

Survey of Environment: A Step towards sustainability



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FOREWORD

In 1983, the UN World Commission on Environment and Development was created in 1983 and its landmark report, "Our Common Future", in 1987, focused the world's attention on the links between environmental problems, patterns of economic development and social and political factors. The chairman of the commission said, 'with the "environment" is where we all live, and "development" is what we all do in attempting to improve our lot within that abode. The two are inseparable.' With The global economy had to meet people's needs and legitimate desires, but growth had to fit within the planet's ecological limits.

Sustainability involves interacting economic, social, and environmental factors. Progress toward sustainability thus requires directing policy attention to all three. Environment and development are not separate challenges. They are closely linked. Development cannot continue if the environment and natural resources deteriorate and the environment cannot be protected if economic growth ignores the costs of environmental destruction.

Environmental issues are many and varied. Deforestation, desertification, change in biodiversity, energy use urbanization, managing wastes, transport are indicators that help to understand the integrated and complex

relationships involved in maintaining human health and environmental wellbeing. Environmental indicators reflect the current state of the environment. There is a need to effectively manage the environment if development is to be at all sustainable.

Survey of the environment and systematic collection of environmental data has significant importance. These are now widely used in reporting, planning, clarifying policy objectives and priorities, budgeting, and assessing performance.

The present issue covers the importance of environmental indicators, how they are powerful tools for tracking environmental progress, providing policy feedback and measuring environmental performance. It discusses India's first-ever National Environment Survey (NES). It will map environment data of all districts and rank all districts on their environmental performance and document their best green practices based on various environmental parameters. The Survey will be carried out by the Ministry of Environment, Forests and Climate Change through Environmental Information System (ENVIS) and its Hubs and Resource Partners across the country. This issue also covers the details of work that CERC-ENVIS RP will be undertaking in six districts of Gujarat under the NES.

Environmental Survey and its importance



“While the overall policy focus should be on meeting basic needs and expanding opportunities for growth, they should not be at the expense of unsustainable environmental degradation.”

Muthukumara Mani
Senior Environmental Economist

Since the United Nations Conference on Environment and Development in 1992, sustainability has become a widely shared goal and an important topic. The World Resources Institute, attempting to produce environmental indicators for 'sustainable development' argue that “sustainability involves—at a minimum—interacting economic, social, and environmental factors” arguing that inadequate attention has been given to the latter. Growing concern over environmental issues drives the need for more comprehensive and reliable environmental information. It has also generated “State of the Environment” efforts in many countries and international organisations like the UN Environment Programme (UNEP) to provide, analyse and report on scientifically-based environmental information.

For tracking environmental progress and supporting policy evaluation, environmental indicators are essential tools. These are the first line of warning against hazards caused by humans or nature catastrophes to prevent diseases and death of living organisms. There is a large range of environmental indicators. These are generally air quality, biodiversity, climate change, energy resources, forest resources, waste generation, water quality, water resources and many more. Environmental

indicators disseminate global environment statistics. It helps to determine the appropriate level of effort or depth of such an assessment for surveying the environment.

Indicators are measurement, statistic, or value that identifies the presence or level of the factor affecting the environment. A set of such indicators and their trend points to the overall condition or quality of the environment.

The **Organisation for Economic Development and Co-Operation (OECD)** has worked on such indicators in close cooperation with OECD Member countries. Its environmental indicators are regularly used in environmental performance reviews to monitor the integration of economic and environmental decision making, to analyse environmental policies and to gauge the results. Beyond their application in OECD environmental performance reviews, these indicators also contribute to follow-up work on the OECD environmental strategy and to the broader objective of reporting on sustainable development.

The **United Nations Statistics Division (UNSD)** developed and published its first “**A Framework for the Development of Environment Statistics**” (FDES) in 1984. The FDES sets out the scope of environment

statistics by relating the components of the environment to information categories that are based on the recognition that environmental problems are the result of human activities and natural events reflecting a sequence of action, impact, and reaction. Relevant information, therefore, refers to social and economic activities and natural events, their effects on the environment and the responses to these effects by the society. The revised FDES 2013 is a multipurpose conceptual and statistical frame work that is comprehensive and integrative in nature. It provides an organizing structure to guide the collection and compilation of environment statistics and to synthesize data from various subject areas and sources.

With an ever increasing demand for high quality environment statistics especially bearing in mind the Sustainable Development Goal Agenda, the UNSD shares publicly environment-related censuses and surveys. The Environment Statistics Section of UNSD has undertaken this initiative in collaboration with the Expert Group on Environment Statistics and has received contributions of censuses and surveys from experts in the field of environment statistics from various countries around the world. The UNSD continues to develop the Environment Statistics Database that contains data received through the Questionnaire on Environment Statistics. UNSD cooperates closely with the OECD, the Statistical Office of the European Communities (Eurostat), UNEP, the UN Division of Sustainable Development (DSD) and the regional commissions, as well as with specialized agencies, secretariats of international conventions, NGOs and others, in order to build up synergies, and to avoid duplication of efforts in data collection.

Green growth policies need to be founded on a good understanding of the determinants of green growth and need to be supported with appropriate indicators to monitor progress. Several countries are at the forefront of the transition towards green growth, but no country leads in all areas. The OECD countries release selected indicators for monitoring progress towards green growth to support policy making and inform the public at large. Their dataset covers **OECD countries** as well as **BRIICS economies**

(Brazil, Russian Federation, India, Indonesia, China and South Africa) and **G20 countries**.

The **Environment and Climate Change Canada** with the support of other federal government departments prepare environmental indicators. Its Canadian Environmental Sustainability Indicators (CESI) programme provides data and information to track the performance on key environmental sustainability issues including climate change and air quality, water quality and availability and protecting nature. The environmental indicators are based on objective and comprehensive information and convey environmental trends in a straightforward and transparent manner.

The **European Environment Agency (EEA)** of the European Union also develops indicators to answer key policy questions and to support all phases of environmental policy making, from designing policy frameworks to setting targets, and from policy monitoring and evaluation to communicating to policy-makers and the public.

The censuses and surveys are being made available for information and to help improve environment statistics collection, and analysis of environment statistics. Censuses and surveys available cover a variety of themes all relevant to environment statistics including agriculture, air and climate, energy, environment expenditure, fisheries, waste and water.

Source:

<https://unstats.un.org/unsd/ENVIRONMENT/censusandsurveys.html>

<https://www.worldbank.org/en/news/feature/2014/03/06/green-growth-overcoming-india-environment-challenges-promote-development>,

http://pdf.wri.org/environmentalindicators_bw.pdf,
[http://www.oecd.org/environment/indicators-](http://www.oecd.org/environment/indicators-modelling-outlooks/Highlights_Green_Growth_Indicators_2017.pdf)

[modelling-outlooks/Highlights_Green_Growth_Indicators_2017.pdf](http://www.oecd.org/environment/indicators-modelling-outlooks/Highlights_Green_Growth_Indicators_2017.pdf), [https://www.canada.ca/en/environment-](https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/about-sustainability.html)

[climate-change/services/environmental-indicators/about-sustainability.html](https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/about-sustainability.html),
<http://www.indiaenvironmentportal.org.in/files/file/compendium%20environment%20statistics%20india%202013.pdf>

Environment Survey: Indian Scenario

Expansion of the human population, industrialization, urbanization and many more anthropogenic activities have caused an adverse impact on our environment. The developmental activities being haphazard and erratic are leading to overuse of natural resources and leading to environmental pollution. If this scenario continues, it is going to cause an irreparable damage to our mother earth. Realizing the damage caused, it has become an ardent requirement for us to adopt and adapt to a sustainable way of living so as to secure the future of our progeny. Hence, today's main concern is to safeguard and protect the environment that we breathe and live in.

People all around the world have geared up to make corrective measures. Initiatives have been taken up to revive our nature back; old traditions that bring us to close proximity to nature are being followed. However, the efforts said and done are not enough, a lot more has to be done and GIS (Geographical Information System) can help us achieve our goal to preserve and conserve our environment. It is a valuable tool for effectively managing conservation planning.

GIS technology offers a radically different way to produce and use the maps required to manage our communities and industries. It creates intelligent super maps through which sophisticated planning and analysis can be performed at the touch of a button.

GIS Solutions for Surveying

A geographic information system is a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data. Rooted in the science of geography, GIS integrates many types of data. It analyses spatial location and organises layers of information into visualisations using maps and 3D scenes. With this unique

capability, GIS reveals deeper insights into data, such as patterns, relationships, and situations—helping users make smarter decisions. GIS is a powerful tool that helps to monitor and supervise various aspects of environment degradation like decreasing glacier area, growth in glacial lake size, unprecedented rainfall, changes in land use and land cover, forest degradation, floods and glacial lake outburst floods, landslides and shortfalls in agricultural crop production etc. The GIS based software applications have been used widely for environment management and analysis studies.

The usage of GIS in environmental risk management ranges from simple development of databases /inventory systems, to advanced GIS layers overlay, then to complex spatial decision-making systems for study of the impact of air, water and soil pollutions, ecological imbalance and natural disasters on the environmental and human receptors. Effective monitoring of the environment and an improved understanding of the same requires valuable information and data that can be extracted through application of geospatial technologies such as remote sensing and GIS. It can also display and analyze aerial photographs. Digital information can be overlaid on photographs to provide environmental data analysts with more familiar views of landscapes and associated data. GIS can provide a quick, comparative view of hazards (highly prone areas) and risks (areas of high risk which may occur) and areas to be safeguarded. In order to plan and monitor the environmental problems, the assessment of hazards and risks becomes the foundation for planning decisions and for mitigation activities. GIS supports activities in environmental assessment, monitoring, and mitigation and can also be used for generating environmental models.

Surveys and Mapping

Surveys provide baselines for ground truth data that

helps in preparing the attributes to create a map. Without knowing what is there and in what numbers, one cannot go forward with conservation plans. To know whether a species needs protection, one needs to know their population status, which is exactly what a survey provides. Surveys also indicate potential areas to be protected and help to identify potential threats to a species. The GIS based maps and models have to be validated with the ground truth data. Surveys need to be repeated at regular intervals (e.g the tiger census is done once in 4 years) and the same methodology has to be followed each time. With the help of satellite images, ground truth data and various algorithms, GIS based maps are created.

A report **“India: Green Growth-Overcoming Environment Challenges to Promote Development”** by the World Bank in 2014 finds that environmental degradation costs India \$80 billion per year or 5.7% of its economy. According to the survey of World Health Organisation (WHO) in 2016, 14 of the world's 20 most polluted cities are in India. The WHO data also said that nine out of 10 people in the world breathe air containing high levels of pollutants. It's no wonder that environmental sustainability is considered to become the next major challenge as India surges along its growth trajectory. India is among the bottom five countries on the Environmental Performance Index (EPI) 2018, plummeting 36 places from 141 in 2016, according to a biennial report by Yale and Columbia Universities along with the World Economic Forum. While India is at the bottom of the list in the environmental health category, it ranks 178 out of 180 as far as air quality is concerned. Its overall low ranking - 177 among 180 countries - was linked to poor performance in the environmental health.

Survey of Environment

To bring out the entire data of different environmental aspects onto a single platform, India's first ever National Environment Survey (NES) was kicked off in January, 2019 to map environment

data of 55 districts across 24 States and 3 Union Territories. The NES will rank all districts on their environmental performance and document their best green practices based on various environmental parameters. The earliest first set of complete green data from this survey will be available in 2020. The first NES will be carried out by Ministry of Environment, Forests and Climate Change (MoEF&CC) through Environmental Information System (ENVIS) and its Hubs and Resource Partners across the country. It will be done through grid-based approach, using grids measuring 5x5 km (grid size is subject to change) to collect comprehensive data on various environmental parameters. These parameters will include air, water, soil quality, solid, hazardous and e-waste, emission inventory; forest & wildlife; flora & fauna; wetlands, lakes, rivers and other water bodies. It will also assess carbon sequestration potential of all the districts across the country.

The green data from this survey will provide important tool in hands of policy-makers for decision making at all levels – district, state and national. The survey will fully map and create emission inventory, provide valuation of ecosystem services and collate research data in the field of environment. Initially the survey will be focusing on 55 districts and later will be scaled up to all districts in the country. The first set of data will be compiled in one year because it needs to cover seasonal cycles in terms of air pollution and flora & fauna. Presently the survey is planned for 55 districts across the country. All 723 districts in the country are expected to be surveyed in a period of three to four years. ENVIS will include 18 modules, 110 sub modules covering 617 parameters (numbers subject to change). ENVIS Hubs/RPs will periodically update data obtained from state departments/bodies and maintain the NEG (National Environmental Geodatabase).

Below are the centers with their website links, wherein data source of different environmental aspects could be gathered.

Sr. No.	Data	Source
1	Ministry of Forests, Environment and Climate Change	http://envfor.nic.in/
2	National remote sensing centre - Bhuvan	http://bhuvan.nrsc.gov.in/bhuvan_links.php
3	Google earth (to be installed)	earth.google.com
4	Western Ghats biodiversity portal	https://thewesternghats.indiabiodiversity.org/
5	India biodiversity portal	https://indiabiodiversity.org/
6	Biodiversity information system	https://www.cbd.int/gti/infosys/default.shtml https://indianbiodiversity.org/
7	Geological Survey of India	https://www.gsi.gov.in/
8	Census of India	http://censusindia.gov.in/
9	Survey of India	http://www.surveyofindia.gov.in/
10	NBSSLUP (National Bureau of Soil Survey and Land Utilisation Planning)	https://nbsslup.in/
11	NSDI	https://nsdiindia.gov.in/nsdi/nsdiportal/index.jsp
12	State biodiversity board and forest department - webpages	http://nbaindia.org/www.karnataka.gov.in/kbb/english/Pages/home.aspx http://gsbb.goa.gov.in/ https://www.forests.tn.gov.in/pages/view/about-present http://aranya.gov.in http://www.keralabiodiversity.org/ http://www.mahaforest.nic.in/index.php?lang_eng_mar=Eng https://fed.gujarat.gov.in/gsbb-fed.htm
13	Wild life Institute of India	http://www.wii.gov.in/
14	Flora	http://www.efloras.org/index.aspx http://florakarnataka.ces.iisc.ac.in/hjcb2/ http://www.flowersofindia.net/ https://thewesternghats.indiabiodiversity.org/ https://indiabiodiversity.org/
15	Birds	https://thewesternghats.indiabiodiversity.org/ https://indiabiodiversity.org/ https://avibase.bsc-oc.org/avibase.jsp?lang=EN Search for location based checklist (example: Bird checklist of Kodagu)
16	Fish	http://www.fishbase.org/search.php
17	Agro-climate	http://www.agriinfo.in/?page=topic&superid=1&topicid=425
18	District information	Search for specific district webpages (NIC)
19	WRIS (Water Resources Information System)	http://cwc.gov.in/water-resourcesinformation-system-wris
20	IUCN red list	http://www.iucnredlist.org
21	Meteorology	http://www.imd.gov.in/pages/main.php http://hydro.imd.gov.in/hydrometweb/(S(lti4uw2ksxmtoyf03dotj2rk))/DistrictRaifall.aspx https://www.indiawaterportal.org/met_data/
22	India Data portal Water Resource Departments	https://data.gov.in , https://kerala.gov.in/kerala-water-authority , https://gwssb.gujarat.gov.in/http://waterresources.kar.nic.in/introduction.htm , https://goawrd.gov.in/ http://www.wrd.tn.gov.in/ https://wrd.maharashtra.gov.in/
	Research papers	https://www.sciencedirect.com/ http://www.biodiversityjournal.com/ https://www.researchgate.net/ https://scholar.google.co.in/

Source: <https://www.epw.in/journal/2015/7/web-exclusives/surveys-and-wildlife-conservation.html> http://learnline.cdu.edu.au/units/sbi502/study_guide/wfs4.html <https://www.esri.com/en-us/what-is-gis/overview> <https://www.geospatialworld.net/blogs/managing-the-environment-using-gis> <https://currentaffairs.gktoday.in/indias-national-environment-survey-kick-2019-10201861787.html>

FOCAL POINT: NEW DELHI

Sr. LIST of ENVIS HUBS

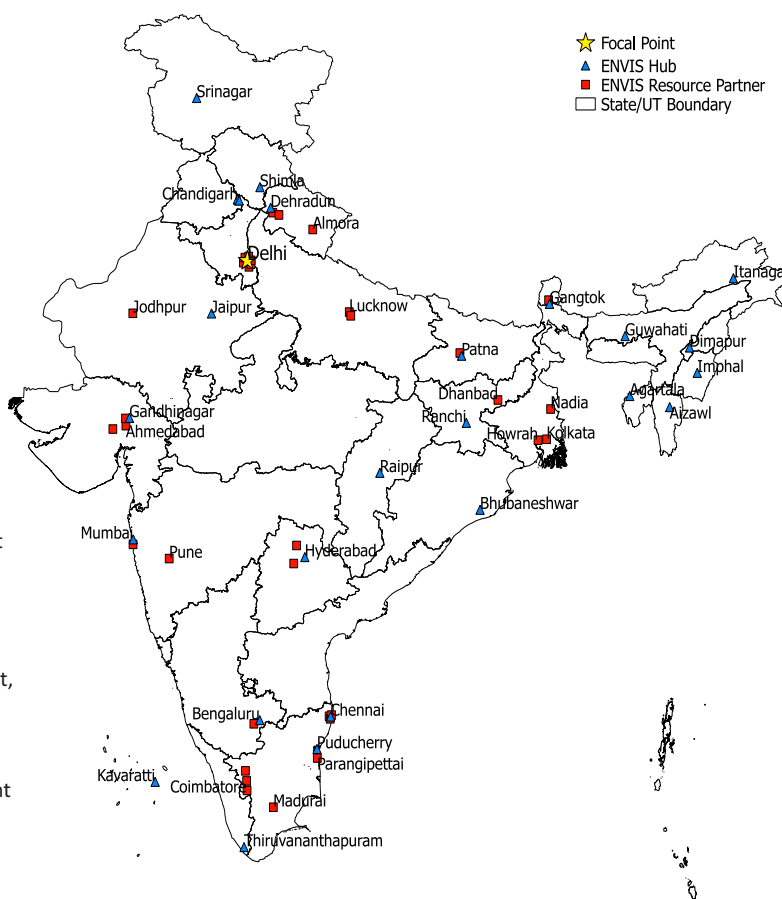
No.

- 1 Environment Protection Training and Research Institute (EPTRI), Hyderabad
- 2 Department of Environment & Forests -Arunachal Pradesh
- 3 Assam Science, Technology and Environmental Council, Guwahati
- 4 Bihar State Pollution Control Board, Patna
- 5 Chhattisgarh Environment Conservation Board, Raipur
- 6 Gujarat Ecology Commission (GEC), Gandhinagar
- 7 Directorate of Environment & Climate Change Department (DoE&CCD), Chandigarh
- 8 Himachal Pradesh Council for Science, Technology and Environment (HIMCOSTE), Shimla
- 9 Department of Ecology, Environment and Remote Sensing, State Government of J&K
- 10 Forests & Environment Department, Govt. of Jharkhand
- 11 Environment Management & Policy Research Institute (EMPRI), Bengaluru
- 12 Kerala State Council for Science, Technology and Environment (KSCSTE), Thiruvananthapuram
- 13 Department of Environment & Forests - Kavaratti, Lakshadweep
- 14 State Environment Department, Maharashtra
- 15 Directorate of Environment, Dept. of Forests and Environment, Govt. of Manipur
- 16 Mizoram Pollution Control Board, Aizawl
- 17 Nagaland Pollution Control Board, Dimapur
- 18 Centre for Environmental Studies (CES), Forest & Environment Department, Government of Odisha
- 19 Puducherry Pollution Control Committee, Puducherry
- 20 Punjab State Council for Science and Technology (PSCST), Chandigarh
- 21 Department of Environment - Chandigarh
- 22 Rajasthan State Pollution Control Board (RSPCB), Jaipur
- 23 Forests, Environment & Wildlife Management Department, Gangtok, Sikkim
- 24 Department of Environment, Govt. of Tamil Nadu
- 25 Tripura State Pollution Control Board, Agartala
- 26 Uttarakhand Environment Protection & Pollution Control Board (UEPPCB), Dehradun

Sr.

No. LIST of ENVIS RESOURCE PARTNERS

- 1 Central Pollution Control Board (CPCB), New Delhi
- 2 National Institute of Occupational Health (NIOH), Ahmedabad
- 3 Centre for Ecological Sciences - Indian Institute of Science (IISc), Bengaluru
- 4 Centre of Advanced Study in Marine Biology (CASMB), Parangipettai
- 5 Zoological Survey of India (ZSI), Kolkata
- 6 Centre for Mining Environment (CME)IIT-Indian School of Mines, Dhanbad
- 7 G.B. Pant National Institute of Himalayan Environment and Sustainable Development (GBPNIHESD), Almora
- 8 Botanical Survey of India (BSI), Howrah
- 9 Forest Research Institute (FRI), Dehradun
- 10 Wildlife Institute of India (WII), Dehradun
- 11 State Council of Science and Technology for Sikkim (SCSTS), Gangtok
- 12 Central Arid Zone Research Institute (CAZRI), Jodhpur



- 13 Department of Zoology - University of Madras, Chennai
- 14 Institute for Ocean Management (IOM), Anna University, Chennai
- 15 Indian Institute of Tropical Meteorology (IITM), Pune
- 16 Indian Institute of Chemical Technology (IICT), Hyderabad
- 17 National Botanical Research Institute (NBRI), Lucknow
- 18 Gujarat Cleaner Production Centre (GCPC), Gandhinagar
- 19 Department of Environmental Sciences (DES), Kalyani University, Nadia
- 20 School of Planning and Architecture (SPA), New Delhi
- 21 School of Environmental Sciences Jawaharlal Nehru University (JNU), New Delhi
- 22 Environment Protection Training and Research Institute (EPTRI), Hyderabad
- 23 Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore
- 24 Thiagarajar College of Engineering (TCE), Madurai
- 25 Institute for Wildlife Sciences (IWS), University of Lucknow, Lucknow
- 26 Amrita Vishwa Vidyapeetham (AVV), Coimbatore
- 27 The Energy Resources Institute (TERI), New Delhi
- 28 World Wide Fund for Nature - India (WWF), New Delhi
- 29 Asian Development Research Institute (ADRI), Patna
- 30 Bombay Natural History Society (BNHS), Mumbai
- 31 Consumer Education and Research Centre (CERC), Ahmedabad
- 32 CPR Environmental Education Centre (CPREEC), Chennai
- 33 International Institute of Health and Hygiene (IIHH), New Delhi
- 34 Salim Ali Centre for Ornithology and Natural History (SACON), Coimbatore

The Dangs

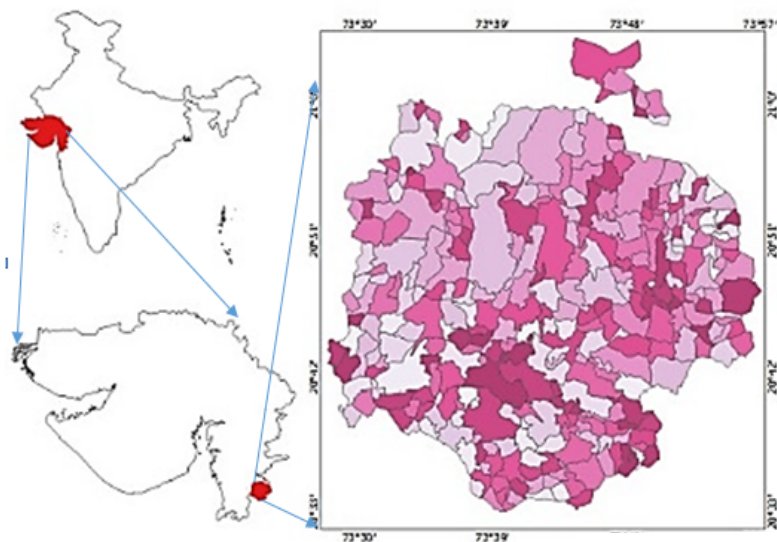


Figure 1: Location Map of the Dangs District

The Dangs was known as “Dakaranya or Dandak” during the period of Ramayana. The smallest tribal district of Gujarat, is located in the south western part of the state of Gujarat in western India. A cluster of thickly forested hills, the Dangs rising to the Sahyadri mountain range, shares boundary with the neighbouring state of Maharashtra. It is bounded in the North by Surat (district of Gujarat) and Dhule (district of Maharashtra), in the east by Nasik (district of Maharashtra) and West by Valsad District (district of Gujarat). This is the only district of the Gujarat state with high hills and rich forest.

Geography

The total geographic area covered is 1,776 sq. km. It lies between 20° 33'50" to 21° 04' 52" Latitudes and 73° 27'58" to 73° 56'38" Longitudes and ranges between 300 to 1300 m Mean Sea Level (MSL). Major physiographic region is terraced topography with flat topped conical hills, small plateaus and steep sided narrow valleys.

On the basis of physiographic climate, geology, soils and natural vegetation, district is subdivided into two micro regions Lower Dangs and Upper Dangs. The Lower Dangs is characterized by low hills and thick vegetation cover with an altitude ranging from 560 to 590 meters above MSL. The geological

structure of this region is composed of Deccan Trap. Whereas, Upper Dangs is filled with hilly track and having thick forest cover with an altitude ranging from between 675 and 1,290 meters above MSL.

Soil of this region is black rock outcrops shallow black, brown and alluvial soils of recent origin. The four major rivers are Gira, Purna, Ambika and Khapri. The Gira and Khapri are major tributaries of Purna and Ambika respectively. Slope variation map is represented using GIS technology which is shown in Figure 2.

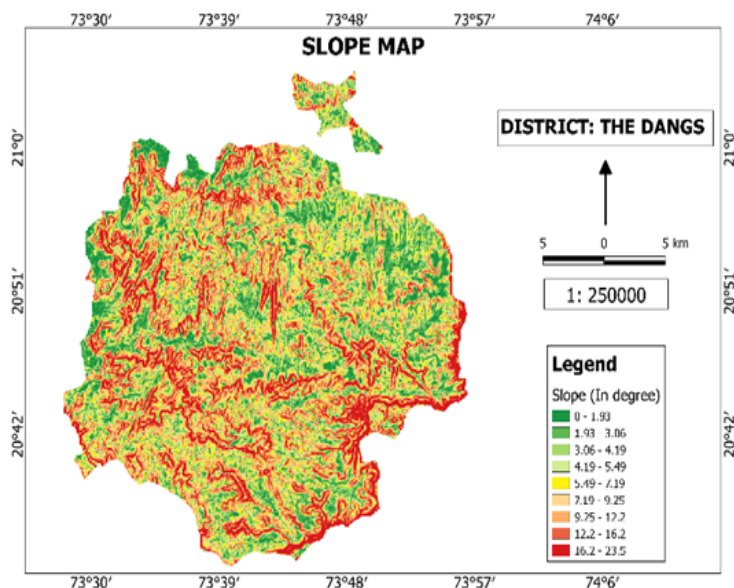


Figure 2: Slope Variation

Climate and Rain fall

The district enjoys dry climate throughout the year except during the monsoon season. The district has semi-arid climate. The year may be divided into four seasons. The cold season from December to February is followed by the hot season from March to May. The period from June to September constitutes the South-West monsoon season. October and November may be termed the post monsoon or retreating monsoon season.

The temperature varies between 9.2°C and 36.4° C. Average rainfall for the district is 1760 mm having spread over 90 rainy days.

Demography

There are total 311 villages and 3 Talukas named Ahwa, Waghai and Subir. There are total 70 gram panchayats: 3 Gram Panchayat and 3 Group Gram Panchayats.

As per Census 2011, the total number of households in the district are 48,448. Total population is 2,28,291, of which males are 1,13,821 and females are 1,14,470. Average literacy rate is 75.16% of which in urban area the literacy rate is 73.42% and for rural area it is 88.32%. The Dangs district stands at 1006 per 1000 male in sex ratio as compared to Gujarat state's sex ratio (919) which represents a good picture of the district. Sex Ratio in urban region of the district is 1038 whereas in rural areas, the sex ratio is 1002 females per 1000 males. Thematic map of population density of the region is shown in Figure 3.

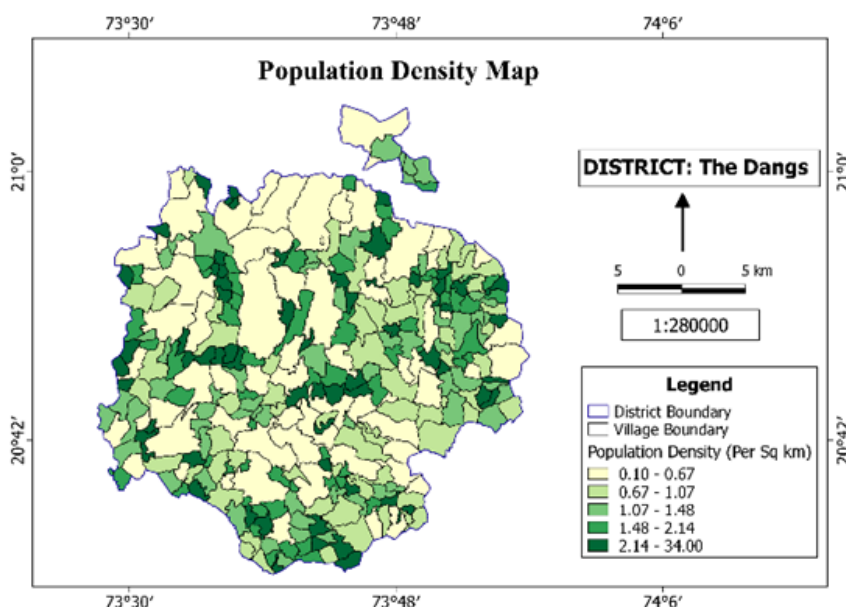


Figure 3: Population Density of the district

The entire district is tribal dominated with 98% of its total population. The language spoken amongst people is basically Konkai which is very much familiar with Gujarati and Marathi. Dangi dance is famous in local culture. It is famous in India and in foreign countries as well. Warli painting and Bamboo crafts of tribal is famous across the country. Most of the people depend on agriculture (42.1%) and they are also engaged in animal husbandry, daily wages activities and other services. The collection of Non Timber Forest Product (NTFP) is still a major source of livelihood for the people.

Timru leaves, teak seeds and mahuda flowers and seeds are mostly collected during the summer which provides an alternative livelihood source. Manufacturing of various household bamboo products is a major source of livelihood.

Forest Cover

The forest of Dang is classified under North Western Ghats mist deciduous forest which lie within the belt of heavy rainfall and can be classified as South Indian Moist deciduous forest (38%) and Southern Dry Deciduous Forest (58%). The Dangs forests fall in the bio geographic zone 5 "Western Ghats", under biotic province 5 A "Malabar Coast" and 5 B Western Ghat Mountains".

The total area under forest in the year 2015 is 1054.88 sq. km. which is 59.80% of total geographical area of the district. The Dangs is rich in timber as most of the trees

are of high quality teak. The total forest area consists of two parts namely, protected forest and reserved forest, which are under the jurisdiction of the Forest Department, Government of Gujarat. The reserved forest covers 864.17 sq. km. while protected forest comprises of 190.71 sq. km. The reserved forest is amongst the richest forests in the whole of Gujarat. The forest cover is classified into three density categories: very dense, moderate dense and open Forest which encompasses 209,745 and 414 sq. km. respectively. The Government of Gujarat has set up one wildlife and one national park for preservation of wildlife i.e. Purna wildlife sanctuary is located around

(160 sq. km) Purna River in the northern part and the Vansda National Park in the southern part with an area of 23.9 sq. km. The important animal species are hyena, sambar, chital, barking deer and monkey.

The district with its characteristic topography, is rich in forest cover in the whole of Gujarat. Forest covers more than 50% of its geographical area of the district. Its natural resources is rich in timber and teak of high quality. As per census 2011, The Dangs is the least populous district of Gujarat and is dominated by tribes.

Districts under National Environment Survey

Consumer Education Research Center-ENVIS Resource Partner (CERC-ENVIS RP) has selected The Dangs district to study under National Environment Survey - Grid based Decision Support System (NES-GRIDSS) in a first phase. It requires collection of primary data, secondary data, preparation of thematic maps and district mapping to facilitate policy decisions at all levels of government.

The reasons for the selection of this district are as follows:

- Dangs district is situated in the Southeastern part of the Gujarat state. It is district primarily a tribal dominated district having 73% of its land is covered under Reserved & Protected forest.
- The terrain of the district is hilly / undulating dissected by a network of streams and rivers.

- The district is a storehouse of number of medicinal plants, many of them still unexplored.
- The district was once dominated by various types of wild animals. Even today, sloth bear, panthers, etc. is usually sighted in the remote part of the district.
- Although annual rainfall is high, as compared to the state average, in the district, there is an eventual deficit of drinking water during summer season.

The above reasons make the district vulnerable to degradation of eco-sensitive / hot spots zones.

Sources: <http://censusindia.gov.in/>,
<https://planning.gujarat.gov.in/>,
<https://dangs.gujarat.gov.in/>
<http://dcmsme.gov.in/dips/2016-17/12.%20Dang%202016-17.pdf>

ENVIS Secretariat has also allotted five other districts of Gujarat to CERC-ENVIS RP which is shown in Figure

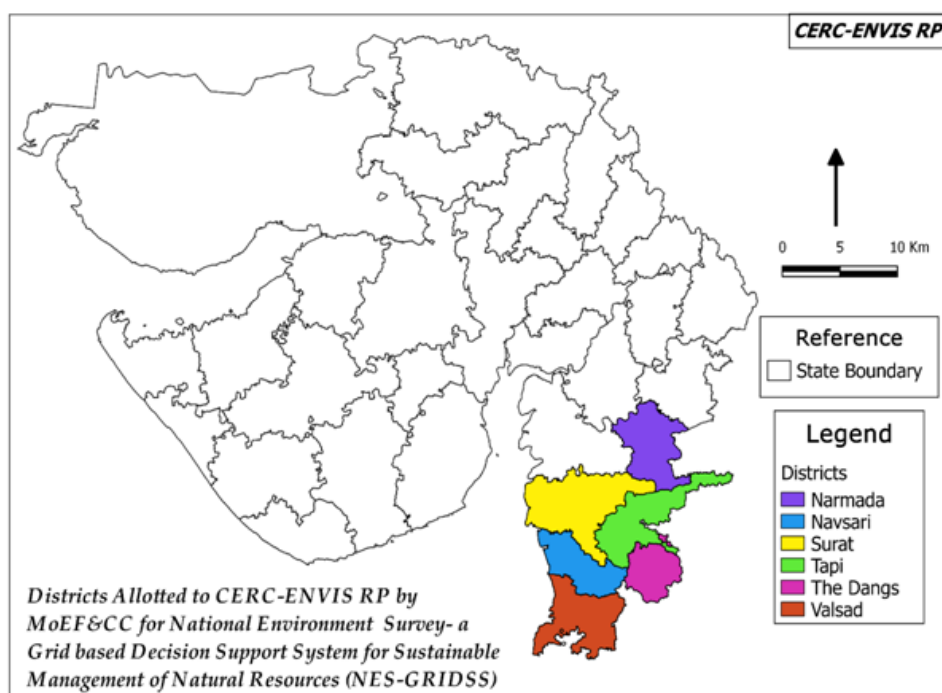


Figure : Districts allotted under NES-GRIDSS

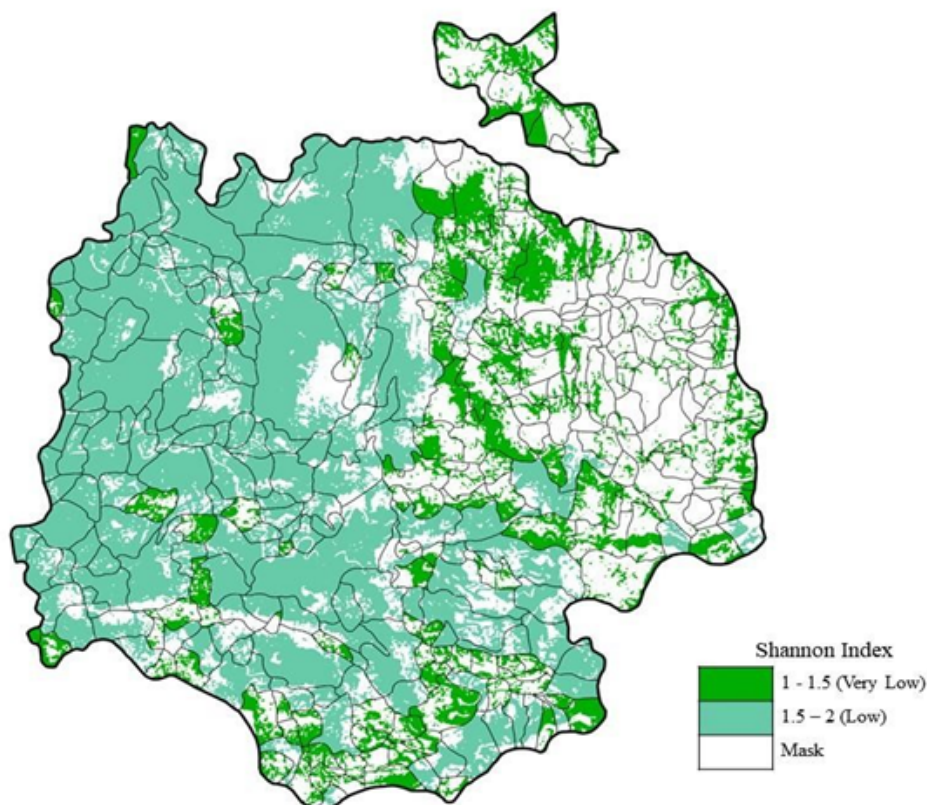


Figure: Shannon index computed for each village separately. It can be seen that west Dangs is rich in biodiversity while the east part of Dangs is still lacking in diversity.

Courtesy: Summer Internship on 'Biodiversity Mapping of The Dangs District using Multi-Temporal Satellite images and Dynamic Time Wrapping (DTW) Algorithm by Mr. Arav Saha and Mr. Srikumar Sastry, Dhirubhai Ambani Institute of Information and Communication Technology DAIICT, Gandhinagar.

The Environmental Information System acronymed as ENVIS was implemented by the Ministry of Environment & Forests by end of 6th Five Year Plan as a Plan Scheme for environmental information collection, collation, storage, retrieval and dissemination to policy planners, decision makers, scientists and environmentalists, researchers, academicians and other stakeholders.

The Ministry of Environment and Forests has identified Consumer Education and Research Centre (CERC), Ahmedabad, as one of the Resource Partners to collect and disseminate information on "Environment Literacy - Eco-labelling and Eco-friendly Products". The main objective of this ENVIS Resource Partner is to disseminate information on Eco products, International, and National Eco labeling programmes.

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Write to us: We value your views and suggestions. Please send your feedback on this issue. We would also like to invite your contributions on the Eco Product and Eco Labelling.

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