Uttarakhand

State of the Environment Report-2012

Uttarakhand State Council for Science and Technology (UCOST)
Uttarakhand Science Education and Research Centre (USERC)

Department of Science and Technology (Govt. of Uttarakhand), Uttarakhand

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Bishen Singh Mahendra Pal Singh
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Uttarakhand : State of the Environment Report-2012
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ISBN : 978-81-211-0845-4

Published by Abhimanyu Gahlot for M/s. Bishen Singh Mahendra Pal Singh,
23-A, New Connaught Place, Dehra Dun, India and Uttarakhand State Council for Science and Technology (UCOST), Dehra Dun India, Printed at Shiva Offset Press and composed by Doon Phototype Printers, 14, Old Connaught Place, Dehra Dun, India.

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Cover Photo: Devariyatal, Rudraprayag (Photo by Mr. Threesh Kapoor)

Preface

Evident from various developmental indicators like industrialization, urbanization and growth in population, Uttarakhand economy has witnessed phenomenal growth since it's carving out from Uttar Pradesh. However, these developments have accentuated and sometimes triggered the question of whether they are ecofriendly or are of sustainable approach? Incidentally, there is an increasing awareness and infusing of environmental aspects into the mainstream economy of the bio-diverse rich state. Being an essential ingredient, environmental concerns therefore have taken up an important place in planning and development programmes of the State.

It is fathomed that the capacity to produce and consume goods and services depends on the three assets of the economy: natural, industry and human resources. Natural resources consists of natural assets of biosphere supporting all life forms and the economic contributions include production of food, energy, air, water, minerals, habitat and biological diversity. Industry with the aid of human capital builds on natural resources. The ecosystem where the three assets mingle and impact each other is the 'Environment'. Thus it is essential to honor the natural resources constraint for sustainability of humanity.

As established, the environmental effects of a progressive economy can be traced through different sectoral, regional and case specific channels. An attempt therefore has been made to capture multiple facets of economy where environment makes contributions. This present 'SOER 2012' is the first in a series of reports from the state on the environmental concerns and its impacts as seen by environment policy researchers. It is designed to present the progress made towards realization of sustainable development goals and a good environmental quality. Alongside tackling local issues and challenges the outcome of the report is also meant to serve as a baseline for the state of Uttarakhand environment, in a manner that will allow measuring progress in the future.

Divided over seven broad sections, the report offers a panoramic overview of the environment of the state. The sections have reviewed the trends, status and presented some facts of the current environmental situation in the state, analyzed the pressures and underlying causes, impacts and regulatory issues as pertaining to the sector. Within each chapter, the lead authors have presented primary data (Chapters-Climate Change and Water), data drawn from R&D Projects sponsored by UCOST and secondary data from reliable government sources in the form of several portrayals and fact files. Given the fact that the environment interfacing the economy and society has very large dimensions, this report could take up only a handful. Nevertheless it is proposed to include the rest of the sectors in forthcoming issues.

For convenience of a reader the report presents a ready reckoner on nearly all aspects of the environment. This document is targeted at a wide readership ranging from policy makers and advisors to academic readers as well as the common person. The report is written with an aim to i) Provide detail, relevant and credible information and data base on environmental issues for decision makers and public; ii) Provide environment status of the state; iii) Help the decision makers to identify gaps in the environment management planning; and iv) Generate awareness for environmental issues.

Finally, I wish to thank my colleagues from UCOST, USERC and many other authors who spent months of hard working days; they are the contributors and it must be mentioned that without their dedication this report would not have been possible.

Dr. Rajendra Dobhal
Director General

Acknowledgements

Authors humbly acknowledge the inputs and support provided by concerned persons (listed below) for sharing the State sectoral data:

- Prof. A.N. Purohit
  Ex-Vice Chancellor
  HNB Garhwal University, Srinagar
- Dr. Piyoosh Rautela
  Executive Director
  Disaster Mitigation and Management Centre,
  Dehradun
- Director
  Department of Agriculture, Dehradun
- Officer In-charge
  Zoological Survey of India, Northern Regional
  Station, Dehradun
- Officer In-charge
  Botanical Survey of India, Dehradun
- Chief General Manager
  Uttarakhand Jal Sansthan, Dehradun
- Regional Director
  Central Ground Water Board, Dehradun
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- Uttarakhand State AIDS Control Society Directorate
  of Medical Health & Family Welfare, Dehradun
- Cooperation Centre for Riverbank Filtration
  Haridwar
- Dr. I.D. Bhatt
  G.B.Pant Institute of Himalayan Environment and
  Development
  Kosi, Katarmal, Almora
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  Geological Survey of India, Dehradun
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  (Uttarakhand)
- Mr. S.T.S. Lepcha (IFS)
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  Mandal, Gopeshwar, Distt-Chamoli
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  Consultant Centre for Glaciology, WIHG, Dehradun
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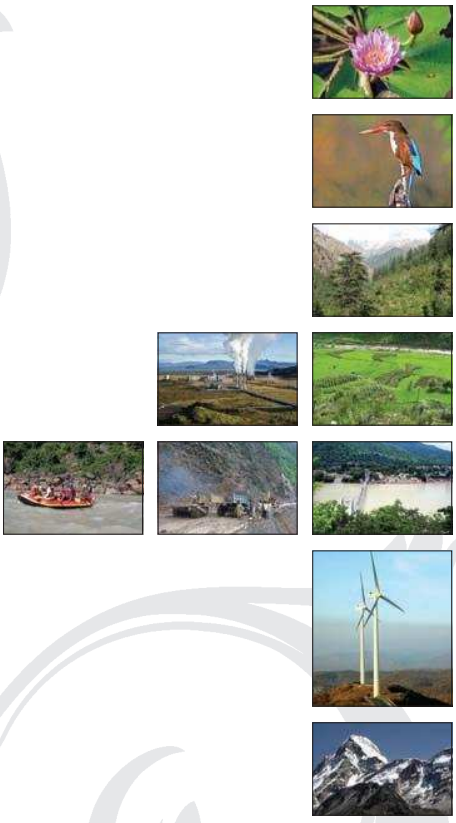

Photo Courtesy

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Mr. Abhinav Dubey, Project Scientist, UCOST, Dehradun

Uttarakhand Forest Department, Dehradun

Uttarakhand Jal Sansthan, Dehradun

Uttarakhand Renewable Energy Development Agency, Dehradun

Himalayan Institute of Hospital Trust, Jolly Grant, Dehradun

Lal Bahadur Shastri National Administrative Academy, Mussoorie
Directorate of Industries, Uttarakhand

M/s Bishen Singh Mahendra Pal Singh, Dehradun

Mr. Abhimanyu Gahlot, Dehradun

Mr. N.C. Dhingra and Mr. Jyoti Swarup Sharma

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List of Abbreviations

AAS	:	Atomic Absorption Spectrophotometer
AIBP	:	Accelerated Irrigation Beneficiary Program
BARC	:	Bhabha Atomic Research Centre
BCM	:	Billion Cubic Metre
BHEL	:	Bharat Heavy Electrical Limited
BIS	:	Bureau of Indian Standard
BMCs	:	Biodiversity Management Committee
BOD	:	Biochemical Oxygen Demand
BR	:	Biosphere Reserve
BVI	:	Bheshaj Vikas Ikai
CAMP	:	Conservation Assessment and Management Plan
CAP	:	Centre for Aromatic Plants
CBD	:	Conservation of Biological Diversity
CBR	:	Crude Birth Rate
CCRBF	:	Cooperation Centre for River Bank Filtration
CCS	:	Carbon Capture and Sequestration
CDH	:	Conservation, Development and Harvesting
CDM	:	Clean Development Mechanism
CDP	:	City Development Plan
CDR	:	Crude Death Rate
CEA	:	Central Electricity Authority
CFU	:	Colony Forming Units
CGWB	:	Central Ground Water Board
CHC	:	Community Health Center
CII	:	Confederation of Indian Industries
CITES	:	Convention on International Trade in Endangered Species
CLL	:	Colourless
CMS	:	Convention on Migratory Species
COD	:	Chemical Oxygen Demand
CPCB	:	Central Pollution Control Board
CR	:	Conservation Reserve
Cr	:	Critically Endangered
CRSP	:	Central Rural Sanitation Programme
CSMRS	:	Central Soil and Material Research Station
CSSIHR	:	Compendium of Statistics for the States of Himalayan Region
D/S	:	Downstream
DCMG	:	District Crisis Management Group
DDMA	:	District Disaster Management Authority
DM	:	Disaster Management
DMD	:	Disaster Management Department
DMMC	:	Disaster Mitigation and Management Centre
DO	:	Dissolved Oxygen
DPAP	:	Drought Prone Area Development Programme
DRDA	:	District Rural Development Agency
DRDO	:	Defence Research Development Organisation
DST	:	Department of Science and Technology
EC	:	Electrical Conductivity
ELA	:	Equilibrium Line Altitude
En	:	Endangered
EVP	:	Evaporation Lines
Ex	:	Extinct
FC	:	Fecal Coliform
FDU	:	Field Distillation Unit
FSI	:	Forest Survey of India
GA	:	Geographical Area
GEF	:	Global Environment Fund
GIA	:	Gross Irrigated Area
GIS	:	Geographical Information System

GLOF	:	Glacial Lake Outburst Floods
GMVN	:	Garhwal Mandal Vikas Nigam
GOI	:	Government of India
GRAMYA	:	Uttarakhand Decentralized Watershed Development Project
GSI	:	Geological Survey of India
GW	:	Giga Watt
GWh	:	Giga Watt hour
GWMW	:	Ground Water Monitoring Well
Ha	:	Hectare
HAPPRC	:	High Altitude Plant Physiology Research Centre
HESCO	:	Himalayan Environment Studies and Conservation Organisation
HRDI	:	Herbal Research and Development Institute
ICFRE	:	Indian Council of Forestry Research and Education
IFAD	:	International Fund for Agricultural Development
IIE	:	Integrated Industrial Estate
IIT	:	Indian Institute of Technology
ILSP	:	Integrated Livelihood Support Project
IMR	:	Infant Mortality Rate
IPM	:	Integrated Pest Management
ISOPOM	:	Integrated Scheme of Oilseeds, Pulses, Oil Palm and Maize
ISRO	:	Indian Space Research Organization
IUCN	:	International Union for Conservation of Nature
IWMP	:	Integrated Watershed Management Programme
K	:	Potassium
KMVN	:	Kumaon Mandal Vikas Nigam
KW	:	Kilo Watt
Lc	:	Least Concern
LHP	:	Large Hydropower Projects
LMWL	:	Local Meteoric Water Line
LPHD	:	Litre Per Head Per Day
LPM	:	Litres Per Minute
MAPs	:	Medicinal and Aromatic Plants
MASL	:	Mean Average Sea Level
MBGL	:	Metres Below Ground Level
MGNREGA	:	Mahatma Gandhi National Rural Employment Guarantee Act
MHA	:	Ministry of Home Affairs
MLD	:	Million Litres Per Day
MMA	:	Macro Management of Agriculture
MMR	:	Maternal Mortality Ratio
MPCAS	:	Medicinal Plant Conservation Areas
MPN	:	Maximum Probable Number
MSK	:	Medvedev Sponheuer Karnik
MT	:	Metric Tonn
MU	:	Million Units
MW	:	Mega Watt
MW	:	Monitoring Well
N	:	Nitrogen
NA	:	Not Analysed
NAPCC	:	National Action Plan on Climate Change
HYV	:	High Yielding Varieties
NBM	:	National Bamboo Mission
NBWL	:	National Board of Wild Life
NCC	:	National Cadet Core
ND	:	Not Detected
NDBR	:	Nanda Devi Biosphere Reserve
NDMA	:	National Disaster Management Authority
NDRF	:	National Disaster Response Force
NEC	:	National Executive Committee
NEP	:	National Electricity Policy
NGO	:	Non Government Organization
NHB	:	National Horticulture Board
NHM	:	National Horticulture Mission
NIA	:	Net Irrigated Area
NIDM	:	National Institute of Disaster Management
NIH	:	National Institute of Hydrology
NIPHM	:	National Institute of Plant Health Management
NIUA	:	National Institute of Urban Affairs
NMPB	:	National Medicinal Plant Board
NP	:	National Park
NPOF		National Project on Organic Farming
NRAA	:	National Rainfed Area Authority
NREP	:	National Rural Employment Programme
NSG	:	National Security Guard
NSS	:	National Service Scheme

NTFP	:	Non Timber Forest Products
NTU	:	Nephelometric Turbidity Unit
NYKS	:	Nehru Yuva Kendra Sangathan
ODL	:	Odourless
P	:	Phosphorous
PAN	:	Protected Area Network
PA's	:	Protected Areas
PCRI	:	Pollution Control Research Institute
PHC	:	Primary Health Center
PMU	:	Project Management Unit
QPM	:	Quality Planting Material
Qtl	:	Quintal
R&D	:	Research and Development
R	:	Rare
RBF	:	River Bank Filtration
RE	:	Renewable Energy
RET	:	Rare, Endangered, Threatened
RKVY	:	Rashtriya Krishi Vikas Yojana
RLEGP	:	Rural Landless Employment Guarantee Programme
RS	:	Remote Sensing
RSC	:	Residual Sodium Carbonate
SAC	:	Space Applications Centre
SAR	:	Sodium Adsorption Ratio
SCMG	:	State Crisis Management Group
SDMA	:	State Disaster Management Authority
SEOC	:	State Emergency Operation Centre
SERC	:	State Electricity Regulatory Commissions
SGDP	:	State Gross Domestic Product
SHP	:	Small Hydropower Projects
SIDCUL	:	State Infrastructure and Industrial Development Corporation of Uttarakhand Ltd
SMPB	:	State Medicinal Plant Board
STP	:	Sewage Treatment Plants
SWAP	:	Sector Wide Approach
TC	:	Total Coliform
TDS	:	Total Dissolved Solids
TFR	:	Total Fertility Rate
TKN	:	Total Kjeldahl Nitrogen
TSC	:	Total Sanitation Campaign
TW	:	Tube Well
U/S	:	Upstream
UCOST	:	Uttarakhand State Council for Science and Technology
UEPPCB	:	Uttarakhand Environment Protection and Pollution Control Board
UGC	:	Upper Ganga Canal
UJS	:	Uttarakhand Jal Sansthan
UNDP	:	United Nations Development Programmes
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
UOCB	:	Uttarakhand Organic Commodity Board
UPJN	:	Peyjal Vikas Evam Nirman Nigam
USERC	:	Uttarakhand Science Education and Research Centre
USOCA	:	Uttarakhand State Seed and Organic Certification Agency
UV-VIS	:	Ultraviolet-Visible
Vu	:	Vulnerable
WDPSCA	:	Watershed Development Project for Shifting Cultivation Area
WHO	:	World Health Organization
WIHG	:	Wadia Institute of Himalayan Geology
WS	:	Wild Life Sanctuary
WTI	:	Water Technology Initiative

Executive Summary

The present SOER has tried to come up with a complete database on the resources of the State for ready reference and discussion making based on the facts and figures. The report has seven sections: Bio-resources, Geo-resources, Climate Change, Disaster Scenario & management, Health, Industry and Tourism. The summary of the various sections of the book is as follows:

SECTION I: BIO-RESOURCES

Biodiversity

Uttarakhand exhibits rich biodiversity because of high topographic, climatic and altitudinal variations. It is estimated that there are about 7000 species of plants in the State though till date only 85% flora is explored. Similarly, the State comprises 500 species of fauna of which 80% are invertebrates and 20% vertebrates. Of the total floral diversity explored, 74% comprised flowering plant diversity. It is interesting to note that the floral diversity of the State contributes 31% of total floral density of India. On the other hand, the faunal diversity contributes just 1.58% of the total faunal density of the country. The pteridophytic, gymnospermic and angiospermic diversity of Uttarakhand contributes 33.2, 54.5 and 28.9% of the respective diversity of the country. The moluscus, arthropod, pisces, amphibians, reptiles and aves diversity of the State contributes 2.55, 0.19, 5.58, 9.71, 15.46 and 12.69% of the respective diversity of the country.

Medicinal and Aromatic Plants

Uttarakhand harbours over 701 species of medicinal plants that are used by large number of drug and pharmaceutical industries as well as used in Ayurvedic, Unani and other traditional systems of medicine. These species are distributed at all elevations with majority towards high altitude zones. During 2004-2011, nearly 1500-2250 MT volume of medicinal plants was collected from forests while 75 to 1100 MT net volume has been produced through cultivation in past four years. Most of the demand is being met out by wild collection itself. To develop the MAP sector, seven areas have been designated as Medicinal Plant Conservation Areas (MPCAs) for its mainstream conservation and sustainable use.

Forests

Uttarakhand is covered with rich forests all across 13 districts. The forest cover in the State is 24,496 km^2, which is 45.80% of the State's geographical area. As regards the forest cover and forest area as percentage of geographical area the State lies at 11th and 5th position, respectively out of 35 State/UT whereas, forest cover and forest area occur at 9th position. The last decade has seen an increase of 1.04% forest cover in the State. Out of 13 districts, Nainital (72.69%) has highest forest cover whereas, Udham Singh Nagar (21.48 %) has the lowest. Among the 16 forest types existing in India, 8 can be found in Uttarakhand. IUCN has listed 38 forest plants species as globally threatened in the State. The total wetland area of the State is 1038.82 km^2 with Udham Singh Nagar district having the maximum wetland area (19.35%). The State forests are hea□ven for timber production, putting it at 5th and 3rd national ranking in terms of estimated production of wood and fuelwood from forests.

Agriculture and Horticulture

Agriculture is described as a key component of State economy constituting one third of the share of State's income. The major work force including 80% women population of the State is employed in agriculture sector. Total cropped area accounts for around 20.5%. The net area sown is around 13.1% and is under pressure to sustain a population of more than 10 crore, almost 80% of which is rural. Only 14% of the total area is irrigated in the hill areas, with the rest of the sown area being rain fed. The percentage of irrigated area in the plains, however, is very high. The major crops in the State include paddy, wheat, maize, soybean and other pulses and millets. As regards Horticulture, a total of 19 different type of fruits and 28 vegetables are grown in the State excluding the wild varieties. Among the fruits, mango, apple, citrus, litchi and guava form the major share while in vegetables, brinjal, cabbage, cauliflower, okra, onion, peas, potato and tomato form the major share of the State.

SECTION II: GEO-RESOURCES

Minerals and Mining

Uttarakhand has potential mineral reserves that can be exploited for industrial growth. Magnesite, Talc-Steatite, limestone, Dolomites are the minerals occurring in great abundance while ores of uranium, copper, lead, pyrite, gold and deposits of phosphorite, gypsum and graphite deposits are too small to be commercially profitable. The reserves of magnesite and cement grade limestone are tremendously large. However, non-systematic mining activity and unscrupulous practice has led to the destruction of resource and caused imbalance in local ecosystem.

Water Resources

Uttarakhand being a hilly State possesses varied hydrogeological regimes as well as fair amount of snow cover. It receives heavy rainfall during the monsoon period and snowfall, which is caused by winter depression during January to March. Two hydrogeological regimes i.e. Gangatic alluvial plain and the Himalayan mountain belt exist in the State where the former regime is capable for ground water development. Ground water in hilly parts of the State occurs mainly in fissures and fractures and emerges in the form of water streams such as, gadhera or springs. However, as regards surface water regimes, they are mainly due to three types of rivers such as, glacial fed rivers, non glacial fed rivers and rainfed rivers. Ganga, Yamuna, Ramganga, Kali, Kosi rivers etc. and their tributaries are the main surface water bodies. In addition to these, some lakes including Naini Lake, Sat Tal Lake, Naukuchiatal Lake also fulfil the water requirements in Uttarakhand. Concerning the water quality issues, the State has plenty of good quality of water except for some industrial or highly populated sites. Some problems plaguing the sector are hardness from hard rocks and coliform problems due to improper management of sewage.

Energy Resources

The energy need of the State is mostly met by hydropower. Uttarakhand has the identified capacity of hydropower potential of around 18 GW out of which only 2980 MW capacity has been tapped. There are 354 identified Small Hydro Power sites with the aggregate potential of 1478.24 MW. Among the large hydropower projects, Tehri project on Bhagirathi river is the largest with an installed capacity of 2000 MW. Besides this, solar energy generation also has scope in the State. In spite of this only 50 KW of grid and 80 KW of off-grid solar power has been generated till Jan 2011. Other sources of clean energy available in the State are geothermal, wind and biomass.

Glaciers

Upper reaches of Ganga basin falls within the Uttarakhand Himalayas, which includes Yamuna, Bhagirathi, Alaknanda, Kaliganga (Ghaghra) etc. Total number of glaciers identified in this part is 968 with 213.74 km^3. Total ice volume and the glacier covered area is about 2,883 sq. km, which is 9% of the basin area. Largest number of glaciers totalling to 407 has been identified in the Alaknanda basin that occupies 1,255 sq. km, which account for almost 11% of total basin area. Yamuna basin has the least number of glaciers, numbering 52, occupying 143.43 sq. km as the glacier covered area, which comes to just about 2% of the total basin area.

SECTION III: CLIMATE CHANGE

Climate Change

This chapter provides preliminary results of climate change impact studies on temperature and rainfall, snow cover and glaciers, biodiversity, streams and rivers, agriculture and other sectors conducted in Uttarakhand and also embraces an overview of long term action plan initiated by Uttarakhand Climate Change Center (UCCC) for climate change impacts mitigation in association with villagers, government departments and scientists. It demonstrates that due to anthropogenically accelerated climate change since the last five decades, the temperature has increased by 0.45°C and the amount of annual rainfall has gone down to about 23% low; the glaciers are steadily retreating and the snow cover is depleting consequently the vegetation line is shifting towards higher altitudes; the non-glacial fed rivers are being transformed from perennial to non-perennial rivers; due to lack of water, the irrigated land is being changed into non-irrigated land, therefore, the production of irrigated crop, viz., paddy has gone down 41% to 52% during the last one decade; due to changes in rainfall rhythm, delay in onset, rainfall during maturity period of crops and erratic behavior of rainfall have caused significant loss in crop yield in the rain fed agricultural regime; and there are many signatures of phonological changes, reduction in fruits production and shifting of fruit belts towards higher elevation. It also suggests that the highly vulnerable sectors for impact of climate change in Uttarakhand are agriculture, food and livelihood security; human health and environment; glaciers and snow cover; groundwater recharge and summer flows in springs, streams

and rivers; water quality; biodiversity (flora and fauna); agro forestry and ecosystem; disaster and hazard risks; tourism; industry and human settlement; trade retail and commerce; electricity; policy and governance.

SECTION IV: DISASTER

Disaster Scenario and Management

Uttarakhand due to its complex geographical setting is vulnerable to geological disasters. The State is among the most seismically active parts of India. Landslide, flash floods and cloud burst are seasonal in nature but earthquakes and road accidents are the most devastating and unpredictable. So far, in the recent years (1990 onwards) Uttarakhand has experienced 53 earthquakes of which two major ones (magnitude >6) were in Uttarkashi (1991) and Chamoli (1999) and also a series of landslides/cloud bursts. Since 2005-2011, the State has lost 785 human lives and 443 were injured due to natural disasters. Around 62 landslides have been reported across the State since 2002. The human loss pertaining to landslide/flash floods during the last decade was to the tune of 721.

SECTION V: HEALTH

Health Status

The State houses around 0.8% of the population of India. The crude birth rate (CBR), crude death rate (CDR), total fertility rate (TFR) and Infant mortality rate (IMR) are less than the national values. Immunization percentage (62.9%) of children below 23 months is also higher than the National value (54.1%). Thus, the State's efforts towards population control and achieving replacement level of population have been bearing fruits. However, maternal mortality ratio is higher than the national value and percentage of institutional deliveries are also less than the national average. Due to its unique climatic conditions disease outbreaks like malaria, kala-azhar are almost nil. However, Jaundice, Diarrhoea and food poisoning are the major outbreaks experienced in the State.

SECTION VI: INDUSTRY

Landscape of Industries

When Uttarakhand came to existence in 2000 as a separate State, it had few resources for upliftment of its economy. The State was then known as "zero industry region". Banking on the strength of the State in terms of good connectivity, perfect location, cheap and abundant power and highly educated human resource, the State was able to develop the industrial infrastructure in a very short span of time. SIDCUL successfully developed Haridwar, Pantnagar, Selaqui industrial areas. All this had a direct effect on the State GDP with an increase of more than 9% from 2000 to 2007. During this period the industrial sector growth rate was 17.2%. Afterwards also the growth of GDP was upward with 33.9% in 2007-08. The State has 36,928 registered Micro, Small and Medium Enterprises and 206 heavy industries (till 2010). The State registered an increase of 211% in MSMEs and 318% in heavy industries after its formation. The unprecedented growth of industries is due to cumulative effect of existing conducive environment and favourable policies for the industries.

SECTION VII: TOURISM

Tourism and Ecotourism

Situated among the rising peaks of Himalayas, patronizing the source glaciers of river Ganga and Yamuna, presence of exotic natural beauty, remote areas virgin from human interference, locations preserving scenic sites are features resource for tourism in the State. The State in itself is reserve of geographical resources having all major relief features from mountains to glaciers, Bugyals and plain agricultural lands of Haridwar, major river systems of Ganga and Yamuna, highland lakes like Roopkund, Nainital, Naukuchiatal & Chhatrakund, bio-diversity rich valleys like Valley of Flowers etc. Along the geographical relief the State is also blessed with a rich forest cover and bio-diversity, housing 6 National parks, 6 Sanctuaries and 1 Biosphere Reserve.

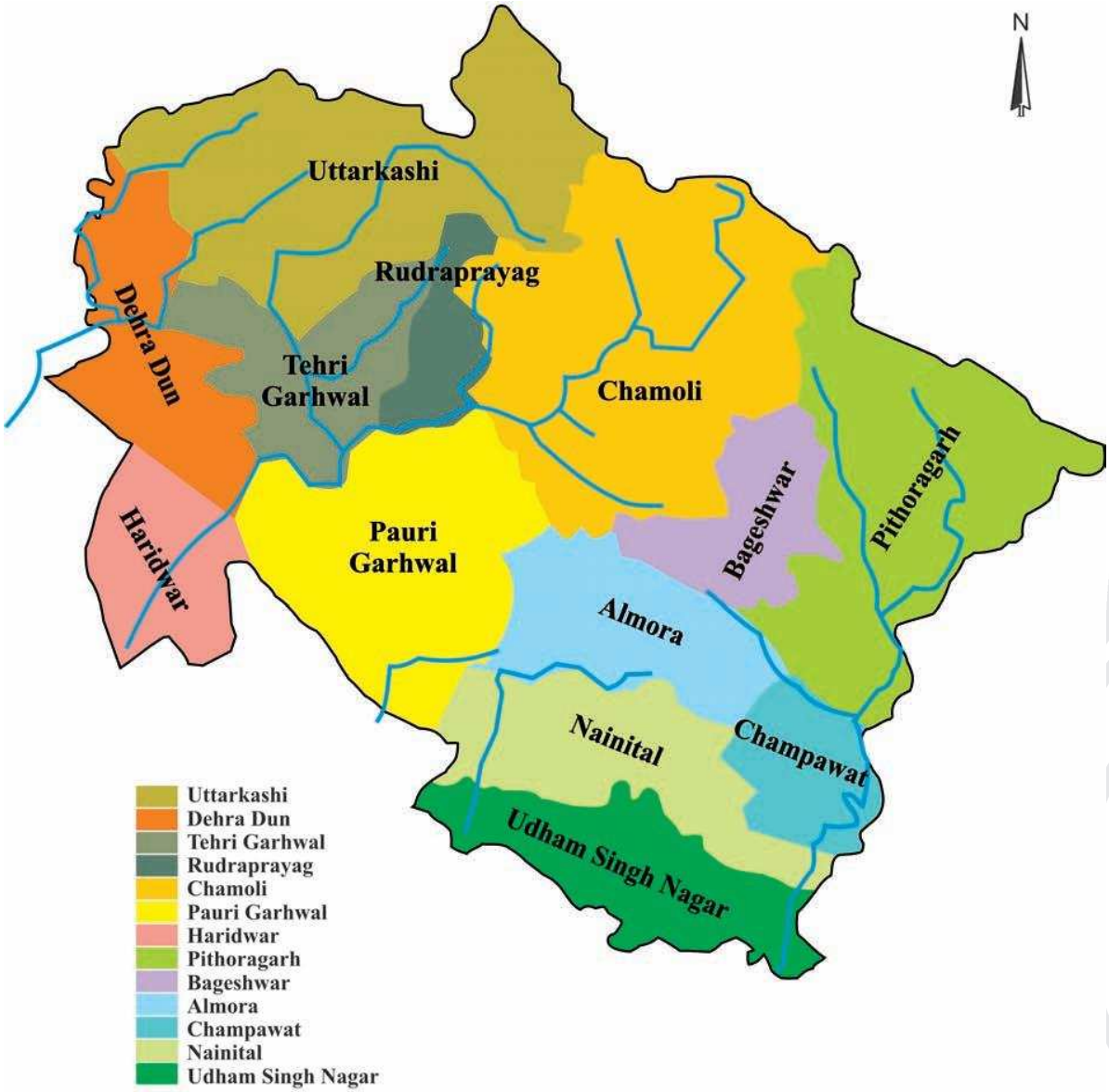
Together the two (topography and wildlife) makes the State a paradise for adventure lovers and caters them with the facilities to experience the rare. But the real jewel in the crown is spiritual essence of the State. Uttarakhand has a pleasure to have the presence of few of the major holy towns, pilgrimages and temples of Northern India. Every year lakhs of devotees from across the world visits these places in search of peace. With all these exotic locations, geographical landforms, rivers, forest and wildlife the State is the destination for all.

UTTARAKHAND : FACTS AND FIGURES[1,2]

S.No.	Items	Year/Period	Unit	Statistics
	GENERAL INFORMATION			
(A) Geographical Data				
1	Latitude	-	-	28°43′ N to 31°27′ N
2	Longitude	-	-	77°34′ E to 81°02′ E
3	Geographical Area	2010	Sq. Km.	53483
	(i) Hill	2010	Sq. Km.	46035
	(ii) Plain	2010	Sq. Km.	7448
4	Forest Area	2010	Sq. Km.	34651
(B) Meteorological Data				
1	Average Rainfall	2009	m. m.	1606
2	Temperature			
	(i) Minimum (Mukteshwar)	2009	°C	-1.7
	(ii) Maximum (Pantnagar)	2009	°C	42.0
(C) Administrative Units		-	-	-
1	Divisions	2010	No.	02
2	Districts	2010	No.	13
3	Tehsils	2010	No.	78
4	Development Blocks	2010	No.	95
5	Nyaya Panchayats	2010	No.	670
6	Gram Panchayats	2010	No.	7541
7	Census Villages (As per 01 census)	2001	No.	16826
	(i) Inhabited Villages (Including Forest Settlements)	2001	No.	15761
	(ii) Un-inhabited Villages	2001	No.	1065
8	Town/Urban Agglomeration			
	(i) Municipal Corporation	2010	No.	01
	(ii) Nagar Palika Parishads	2010	No.	32
	(iii) Nagar Panchayats	2010	No.	30
	(iv) Cantonment Boards	2010	No.	09
	(v) Census Towns	2001	No.	12
	(vi) Industrial Townships	2001	No.	02
9	Development Authority	2010	No.	06
10	Lok Sabha constituency	2010	No.	05
11	Rajya Sabha Constituency	2010	No.	03
12	Vidhan Sabha Constituency	2010	No.	70
	POPULATION (2011 Census)			
(A)	Total	2011	No.	10116752
(B)	Rural	2011	No.	7025583
(C)	Urban	2011	No.	3091169
(D)	District Population:	-	-	-

S.No.	Items	Year/Period	Unit	Statistics
	(i) Uttarkashi	2011	No.	329686
	(ii) Chamoli	2011	No.	391114
	(iii) Tehri Garhwal	2011	No.	616409
	(iv) Rudraprayag	2011	No.	236857
	(v) Dehradun	2011	No.	1698560
	(vi) Haridwar	2011	No.	1927029
	(vii) Pauri Garhwal	2011	No.	686527
	(viii) Pithoragarh	2011	No.	485993
	(ix) Bageshwar	2011	No.	259840
	(x) Almora	2011	No.	621927
	(xi) Champawat	2011	No.	259315
	(xii) Nainital	2011	No.	955128
	(xiii) Udham Singh Nagar	2011	No.	1648367
	DEMOGRAPHY			
	(A) Literates (Age above 6 Years) (Provisional)			
1	**Total**	2011	Lakh	69.97
	(i) **Male**	2011	Lakh	39.30
	(ii) **Female**	2011	Lakh	30.67
	(B) Literacy Rate			
1	**Total (Provisional)**	2011	%	79.63
	(i) **Male**	2011	%	88.33
	(ii) **Female**	2011	%	70.70
	(C) Sex-wise Labour Force (Total Workers)			
1	Total	2001	Lakh	31.34
	(i) Male	2001	Lakh	19.96
	(ii) Female	2001	Lakh	11.38
	Rural	2001	Lakh	24.99
2	(i) Male	2001	Lakh	14.37
	(ii) Female	2001	Lakh	10.62
	(D) Category-wise Labour Force			
1	Main Workers	2001	Lakh	23.22
	(i) Cultivators	2001	Lakh	10.67
	(ii) Agricultural Labourers	2001	Lakh	1.43
	(iii) Household Industry Workers	2001	Lakh	0.49
	(iv) Other Workers	2001	Lakh	10.63
2	Marginal Workers	2001	Lakh	8.12
	(i) Cultivators	2001	Lakh	5.03
	(ii) Agricultural Labourers	2001	Lakh	1.17
	(iii) Household Industry Workers	2001	Lakh	0.23
	(iv) Other Workers	2001	Lakh	1.69
	AGRICULTURE			
	(A) Land-use			
1.	Total Reported Area	2008-2009	Hectare	5672568
2	Forest Area	2008-2009	Hectare	3485847
3	Culturable Waste Land	2008-2009	Hectare	303144

POLITICAL MAP OF UTTARAKHAND



Source:
Modified from planning Atlas of Uttar Pradesh, 1987
Planning Department, Government of Uttar Pradesh, Lucknow

S.No.	Items	Year/Period	Unit	Statistics
4	Fallow Land	2008-2009	Hectare	106128
	(i) Current Fallow	2008-2009	Hectare	35161
	(ii) Fallow Land other than Current Fallow	2008-2009	Hectare	70967
5	Barren & Unculturable Land	2008-2009	Hectare	224480
6	Land under Non-agricultural Uses	2008-2009	Hectare	216534
7	Permanent Pasture & Other grazing Land	2008-2009	Hectare	198737
8	Land under misc., Tree Crops and Groves not included in Net Area Sown	2008-2009	Hectare	383987
9	Net Area Sown	2008-2009	Hectare	753711
(B) Fertiliser Consumption				
1	Nitrogen (N)	2009-2010	M.T.	104101
2	Phosphorus (P)	2009-2010	M.T.	24785
3	Potash (K)	2009-2010	M.T.	6910
	IRRIGATION			
(A) Net and Gross Irrigated Area				
1	Canals	2008-2009	Hectare	95922
2	Tube Wells	2008-2009	Hectare	198193
3	Other Wells	2008-2009	Hectare	15587
4	Tanks	2008-2009	Hectare	770
5	Other Sources	2008-2009	Hectare	29657
6	Net Irrigated Area (NIA)	2008-2009	Hectare	340129
7	Gross Irrigated Area (GIA)	2008-2009	Hectare	569769
(B) Irrigation Infrastructure				
1	Length of Canals	2009-2010	Km.	11081
2	Length of Lift Canals	2009-2010	Km.	201
3	Tube Wells (State)	2009-2010	No.	981
4	Pump Sets (Boring/ Free Boring)	2009-2010	No.	54361
5	Hauj	2009-2010	No.	29507
6	Gool	2009-2010	Km.	23715
7	Hydrum	2009-2010	No.	1493
8	C.C.A. Under State Canal	2009-2010	Lakh Hect.	3.18
9	Revenue Collection by Irrigation	2009-2010	` Lakh	243.61
	LIVESTOCK AND POULTRY			
(A) Veterinary Services				
1	Infrastructure			
	(i) Veterinary Hospitals	2009-2010	No.	310
	(ii) 'D' Category Veterinary Hospitals	2009-2010	No.	12
	(iii) Livestock Centres			
	(iv) A. I. Centres/Sub Centres	2009-2010	No.	634
		2009-2010	No.	573

S.No.	Items	Year/Period	Unit	Statistics
(B) Livestock (Provisional)				
1	Cattle			
	(i) Cow and Bullocks (Desi)	2007	No.	1895689
	(ii) Cow and Bullocks (Cross Breed)	2007	No.	339427
	(iii) Buffalo	2007	No.	1219518
2	Other Livestock			
	(i) Sheep (Desi & Cross Breed)	2007	No.	290411
	(ii) Goats	2007	No.	1335306
	(iii) Horse & Mules	2007	No.	39525
	(iv) Dunkeys	2007	No.	1262
	(v) Pig (Desi & Cross Breed)	2007	No.	19822
	(vi) Other Animals (Dogs & Rabbits)	2007	No.	257009
3	Total Livestock [Excluding cat.2 (VI)]	2007	No.	5140960
(C) Poultry				
1	Hen/Cock/Chicks	2007	No.	2562861
2	Other Birds	2007	No.	38991
	FISHERIES			
1	Departmental Fish Farms	2009-2010	No.	11
2	(i) Fish Production	2009-2010	'000 M.T.	3,488
	(ii) Value of Production	2009-2010	` Lakh	2219.87
3	Production of Fish Seed	2009-2010	Lakh	344.83
	HORTICULTURE			
(A) Horticulture Services				
1	Infrastructure			
	(i) Horticulture Mobile Teams	2009-2010	No.	285
	(ii) Fruit Preservation Centres	2009-2010	No.	48
	(iii) State Nurseries/Orchards	2009-2010	No.	104
(B) Coverage and Production				
1	Fruits			
	(i) Area	2009-2010	Hectare	193787
	(ii) Production	2009-2010	M.T.	723554
2	Vegetables			
	(i) Area	2009-2010	Hectare	58451
	(ii) Production	2009-2010	M.T.	564281
3	Potato			
	(i) Area	2009-2010	Hectare	24331
	(ii) Production	2009-2010	M.T.	432236
	(iii) Productivity	2009-2010	Qtl./ Hectare	177.6
	SERICULTURE			
1	Government Sericulture Farms			
	(i) Farms	2009-2010	No.	72
	(ii) Area	2009-2010	Acre.	507

S.No.	Items	Year/Period	Unit	Statistics
2	Mulberry Plantation			
	(i) In Government Farms	2009-2010	Thousand	92.6
	(ii) In Private Farms	2009-2010	Thousand	279.9
3	Cocoon Production	2009-2010	Kg.	111145
	INDUSTRY			
(A) Rural and Small Scale Industries				
1	Khadi Udhyog/Gramodhyog Units	2009-2010	No.	1210
2	Small Scale Industries (SSIs)	2009-2010	No.	35955
3	Total Employees of Khadi Units	2009-2010	No.	3750
4	Total Employees of SSIs	2009-2010	No.	142780
(B) Factories [Regd. Under Factories Act, 1948-Section 2M (I) and 2M (II)]				
1	No. of Factories	2008-2009	No.	1907
2	No. of Workers	2008-2009	No.	172861
3	Total Persons Engaged	2008-2009	No.	229727
4	Value of Product & by Product	2008-2009	` Lakh	6035210
5	Net Value Added	2008-2009	` Lakh	2843285
6	Value of Output	2008-2009	` Lakh	8292360
7	Gross Fixed Capital Formation	2008-2009	` Lakh	673613
8	Profits	2008-2009	` Lakh	2161819
	EDUCATION			
(A) Basic/Secondary Education				
1	No. of Schools/Colleges	2009-2010	No.	22379
	(i) Junior Basic	2009-2010	No.	15644
	(ii) Senior Basic	2009-2010	No.	4296
	(iii) High School/Intermediate	2009-2010	No.	2439
2	No. of Students	2009-2010	No.	2381594
	(i) Junior Basic	2009-2010	No.	1155639
	(ii) Senior Basic	2009-2010	No.	536216
	(iii) High School/Intermediate	2009-2010	No.	689739
3	No. of Teachers	2009-2010	No.	80421
	(i) Junior Basic	2009-2010	No.	36394
	(ii) Senior Basic	2009-2010	No.	12317
	(iii) High School/Intermediate	2009-2010	No.	31710
(B) Higher Education				
1	No. of Institutions	2009-2010	No.	122
	(i) Degree/Post Degree Colleges	2009-2010	No.	106
	(ii) Central Universities	2009-2010	No.	1
	(iii) State Universities	2009-2010	No.	6
	(iv) Private Universities	2009-2010	No.	5
	(v) Deemed Universities	2009-2010	No.	4
	(vi) Indian Institute of Technology (Central University)	2009-2010	No.	1
2	No. of Students	2009-2010	No.	163996

S.No.	Items	Year/Period	Unit	Statistics
3	No. of Teachers	2009-2010	No.	1684
	(i) Degree/Post Degree Colleges	2009-2010	No.	1180
	(ii) Universities	2009-2010	No.	504
(C) Vocational and Technical Education				
1	Industrial Training Institutes	2009-2010	No.	106
	(i) Sanctioned Seats	2009-2010	No.	10388
	(ii) Admission	2009-2010	No.	6275
2	Polytechnics	2009-2010	No.	37
	(i) Sanctioned Seats	2009-2010	No.	4320
	(ii) Admission	2009-2010	No.	4053
3	Distt. Instt. of Educ. Training	2009-2010	No.	13
	(i) Sanctioned Seats	2009-2010	No.	1300
	(ii) Admission	2009-2010	No.	1300
PUBLIC HEALTH AND FAMILY WELFARE				
(A) State Allopathic Hospitals and Dispensaries				
	(i) District Level Hospitals	2009-2010	No.	12
	(ii) District Female Hospitals	2009-2010	No.	7
	(iii) Base Hospitals	2009-2010	No.	3
	(iv) P.H.C./Additional P.H.C.	2009-2010	No.	250
	(v) Community Health Centres	2009-2010	No.	55
	(vi) State Allopathic Hospitals	2009-2010	No.	322
	(vii) Joint/Women Hospitals	2009-2010	No.	39
	(viii) Tehsil/Distt. Level Post Mortem Centres	2009-2010	No.	24
	(ix) Health Posts	2009-2010	No.	9
	(x) Tuberculosis Hospitals/Clinics	2009-2010	No.	18
	(xi) Leprosy Hospitals	2009-2010	No.	3
	(xii) Beds in Govt. Hospitals	2009-2010	No.	8075
(B) Family Welfare Services				
	(i) Women & Child Welfare Centres	2009-2010	No.	2
	(ii) Main Centres	2009-2010	No.	84
	(iii) Women & Child Welfare Sub-Centres	2009-2010	No.	1765
(C) Ayurvedic & Unani Hospitals				
	(i) Ayurvedic Hospitals	2009-2010	No.	540
	(ii) Unani Hospitals	2009-2010	No.	5
(D) Homeopathic Hospitals/Dispensaries		2009-2010	No.	107
ELECTRICITY AND WATER SUPPLY				
(A) Installation Capacity		2009-2010	MW.	1305.90
(B) Electricity Generated (Gross)		2009-2010	MU	4126.55
(C) Length of Lines				
	(i) 400 KV	2009-2010	Km.	172
	(ii) 220 KV	2009-2010	Km.	631
	(iii) 132 KV	2009-2010	Km.	1340
	(iv) 33 KV	2009-2010	Km.	3888.15
	(v) 11 KV	2009-2010	Km.	32942.28
	(vi) LT	2009-2010	Km.	48061.72

S.No.	Items	Year/Period	Unit	Statistics
(D) Electricity Consumption				
	(i) Domestic	2009-2010	M.U. Watt.	1387.23
	(ii) Commercial	2009-2010	M.U. Watt.	865.96
	(iii) Industrial	2009-2010	M.U. Watt.	3399.16
	(iv) Street Lighting	2009-2010	M.U. Watt.	51.42
	(v) Agriculture	2009-2010	M.U. Watt.	298.15
	(vi) Water Works/Waste Disposal	2009-2010	M.U. Watt.	247.30
(E) Rural Electrification				
1	Electrified Inhabited Revenue Villages:-			
	(i) Uttarakhand Power Corporation			
	(ii) UREDA	2009-2010	No.	15270
		2009-2010	No.	266
2	Energised Pump Sets/Tube Wells	2009-2010	No.	21915
3	Kuteer Jyoti Connections	2009-2010	No.	253802
(F) Drinking Water Supply				
1	Inhabited Revenue Villages Covered	2009-2010	No.	15545
2	Population Covered	2009-2010	No. Lakh	62.58
	(i) Fully Covered	2009-2010	No. Lakh	50.24
	(ii) Partially Covered	2009-2010	No. Lakh	12.34
3	Scarcity Villages	2009-2010	No.	02
4	Scarcity Hamlets			
	(i) Not Covered (N.C)	2009-2010	No.	2638
	(ii) Partially Covered (P.C.)	2009-2010	No.	8514
5	Hand Pump Installed by			
	(i) Jal Nigam	2009-2010	No.	21862
	(ii) Jal Sansthan	2009-2010	No.	7072
6	"Uttarakhand Koop" installed by Jal Sansthan	2009-2010	No.	1381
	FOREST AND WILDLIFE			
(A) Classification of Forest Area According to Legal Status				
1	Reserved Forests	2009-2010	Sq. Km.	24643
	(i) Reserved Forests under the Control/ Management of Forest Department	2009-2010	Sq. Km.	24261
	(ii) Reserved Forests which is Completely Recorded in Van Panchayats	2009-2010	Sq. Km.	348
	(iii) Reserved Forests under the Control/ Management of other Government Agencies	2009-2010	Sq. Km.	34

S.No.	Items	Year/Period	Unit	Statistics
2	Protected Forests	2009-2010	Sq. Km.	9885
	(i) Protected Forests Under the Control/ Management of Forest Department	2009-2010	Sq. Km.	99
	(ii) Unclassified and Vasted Forests under the control/Management of Forest Department, which have Legal Status of Protected Forest	2009-2010	Sq. Km.	55
	(iii) Civil and Soyam Forest:			
	Under the Control of Revenue Department			
	Under the Control of Forest Panchayats as Village Forests	2009-2010	Sq. Km.	4769
		2009-2010	Sq. Km.	4962
3	**Private Forest (Municipal & Cantonment etc.)**	**2009-10**	**Sq. Km.**	**123**
(B) Growing Stock & Forest Produce Statistics				
1	Estimated Growing Stock	2009-10	'000 Cu. m.	249939
2	Timber Production	2009-10	Cu. m. Round	242621
3	Fire Wood Production	2009-10	Cu. m. Stack	29263
4	Resin (NTFP) Production	2009-10	Quintals	196075
(C) Wildlife				
1	National Park			
	(i) Number	2009-10	No.	6
	(ii) Area	2009-10	Sq. Km.	4915
2	Wildlife Sanctuary			
	(i) Number	2009-10	No.	6
	(ii) Area	2009-10	Sq. Km.	2420
3	Important Wild Animals			
	(i) Tiger	2008	No.	178
	(ii) Leopard	2008	No.	2335
	(iii) Elephant	2008	No.	1346
	(iv) Musk Deer	2008	No.	376
	(v) Black Bear	2008	No.	1935
	(vi) Sloth Bear	2008	No.	172
	(vii) Brown Bear	2008	No.	14
	TOURISM			
(A) Infrastructure				
1	Tourist Places	2009-10	No.	264
2	Tourist Rest Houses (T.R.H.)	2009-10	No.	184
3	Raien Basera (Night Shelters)	2009-10	No.	32
4	Beds in T.R.H.	2009-10	No.	6817
5	Beds in Raien Basera	2009-10	No.	1750
6	Hotels & paying guest Houses (as on 31-03-2010)	2009-10	No.	3126
7	Dharamshala (as on 31-03-2010)	2009-10	No.	867

S.No.	Items	Year/Period	Unit	Statistics
(B) Tourist Arrival				
1	In Tourist Places (including Pilgrims)	2010	No. Lakh	311.08
	(i) Indian Tourist	2010	No. Lakh	309.72
	(ii) Foreign Tourist	2010	No. Lakh	1.36
2	In Important National Parks and Wild Life Sanctuaries	2009-10	No.	301241
	(i) Indian Tourist	2009-10	No.	285412
	(ii) Foreign Tourist	2009-10	No.	15829
	FOOD AND CIVIL SUPPLY			
1	Distribution of Essential Commodities			
	(i) Petrol	2009-10	Kilo lts.	196004
	(ii) Diesel	2009-10	Kilo lts.	522488
	(iii) Kerosene Oil	2009-10	Kilo lts.	114740
	(iv) LPG Gas	2009-10	M.T.	152996
	(v) Levy Sugar	2009-10	M.T.	45567
	UTTARAKHAND RENEWABLE ENERGY DEVELOPMENT AGENCY (UREDA)			
1	Community Solar Cooker	2009-10	No.	210
2	Improved Gharat	2009-10	No.	137
3	Solar Photo Programme			
	(i) Solar Light-Domestic	2009-10	No.	76
	(ii) Solar Lantern	2009-10	No.	1840
	(iii) Solar Light-Street	2009-10	No.	1427
4	Winowing Fan	2009-10	No.	51
5	Solar Water Heater	2009-10	No.	33900
	RURAL DEVELOPMENT			
(A) Rural Poverty (BPL Census 2002)				
	(i) Families Below Poverty Line	2002	No.	622033
	(ii) Percentage of Families Below Poverty Line	2002	Percentage	47.1
(B) Swarn Jayanti Gram Swarojgar Yojna				
	Self Help Groups Formed (As on 31-03-2010)	2009-10	No.	27812
(C) Indira Awas Yojna				
	Construction of Houses during the year	2009-10	No.	20513

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2. Census of India, ***Provisional population totals***, Paper 2, Volume 1 of 2011, Rural and urban distribution, Uttarakhand Series 6, 2011.

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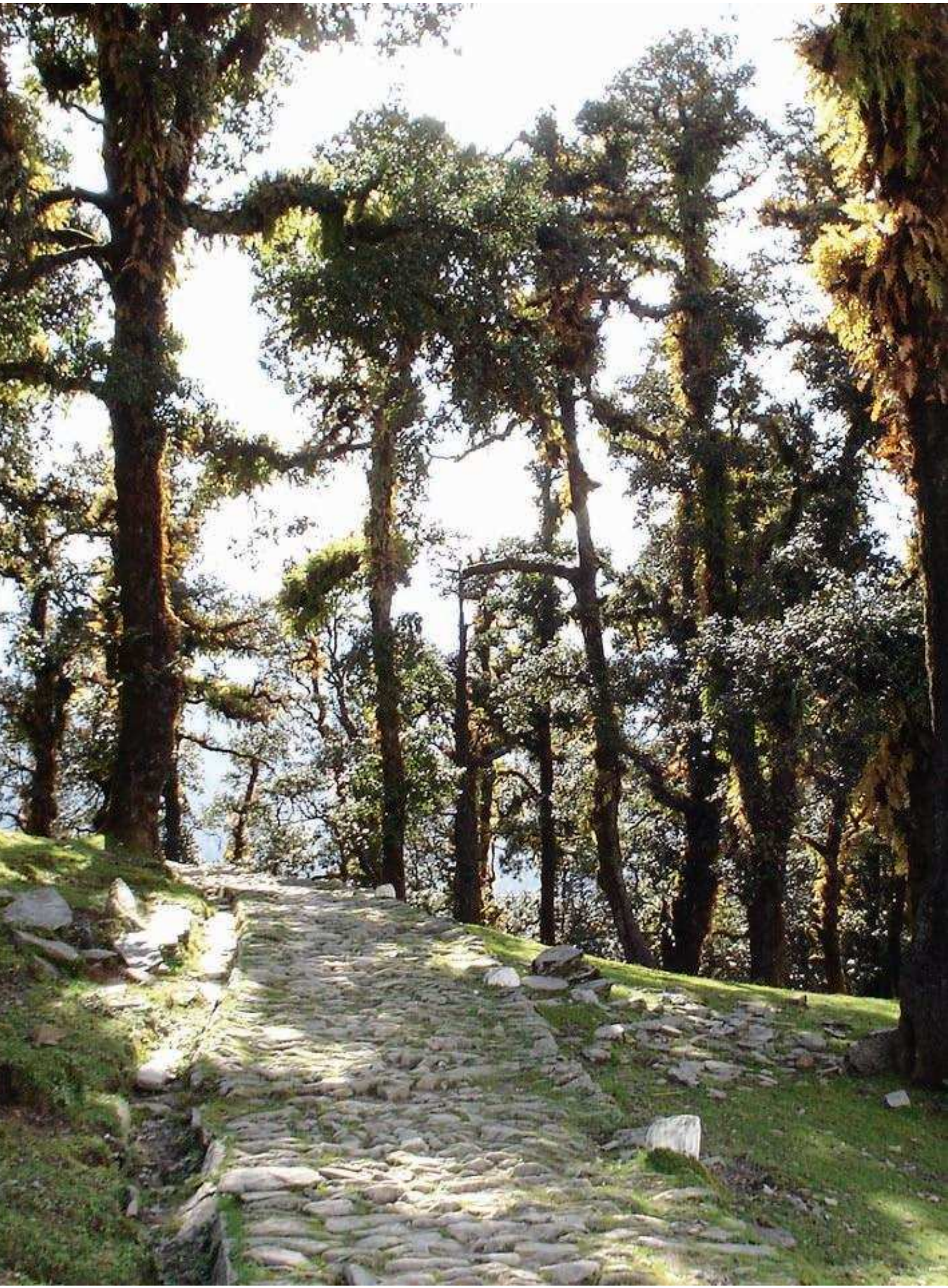

Section I

BIO-RESOURCES

Biodiversity

Chapter

ONE