

Vol-I, Biannual | Apr 2023 - Sep 2023 | Oct 2023 - Mar 2024

SUSTAINABLE LAND MANAGEMENT

NEWSLETTER

Centre of Excellence on Sustainable Land Management
Indian Council of Forestry Research and Education, Dehradun

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Published by
Centre of Excellence on Sustainable Land Management
Indian Council of Forestry Research and Education, Dehradun



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From the Desk of Director

Land degradation and desertification have been triggered mainly due to unsustainable land use and deforestation and emerged one of the most pressing environmental issues in the world. The problems are particularly severe in the arid and semi-arid areas supporting nearly two billion people. Prevention of further land degradation and restoration of degraded lands has become essential because the demand for productive lands has increased to fulfil the increasing food grain demand.

The Centre of Excellence on Sustainable Land Management (CoE-SLM), established at the Indian Council of Forestry Research and Education, Dehradun, has the global mandate to address land degradation issues and achieve land degradation neutrality by 2030. CoE-SLM aims to promote sustainable land management (SLM) practices through the induction of technology on land degradation and the promotion of South-South Cooperation.

Keeping in view the aim, mission and objectives, CoE-SLM has developed training modules for capacity building of stakeholders at regional, national and international levels engaged in land management. The Centre is imparting training on land resource assessment using RS-GIS techniques and promotion and upscaling SLM practices to achieve Land Degradation Neutrality. To compile and disseminate state-of-the-art knowledge on the global efforts on restoration of degraded land through sustainable land management practices to achieve Land Degradation Neutrality, CoE-SLM is publishing a half yearly Newsletter on 'Sustainable Land Management'. The first volume of the Newsletter is a compilation of articles on land degradation status in India and time-tested sustainable land management practices besides, providing information about the events organized by CoE-SLM since its inception.

It gives me immense pleasure to introduce the volume-I: issues I & II (April 2023-September 2023 & October 2023-March 2024) of the Newsletter published by CoE-SLM, ICFRE, Dehradun. I hope the Newsletter shall serve as a platform for communication with stakeholders worldwide. I thank all the contributors and editorial team for successfully publishing the I & II issues of volume 1, 2023-24. Your valuable opinions and suggestions shall help us improve it in the coming issues.

EDITORIAL

The effects of land degradation have been a global concern since 1930. The extreme wind erosion in the USA in the 1930s formed a wake-up call on land degradation issues. Since then, attempts have been made to reduce land degradation by adopting measures such as terrace construction and tree plantation activities. During 1960-1990, the emphasis was given to formulating projects and policies on soil and water conservation. However, the term sustainable became popular after its use in the Brundtland Report on the World Commission on Environment and Development: Our Common Future in 1987. Since then, the term "Sustainable Land Management (SLM)" has gradually occupied space in the scientific literature[1]. The term SLM refers to a "knowledge-based procedure that helps to integrate land, water, biodiversity and environmental management to fulfil the rising food and fibre demands of the growing human population while sustaining ecosystem services and livelihoods"[2]. It is a combination of technologies, policies and activities to integrate socioeconomic principles with environmental issues to enhance the productivity of land and buffering capacity of soil against various degradation processes and protect the potential natural resources. Besides, the Earth Summit-1992 defined SLM as "the use of land resources, including soils, water, animals, and plants for the production of goods to meet changing human needs while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions". In a broader sense, SLM encompasses the established approaches, viz., soil and water conservation, conservation agriculture, natural resource management and integrated ecosystem management. It aims to integrate social, economic and ecological dimensions to maintain holistic, productive and healthy ecosystems across the globe[3].

The Centre of Excellence on Sustainable Land Management (CoE-SLM), established at the Indian Council of Forestry Research and Education, Dehradun, aims to facilitate the restoration of degraded lands and promote South-South Cooperation to achieve land degradation neutrality. The Newsletter on Sustainable Land Management aims to compile and disseminate state-of-the-art knowledge on the global efforts on restoration of degraded land through sustainable land management practices to achieve Land Degradation Neutrality, besides, providing a platform to disseminate the research, education and capacity-building programmes of CoE-SLM to the various stakeholders across the nation.

Editors

[1]Graaff, J. de, Aklilu, A. Ouessar, M. Asins-Velis, S. Kessler, A. Development of sustainable land management policies and practices in five selected countries from 1960-2010. Agro Environ, Wageningen (2012).

[2]World Bank: Sustainable land management: Challenges, opportunities, and trade-offs. The International Bank for Reconstruction and Development. Washington, DC. (2006).

[3]Smyth, A.J. Dumanski, J. FESLM: An international framework for evaluating sustainable land management. World Soil Resources Report. Food and Agriculture Organization of the United Nations, Rome, Italy (1993).

GENESIS AND ESTABLISHMENT OF CENTRE OF EXCELLENCE ON SUSTAINABLE LAND MANAGEMENT (CoE-SLM), ICFRE, DEHRADUN

Hon'ble Prime Minister of India while addressing the High-Level Segment of the 14th session of the Conference of Parties to UNCCD in 2019 made an announcement to set up a Centre of Excellence on Sustainable Land Management (CoE-SLM) at Indian Council of Forestry Research and Education in order to further develop the scientific approach and facilitate induction of technology on land degradation issues

MISSION

- Promote South-South cooperation to enable India to share its experiences on sustainable land management with other country Parties
- Identifying various sources of obtaining finance to implement projects/ schemes to achieve land degradation neutrality
- Engage in planning, monitoring and evaluation systems for interventions to combat land degradation
- Facilitate networking of national and international institutions working on sustainable land and ecosystem management for knowledge sharing, capacity building of the stakeholders in land degradation neutrality (LDN) target setting and provide technical support for land degradation mapping
- To share knowledge and technology amongst developing countries, and parties of UNCCD to arrest further land degradation and restoration of degraded lands
- Develop a scientific approach; facilitate induction of technology, capacity building and knowledge sharing for addressing land degradation issues
- The Centre of Excellence shall work in close coordination with all regional, national and international organizations engaged in land restoration and allied areas





Shri Bhupender Yadav Hon'ble Union Minister of Environment, Forest and Climate Change, Govt. of India formally inaugurated the Centre of Excellence on Sustainable Land Management (CoE-SLM), at Indian Council of Forestry Research and Education, Dehradun on 20 May 2023.

AIM

To facilitate the restoration of degraded lands and achieve land degradation neutrality

OBJECTIVES

1. Assessment of land degradation through the application of space-based technology in collaboration and networking with research organizations/ institutes of India, i.e., ISRO (SAC, NRSC etc.), FSI, GSI, etc. and to build a National Knowledge Hub with data-related to sustainable land management
2. Capacity building in the formulation of strategies for sustainable land management frameworks along with sustainable development goals (SDGs)
3. Capacity building for assessment, monitoring and reporting of land-based indicators of United Nations Convention to Combat Desertification (UNCCD)
4. Capacity building for target setting for land degradation neutrality, drought risk and early warning systems, gender mainstreaming, good governance of land tenure and land rights, and sustainable development goals
5. Capacity building to assess the impacts of land degradation and land use changes in greenhouse gas emission and biodiversity loss
6. Provide training and capacity building on land degradation issues through conducting certificate, diploma, degree, doctoral and post-doctoral courses
7. Capacity building for fund sourcing from private sectors, corporate sectors and multi-lateral agencies for taking up projects on sustainable land management (SLM)
8. Implementation of demonstrative projects for sustainable land management
9. Facilitate publication of articles, journals, research papers and books
10. Facilitate compilation of best practices on sustainable land and ecosystem management worldwide and dissemination to the national and international stakeholders
11. Collaborate with international agencies for effective knowledge exchange related to assessment of land degradation status, LDN targets, SLM practices, drought risk and early warning system, sand and dust storms, land degradation induce force migration and displacement, gender mainstreaming, good governance of land tenure and land rights, land induced greenhouse gas emissions and biodiversity loss
12. Dissemination of training and knowledge to international stakeholders on above issues in line with understanding and achievement of sustainable development goals

EVENTS OF CoE-SLM



During the inauguration of the Centre of Excellence on Sustainable Land Management (CoE-SLM) at the Indian Council of Forestry Research and Education (ICFRE), Dehradun on 20 May 2023, two publications "Compendium of Sustainable Land Management Practices" and "Pathways to Achieve Land Degradation Neutrality in India" were also released on the occasion.



INAUGURATION OF CoE-SLM AND UNVEILING THE PUBLICATIONS ON 20 MAY 2023

WORKSHOP ON WORLD DAY TO COMBAT DESERTIFICATION AND DROUGHT-17 JUNE 2023



Theme: Her Land Her Rights

The United Nations General Assembly declared June 17 as the "World Day to Combat Desertification and Drought" (WDCDD) in December 1994. In order to prevent, halt and reverse the degradation of ecosystems across the globe, 2021-30 has been declared as the UN Decade on Ecosystem Restoration. The CoE-SLM, ICFRE aims to further develop scientific approaches and facilitate the induction of technology on land degradation issues at national and international



levels and promote South-South Cooperation to promote Sustainable Land Management practices and achieve Land Degradation Neutrality. To commemorate World Day to Combat Desertification and Drought, CoE-SLM organized a workshop on the theme Her Land Her Rights on 17 June 2023 at ICFRE Dehradun.

WORKSHOPS AND TRAININGS

WORKSHOP ON SUSTAINABLE LAND MANAGEMENT FOR COMBATING DEGRADATION & COLLABORATIVE DEVELOPMENT OF TRAINING MODULES FROM 11-12 SEPTEMBER 2023



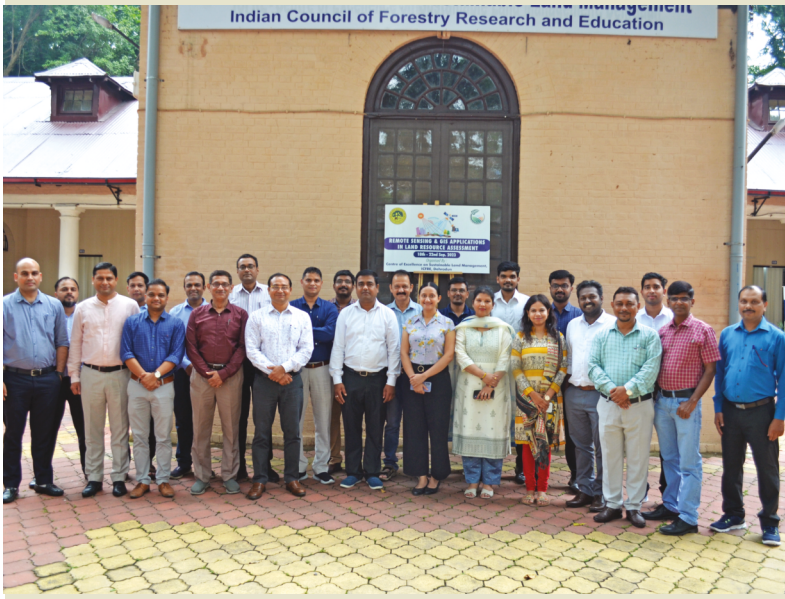
A two-day workshop on "Sustainable Land Management for Combating Degradation and Collaborative Development of Training Modules" was organized by CoE-SLM on 11 and 12 September 2023. The workshop aimed to develop national and regional training modules for capacity building of stakeholders on sustainable land management practices and to achieve land degradation neutrality by 2030. Twenty (20) Scientists representing ICAR and ICFRE institutes attended the workshop and provided their expert inputs to develop the training modules.



TRAINING ON RS-GIS APPLICATIONS IN LAND RESOURCE MANAGEMENT FROM 18-22 SEPTEMBER 2023



Centre of Excellence on Sustainable Land Management (CoE-SLM) organized five days training on "RS-GIS Applications in Land Resource Management" from 18-22 September 2023 for the capacity building of stakeholders working on sustainable land management.



TRAINING ON SUSTAINABLE LAND MANAGEMENT THROUGH ADAPTIVE AND CLIMATE RESILIENT INTERVENTIONS FROM 18-20 DECEMBER 2023

CoE-SLM, ICFRE, Dehradun, organized three days training programme on "Sustainable Land Management through Adaptive and Climate Resilient Interventions" from 18 to 20 December 2023 for field functionaries of Agriculture, Horticulture and Forestry departments from the states of Punjab, Haryana, UP and Uttarakhand. The training aimed to sensitize the stakeholders on SLM through adaptive and climate-resilient interventions to achieve the LDN targets by 2030.





CoE-SLM organized five days International Training Workshop from 15 to 19 January 2024 to equip participants in utilizing skills of Remote Sensing and GIS (RS-GIS) for assessing and monitoring land degradation and restoration efforts. The training was jointly organized by CoE-SLM, ICFRE, and the G20 Global Land Initiative Coordination Office of the United Nations Convention to Combat Desertification (UNCCD).

CORPORATE SUMMIT ON "SUSTAINABLE LAND MANAGEMENT: COLLABORATIVE STRATEGIES TO ACHIEVE LAND DEGRADATION NEUTRALITY" ON 7 FEBRUARY 2024





ONE-WEEK INTERNATIONAL TRAINING WORKSHOP ON "ASSESSING LAND DEGRADATION DYNAMICS AND RESTORATION EFFORTS WITH REMOTE SENSING DATA AND GIS TOOLS" FROM 15-19 JANUARY 2024

Eighteen participants attended the training, among them, six were from Asian countries (Armenia-1, Jordan-1, Indonesia-1, Nepal-2, India-1), eight were from African countries (Algeria-1, Kenya-1, Madagascar-1, Mauritania-2, Morocco-1, Nigeria-1, Zambia-1), and 2 participants each from Europe (UK, Turkey) and South American countries (Mexico, Peru).





CoE-SLM, ICFRE, Dehradun, organized a one-day Corporate Summit on "Sustainable Land Management: Collaborative Strategies to Achieve Land Degradation Neutrality" on 7 February 2024, in which 20 delegates from 17 different corporate sectors participated. The aim of the summit was to develop a synergistic approach of working together to address the issue of land degradation. Representatives from different corporate sectors highlighted their different schemes related to the environment and forestry sector and finalized the areas for collaborative efforts between corporate houses and CoE-SLM, ICFRE, to address the issues of land degradation and achieve LDN targets.



INTERNATIONAL TRAINING ON "SUSTAINABLE LAND MANAGEMENT: PRINCIPLES, PRACTICES AND APPLICATIONS" FROM 06-10 MARCH 2024

COLLABORATIONS / MEMORANDUM OF UNDERSTANDING (MOUs)

CoE-SLM has initiated collaboration with National and International Organizations by initiating the process of signing of Memorandum of Understating (MoU) with the following:

- United Nations Conventions to Combat Desertification, Bonn, Germany
- International Union for Conservation of Nature, Gland, Switzerland
- Space Applications Centre, ISRO, Ahmedabad, Gujarat
- National Remote Sensing Centre, Hyderabad, Telangana
- Forest Survey of India, Dehradun, Uttarakhand

CoE-SLM, ICFRE IN G20 SUMMIT

I ESWG Meeting, Bengaluru (9-11 February 2023)

- Presentation on "Eco-restoration of Mining and Forest Fire Affected Areas"
- Pavilion-themed "Land Restoration"

II ESWG Meeting, Gandhinagar (27-29 March 2023)

- Presentation on "Compendium of best practices"

IV ESWG Meeting, Gandhinagar (26-28 July 2023)

- CoE-SLM in coordination with the Knowledge Partners and Collaborators prepared the presidency document "Compendium of Best Practices: Restoration of Mining Affected Areas"

PARTICIPATION IN G20/ WORKSHOPS/ SEMINARS/ TRAININGS

- Dr. Sanjay Singh delivered a lecture on "Restoration of Mining Affected Areas-G 20 Perspective" at the five-day Management Development Programme sponsored by MoEF&CC for Indian Forest Service Officers from February 5-9, 2024, at IIFM, Bhopal.
- Smt. Kanchan Devi, IFS, DG, ICFRE and Dr. Sanjay Singh, Scientist, CoE-SLM, attended a meeting addressing issues related to forest land degradation and its restoration at Indira Paryavaran Bhawan, Kaveri Conference Hall, MoEF&CC, Govt. of India under the chairmanship of the Secretary EF&CC on 29 January 2024.

CoE-SLM organized five days of International Training on "Sustainable Land Management: Principles, Practices and Applications" from 6-10 March 2024 with technical support from the Global Land Initiative (GLI) and the United Nations Convention to Combat





Desertification (UNCCD). Nineteen participants representing fourteen countries participated in the training programme. The training programme aimed to address various aspects of Sustainable Land Management and equip participants with the latest advancements and strategies to deal with land degradation issues.

LAND DEGRADATION STATUS OF INDIA ACCORDING TO THE NATIONAL REPORTING TO THE UNCCD 2022

Manoj Kumar, Ram Kumar Singh and Divesh Pangtey

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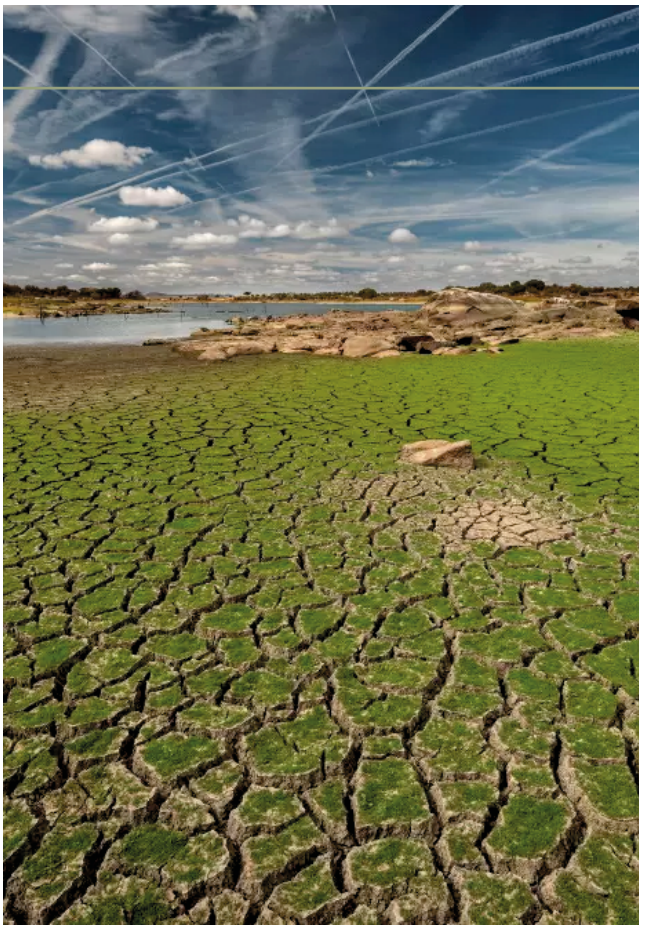


The United Nations Convention to Combat Desertification (UNCCD) is a Rio Convention addressing Desertification, Land Degradation, and Drought (DLDD). Identified during the 1992 Rio Earth Summit as a major challenge to sustainable development, UNCCD focuses on monitoring land degradation status at the national level as are party to the Convention. With 195 Parties, UNCCD is a crucial instrument recognizing land degradation and its impact on vulnerable people and ecosystems worldwide.

India became a signatory to the UNCCD on 14 October 1994 and ratified it on 17 December 1996. It is the seventh largest country in the world with 328.72 mha area and is the second most populated country with 1.21 billion population (Census, 2011).

Degradation of lands has severe implications for livelihood and food security. India has got high stakes on this front and stands strongly committed to implementing the goals of UNCCD. The Ministry of Environment, Forest and Climate Change (MoEF&CC) is the nodal Ministry to coordinate all issues pertaining to the

Convention. The MoEF&CC has designated Indian Council of Forestry Research and Education (ICFRE), Dehradun as the facilitating organization for the reporting of degradation and desertification status to the UNCCD Secretariat.

The process of preparation of the report included data collection and synthesis of important programmes undertaken by the various Ministries and Departments of Government of India, Science and Technology Institutions and Non-Governmental Organizations. The National Report is submitted online to UNCCD Secretariat through PRAIS4 portal of the Convention and can be accessed through https://prais.unccd.int/unccd/reports.

The Conference of Parties (COP) to the UNCCD by its decision 7/COP13 adopted the UNCCD 2018-2030 Strategic Framework, having five Strategic Objectives (SOs). The report elaborates upon India's progress on the SOs for the baseline period (2000-2015) and reporting period (2016-2019) as follows.

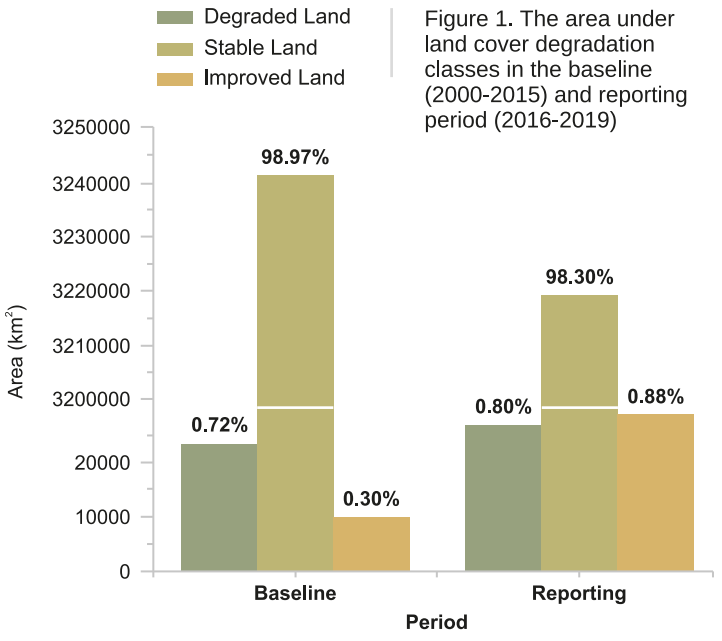


Figure 1. The area under land cover degradation classes in the baseline (2000-2015) and reporting period (2016-2019)

SO-1: To improve the condition of affected ecosystems, combat desertification/land degradation, promote sustainable land management and contribute to land degradation neutrality

SO1-1 Trends in land cover

Land cover refers to the observed (bio) physical cover on the Earth's surface. The UNCCD methodology for estimating the proportion of land that is degraded over a total land area i.e., Sustainable Development Goal (SDG) indicator 15.3.1 uses land cover change as an indicator of altered ecosystem dynamics resulting from natural and/or artificial drivers and factors.

The statistics related to the suggested indicators to monitor the progress of SOs were generated using data sets as suggested in PRAIS4 manual i.e., ESA Land cover, MODIS NDVI, and ISRIC Soil Grids. The maximum land cover change identified during the reporting period compared to the baseline period was identified as conversion of cropland into the artificial surface (11918 km^2) followed by conversion of tree cover into cropland cover (5396.33 km^2). During the reporting period (2016-2019), land cover degradation was compared to the baseline year 2000-2015 (Fig. 1). During the reporting period, the percentage of Degraded land increased whereas stable land and improved land shows a remarkable reduction compared to the baseline period.

SO1-2 Trends in land productivity or functioning of the land

The UNCCD methodology for estimating the proportion of land that is degraded over a total land area (i.e., SDG indicator 15.3.1) uses changes in land productivity as an indicator of long-term variations in the health and productive capacity of the land. Land productivity is calculated from Earth observation data representing net primary productivity (NPP). Vegetation indices, such as the Normalized Difference Vegetation Index (NDVI) or the Enhanced Vegetation Index (EVI), are often used as proxies for NPP. The land productivity degradation map is represented as degraded/not degraded land in the baseline period. While land productivity dynamics in the reporting period indicated areas that have degraded, improved or remained stable compared to the baseline.

The trend metric is calculated over an interval of 16 years as per the UNCCD guidelines for both the baseline (2000-2015) and the reporting period (2016-2019). The trend was calculated by fitting a linear regression model to the time series and determining the significance of the trend slope by calculating its z-score. Positive z-scores indicate a trend of increasing productivity, while negative scores indicate decreasing productivity. Based on the assessment of land productivity dynamics, degraded area in India grew by 4.7% in the reporting period compared to the baseline period (Table 1 & 2). While total degraded area in the reporting period based on productivity is estimated as 273,863 km^2.

SO1-3 Trends in carbon stocks above and below ground

The UNCCD methodology for estimating the proportion of land that is degraded over a total land area (SDG indicator 15.3.1) uses SOC stock as an indicator of overall soil quality associated with soil nutrient cycling, soil aggregate stability and soil structure, with direct implications for water infiltration, vulnerability to erosion, and ultimately the productivity of vegetation, and in agricultural contexts, yields. During the reporting period, soil organic carbon content was found to be highest under the tree land cover (95 Mg/ha) followed by grasslands (87 Mg/ha), wetlands (72 Mg/ha), and cropland (46 Mg/ha). While the total degraded area in the reporting period based on soil organic carbon stock has increased to 27,623.56 km^2 in the reporting period (Table 3 & 4).

Table 1. Land productivity degradation in the baseline period (2000-2015)

Land productivity degradation classes	Area (km^2)	Percent of total land area (%)
Land area with degraded land productivity	1,22,244.40	3.8
Land area with non-degraded land productivity	29,95,190.81	92.7
Land area with no land productivity data	1,11,446.29	3.5

Table 2. Land productivity degradation in the reporting period (2016-2019)

Land productivity degradation classes	Area (km^2)	Percent of total land area (%)
Land area with improved land productivity	15,60,097.13	48.3
Land area with stable land productivity	12,67,671.72	39.3
Land area with degraded land productivity	2,73,863.46	8.5
Land area with no land productivity data	1,25,685.06	3.9

Table 3. Soil organic carbon stock degradation in the baseline period (2000-2015)

Soil Organic Carbon (SOC) degradation classes	Area (km^2)	Percent of total land area (%)
Land area with degraded SOC	19,075.00	0.6
Land area with non-degraded SOC	31,36,673.55	97.1
Land area with no SOC data	73,838.94	2.3

Table 4. Soil organic carbon stock degradation in the reporting period (2016-2019)

Soil Organic Carbon (SOC) degradation classes	Area (km^2)	Percent of total land area (%)
Land area with improved SOC	6,255.91	0.2
Land area with stable SOC	31,14,366.34	96.5
Land area with degraded SOC	27,623.56	0.9
Land area with no SOC data	79,044.55	2.4

SO1-4 Proportion of degraded land over the total land area

Land degradation is the reduction or loss of biological and economic productivity in various land types due to factors such as land use and management practices. Recognizing the extent of degraded land is crucial for achieving land degradation neutrality (LDN) at the national level. SDG indicator 15.3.1 measures the area of degraded land as a proportion of the total land area, excluding inland waters. The One-Out All-Out (1OAO) method integrates sub-indicators to assess land degradation, categorizing each land unit as either degraded or not. Analyzing changes involves establishing a baseline for degradation, against which progress is evaluated. UNCCD encourages Parties to highlight areas with significant and dramatic changes. These are defined as:

- **Hotspots:** areas that are highly vulnerable to degradation in the absence of urgent remediation activities;
- **Brightspots:** areas that do not exhibit any signs of degradation, or which have been remediated from a degraded state by implementing appropriate remediation activities or through land planning processes to prevent degradation.

Knowledge about the location and type of Hotspots/Brightspots facilitates the development of action plans to redress degradation through the conservation, rehabilitation, restoration and sustainable management of land resources. Land degradation maps of the baseline and reporting period were developed (Fig. 2), which suggests the proportion of degraded land increased from 4.4 to 9.5 percent in the reporting period compared to the baseline period. Based on trend analysis of land degradation in baseline and reporting period, 483 hotspots and 15 brightspots have been identified that are spread across different region of the country.

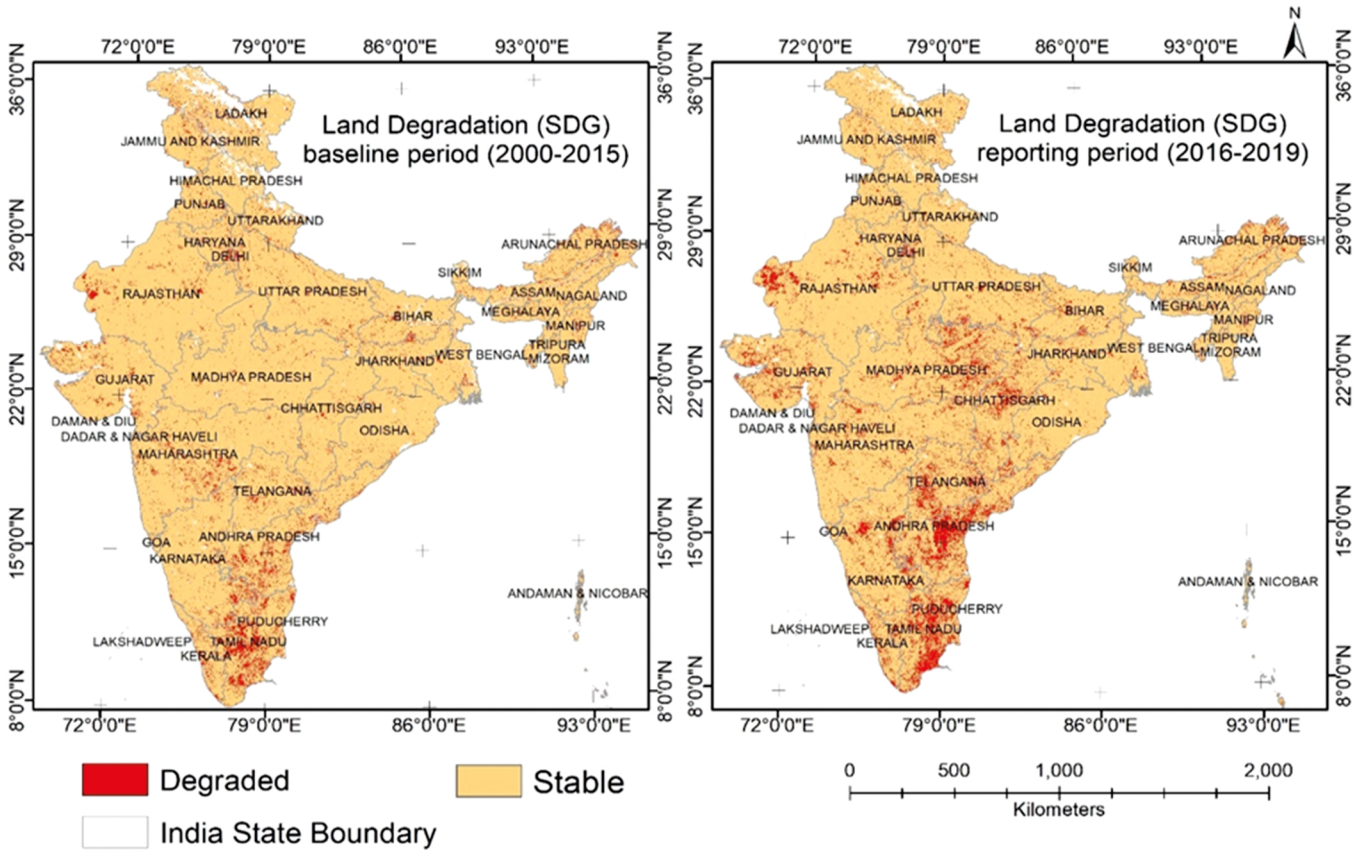


Figure 2. National land degradation map for the baseline (2000-2015) and reporting period (2016-2019)

SO-2: To improve the living conditions of affected populations

SO2-1 Trends in population living below the relative poverty line and/or income inequality in affected areas

Indicator SO 2-1 estimates the well-being of populations in monetary terms. Two metrics are used for this purpose which are mentioned below:

a. Proportion of the population below the international poverty line, or

b. Income inequality.

These metrics can be used interchangeably according to country-specific conditions. The proportion of the population below the international poverty line is generally considered relevant to less developed countries, where extreme poverty and destitution are core development challenges. As per the international poverty line currently set at USD 1.90 a day at 2011 international prices, national poverty line decreased from 40.60 % in the year 2000 to 9.8 % in the year 2020.

SO2-2 Trends in access to safe drinking water in affected areas

Having access to water is a key determinant of child survival, maternal and child health, family well-being and economic productivity. Accordingly, an increasing trend in access to safe drinking water would help improve the living conditions of affected populations. In order to quantify safely managed drinking water, the proportion of the population using improved drinking water services is determined. This is currently being measured by the proportion of the population using an improved basic drinking water source. Safe drinking water accessibility is increasing in rural areas as per the WHO and ATLAS of Sustainable Development Goals 2023.

SO2-3 Trends in the proportion of population exposed to land degradation disaggregated by sex

Indicator SO 3-2 was developed in response to decision 11/COP.14 to align the reporting process for SO 1 to 5 with gender-responsive indicators and guidelines and ensure that the gender dimensions of land degradation are captured. The indicator estimates the proportion of populations exposed to land degradation, disaggregated by sex, as a first step towards addressing the gender data gap on land degradation within the UNCCD reporting framework. Proportion of the population exposed to land degradation increased in the reporting period as compared to the baseline period.

SO-3: To mitigate, adapt to, and manage the effects of drought in order to enhance resilience of vulnerable populations and ecosystems

SO3-1 Trends in the proportion of land under drought over the total land area

Drought is defined as a period of dry weather long enough to cause a serious hydrological imbalance (World Meteorological Organization (WMO), 1992). The UNCCD defines drought as the naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems. Indicator SO 3-1 specifically describes the status of meteorological drought hazards that occurred during the baseline and reporting periods within a country. There are several drought indices that can be used to estimate national drought hazard. The UNCCD methodology recommends using a globally accepted drought index, the Standardized Precipitation Index (SPI), to characterize the meteorological drought hazard.

Global Precipitation Climatology Centre (GPCC) monthly precipitation products was used to analyze the proportion of land cover under the drought. A decrease in areas under drought was observed from 68% in baseline period to 37.5% in reporting period. The major area falls under mild drought class (27.13%) followed by moderate (5.76%), severe (2.51%) and extreme (1.40%) classes (Fig. 3).

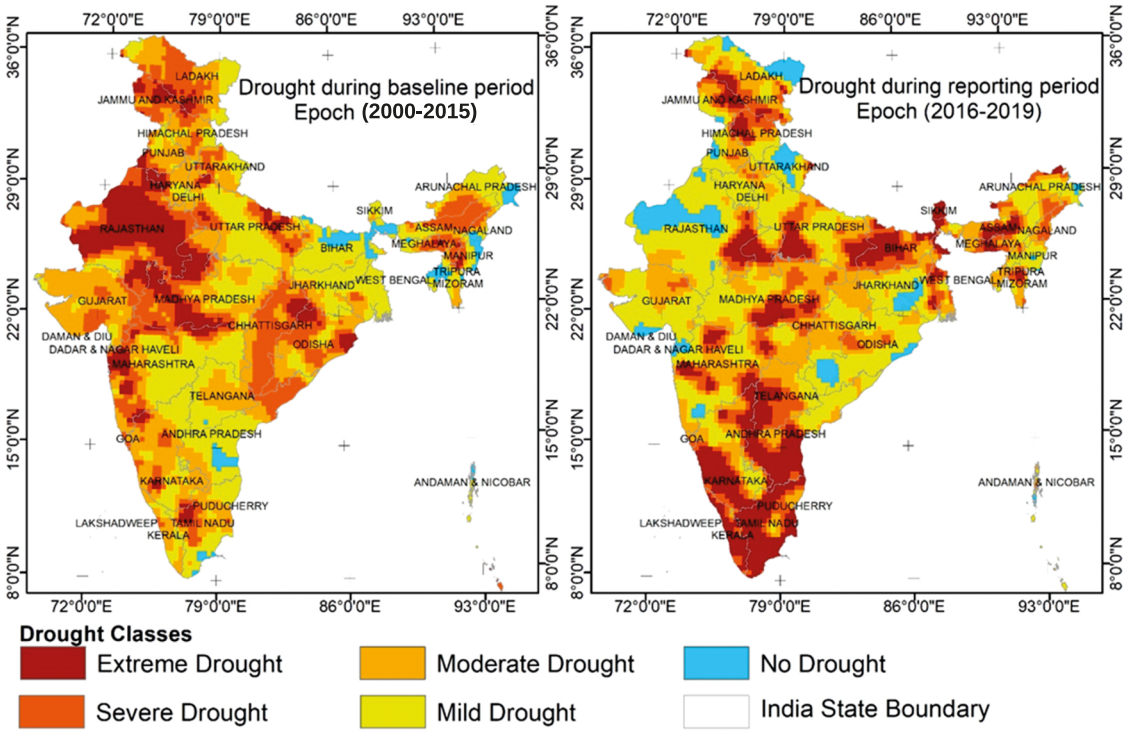


Figure 3. National drought map for the baseline (2000-2015) and reporting period (2016-2019)

SO3-2 Trends in the proportion of the population exposed to drought

Indicator SO 3-2 defines the exposure of the population to drought hazards (identified by indicator SO 3-1) as the total count of people exposed as well as the percentage of the total population exposed. This indicator may be further disaggregated by sex if data is available. The method of computation uses the spatial distribution of the population or sub-population group (i.e., by sex) to establish its exposure to drought, based on the location and extent of the drought intensity classes as determined by indicator SO 3-1. Using this information, the percentage of the total population located within each drought intensity class, as well as the percentage of the total population exposed to drought (i.e., to all drought intensity classes), is calculated and reported. National reporting is facilitated through the provision of default data.

The total population exposed to non-drought areas decreased in the reporting period. As of 2019, about 47% of the population was exposed to drought.

SO3-3 Trends in the degree of drought vulnerability

The UNCCD approach to assessing drought vulnerability is based on a composite index, called the Drought Vulnerability Index (DVI), which incorporates three components to reflect the vulnerability of the population of an individual country to drought: i) social, ii) economic and iii) infrastructural. The DVI does not, at present, address ecological or ecosystem vulnerability. It is in the consultation phase and is yet to be fixed.

SO-4: To generate global environmental benefits through effective implementation of the United Nations Convention to Combat Desertification

SO4-1 Trends in carbon stocks above and below ground

Trends in carbon stock above and below ground is a multi-purpose indicator used to measure progress towards both strategic objectives 1 and 4. Quantitative data and a qualitative assessment of trends in this indicator are reported under strategic objective 1, progress indicator SO1-3.

SO4-2 Trends in abundance and distribution of selected species

The world's species are impacted by several threatening processes, including habitat destruction and degradation, overexploitation, invasive alien species, human disturbance, pollution and climate change. On-ground land restoration actions can mitigate threatening processes and reduce species extinction risk. The Red List Index (RLI) of species survival was used to assess overall changes in the extinction risk of groups of species because of threats and the extent to which threats are being mitigated. Based on this it was observed that the national RLI value in the year 2019 has decreased to 0.67 as compared to the RLI value of 0.75 in 2000.

SO4-3 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type

Protecting important sites for biodiversity is critical to halting the decline in biodiversity and ensuring the long-term and sustainable use of terrestrial natural resources. Establishing protected areas is an important mechanism for achieving this aim, and this indicator measures progress toward the conservation, restoration and sustainable use of terrestrial ecosystems and their services. There was an increase of 3.26 % in the protected area during year 2020 compared to year 2000

SO-5: To mobilize substantial and additional financial and non-financial resources to support the implementation of the Convention by building effective partnerships at global and national level

SO5-1 Bilateral and multilateral public resources

Ministry of Finance, Department of Economic Affairs, Economic Division (Climate Change Finance Unit) provided $2,823.23 through JICA, WB, and GEF India for 7 projects. The MoEF&CC facilitated an amount of $ 974,314,510.35 through the GEF Trust Fund, JICA, and GCF for 6 projects. India's new initiative for scaling up land restoration efforts under Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) having an annual budget of USD 0.97 billion will help in restoring 26 million hectares of degraded land and improve livelihoods coupled with short-term and long-term benefits to the local communities

SO5-2 Domestic public resources

India's population is projected to reach 1.7 billion by 2050. About 2 billion hectares of land - an area over three times the size of India - are degraded but can be restored back to health. India is one of the first countries to commit to the 2030 Sustainable Development Goal target of achieving land degradation neutrality (LDN). India would raise its ambition of the total area that would be restored from its land degradation status from 21 million hectares to 26 million hectares between 2020 and 2030.

Monitoring desertification-related financial and non-financial resources poses challenges due to the complex, cross-sectoral nature of land-related issues and the diverse sources supporting anti-desertification efforts. This document primarily focuses on international public financial resources, specifically bilateral and multilateral Official Development Assistance (ODA). The analysis reveals that bilateral ODA for desertification-related activities has remained stable, suggesting a decreasing relative importance compared to other sectors. Multilateral flows, including contributions from United Nations agencies, play a crucial role in supporting UNCCD-related activities, with overall multi-bilateral funding gradually increasing. However, the lack of desertification markers for financial flows beyond bilateral ODA emphasizes the need for comprehensive methodological and data collation strategies to systematically track financial flows in the fight against desertification.

SO5-3 International and domestic private resources

The indicator discussed focuses on monitoring private sector resources mobilized by a reporting party for domestic and international activities, encompassing various private organizations such as corporations, households, and non-profit entities. This private financing supports the implementation of the Convention through concessional and non-concessional resources. The opportunity for financing Land Degradation Neutrality (LDN) projects is vast, with sources including national budgets, development banks, global funds, bilateral agencies, NGOs, and the private sector. The Global Environment Facility (GEF) serves as a financial mechanism for international environmental conventions, offering grant funding for projects addressing land degradation, deforestation, biodiversity management, climate change, and harmful chemicals.

In the context of India, climate actions are aligned with key development goals, necessitating additional financial resources to achieve climate resilience, with estimates indicating substantial funding requirements for both adaptation and mitigation. As per estimates, the country needs at least USD 206 billion (at 2014-15 prices) between 2015 and 2030 for implementing adaptation actions in key areas like agriculture, forestry, fisheries, infrastructure, water resources and ecosystems. With respect to mitigation requirements, India needs USD 834 billion by 2030 at 2011 prices for at least moderate low-carbon development. The Ministry of Finance serves as the focal point for international financial assistance in the country's institutional structure for climate finance

SO5-4 Technology transfer

The Convention mandates Parties to promote and finance the transfer of environmentally sound, economically viable, and socially acceptable technologies for combating desertification and mitigating drought effects. Article 20 encourages technology cooperation among affected country Parties through financial assistance and international collaboration. This indicator collects information on resources allocated to technology transfer, both given to and received from other countries, allowing qualitative and quantitative reporting on technology transfer requirements. However, no significant data and information were available regarding technology assistance, transfer, cooperation or facilitation between India and other countries.

SO5-5 Future support for activities related to the implementation of the Convention

It is a qualitative indicator with three questions that encourage country Parties to reflect on future resources to be targeted at implementing the Convention. In particular, the indicator allows country Parties to provide descriptive information on planned domestic resources, both public and private. It also provides a space to report on the planned provision and mobilization of international public and private resources. The third question aims to facilitate the sharing of information on resources needed by Parties for the implementation of the Convention. No significant data was available regarding future resources to be targeted or support for activities related to the implementation of the Convention.

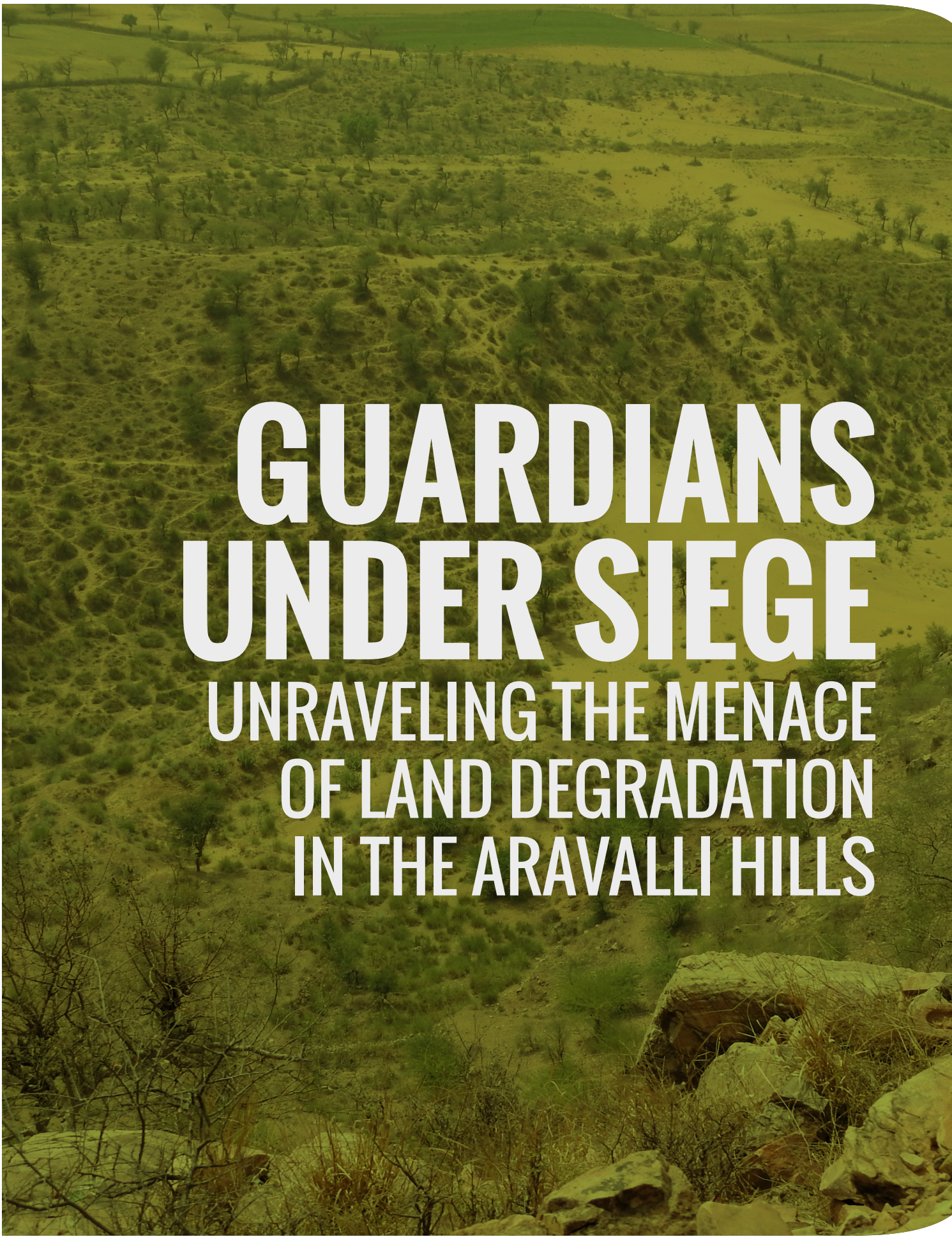


CONCLUSION

The UNCCD 2022 National report emphasizes five Strategic Objectives (SOs) to highlight achievements and challenges in effective planning and implementing the convention. It also served as a foundation for assessing the national status of land degradation and necessary investments across development plans to achieve country-specific targets between the baseline (2000-2015) and reporting period (2016-2019). The report highlighted an increase in degraded land cover from 4.4% at baseline to 9.5% during the reporting period, identifying a total of 483 hotspots and 15 bright spots. Furthermore, the report also highlighted a decrease in the area under drought from 68% in the baseline period to 37.5% in the reporting period. However, based on the downward trend in the Red List Index (RLI) of species survival, the risk of species' extinction is rising. To overcome these challenges, the national report outlines strategies to mobilize domestic and private sector financial resources, covering institutional matters, regulations, standards, performance frameworks, public-private partnerships, fiscal policies, and financial instruments. It emphasizes the significance of additional financial investments to achieve Convention objectives, highlighting voluntary LDN targets and national drought plans. Projects focusing on gender equality are crucial for achieving global targets, as well as the sharing of technology and innovative financing solutions, which are essential for further resource mobilization. Additionally, building capacities to plan future resource requirements for addressing land degradation, desertification, and drought issues is emphasized. Integrating these strategies in the forthcoming reporting process will enable Parties to assess the suitability of the indicators for measuring progress towards the SOs.

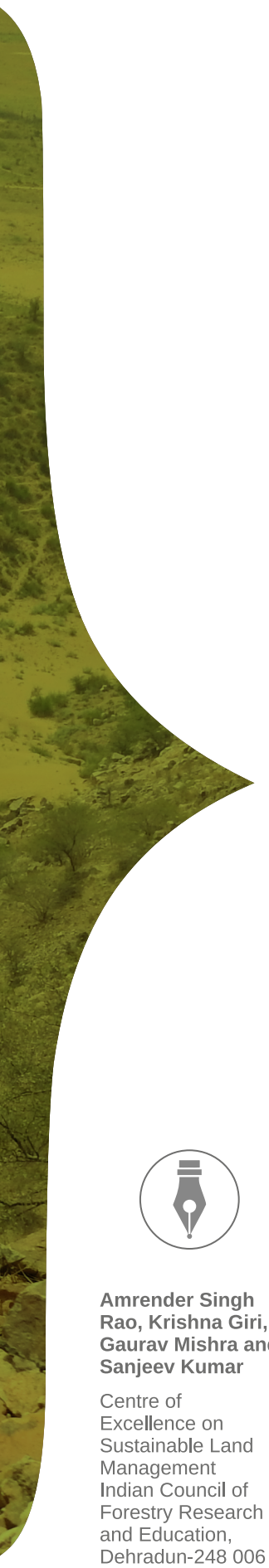
REFERENCE

Census (2011). Government of India. http://censusindia.gov.in



GUARDIANS UNDER SIEGE

UNRAVELING THE MENACE OF LAND DEGRADATION IN THE ARAVALLI HILLS



The escalating growth of the human population, resource scarcity, social unrest, and increasing environmental degradation collectively pose formidable challenges to the ecological processes that underpin the global biosphere and its biodiversity (Folke et al., 2022; Lindsay et al., 2022). These multifaceted issues, intertwined with contemporary environmental challenges including anthropogenic climate change, stratospheric ozone layer depletion, biodiversity loss, and degradation coupled with the net loss of arable land, have impacted the intricate web of ecological resilience of planet's ecosystems. The land is one of the most fundamental and basic resource which is non-renewable from the perspective of human time scale as it could need almost 100 years for the formation of 0.5 cm soil. It is a multifunctional system addressing energy, water security, biodiversity, environmental quality, repository of urban/industrial wastes and sink of atmosphere CO_2. Land degradation severely jeopardizes global food security, biodiversity loss and sustainability of forests (Blanco and Lal, 2023).

Globally 20% of the land is degraded, almost the size of African continent (30 million km^2) (UNESC, 2019). In India, drylands occupy 69% of the TGA (329 M ha) and 141 M ha i.e., 57% of the total cultivated area. According to the recent estimates of the Space Applications Centre 2021, the current extent of land degradation has been estimated at 97.85 million hectares, covering 29.77% of the geographic area of the country. Vegetation degradation, water erosion, wind erosion, water logging, salinity/alkalinity, mass movement, frost shattering, anthropogenic activities are among the major drivers of desertification and land degradation in India (SAC, 2021). The definition of Land Degradation is highly debated globally, however, The United Nations Convention to Combat Desertification defines land degradation as the decline or loss, occurring in arid, semi-arid, and dry sub-humid regions, of the biological or economic productivity and complexity of rain-fed cropland, irrigated cropland, or range, pasture, forest, and woodlands due to various factors, including human activities and habitation patterns. These factors encompass soil erosion by wind and/or water, degradation of the physical, chemical, and biological or economic attributes of soil, and the sustained loss of natural vegetation over time. Drylands are comprised of arid, semi-arid and sub-humid ecosystems. One such dryland ecosystem is the Aravalli Hill ranges.

The Aravalli's stand as ancient sentinels on Earth, dating back 350 million years. These majestic landforms traverse four states - Haryana, Delhi, Rajasthan, and Gujarat, leaving an indelible mark on the western-flank topography of the region. The Aravalli's weave through the tapestry of culture and traditions in the settlements surrounding them. The term "Aravalli" is derived from Sanskrit, meaning the "line of peaks." Zooming out to Earth's crust and its grand geological processes, the Aravalli Range emerges as an integral portion of the Indian subcontinent, adjacent to the Indo-Gangetic plains and the Himalaya's. In the hilly terrain of Central India, five folds have played a role in shaping its landscape, with the Dharwar fold being the oldest, followed by the Aravalli folds. This hilly area, flanked by the Aravalli Range to the East, the Satpura Range to the West, and the Great Plains to the North, constitutes a sizable triangular region. Spanning over 800 kilometers from Gujarat to Delhi, the Aravalli Mountain Range begins at Delhi's coordinates and culminates in Palanpur (Fig. 1).

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Over extensive periods, persistent erosion has sculpted low-relief features, with some hilltops boasting expansive flat areas exceeding 5 kilometers in width. As one moves north, the range tapers, and the hills assume a more subdued character. Reaching Delhi, they submerge beneath a layer of youthful alluvium, occasionally rising as hillocks like Raisina Hill. In the northeastern Aravalli's, where Delhi rests, elevations range from 400 to 600 meters. Progressing from Delhi, the range extends to Haridwar, concealing itself beneath the Earth's surface. Further, the Aravalli's stretch along the Thar Desert, exhibiting widths ranging from 10 kilometers in some areas to over 100 kilometers in others. These venerable hills birth several prominent rivers, such as the Sabarmati in Gujarat and lesser-known yet significant ones like Vakal and Luni in Rajasthan, or Indori and Sabi in Haryana. Additionally, the Aravalli's host natural wonders like the Sambhar Lake in Rajasthan, and Sultanpur Lake in Haryana.

In essence, the Aravalli Hills stand not only as geological marvels but as custodians of diverse ecosystems, shaping the cultural and environmental identity of the regions they traverse. These ranges have found themselves in the grip of a formidable adversary - land degradation. As the relentless urbanization, deforestation, and unsustainable land practices converge, the once pristine landscapes of the Aravalli Hills are undergoing a transformation that demands urgent attention and collective action.

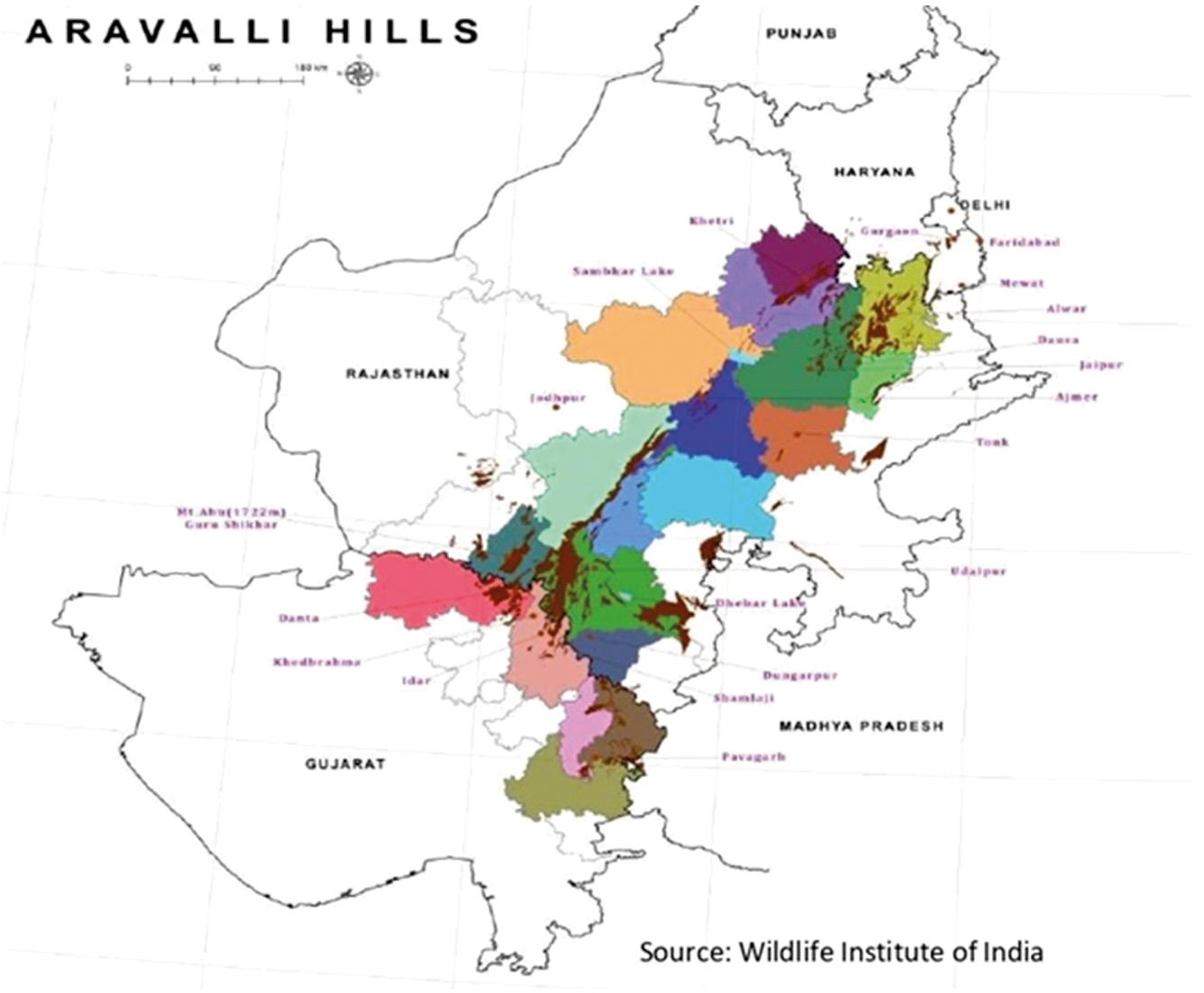


Figure 1. Map of the Aravalli Hills

THE MENACE OF DEFORESTATION:

One of the primary culprits of land degradation in the Aravalli Hills is rampant deforestation. As demands for timber, urban expansion, and agricultural activities rise, large swaths of forests are being cleared, disrupting the natural equilibrium. The intricate web of flora and fauna that once thrived is now under threat, leading to soil erosion and the loss of biodiversity. According to SAC (2021), the Aravalli ranges are subject to high degradation due to water erosion, salinity, settlements and vegetation degradation etc. in all the four states (Table 1).

Table 1. Causes and contributors of Land degradation in the Aravalli Hills

State	Factors of Degradation (%)						Total Area under desertification (%)
	Vegetation Degradation	Water logging	Settlements	Salinity	Water erosion	Wind erosion	
Delhi	6.73	0.23	53.64	-	-	-	60.60
Haryana	0.94	0.28	1.94	0.63	0.31	3.43	7.67
Rajasthan	7.62	0.05	0.35	1.06	6.18	44.41	62.90
Gujarat	11.82	0.02	0.84	13.48	19.67	6.00	52.29

(Source: SAC, 2021)



Figure 2.
Remains of mining activity in the Aravalli hill ranges from Rajasthan and Haryana states

UNREGULATED MINING ACTIVITIES:

The Aravalli Range boasts a wealth of non-ferrous minerals such as Zinc, Gold, Silver, as well as ferrous minerals including Copper ore and Lead. Additionally, the region is abundant in non-metallic minerals and construction materials like marble and limestone. The allure of substantial mineral reserves and robust, layered stones has led both miners and builders to exploit the resources of the Aravalli Range since the latter part of the 20th century. Unfortunately, a significant portion of these activities remains unregulated, causing irreparable damage to the land. Mining not only alters the topography but also exposes the soil to erosion, leaving the hills vulnerable to degradation. It is estimated that nearly 8% of the Aravalli hills have disappeared between 1975-2019, and further the estimate is projected at 22% by 2059 if explosive urbanisation and mining continues at the current pace (Raj and Sharma, 2022).



IMPROPER LAND USE PRACTICES

The Aravalli region has witnessed rapid urbanization and infrastructure development. Improper land use practices, such as unchecked construction, quarrying, and inadequate waste management, contribute significantly to soil erosion and the depletion of natural resources. The delicate balance between development and conservation is teetering on the edge. The assessment of the land use dynamics of the Aravalli ranges (India) using integrated geospatial and Classification and Regression Tree (CART) approach has identified that 3676 km^2 and 776.8 km^2 have been converted into barren land and settlements from 1975 to 2019 respectively, 5772.7 km^2 of forest land has decreased in Aravalli. In 2059, a total of 16360.8 km^2 of forest land will be converted to settlements (Raj and Sharma, 2022). Activities such as mining and settlement represent human interventions that often occur implicitly, leading to ecological imbalances by compromising environmental integrity and hindering progress towards SDGs. The erosion of forests along the northern and central Aravalli tracts is leading to the encroachment of desertification, particularly in the gap areas, resulting in an increased frequency and intensity of dust storms. Deforestation and various developmental activities have led to the destruction of the once-dense forests that covered much of the Aravalli range. As a consequence of excessive runoff and soil erosion, the Aravalli region is gradually transforming into barren, Rocky Mountains devoid of vegetation, as reported by the Wildlife Institute of India in 2017. This degradation poses a significant threat to ecosystem services crucial for cities like Delhi and Gurgaon, including groundwater replenishment, temperature regulation, dust and pollutant filtration, as well as providing habitats for numerous plant and animal species.



Figure 3. Desertification and land degradation extent in the Aravalli hills from Takri mountain in Rewari district of Haryana



Figure 4. Threats to village ponds due to irregular rainfall patterns and mining

The Aravalli Hills play a crucial role in maintaining the water balance in the region (Fig. 4). Land degradation, however, disrupts this balance, leading to decreased water retention capacity and increased vulnerability to floods and droughts. The ecological consequences of mining extend to the disruption of aquifers as digging or mining to significant depths can puncture these underground water reservoirs, leading to disturbances in water flow regimes. Mining activities have also adversely affected the catchment areas of natural drainage systems. Notably, lakes such as Soorajkund are experiencing a gradual decline, with the potential consequence of drying up due to the alterations in the surrounding landscape caused by mining operations. The once reliable source of water for communities downstream is now at risk, jeopardizing the livelihoods of thousands.

ECOLOGICAL CONSEQUENCES:

The Aravalli Hills hosts a myriad of plant and animal species. Land degradation poses a severe threat to this delicate ecosystem, pushing several species towards the brink of extinction. The loss of biodiversity not only disrupts the natural beauty of the region but also has cascading effects on the ecological services that the Aravalli Hills provide. Analysis of remotely sensed data products spanning from 1972-75, 1982-84, 1994-96, and 2005-07 has uncovered a concerning trend: desert sand is gradually shifting towards the northeastern plains through 12 identified gaps in the Aravalli Hills. These gaps stretch from the Magra hills in Ajmer district to the Khetri-Madhogarh hills in Jhunjhunu district, and further to the northernmost hillocks in Mahendergarh district of Haryana. (https://www.rgics.org/wp-content/uploads/PW-7.08.pdf, aaccessed on 24.01.2024). The degradation of the ecosystem in the hills has led to the emergence and rapid expansion of fragile and vulnerable areas. It is imperative to identify, assess, map, and monitor these areas effectively to restore ecological balance.

COMMUNITY IMPACT:

Local communities residing in and around the Aravalli region are facing the brunt of land degradation. Reduced agricultural productivity, water scarcity, and the loss of traditional livelihoods are some of the immediate challenges. As the hills degrade, the resilience of these communities is tested, emphasizing the need for sustainable solutions that balance development with conservation. The process of crushing and mining stones contributes to an elevated level of particulate matter in the air. This elevated concentration of particulate matter is linked to an increase in respiratory issues, including chronic bronchitis, silicosis and asthma cases. The inhalation of these fine particles generated during crushing and mining activities poses health risks and can negatively impact respiratory health, particularly for individuals exposed to such environments over an extended period (ECOSOC, 2019). Further with changes in the region the threat of Invasive Alien Species (IAS) has also risen and impacted the productivity of the soil. Species like *Parthenium hysterophorus, Prosopis juliflora, Lantana camara, Verbesina enceliodes* etc. are few of the species that have impacted the natural vegetation and biodiversity of the region (Fig. 5-6).



Figure 5. Invasion of Alien species is a growing threat to the ecosystem of Aravalli's to the existing biodiversity and land resources



Figure 6. Invasion of *Prosopis juliflora* in the Aravalli Hills

The Aravalli Hills, once considered the guardians of ecological equilibrium, faces numerous challenges, including encroachment, mining, and deforestation. The repercussions of these activities on rainfall patterns, soil fertility, and overall environmental health could be catastrophic. The alteration in rainfall patterns, the depletion of water resources in the Faridabad district, and the escalating levels of air pollution in the Delhi National Capital Region (NCR) have been convincingly connected to the degradation and loss of vegetation in the Aravalli region. The adverse impact of these challenges extends beyond the immediate local environment, influencing broader ecological and climatic conditions in the surrounding areas and require urgent need of our attention.

As custodians of this precious natural heritage, it is our responsibility to reverse the tide of land degradation and ensure that the Aravalli Hills continue to thrive for generations to come. Through collaborative efforts, sustainable land management practices, and a commitment to sustainable development, we can restore the glory of the Aravalli Hills and secure a harmonious future for both nature and communities.

REFERENCES

Blanco, H. and Lal, R. (2023). Soil Conservation and Management. Springer Nature.

Folke, C., Polasky, S., Rockström, J., Galaz, V., Westley, F., Lamont, M. and Walker, B.H. (2021). Our future in the Anthropocene biosphere. Ambio, 50:834-869.

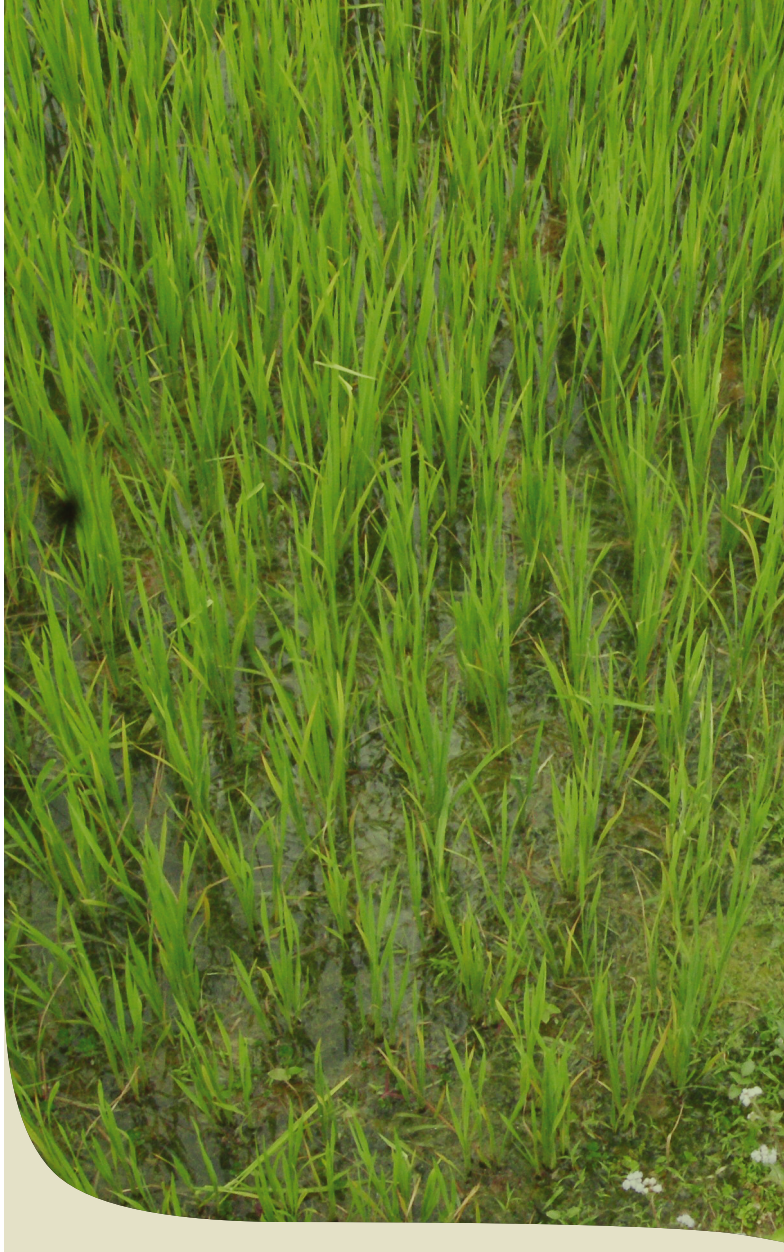
https://www.rgics.org/wp-content/uploads/PW-7.08.pdf (Accessed on 24.01.2024).

Lindsay, P.A., Anderson, S.H., Dickman, A., Gandiwa, P., Harper, S.H., Morakinyo, A.B. and Tumenta, P.N. (2022). Shepherding sub-Saharan Africa's terrestrial biodiversity through peak anthropogenic pressure toward a green anthropocene. Annual Review of Environment and Resources. 47:91-121.

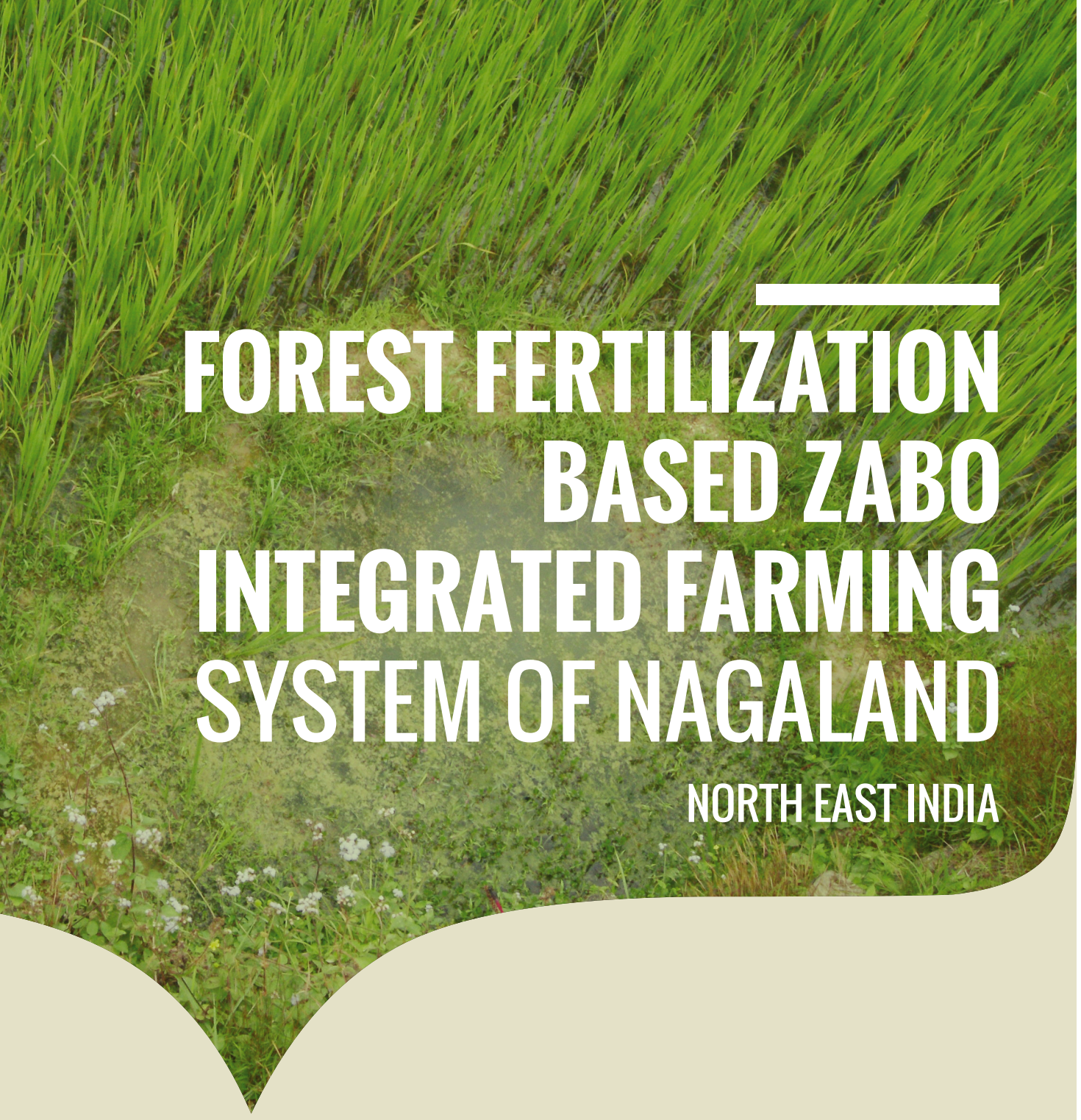
Raj, A. and Sharma, L.K. (2022). Assessment of land-use dynamics of the Aravalli range (India) using integrated geospatial and CART approach. Earth Science Informatics. 1-26.

SAC. (2021). Desertification and Land Degradation Atlas of India (Assessment and analysis of changes over 15 years based on remote sensing). Space Applications Centre, ISRO. Ahmedabad, India. 282 pages.

United Nations Economic and Social Council (ECOSOC). (2019). Special Edition of the Sustainable Development Goals Progress Report, Report of the Secretary-general, Supplementary Information. Economic and Social Commission, New York. https://unstats.un.org/sdgs/files/report/2019/secretary-general-sdg-report-2019 StatisticalAnnex.pdf.



The Zabo farming system is a traditional knowledge based integrated land use practice developed by the Chakhesang ethnic community of Kikruma village of Phek district in Nagaland. The term Zabo refers to impounding runoff water into ponds. This is an indigenous method of runoff rainwater harvesting from forest hilltops to the constructed ponds in the middle of paddy fields. The farming system is dependent on rainwater harvesting from the protected forest hilltops during the monsoon season for paddy cum fish cultivation. Inlet channels are constructed from the hilltop to collect runoff water in the ponds. The runoff rainwater is first channelized to the silt retention tanks, followed by water harvesting ponds (Singh et al., 2018). The runoff rainwater carries soil nutrients from the forest and increases the soil fertility of paddy fields. This farming system makes the best use of the optimum resources from the forests, agriculture, horticulture, fishery, animal husbandry, and soil and water conservation measures. The rainwater harvesting ponds/pits of varying dimensions are traditionally termed as Ruza and Zabo.



FOREST FERTILIZATION BASED ZABO INTEGRATED FARMING SYSTEM OF NAGALAND

NORTH EAST INDIA

Krishna Giri, Gaurav Mishra, Hans Raj and Amrender Singh Rao

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Ruza: The ponds with variable dimensions (40 × 40 ft or 30 × 40 ft and 4-5 ft depth) constructed for runoff rainwater harvesting for paddy cum fish cultivation.

Zabo: Small pits dug in the paddy fields for rearing fish during cultivation phase and conservation of fish fingerlings during the dry season.

Major Components of the Zabo farming system

Forestry: Himalayan alder, Parkia, Neem, Khasi pine, and Oak are the major tree species in the protected forest ecosystem surrounding Kikruma village. The hilltop of the protected forest acts as a catchment area from where runoff rainwater is channelized to the silt retention tanks. Besides, several bamboo species are grown in the forest and peripheral zones of paddy fields.

Agriculture: The Chakhesang ethnic community of Kikruma village has developed terrace fields at the lower elevations of the village. Paddy cum fish cultivation is the major practice in the Zabo farming system, and it is dependent on monsoon rains. The harvested runoff rainwater stored in the Ruza ponds is used for supplementary irrigation to paddy crops during poor monsoon rains. Six traditional paddy varieties are grown in the wet terrace paddy fields, which are categorised into two groups, i.e., Tani and Kumunyo, based on differences in their morphological (plant height and grain size) and chemical (grain colour and stickiness) properties. Besides, maize and vegetables like ginger, pumpkin, cucumber, colocasia, beans, cabbage, spring onion, tree tomato, brinjal, etc., are also cultivated in the bunds or near the ponds.

Horticulture: Horticultural

species such as Banana, Mango, Papaya, Pomegranate, Plum, Peach, Citrus fruits, Indian gooseberries, Guava, etc., are grown in the peripheries of paddy fields, cattle sheds and houses.

Fishery: Small pits are dug in the paddy field, and fish fingerlings are released in these pits. During the dry period after paddy harvesting, fish enter these Zabo pits. During the winter, the farmers harvest fish from Zabo ponds.

Animal Husbandry: Cattle, piggery, and poultry are the key components of animal husbandry in Kikruma village. The animal sheds are constructed on the upper side of the paddy farm, and irrigation water passes through the animal yards to carry manure and urine to the fields. This practice provides nutrient supply to the agricultural fields.

Soil and Water Conservation: The terraces are prepared by cutting hill slopes into flat beds. Soil erosion is controlled in the terraces by constructing bunds to prevent water runoff from the fields and check soil erosion. Water from the ponds is released to the paddy fields sequentially through open or bamboo channels. The water flows sequentially from one terrace to another and irrigates the entire farmland. Based on the water supply, the paddy fields are categorized into the following:

Dziitsuii Paddy fields: These paddy fields receive water from base flow fed by groundwater discharge and remain filled with water round the year. These fields are used for paddy cultivation during the kharif season and for fish and snail cultivation throughout the year.

Füso paddy fields: These paddy fields dry up after the crop harvest and are usually irrigated using runoff water stored in the Ruza ponds during the monsoon season. A pictorial representation of the Zabo farming system is given in Figure 1.


A


C



E

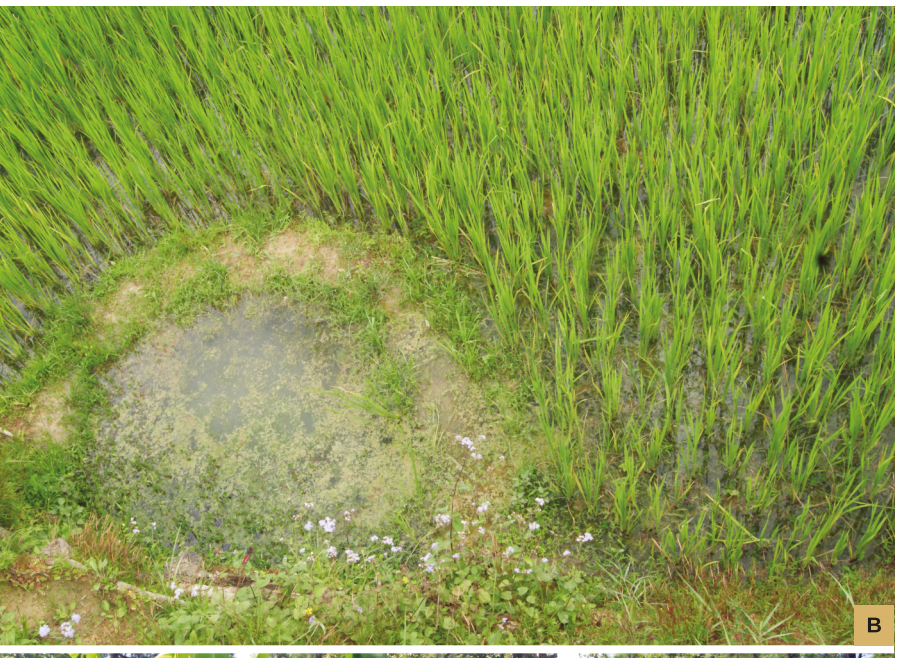






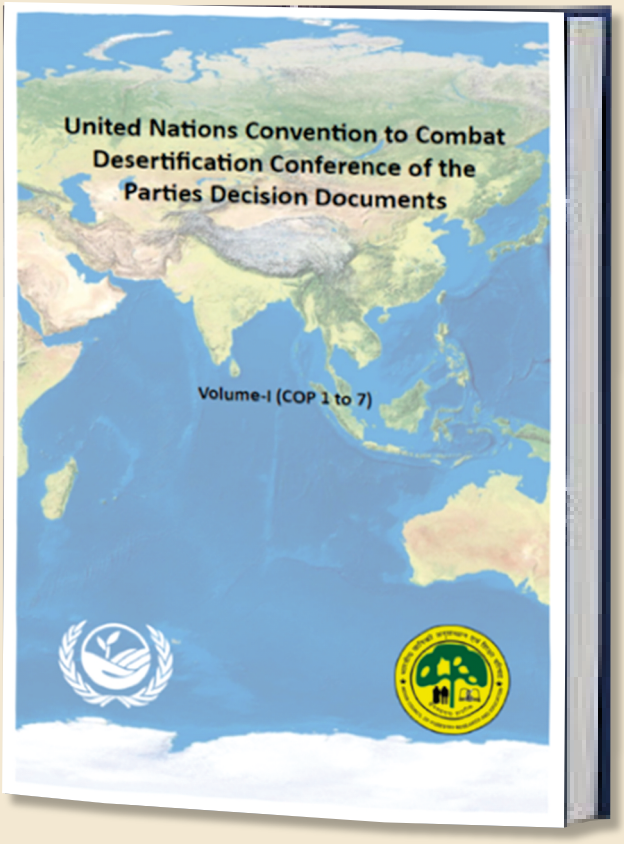
Fig 1. (A): Ruza water harvesting pond; (B): Zabo pond; (C): Zabo integrated farm; (D): Agrobiodiversity' (E): Open irrigation channel and (F): Terrace paddy fields in the hill slope

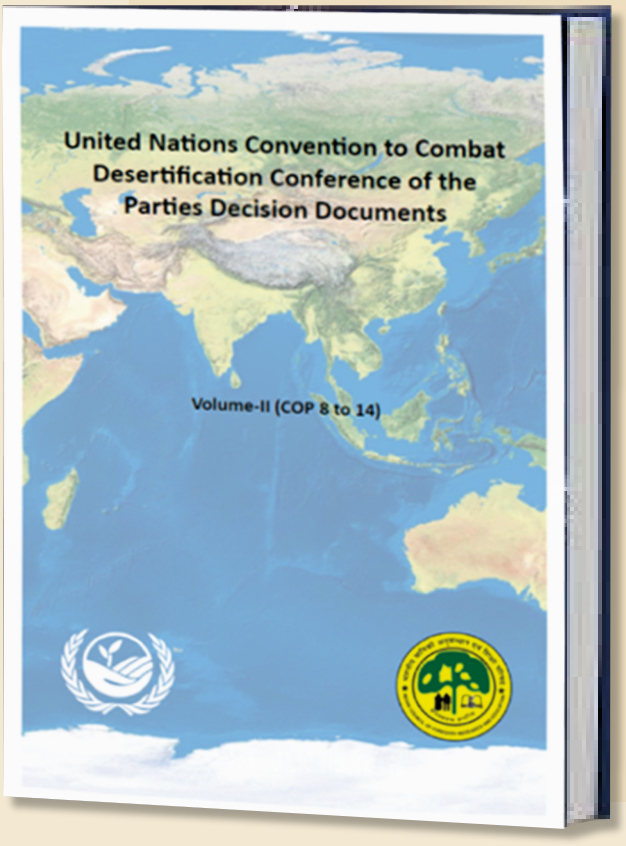
The Naga farming communities are well known for their close association with nature and have used the terrain as their natural farming system. The Zabo farming system of Kikruma village is a time-tested sustainable land use practice that is widely accepted, duplicated, and acknowledged by all stakeholders of the region. Integrating forestry, agriculture, livestock, horticulture, fishery, and well-founded soil and water conservation methods makes this farming system remunerative and sustainable.

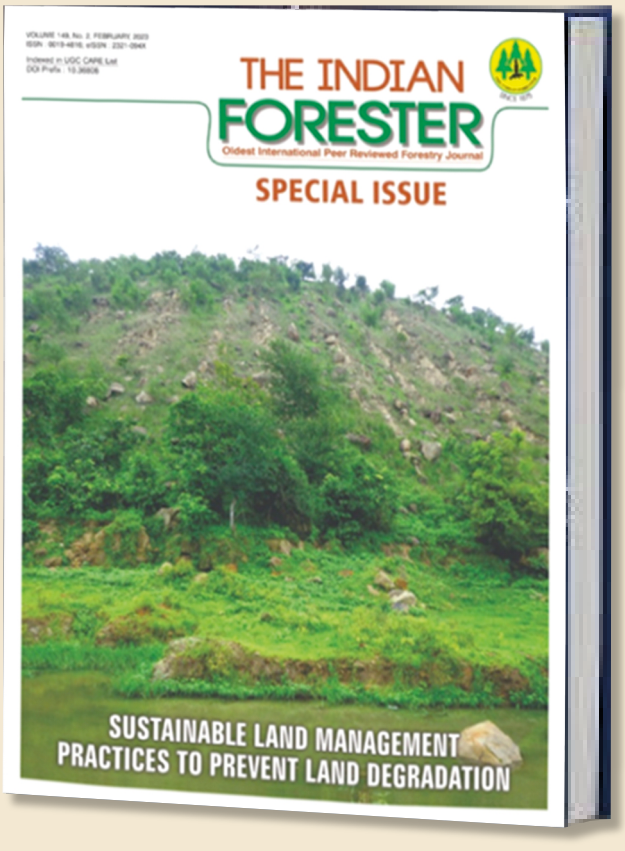
REFERENCE

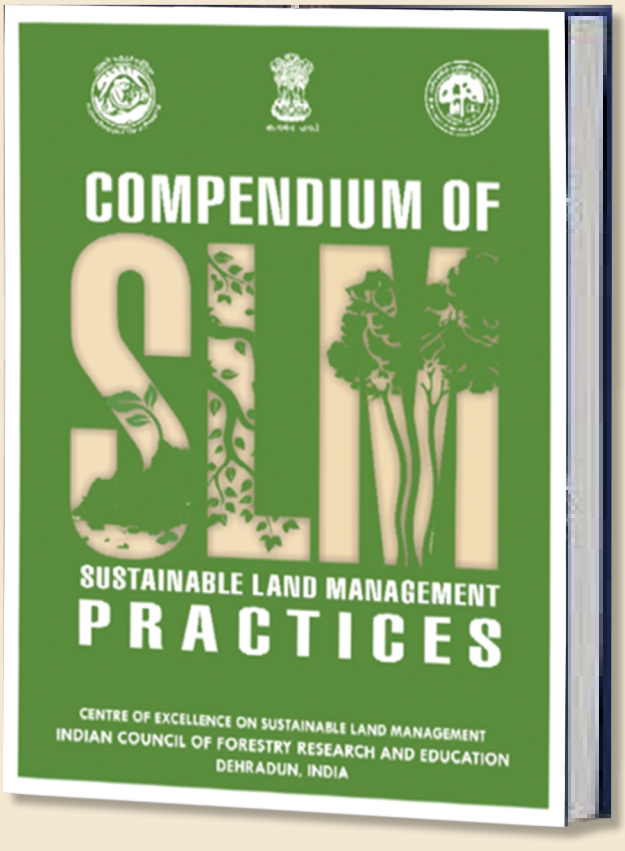
Singh, R.K., Asangla, H.K., Bharali, R. and Borkotoky, D. (2018). Zabo: A time-tested integrated farming system practiced by Chakhesang tribe of Nagaland. Indian Journal of Hill Farming. 31(1):188-192.

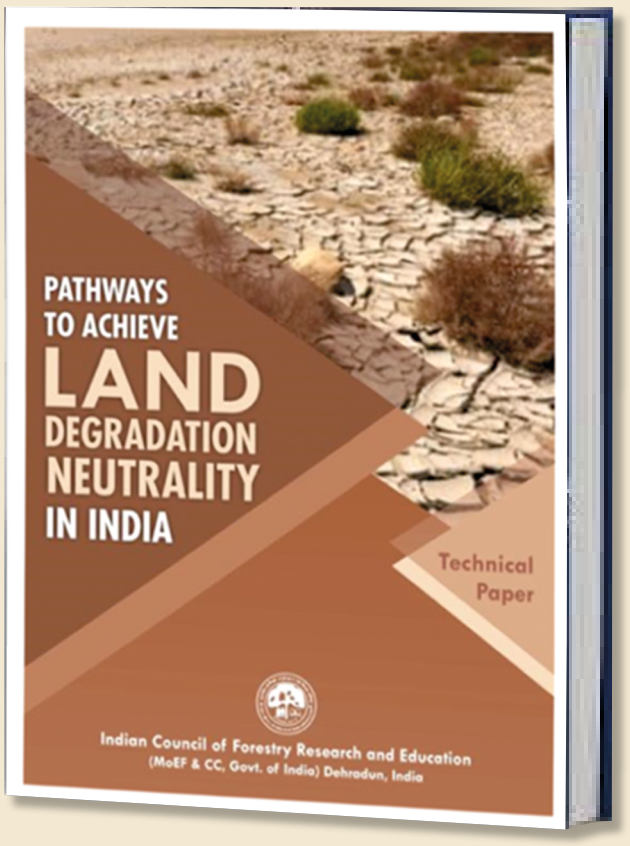
PUBLICATIONS OF CoE-SLM

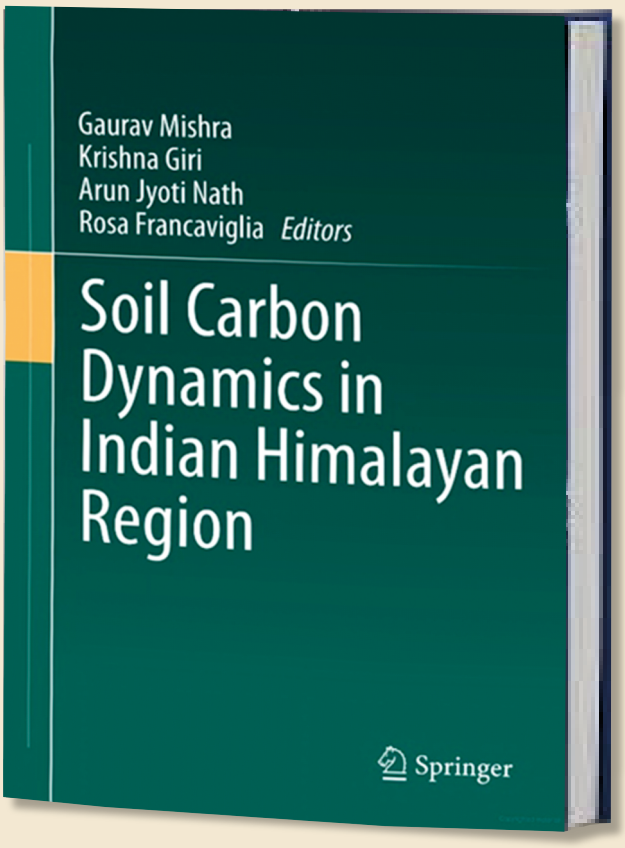


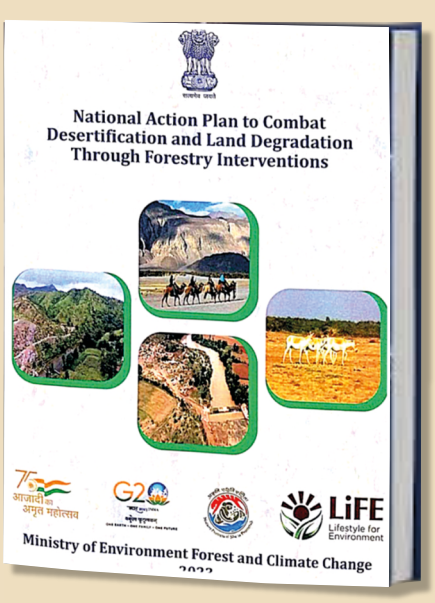












CoE-SLM, ICFRE contributed to the preparation of NAP to Combat Desertification and Land Degradation Through Forestry Interventions, 2022



G20 Presidency Documents

CoE-SLM IN NEWS

https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1925988

Ministry of Environment, Forest and Climate Change

Shri Bhupender Yadav Inaugurates Centre of Excellence on Sustainable Land Management at Indian Council of Forestry Research and Education in Dehradun

The Centre will help India arrest land degradation and improve soil quality as a boost for sustainable development:Shri Yadav

Posted On: 20 MAY 2023 9:35PM by PIB Delhi

The Prime Minister of India during the 14th Conference of the Parties (COP-14) of the United Nations Convention to Combat Desertification (UNCCD) on 9th September 2019, announced the establishment of Centre of Excellence on Sustainable Land Management (CoE-SLM) at the Indian Council of Forestry Research and Education. CoE-SLM aims to promote South-South Cooperation and address land degradation issues through sustainable land management practices. Shri Bhupendra Yadav,Union Minister of Environment, Forest and Climate Change and Labour and Employment formally inaugurated CoE-SLM on 20th May, 2023 at ICFRE, Dehradun.



The CoE-SLM is poised to make a lasting impact in addressing land degradation issues, by leveraging sustainable land management practices, fostering cooperation among developing countries, and achieving Land Degradation Neutrality (LDN), this initiative aligns with the vision of the Indian government to promote environmental conservation and combat climate change.

The CoE-SLM, established at the ICFRE, aims to facilitate the restoration of degraded land through technical support, capacity building, and knowledge sharing at the national and sub-national levels. By collaborating with developing countries that are party to the United Nations Convention to Combat Desertification (UNCCD), the CoE-SLM seeks to achieve LDN targets, promote south-south cooperation, and contribute to the Sustainable Development Goals (SDGs) outlined by various international conventions, including the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC).

The CoE-SLM has set forth specific objectives to guide its actions. These include assessing land degradation, capacity building on sustainable land management frameworks aligned with the Sustainable Development Goals (SDGs), and strengthening the assessment, monitoring, and reporting of land-based indicators outlined by the UNCCD. The centre also aims to set LDN targets, develop drought risk and early warning systems, mainstream gender considerations, promote good governance of land tenure and rights, and assess the impacts of land degradation on greenhouse gas emissions and biodiversity loss.

Shri Yadav also released two publications "Technical Paper on Pathway to achieve LDN in India" and "Compendium of Sustainable Land Management Practices" on this occasion. Mr. Chandra Prakash Goel, Director General of Forest and Special Secretary, Mr. B.K. Singh, Addl. Director General of Forests (NAEB, GIM), Mr. S.P. Yadav, Addl. Director General Forest (Wildlife) and Mr. Pravir Pandey, Additional Secretary & Financial Advisor, from Ministry of Environment Forest and Climate Change, Shri. Arun Singh Rawat, Director General, ICFRE, Kanchan Devi, Director (IC), and Director CoE-SLM, Mr. R.K. Dogra, Dy Director General (Admin), ICFRE, Directors of ICFRE Institutes (AFRI, FRI, HFRI, TFRI, IFP, RFRI, IWST, IFGTB, and IFB), Director IGNFA, APCCF Integrated Regional Office, Dehradun, Director Forest Education, Principal CASFoS, Deputy Director General Forest Survey of India, Director WADIA Institute of Himalayan Geology, Officers from Uttarakhand State Forest Department, Officers Scientist and Staff of ICFRE were present on the occasion.

MJPS

(Release ID: 1925988) Visitor Counter : 2181

Read this release in: Urdu , Hindi

Home › Dehradun › Centre of Excellence on Sustainable Land Management inaugurated at ICFRE

DEHRADUN UTTARAKHAND

Centre of Excellence on Sustainable Land Management inaugurated at ICFRE

By **Garhwal Post** - May 21, 2023 693 0

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By Our Staff Reporter

DEHRADUN, 20 May: Bhupender Yadav Minister, Environment, Forest and Climate Change, Government of India inaugurated the Centre of Excellence on Sustainable Land Management being established at Indian Council of Forestry Research and Education (ICFRE) on Saturday. The establishment of this center was earlier announced by the Prime Minister of India while addressing the High-Level Segment of Fourteenth Conference of Parties (COP 14) of United Nations to Combat Desertification. The main role of the Centre would be to share knowledge and technology amongst developing country Parties of UNCCD. The Centre will facilitate networking of national and international institutions working on sustainable land and ecosystem management. It will also provide technical support for land degradation mapping, planning, monitoring and evaluation systems for interventions to combat land degradation. The Centre envisages south-south cooperation to enable India to share its experiences with other country Parties.

https://garhwalpost.in/centre-of-excellence-on-sustainable-land-management-inaugurated-at-icfre/



BITS PILANI LAUNCHES BITS DESIGN SCHOOL, MUMBAI

TRENDING

THIS STORY IS FROM JUNE 18, 2021

Dehradun: ICFRE marks World Day to Combat Desertification and Drought

TNN / Updated: Jun 18, 2021, 07:12 IST

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Bharat Bandh: Farmers to block roads; traffic curbs in Delhi-NCR

Audio story: How fate foiled Bhopal's biggest bank robbery

A webinar was organised on Thursday by Indian Council for Forest Research and Education (ICFRE) authorities in which experts spoke about the importance of soil and the need to tackle fast degrading land in the country.

TOI

DEHRADUN: A webinar was organised on Thursday by Indian Council for Forest Research and Education (ICFRE) authorities in which experts spoke about the importance of soil and the need to tackle fast degrading land in the country.

The experts, in the webinar, said that globally, 23% of the land is no longer productive and 75% has been transformed from its natural state, primarily for agriculture.



The Hawk
18-6-2023

Centre Of Excellence On Sustainable Land Management, ICFRE Dehradun Celebrates World Day To Combat Desertification And Drought On 17th June 2023

Dehradun (The Hawk): The Centre of Excellence on Sustainable Land Management (CoE-SLM), organized a workshop on June 17th, 2023, at Indian Council of Forestry Research and Education (ICFRE), Dehradun to commemorate World Day to Combat Desertification and Drought. This year's theme of UNCCD was "Her Land. Her Rights." which focuses on gender equality.

The United Nations General Assembly declared June 17th as the "World Day to Combat Desertification and Drought" in December 1994. In order to prevent, halt and reverse the degradation of ecosystems across the globe, 2021-30 has been declared as the UN Decade on Ecosystem Restoration. The centre of Excellence on Sustainable Land Management established at ICFRE Dehradun aims to further develop scientific approaches and facilitate the induction of technology on land degradation issues at national and international levels and to promote South-South Cooperation to achieve Land Degradation Neutrality and promote Sustainable Land Management practices. The workshop was inaugurated by Shri C.P. Goyal Director General of Forest and Special Secretary Ministry of Environment, Forest and Climate Change, Govt. of India. Shri Goyal in his inaugural address stressed on achieving land degradation neutrality through problem-solving, strong community involvement and cooperation at all levels. He emphasized to promote public awareness and community participation to strengthen implementation of UNCCD strategies for sustainable land management at various levels. Shri Arun Singh Rawat, Director General, ICFRE in his address highlighted that nearly 25% area degraded globally is affecting 3.2 billion people around the world. Shri Rawat further mentioned that the land resources have undergone degradation and suffered loss due to huge anthropogenic pressure. He suggested gender equality and a common contribution for sustainable land management issues, and support to advance land rights for women and girls around the world. On this occasion the feminine figures of India Smt. Jamuna Tudu (Padma Shri) Jharkhand, Smt. Bas Devi (Padma Uttarakhand and Sudha S (IFS), G Tamil Nadu were tated by the Dire eral ICFRE. Th Shri awardees shared experiences in Conserving Forest of Jharkhand and Revival of Koni River in Uttarakhand. Smt. Sudha S (IFS) talked about Land use planning and assessment of ecosystem services for landscape restoration. Dr. R.S. Rawat, Scientist, ICFRE shared experience on empowering Women for Scaling up of SLEM Practices in Madhya Pradesh and Chhattisgarh. Dr. Vivek Saxena IFS, talked on Aravalli Mountains and Ecosystem. Dr. Archana Chatterjee, from IUCN discussed women's role and contribution in forest landscape restoration. Besides, UNCCD representative Dr. Ishwar Narayanan delivered a talk on Her Land. Global Insights and Smt. Shruti Sharma, Former PCCF&HoFF, Govt. of Rajasthan shared her experiences on Eco-restoration and Drought Resilience.

Janbharat Mail
18-6-2023

विश्व मरुस्थलीकरण एवं सूखा रोकथाम दिवस 2023 के अवसर पर कार्यशाला का आयोजन

देहरादून, संवाददाता। भूमि प्रबंधन उत्कृष्टता केंद्र, भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद, देहरादून ने 17 जून, 2023 को विश्व मरुस्थलीकरण एवं सूखा रोकथाम दिवस के उपलक्ष्य में एक कार्यशाला का आयोजन किया।

इस वर्ष के आयोजन का विषय उसकी भूमि। उसके अधिकार था जो लैंगिक समानता पर केंद्रित है। संयुक्त राष्ट्र महासभा ने दिसंबर 1994 में 17 जून को विश्व मरुस्थलीकरण एवं सूखा रोकथाम दिवस'' के रूप में घोषित किया था। प्रत्येक महाद्वीप और प्रत्येक महासागर में पारिस्थितिक तंत्र के क्षरण की रोकथाम के लिए संयुक्त राष्ट्र ने 2021-2030 को पारिस्थितिकी तंत्र बहाली दशक घोषित किया है।

भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद देहरादून द्वारा स्थापित सतत् भूमि प्रबंधन उत्कृष्टता केंद्र का उद्देश्य भारत और दक्षिण-दक्षिण देशों के लिए भूमि क्षरण के मुद्दों पर वैज्ञानिक दृष्टिकोण को विकसित करना व सतत् भूमि प्रबंधन प्रथाओं को विश्व स्तर बढ़ावा देना है। इस कार्यशाला के मुख्य अतिथि श्री सी. पी. गोयल, वन महानिदेशक और विशेष सचिव पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार रहें। श्री. गोयल ने अपने उद्घाटन भाषण में मरुस्थलीकरण एवं सूखा रोकथाम, जन अकांक्षाओं के आधार पर भूमि क्षरण की समस्या का समाधान मजबूत सामुदायिक भागीदारी के माध्यम से करने पर जोर दिया।

श्री अरूण सिंह रावत, महानिदेशक, भा.वा. अ.शि.प.,ने अपने सम्बोधन में बताया कि विश्व स्तर पर लगभग 25: भूमि क्षेत्र का क्षरण हुआ है जिससे 3.2 बिलियन लोग प्रभावित हुए हैं। उन्होंने विशाल मानवजनित दबाव के कारण भूमि संसाधनों के क्षरण से उत्पन्न हुए समस्याओं के वैज्ञानिक एवं सामूदायिक भागीदारी से समाधान करने पर जोर दिया।



उन्होंने लैंगिक समानता और स्थायी भूमि प्रबंधन मुद्दों के लिए एक आम योगदान के साथ महिलाओं एवं लड़कियों के लिए अग्रिम भूमि अधिकारों का समर्थन करने का सुझाव दिया।

इस अवसर पर भारत की नारी शक्ति श्रीमती जमुना टुडू (पद्म श्री) झारखण्ड, श्रीमती बसंती देवी (पद्म श्री) उत्तराखण्ड, और श्रीमती सुधा एस (आईएफएस) को महानिदेशक, भा.वा. अ.शि.प., के द्वारा सम्मानित किया गया।

पद्मश्री पुरस्कार से सम्मनित अतिथियों ने झारखंड के वन संरक्षण और उत्तराखंड में कोसी नदी के पुनरुद्धार में अपने अनुभव साझा किए।

श्रीमती सुधा एस (आईएफएस) ने लैंडस्केप बहाली के लिए भूमि उपयोग योजना और पारिस्थितिक तंत्र सेवाओं के मूल्यांकन पर व्याख्यान दिया। इसके पश्चात डॉ. आर.एस. रावत, वैज्ञानिक, भा.वा.अ.शि.प., ने मध्य प्रदेश और छत्तीसगढ़ में सतत् भूमि प्रबंधन प्रथाओं को बढ़ाने के लिए महिलाओं की भागीदारी पर अपने अनुभव साझा किये। डॉ. विवेक सक्सेना (आईएफएस) उत्तर प्रदेश वन विभाग, ने अरावली पर्वत और पारिस्थितिकी तंत्र पर चर्चा की। आईयूसीएन की डॉ. अर्चना चटर्जी ने वन परिदृश्य बहाली में महिलाओं की भूमिका और योगदान पर अपना विचार व्यक्त किये।

यूएनसीसीडी के प्रतिनिधि डॉ. ईश्वर नारायणन, ने हर लैंड: ग्लोबल इनसाइट्स एवं श्रीमती श्रुति शर्मा, पूर्व मुख्य वन संरक्षक राजस्थान सरकार, ने पारिस्थितिकी बहाली और सूखा प्रतिरोध पर विचार व्यक्त किये।

Rashtriya Sahara
18-6-2023

वन प्रबंधनः राष्ट्रीय कार्ययोजना संहिता जारी



राष्ट्रीय कार्ययोजना संहिता जारी करते वरिष्ठ वनाधिकारी।

■ सहारा न्यूज ब्यूरो

देहरादून।

पर्यावरण, वन व जलवायुपरिवर्तन मंत्रालय ने वनों के वैज्ञानिक प्रबंधन और समय के साथ वन प्रबंधन में उभरते नए दृष्टिकोण को अपनाने के लिए 'राष्ट्रीय कार्ययोजना संहिता-2023' जारी की है। शनिवार को देहरादून स्थित भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद में आयोजित कार्यक्रम के दौरान वन महानिदेशक सीपी गोयल व अन्य वरिष्ठ अधिकारियों ने यह कार्ययोजना संहिता जारी की।

इस अवसर पर वन महानिदेशक श्री गोयल ने कहा कि भारत दुनिया के उन चुनिंदा देशों में शामिल है जहां वन प्रबंधन की वैज्ञानिक व्यवस्था है। वर्ष 2004 में पहली बार राष्ट्रीय कार्ययोजना संहिता जारी की गई थी, जिसे वर्ष 2014 में संशोधित किया गया। देश के विभिन्न वन प्रभागों के वैज्ञानिक प्रबंधन के लिए कार्ययोजना तैयार करने में एकरूपता लाई गई।

■ भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद में आयोजित कार्यक्रम के दौरान जारी की गई कार्ययोजना

■ वनों के वैज्ञानिक प्रबंधन व पर्यावरण संरक्षण पर दिया जोर

उन्होंने कहा कि देश में पर्यावरणीय स्थिरता बनाए रखने, प्राकृतिक विरासत का संरक्षण करने, जलग्रहण क्षेत्रों में मिट्टी का कटाव रोकने, पेड़ों को नष्ट होने से बचाने, बालू के टीले के विस्तार को रोकने, वनों की उत्पादकता बढ़ाने आदि के लिए वनों का प्रबंधन किया जाता है। राष्ट्रीय कार्ययोजना संहिता-2023 देश के विभिन्न वन प्रभागों के लिए कार्ययोजना तैयार करने में राज्य के वन विभागों के लिए एक मार्गदर्शक सिद्धांत के रूप में कार्य करेगा।

इसमें वनों के सतत प्रबंधन के लिए सिद्धांतों को शामिल करते हुए वन प्रबंधन आयोजना के अनिवार्य तत्वों का विस्तार से उल्लेख किया गया है। वन एवं पर्यावरण मंत्रालय व आईसीएफआरई के वरिष्ठ अधिकारी भी इस दौरान मौजूद थे।

विश्व मरुस्थलीकरण व सूखा रोकथाम दिवस पर आईसीएफआरई में कार्यशाला

सामुदायिक भागीदारी से होगा भू-क्षरण का समाधान

■ वन महानिदेशक सीपी गोयल ने बतौर मुख्य अतिथि कार्यशाला में की शिरकत

■ सहारा न्यूज ब्यूरो

देहरादून।

विश्व मरुस्थलीकरण व सूखा रोकथाम दिवस के अवसर पर शनिवार को भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद के सतत भूमि प्रबंधन उत्कृष्टता केंद्र द्वारा कार्यशाला आयोजित की गई। 'उसकी भूमि उसके अधिकार' थीम पर आयोजित कार्यशाला में वन महानिदेशक व वन एवं पर्यावरण मंत्रालय में विशेष सचिव सीपी गोयल ने बतौर मुख्य अतिथि शिरकत की। उन्होंने दीप प्रज्जवलित कर कार्यशाला का उद्घाटन किया।

इस अवसर पर वन महानिदेशक ने मरुस्थलीकरण व सूखा रोकथाम, जन अकांक्षाओं के आधार पर भूमि क्षरण की समस्या का समाधान मजबूत सामुदायिक भागीदारी के माध्यम से करने पर जोर दिया। कहा कि संयुक्त राष्ट्र महासभा ने दिसंबर 1994 में 17 जून को विश्व मरुस्थलीकरण व सूखा रोकथाम दिवस के रूप में घोषित किया था। प्रत्येक महाद्वीप और प्रत्येक महासागर में पारिस्थितिक तंत्र के क्षरण की रोकथाम के लिए संयुक्त राष्ट्र ने वर्ष 2021-2030 को पारिस्थितिकी तंत्र बहाली दशक घोषित किया है।



कार्यशाला को संबोधित करते वन महानिदेशक सीपी गोयल।

भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद देहरादून द्वारा स्थापित सतत भूमि प्रबंधन उत्कृष्टता केंद्र का उद्देश्य भारत और दक्षिण देशों के लिए भूमि क्षरण के मुद्दों पर वैज्ञानिक दृष्टिकोण को विकसित करना व सतत भूमि प्रबंधन प्रथाओं को वैश्विक स्तर पर बढ़ावा देना है।

आईसीएफआरई के महानिदेशक अरूण सिंह रावत ने कहा कि वैश्विक स्तर पर लगभग 25 प्रतिशत भूमि क्षेत्र का क्षरण हुआ है, जिससे 3.2 बिलियन लोग प्रत्यक्ष व अप्रत्यक्ष रूप से प्रभावित हुए हैं। उन्होंने विशाल मानवजनित दबाव के कारण भूमि संसाधनों के क्षरण से उत्पन्न हुई समस्याओं के वैज्ञानिक व सामुदायिक भागीदारी से समाधान करने पर जोर दिया।

इसके साथ ही लैंगिक समानता और स्थायी भूमि प्रबंधन मुद्दों के लिए एक आम योगदान के साथ महिलाओं व लड़कियों के लिए अग्रिम भूमि अधिकारों का समर्थन करने का सुझाव भी दिया। इस अवसर पर पद्मश्री जमुना टुडू, पद्मश्री बसंत सिंह व आईएफएस सुधार एस को परिषद की ओर से सम्मानित भी किया गया। पद्म सम्मान से सम्मानित इन महिलाओं ने झारखंड के वन संरक्षण और उत्तराखंड में कोसी नदी के पुनरुद्धार के संदर्भ में अपने अनुभव साझा किए।

डा.आरएस रावत, डा.विवेक सक्सेना, डा.ईश्वर नारायणन, श्रुति शर्मा आदि ने भी कार्यशाला में अपने विचार रखे।



डॉ.विवेक ने स्व-लिखित कविता के माध्यम से व्यक्त की भावनाएं

वन, पर्यावरण व जलवायु परिवर्तन मंत्रालय के उप महानिदेशक (वन) डा.विवेक सक्सेना ने अपनी भावनाएं स्वलिखित कविता के माध्यम से व्यक्त की। उन्होंने कविता 'जिस जगह पर सूखा है, वहीं पर आदमी भूखा है, जिस जगह पर हरा है, वहीं पर पेट भरा है। सूखे की यही घर-घर कहानी, कहां गया हमारा पानी। हरियाली नहीं तो पानी नहीं, पानी नहीं तो जीव नहीं। जीव नहीं तो हम हम नहीं के जरिए पर्यावरण के महत्व पर प्रकाश डाला।

Punjab Kesari
18-6-2023

वनों के वैज्ञानिक प्रबंधन को राष्ट्रीय कार्ययोजना संहिता रिलीज

देहरादून, 17 दून (स.ह.) : पर्यावरण वन और जलवायु परिवर्तन मंत्रालय के महानिदेशक व विशेष सचिव चंद्र प्रकाश गोयल ने वनों के वैज्ञानिक प्रबंधन वन प्रबंधन में उभरते हुए दृष्टिकोण को अपनाते हुए राष्ट्रीय कार्ययोजना संहिता 2023 जारी की। एक जुलाई से यह कोड देशभर में लागू हो जाएगा।

शनिवार को भारतीय वानिकी अनुसंधान और शिक्षा परिषद परिसर में आयोजित समारोह में कार्ययोजना को जारी किया गया। इस पुस्तिका को उनके द्वारा रिलीज किया गया।

इस मौके पर विशेष सचिव चंद्र प्रकाश गोयल ने कहा कि वन, वन संपदा और वन्य जीव जुड़ी बाते हैं। इंसान हमेशा वनों पर निर्भर रहा है। हम वनों के बिना जीवन की कल्पना ही नहीं कर सकते। इसलिए वनों का वैज्ञानिक प्रबंधन समय की मांग है। राष्ट्रीय कार्ययोजना कोड सभी वनकर्मियों का मार्गदर्शन करेगा। वन विभाग को डाटा को बहुत गंभीरता से लेना होगा। इनका संग्रह और इनका विश्लेषण भविष्य में वन प्रबंधन की दिशा तय करेगा। आईसीएफआरई के महानिदेशक डा. अरुण सिंह रावत ने कहा कि वनों को हर हाल में बचाना हमारी प्राथमिकता है। टिकाऊ भूमि प्रबंधन व वनों के मरुस्थलीकरण को बचाने के लिए मिलकर काम करना होगा। पद्मश्री बसंती देवी ने कहा कि हमें जमीन पर काम करना होगा। इसके लिए समाज को साथ में लेने की आवश्यकता है। सरकार और समाज सभी को मिलकर सहयोग की भावना से काम करना होगा। उपमहानिदेशक डा. राजेश शर्मा ने धन्यवाद ज्ञापित किया। संचालन डा. शिल्पी ने किया।

वनों और वन संपदा को बचाने का बड़ा प्रयास है नई कार्ययोजना

पहली बार राष्ट्रीय कार्ययोजना संहिता 2023 में राज्य के वन विभागों को निरंतर डेटा संग्रह और एक केंद्रीकृत डेटाबेस व्यवस्थित करने को कहा गया है। भारतीय वन प्रबंधन मानक इस कोड का हिस्सा है। देश की भौगोलिक व पारिस्थितिक विभिन्न के हिसाब से सोच समझकर यह कोड तैयार किया गया है। मानकों को गहरे शोध के बाद मानकों को भारतीय वन प्रबंधन में एकरुपता लाने की कोशिश की गई है। इन मानकों संहिताबद्ध किया गया है। इससे वन प्रबंधन बेहतर ढंग से हो सकेगा। पर्यावरणीय स्थिरता, वन संपदा संरक्षण, जल की सुरक्षा, वन क्षेत्र के आसपास रहने वालों की आजीविका को कायम रखना वन प्रबंधन की प्राथमिकताओं में से एक है। राज्यों के लिए यह एक मार्गदर्शिका का काम करेगी। प्रबंधन में एकरूपता लाने का प्रयास किया गया है।

बसंती देवी ने अधिकारियों को बताए वनों को बचाने के सूत्र



देहरादून, 17 जून (स.ह.) : पद्मश्री बसंती देवी की जिंदगी रचना और संघर्ष का पर्याय है। आज आईसीएफआरई परिसर में उन्होंने अपने जीवन की संघर्ष को बयां किया। बताया कि किस तरह कम उम्र में विधवा हो गईं। उसके बाद सर्वोदयी राधा बहन के साथ जुड़ गई। उसके बाद रचनात्मक कर्म से जुड़ गईं। पिथौरागढ़ की रहने वाली बसंती देवी ने विभिन्न इलाकों में महिलाओं की शिक्षा, सशक्तिकरण और आजीविका के क्षेत्र में चालीस वर्ष तक अनवरत काम किया। बालवाड़ी आंदोलन चलाकर शिक्षा का प्रचार प्रसार किया। कोसी नदी को पुनर्जीवित करने के लिए उन्होंने अपना जीवन झोंक दिया। जंगलों के कटने व अति कटान के कारण कोसी सूख गई। इसके बाद राधा बहन की प्रेरणा से कोसी को दुबारा जीवन प्रदान करने में सफल हुईं। उनके द्वारा विस्तार से रचनात्मक कर्म धारा की जानकारी दी गई। यहां पर मौजूद आईएफएस उनसे बेहद प्रभावित हुए। सभी ने उनसे प्रेरणा लेकर काम करने का संकल्प लिया। बसंती देवी ने लोगों को वनों को बचाने, संयमित जीवन जीने, नदियों समेत जल बचाने के सरल सूत्र दिए। उनका कहना था कि अधिकारियों को लोगों से जुड़कर काम करना चाहिए।

CMYK

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DEHRADUN UTTARAKHAND

COE-SLM, ICFRE, begins training prog on Assessing Land Degradation Dynamics

By Garhwal Post - January 17, 2024 306 0

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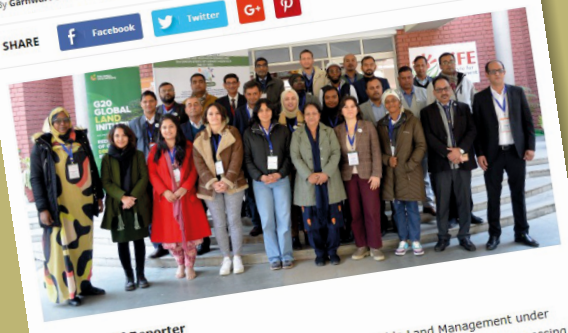

By Our Staff Reporter

Dehradun, 15 Jan: The Centre of Excellence on Sustainable Land Management under ICFRE, Dehradun, started a five-day long international training programme on "Assessing Land Degradation Dynamics and Restoration Efforts with Remote Sensing Data and GIS Tools" today. The training is being organised in collaboration with UNCCD-G20 GLI. Together, the CoE-SLM, ICFRE and UNCCD-G20 GLI, strive to contribute to solutions on land degradation across borders.

The training programme was inaugurated by Kanchan Devi, Director General, ICFRE. After welcoming the international participants, she highlighted the application of RS-GIS tools for understanding land degradation dynamics and formulating restoration strategies.

Vinay Kumar, Director, COE-SLM; Dr Rajesh Sharma, Head, COE-SLM; Dr Sudhir Kumar, DDG (Extension); Dr Ratnakar Johri, DDG (Research), ADGs and Scientists of ICFRE were present at the inaugural session of the training. Eighteen participants from 16 countries are attending the training programme.

Eminent experts as resource persons from institutions like NRSC, SAC, UNCCD, IIRS, IIT-Kharagpur will share their experience and expertise during the five-day training. The training also includes a hands-on session on satellite image interpretation to detect different land cover and collaborative field exercise on the case-study of land restoration undertaken by Uttarakhand Forest Department will be undertaken.

This training is a testament to the collective commitment of nations towards sustainable land management and land degradation neutrality. This training will equip participants with a holistic understanding of RS-GIS applications in land resources assessment.

Amar Ujala
18-6-2023

भूमि क्षरण को रोकने के लिए तकनीक संग जुड़ेगा समुदाय

एफआरआई में हुई कार्यशाला में बोले भारत के वन महानिदेशक, विश्व स्तर पर लगभग 25% भूमि क्षेत्र का क्षरण हुआ

अमर उजाला ब्यूरो

देहरादून। विश्व स्तर पर लगभग 25 प्रतिशत भूमि क्षेत्र का क्षरण हुआ है। इससे करीब 32 करोड़ लोग प्रभावित हुए हैं। भारत में भूमि क्षरण, मरुस्थलीकरण व सूखे की समस्या से निपटने के लिए तकनीक के साथ ही सामुदायिक भागीदारी का सहारा लिया जाएगा।

उपरोक्त बात देश के महानिदेशक वन व विशेष सचिव पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय सीपी गोयल ने कही। विश्व मरुस्थलीकरण एवं सूखा रोकथाम दिवस पर भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद देहरादून में हुई कार्यशाला में गोयल ने कहा, भारतीय वानिकी अनुसंधान की ओर से स्थापित सतत भूमि प्रबंधन उत्कृष्टता केंद्र का उद्देश्य देश और दक्षिण देशों के लिए भूमि क्षरण के मुद्दों पर वैज्ञानिक दृष्टिकोण विकसित करना व सतत भूमि प्रबंधन प्रथाओं को विश्व स्तर बढ़ावा देना है। कहा, जन अकांक्षाओं के आधार पर भूमि क्षरण की समस्या का समाधान तकनीक के साथ ही मजबूत सामुदायिक भागीदारी से ही संभव है। इसमें भी महिलाओं को प्राथमिकता दी जाएगी। भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद के महानिदेशक अरुण सिंह रावत ने कहा, जिस तेजी से आबादी बढ़ रही, उसी तेजी से भूमि के ऊपर भी अनेक प्रकार के दबाव बढ़ रहे हैं। फॉरेस्ट कवर भी इससे प्रभावित हो रहा है। कहा, स्थायी भूमि प्रबंधन के लिए देश में अब नवीनतम तकनीकों का प्रयोग किया जा रहा है। आने वाले दिनों में परिणाम दिखने लगेंगे। इस दौरान नेशनल वर्किंग प्लान कोड- 2023 पुस्तिका विमोचन भी किया गया।



एफआरआई में आयोजित कार्यशाला में पुस्तिका का विमोचन करते अतिथि।

इन्होंने भी दिए व्याख्यान : भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद के वैज्ञानिक डॉ. आरएस रावत ने मध्य प्रदेश और छत्तीसगढ़ में सतत भूमि प्रबंधन प्रथाओं को बढ़ाने के लिए महिलाओं की भागीदारी पर अनुभव साझा किए। आईएफएस, यूपी वन विभाग के डॉ. विवेक सक्सेना ने अरावली पर्वत और पारिस्थितिकी तंत्र पर चर्चा की। आईयूसीएन की डॉ. अर्चना चटर्जी ने वन परिदृश्य बहाली में महिलाओं की भूमिका और योगदान पर विचार रखे।

पद्मश्री जमुना टुडू और बसंती देवी को सम्मान

पद्मश्री जमुना टुडू झारखंड, पद्मश्री बसंती देवी उत्तराखंड और आईएफएस सुधा एस को पर्यावरण को बचाने में उनके योगदान के लिए सम्मानित किया गया। पद्मश्री पुरस्कार से सम्मानित अतिथियों ने झारखंड के वन संरक्षण और उत्तराखंड में कोसी नदी के पुनरुद्धार में अपने अनुभव साझा किए। आईएफएस सुधा एस ने लैंडस्केप बहाली के लिए भूमि उपयोग योजना और पारिस्थितिक तंत्र सेवाओं के मूल्यांकन पर व्याख्यान दिया।

ताज़ा खबर

Uttarakhand news-जानिए क्यों 16 देशों के 18 प्रतिनिधि पहुंचे उत्तराखंड, आईसीएफआरई ने कैसा प्रशिक्षण शुरू किया

Uttarakhand news-उत्तराखंड में दुनिया के 18 देशों के प्रतिनिधि पहुंचे हैं। ये प्रतिनिधि एक खास प्रशिक्षण में हिस्सा लेने के लिए पहुंचे हैं। यह प्रशिक्षण शुरू किया है भारतीय वानिकी अनुसंधान और शिक्षा परिषद (ICFRE) ने।

By **India Vistar** - January 16, 2024

Share



Uttarakhand news

Uttarakhand news-उत्तराखंड में दुनिया के 18 देशों के प्रतिनिधि पहुंचे हैं। ये प्रतिनिधि एक खास प्रशिक्षण में हिस्सा लेने के लिए पहुंचे हैं। यह प्रशिक्षण शुरू किया है भारतीय वानिकी अनुसंधान और शिक्षा परिषद (ICFRE) ने। देहरादून में स्थित आईसीएफआरई के तहत सतत भूमि प्रबंधन पर उत्कृष्टता केंद्र (COE-SLM) ने रिमोट सेंसिंग डेटा और जीआईएस टूल्स के साथ भूमि क्षरण गतिशीलता और बहाली प्रयासों का आकलन करने पर अंतर्राष्ट्रीय प्रशिक्षण कार्यक्रम शुरू किया है। 18 देशों के लोग इसी प्रशिक्षण में हिस्सा लेने पहुंचे हैं।

Uttarakhand news-यह है कार्यक्रम

आईसीएफआरई देहरादून के तहत सतत भूमि प्रबंधन पर उत्कृष्टता केंद्र ने 15 जनवरी, 2024 से "रिमोट सेंसिंग डेटा और जीआईएस टूल्स के साथ भूमि क्षरण गतिशीलता और बहाली प्रयासों का आकलन" पर पांच दिवसीय अंतरराष्ट्रीय प्रशिक्षण कार्यक्रम शुरू किया है। प्रशिक्षण यूएनसीसीडी-जी20 (UNCDC-G20) जीएलआई (GLI) के साथ समन्वय से आरंभ हुआ है। यह सभी सीमाओं के पार भूमि क्षरण से उत्पन्न समाधान में योगदान देने का प्रयास करते हैं।

प्रशिक्षण कार्यक्रम का उद्घाटन श्रीमती कंचन देवी, आईएफएस, महानिदेशक, आईसीएफआरई द्वारा किया गया। उन्होंने अंतर्राष्ट्रीय प्रतिभागियों का स्वागत किया। अपने संबोधन में उन्होंने भूमि क्षरण की गतिशीलता को समझने और बहाली रणनीतियों को तैयार करने के लिए आरएस-जीआईएस उपकरणों के अनुप्रयोग पर प्रकाश डाला।

उद्घाटन सत्र में विनय कुमार (आईएफएस), निदेशक, सीओई-एसएलएम, डॉ. राजेश शर्मा, प्रमुख, सीओई-एसएलएम, डॉ. सुधीर कुमार, डीडीजी (विस्तार), डॉ. रत्नाकर जौहरी, डीडीजी (अनुसंधान), एडीजी और आईसीएफआरई के वैज्ञानिक उपस्थित थे। प्रशिक्षण कार्यक्रम में 16 देशों के अठारह प्रतिभागी भाग ले रहे हैं। एनआरएससी, एसएसी, यूएनसीसीडी, आईआईआरएस, आईआईटी-खड़गपुर जैसे संस्थानों के संसाधन व्यक्ति के रूप में प्रख्यात विशेषज्ञ पांच दिवसीय प्रशिक्षण के दौरान अपने अनुभव और विशेषज्ञता साझा करेंगे।

प्रशिक्षण में विभिन्न भूमि आवरण का पता लगाने के लिए उपग्रह छवि व्याख्या अभ्यास पर एक व्यावहारिक सत्र भी शामिल है और उत्तराखंड वन विभाग द्वारा भूमि बहाली के मामले के अध्ययन पर सहयोगात्मक क्षेत्र अभ्यास भी किया जाएगा। यह प्रशिक्षण स्थायी भूमि प्रबंधन और भूमि क्षरण तटस्थता के प्रति राष्ट्रों की सामूहिक प्रतिबद्धता का एक प्रमाण है। यह प्रशिक्षण प्रतिभागियों को भूमि संसाधन मूल्यांकन में आरएस-जीआईएस अनुप्रयोगों की समग्र समझ से लैस करेगा।

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XPRESSIONS: 9219552563 | DOC NO. XPS1305242377