening and maintenance of forest roads, and construction and maintenance of puls/pulias.

Vision 2030 for Target 15.9

The conservation plans for tigers, elephants and snow leopards will continue for the 15-year period. For the development of eco-tourism, the number of awareness centres, information centres and picnic spots etc. will increase from 3 in the baseline to 60 by 2030, with interim targets of 12 (2019-20) and 28 (2023-24). The number of Van Chetna Kendras will increase from the current figure of 9 to 20 by 2019-20, and will continue at the same level for the remaining years till 2030. For infrastructure facilities, too, the vision is to scale up the facilities over the 15-year period.

Challenges for Targets 15.4–15.9

- Bio-diversity needs to be linked with higher incomes.
- The incidence of poaching is a continuing menace in the state.
- A danger in promoting eco-tourism is that excessive tourist footfalls can endanger tourist destination in the fragile mountain environment; similarly, human walking on glaciers, too, similarly can hasten the warming up and eventual collapse of glaciers.

Strategies for attaining Vision 2030

- Communities need to be involved in bio-diversity conservation.
- Community-led anti-poaching units can be set up.
- It is imperative to regulate tourist movement within the national parks and glaciers. For instance, in the Valley of Flowers, which is both a bio-diversity hot spot and a major tourist attraction, the tourists must continue to be prohibited from walking on the valley floor itself, as is done in many such bio-diversity hotspots around the world. Similarly, restrictions are needed on humans walking on glaciers.

Appendix 5.1.1

Vision for Targets under SDG 7: Affordable and Clean Energy

Targets for SDG 7	Vision 2030 for Targets
Target 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	To cover all remaining households with access to electricity.
Target 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	To increase the share of renewable energy in the total to 15% by 2030.
Target 7.3 By 2030, double the global rate of improvement in energy efficiency	To reduce Transmission & Distribution loss to 9% by 2030.

Appendix 5.1.2

Targets and Indicators for SDG 7: Affordable and Clean Energy

Target 7.1	***By 2030, ensure universal access to affordable, reliable and modern energy services***	Baseline 2016-17	Vision 2030
7.1a1 Households using clean fuels (electricity, LPG/Natural gas, bio-gas) for cooking (%) (Rural)		31.1	
7.1a2 Households using clean fuels (electricity, LPG/Natural gas, bio-gas) for cooking (%) (Urban)		86.6	
7.1b1 Households with electricity (%) (Rural)		96.5	100.0
7.1b2 Households with electricity (%) (Urban)		99.4	100.0
7.1c Number of villages with electricity facility		15638	15745 (100%)
7.1d Rural households (no.) using electricity for lighting		995573	1118191 (100%)
7.1e Total Installed capacity (MW)*		1290.10	1648
7.1f Electricity consumption (kWh per capita)		1279	2153
7.1f households (%) using firewood as main cooking fuel			
Target 7.2	***By 2030, increase substantially the share of renewable energy in the global energy mix***		
7.2a Renewable share of micro hydel in total energy demand (million units)		18	151
7.2b Renewable share of solar energy in total energy demand (million units)		70	601
7.2c Renewable share of others (co-gen, biomass, W2E) in total energy demand (million units)		284	1137
7.2d Renewable share in total energy demand (million units)		371	1889
7.2e Share of renewable energy in total energy (final) consumption in state (%)		3.2	15.1
Target 7.3	***By 2030, double the global rate of improvement in energy efficiency***		
7.3a Transmission and Distribution loss (%) in state		18.63	9.00
7.3b Use of efficient lighting systems — LED for street light (%)			
7.3c Energy Saving by renewable sources (MW)			

*This Target has already been achieved in 2018

Appendix 5.1.3

Schemes for SDG 7: Affordable and Clean Energy

Targets	State Schemes	Direct Intervention Schemes
Target 7.1	Promotion of green power projects	Rajiv Gandhi Grameen Vidyutikaran Yojana
Target 7.2	Small hydro-power projects	
Target 7.3	Integrated Transmission Systems (EAP)	Perform, Achieve and Trade Scheme

Appendix 5.2.1

Vision for Targets under SDG 11: Sustainable Cities and Communities

Targets for SDG 11	Vision 2030 for Targets
11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums	• Reduce Slum Households in the Total Urban Households to 10% from a baseline of 40%. • Increase the Slums Denotified to 80% from a baseline of 35%. • Increase share of Slum Households covered by Low-cost Housing Programmes to 90%, from a baseline of 25%. • Increase share of Slum Households living in Pucca Houses to 85%, from a baseline of 35%. • Increase the percentage of Shelter Capacity to Shelter less Population to 50%, raised from a baseline of 0.8%.
11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons	• Increase the geographical coverage of public transport to 70% by 2030, from baseline of 10% • To create green, walkable, limited vehicle zones in the cities to reduce traffic congestion • To create dedicated bicycle track with pedestrian-friendly areas • Take special care for disabled friendly transport
11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	By 2030 • Increase the share of Area Notified as per Master Plan to 100 percent, from the present 30%. • Promote active participation of all ward committees in local bodies. • Enhance the share of women councillors to 50%, from a baseline of 10%. • Augment the number of SHGs to 800, from a baseline of 250. • Address all consumer grievances, while increasing substantially from the present share of 25%.
11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage	
11.5 By 2030, significantly reduce the number of deaths and the number of people affected and decrease by 100 percent the economic losses relative to gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations	

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Appendix 5.2.1 Contd...

11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	By 2030 • Increase the percentage reduction in air and noise pollution level to 70%. • All the garbage generated will be collected and transported. • Increase the share of sewage treated to sewage generated to 70%. • All wards will have garbage collection and transportation • All urban households will have sewerage connection • All urban households to have 24x7 access to Potable, Safe Drinking Water within Premises • All urban households to have 24x7 access to electricity within Premises
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities	Provide universal access to safe, inclusive and accessible, green and public spaces to all, especially women, children and disabled people, as per state norms.

Appendix 5.2.2

Targets and Indicators for SDG 11: Sustainable Cities and Communities

Target 11.1	***By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums***	Baseline 2016-17	Vision 2030
11.1a Percentage of Slum Households to Total Urban Households		40	10
11.1b Percentage of Slums Denotified		35	80
11.1c Percentage of Slum Households covered by Low-cost Housing Programmes		25	90
11.1d Percentage of Slum Households living in Pucca Houses		35	85
11.1e. Percentage of Shelter Capacity to Shelter less Population		0.8	50
Target 11.2	***By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons***		
Sustainable Transport System	11.2a Geographical Coverage of Public Transport	10	70
Target 11.3	***By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries***		
Sustainable Urbanization & Human settlement	11.3a Land Notifications as per Master Plan (%)	30	100
	11.3b Number of Building Plans Sanctioned as per Planning Control	NA	100
	11.3c Number of Active Ward Committees in the ULBs	NA	100%
	11.3d Percentage of Women Councillors in the ULBs	10	50
	11.3e Number of waste disposal plants in each ULBs	250	800
	11.3f Percentage of Consumer Grievance Addressed in each ULBs	25	100
Target 11.4	***Strengthen efforts to protect and safeguard the world's cultural and natural heritage***		

Contd...

Appendix 5.2.2 Contd...

Target 11.5	***By 2030, significantly reduce the number of deaths and the number of people affected and decrease by 100 percent the economic losses relative to gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations***		
Target 11.6	***By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management***		
Air Pollution	11.6a Percentage Reduction in the Level of Air Pollution	20	70
	11.6a1 Concentration of particulate matter (PM 10) Dehradun Clock Tower	180.05	
	11.6a2 Concentration of particulate matter (PM 10) Dehradun ISBT	288.12	
	11.6a3 Concentration of particulate matter (PM 10) Haridwar SIDCUL	127.88	
	11.6b1 Concentration of sulphur dioxide Dehradun Clock Tower	25.07	
	11.6b2 Concentration of sulphur dioxide Dehradun ISBT	27.10	
	11.6b3 Concentration of sulphur dioxide Haridwar SIDCUL	24.96	
	11.6c1 Concentration of nitrogen dioxide Dehradun Clock Tower	28.66	
	11.6c2 Concentration of nitrogen dioxide Dehradun ISBT	30.05	
	11.6c3 Concentration of nitrogen dioxide Haridwar SIDCUL	27.78	
	11.6d Concentration of carbon monoxide		
Solid Waste & Drainage	11.6g Municipal Solid Waste processing (total) (%) under SBM	0.5	
	11.6h Municipal Solid Waste processing (Equivalent) (%) under SBM	5.07	
	11.6i No. of wards with 100% door to door collection and transportation of solid waste	431	
	11.6n Hospitals disposing bio-medical waste safely (number)	708	
	11.6nPercentage of garbage collected and transported to garbage generated	5.07	100
	11.6o Percentage of sewage treated to sewage generated	NA	70
	11.6p Percentage Households connected to drainage system	NA	70
	11.6q Percentage of waste water treated to generated	30	90
	11.6r Number of wards with 100% waste collection and transportation (Total wards 700)*	431	700 out of 700
	11.6s Percentage of households having 24/7 access to potable, safe drinking water within the premises	50	100
	11.6t Percentage of households having 24/7 access to electricity within the premises	55	100
	11.6u Percentage reduction in the level of noise pollution	NA	70
Target 11.7	***By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities***		

Appendix 5.3.1

Vision for Targets under SDG 12: Responsible Consumption and Production

Targets for SDG 12	Vision 2030 for Targets
Target 12.1 Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries	
Target 12.2 By 2030, achieve the sustainable management and efficient use of natural resources	Natural resources will be used efficiently by increasing the use of bio-fertilizers from 0.3 kg/Ha gradually to 0.6 kg/Ha and also by enhancing the existing carbon sink in the forests in the state.
Target 12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses	Waste of food will be minimised at all levels of the production and supply chain, and the post-harvest loss for all products will be reduced to less than 2% by 2030.
Target 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment	Minimise the release of harmful chemicals and other wastes into air, water, soil, and to reduce the use of plastics and the hazardous waste generation to zero by 2030.
Target 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	Minimize generation of waste by 2030.
Target 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle	
Target 12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities	
Target 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature	

Appendix 5.3.2

Targets and Indicators related to SDG 12: Responsible Consumption and Production

Target 12.1	***Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries***	2016-17 Baseline	2017-18 to 2030-31
Target 12.2	***By 2030, achieve the sustainable management and efficient use of natural resources***		
12.2a Bio-fertilizers in agricultural production (kg/ha)		0.3	0.6
12.2d Total carbon sink (MT) in forest area		537.02*	
Target 12.3	***By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses***		
12.3a Post harvest loss fruits and vegetables (annual) as % of total production		4.58-15.88**	Reduce to <2%
Target 12.4	***By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycles, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment***		
Sound Management of Chemicals	12.4.a Use of plastics (per capita in grams per day)		0
	12.4 b Amount of hazardous waste generation (metric tonnes per annum)	55627	0
Target 12.5	***By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse***		
Target 12.6	***Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle***		
Target 12.7	***Promote public procurement practices that are sustainable, in accordance with national policies and priorities***		
Target 12.8	***By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature***		
12.8a Population covered by awareness campaigns (%)			100%

*Estimate by Raj and Joshi (Uttarakhand State Perspective Strategic Plan 2009-27, Watershed Management Directorate, Uttarakhand), cited in the Annual Plan 2013-14, Vol. I, State Planning Commission, Government of Uttarakhand.
**Estimated at the national level by ICAR-CIPHET for 2013-14.

Appendix 5.3.3

Schemes for SDG 12: Responsible Consumption and Production

Targets	Centrally Sponsored Schemes/State Sector	Direct Intervention Schemes
Target 12.1	National Policy on Biofuels	Seed Development Programme
Target 12.2	National Clean India Fund	
Target 12.3	National Clean Energy Fund	
Target 12.4	Renewable Energy: Renewable Energy Global Investment Promotion Meet and Expo	
Target 12.5	Soil Health Card Scheme	
Target 12.6	State Sector—Promotion of Organic Farming	

Appendix 5.4.1

Vision for Targets under SDG 13: Climate Action

Targets for SDG 13	Vision 2030 for Targets
Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	By 2030, Uttarakhand would have embarked on a growth trajectory that is inclusive, climate-resilient, and sustainable. It would have succeeded in eliminating the emission of harmful GHGs from different sources, substantially increased its adaptive capacity and resilience, and would have effectively integrated measures related to climate change in State policies. There is need to reduce GHG emissions by: Eliminating GHG emission from cooking by establishing LPG or electricity as the primary cooking fuel for households Reducing methane emission through rice cultivation by: (1) enabling a shift from rice to fruit cultivation and (2) adopting AWD technologies to reduce methane emission in continuing rice cultivation. Eliminating GHG emissions from public transport by adopting CNG or electric energy.
Target 13.2: Integrate climate change measures into national policies, strategies and planning	
Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	

Appendix 5.4.2

Targets and Indicators for SDG 13: Climate Action

		Baseline 2016-17	Vision 2030
Target 13.1	***Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries***		
13.1.b Consumption of ozone-depleting substance (ODS tonnes)		All ACs and fridges with ODS	100% ACs and Fridges without ODS
13.1.c Greenhouse gases (GHG) emitted by transport sector (%)		No CNG/electric transport	All transport CNG/ electric
13.1.d Greenhouse gases (GHG) emitted by agriculture sector (%)			Shift 50% cultivated area to Horticulture
13.1.h GHG emission (in N_2O) from agricultural sector (Gg)		All rice under flooding	80% rice area under AWD
13.1.k GHG emission (in CO_2) from energy sector (industrial, transport and other) (Gg)		70% rural cooking with wood	Eliminate all rural cooking with wood
Target 13.2	***Integrate climate change measures into national policies, strategies and planning***	State action plan on climate change (SAPCC) formulated	50% of state budget linked to SAPCC
Climate Change Action Plan	13.2a Number of sectors to be prioritised under the climate change action plan		
	13.2b Number of sectors covered under the climate change action plan		
Target 13.3	***Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning***		
Education, Awareness and IEC	13.3a Proportion of population covered by climate change education (%)		Increase college enrolment to 30% of high school graduates
	13.3b Trained persons in climate change mitigation (early warning etc.) (number)		
	13.3c Number of awareness program at state level have integrated climate mitigation and adaptation		
	13.3d Number of awareness programmes at the sub-state level that have integrated climate mitigation and adaptation		

*AWD refers to Alternate Wetting and Drying, which is a water-saving technology.

Appendix 5.4.3

Schemes for SDG 13: Climate Action

Target	Central Government	State Government
13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters	National Action Plan on Climate Change included in which – National Solar Mission. National Mission for Enhanced Energy Efficiency. National Mission on Sustainable Habitats. National Water Mission. National Mission for Sustaining the Himalayan Ecosystem. National Mission for a Green India. National Mission for Sustainable Agriculture. National Mission for Strategic Knowledge on Climate Change	Hamara Ped, Hamara Dhan Multi-purpose plantation and conservation of forest
13.2 Integrate climate change measures into national policies, strategies and planning		
13.3 Strengthen education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning		

Appendix 5.5.1

Vision for Targets under SDG 15: Life on Land

Targets for SDG 15	Vision 2030 for Targets
15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	An extra 2% forest cover would be attained by 2030. Some part of the moderately dense forest will be turned into dense forest, and some part of the open forest will be converted into moderately dense forest. Afforestation (including all types of plantations) is to reach 224,000 hectare by 2030. The number of soil and water conservation works will increase to 7000 by 2030. The area covered under pits and ponds (Chal-khal) will increase to 3500 ha by 2030. The number of watersheds that have undergone adaptation practices for soil and water management is envisioned to double by 50% till 2030
15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	
15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world	
15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development	The share of mountain eco-systems covered by protected areas will be maintained at 20% The number of tigers is slated to increase to 390 by 2030 There will be escalation of measures to prevent the extinction of threatened species.
15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	
15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed	

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15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products	Curb poaching over the coming years, such that it stops altogether
15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species	
15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts	The conservation plans for tigers, elephants and snow leopards will continue for the 15-year period. For the development of eco-tourism, the number of awareness centres, information centres and picnic spots etc. will increase, as will the number of Van Chetna Kendras and infrastructural facilities.

Appendix 5.5.2

Targets and Indicators for SDG 15: Life on Land

		Baseline 2016-17	Vision 2030
Target 15.1	***By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and dry lands, in line with obligations under international agreements***		
Conservation and Restoration of Forest	15.1 a Total land area covered by dense forest against total forest cover (%)	34	35.5
	15.1 b Total land area covered by bushes /scrub (%)	0.006	0.006
	15.1 c Forest under community based management (as% of total forest area)(Van Panchayat)	40%	40%
	15.1d Conservation areas (including Forest)(in proportion to total land area)	71%	71%
	15.1 e Conservation of lakes, wetlands and ponds (No)	-	-
	15.1 g afforestation (ha)(Including all type of plantation departmental & Mass planting)	18251	224000
	15.1 i Soil &Water conservation works (Number)	45	7000
Conservation & Restoration of Water Bodies	15.1 j Number of river and riverlets covered	11	11
	15.1 k Afforestation for rivers and riverlets (Ha)	1000	29302
	15.1 l Number of lakes taken up for treatment	-	-
	15.1 m Afforestation for lakes (Ha)	-	-
	15.1 n Number of contour trenches, chal-khals (pits and ponds) Constructed	1020	14000
	15.1 o Area covered under pits and ponds (Chal-khal)	215	3500
	15.1 p Soil and Moisture Conservation	-	6196.85
	15.1 q Maintenance of Herbal Garden (number)	4	4
	15.1 r Protection of Bugyals	LS	15
	15.s River front development (ha)	-	442.78
	15.t Bio-remediation and Bio-filtration (Ha)	-	240
	15 u Institutional/Industrial Plantation (ha)	-	290
	15.v Ganga Van (Eco Park Development) (ha)	-	379.8
	15.w Riparian Wildlife Management (ha)	-	1620
	15.x Brick construction/Tree guard Plantation(ha)		150

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Appendix 5.5.2 Contd...

Target 15.2	***By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and increase afforestation and reforestation***		
Afforestation and Reforestation			
15.2 a Rate of forest loss and degradation (%)		-	-
15.2 b Handover of forest to leasehold forest groups (000 ha)		-	-
15.2 c Additional plantation (Ha) per annum		-	-
15.2 d Growing of seedlings (Lakh seedlings)		268	3780
15.2 e Percentage change in forest cover		-1.1	2
15.2 f Number of plants raised for schools (lakh seedlings)		5.03	70
15.2 g Total tree covered achieved outside forest area (sq. km)		752	850
15.2 h Total area covered under different afforestation schemes (Ha)		305248	529248
Target 15.3	***By 2020, combat desertification, restore degraded land and soil, including land affected by desertification, drought and foods, and strive to achieve a land-degradation-neutral world***		
Combat desertification, restore degraded land and soil			
15.3a Identification and management of watersheds (number)		286 MWS are being treated (ongoing)	1.Treatment of 286 MWS will continue till 2021-22 2. Project proposal for 176 MWS will be prepared for financing 3. Approved projects under EAPs and CSS for 176 MWS will be implemented
15.3b Conservation of watersheds (number)		286	462
15.3c Reclaim flooded and other degraded land (in 000 ha)		1.0	8.0
15.3d Number of watersheds undergone adaptation practices for soil and water stress management		82	462
15.3e Conservation of rivulets and rive banks through bioengineering (km)		26.45	75.00
15.3f Increase tree/forest cover in degraded area (Hectare)		2481	5200
Target 15.4	***By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development***		
conservation of mountain ecosystems, including their biodiversity			
15.4a Potentially dangerous glacial lakes (%)			
15.4b Mountain ecosystems covered by the protected areas (%)		20%	20%
15.4c Restoration of water bodies/streams in mountain areas			
15.4 d Improvement of local livelihood (increase in (%)(Livelihood will be generated indirectly not through department)		-	0.5% of total population
15.4 e Increase in per capita income of mountain dwellers		0	0

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Appendix 5.5.2 Contd...

Target 15.5	***Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species***		
Prevent the extinction of threatened species			
15.5a Threatened flora (medicinal and aromatic plants) (%)			
15.5b Threatened fauna (mammals, birds, reptiles, amphibians, fishes, insects, platyhelminths, molluscs, etc.) (%)			
15.5 c Wild tigers (number)		340	390
15.5 d Blackbucks(number)		-	-
15.5 e Red list Index		-	-
15.5 f Number of endangered species			
15.5 g Construction of water holes (numbers)		49	840
15.5 h Removal of lantana (ha)		1640	28000
15.5 i Patrolling for protection (Number)		513	7000
15.5 j Maintenance of fire lines (Km)		49524	49524
15.5 k Control burning (Ha)		159993	160000
15.5 l Fire watcher (number)		7251	8000
15.5 m Strengthening of check posts (number)		36	36
15.5 n Construction/maintenance of Boundary Pillars (Number)		895	14000
15.5 o Creation of large water bodies for elephant		2	56
Target 15.6	***Ensure fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources***		
15.6a Poaching of tigers and other wild life prevented to curb the wildlife			
15.6b Community led anti-poaching units mobilized (number)			
Target 15.7	***Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both the demand and supply sides of illegal wildlife products***		
Poaching and Trafficking of wild life and endangered species of flora & fauna	15.7a Number of poaching cases prevented to curb the wildlife trafficking	33	
	15.7b Community led anti-poaching units mobilized (number)	-	14
	15.7c Number of detection and prevention of traded wildlife that was poached or illicitly trafficked		
Target 15.8	***By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species***		
Target 15.9	***By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts***		
15.9a Plant (floral) species under conservation plans (number)			
15.9b Animal (faunal) species under conservation plans (number)		03(Tiger, Elephant & Snow Leopard)	03(Tiger, Elephant & Snow Leopard)

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15.9e Total direct/indirect budgetary allocation under the biodiversity programmes over the total budget		
15.9 h1 Ecotourism-- Development of awareness center, information center/ Picnic spots	3	60
15.9 h2 Ecotourism-- Maintenance of Zoos	3	3
15. h3 Ecotourism-- Strengthening of FRH	1	175
15. h4 Ecotourism-- Maintenance of Van Chetna Kendra	9	20
15. h5 Ecotourism-- Construction of Zoos (Number)	2	3
15.9 i1 Infrastructure--Strengthening of Forest Roads (Km)	17 roads	1750
15. 9 i2 Infrastructure--Maintenance of Forest Roads (Km)	487	3000
15. 9 i3 Infrastructure-- Maintenance of Bridle Paths (Km)	LS	8400
15. 9 i4 Infrastructure-- Construction of Buildings (Number)	2 Part	560
15. 9 i5 Infrastructure-- Maintenance of Buildings (number)	49	5600
15. 9 i6 Infrastructure-- Construction/Maintenance of Pul/Pulias (Number)	-	280

Appendix 5.5.3

Schemes for SDG 15: Life on Land

Targets	Centrally Sponsored Schemes	Direct Intervention Schemes
Target 15.1	National Afforestation Programme (National Mission for Green India)	Strengthening of Van Panchayats
Target 15.2	Integrated Development of Wildlife Habitats	Eco-task Force
Target 15.3	Project Tiger	Multi-purpose Plantation
Target 15.4	Development of Wildlife Habitat (State Sector)	
Target 15.5	Compensatory Afforestation	
Target 15.6	Eco-sensitive Zone Marking	
Target 15.7	Protected Area (Parks, Sanctuaries, Conservation reserves, etc.)	
Target 15.8	Establishment of Wildlife Board	

Chapter 6

Resource Mobilisation

Introduction

The SDGs for the state cannot be realised without considering the current status of financial resources and future investment potential. The SDG 17 has identified 19 targets for "Strengthening the means of implementation and revitalize the global partnership for sustainable development". All these targets are dependent on country level applicability rather than state level policy. Recently the Centre–state fiscal relationship in India went through major restructuring with greater devolution of financial power as well as the shifting of some major responsibilities to the states. The Goods and Services Tax (GST) has become a law that will have a major impact on state revenue. It will be difficult to set financial targets as long as the implications of all these changes are not fully realised.

However, some common and reliable indicators may be identified to show the prospects of resource mobilisation in future. These are:

a) Tax collection as a percentage of GSDP;

b) Tax collection efficiency;

c) Fiscal and revenue deficit as a percentage of GSDP;

d) Total liability as a percentage of GSDP;

e) Credit–Deposit Ratio; and

f) Successful utilisation of grants.

A review of state budgets will be helpful in realising how and to what extent these indicators can be used in order to achieve the target of resource mobilisation in future.

General Review of the Economy

The driving sectors of the state at present are agro-processing and horticulture, tourism, hydro-power, IT, bio-technology, and micro, small and medium industries in which the state enjoys a comparative advantage. The future growth drivers to focus on will be horticulture, including hill agriculture, medicinal and aromatic plants, tourism and small hydro-power, while the IT sector is envisioned to act as an enabler for the entire economy. The MSME sector is a cross-cutting sector through all the above in terms of job creation and is the main sector for providing employment.

As the preceding chapters have shown, Uttarakhand has performed well with respect to many of the social indicators such as the education and health sectors. All the indicators point towards the development of qualitatively better human capital. However, the state faces a severe crisis in the availability of drinking water, unrestricted construction, and treatment of waste management, among other areas. There are certain sectors where the gap between targets and achievements is very high. State expenditure needs to be prioritised and diverted to those sectors as per the estimated gaps between the targets and achievement, thereby leading to the requirement of financial resources. Once the resource requirements are estimated, efforts need to be directed towards resource generation and exploration of possible sources of finance.

It was seen in Chapter 1 that the state's Gross State Domestic Income (GSDP) has shown an impressive growth rate of around 7 per cent during the period 2011-12 to 2017-18, with the exception of 2014-15. The current and capital expenditure are increasing significantly, indicating the growth of physical assets of the state (Table 6.1). The credit–deposit ratio of the state has remained almost steady, except in 2013-14 when the devastating floods created havoc in the economic scenario. More than half of the bank deposits are invested in the state, reflecting the positive business environment.

The share of major sectors in the GSDP has remained almost the same during the last five years. The tertiary sector, including education and medical services, contribute more than one third of the total state income, while the agricultural sector contributes a little over 11 per cent. Despite being largely rural, income from the agricultural sector has remained the same. Modernisation of agriculture may increase its share, to some extent, but much resource generation from this sector is highly improbable.

The number of small and medium industries has have increased significantly in the state. Their contribution has been pegged to more than half of the GSDP during last five years. With an increase in production in this sector, there seem to be many untapped resources to be explored in terms of taxes and domestic loans. Agro-processing industries can contribute to the exchequer with proper diversification of investment.

Table 6.1 Revenue and Capital Expenditure in Uttarakhand during 2011-12 to 2015-16

Components	2011-12	2012-13	2013-14	2014-15	2015-16	AGCR
Revenue Expenditure (Rs. Lakh)	1297500	13960 22	16216 41	2088436	23086 44	12.21
Capital Expenditure (Rs. Lakh)	448820	530204	587213	631406	649734	7.68

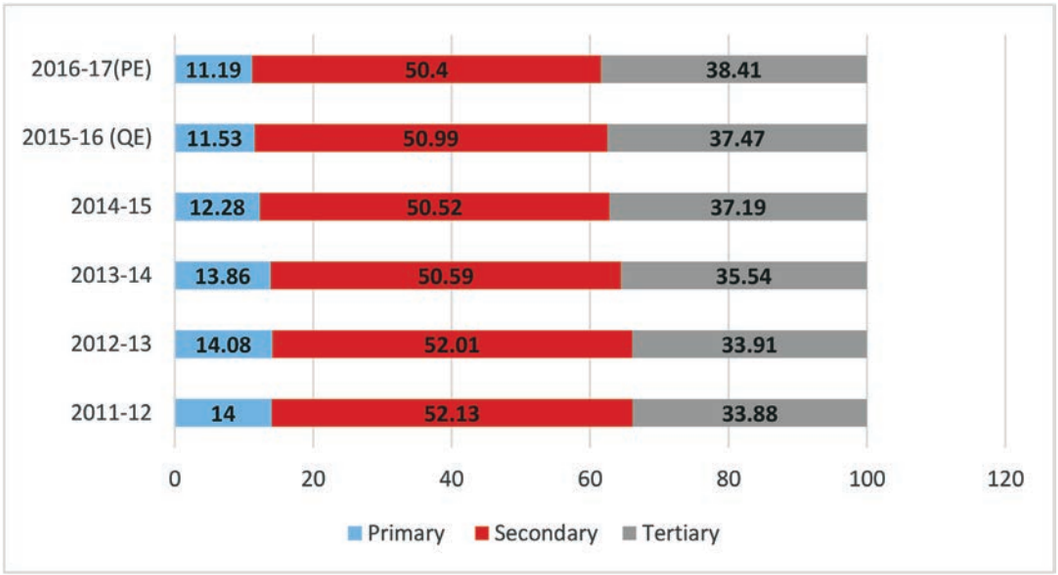
Source: Government of Uttarakhand data and Uttarakhand at a Glance for different years.

The sectoral shares in the state economy show that the primary and secondary sectors are slowly losing their shares in the GSDP, while that of tertiary sector is increasing (Figure 6.1). The primary sector, already at a low level, is losing its share faster than the secondary sector. Even as the secondary sector, dominated by manufacturing, contributes around half of the GSDP, the contribution of the tertiary sector may grow to catch up with the secondary sector. It reflects the growing strength of the state economy, which is showing familiar signs of development. Apart from being an educational hub, the state has an enormous potential in IT-related services and digitisation. The high standard of educational institutions can be instrumental in providing and spreading training in computers, the Internet and other related services in rural areas in order to facilitate an improvement in production quality, disbursement of loans, and the creation of marketing facilities for small producers through improved connectivity. The state must seize the opportunities provided by the Central Government through the 'Digital India' and 'Skill India' initiatives.

The State of Finance

The revenue receipts of the state have been increasing significantly between 2011-12 and 2015-16 (Table 6.2). Taxes and grants from the Central Government account for around 90 per cent of the total revenue of the state. The share of taxes in the total revenue has increased by more than 8 per cent over the years, while the share of Central grant declined from around 30 to 25 per cent. The state's own tax revenue has shown a growth rate of more than 10 per cent though its share in the total taxes has increased by around 3 per cent. Its share in Central taxes grew by more than its own tax revenue. Non-tax revenue, which constitutes 35 to 40 per cent of the total revenue receipts, has shown a low growth rate of less than 5 per cent. The state's own non-tax revenue has grown at a rate of as low as 1.43 per cent, while revenue grants, constituting a significant proportion of the non-tax revenue, have recorded a much higher growth rate. This indicates increasing dependence of the state on Central funds, thereby implying declining financial independence. The state should concentrate on increasing its own revenue base.

Figure 6.1 Sectoral share (%) in Gross Value Added in Uttarakhand (at current prices)



Source: Government of Uttarakhand

On the other hand, domestic borrowing of the state has experienced a quantum jump from around 14 to 32 per cent. This results in the diversion of a significant proportion of the expenditure towards debt servicing and reducing the share of building capital assets or social services.

Property receipts have shown increasing growth rate, though its share in total revenue is less than 3 per cent. It signifies that state must explore the possibility of generating more remunerable public properties as an important instrument of resource generation in future.

Borrowing at home is increasing at the rate of around 14 per cent annually, while loans from central government, though, very small in percentage, is growing at the rate of 19.84 per cent annually. A positive aspect of finance is that recovery of loans and advances is growing at nearly 20 per cent annually, though again, it is not significant in over-all budgetary receipts.

Another significant development in the revenue account is decreasing percentage of suspense and miscellaneous component. It has been reduced to almost half, indicating improved financial and fiscal administration. Remittance receipt is showing increasing tendency with positive impact on the economy.

The growth of revenue expenditure has been higher than that of revenue receipts during the last five years. Interest payments and pension constitute around 25 per cent of the total revenue expenditure. The share of interest payments has remained the same, on an average, while the share of pension is increasing slowly, indicating the growing dependency ratio in the economy. The growth rate of pensions is the highest among all the components of expenditure. The capital expenditure is growing moderately. The value of the loans and advances taken by the government is much more than that of the loans given. The revenue expenditure is growing much faster than the capital expenditure, signifying that the growth of capital assets is much lower than that of administrative expenses.

The analysis of expenditure in the state budgets shows that a significant proportion, that is, more than one-third of the total expenditure, has been allocated for the education sector as it is an important destination for educational tourism.

The state allocates the maximum proportion of expenditure for the compensation of employees, that is, salary and other administrative expenses. During the last three years, this expenditure has increased from 12 to 24 per cent. Construction expenditure is the next significant area, showing an increase from 4 to 12 per cent. However, capital transfer is very low, that is, less than 2 per cent, indicating that there is hardly any revenue surplus to be transferred to capital account. The state spends very little (0.1 per cent) towards interest payment to Central Government loans though other interest payments are pegged at around 7 per cent.

Capital formation in the state is primarily in the form of physical capital rather than financial capital. Naturally, a major component of annual expenditure is directed towards construction activities.

It is disturbing to note that that the allocation of expenditure amounts towards the major social sectors like education, health, energy, water supply and transport are decreasing as percentages of the total expenditure though there is a considerable gap between the targets and achievement in each of these sectors. In agriculture and transport, the growth rate of expenditure is also very low. In the energy sector, the growth rate is negative. In education, the percentage of expenditure has declined from 31.09 per cent to 19.62 per cent (Table 6.4).

The important components in the 'Others' category include general administration, public safety, housing and community amenities, cultural activities, relief and calamities, trade promotion, and cooperative promotion activities. The combined expenditure has been increasing significantly as a percentage of the total expenditure and has also been showing the highest growth rate. It seems that the Plan expenditure needs to be realigned to match the gaps between the targets and achievement in the various SDG components.

Resource Mobilisation

Resource mobilisation can be achieved in two parts: (i) Efficient use of existing resources and (2) Generation of new resources.

The major sources of revenue may be classified as follows:

1. Tax revenue
2. Non-–tax revenue

Table 6.2: Distribution of Total Budgetary Receipts during 2011-12 to 2015-16 (Rs. Lakh)

Major Items	2011-12	2012-13	2013-14	2014-15	2015-16	AGCR
A) Revenue Receipts	13,69,141 (100)	15,74,721 (100)	17,32,053 (100)	2,024,624 (100)	21,23,443 (100)	17.14
1. Taxes	8,48,166	9,68,712	10,92,873	12,13,080	14,71,098	15.36
Percentage of (A)	61.95	61.52	63.1	59.92	69.28	
1a.State's Own Tax Revenue	5,61,556	6,41,424	7,35,534	8,33,850	9,37,779	10.80
Percentage of (A)	41.02	40.73	42.47	41.19	44.16	
1b. Share in Central taxes	2,86,610	3,27,288	3,57,338	3,79,230	5,33,319	13.22
Percentage of (A)	20.93	20.78	20.63	18.73	25.16	
2. Non Tax Revenue	5,20,975	6,06,009	6,39,181	8,11,544	6,52,345	4.60
Percentage of (A)	38.05	38.48	36.90	40.08	30.72	
2a. State's Own Non-Tax Revenue	1,13,606	1,60,288	1,31,654	1,11,044	1,21,966	1.43
Percentage of (A)	8.30	10.18	7.60	5.48	5.74	
2b. Revenue Grant from GOI	4,07,369	4,45,721	5,07,527	7,00,500	5,30,379	5.42
Percentage of (A)	29.75	28.30	29.30	34.6	25.00	
Total (A)	13,69,141	15,74,721	17,32,053	20,24,624	21,23,443	9.17
Percentage	100	100	100	100	100	
B. Loans, Advances and others (Rs. Lakh)	3147611	1868641 -	5232797 -	2126809 -	2332773 -	7.22
	-100	-100	-100	-100	-100	
1. Borrowing at home	446983	573368	531669	593594	739207	13.4
Percentage of (B)	14.2	30.68	10.16	27.91	31.69	
2. Loans from GOI	4640	5000	3496	5000	9000	18.01
Percentage of (B)	0.15	0.27	0.07	0.24	0.39	
3. Recovery of loans and Advances	9057	36810	5523	4570	3739	19.84
Percentage of (B)	0.29	1.97	0.11	0.21	0.16	
4. Suspense and Miscel-laneous	2031239	906007	3814245	906005	924533	17.86
Percentage of (B)	64.53	48.48	72.89	42.6	39.63	
5. Remittance	304966	271600	481669	280111	309956	0.41
Percentage of (B)	9.69	14.53	9.2	13.17	13.29	
6. Others	350726	75856	396195	337529	346338	
Percentage of (B)	11.14	4.06	7.57	15.87	14.85	
7. Subtotal (B)	3147611	1868641	5232797	2126809	2332773	7.22

Total (A+B)	4516752	3443362	6964850	4151433	4456216	2.11
Revenue Receipts (A)	1369141	1574721	17 32053	2024624	2123443	17.14
Percentage of (A+B)	30.31	45.73	24.86	48.77	47.65	
Loans, Advances, Others (B)	3147611	1868641	5232797	2126809	2332773	7.22
Percentage of (A+B)	69.69	54.27	75.14	51.23	52.35	

Source: Analysis of State Government Budgets of Uttarakhand for different years, Directorate of Economics and Statistics, Government of Uttarakhand

Figure 6.2: Distribution of Total Budgetary Receipts 2011-16 (Rs. Lakh)

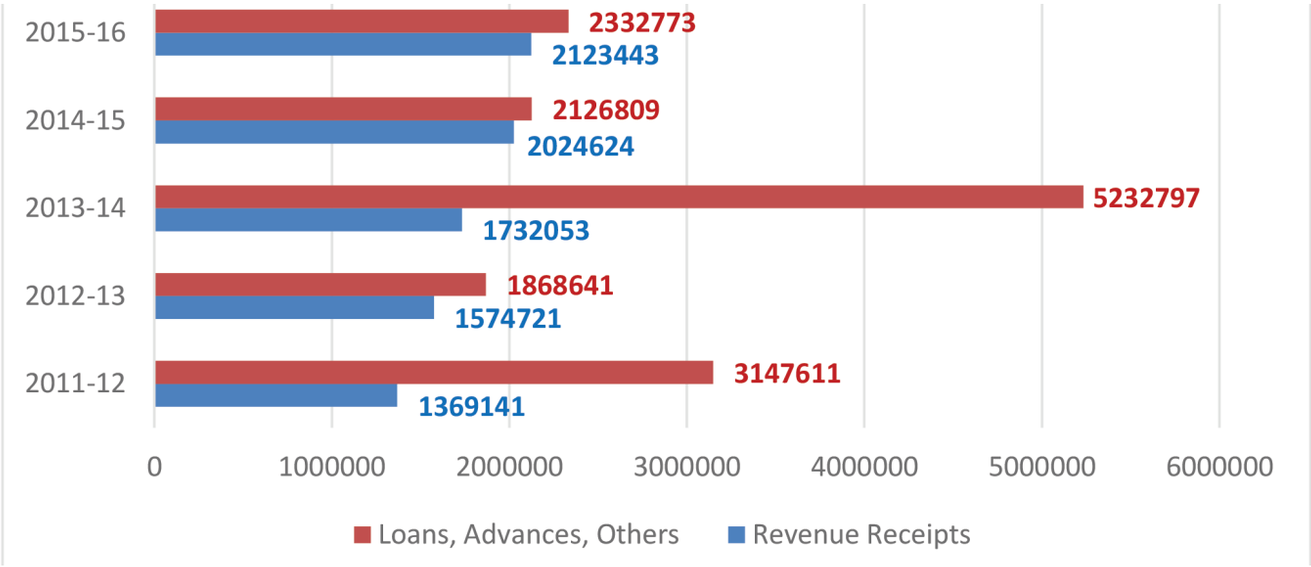


Table 6.3: Distribution of Total Budgetary Expenditure during 2011-12 to 2015-16 (Rs. Lakh)

Major Items	2011-12	2012-13	2013-14	2014-15	2015-16	AGCR
A. Revenue Expenditure	12,97,532 (100)	13,96,022 (100)	16,21,641 (100)	20,88,436 (100)	23,08,644 (100)	12.21
1. Interest Payments	1,76,921	2,08,873	2,05,604	2,40,561	3,02,111	11.29
Percentage of (A)	13.63	14.96	12.68	11.52	13.09	
2. Pensions	1,13,510	1,36,568	2,13,064	2,45,191	2,62,782	18.28
Percentage of (A)	8.75	9.78	13.15	11.74	11.38	
3. Others	10,07,101	10,50,584	12,02,973	16,02,684	17,43,751	11.60
Percentage of (A)	77.62	75.25	74.18	76.74	75.53	
B. Capital Expenditure	4,48,820 (100)	5,30,204 (100)	5,87,213 (100)	6,31,406 (100)	6,49,734 (100)	7.68
1. Capital Outlay	2,31,731	3,54,210	3,71,202	4,93,905	4,21,730	12.72
Percentage of (B)	51.63	66.81	63.21	78.22	64.91	
2. Loans and Advances	24,684	27,257	67,799	30,097	8314	-19.56
Percentage of (B)	5.50	5,14	11.54	4.77	1.28	
3. Others	1,92,405	1,48,737	1,48,212	1,07,404	2,19,690	2.69
Percentage of (B)	42.87	28.05	25.24	17.01	33.81	

C. Total Expenditure	17,46,352 (100)	19,26,226 (100)	22,08,854 (100)	27,19,842 (100)	29,58,378 (100)	11.12
1. Revenue Expenditure	12,97,532	13,96,022	16,21,6 41	20,88,436	23,08,644	12.21
Percentage of (C)	74.30	72.47	73.42	76.79	78.04	
2. Capital Expenditure	4,48,820	5,30,204	5,87,213	631406	6,49,734	7.68
Percentage of (C)	25.70	27.53	26.58	23.21	21.96	

Source: Analysis of State Government Budgets of Uttarakhand for different years, Directorate of Economics and Statistics, Government of Uttarakhand.

Figure 6.3: Distribution of Budgetary Expenditure during 2011-16 (Rs. Lakh)

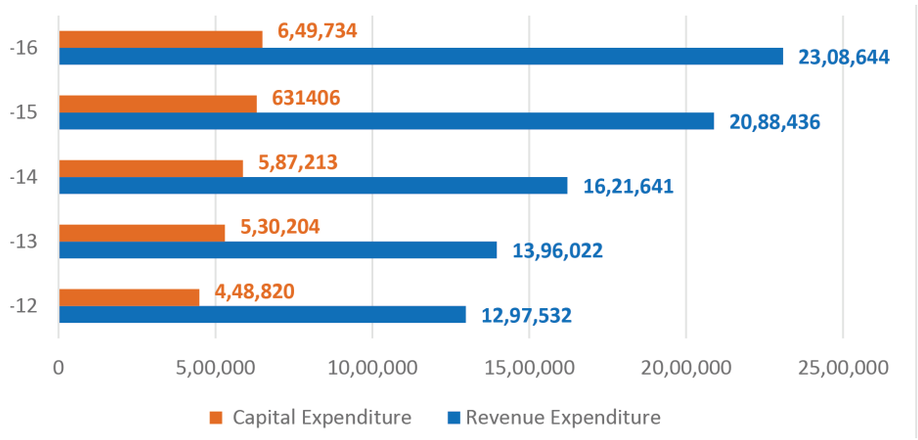


Table 6.4: Share of Budget Expenditures on Major Heads during 2011-12 to 2015-16 (Rs. Lakh)

Components	2011-12	2012-13	2013-14	2014-15	2015-16	CAGR (%)
Education	3,91,251	4,22,562	5,29,630	6,65,674	7,10,928	16.10
Percentage	31.09	25.96	21.15	27.52	19.62	
Health	73,292	8365	1,08,623	1,90,858	1,70,825	23.56
Percentage	5.82	0.51	4.34	7.89	4.71	
Agriculture	1,31,609	1,36,454	9588	6695	1,32,720	0.21
Percentage	10.46	8.38	0.38	0.28	3.66	
Energy	26,560	1,03,650	29,172	46,915	23,674	-2.83
Percentage	2.11	6.37	1.16	1.94	0.65	
Water Supply	24,634	36,997	51,696	51,300	44,673	16.05
Percentage	1.96	2.27	2.06	2.12	1.23	
Transport	1,06,381	1,11,330	1,23,684	1,84,616	1,21,712	3.42
Percentage	8.45	6.84	4.94	7.63	3.36	
Others	5,04,722	8,08,628	16,54,144	12,73,068	24,19,126	47.96
Percentage	40.11	49.67	66.05	52.63	66.76	
Total	17,46,352	19,26,226	22,08,854	27,19,842	29,58,378	30.27
	100.00	100.00	100.00	100.00	100.00	

Source: Analysis of State Government Budgets of Uttarakhand for different years, Directorate of Economics and Statistics, Government of Uttarakhand.
Note: Budget expenditure consists of both revenue and capital expenditure.

3. Grants in aid
4. Recovery of loans and advances
5. Public debt
6. Small savings
7. Deposits and advances
8. Remittances
9. Reserve and sinking fund
10. Suspense and cash balance

Similarly, the expenditure can be classified as follows::

1. Interest payments and servicing of debt
2. Pension payments
3. Salaries
4. Grants and subsidies
5. Social services
6. Economic services
7. Compensation and assignment to local bodies
8. Capital expenditure
9. Loans and advances
10. Public debt

A major indicator of prudence in fiscal management is the status of deficits. There are three types of deficits that merit attention. These are defined as follows:

Revenue deficit = Revenue Expenditure – Revenue Receipt

Fiscal Deficit = (Total Expenditure – Repayment of Loan) – (Total Receipt – Loan Taken)

Primary Deficit = Revenue Deficit – Interest Payment

The fiscal gap indicates how the gap will be financed by borrowing. Ideally, the borrowings should be invested in capital projects. The Government of Uttarakhand enacted the Fiscal Responsibility and Budget Management (FRBM) Act in 2005, and set a target of eliminating revenue deficit by 2015. However, the revenue deficit still continues, though at less than one per cent of the GSDP. The fiscal deficit was 3.29 per cent of the GSDP as per 2015-16 data. Both these deficits are well within the limits specified by the FRBM Act but the fiscal deficit is significantly high as a percentage of the total expenditure, at around 20 per cent.

The trend of fiscal deficit was also increasing slowly except in 2015-16, though it is well within limits. The trend of revenue surplus was fluctuating during the period 2011-12 to 2013-14, but during the last two years, it has been in deficit. The primary deficit is also very low but the outstanding liability at the end of the year is quite significant and is increasing continuously. It shows increasing dependence on borrowing as the state finds it difficult to raise adequate internal revenue to finance its growing expenditure. Table 6.6 clarifies this point further.

Capital outlay is defined as follows: Capital Outlay = Capital Expenditure – (Loans and Advance + Repayment of Loans). Borrowed fund needs to be fully utilised for creating capital assets. But this does not happen consistently. Most of the time, borrowed funds are diverted to other areas, thereby weakening financial management and the confidence of getting future loans. Among the last five years, borrowed funds could not be used for creating capital assets for three years (Table 6.6). In the last year, only a little more than 60 per cent of the borrowed funds could be utilised. This is an area of concern, indicating that the construction of capital assets is seriously lagging behind the growing demand, thereby slowing down the pace of growth.

Ways and Means Advances - The state has maintained a good record in utilising ways and means advances and has tried to reduce use of overdrafts.

The efficiency of tax collection is one major indicator of tax administration. The state fares well in this field. Tax efficiency is measured by the tax collected as a percentage of the tax demand or tax projection. It may also be measured as a ratio between the tax collected and the cost of tax collection. During the last five years, the cost of tax collection varied between 21 per cent and 27 per cent of the property tax, indicating a huge scope of revenue augmentation in this area. It was 1 to 3 per cent related to the tax collection of commodity and services. The state can boast of efficient tax administration.

Revenue expenditure, which is the expenditure incurred on the day-to-day running of the organization, is classified into general services (police, land revenue, justice, jail, pension, etc.), social services (education, health, water supply, etc.) and econom-

ic services (agriculture, rural development, energy, industry, transport, etc.). Capital expenditure is the expenditure incurred to create permanent assets, to enhance the utility of such assets or to reduce permanent liabilities.

During the years 2011-12 to 2015-16, there has been a shortfall of the actual expenditure against the budget estimates by 9 to 11 per cent. If the actual expenditure is less than the budget estimates, it may result in contraction of economic activities. Interest payments and debt servicing account for 13 to 15 per cent of the total revenue expenditure.

Savings from grants do not refer indicate positive development. They refer to the slow or non-implementation of schemes. The state has not been able to utilise 25 to 60 per cent of the grants in various schemes, mostly welfare related ones. In the area of economic services like energy, industry and labour, the savings were sometimes to the tune of 75 per cent, indicating a serious shortage of projects. These have led to slow growth of the economy not because of the shortage of funds but due to the lack of proper implementation (Table 6.7).

Committed expenditure to various sectors and various components reduces the flexibility for developmental spending. During 2011-12 to 2015-16, committed expenditure accounted for 61 to 64 per cent of the total revenue receipts. The proportion has declined in case of the total revenue expenditure from 64 per cent to 59 per cent. However, it shows that the state government could only exercise 35 to 40 per cent flexibility to direct the course of development.

Public debt has been constituting approximately the same percentage of GSDP for the last five years, ranging between 14 and 16 per cent, while the total liability also maintains a stable share, varying between 19 to 21 per cent of the GSDP during the same period, emphasizing a more or less uniform financial picture with the liabilities not being negatively skewed (Table 6.8).

Tables 6.9 and 6.10 present the expected budgetary allocations under different heads and the funds required to achieve the SDGs at different points of time. The estimates for fund requirements have been prepared by the concerned departments. These are presented in Appendix 6.1.

The expected budgetary allocations have been calculated on the basis of current trends as reflected in the state for the last five years. The comparative analysis shows that there are serious shortages of fund in departments like education, drinking water and sanitation, electricity and irrigation. The departments have estimated that the budgets will be sanctioned as per requirements, but the current trends do not reflect this optimism.

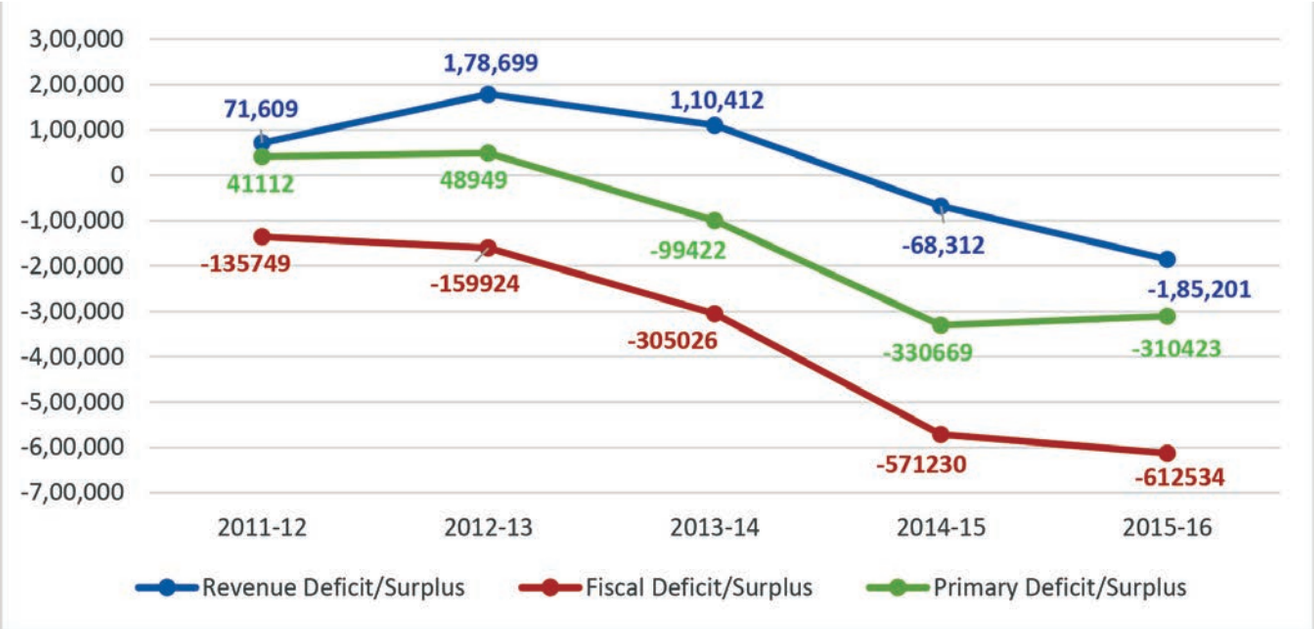
It requires vigorous efforts to increase state revenue to raise the required resources. The state should seriously look into tax administration and management, public–private participation and domestic borrowings to fill the financial gap. The 14th Finance Commission has

Table 6.5: Trend of Budgetary Surplus (+)/Deficit (-) during 2011-12 to 2015-16 (Rs. Lakh)

Component	2011-12	2012-13	2013-14	2014-15	2015-16
Revenue Deficit/ Surplus	71,609 (00.61)	1,78,699 (01.34)	1,10,412 (00.73)	-68,312 (00.41)	-1,85,201 (00.99)
Fiscal Deficit/Surplus	-1,35,749 (01.16)	-1,59,924 (01.20)	-3,05,026 (02.23)	-5,71,230 (03.46)	-6,12,534 (03.29)
Primary Deficit/Surplus	41,112 (00.35)	48,949 (00.36)	-99,422 (00.66)	-3,30,669 (02.00)	-3,10,423 (01.67)
Total Outstanding Liability at the end of the year	21,75,300 (18.72)	25,54,000 (19.21)	2876700 (19.19)	32,88,800 (19.94)	38,46,000 (20.70)
GSDP at current prices	1,16,16,500	1,32,91,900	1,49,87,300	1,64,93,100	1,85,75,300

Source: Government of Uttarakhand

Figure 6.4: Budgetary Surplus/Deficit during 2011-16 (Rs. Lakh)



effectively reduced the share of the state in the Central pool as compared to the 13th Finance Commission. The state should thus urgently concentrate on resource mobilisation in order to realize the SDGs within 2030. This should, however, be possible given the strong financial track records of the state.

It has been observed from the budgetary analysis that the gap between budgetary allocation and fund requirement is likely to increase during the 15-year slot as per current trends. Hence, it is advisable to translate developmental values into monetary returns. Land value is likely to increase consequent to an improvement in infrastructure. This must be converted into an increase in the tax base, rents and fees, wherever applicable. E-governance and E-commerce are likely to offer a huge potential for increasing the revenue base. All developmental activities should be properly documented to identify the potential areas of revenue generation. All central sources of funding should be tapped vigorously and utilised fully. At the same time, the state and local bodies should explore all possible ways of increasing revenue for re-investing continuously in order to achieve the SDGs fully.

Conclusion

The state is registering a high score on fiscal management. With high growth in the GSDP and per capita income, the economic potential of the state is quite promising. Low revenue as well as fiscal deficit indicate good fiscal management without the pressure of high inflation and an increasing loan burden. Sound financial records pave the way for more loans and grants, if desired. A good track record of loan repayment is very important for resource mobilisation through external assistance.

Table 6.6: Proportion of Borrowed Funds Spent on Capital Outlay

	Component	2011-12	2012-13	2013-14	2014-15	2015-16
1	Capital Outlay (Rs. Crore)	2317.00	3542.10	3712.02	4939.00	4217.00
2	Borrowed Fund (Rs. Crore)	3244.00	2983.00	4038.00	4754.00	6998.00
3	Percentage of (1) to (2)	71.42	118.74	91.92	103.89	60.26

Source: Calculated from Accounts at a Glance, 2015-16, Government of Uttarakhand.

Table 6.7: Non-Utilisation of Grants under Selected Components (Percentage)

Components	2011-12	2012-13	2013-14	2014-15	2015-16
Education and Culture	57.89	33.95	38.97	31.81	60.89
Labour and Employment	17.35	32.26	19.66	27.77	40.60
Energy	78.68	38.73	52.55	73.40	47.88
Industries	94.62	58.42	74.99	66.53	21.19
Tourism	40.60	74.41	61.06	67.08	40.18

Source: Compiled from Accounts at a Glance, 2015-16, Government of Uttarakhand.

However, the state should be more prudent in generating internal financial resources. A very low proportion of tax revenue to the GSDP indicates that the tax base needs to be widened and an increase in tax rates also may be considered with increasing per capita income.

Very low cost of tax collection indicates efficient tax administration. The scope of increase in both direct and indirect taxes needs to be explored.

Loans and advances form more than half of the revenue receipts while the recovery of loans does not account for even one per cent of the total revenue receipt. This situation needs to be explored more along with the prospects of increasing the non-tax revenue. Receipts from property are very low, and so are the proceeds from the sale of goods and services. The manufacturing and service sectors reflect strong growth potentials that need to be explored. However, infrastructural provisions in the productive sectors need a boost to facilitate the realisation of the revenue potential. There should be a distinction between productive and non-productive loans. The ratio of the former to the latter should be increased for investments to make more remunerative.

It has been observed that the allocation of resources among the different sectors has remained

Table 6.8: Financial Management Indicators for the State during 2011-12 to 2015-16

	Indicators	2011-12	2012-13	2013-14	2014-15	2015-16
1	Revenue Surplus as % of GSDP	0.61	1.34	0.73	(-)0.55	(-)0.99
2	Fiscal deficit as % of GSDP	(-)1.16	(-)1.20	(-)2. 03	(-) 3.46	(-)3.29
3	Tax Revenue as % GSDP	7	7	7	7	8
4	Own Tax Revenue as % of GSDP	5	5	5	5	5
5	Efficiency on Tax Collection (%)	2.77	2.59	2.60	4.02	4.32
6	Committed Expenditure as % of Total Revenue Receipts	61	59	61	61	64
7	Committed Expenditure as % of Total Revenue Expenditure	64	67	66	58	59
8	Total Liability as % of GSDP	20	19	19	20	21
9	Credit–Deposit Ratio	53	54	43	56	55

Source: Compiled from Accounts at a Glance, 2015-16 and Analysis of State Government Budgets, Uttarakhand.

Table 6.9: Funds Likely to be Available under the Budget Heads to Achieve Vision 2030 (Rs. Lakh)

S. No.	Components	3 Years (2017-20)	7 Years (2017-24)	15 Years (2017-30)
1	Agricultural and Allied Services*	176726.00	481737.00	1056869.00
2	Minor Irrigation	94703.00	113380.00	846113.01
3	Department of Labour	450.00	1000.00	2000.00
4	MSME and Industries	5425315.00	9832156.00	11223570.00
5	Ministry of Health	328375.33	1025371.56	3125798.72
6	Education	90234.00	167425.00	372584.00
7	Electricity	49809.00	72860.00	1042519.00
8	Drinking water and Sanitation	221133.00	923585.00	1828757.00
9	Slum Housing and Solid Waste Management	229156.38	832458.45	3058700.38
10	Public Works Department	838452.34	240325.00	502583.00
11	Rural Development	14572.00	39278.00	101256.78
12	Women Empowerment and Child Development	34293.84	43380.00	96113.01
13	Panchayati Raj	108224.54	485285.00	975286.00
14	Disaster Mitigation and Management	1025155.00	2345561.52	3925872.44
15	Civil Defense and Law and Order	49500.00	95702.00	145238.00

*Includes Agriculture, Horticulture, Animal Husbandry and Milk cooperatives.
Source: Uttarakhand government

almost stable though the gap between targets and achievements is not the same in every sector. The areas wherein these gaps are large need to be identified and the resources allocated accordingly, so that the state can progress towards the attainment of SDGs in a time-bound manner. The social sectors should receive more resources for raising the standard of human development. It would not be difficult to mobilise resources once the gaps are identified.

It is imperative to analyse the nature of suspense and miscellaneous accounts and reduce its impact on both revenue receipts and expenditure. In some years, the percentage has been more than half of the total revenue receipts. The savings from this head can be utilised more effectively.

It is necessary to utilise loans totally for creating capital assets. Any diversion of these loans does not reflect prudent financial management and creates uncertainty in the disbursement of loans in future. Detailed project planning with matching financial requirements should thus

be prepared. A clear and time-bound cash flow analysis is imperative for resource generation on a sustainable basis.

Similarly, if grants are not utilised within time frame and returned prematurely, it creates a hindrance for the sanctioning of grants in future and a reduction in allotments.

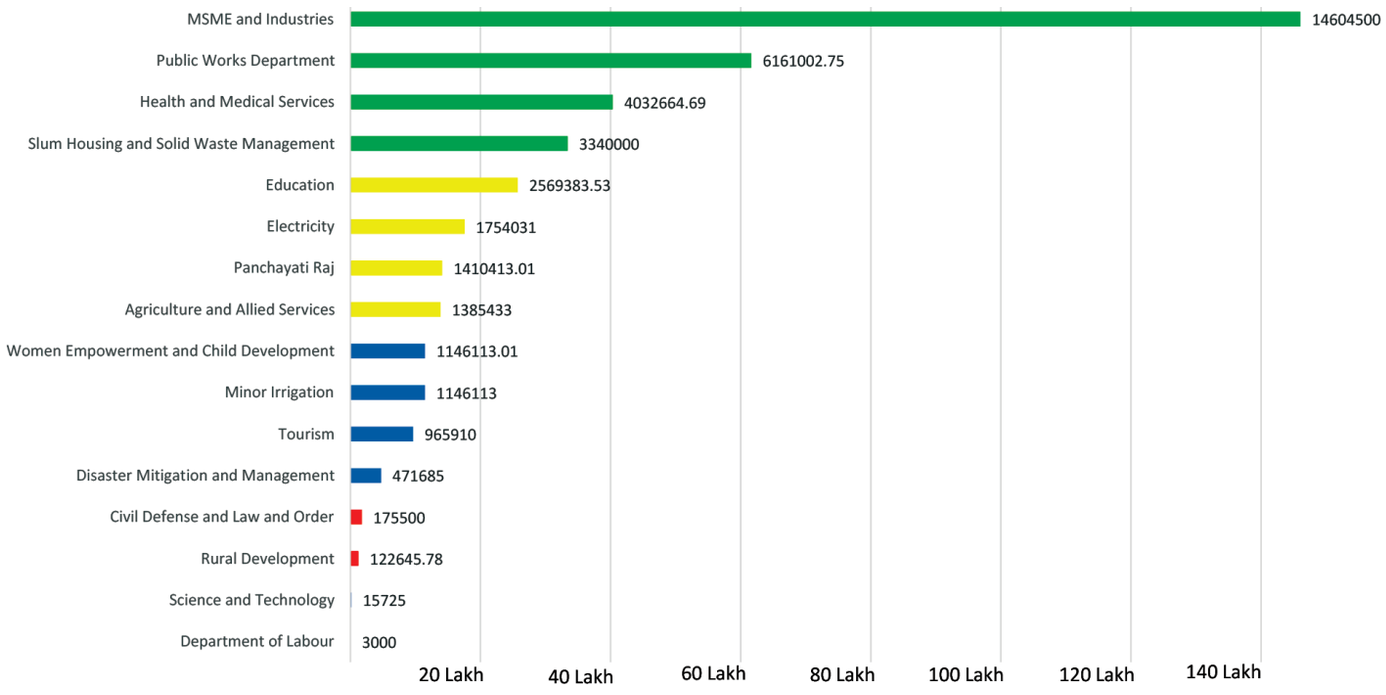
The state needs to be careful about tied or committed expenditure. If a significant proportion of the expenditure is tied to particular areas, then flexibility gets compromised and expenditure buoyancy is not fully realised. Administrative loopholes need to be plugged, and the leakage of supply chains needs to be looked into. Resources

Table 6.10: Funds Required under Various Heads to Achieve Vision 2030 (Rs. Lakh)

S. No.	Components	3 Years (2017-20)	7 Years (2017-24)	15 Years (2017-30)
1	Agriculture and Allied Services*	213092.00	538592.00	1385433.00
2	Minor Irrigation	154703.00	443383.00	1146113.00
3	Department of Labour	550.00	1500.00	3000.00
4	MSME and Industries	6443600.00	10441200.00	14604500.00
5	Health and Medical Services	358428.55	1373451.96	4032664.69
6	Education	1893511.11	2196402.40	2569383.53
7	Electricity	669572.00	1113659.00	1754031.00
8	Science and Technology	7960.00	9820.00	15725.00
9	Tourism	56930.00	576038.00	965910.00
10	Drinking Water and Sanitation	426486.00	1138415.00	NA
11	Slum Housing and Solid Waste Management	238600.00	1140000.00	3340000.00
12	Women Empowerment and Child Development	134293.04	443380.00	1146113.01
13	Public Works Department	960732.00	2808850.00	6161002.75
14	Rural Development	20395.76	50587.06	122645.78
15	Panchayati Raj	189772.11	545223.78	1410413.1
16	Disaster Mitigation and Management	1239107.00	2609607.00	471685.00
17	Civil Defense and Law and Order	52500.00	110500.00	175500.00

*Includes Agriculture, Horticulture, Animal Husbandry and Milk cooperatives.
Source: Uttarakhand government

Figure 6.5: Funds Required under Various Heads to Achieve Vision 2030 (Rs. Lakh)



need to be utilised for the creation and maintenance of assets to ensure zero wastage of capital.

With the major financial indicators reflecting very positive values, resource mobilisation should not be a problem for the state. It should tap all the Central as well as external funds to augment its own resources for achieving the SDGs in a time-bound manner.

The financial requirements of some major departments have been compiled in the Annexure. It is evident that the gap in budgetary provision and actual requirement ranges from 20 to 60 per cent. It is thus time to focus on need-based funding and to prioritise expenditure. The state does not suffer a huge shortage of funds but proper financial administration is the need of the hour.

Appendix 6.1 Financial Resources Required for Various Sectors during 2017-2030 (Rs. Lakh)

1 Health

1.1 Ministry of AYUSH

S.no	Components	3 years (2017-2020)	7 years (2017-2024)	15 Years (2017- 2030)
1	Construction of hospitals/dispensaries	1980.00	3120.00	7780.00
2	AYUSH village	770.00	1100.00	1100.00
3	College	8000.00	4510.00	
4	Training Centres	46.00	62.00	58.00
5	R & D	400.00	600.00	405.00
6	Awareness Programme	340.00	50.00	85.00
	Total	11536.00	9442.00	9428.00
	Source of Fund			
1	Fund required	12276.00	9442.00	9428.00
2	Budgetary Provision	12000.00	14000.00	9428.00
2.1	Central Schemes	12000.00	14000.00	9428.00
2.2	State Schemes			

1.2. Allopathic

S. No.	Components	3 years	7 years	15 years
1	State Sector	292180.97	837453.95	2470569.02
2	Central Sector	143991.58	412709.96	1216966.89
3	EAP	39720.00	113846.05	335700.78
	Total	346892.55	1364009.96	4023236.69

2. Department of Labour

S. no.	Components	3 years (2017-2020)	7 years (2020-2024)	15 Years (2024- 2030)
1	Eradication of forced labour and child labour	400.00	1100.00	2200.00
2	Rights of women and migrants labour	150.00	400.00	800.00
	Total	550.00	1500.00	3000.00
1	Fund required	550.00	1500.00	3000.00

3. Electricity

S. No.	Components	3 Years (2017-2020)	7 Years (2020-2024)	15 Years (2024- 2030)
1	H.P.P up to 25MW	114800	48900	163700
2	H.P.P more above 25MW	285231	789747	878819
3	Construction of transmission sub status, transmission lines and capacity addition	192129	197600	634100
4	Availability of electricity to all households	77412	77412	77412
5	Total	669572	1,113,659	1754031
1	Fund required	669572	1,113,659	1754031
2	Budgetary Provision	49809.00	72860.00	1042519.00

4. Science and Technology

S.No.	Components	3 years | (2017-18-19-20)	7 years (2017-18 -23-24)	15 Years (2024-2030)
1	Uttarakhand Space Application Centre	650.00	2085.00	3937.50
2	Bio Technology Research and Development	1680.00	825.00	725.00
3.	Biotech Park	300.00	700.00	1500.00
4.	Skill Development	150.00	100.00	200.00
5.	Bio Tech University	1200.00	1200.00	1500.00
6.	Others	3980.00	4910.00	7862.50
7.	Total	7960.00	9820.00	15725.00

5.Education

5.1 Elementary Education

S No.	Components	3 years (2017-2020)	7 years (2017-2024)	15 Years (2017- 2030)
1	Teachers	154741.00	170215.4	185690.4
2	Personality/Skill Development	90381.22	99419.34	108457.46
3	Exposure Visit	3068.8	3375.76	3682.56
4	Transport and Security	7323.05	8055.36	8787.66
5	School Beautification	8514.7	5232.48	5708.16
6	Recreational Facilities	15344.00	16878.4	18392.8
7	ICT Facilities	81562.00	89718.2	97874.4
8	Textbooks, Uniform, Food, Stationeries, Motivational Works	679070.12	746977.13	814884.16
9	Training	9991.8	10990.98	11990.16
10	Improving Learning Score	703.82	774.2	844.58
11	Basic Infrastructure	665112.18	728951.66	798476.77
12	Total	1716900.14	1874668.29	2045093.55

5.2 Secondary Education

S. No.	Components	3 Years (2017-2020)	7 Years (2020-2024)	15 Years (2024- 2030)
1	Information, Communication, Education (ICE)	39.00	39.00	39.00
2	Up gradation of existing schools	4500	4500	4500
3	Provision of Basic Amenities	9031.91	10130.38	10636.25
4	Test Books and uniform	3799.73	3799.73	3799.73
5	Infrastructure	26855.33	37750.00	86775.00
6	Exposure	475.00	475.00	475.00
7.	Fund Required	44700.97	56694.11	106224.98
Total		44700.97	56694.11	106224.98

5.3 Higher Education

S. No.	Components	3 Years (2017-2020)	7 Years (2020-2024)	15 Years (2024- 2030)
a	Construction of Buildings and Infrastructure	6500	6000	12380
b	Human Recovery	4300	10080	14500
	Total	10800	16080	26880

5.4. Technical Education

S. No.	Components	3 Years (2017-18-19-20)	7 Years (2017-18 -23-24)	15 Years (2017-18 -30-31)
1	Construction/Improvement of Buildings	101300	206636.8	324683.55
2	Infrastructure	19810	42323.2	66501.45
3	Total	121110	248960	391185

6. Drinking Water and Sanitation

S. No.	Components	3 Years (2017-2020)	7 Years (2020-2024)	15 Years (2024- 2030)
1	Urban water supply and sewerage	172242.00	709000.00	NA
2	Rural Water Supply	254244.00	352615.00	
3	Peri Urban		76800.00	
4	Total	426486.00	1138415.00	

7. Minor Irrigation

S. No.	Components	3 Years (2017-2020)	7 Years (2020-2024)	15 Years (2024- 2030)
1	Bharat Nirman Programme	154700.00		
2	Tribal Subplan construction and Subsidy	500.00		
3	Scheduled Caste Sub-plan	730.00		
4	State sector construction (SCSP)		2080.00	5400.00
5	State Sector (TSP)		1430.00	3710.00
6	Total C.S.S		439873.00	1137003.01
	Total		443383.00	1146113.01
	Source of Fund			
S. No.	Components	3 years	7 years	15 years
1	Fund required	154703.01	443383.01	1146113.01
2	Budgetary Provision	154703.00	443380.00	1146113.01
2.1	Central Schemes	153473.00	439870.00	
2.2	State Schemes	1230.00	3510.00	
2.3	EAP			

8. Women Empowerment and Child Development

S. No.	Components	3 Years (2017-2020)	7 Years (2020-2024)	15 Years (2024- 2030)
1	SAM & MAM (Underweight)	56700		
2	Education	76400		
3	Gender Equality and Empowerment	1193.84	2113.84	3723.84
4.	Total	134293.84		
	Source of Fund			
1	Budgetary Provision	134293.84	443380.00	1146113.01
1.1	Central Schemes	153473.00	439870.00	
1.2	State Schemes	1230.00	3510.00	

9. Department of Animal Husbandry

S. No.	Components	3 Years	7 Years	15 Years
1	Construction of Veterinary Hospitals/Dairy Units/Other capital works	3567.83	11.550.92	26432.79
2	Livelihood upliftment, Animal rearing, Distribution of animals	13831.69	45349.59	126878.96
3	Livestock Census	1944.52	5573.38	14406.13
4	Prevention of Animal Disease	2137.8	6127.39	15838.24
5	Total	82691.79	236982.43	612533.38
	Source of Fund			
	Central Source	745760	21375	55250.49
	State Source	7523419	215607.44	557282.89
	Total	8269179	236982.43	612533.38

10. Panchayati Raj

S. No.	Components	3 Years	7 Years	15 Years
1	Grants from 14th Finance Commission	120969	380466.3	1012096
2	Finance Commission Grants (Others)	18828	18828	18828
3	State Finance Commission	18000	45846	113625
4	Capacity Building	1733.11	4967.48	12840.1
5	Cleanliness and Digitisation	30242	95116	253024
	Total	189772.11	545223.78	1410413.1

11. Public Works Department

S. No.	Components	3 Years (2017-18-2019-20)	7 Years (2017-18-2013-24)	15 Years (2017-2030)
1	Road Connectivity in small villages (<Rs. 250 person)	232750	657750	1297118.75
2	Road Expansion	247616	746675	1783383
3	Access to all weather roads	480366	1404425	3080501
	Total	960732	2808850	6161002.75

12. MSME and Industries

S. No.	Components	3 Years	7 Years	15 Years
1	District Sector	27300	37400	67200
2	State Sector	934700	1443100	2693300
3	Central Sector	1881600	2960700	5844000
4	EAP	3600000	6000000	6000000
	Total	6443600	10441200	14604500

13. Disaster Mitigation and Management

S. No.	Components	3 Years	7 Years	15 Years
1	Compensation for damaged houses	15000	30000	45000
2	Consumption for death injury due to disaster	8000	15000	23000
3	Loss of animals due to disaster	5000	75000	12500
4	Construction/Improvement of Buildings Infrastructure	101300	206636.8	324683.55
5	Infrastructures	198107	42323.2	66501.45
	Total	1239107.00	2609607.00	471685.00

14. Rural Development

S. No.	Components	3 Years	7 Years	15 Years
1	PMAY	975	975	975
2	NRLM	180	420	1,000.00
3	MGNREGS	18000	45846	113625
4	SPMRUM	96	225	1440
5	EAP (IFAD Supported Programme)	450	450	450
6	BADP	114	266	570
7	State Schemes	1030.76	2405.06	5155.78
8	Total	20395.76	50587.06	122645.78

15. Civil Defense and Law and Order

S. No.	Components	3 Years	7 Years	15 Years
1	Creation of New Police Status and Outposts	5000	15,000.00	25000
2	Creation of Traffic Directorate	1000	2000	3,000
3	Creation of Infrastructure for Women Safety	1000	2000	3000
4	Creation of New five status	11000	24000	46000
5	Creation of command and control centres in all districts	12500	24500	24500
6	Security for Religions festivals	5000	20000	30000
7	Home Guards Manpower and Infrastructure	15000	20000	40000
8	Civil Defense Manpower and Infrastructure	2000	3000	4000
9	Total	52500.00	110500.00	175500.00

16. Slum Housing

S. No.	Components	3 Years	7 Years	15 Years
1	GOI Share	60000	52500	15000
2	State Government share	20000	17500	5000
3	Beneficiary share	80000	70000	20000
4	Total	160000	140000	40000
Municipal Solid Waste Processing under SBM				
1	GOI Share	27500		
2	State /Other Resources	51100		
3	Total	78600		
4.	Grand Total	238600	1140000	3340000

17. Agriculture and Allied Services

S. No.	Components	3-Year Plan	7-Year Plan	15-year Plan
1	Agriculture	80400.00	207400.00	442900.00
2	Horticulture	45000.00	120000.00	320000.00
3	Animal Husbandry	82691.79	203692.43	612533.38
4	Milk Co-operatives	5000.00	7500.00	10000.00
	Total	213092.00	538592.00	1385433.00

18.Tourism

Sl. No.	Components	3 year Plan	7 Year Plan	15 year Plan
1	Accommodation	10000.00	20000.00	50000.00
2	Skill Development	700.00	800.00	1500.00
3.	Development of new home stays	2000.00	2000.00	6000.00
4.	Development of Rural Tourism	5000.00	5000.00	15000.00
5.	Development of 13 new destinations		500000.00	800000.00
6.	Tourism Development Authorities/Destination Management committees	50.00	50.00	150.00
7.	Infrastructure (Ropeways, Parking, Wayside amenities Complexes, St. WM Mountaineering Routes/Mountain Train Biking Routes)	36580.00	47688.00	92760.00
8.	Safety and Security	2600.00	500.00	500.00
	Total	56930.00	576038.00	965910.00

Annexures

SDG Targets and Indicators*

ANNEXURE 1

SDG 1: End poverty in all its forms everywhere

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 1.1	*By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day*					
	1.1a: Households (no.) who are deprived (SECCs) (lakhs) rural	GoI 2011 SECC	429,888 171955 171955	343,911 (reduce by 20%)	171,955 (reduce by 40%)	0 (reduce by 40%)
	1.1b: Population who are deprived (SECC (lakhs) urban		NA	NA	NA	NA
	1.1c: No. of homeless households		21,930	18,853	3,077	0
	1.1d. Population below US$ 1.25 per day (ppp value), (%)					
	1.1e. Per capita state domestic product (in Rs.) (at 2011-12 prices)		140405			217562
Target 1.2	*By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions*	2011-12 NSS All ages				
	1.2a Population below state poverty line (%)		11.26			Reduce to at least 5.63%
	1.2b Population below state poverty line (lakhs)		11.6			
	1.2c No. of people (lakh) below poverty line (rural)		8.25			
	1.2d % of people below poverty line (rural)		11.62			

* Data obtained from Uttarakhand State Government, unless otherwise mentioned. Some indicators for which values are currently not available, have also been included, in view of the fact that statistical methods can be improved in the future for collection of such important information. This is particularly applicable for climate change related indicators.

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
	1.2e No. of people (lakh) below poverty line (urban)		3.35			
	1.2f % of people below poverty line (urban)		10.48			
	1.2g. Women of all ages below national poverty line					
	1.2h. Children of all ages below national poverty line					
Target 1.3	*Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable*					
	1.3a Social protection expenditure in total budget (%)					
	1.3b1 Beneficiaries (no.) under Old Age pension scheme		425962			555000
	1.3b2 Beneficiaries (no.) under Widow pension scheme		139381			180000
	1.3b3 Beneficiaries (no.) under Disability pension scheme		64921			80000
	1.3b4 Beneficiaries (no.) under Farmer pension scheme		19469			25000
	1.3c. % of Employed people (Working Poor) below national poverty line					
	1.3d Employment to population ratio (UPS)					
Target 1.4	*By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance*					
Financial Services	1.4a Number of Jan Dhan Yojana accounts opened till February 2017		2170963			Cover all unreached house-holds
	1.4b Number of women SHGs					
	1.4c Number of men SHGs					
	1.4d Number of functional SHGs wrt microfinancing like CCL & inter/intra loaning(women)					
	1.4e Number of functional SHGs wrt microfinancing like CCL & inter/intra loaning(men)					
Economic Resource	1.4f Share of bottom quintile in national consumption (%)					
	1.4g Ownership of Land by Women					
	1.4h Ownership of Land by SC/ST					
	1.4i No.of small/marginal land holdings for poor & vulnerable (men)					
	1.4j No. of small/marginal land holdings for poor & vulnerable (women)					

Target/Sub-Target and Indicators		*Source/Notes*	*Physical Targets*			
			2016-17 Baseline	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 1.5	*By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social &environmental shocks & disasters*					
	1.5a Houses fully damaged due to natural disaster (to be reconstructed, in number)		806	700	500	100
	1.5b Houses partially damaged due to natural disaster (to be reconstructed, in number)		2440	2000	1500	200
	1.5c Loss of lives from disasters (number)		126	100	10	0
	1.5d Injuries due to natural disaster (in number)		100	60	50	0
	1.5e Loss of animals (big) due to natural disaster (in number)		394	300	200	50
	1.5f Loss of animals (small) due to natural disaster (in number)		1070	900	700	100
	1.5g Persons affected by disaster(number)					
	1.5h Direct disaster Economic loss /GSDP					
	1.5i Agriculture area effected by disaster(Hect)					
	1.5j Disaster warnings through SMS (% villages)		Nil	70% (high disaster prone areas) by 2020	100% by 2025	

ANNEXURE 2

SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Target/Sub-Target and Indicators		*Source/Notes*	*2016-17 Baseline*	*Physical Targets*		
				2017-18 to 2019-2020	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 2.1	*By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round*					
	2.1a Per capita average food consumption or food grain production	Food and civil supplies website	NA			
	2.1b per hectare foodgrain production (Mt)		1843785	1969032*	2020349**	2076303***
	2.1c % Share of Antyodaya and BPL households in total households (BPL replaced by priority households)		24%			0
	2.1d Population spending more than two-third of total consumption on food					
Target 2.2	*By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and addressing the nutritional needs of adolescent girls, pregnant and lactating women and older persons*					
Underweight	2.2a (i) Prevalence of underweight children <5 years (-2SD) (%)	NFHS-4 (2015-16) for baseline	26.60	21.20	10.40	<5
	2.2a (ii) Prevalence of underweight children <5 years (-2SD) (%) (Urban)		25.60	20.45	10.15	<5
	2.2a (iii) Prevalence of underweight children <5 years (-2SD) (%) (Rural)		27.10	21.58	10.53	<5

Target/Sub-Target and Indicators					*Physical Targets*		
			Source/Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Stunting	2.2b (i)	Prevalence of stunted children <5 years (-2SD) (%)	NFHS-4 (2015-16) for baseline	33.50	26.38	12.13	<5
	2.2b (ii)	Prevalence of stunted children <5 years (-2SD) (%) (Urban)		32.50	25.63	11.88	<5
	2.2b (iii)	Prevalence of stunted children <5 years (-2SD) (%) (Rural)		34.00	26.75	12.25	<5
Wasting	2.2c (i)	Prevalence of wasted children <5 years (-2SD) (%)		19.50	15.88	8.63	<5
	2.2c (ii)	Prevalence of wasted children <5 years (-2SD) (%) (Urban)		18.60	15.20	8.40	<5
	2.2c (iii)	Prevalence of wasted children <5 years (-2SD) (%) (Rural)		19.90	16.18	8.73	<5
Anaemia	2.2d (i)	Prevalence of anaemia among women of reproductive age (15-49 months) (%)		45.20	36.00	19.00	<10
	2.2d (ii)	Prevalence of anaemia among women of reproductive age (15-49 months) (%) (Urban)		43.40	35.00	18.00	<10
	2.2d (iii)	Prevalence of anaemia among women of reproductive age (15-49 months) (%)(Rural)		46.20	37.00	19.00	<10
	2.2e	Prevalence of anaemia among children (6-59 months) (%)		59.80	46.00	19.00	<5

Target/Sub-Target and Indicators			*Source/Notes*	*2016-17 Baseline*	*Physical Targets* *2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 2.3	*By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment*						
Value addition	2.3a	Targeted seed distribution rice (quintal)	Directorate of Agriculture	18,464	25,210	31,450	34,490
	2.3b	Targeted seed distribution wheat (quintal)		120,337	121,597	122,000	122,000
Security	2.3c	Crop insured (farmers covered)		375,000	400,000	500,000	550,000
	2.3d	Crop insured (area covered) (Ha)		85,790	103,164	137,552	257,909
Productivity	2.3e	Land productivity for fruits (metric tonnes per hectare)		3.83	4.1	4.1	5.0
	2.3f	Land productivity for vegetables (metric tonnes per hectare)		9.13	9.32	9.52	10
	2.3g	Land productivity for potato (metric tonnes per hectare)					
	2.3h	Land productivity for spices (metric tonnes per hectare)		16.14	16.23	16.36	16.88
	2.3i	Area under flower production (hectare)					
	2.3j	Productivity(per hect production of cereals)		6.38	8.13	8.24	8.4
	2.3k	Productivity(Per hect production of pulses)					
	2.3l	Productivity(per hect production of millets)		1400	1900	3500	5000
	2.3m	Average income of small scale food producer		21.69	22.93	23.45	24.02
	2.3n	Agriculture households having land ownership (%)		10.48	11.92	12.31	12.93
	2.3o	Irrigated land out of total land (%)		16.17	16.74	17.04	17.39
	2.3p	Land ownership of SC/ST (%)					
Target 2.4	*By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production; that help maintain ecosystems; that strengthen capacity for adaptation to climate change extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality*						

Target/Sub-Target and Indicators			Source/Notes	Physical Targets			
				2016-17 Baseline	2017-18 to 2019-2020	2017-18 to 2023-24	2017-18 to 2030-31
Resilient Agriculture Practices	2.4a	Agricultural land (foodgrain) at the present level (,000 hectare)		900.197	907.63	909.65	911.49
	2.4b	Agriculture productivity (quintal per hectare)					
	2.4c	Organic Agriculture productivity (quintal per hectare)		20.48	21.69	22.21	22.78
	2.4d	Bio-fertilizers in agricultural production (kg/Ha)		16.03	17.0	18.9	20.0
	2.4e	Area under organic certification (thousand hectares)					
	2.4f	Land under horticulture (lakh hectare)		0.3	0.4	0.5	0.6
				35^	125	200	250
	2.4g	Soil testing status(per 1000 hectare)					
	2.4h	Soil treatment (per 1000 hectare)		3.194	3.459	3.895	4.95
	2.4i	Number of Soil card distributed					
	2.4j	Number of farmers adopting the soil test practice		79678	203604	407208	882284
Adaptation to climate change				63.3	63.3	63.3	63.3
				459917	1368975	2737950	5932225
				459917	1368975	2737950	5932225
Target 2.5	*By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and ensure access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed*						
Genetic Diversification of Seeds(GDS)	2.5a	Establish DNA bank for variety of seeds		Seed bank Uttarakhand Seeds and Terai Development Corporation has long term objective of 15% annual average growth rate			
	2.5b	Establish DNA bank for variety of plants					
	2.5c	Establish DNA bank for variety of animal species					
	2.5d	Number of farmers using traditional knowledge for agriculture production					
Traditional knowledge association for GDS process	2.5e	Number of traditional practices for farming					
	2.5f	Number of KVKs					
	2.5g	Number of capacity building programme to transform the traditional practices for Genetic Diversified Process					
	2.5h	Number of farmers trained for such programmes (as in 2.5g)					

Note: *Average value for 3 years; ** Average value for 7 years; *** Average value for 13 years ^ The value is for 2014-15, as per State Government and this area is slated to increase successively to 50 thousand hectares in 2015-16, and to 75 thousand hectares by 2016-17.

ANNEXURE 3

SDG 3: Ensure healthy lives and promote well-being for all at all ages

Target/Sub-Target and Indicators			*Physical Targets*			
		Source / Notes	*2016-17 Base-line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 3.1	*By 2030, reduce global MMR to <70 per 100,000 live births*					
	MMR (per 100,000 live births)	AHS 2012-13	165	141	94	70/1,00,000 live birth
Target 3.2	*By 2030, end preventable deaths of new-borns and children under 5 years of age*					
3.2a1	Infant mortality rate (per 1,000 live births) (Total)		40	36	29	25 / 1,000
3.2a2	Infant mortality rate (per 1,000 live births) (Rural)		39	36	29	25 / 1000
3.2a3	Infant mortality rate (per 1,000 live births) (Urban)		44	39	30	25/1000
3.2b1	Under-five mortality rate (per 1,000 live births) (Total)		47	42	31	25 / 1000
3.2b2	Under-five mortality rate (per 1,000 live births) (Rural)		46	41	30	25 / 1000
3.2b3	Under-five mortality rate (per 1,000 live births) (Urban)		49	43	31	25 / 1000
3.2c	Immunization of children (fully immunized) (%)		79.6	85	95	>95
Target 3.3	*By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases, and combat hepatitis, water-borne diseases and other communicable diseases*					
3.3a	Prevalence of HIV and AIDS across different types of high-risk categories.		0.11	0.08	0.03	0
3.3b	Prevalence of tuberculosis (TB) per 100,000 population		145	118 20% reduction	73 50% reduction	29 80% (reduction)
3.3c	Confirmed malaria cases (number)	NVBDCP/ State Government	914	500	Near to elimination	Near to elimination
3.3d1	Registered prevalence rate (per 10,000 of pop) for leprosy		0.24	0.19	0.12	Near to elimination
3.3d2	Kala-azar (visceral leishmaniasis) cases (number)		2	0	0	0
3.3d3	Average prevalence of lymphatic filariasis (%)	NVBDCP/ State Govt	0	0	0	0
3.3d4	Cases of dengue (number)	NVBDCP/ State Govt	2046			
3.3d5	People die annually due to Japanese encephalitis (number)		0	0	0	0

Target/Sub-Target and Indicators			*Physical Targets*			
		Source / Notes	*2016-17 Base-line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
3.3e1	Confirmed cases of hepatitis A (number)		10677	9609	8648	7783
3.3e2	Confirmed cases of hepatitis B (number)		254	229	206	185
3.3f1	Annual incidence of diarrhoea (per 1,000)		10.3	9.27	8.34	7.51
3.3g1	Confirmed cases of influenza (H1N1) (number)	IDSP/state govt	20			
Target 3.4	*By 2030, reduce by one third premature mortality from non-communicable diseases (NCDs) through prevention and treatment and promote mental health and well being*					
3.4a1	Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease	GBD 2014	48%	42%	35%	16%
3.4b	By 2030,reduce by one third premature mortality from non-communicable diseases through prevention & treatment		-	-	-	-
3.4b1	People (aged 15–69 years) with raised total cholesterol (%)	ICMR INDIAB	13.9%	11%	8%	4.5%
3.4b2	People (aged 15–69 years) with raised blood pressure (%)	NFHS 2015-16	26.8%	21%	16%	9%
3.4c	By 2030,promote mental health and well being		-	-	-	-
3.4c1	Mental health problems (%)		-	10% Reduction	15% Reduction	30% Reduction
3.4c2	Suicide rate (per 100,000 population)		-	-	-	-
Target 3.5	*Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol*					
3.5a	Hard drug users (estimated number)	Raman Development agency selected by NACO for IDUs. (2007)	3000	2500	2050	1500
3.5b	Drugs users(estimated number)					
Target 3.6	*By 2020, halve the number of global deaths and injuries from road traffic accidents*	Transport Commissioner, Uttarakhand Letter No -NH- 466/Ent/ Rs/1-8(3)/2017 dated 31 Jan.2017	Road Accident -1342, Death-801, Injuries – 1497, (Jan to Oct)	Road Accident -671, Death-400, Injuries – 748,	Road Accident -336, Death-200, Injuries – 370,	Road Accident -168, Death-100, Injuries – 175,
3.6a	Number of death from road accident					
3.6b	Number of injuries from road accident					
3.6c	Number of IEC activities (awareness programme) in the schools					
3.6d	Number of schools covered under the awareness programme					
3.6e	Number of schools covered coming under the major highway(IEC)					

Target/Sub-Target and Indicators			*Physical Targets*		
		Source / Notes	*2016-17 Base-line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 3.7	*By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes*					
3.7a	Contraceptive prevalence rate (modern methods) (%)					
3.7a1	Current Use of Modern Family Planning Methods (currently married women age 15–49 years) (Total)	NFHS 2015-16	49.3	52.87	58.82	65.96
37a2	Current Use of Modern Family Planning Methods (currently married women age 15–49 years) (Rural)		49.8	53.37	59.32	66.46
3.7a3	Current Use of Modern Family Planning Methods (currently married women age 15–49 years) (Urban)		48.4	51.97	57.92	65.06
3.7b	Antenatal care (ANC) coverage (at least four visits) (%)					
3.7b1	Mothers who had at least 4 antenatal care visits (%) (Total)		30.9	48	83	100
3.7b2	Mothers who had at least 4 antenatal care visits (%) (Rural)		25.7	44	81	100
3.7b3	Mothers who had at least 4 antenatal care visits (%) (Urban)		41.2	56	85	100
3.7c	Institutional Delivery (%)					
3.7c1	Institutional delivery (%) (Total)		68.6	76	92	100
3.7c2	Institutional delivery (%) (Rural)		63.7	73	91	100
3.7c3	Institutional delivery (%) (Urban)		79.1	84	95	100
3.7d	Postnatal Care (PNC) for mothers (%)					
3.7d1	Mothers who received postnatal care from a doctor/nurse/LHV/ ANM/midwife/other health personnel within 2 days of delivery (%) (Total)		54.8	66	89	100
3.7d2	Mothers who received postnatal care from a doctor/nurse/LHV/ ANM/midwife/other health personnel within 2 days of delivery (%) (Rural)		49.1	62	87	100
3.7d3	Mothers who received postnatal care from a doctor/nurse/LHV/ ANM/midwife/other health personnel within 2 days of delivery (%) (Urban)		66.1	75	92	100
3.7e	Total Fertility Rate (TFR) (births per women)					
3.7e1	Total fertility rate (TFR) (births per women) (Total)		2.1	2.1	2.1	2.1
3.7e2	Total fertility rate (TFR) (births per women) (Rural)		2.2	2.2	2.1	2.1
3.7e3	Total fertility rate (TFR) (births per women) (Urban)		1.8	1.9	2.0	2.1
Target 3.8	*Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all*					

Target/Sub-Target and Indicators				*Physical Targets*		
		Source / Notes	*2016-17 Base-line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
3.8a	Government health expenditure as % of GSDP					
3.8b	Shortage of doctors at PHCs		55.78%			0
3.8c	Shortage of obstetricians and gynaecologists		91%			0
3.8d	Shortage in No. of functioning PHCs		94			0
3.8e	Shortage in no. of ANMs		0			0
3.8f	No. of doctors per lakh population	-	13.91	14.19 (2% Increase)	23.58 (5% Increase)	27.15 (7% Increase)
3.8g	No. of paramedicals per lakh population (hills and plains)	-	38.57	39.34 (2% Increase)	40.50 (5% Increase)	41.27 (7% Increase)
3.8h	No. of hospitals beds per lakh population	-	1032	1270	1508	1750
3.8i	No. of PHC per lakh population	-	2.58	3.08	3.58	4.00
3.8j	No. of maternity & child care centre per lakh population	-	18.97	21.47	23.97	26.50
3.8k	No. of other health centre per lakh population (hills and plains)	-	3.44	5.62	7.80	10.00
3.8l	Number of Persons covered under Health Insurance(R)	MSBY data	2428275	2940000	3198542	3538978
3.8m	Number of Persons covered under Health Insurance(U)	MSBY data	3353350	4060000	4417035	4887160
3.8n	Number of Persons covered under Health Insurance(T)	MSBY data	5781625	7000000	7615577	8426138
3.9	**By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination**					
Illness						
3.9A	Number of illness from hazardous chemical					
3.9b	Number of illness from hazardous air					
3.9c	Number of illness from water and soil and contamination					
Deaths						
3.9d	Number of deaths from hazardous chemical					
3.9e	Number of deaths from hazardous air					
3.9f	Number of deaths from water and soil and contamination					

ANNEXURE 4

SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 4.1	*By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes*					
All girls and boys complete free, equitable primary and secondary education						
4.1a	Net enrolment rate in primary education (%)		89.18	90	95	100
4.1b	Net enrolment rate in upper primary education (%)		71.00	76	85	100
4.1c	Primary cycle retention rate (%)		86.15	90	95	100
4.1d	Upper primary cycle retention rate (%)		98.62	99	100	100
4.1e	Primary level completion rate (%)		100	100	100	100
4.1f	Upper primary level completion rate (%)		96.76	100	100	100
4.1g	Net enrolment rate in secondary education (%)	2015-16	51.28	58	66	80
Quality primary and secondary education						
4.1h	Trained teachers in total number of teachers for primary education (%)		95.00	100	100	100
4.1i	Trained teachers in total number of teachers for upper primary education (%)		100.00	100	100	100
4.1j	School with access to basic drinking water facilities—Primary (%)		98.2	100	100	100
4.1k	School with access to basic drinking water facilities—Upper Primary (%)		94.5	100	100	100
4.1l	School with access to basic toilet facilities—Primary (%)		97.0	100	100	100
4.1m	School with access to basic toilet facilities—Upper Primary (%)		96.0	100	100	100
4.1n	School with access to basic electricity facilities—Primary (%)		73.2	80	100	100
4.1o	School with access to basic electricity facilities—Upper Primary (%)		82.5	85	100	100
4.1p	School with ramp and material for students with disability—Primary (%)		66.1	75	90	100
4.1q	School with ramp and material for students with disability —Upper Primary (%)		59.5	65	90	100
Effective learning outcomes						
4.1r	Learning score (reading) at the end of Primary (Class 5) (%)		61.18	65	80	95
4.1s	Learning score (math) at the end of Primary (Class 5) (%)		61.69	65	80	95
4.1t	Learning score (reading) for end of Lower secondary (class 8) (%)		62.39	65	80	95

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
4.1u	Learning score (math) for end of Lower secondary (class 8) (%)		34.35	40	65	90
Dropouts						
4.1v	Drop-out at primary level (%)		3.16	2	0	0
4.1w	Drop-out at upper primary level (%)		1.69	1	0	0
4.1x	Drop-out at secondary level (%)		12.65	9.65	5.65	0
Target 4.2	*By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education*					
4.2a	Enrolment (number) in pre-school education among 3-5+ year olds (hills)	ICDS/ MWCD	286546			
4.2b	Enrolment per AWC in pre-school education among 3-5+ year olds (hills)		8	Increase by 10%		
4.2c	Enrolment (number) in pre-school education among 3-5+ year olds (plains)		100183			
4.2d	Enrolment per AWC in pre-school education among 3-5+ year olds (plains)		14			
Target 4.3	*By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university*					
4.3a	Share of diploma seats for women (% of total)		30	30	32	40
4.3b	Number of diploma seats for women		6200	6500	7500	20000
4.3c	Ratio of boys enrolment in technical and vocational education					
4.3d	GER at Higher Education		33.9	42	50	60
4.3e	NER at Higher Education		NA	38	47	58
4.3f	Pupil Teacher Ratio at Higher Education		142:1	120:1	70:1	20:1
Target 4.4	*By 2030, increase by 75 percent the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship*					
4.4a	Number of students taking technical education in polytechnics (000)		20.604	21.664	24	50
4.4b	Present skill training capacity (000) (State Skill Development Mission)			44	79.199	151.92
4.4c	Number of polytechnics		131	150	170	200
4.4d	Number of polytechnics in backward/rural areas		34	17 AICTE unapproved institutions will be approved	5 new institutions will be opened	50

Target/Sub-Target and Indicators		*Source/ Notes*	*Physical Targets*			
			2016-17 Baseline	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
4.4e	Students/teachers ratio in technical education		20:1	384 new teaching posts	New 500 teaching posts	10:1
4.4f	Entrepreneurship (no. of EDPs) in Higher Education		20	25	30	40
4.4g	Employability ratio		40	45	50	60
Target 4.5	*By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations*					
4.5a	Gender Parity Index (primary school)		0.89	0.92	0.95	1.00
4.5b	Gender Parity Index (secondary school)		0.92	0.93	0.97	1.00
4.5c	Gender Parity Index (higher Education)		0.94	1.04	1.24	1.44
Target 4.6	*By 2030, ensure that all youth and at least 95 percent of adults, both men and women, achieve literacy and numeracy*					
4.6a	Literacy rate of youth (15-29 years)(%)		94.8			100.0
4.6b	Literacy rate of youth (15-29 years) (women) (%)		93.6			100.0
4.6c	Numeracy all (15 years and older) (%)					
4.6d	Numeracy female (15 years and older) (%)					
Target 4.7	*By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development*					
IEC , Education and Awareness on SDGs	4.7a Number of seminars/workshops/trainings on SDGs					
	4.7b Number of seminars/workshops/trainings on Human Rights					
	4.7c Number of seminars/workshops/trainings on Gender Equality					
	4.7d Number of programmes for promotion of culture of peace & non-violence					
	4.7e Number of programmes for cultural diversity					

ANNEXURE 5

SDG 5: Achieve gender equality and empower all women and girls

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Base line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 5.1	*End all forms of discrimination against all women and girls everywhere*					
5.1a	Ratio of girls to boys in primary level education		0.89	0.92	0.95	1
5.1b	Ratio of girls to boys in secondary level education		0.92	0.93	0.97	1.00
5.1c	Ratio of literate women (15-24 years) to literate men (15-24 years)					1.00
5.1d	Share of women workers in the non-agricultural sector (%)	NSS 2011-12 (All ages) UPS	16.8			50
5.1e.	Ratio of women to men wage in casual farm work					
5.1f.	Ratio of women's to men's wage in casual non-farm work					
Target 5.2	*Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation*					
5.2a1	Sex ratio at birth (female to male)	NFHS-4 (2015-16)	888			1000
5.2a2	Sex ratio at birth (female to male) (Rural)	NFHS-4 (2015-16)	924			1000
5.2a3	Sex ratio at birth (female to male) (Urban)	NFHS-4 (2015-16)	817			1000
5.2b	Women (15-49 years) who experience physical or sexual violence as reported (number)	State Women's Commission (NFHS)	1412			
5.2c	Violence against women reported 1st January 2016 to 30th November 2016	Police HQ	1896			<1,896
5.2d	Ever married women who have experienced spousal violence (15-49 years) (%)	NFHS-4 (2015-16)	12.7			<12.7
Target 5.3	*Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation*					
5.3a	Women aged <18 years who are married or in union (%)*	As reported by State WC	Negligible incidence			0

Target/Sub-Target and Indicators			*Physical Targets*		
	Source/ Notes	*2016-17 Base line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 5.4 *Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and family as nationally appropriate*					
5.4a Share of women workers in non-agricultural sector (%)	NSS 2011-12 (All ages) UPS	16.8			50
Unpaid care and domestic work					
5.4b % of women engaged in collecting water/wood out in total women in domestic work	NSS 2011-2012	52.7			26
5.4c. Average hours spent per day by women in domestic and care activities					
Target 5.5 *Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life*					
5.5a Seats held by women in Panchayat bodies (%)		50			
5.5b Women in public service posts (%)		30			50
5.5c Share of women entrepreneurs (%)	Sixth Economic Census	9.26			33
5.5d Seats held by women in legislature (%)					
Target 5.6 *Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of its review conferences*					
5.6. Awareness about reproductive rights among girls and women (%)					

* According to NFHS-4 data (2015-16), around 13.9% of women aged 20-24 years were married before 18 years of age

ANNEXURE 6

SDG 6: Ensure availability and sustainable management of water and sanitation for all

Target/Sub-Target and Indicators				*Physical Targets*		
		Source/ Notes	*2016-17 Base line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 6.1	*By 2030, achieve universal and equitable access to safe and affordable drinking water for all*					
6.1a1	No. of Rural habitations covered by water supply of 40 lpcd (litres per capita per day)*		21345	6074	11660	17864
6.1a2	No. of Urban ULBs covered by water supply of 135 lpcd (litres per capita per day)*		21	18	43	70
6.1b	Total rural habitations using safe drinking water (%)	NRDWP website 2014-15	64.3			100
6.1b1	SC dominated rural habitations using safe drinking water (%)	Same as above	70.8			100
6.1b2	ST dominated rural habitations using safe drinking water (%)	Same as above	100	100	100	100
6.1c	Households with access to piped water supply** (number)	Domestic water connection as of Oct 2016	582621			All households
6.1c1	Households with access to piped water supply (no.) (Rural)	Same as above	279964			All households
6.1c2	Households with access to piped water supply (no.) Urban)	Same as above	302657			All households
Target 6.2	*By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations*					
6.2a1	Households without latrines (%)	Census 2011	34.2			0
6.2a2	Households without latrines (%) (Rural)	Census 2011	45.9			0
6.2a3	Households without latrines (%) (Urban)	Census 2011	6.4			0
6.2b	Individual toilets and community toilets (number)	State Govt	1540	$ 27640		
6.2c	Urban Local Bodies with partial sewerage (%)	State Govt	28.6			100
Target 6.3	*By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing hazardous chemicals and materials, halving the proportion of untreated waste water and increasing recycling and safe reuse*					

Target/Sub-Target and Indicators				*Physical Targets*		
		Source/ Notes	*2016-17 Base line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
6.3a	Municipal Solid Waste processing (total) (%) under SBM^	Handbook of Urban Statistics 2016, GoI	0.5			
6.3b	Municipal Solid Waste processing (Equivalent) (%) under SBM^	As above	5.07			100
6.3c	No. of wards with 100% door to door collection and transportation of solid waste^^	State govt	431			703
6.3d	Amount of hazardous waste generation (metric tonne per annum)	Indiastat website; data 2012	55627			0
6.3e	Amount of bio-medical waste generation (kg/day)	Indiastat website; data 2013	2257.41			
6.3f	Quality affected habitations(Number)					
Target 6.4	*By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity*	State government	350 sustainability structures have been proposed for 2016-17			
Sustainable withdrawal of water	6.4a Water stress or withdrawal/Total available water 6.4b Number of people suffering from water scarcity					
Target 6.5	*By 2030, implement integrated water resources management at all levels, including through trans boundary cooperation as appropriate*					
Target 6.6[$]	*By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes*					

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Base line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
6.6a	afforestation(Hectare)	On the basis of actual achievement till 2016-17and target set in Gram Panchayat Watershed Development Plan prepared by the local community	2110	7212	7632	14604
6.6b	afforestation survival rate		78%			
6.6c	Soil conservation work(Hectare)		21450	28028	37880	60060
6.6d	Number of water bodies(Total)					
6.6e	Afforestation for water bodies(Hectare)			Included in 6.6a		
6.6f	Afforestation survival rate for water bodies					
6.6g	Number of lakes					
6.6h	afforestation for lakes (Hectare)			Included in 6.6a		
6.6i	afforestation survival rate for lakes					
6.6j	Number of *chal-khal* (pits and ponds) constructed		15312	36865	47586	114715
6.6k	Area covered under pits and ponds (*chal-khal*) (Hectare)		168	404	522	1271

Note: *Refers to additional habitations to be covered for all years except baseline. **Source: State govt. Refers to Piped water into dwelling/yard/plot, public .tap/standpipe, tube well or borehole, protected dug well or spring, rainwater, community RO plant.

^Data upto 4th September 2015 from Handbook of Urban Statistics 2016, GoI; ^^Data from Handbook of Urban Statistics GoI is 87

$ Note : The information is based on following assumptions.

6.6 a Afforestation (Hectare)- Actual for the year 2016-17 and target for the remaining period in GPWDP.

6.6 b Afforestation survival rate- Based on sample study.

6.6 c Soil Conservation work (Hectare)- 10% of the total area of non arable land within Microwatershed

6.6 j Number of Chal- Khal (Pits & Ponds) constructed- Actual for the year 2016-17 and target for the remaining period in GPWDP.

6.6 k Area covered under pits and ponds (Chal-Khal) (Hectare)- Calculated on the basis of area under Recharge Pit (1cum) 1sqm and area under Water pond (125 cum) 96 sqm.

$$ Achieved by 2018

ANNEXURE 7

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all

Target/Sub-Target and Indicators				*Physical Targets*		
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 7.1	*By 2030, ensure universal access to affordable, reliable and modern energy services*					
7.1a1	Households using clean fuels (electricity, LPG/Natural gas, bio-gas) for cooking (%) (Rural)	NFHS-4 (2015-16)	31.1			
7.1a2	Households using clean fuels (electricity, LPG/Natural gas, bio-gas) for cooking (%) (Urban)	NFHS-4 (2015-16)	86.6			
7.1b1	Households with electricity (%) (Rural)	UPCL	96.5	100.0	100.0	100.0
7.1b2	Households with electricity (%) (Urban)	UPCL	99.4	100.0	100.0	100.0
7.1c	Number of villages with electricity facility	Revenue villages (census)	15638	15745 (100%)	15745 (100%)	15745 (100%)
7.1d	Rural households (no.) using electricity for lighting	UPCL	995573	1118191 (100%)	1118191 (100%)	1118191 (100%)
7.1e	Total Installed capacity (MW)*	UPCL	1290.10	151	438	1648
7.1f	Electricity consumption (kWh per capita)	4.46% CGPA (PFA document)	1279	1587	1873	2153
7.1f	Households (%) using firewood as main cooking fuel					
Target 7.2	*By 2030, increase substantially the share of renewable energy in the global energy mix*					
7.2a	Renewable share of micro hydel in total energy demand (million units)	UREDA	18	74	95	151
7.2b	Renewable share of Solar in total energy demand (million units)	UREDA	70	351	409	601
7.2c	Renewable share of others (co-gen, biomass, W2E) in total energy demand (million units)	UREDA	284	821	922	1137
7.2d	Renewable share in total energy demand (million units)	UREDA	371	1246	1426	1889

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
7.2e	Share of renewable energy in total energy (final) consumption in state (%)		3.2	10.5	11.8	15.1
Target 7.3	*By 2030, double the global rate of improvement in energy efficiency*					
7.3a	Transmission and Distribution loss (%) in state	UPCL	18.63	14.00	12.00	9.00
7.3b	Use of efficient lighting systems — LED for street light (%)					
7.3c	Energy Saving by Renewable sources (MW)					

*The figures for 2019-20, 2023-24 and 2029-30 refer to increments over the baseline.

ANNEXURE 8

SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Target/Sub-Target and Indicators				*Physical Targets*		
		Source/ Notes	***2011-12 NSS All ages***	***2016-17 baseline***	***2017-18 to 2019-2020***	***2017-18 to 2023-24***	***2017-18 to 2030-31***
Target 8.1	*Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 percent gross domestic product growth per annum in the least developed countries*						
8.1b	Per capita GSDP growth (%)	2011-12 to 2017-18 average		7.1			>7.1
8.1a	Share of bottom quintile in total consumption (%)		9.7				>9.7
Target 8.2	*Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value-added and labour-intensive sectors*						
8.2a	Growth of agricultural sector (%)	2011-12 to 2017-18 average		1.4%			>1.4%
8.2b	Growth of construction sector (%)	2011-12 to 2017-18 average		7.7%			Maintain the growth rate
8.2c	Growth of manufacturing sector (%)	2011-12 to 2017-18 average		7.3%			>7.3%
8.2d.	Labour productivity of agriculture sector		Rs. 93,439				> Rs. 93,439
8.2e.	Labour productivity of non-agriculture sector		Rs. 359,542				
8.2f.	Labour productivity of construction sector		Rs. 198,343				> Rs. 198,343
8.2g.	Labour productivity of manufacturing sector		Rs. 1,310,968				Maintain

Target/Sub-Target and Indicators					*Physical Targets*		
		Source/ Notes	***2011-12 NSS All ages***	***2016-17 baseline***	***2017-18 to 2019-2020***	***2017-18 to 2023-24***	***2017-18 to 2030-31***
Target 8.3	*Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services*						
8.3a:	Share (%) of workforce in non-agriculture		56%				>56%
8.3b:	Share (%) of regular employment		19.9%				>19.9%
8.3c:	Share (%) of formal employment		10.5%				>10.5%
8.3d:	Share (%) of Regular Workers in (Public/Government Sector)		44.6%				
8.3e:	MSME (numbers)			53 thousand			
8.3f:	MSME (employment)			2.5 lakhs			
Target 8.4	*Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-yearframework of programmes on sustainable consumption and production, with developed countries taking the lead*						
Target 8.5	*By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value*						
Full Employment							
8.5a:	Unemployment (15-59 years) (%)		4.2%				>4.2%
8.5b:	Underemployment rate (15-59 years) (%)		5.0%				>5.0%
8.5c:	Share (%) of women employment (15-59 years) in total		26.8%				>26.8%
8.5d:	Share (%) of women workers (15-59 years) in non-farm		18.5%				>18.5%
8.5 e:	Share(%) of women workers in regular work (UPS)		12.8%				>12.8%
Target 8.6	*By 2020, substantially reduce the proportion of youth not in employment, education or training*						

Target/Sub-Target and Indicators				*Physical Targets*		
	Source/ Notes	***2011-12 NSS All ages***	***2016-17 baseline***	***2017-18 to 2019-2020***	***2017-18 to 2023-24***	***2017-18 to 2030-31***
8.6a: Youth unemployment (15-29 years) rate (%)		14.3%				<14.3%
8.6b: Unemployment per cent for high educated youth (secondary and above)		17.2%				<17.2%
8.6c: Youth (15-29 years) underemployment rate (%)		7.0%				<7.0%
8.6d: Share (%) of youth (15-29 years) not in education, training or employment.		24%				<24%
8.6e: Number of youth trained in vocational trades (Youth Welfare and PRD Department)		429#				
8.6f: Average daily earnings male (regular work)		Rs 453				>Rs 453
8.6g: Average daily earnings female(regular work)		Rs 420				>Rs 420
Target 8.7 *Take immediate and effective measures to secure the prohibition and elimination of the worst forms of child labour, eradicate forced labour and, by 2025, end child labour in all its forms, including the recruitment and use of child soldiers*						
Child Labour						
8.7a Incidence of child labour (%) (UPS)		1.0				0
Target 8.8 *Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment*						
Safe and Secure Working environment	8.8a Number of migrant workers					
				Reduce informal employment and enhance regular/ secure employment		
Target 8.9 *By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products*						
8.9a1 Tourist arrivals (lakh)	2016		317.77			
8.9a2 Tourist arrivals (domestic) (lakh)	2016		316.69			3 times
8.9a3 Tourist arrivals (foreign) (lakh)	2016		1.13			3 times
8.9b1 Increase in tourists to lesser known unexplored destinations			19%			33%

Target/Sub-Target and Indicators				*Physical Targets*		
	Source/ Notes	***2011-12 NSS All ages***	***2016-17 baseline***	***2017-18 to 2019-2020***	***2017-18 to 2023-24***	***2017-18 to 2030-31***
8.9b2	Religious tourist destinations (in % of existing tourist destinations)		70	68	65	60
8.9b3	Registration of Hotels (under TT) (in % of existing hotels)		875 no.s	50	100	
8.9b4	Registration of TA/TOs** (under TT) (in % of existing hotels)		172 no.s	50	100	
8.9c1	Accreditation (under SRT norms) for Hotels (in % of total number of hotels)		0	5	15	25
8.9c2	Accreditation (under SRT norms) for TA/TOs (in % of total number of hotels)		0	5	15	25
8.9c1	Accreditation (under SRT norms) for *Dhabas*, eateries and other tourism units (in % of total number of hotels)		0	5	15	25
8.9d1	Recognition of Prior learners and other capacity development measures for mountain and destination guides (Paryatan Mitra), *dhaba* owners, porters, cooks, waiters, drivers, etc.		0	5000	10000	20000
8.9d2	Registration of new entrants for mountain and destination guides (Paryatan Mitra), bird watching guides, *dhaba* owners, porters, cooks, waiters, drivers, etc.		330	2000	5000	10000
8.9d3	Registration of existing homestays (%)		NA	30	70	100
8.9d4	Development of new homestays (no.)		256	250	500	1000
8.9e	No. of Gram Panchayats to be developed for rural tourism		73	100	200	500
8.9f	Development of 13 new destinations in 13 new districts		0			13
8.9g	Tourism development authority/destination management committees		2	5	10	25
8.9h1	Infrastructure--Toilet complexes only (no. of seats)		192 (1949)	263 (2344)	353 (2876)	445 (3406)
8.9h2	Infrastructure-- Wayside amenities complexes		0	5	10	25
8.9h3	Infrastructure--Parking		4	10	25	50
8.9h4	Infrastructure—Solid and Liquid Waste management in Tourist destination		0	10	25	50
8.9i	Development of trekking/mountaineering routes /mountain trail biking or MTBs) routes (new)		32	50	100	200
8.9j	Safety and security—Tourist tracking (% of total tourists)		0	50	80	100
8.9k	Tourism share in GSDP(%)					

Target/Sub-Target and Indicators				*Physical Targets*		
	Source/ Notes	***2011-12 NSS All ages***	***2016-17 baseline***	***2017-18 to 2019-2020***	***2017-18 to 2023-24***	***2017-18 to 2030-31***
8.9l Expenditure on tourism sector over total expenditure(%)						
8.9m Total allocation on tourism against the budget(%)						
8.9n Total job creation in tourism sector(% of total job created)						
Target 8.10 *Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all*						
Banking/Financial Institutions Status						
8.10a No. of commercial bank branches per 100000 population						
8.10b No. of co-operative bank branches per 100000 population						
8.10c ATMs per 100000 population						
8.10d Number of accounts						
8.10e Number of accounts opened in PMJDY						
8.10f. Households (%) having bank account						
Insurance Status						
8.10f. Households (%) having any health insurance cover						
8.10g. Households (%) having life insurance cover						

** TA is Travel Agent and TO stands for Tour Operator

Figure is for 2015-16

Note: Hotspots are famous tourist destinations. Sustainable destinations are those where an effective organization exists to manage and protect tourism assets.

ANNEXURE 9

SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Target/Sub-Target and Indicators		*Physical Targets*				
		Source/ Notes	*2016-17 Base line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 9.1 Physical and Communication Connectivity	*Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all*					
9.1a	Road length per lakh population (km)		322.93	357.63	407.21	461.29
9.1b	Access to all-weather roads (% villages)		67.665	76.97	87.98	100.00
9.1c	Telephone connections by (incl WLL) BSNL only	2014-15	168630			
9.1d	Mobile connectivity in villages (%)		55	70	100	Uncovered areas along state highways
9.1e	Internet connectivity to all Gram Panchayats (% of villages)		10	30	70	100
9.1f	Households (%) with internet connectivity (fixed or mobile)					
Target 9.2	*Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries*					
Increasing industrial share in gross state domestic product						
9.2a	Industry share in GSDP (%)	2014-15 quick estimate State Economic survey	48.36			
Increasing industrial share in employment						
9.2b	Share (%) of industry/manufacturing in employment					
9.2c	Employment generation in the MSME sector (number)		258000	320,000	460,000	850,000
9.2d	Employment generation in large industry (number)**		168718	184363	248438	444123
9.3e	Number of MSMEs		53000	68,000	94,000	170,000

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Base line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
9.3f	Capital investment in MSMEs (Rs crore)		10,960	14,000	18,000	36,000
9.3g	Number of heavy industries**		1,828	1998	2,618	4510
9.3h	Capital investment in large industries (Rs cr)**		21,826	23155	30351	53769
Target 9.3	*Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets*					
Financial Inclusion in SSI & other Enterprises	9.3a CD ratio wrt SSIs					
	9.3b Households (%) with bank accounts (lakh)		62.71			
	9.3c % of SSIs have taken loan from Financial Institutions					
Value chain and Markets	9.3d. % of SSIs are part of value chains					
	9.3e SSIs share in markets (%)					
	9.3f % of SSIs covered under any type of market					
Target 9.4	*By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities*					
9.4a	Number of industrial areas with adequate infrastructure					
9.4b	Number of industries getting facilities under single window system					
Target 9.5	*Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and increasing the number of research and development workers per 1 million people and public and private research and development spending*					
	9.5a Mapping of soil map by USAC		NA	1:50	1:10	1:4k
	9.5b Mapping of waste water sources and sewage by USAC in towns		NA	5	50	60

Target/Sub-Target and Indicators				*Physical Targets*		
		Source/ Notes	*2016-17 Base line*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
	9.5c GIS based city information system developed by USAC in towns		1	2	10	20
	9.5d R&D investment over GSDP					
	9.5e Number of researchers over total population					
	9.5f Number of researcher enrolled (% increase)					
	9.5g Number of research and innovations (% increase)					

*TRAI does not provide separate data for Uttarakhand

**The data pertain to State Infrastructure & Industrial Development Corporation of Uttarakhand Limited (SIIDCUL)

ANNEXURE 10

SDG 10: Reduce inequality within and among countries

Target/Sub-Target and Indicators					*Physical Targets*		
		Source/ Notes	*NSS 2011-12 All ages*	*2016-17 baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 10.1	*By 2030, progressively achieve and sustain income growth of the bottom 40% of the population at arate higher than the national average*						
10.1a	Consumption inequality (measured by Gini coefficient)		0.35		Reduce/ Arrest at present level	Reduce/ Arrest at present level	Reduce/ Arrest at present level
10.1b	Share of bottom 40% of population in total consumption (%)		23.0		Improve the share to above 23% based on their income growing at rates above 7% p.a. and at above 10% by 2030		
10.1c	Palma ratio (Ratio of share of richest 10% in total consumption/ share of poorest 40% in total consumption)		1.8		Reduce the Palma ratio to at least or below 1.5		
Target 10.2	*By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status*						
10.2a	Ratio of male and female at panchayat level						
10.2b	Ratio of male and female in the state assembly						
10.2c.	Ratio of SC population and their representation in local panchayat						
10.2d.	Ratio of SC population and their representation in state assembly						
10.2e.	Ratio of male and female at government jobs						
10.2f.	Ratio of SC population and their representation in govt jobs						
Target 10.3	*Ensure equal opportunities and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard*						
10.3a	Ratio of per capita income of district with highest value to that of district with lowest per capita income value		State Govt 2013-14	2.05	Reduce from present level		
10.3b	Ratio of households (%) living in 'good'* houses in urban areas to those in rural areas		Census 2011	1.17			1
10.3c	Ratio of all households (%) with access to tap-water from treated sources in urban areas to those in rural areas		Census 2011	1.58			1

Target/Sub-Target and Indicators					*Physical Targets*		
		Source/ Notes	*NSS 2011-12 All ages*	*2016-17 baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
10.3d	Ratio of share of all households (%) to share of SC households (%) with access to tap-water from treated sources		Census 2011	1.17			1
10.3e	Ratio of share of all households (%) to share of ST households (%) with access to tap-water from treated sources		Census 2011	1.25			1
10.3f	Slum households (%) with access to tap-water from treated sources		Census 2011	68.3			100
10.3g	Slum households (%) with access to closed drainage for waste water outlet		Census 2011	29.8			100
10.3h	Poverty ratio (rural vs urban)			1.11			
Target 10.4	*Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality*						
10.4a	Growth of real wages						
Target 10.5	*Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations*						
Target 10.6	*Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions*						
Target 10.7	*Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies*						

*'Good' refers to census 2011 categorization of housing.

ANNEXURE 11

SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 11.1	*By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums*					
11.1a	Percentage of Slum Households to Total Urban Households	Census 2011	40	30	20	10
11.1b	Percentage of Slums Denotified	Department of Urban Development	35	45	60	80
11.1c	Percentage of Slum Households covered by Low-cost Housing Programmes	Department of Urban Development	25	40	70	90
11.1d	Percentage of Slum Households living in Pucca Houses	Census 2011	35	45	65	85
11.1e.	Percentage of Shelter Capacity to Shelter less Population	AMRUT Report	0.8	15	30	50
Target 11.2	*By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons*					
Sustainable Transport System	11.2a Geographical Coverage of Public Transport	Departmnt of Transport	10	20	50	70
	11.2b Per-capita Availability of Public Transport	Departmnt of Transport	NA	As per national norm		
	11.2c Percentage of Road Network with Dedicated Bicycle Tracks	Departmnt of Transport	NA			
	11.2d Availability of Passenger Information System	Departmnt of Transport	NA			
	11.2e Availability of Traffic Surveillance System	Departmnt of Transport	NA			
	11.2f Percentage of Traffic Intersections with Pedestrian Crossing Facilities	Departmnt of Transport	NA			
	11.2g Percentage of Disabled-friendly Transport, eg. Low-floor Buses	Departmnt of Transport	NA			

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 11.3	*By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries*					
Sustainable Urbanization & Human settlement	11.3a Land Notifications as per Master Plan (%)	Town & Country Planning Department	30	100	100	100
	11.3b Number of Building Plans sanctioned as per Planning Control	Town & Country Planning Department	NA	100%	100%	100%
	11.3c Number of Active Ward Committees in the ULBs	Department of Urban Development	NA	100%	100%	100%
	11.3d Percentage of Women Councillors in the ULBs	Department of Urban Development	10	35	45	50
	11.3e Number of waste disposal plants in each ULBs	Urban Development Agency	250	470	650	800
	11.3f Percentage of Consumer Grievance Addressed in each ULBs	Urban Development Agency	25	50	75	100
Target 11.4	*Strengthen efforts to protect and safeguard the world's cultural and natural heritage*					
Target 11.5	*By 2030, significantly reduce the number of deaths and the number of people affected and decrease by 100 percent the economic losses relative to gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations*	This target has been covered under SDG 1				
Target 11.6	*By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management*					
Air Pollution	11.6a Percentage Reduction in the Level of Air Pollution	Pollution Control Department	20	30	45	70
	11.6a1 Concentration of particulate matter (PM 10) Dehradun Clock Tower	2016; Uttarakhand Environment Protection & Pollution Control Board website. Annual averages	180.05			
	11.6a2 Concentration of particulate matter (PM 10) Dehradun ISBT	Standard value 60	288.12			

Target/Sub-Target and Indicators					*Physical Targets*		
			Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
	11.6a3	Concentration of particulate matter (PM 10) Haridwar SIDCUL		127.88			
	11.6b1	Concentration of sulphur dioxide Dehradun Clock Tower	Standard value 50	25.07			
	11.6b2	Concentration of sulphur dioxide Dehradun ISBT		27.10			
	11.6b3	Concentration of sulphur dioxide Haridwar SIDCUL		24.96			
	11.6c1	Concentration of nitrogen dioxide Dehradun Clock Tower	Standard value 40	28.66			
	11.6c2	Concentration of nitrogen dioxide Dehradun ISBT		30.05			
	11.6c3	Concentration of nitrogen dioxide Haridwar SIDCUL		27.78			
	11.6d	Concentration of carbon monoxide					
	11.6e	Concentration of lead					
	11.6f	Concentration of ozone					
Solid Waste &Drainage	11.6g	Municipal Solid Waste processing (total) (%) under SBM	Data upto 4th September 2015 from Handbook of Urban Statistics 2016, GoI	0.5			
	11.6h	Municipal Solid Waste processing (Equivalent) (%) under SBM	As above	5.07			
	11.6i	No. of wards with 100% door to door collection and transportation of solid waste	State government*	431			
	11.6j	Households connected to sewerage (%)					
	11.6k	Households in slums connected to sewerage (%)					
	11.6l	Percentage of solid waste treated					
	11.6m	Percentage of waste water treated					
	11.6n	Hospitals disposing bio-medical waste safely (number)	UEPCB website	708			
	11.6n	Percentage of Garbage Collected and Transported to Garbage Generated	Department of Urban Development	5.07	50	75	100
	11.6o	Percentage of Sewage treated to Sewage Generated	Department of Urban Development	NA	30	50	70
	11.6p	Percentage Households connected to Drainage System	Department of Urban Development	NA	30	50	70

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
11.6q	Percentage of Waste Water Treated to Generated	Department of Urban Development	30	50	70	90
11.6r	Number of Wards with 100% Waste Collection and Transportation (Total wards 700)*	Department of Urban Development	431	300 out of 700	500 out of 700	700 out of 700
11.6s	Percentage of Households having 24/7 Access to Potable, Safe Drinking Water within Premises	Department of Urban Development	50	60	75	100
11.6t	Percentage of Households having 24/7 Access to Electricity within Premises	Department of Urban Development	55	65	75	100
11.6u	Percentage Reduction in the Level of Noise Pollution	Pollution Control Department	NA	30	50	70
Target 11.7	*By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities*					
11.7a	Per-capita Availability of Green Space		NA	As per National Norm		
11.7b	Average Distance from accessing Public Space		NA	As per National Norm		
11.7c	Average Distance from accessing Recreational Facilities		NA	As per National Norm		
11.7d	Built up area over public space					

Note: * the data for same indicator from 2016 Handbook of Urban Statistics GoI is 87

ANNEXURE 12

SDG 12: Ensure Sustainable consumption and production patterns

Target/Sub-Target and Indicators			*Physical Targets*			
			2016-17 Baseline	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 12.1	*Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries*	*Source/ Notes*				
Target 12.2	By 2030, achieve the sustainable management and efficient use of natural resources					
12.2a	Bio-fertilizers in agricultural production (kg/Ha)		0.3	0.4	0.5	0.6
12.2b	Use of fossil fuel energy consumption (% of total)					
12.2c	Share of firewood in total energy mix (%)					
12.2d	Total carbon sink (MT) in forest area		537.02*	Baseline level should be increased		
Target 12.3	*By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses*					
12.3a	Post harvest loss fruits and vegetables (annual) as % of total production		4.58-15.88**			Reduce to <2%
Target 12.4	*By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycles, in accordance with agreed international frameworks, and significantly reduce their release toair, water and soil in order to minimize their adverse impacts on human health and the environment*					
Sound Management of Chemicals	12.4.a Use of plastics (per capita in grams per day)					0
	12.4 b Amount of hazardous waste generation (metric tonne per annum)	Indiastat website; data 2012	55627			0
	12.4.c Disposal of liquid industrial waste/generated (%)					
	12.4.d Disposal of solid industrial waste/generated(%)					
Target 12.5	*By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse*					

Target/Sub-Target and Indicators		*Physical Targets*			
		2016-17 Baseline	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 12.6	*Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle*				
Target 12.7	*Promote public procurement practices that are sustainable, in accordance with national policies and priorities*				
Target 12.8	*By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature*				
12.8a	Population covered by awareness campaigns (%)				100%

*Estimate by Raj and Joshi (Uttarakhand State Perspective Strategic Plan 2009-27, Watershed Management Directorate, Uttarakhand), cited in Annual Plan 2013-14, Vol.I, State Planning Commission, Govt of Uttarakhand. **Estimated at national level by ICAR-CIPHET for 2013-14

ANNEXURE 13

SDG 13: Take urgent action to combat climate change and its impacts

Target/Sub-Target and Indicators			*Physical Targets*		
	Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 13.1 *Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries*					
13.1.a Annual CO2 emissions (metric tonnes per capita)					
13.1.b Consumption of ozone-depleting substance (ODS tonnes)		All ACs and fridges with ODS	Reduce 10% ACs and fridges without ODS	Reduce 20% ACs and fridges without ODS	100% ACs and Fridges without ODS
13.1.c Greenhouse gases (GHG) emitted by transport sector (%)		No CNG/electric transport	All new transport CNG/electric	25% transport CNG/electric	All transport CNG/electric
13.1.d Greenhouse gases (GHG) emitted by industrial sector (%)					
13.1.e Greenhouse gases (GHG) emitted by commercial sector (%)					
13.1.d Greenhouse gases (GHG) emitted by agriculture sector (%)			Shift 10% cultivated area to Horticulture	Shift 25% cultivated area to Horticulture	Shift 50% cultivated area to Horticulture
13.1.g GHG emission (in CH4) from agricultural sector (Gg)					
13.1.h GHG emission (in N2O) from agricultural sector (Gg)		All rice under flooding	5% rice area under AWD*	25% rice area under AWD	80% rice area under AWD
13.1.i GHG emission (in CO2) from agricultural sector (Gg)					
13.1.j GHG emission (in CO2) from industrial sector (cement and lime) (Gg)					
13.1.k GHG emission (in CO2) from energy sector (industrial, transport and other) (Gg)		70% rural cooking with wood	Reduce rural cooking with wood to 60%	Reduce rural cooking with wood to 50%	Eliminate all rural cooking with wood
13.1l Area growing drought-resistant and flood-resistant crops (% of total)					
13.1m Length of river with perennial flow of water (km)					
13.1n Number of casualties due to disaster					

Target/Sub-Target and Indicators				*Physical Targets*			
			Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
13.1o	Number of people affected due to disaster						
Target 13.2	*Integrate climate change measures into national policies, strategies and planning*			State action plan on climate change (SAPCC) formulated	Formulate ways of integrating SAPCC into state policies	30% of state budget linked to SAPCC	50% of state budget linked to SAPCC
Climate change action plan	13.2a	Number of sectors prioritized under climate change action plan					
	13.2b	Number of sectors covered under climate change action plan					
Target 13.3	*Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning*						
Education, Awareness and IEC	13.3a	Proportion of population covered by climate change education (%)	(a) Introduce climate awareness into schools			Increase High School enrolment to 100%	Increase College enrolment to 30% of High School graduates
			(b) Broad-band connectivity for mitigation and adaptation			100% connectivity of villages	
	13.3b	Trained persons in climate change mitigation (early warning etc.) (number)					
	13.3c	Number of awareness program at State level have integrated climate mitigation and adaptation					
	13.3d	Number of awareness program at sub-state level which have integrated climate mitigation and adaptation					

*AWD is Alternate Wetting and Drying which is a water-saving technology

ANNEXURE 14

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Target/Sub-Target and Indicators				*Physical Targets*			
			Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 15.1	*By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and dry lands, in line with obligations under international agreements*						
Conservation and Restoration of Forest	15.1a	Total land area covered by dense forest against total forest cover(%)	FSI 2015	34	34.5	35	35.5
	15.1 b	Total land area covered by bushes /scrub(%)	FSI 2015	0.006	0.006	0.006	0.006
	15.1 c	Forest under community based management (as% of total forest area) (Van Panchayat)	Forest Stats 2014-15	40%	40%	40%	40%
	15.1d	Conservation areas (including Forest)(in proportion to total land area)	Forest Stats 2014-15	71%	71%	71%	71%
	15.1 e	Conservation of lakes, wetlands and ponds (No)		-	-	-	-
	15.1 f	afforestation (ha)(Including all type of plantation departmental & Mass planting)		18251	48000	112000	224000
	15.1 g	Soil &Water conservation works (Number)		45	1500	3500	7000
Conservation & Restoration of Water Bodies	15.1 h	Number of river and riverlets covered	Namami Gange	11	11	11	11
	15.1 i	afforestation for river & riverlets (Ha)	Namami Gange	1000	29302	29302	29302
	15.1 j	Number of lakes taken for treatment		-	-	-	-
	15.1 k	afforestation for lakes (Ha)		-	-	-	-
	15.1 l	Number of contour trench, pits & pond (chal-khal) Constructed	MPR 2016-17	1020	3000	7000	14000
	15.1 m	Area covered under pits and ponds (Chal-khal)	MPR 2016-17	215	750	1750	3500
	15.1 n	Soil& Moisture Conservation	Namami Gange	-	6196.85	6196.85	6196.85
	15.1 o	Maintenance of Herbal Garden (number)	MPR 2016-17	4	4	4	4
	15.1 p	Protection of Bugyals		LS	15	15	15
	15.q	River front development (ha)	Namami Gange	-	442.78	442.78	442.78
	15.r	Bioremediation & Bio filteration (Ha)	Namami Gange	-	240	240	240
	15 s	Institutional/Industrial Plantation (ha)	Namami Gange	-	290	290	290
	15.t	Ganga Van(Eco Park Development) (ha)	Namami Gange	-	379.8	379.8	379.8

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
15.u	Riparian Wildlife Management (ha)	Namami Gange	-	1620	1620	1620
15.v	Brick construction/Tree guard Plantation(ha)	Namami Gange		150	150	150
Target 15.2	*By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and increase afforestation and reforestation*					
Afforestation and Reforestation						
15.2 a	Rate of forest loss and degradation (%)		-	-	-	-
15.2 b	Handover of forest to leasehold forest groups (000 ha)	State has Van Panchayats	-	-	-	-
15.2 c	Additional plantation (Ha) per annum		-	-	-	-
15.2 d	Growing of Seedlings (Lakh seedlings)	2015-16	268	810	1890	3780
15.2 e	Percentage change in forest cover	FSI 2015	-1.1	1	1.49	2
15.2 f	Number of Plants raised for schools (Lakh seedlings)	2016-17	5.03	15	35	70
15.2 g	Total tree covered achieved outside forest area (Sq.Km)	ISFR 2015	752	770	800	850
15.2 h	Total area covered under different afforestation schemes (Ha)	Departmental report (From 2002-03 to 2016-17)	305248	353248	417248	529248
Target 15.3	*By 2020, combat desertification, restore degraded land and soil, including land affected by desertification, drought and foods, and strive to achieve a land-degradation-neutral world*					
Combat desertification, restore degraded land and soil						
15.3a	Identification and management of watersheds (number)	1. Total 1110 Micro-water shed (MWS) are situated in state excluding district Haridwar. 2. Out of which 843 MWS identified for treatment. 3. 381 MWSs have been treated under EAPs and CSS and remaining 462 MWS will be treated. Out of which 286 MWSs are being treated under EAPs and CSS and 176 MWS will be taken up for treatment from 2023-24.	286 MWS are being treated (ongoing)	Treatment of 286 MWS will be continued	1. Treatment of 286 MWS will continue 2. Project proposal for 176 MWS will be prepared for financing	1. Treatment of 286 MWS will continue till 2021-22 2. Project proposal for 176 MWS will be prepared for financing 3. Approved projects under EAPs and CSS for 176 MWS will be implemented

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
15.3b	Conservation of watersheds (number)		286	286 continued	300	462
15.3c	Reclaim flooded and other degraded land (in 000 ha)		1.0	2.5	3.5	8.0
15.3d	Number of watersheds undergone adaptation practices for soil and water stress management		82	110	286	462
15.3e	Conservation of rivulets and river banks through bioengineering (km)		26.45	67.00	70.00	75.00
15.3f	Increase tree/forest cover in degraded area (Hectare)		2481	3500	4500	5200
Target 15.4	*By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development*					
Conservation of mountain ecosystems, including their biodiversity						
15.4a	Potentially dangerous glacial lakes (%)					
15.4b	Mountain ecosystems covered by the protected areas (%)		20%	20%	20%	20%
15.4c	Restoration of waterbodies/streams in mountain areas					
15.4 d	Improvement of local livelihood (increase in (%))(Livelihood will be generated indirectly, not through department)		-	0.5% of total population	0.5% of total population	0.5% of total population
15.4 e	Increase in per capita income of mountain dwellers		0	0	0	0
Target 15.5	*Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species*					
Prevent the extinction of threatened species						
15.5a	Threatened flora (medicinal and aromatic plants) (%)					
15.5b	Threatened fauna (mammals, birds, reptiles, amphibians, fishes, insects, platyhelminths, molluscs, etc.) (%)	*	4 2%			
15.5 c	Wild tigers (number)		340	350	370	390
15.5 d	Blackbucks(number)		-	-	-	-
15.5 e	Red list Index		-	-	-	-
15.5 f	Number of endangered species					
15.5 g	Construction of Water Holes (numbers)		49	180	420	840

Target/Sub-Target and Indicators				*Physical Targets*			
			Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
15.5 h	Removal of lantana (ha)			1640	6000	14000	28000
15.5 i	Patrolling for protection (Number)			513	1500	3500	7000
15.5 j	Maintenance of Fire lines (Km)			49524	49524	49524	49524
15.5 k	Control burning (Ha)			159993	160000	160000	160000
15.5 l	Fire watcher (number)			7251	8000	8000	8000
15.5 m	Strengthening of Check Posts (number)			36	36	36	36
15.5 n	Construction/maintenance of Boundary Pillars (Number)			895	3000	7000	14000
15.5 o	Creation of large water bodies for elephant			2	12	28	56
Target 15.6	*Ensure fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources*						
15.6a	Poaching of tigers and other wild life prevented to curb the wildlife						
15.6b	Community led anti-poaching units mobilized (number)		Institute community management of protected areas				
Target 15.7	*Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both the demand and supply sides of illegal wildlife products*						
Poaching and Trafficking of wild life and endangered species of flora & fauna	15.7a	Number of poaching cases prevented to curb the wildlife trfficking	Forest Circles	33	No target can be fixed since aim of the department is to minimise poaching or stop poaching		
	15.7b	Community led anti-poaching units mobilized (number)		-	3	7	14
	15.7c	Number of detection and prevention of traded wildlife that was poached or illicitly trafficked					
Target 15.8	*By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species*						
15.8a	Percentage change in prevention and control of invasive alien species						
15.8.b	Nationwide surveys and research on invasive alien plant species (number)						
Target 15.9	*By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts*						
15.9a	Plant (floral) species under conservation plans (number)						

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
15.9b	Animal (faunal) species under conservation plans (number)		03(Tiger, Elephant & Snow Leopard)	03 (Tiger, Elephant & Snow Leopard)	03(Tiger, Elephant & Snow Leopard)	03(Tiger, Elephant & Snow Leopard)
15.9c	Number of department identified covered under the biodiversity programmes directly/indirectly					
15.9d	Number of schemes identified covered under the biodiversity programmes directly/indirectly					
15.9e	Total direct/indirect budgetary allocation under the biodiversity programmes over the total budget					
15.9f	Total expenditure(%) against the allocation					
15.9g	Increase in biodiversity Index					
15.9 h1	Ecotourism-- Development of awareness center, information center/ Picnic spots	MPR	3	12	28	60
15.9 h2	Ecotourism-- Maintenance of Zoos	MPR	3	3	3	3
15.9 h3	Ecotourism-- Strengthening of FRH	MPR	1	45	105	175
15.9 h4	Ecotourism-- Maintenance of Van Chetna Kendra	MPR	9	20	20	20
15.9 h5	Ecotourism-- Construction of Zoos (Number)	MPR	2	3	3	3
15.9 i1	Infrastructure--Strengthening of Forest Roads (Km)	MPR	17 roads	375	875	1750
15. 9 i2	Infrastructure--Maintenance of Forest Roads(Km)	MPR	487	800	1600	3000
15. 9 i3	Infrastructure-- Maintenance of Bridle Paths (Km)	MPR	LS	1800	4200	8400
15. 9 i4	Infrastructure-- Construction of Buildings(Number)	MPR	2 Part	120	280	560
15. 9 i5	Infrastructure-- Maintenance of Buildings (number)	MPR	49	1200	2800	5600
15. 9 i6	Infrastructure-- Construction/Maintenance of Pul/Pulias (Number)	MPR	-	60	140	280

* Source: "Threatened Birds of Uttarakhand" by Asan r. Rahmani & Dhananjai mohan, and "Indian mammals a field Guide" by Vivek Mohan, Wildlife(Protection)Act 1972.

ANNEXURE 15

SDG 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Target/Sub-Target and Indicators		*Physical Targets*				
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 16.1	*Significantly reduce all forms of violence and related death rates everywhere*					
16.1a	Crime against body^ per 100,000 population	NCRB*	25.3	Reduce from baseline		
16.1b	Crime against women ^^ per 100,000 population	NCRB*	28.2	Reduce from baseline		
16.1c	Crime against Scheduled Castes per 100,000 population	NCRB*	4.9	Reduce from baseline		
16.1d	Crime against Scheduled Tribe per 100,000 population	NCRB*	2.1	Reduce from baseline		
Target 16.2	*End abuse, exploitation, trafficking and all forms of violence against and torture of children*					
16.2a	Child labour (% of children age 5-17 years)					
16.2b	Crime against children^^^over total crime	NCRB*	16.5	Arrest/reduce from baseline		
16.2c	Number of child abuse/trafficking cases					
Target 16.3	*Promote the rule of law at the national and international levels and ensure equal access to justice for all*					
Target 16.4	*By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime*					
Target 16.5	*Substantially reduce corruption and bribery in all their forms*					
	16.5a Number of corruption /bribery cases					
	16.5b Number of trial against corruption/bribery					
Target 16.6	*Develop effective, accountable and transparent institutions at all levels*					
	16.6a Number of Common Service Centres	State Govt	4000			7950
Target 16.7	*Ensure responsive, inclusive, participatory and representative decision-making at all levels*					
16.7a Voter turnout (%)		Media reports	68			

Target/Sub-Target and Indicators			*Physical Targets*			
		Source/ Notes	*2016-17 Baseline*	*2017-18 to 2019-2020*	*2017-18 to 2023-24*	*2017-18 to 2030-31*
Target 16.8	*Broaden and strengthen the participation of developing countries in the institutions of global governance*					
Target 16.9	*By 2030, provide legal identity for all, including birth registration*					
16.9a	Percentage of births registered (%)$	Outcome budget Health Dept	100	100	100	100
16.9b	Registration of mothers under ICDS (number)	State Govt	1312450	Additional 1 lakh	Additional 1 lakh	Attain 90%
16.9c	Marriage certificate by gender and social groups					
16.9d	Number of PAN cards issued					
16.9e	Number of AADHAR cards issued					
Target 16.10	Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements					

*Source: National Crime Record Bureau. The baseline data refer to 2015.

^ Murder, attempt to commit murder, culpable homicide not amounting to murder, attempt to commit culpable homicide, kidnapping and abduction, grievous hurt, causing death by negligence, causing injury due to rash driving/road rage, dowry death and human trafficking.

^^ Rape, Assault on women with intent to outrage her modesty, Insult to the modesty of women, Cruelty by husband or relatives.

^^^ Foeticide, Infanticide, Procreation of minors, Murder, Exposure and abandonment, Offences under the POCSO Act, the Prohibition of Child Marriage Act etc.

$ The birth registration of children whose births are reported registered under ICDS are 1905085 in number. This is proposed to be increased to 90% by 2030.

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