



CREATING INNOVATIVE SOLUTIONS
FOR A SUSTAINABLE FUTURE

STRATEGIC PLAN 2018-2023



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The stakes are high. Resources are becoming scarce, emissions are rising, and the effects of climate change are becoming more apparent. However, the situation is not hopeless. The world came together to bring various individual efforts to global fruition by entering the Paris Agreement. From developing to developed, every country has joined hands to tackle the major environmental concerns in unison.

Among developing countries, India has been rapidly ushering in efforts to keep the effects of climate change at bay. India has committed to reducing its emissions intensity of GDP by 33%–35% between 2005 and 2030 and increase the use of non-fossil fuels to 40% of our energy mix by 2030. India has already begun the transitional process with significant additions to solar energy generation capacity and a focus on energy efficiency.

India, in future, will be confronted with choices—of technology, resource use efficiency, and waste management—which will have a huge impact, both locally and globally. TERI seeks to ensure that the choices India makes are rooted in sustainability, even as they contribute to the national growth story.

**THE
TIME
TO ACT
IS
NOW...**

TERI: A JOURNEY OF PROMOTING SUSTAINABILITY OVER FOUR DECADES

Founded in 1974, TERI began as a knowledge centre to cultivate action-oriented research in areas of climate change, environment, energy, and sustainable development. Over the next 4 decades, TERI's work expanded manifold. It worked with the government to create policies for energy conservation. On the other hand, it worked at the grassroots, developing energy efficiency solutions for India's small and medium businesses. TERI also worked intensively towards developing lighting and cooking solutions that have impacted over 5.3 million people in India and Africa. It pioneered the use of biotechnology in the petroleum and agriculture sectors in India. It initiated a distinguished series of annual summits, now known as the World Sustainable Development Summit, one of the largest international events dedicated to accelerating the pursuit of sustainable development.

Today, TERI is recognized as an independent, multi-dimensional organization, with capabilities in research, policy, consultancy and implementation. TERI's work across several sectors is focused on

- Promoting efficient use of resources
- Increasing access and uptake of sustainable inputs and practices
- Reducing the impact on environment and climate

TERI's research, and research based solutions have had a transformative impact on industry as well as communities. It has fostered international collaboration on sustainability action by creating a number of platforms and forums.

Headquartered in New Delhi, TERI has regional centres and campuses in Gurugram, Bengaluru, Guwahati, Mumbai, Panaji, and Nainital. TERI's 1200-plus team of scientists, sociologists, economists and engineers delivers insightful, high quality action-oriented research and transformative solutions supported by state-of-the-art infrastructure.

OUR MISSION

TERI's mission is to usher transitions to a cleaner and sustainable future through the conservation and efficient use of energy and other resources, and innovative ways of minimizing and reusing waste.

OUR GOAL

We pursue our mission by working towards the following key goals:

1. Enhancing **access to clean energy** for all
2. Helping a global transition to **renewable energy pathways**
3. **Enhancing energy efficiency**, especially in industries, public utilities, and buildings
4. Facilitating more **efficient use of materials**, especially iron and cement
5. Enhancing **conservation, utilization of and access to water**, including watershed management
6. Enabling the planning and governance of **environmentally sustainable cities** through green buildings and through management of solid waste, sewage, sanitation, mobility, and air quality
7. Building **resilience to adverse impacts of climate change** due to cyclones and variations in hydrology and temperature
8. Accelerating **pollution abatement** through innovative policies and environment treatment products
9. Enhancing **ecosystem services**, especially in forestry and biodiversity
10. Developing **green mobility** solutions
11. Enabling **sustainable food production and nutritional security** through quality planting material, bio-based agricultural inputs, and crop diversification
12. Developing **innovative solutions for clean air**, regionally and in cities

CORE STRATEGIES

Research lies at the core of TERI's work. TERI's core strategies include translating its research into development of:

Policy advisory: including interdisciplinary and integrated policy research and analysis, financing and business model development, consultancy and advisory, engagement and outreach, and capacity building among policy makers, academics, and youth

Technology products: including technology development, demonstration through pilots, replication and scaling up, large scale production, and commercialization as well as capacity building among manufacturers, operators, and users

Technical services: including consultancy and advisory, creating standard operating procedures, strategy development for corporates, testing and verification as well as capacity building and handholding of stakeholders

Policy advisory

TERI is committed to undertaking rigorous, relevant, and objective research towards improved decision making in the areas of energy, environment, and natural resources. It is TERI's endeavour that its experience from technology development and deployment as well as institutional and business models provide insights for designing policies that can upscale successful solutions.

Clean Energy:

TERI's research and analysis has contributed to India's energy policy for over four decades. Under a consortium called Energy Transitions India, TERI and several partners are leading research to forecast India's changing electricity demand patterns by 2030 and to demonstrate the possibility of a cost-effective high renewables system. This on-going research aims to provide direction to policymakers and private sector players to prepare for transitioning from coal-based power plants to a sharply rising trajectory of renewable based power in India.

TERI's modelling of economy-energy-environment linkages provides alternative development pathways to policymakers.

Sustainable Agriculture:

TERI works on policy and institutional solutions that can enhance the sustainability of the agriculture sector. This includes examining policy issues related to climate impacts and resilience, sustainability in the use of natural resources in farming, management of agricultural waste, institutional support for organic agriculture, standards for resilient planting material, and regulation of nano-products in agriculture.

Environment, Climate & Forests

TERI's inter-disciplinary research on air, water, waste, forests, biodiversity, land, and mineral resources supports decision makers on current and emerging environmental challenges from local to global levels. In the past, TERI's work on green federalism was used by the 13th Finance Commission of India to introduce sustainability criteria in fiscal transfers from the Centre to the states.

TERI also provides inputs for India's negotiating position at the United Nations Framework Convention on Climate Change (UNFCCC), Convention on Biological Diversity (CBD), and World Trade Organization (WTO).

TERI supports state governments in preparing their biodiversity strategy and action plans. It works on policy mainstreaming of community-led environmental management and conservation efforts.

Resource Efficiency

TERI's work in resource efficiency covers areas such as circular economy, conservation and sharing, responsible development, and trade and geo-political challenges surrounding natural resources.

Over the years, TERI has undertaken numerous policy research and consultancy assignments for the government, international organizations, and the industry on the benefits assessment of resource efficiency in key economic sectors; sustainability and security implications of trade in natural resources; and the governance of natural resource revenues, among others.

TERI's research has been considered in the formulation of policies such as the amendment of the Mines and Minerals (Development and Regulation) Act in 2016, and has provided negotiating inputs to the government at the WTO on trade issues related to the environment and natural resources.

TERI is currently supporting the Ministry of Environment, Forests and Climate Change in framing the blueprint of an integrated resource efficiency policy for India.

Sustainable Habitats

TERI has successfully completed several policy initiatives at central and state government levels towards mainstreaming high performance buildings in India. TERI has provided inputs towards developing the Energy Conservation Building Code (ECBC) of India and the National Mission on Sustainable Habitats.

Health

TERI's work in health and environment linkages includes assessment of concerns, such as exposure to air and water pollution at various occupational sites, the health effects of household air quality, the effect of ambient air quality on mortality, and the development of indices for tracking and addressing health and well-being. Such studies have drawn the interest of central, state, and local governments, apart from triggering remedial action by environmental agencies and tribunals.

Technology products

TERI has demonstrated scientific leadership by developing innovative products, processes and clean technologies that reduce environmental pollution and/or enhance resource efficiency. Several of these solutions are commercially viable today, while others continue to be supported and strengthened towards commercialization.

Sustainable agriculture:

TERI's mycorrhizal technology, now commercially successful as a biofertilizer, has the potential to reduce the use of chemical fertilizers globally by nearly 50 percent. It has been used to improve productivity of several cash crops, vegetables and cereals across India and parts of North America and Europe.

TERI has recently made significant progress in developing new products such as nano-phosphorous which use nearly 10-20 times less phosphorous than what is used in bulk fertilizers. TERI is developing nano fertilizers by recovering zinc and iron from industrial waste. These products are being developed with Australian partners under a state-of-the-art facility known as the TERI-Deakin Nano biotechnology Research Centre.

TERI has been running a Micro propagation facility which develops protocols for growing high quality planting material. It has a production capacity to supply nearly 2 million disease free plants in a year.

Environmental Pollution:

TERI's mycorrhizal technology has also been used effectively for bioremediation of abandoned flyash dumps and wastelands contaminated with chlor alkali sludge. It has reclaimed saline wastelands for cultivation of crops.

Oilzapper, another TERI technology, which is a bacterial consortium that degrades crude oil and oil sludge, has reclaimed more than 100,000 hectares of oil contaminated soils in different parts of the country. TERI is currently engaged in cleaning up oil spills in Kuwait—the first-of-its-kind large-scale bioremediation project implemented by India's biotechnology sector.

TERI's Enhanced Acidification and Methanation (TEAM) system converts organic waste into biogas. This technology has a shorter waste processing time in comparison to other biogas plants. In several locations, this technology is being used to convert large quantities of food waste from canteens and townships into biogas and manure.

TERI has successfully demonstrated the use of ceramic membrane filters in submerged membrane bioreactors (MBRs) for sewage treatment. These filters are made from fly ash and are considerably cheaper than commercially available membranes. This is a decentralized system that allows for industrial wastewater to be treated for re-use on site, thus resulting in water use efficiency.

Clean Energy:

TERI has developed a range of technologies such as the two-stage gasification of biomass, which is an efficient power generating technology for remote village electrification.

Under its social transformation programme, TERI has developed clean combustion cook-stoves that reduce emissions while being nearly 15-20% more effective than conventional stoves.

Developing intellectual property through innovative products and technologies will remain a constant endeavor at TERI. Its past success and learning from technology development also enables TERI to address the challenges of financing, marketing, consumer acceptance and competitiveness to ensure that such solutions bring a transformative impact on society.

Technical services

TERI offers a wide range of technical and consultancy services to governments, industries and other partners to support them with sustainable solutions.

Clean energy

TERI assists industries in reducing their energy consumption through audits at the plant level. It undertakes technology assessments of energy and environmental performance for different industrial sectors and develops or promotes resource efficient and environment friendly technological solutions.

TERI customizes and disseminates clean energy technologies for underserved communities, who can benefit from clean and affordable solar lighting and cooking solutions.

TERI conducts research analysis for the electricity sector and provides implementation support at national/state/utility levels.

Integrated Modeling

TERI develops and uses various tools and modeling frameworks for energy and economic forecasting, techno-economic analysis and scenarios of energy and environmental simulation and optimization. Through these models and tools, TERI provides energy, economy and environment related inputs to researchers, industry and policymakers at the global, national subnational levels.

Water, biodiversity and climate

TERI conducts water audits and quality testing that typically include estimation of building water use; recommendations of water saving fixtures; estimation of rainwater harvesting potential and recommendations on the reuse and recycling of treated waste water and rainwater, and appropriate waste-water management schemes and systems.

TERI has the expertise to generate climate projections at global and regional scales and impacts, vulnerability and adaptation assessments in key sectors using established models and in-house super-computing facility.

TERI also conducts GHG inventorization and mitigation analysis for the corporate sector. It helps companies estimate the carbon sink and other co-benefits from plantation activities carried out in and around the company premises.

Sustainable Habitats

TERI has been actively involved in providing technical consultancy for the design and development of sustainable building complexes. It undertakes resource (energy and water) audit/resource conservation studies for existing buildings/complexes. It also conducts capacity building for architects, building developers and service engineers on various issues related to sustainable habitats.

TERI has set up various Project Monitoring Units which include Sustainable Habitat cell in Vijayawada, ECBC cell in Odisha, ECBC cell in Punjab, ECBC cell in Haryana.

IMPLEMENTATION PLAN

Focus on transition oriented projects

To achieve the goals that TERI has set out in its Strategy Plan 2018-23, TERI will focus on impact based projects which result in specific outcomes such as-

- a. Demonstrating the feasibility of transition to cleaner and more sustainable choices
- b. Demonstrating pilots where technology for transition is available
- c. Highlighting viable business models for transition
- d. Sensitizing stakeholders who can adopt and propagate the various choices for transition

Such projects will need to adopt a diversity of approaches. TERI will implement such projects at relatively smaller scales, which would minimize reputational risk in case of failure. Such projects will also be used as an opportunity to mentor younger colleagues for leadership positions in the organization. TERI will create an insulated group within the institute where new and innovative ideas can be incubated.

Collaboration

To be able to create large scale impact, TERI will build platforms that bring together policymakers, industry, research and academia to collectively identify the challenges that need to be addressed and validate solutions before these solutions are put out for large scale socialization. TERI has already initiated this process by establishing stakeholder driven platforms to promote energy transitions, biofuels, and phasing down of hydro fluorocarbons.

Consolidated Offerings

TERI will strengthen activities to provide services that are tailored to the needs of the industry such as water and energy audits or resource conservation studies for buildings. TERI will attempt to create a portfolio that consolidates these services under one offering. For example, TERI can explore opportunities to undertake resource efficiency related projects for the hotel industry.

Communication and Outreach

TERI's ability to raise resources for its future projects and also create impact for its current work will depend greatly on communication, outreach and advocacy to stakeholders. Apart from strengthening its media and digital communication, TERI will organize events in India and globally to sensitize various stakeholders on the potential for change and TERI's ability to enable this change. TERI will reach out to both government and industry to raise support for such events.

State-level projects

TERI has achieved success in implementing various state-level projects in Andhra Pradesh, West Bengal, Punjab, Haryana, Maharashtra and Uttarakhand and several states in the North East. Going ahead, TERI will look for opportunities of creating Project Monitoring Units (PMUs) that support state-level action towards policy formulation and handholding towards implementation. For this, it is proposed to recruit a group of senior advisors in the relevant states, who can identify key areas of intervention and help navigate the process of setting up this work.

Commercialization

TERI has set up a Growth, Diversification and Commercialization Unit which is mandated to work towards large scale adoption and commercialization of TERI products and services.

Training and capacity building

The success of TERI's strategy plan would be greatly dependent on relevant training and capacity building of its human resource. TERI will develop annual capacity building plans for its overall staff and management.

Review Mechanism

In the third year of the plan, TERI will constitute a group comprising Distinguished Fellows in TERI, to review progress in the context of the strategy plan, the perceived impact of TERI's work and its financial strength.

PROGRAMME

ENERGY

A transition to clean energy lies at the heart of achieving India's Nationally Determined Contributions towards the Paris Agreement. The Energy Programme at TERI seeks to create successful and sustainable initiatives and business models that promote clean energy technologies



PROMOTING USAGE OF CLEAN AND MORE EFFICIENT ENERGY

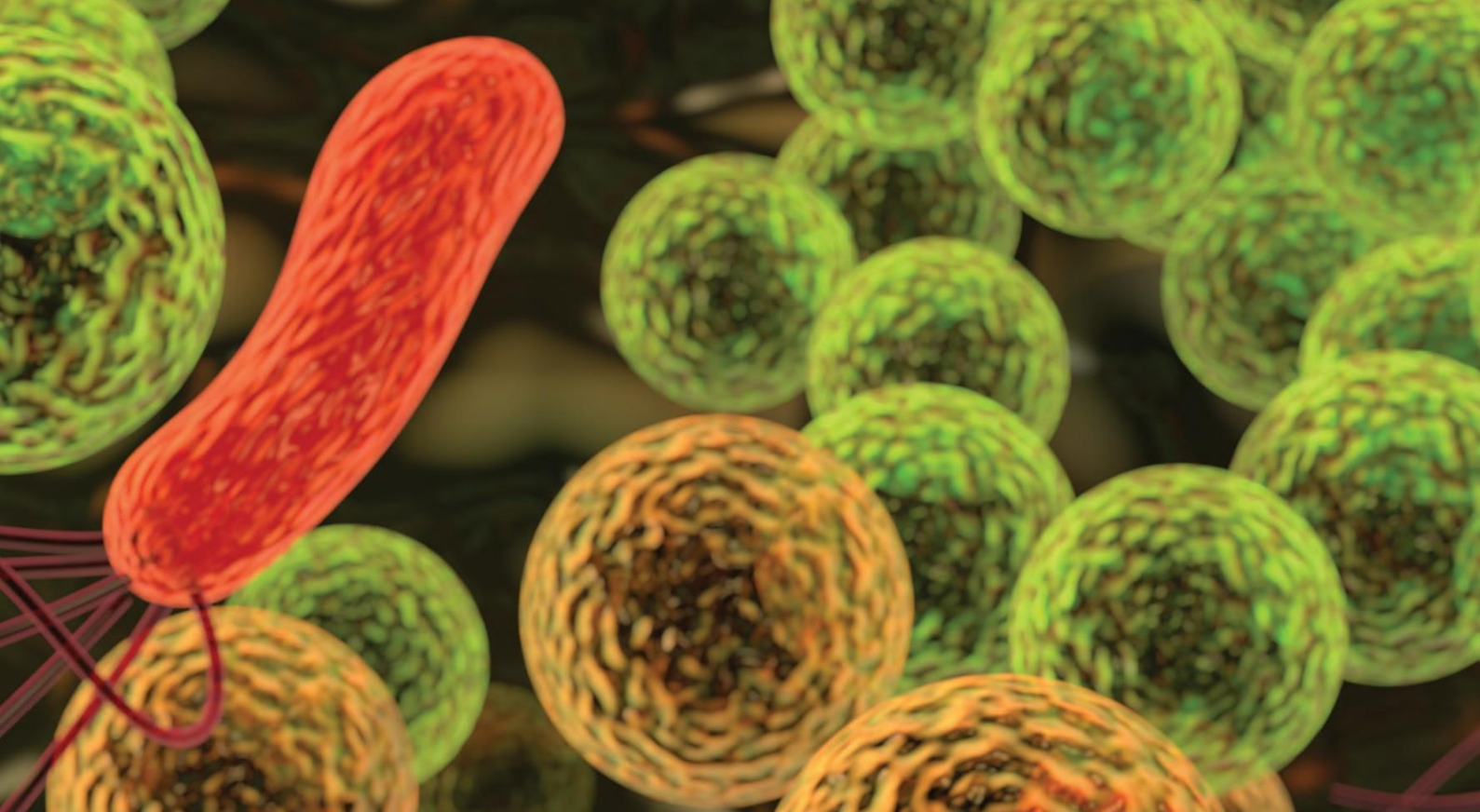
The Energy Programme works on the aims of:

- Promoting resource efficiency in various energy consuming sectors with a focus on energy use in the industrial sector
- Transforming energy supply in the country by undertaking initiatives that facilitate increased supply of renewable energy
- Enabling transitions to clean energy sources through the Energy Transitions Commission
- To achieve these, the Programme seeks to work on, and foster collaborations and partnerships in the following tasks:
- Conduct integrated sectoral analysis for Indian electricity sector and implementation support at national/state/utility levels
- Facilitate integration of renewables into grid, by addressing issues, challenges, market designs, and policy and regulatory aspects
- Enable establishment of performance benchmarking and quality standards for renewable energy technologies (RETs)
- Foster research partnerships and programmes with industry and academia on RETs with a focus on solar and biomass-based technological solutions
- Create analysis on fuel switching in various demand sectors to change the energy mix to cleaner fossil fuels; relevance of changing contractual framework on domestic fuel supply
- Develop and implement innovative solutions for various applications/technologies, including those appropriate for MSME (micro, small & medium enterprise) sectors/clusters
- Expanding energy audit services through in-depth analysis and newer sectors, including support for implementation

PROGRAMME

ENVIRONMENTAL AND INDUSTRIAL BIOTECHNOLOGY

Environmental and Industrial Biotechnology Programme at TERI aims at development and implementation of cutting edge bio based technologies to address environment and energy related issues.



DEVELOPING INNOVATIVE BIO-BASED TECHNOLOGIES FOR ENVIRONMENTAL PROTECTION

The Environmental and Industrial Biotechnology programme aims at basic and applied research explorations on microbial and plant resources to achieve the goal of sustainability, while dealing with environmental pollution and energy security issues. The core competency of this programme lies in development of innovative technologies based on modern biotechnology and scaling up of these technologies from laboratory to field scale.

The programme's flagship technologies of this programme are;

- 'Oilzapper' for management of oil spills and oily sludge remediation
- 'Microbial Enhanced Oil Recovery' for oil recovery enhancement from stripper oilwells
- 'PDB' for prevention of paraffin deposition in oil well tubing to increase oil flow from the tubing Carrying forward these flagship technologies, this programme is exploring;
- Development of green technologies for generation of clean energy; 'Biohydrogen' (from organic waste and agri waste woody biomass), 'Coal Bed Methane' (methane from unminable coal), bio-methane, 'bio-ethanol', 'bio-butanol'
- Development of sustainable bio-based technologies for production of green chemicals/enzymes/food based products; 2, 3 Butane Diol, 1-3 propane Diol, XC polymer (drilling mud), lactic acid, lipase, protease for industrial applications
- Formulation of bio fertilizers (PSB) and bio-cleaning agents for remediation/cleaning of residual pesticides for application in agricultural sector
- Scaling up of these technologies with a goal to implement on a field scale
- Scaling up production of quality planting materials and watershed management
- Waste water management

PROGRAMME

INTEGRATED POLICY ANALYSIS

The Integrated Policy Analysis Programme seeks to inform policymakers about solutions and pathways which decouple economic development from environmental degradation, while enhancing livelihood opportunities and the quality of life. Through in-depth and interdisciplinary research, the Division focusses on technologies, financing options, business models, and partnerships needed to scale up the implementation of these solutions.



THE INTEGRATED POLICY ANALYSIS PROGRAMME AIMS TO PROVIDE AN INTEGRATED PERSPECTIVE FOR POLICY DESIGN, WITH A FOCUS ON ANALYZING THE FOLLOWING ISSUES:

- Demand and availability of resources from multiple perspectives and scenarios including carrying capacity assessments
- Sustainable production including resource efficiency, waste management, and circular economy, and linkages With larger socio-economic issues
- Sustainable consumption, with a focus on lifestyles, consumption patterns, and waste generation
- Resource and environmental governance and its political economy at local, national and global levels
- Modeling of economy-energy-environment linkages and alternative development pathways
- Bio-physical interactions across land, water, air, and biodiversity

PROGRAMME

SOCIAL TRANSFORMATION

Access to clean and affordable energy can enhance socio-economic development. The Social Transformation Programme at TERI seeks to work with communities nationally and globally to enable clean energy solutions that will enhance basic services, livelihoods as well as improve agriculture, health, and educational services in a gender and socially inclusive manner.



PROVIDING ACCESS TO CLEAN AND AFFORDABLE ENERGY TO UNDERSERVED COMMUNITIES

In a developing country such as India, inclusive growth is intrinsically linked to rural development, with energy playing a critical role. With 'energy access' as a pivotal theme, the Social Transformation Programme aims to address key challenges facing effective and sustainable energy provisioning in developing countries, including:

- Affordable and reliable clean energy solutions through innovative and replicable technologies and delivery models
- 'Energy' as a driver of development indicators, such as health, education, livelihoods, and gender mainstreaming

To achieve this, the Programme focusses on the following areas:

- Accelerate energy access through research and implementation of lighting projects
- Promote renewable energy for livelihoods through technology and business model innovation for solar looms, cold storage, and solar micro irrigation
- Mainstreaming gender and social inclusion in energy programmes by creating evidence for better informed policy making
- Facilitate rural energy access, community development, and watershed management through monitoring and evaluation, learning, knowledge sharing, and leading the discourse

PROGRAMME

SUSTAINABLE AGRICULTURE

Sustainable climate resilient agriculture is the key to food and nutrition security in developing economies. The Sustainable Agriculture Programme aims to identify and develop new ways of farming profitably while conserving natural resources.



Global population is expected to reach 10 billion by 2050, raising concerns about feeding these increasing numbers without further degrading the environment. Sustainable agriculture and land utilization, thus, hold the key to resolving food and nutritional concerns.

CREATING CUTTING EDGE TECHNOLOGIES THAT PROMOTE SUSTAINABLE AGRICULTURE

A leading technology developer in the agriculture, environment, and bioenergy space, the Programme aims to create a significant change by focusing on next-generation innovations in sustainable agriculture and nano- biotechnology. The Programme seeks to leverage some of the following key methods:

- Promoting precision, climate resilient agriculture to substantially improve crop yields
- Substitute chemical fertilizers and pesticides with bio-based alternatives, including plant and microbe derived products and synthetic biology
- Increasing development and adoption of green technology-based smart materials and formulations from untapped natural/waste resources.
- Developing future food ingredients and nutraceuticals as well as therapeutics from bio resources.
- Accelerating man-made and industrial overburden based mitigation technologies and improved income generation opportunities for micro farming communities
- Promoting large scale adoption of watershed-based livelihood programmes in Northeast India
- Accelerating production of quality planting materials of important horticultural crops of Northeast India

PROGRAMME

SUSTAINABLE HABITAT

Creating resource-efficient urban centers is fundamental to sustainable development. The Sustainable Habitat Programme seeks to create smart and resilient cities by enhancing resource use efficiency, reducing waste, and putting in place frameworks for efficient mobility.



More than half of the India of 2030 is yet to be built. As the country urbanizes, the manner of this urbanization will not only have a significant impact on the quality of life of citizens, but also on achieving national sustainability goals. Creating smart and resilient cities is thus of vital importance to enhance the national socio-economic fabric.

CREATING FRAMEWORKS FOR SUSTAINABLE URBANIZATION

The Sustainable Habitat Programme aims to be a centre of excellence, providing technical assistance to national and subnational nodal ministries and departments for embedding sustainability in habitats, cities, and transport. The programme focuses on:

- Resource efficiency and waste management in buildings and cities
- Creating net-zero energy, zero-waste water discharge, net zero-waste campuses
- Urban transport, e-mobility, freight and logistics

As a centre of excellence, the programme will employ a multifaceted approach towards enabling effective frameworks for resilient and resource-efficient cities. These include:

- Conducting policy research and analysis to assist and inform policymakers
- Developing ratings catering to sustainable habitats, cities, and transport systems
- Supporting subnational agencies in implementing sustainable development initiatives
- Conducting energy and environment analysis and audits
- Training and capacity building for national and subnational agencies
- Becoming knowledge partners to national and subnational agencies
- Developing Nationally Appropriate Mitigation Actions for the building sector towards carbon-emission reduction and MRV preparation for emerging economies
- Developing energy-efficient pathways for the transport sector
- Conducting applied research and analysis to assist industry partners, building owners and developers make informed decisions.

CONSOLIDATING AND SCALING KNOWLEDGE AND IMPLEMENTATION

With an objective to capture and upscale the knowledge created as part of providing technical assistance across the country and globally, the programme aims to form a sustainable habitat alliance. This alliance will enhance efforts towards:

- Improving resource efficiency and management of waste to reduce long-term cost
- Driving towards a low-carbon pathway in line with the Nationally Determined Contributions
- Enhancing resilience to minimize economic costs related to climate change impacts

PROGRAMME

NATURAL RESOURCES & CLIMATE CHANGE

Effective climate change mitigation is closely linked to how we use natural resources, and how we manage waste. The Natural Resources and Climate Change Programme at TERI creates solutions that seek to lessen impact on our climate, air quality, water, land, and forest through ecological processes and relevant technology and policy initiatives.



SPEARHEADING SOLUTIONS FOR WATER MANAGEMENT

Water resources in India are under severe pressure due to escalating demands, over-exploitation, inefficient use, and pollution, amongst others. The Programme seeks to create efficient solutions for management of water resources, including:

- Facilitating provision of safe water and improvement in water use efficiency in industrial, domestic, and irrigation sectors and enhance water availability through water conservation interventions
- Setting sectoral benchmarks for water use to assist policy for enhancing water use efficiency and creating a cadre of water auditors through training and capacity building
- Promoting water conservation through rainwater harvesting, groundwater recharge, and so on, at the household and watershed levels.
- Providing safe and clean drinking water and efficient irrigation through sustainable technologies



PROMOTING EFFICIENT WASTE MANAGEMENT

Waste, whether solid, liquid or gaseous, is largely an outcome of economic development processes. Developing countries, including emerging economies, have been witnessing improper waste management largely due to improper financing and inability to recover at least the operational cost, if not the total cost, of waste management. The issue has assumed centrestage both globally, with the United Nations Environment Programme (UNEP) launching its Global Waste Management Outlook (GWMO) in 2015, and nationally, with the launch of Swachh Bharat Mission covering both urban and rural areas in 2014.

The Programme seeks to align with and support these international and national aims through the following measures:

- Facilitating maximization of socially acceptable resource recovery and recycling and addressing health impacts, release of climate pollutants from waste disposal
- Increasing adoption of resource efficient manufacturing and adoption of cleaner production practices to promote circular economy
- Working with industry and industry associations to ensure safe disposal of industrial wastes
- Promoting landfill free cities by facilitating resource recovery and recycling

MITIGATING AIR POLLUTION

The quality of air is extremely important, as its deterioration impacts human health, agriculture, buildings, climate, and hence, the economy. Deterioration of air quality, particularly in urban areas, is a serious concern in rapidly developing countries such as India. Also, rural areas, dependent on solid fuels for energy, deal with indoor air pollution and contribute to urban air pollution levels.

The programme aims to facilitate actions at the centre and state levels to improve air quality in Indian cities by at least 50%, achieving ambient air quality, in a mission mode.

The programme seeks to:

- Assess the impacts of air pollution on health and agricultural productivity
- Create a high-resolution database of air pollutant emissions, for India to suggest national-scale policy measures for air quality control
- Create decisive interventions to improve air quality in India's urban and semi-urban areas
- Assist in the creation of policy frameworks at the centre and state levels
- Assist in the creation of sectorial emission management programmes
- Impart training and assistance in capacity building of the pollution control boards and other stakeholders in India

PROMOTING EFFICIENT BIO-RESOURCE MANAGEMENT

In India, forest degradation is a huge challenge. More than 300 million people earn full or partial livelihood from forests, through unsustainable harvest which is a major driver of forest degradation and also loss of biodiversity.

The Programme aims to link sustainable forest management and biodiversity conservation with poverty alleviation, providing an impetus towards achieving India's goals in the forestry sector laid out in the country's Nationally Determined Contributions towards the Paris Agreement.



The key focus areas of the Programme in the forestry and biodiversity area include the following:

- Creating sustainable models demonstrating efficient resource use in rural and tribal areas
- Enhancing income of Forest Dwelling Communities (FDCs) through sustainable harvest and marketing of minor forest produce
- Developing innovative mechanisms for generating financial resources for sustainable forest management and biodiversity conservation
- Providing coastal resource management and livelihood opportunities for coastal communities

IMPROVING NUTRITIONAL SECURITY IN MARGINALISED COMMUNITIES

According to the World Health Organization, 'Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients'. Globally, around 795 million people are undernourished and of these, almost 98% (780 million) people, or the vast majority, live in the developing regions.

Through its work, the Programme aims to develop self-sufficient and sustainable models to ensure nutrition security, leading to healthier communities in the tribal hinterland of the country.

The focus areas of the Programme include the following:

- Implementing innovative approaches that tap the potential of locally available resources, such as wild edibles, in combating malnutrition
- Livelihood generation for women and youth, focussing on small-scale food processing, horticulture, and animal husbandry

REDUCING ENVIRONMENTAL RISKS IN PUBLIC HEALTH

Environmental degradation accounts for a large part of India's disease burden. Our work focusses on establishing and assessing the linkages between environment and public health, particularly the health risks arising from growing pollutants in our air, food, and water.

The key focus areas of the Programme comprise the following:

- Adaptation planning for the health impacts due to climate change
- GIS-enabled monitoring for disease surveillance and drought-resistant crops
- Interventions that have benefits for both climate and health, including clean cook-stoves and active transport options such as bicycles
- Policy relevant research, inter-sectoral action for climate and health as well as effective communication and stakeholder engagement



CREATING FRAMEWORKS FOR EFFECTIVE CLIMATE ACTION

Climate change is one of the most critical challenges faced by humanity today. Local environmental degradation coupled with uncertain changes in climate has immediate impacts on the social well-being of citizens, communities, and society. This calls for immediate transitioning to low carbon developmental pathways, which requires substantial actions and policy reforms.

The Programme aims to strengthen this by facilitating governments to go beyond their commitment in Nationally Determined Contributions (NDCs). The Programme seeks to:

- Address the gaps in understanding the timing and extent of the effects of climate change
- Develop a better understanding of climate variability and climate change at different spatial and temporal scales in an effort to effectively link climate science to policy research
- Enhance assessment of impacts and vulnerability on key sectors, such as water, agriculture, and health, through engagement with multi-stakeholders, including policymakers as well as local communities
- Facilitate various aspects of adaptation, such as identification, prioritization, monitoring and evaluation, and capacity building
- Provide policy analysis and recommendations for global climate policy negotiations from a developing country perspective on mitigation, adaptation, technology, finance, and transparency
- Create frameworks for implementation of NDCs in international geographies, including need assessments and technical consultancy



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