



TAMIL NADU STATE ENVIRONMENT POLICY 2017

Department of Environment
Government of Tamil Nadu



Korattur Lake

Chetpet Lake

Common Effluent Treatment Plant

Department of Environment
GOVERNMENT OF TAMIL NADU
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The Tamil Nadu State Environment Policy 2017 prepared by the Department of Environment, Government of Tamil Nadu follows the Vision Tamil Nadu 2023 launched by the late Hon'ble Chief Minister Dr. J Jayalithaa, Government of Tamil Nadu in March 2012, which identifies preservation of ecology and heritage as a key theme underlying the Vision Tamil Nadu 2023.

Tamil Nadu State Environment Policy 2017 is the outcome of extensive consultations with Experts in different disciplines, Departments and Agencies of Government of Tamil Nadu, Industry Associations, Academic and Research Institutions, Civil Society and the Public.

The Department of Environment, Government of Tamil Nadu undertook extensive consultations and constituted four sub-committees to provide inputs to Tamil Nadu State Environment Policy 2017 on Industry, Coastal Management, Natural Resources and Institutional Framework. In addition, the Department also obtained inputs from several stakeholders through its website and through email. We duly acknowledge and appreciate the contributions of the experts and officials who participated in the deliberations of these sub-committees.

We are also grateful to officials of line departments and agencies of Government of Tamil Nadu that contributed actively. Finally, we thank the several stakeholders from Civil Society, Academia and Industry who contributed to this effort in the form of written submissions and oral contributions during the deliberations while formulating this policy document.



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Acronyms

BGA	- Blue Green Algae
CARE AIR	- Centre for Accessing Real Time Air (Quality) Information Report
CCA RAI	- Climate Change Adaptation in Rural Areas of India
CEMS	- Continuous Emission Monitoring Systems
CNG	- Compressed Natural Gas
CRZ	- Coastal Regulation Zone
DoE	- Department of Environment
EIA	- Environmental Impact Assessment
ENVIS	- Environmental Information System
EPA 1986	- Environment Protection Act 1986
ETRP	- Emergency Tsunami Reconstruction Project
FTC	- Forest and Tree Cover
GHGs	- Greenhouse gases
GIS	- Geographic Information System
GoI	- Government of India
GoTN	- Government of Tamil Nadu
IPM	- Integrated Pest Management
km	- Kilometre
LNG	- Liquefied Natural Gas
MoEF&CC	- Ministry of Environment, Forest and Climate Change
MSMEs	- Ministry of Micro, Small & Medium Enterprises
MW	- Megawatt
NAPCC	- National Action Plan on Climate Change

NEP 2006	- National Environment Policy 2006
NGOs	- Non Governmental Organisations
NLCP	- National Lake Conservation Plan
NPM	- Non-Pesticidal Management
NRCP	- National River Conservation Plan
PAs	- Protected Areas
PUC	- Pollution Under Control
R&D	- Research and Development
SAPCC	- State Action Plan on Climate Change
SEIAA	- State Level Environmental Impact Assessment Authority
SIDCO	- Small Industries Development Corporation
SIPCOT	- State Industries Promotion Corporation of Tamil Nadu
sq.km.	- Square Kilometre
SPI	- System of Pulses Intensification
SRI	- System of Rice Intensification
SSI	- Sustainable Sugarcane Initiative
SWM	- Solid Waste Management
TIDCO	- Tamil Nadu Industrial Development Corporation
TN	- Tamil Nadu
TNSEP	- Tamil Nadu State Environment Policy
TNPCB	- Tamil Nadu Pollution Control Board
TNSCZMA	- Tamil Nadu State Coastal Zone Management Authority
TNSP	- Tamil Nadu Solar Policy
UAs	- Urban Agglomerations
WSF	- Water Soluble Fertilizers

TAMIL NADU STATE ENVIRONMENT POLICY 2017

PREAMBLE

The State of Tamil Nadu is situated in the southern part of the country between 8° 5' - 13° 35' North latitude and 76° 15' - 80° 20' East longitude. The total area of the State is 1,30,058 sq.km., making it the eleventh largest State in the country. Tamil Nadu has 32 districts. Tamil Nadu is one of the important Coastal States having a coastline of 1076 km. To its east is the Bay of Bengal and at its southernmost tip is the town of Kanyakumari, which is the meeting point of the Arabian Sea, the Bay of Bengal and the Indian Ocean.

The total population of Tamil Nadu as per Census 2011 was 72.1 million which is 5.96 percent of India's population. It is the seventh most densely populated State in India with a population density of 555 persons per sq.km., significantly higher than the Indian average of 382 persons per sq.km. (Census of India, 2011). Tamil Nadu is the most urbanized State in India, with a population of 35 million spread over about 11 percent of the total area of the State i.e. over an area of 13,755 sq.km.

As the economy continues to grow rapidly, the State will face constraints and limitations of natural resources and the need to use them in a sustainable manner. While Tamil Nadu focuses on industrial development at a pace faster than the National average, it will focus on the need to preserve the environment and its heritage. Efforts will be made to ensure a balance between development and environment. The Tamil Nadu State Environment Policy 2017 focuses on environmental sustainability in the State as well as recognizing the objectives of Vision Tamil Nadu 2023 (Vision TN 2023).

The Government of Tamil Nadu (GoTN) has formulated the Vision TN 2023 with the aim of catapulting Tamil Nadu onto a higher economic growth trajectory, while ensuring that it benefits all sections of society. By 2023, Tamil Nadu aspires to become India's most prosperous and progressive State with no poverty, and where its people enjoy all the basic services of a modern society and *live in harmonious engagement with the environment and with the rest of the world.*

The GoTN accords the highest priority to preserve, protect its ecological footprint and environmental resources, in light of the responsibility placed upon it as per Section 48 of the Constitution of India which specifies that “the State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the Country”. Keeping in mind this constitutional obligation, the Vision TN 2023 announced by the late Hon’ble Chief Minister Dr. J Jayalithaa in March 2012 identified Theme 8 “*Nurturing a rich heritage and preserving ecology and heritage*” as one of the key themes underlying this Vision emphasising further that “Preserving and wherever possible, improving the quality of the environment and nurturing the cultural heritage of the State” would be an essential ingredient of Vision TN 2023. “Environmental preservation would encompass the entire ecological footprint of human activity and would include increasing forest cover, protection of wetlands, conserving groundwater, rivers and other water bodies, protection of the coastal zones and fragile ecosystems, conservation of the zoological and botanical diversity of the State, protection of soil and other natural formations from abuse on account of human activity, efficient recycling of solid waste ensuring minimal impact on the environment, minimising atmospheric pollution and in general maintaining the ecological balance across the entire State”. The growth strategy of Tamil Nadu is fully conscious of sustainability imperative.

The National Environment Policy (NEP) announced by Government of India in 2006 highlighted the role of environmental degradation as a causal factor in enhancing and perpetuating poverty and the growing evidence of poor environmental quality adversely affecting human health and social development outcomes. Emphasising the need to address challenges arising from institutional/policy failures and from global environmental concerns (including climate change, ozone depletion and bio-diversity loss), the NEP 2006 spelt out a set of objectives, principles, strategies and actions to effectively manage the environment.

While the NEP 2006 provided a useful base to reflect on and address environmental challenges in general, GoTN deemed it necessary to bring out this State-specific Environment Policy to address issues specific to the environmental context in Tamil Nadu and to provide a holistic policy framework, in the context of the outcomes targeted under the Vision TN 2023.

Environment is an important cross-cutting subject requiring commitment and attention of stakeholders from all the departments and agencies of GoTN, industry, academia, civil society and public at large. Accordingly, the Policy takes into account the actions on environment covered under policies formulated by all the departments and agencies of GoTN. Further, views and suggestions from consultations with stakeholders from industry, academia, civil society and the public at large have been duly considered and incorporated in formulating the Tamil Nadu State Environment Policy 2017.

1. OBJECTIVES

The objectives of Tamil Nadu State Environment Policy 2017 are to

1. Conserve, Nurture and Renew Environmental Resources essential for habitat and life-support, livelihoods, economic growth, quality of life and human well-being while enabling judicious and equitable access of these resources to meet the needs and aspirations of all sections of society in the present and future.
2. Integrate environmental well-being into developmental programmes by weaving environmental considerations into policy formulation, planning and implementation of developmental programmes and projects in an environmentally sustainable manner, while achieving other positive developmental outcomes including poverty alleviation, inclusive economic growth and social well-being.
3. Enhance preparedness to deal with climate change impacts through a systematic approach to identify climate change impacts, develop and implement relevant adaptation/mitigation mechanisms taking into account priorities identified under the National Action Plan on Climate Change (NAPCC) and State-specific risks and impacts.
4. Improve Environment Governance and institutional capacity involving articulation of a comprehensive policy framework and building capable, effective, independent and accountable institutions geared to (i) set, monitor and enforce environmental legislation, policy, standards and safeguards, (ii) implement clear, transparent, participative, efficient mechanisms for environment planning, management and regulation and (iii) create a healthy investment climate to facilitate time-bound implementation of environmentally sustainable projects, programmes and investments to aid positive developmental impact.

The TN State Environment Policy 2017 is being formulated keeping in mind the fourteen principles set out in the National Environment Policy 2006 (NEP 2006) namely, (i) putting human beings at the centre of concerns for sustainable development, (ii) the right to development while ensuring inter and intra-generational equity, (iii) ensuring that environmental protection is an integral part of development processes, (iv) the need to take a precautionary approach while dealing with credible threats to environment, (v) realising economic efficiency while recognising polluter pays and cost minimisation principles, (vi) priority towards entities with incomparable values, (vii) equity in entitlements to, and participation of, the relevant public, in decision-making on use of environmental resources, (viii) legal liability and supplementing criminal liability with civil liability approaches, (ix) public trust doctrine with the State as a trustee and not absolute owner of resources, subject to reasonable conditions including protection of legitimate interests and matters of strategic national interest, (x) decentralisation of powers and responsibilities, (xi) integration of environmental considerations in sectoral policy making, (xii) relevant environment standards setting, (xiii) preference to preventive action and (xiv) environment offsetting under exceptional reasons of overriding public interest.

2. STRATEGIES AND ACTIONS

This section details strategies and actions to realise the objectives of Tamil Nadu State Environment Policy 2017 namely,

- Conserve, Nurture and Renew Environmental Resources
- Integrate environmental well-being into developmental programmes
- Enhance preparedness to deal with climate change impacts
- Improve Environment Governance and institutional capacity

2.1. Conserve, nurture and renew environmental resources

A key objective of the Tamil Nadu State Environment Policy is to identify, preserve, nurture and enhance environmental resources in the State, while ensuring that the impacts of anthropogenic actions and global climate change impacts are adequately assessed and acted upon.

2.1.1. Water resources

With four percent of India's land area and seven percent of population, Tamil Nadu has only three percent of water resources of the Country. Both per capita water availability (at 800 cubic metres vis-à-vis National average of 1545 cubic metres) and annual rainfall (at 970 millimetres vis-à-vis National average of 2300 millimetres) are significantly lower than National average. Large parts of the State are in the rain shadow of Western Ghats and get limited rainfall from south-west monsoon.

Surface water potential is estimated at 24,160 million cubic metres and accounts for nearly 50 percent of the estimated water availability in the State. Of 17 river basins in Tamil Nadu, 16 are in "deficit" and only one has surplus water. In all basins there are some blocks, which are identified as potentially deficit areas due to low rainfall, formation factors, topographical factors and water quality problems. About 24 lakh hectares are irrigated by surface water.

Utilisable groundwater recharge is 22,423 million cubic metres. In Tamil Nadu's categorization of 385 (384+ 1 Chennai city) blocks, 145 blocks are categorized as safe blocks and 57 blocks are categorized as semi critical, 33 blocks are categorized as critical and 142 (141+ 1 Chennai city) are categorized as over-exploitation with another 8 blocks having turned saline.

Key challenges to water security include:

1. Increase in water demand across segments (agriculture, residential and industry) while the limited sources of water could further shrink due to climate change impacts.
2. Excessive ground water extraction beyond recharge capacity.
3. Excessive and in-efficient use of surface water particularly for irrigation.
4. Neglect of lakes, tanks, canals, water courses and other water bodies.
5. Water pollution on account of various sources including industrial effluent, domestic sewage, municipal solid waste and eutrophication due to excessive fertiliser use etc., leading to negative environmental and public health impacts.

Strategies and Actions

The strategies and actions on water resources management shall be geared to achieve water security through preservation and renewal of water resources, sustainable and equitable water allocation and promoting efficient and universal access to meet all consumptive needs while maintaining minimum ecological flows into rivers, water bodies and for groundwater recharge.

1. Strengthen information repository on water through a comprehensive mapping and inventorisation of information on water sources. GoTN would build a comprehensive information inventory of potential and actual water resources covering both surface and ground water sources using modern technologies including GIS and remote sensing.
2. Promote integrated approaches to management of water resources taking into account inflows and withdrawals by season, pollution loads and natural regeneration capacities, required ecological flows and adherence to water quality standards, while promoting conjunctive use of surface and ground water in a sustainable manner.
3. Systematically augment, renew and maintain water resources while improving and strengthening infrastructure for efficient water access and service delivery through
 - a. Concrete steps to double water storage capacity in the State as targeted in Vision TN 2023 through a combination of renewal and increase in capacity of existing systems (river basins, reservoirs and water bodies), new investments (in reservoirs, check dams, canals and water bodies) and efforts to reduce water losses.
 - b. Accordingly high priority to creation of 'new' sources to meet its water security goals through tapping water from domestic sewage recycling and desalination. GoTN has successfully implemented large-scale desalination plants for meeting the demand of Chennai city and will evaluate the scope for replication of this initiative to augment water availability.

- c. Strengthening delivery systems for universal equitable and efficient water service delivery across categories of users.
- d. Initiating measures to eliminate sewage and effluents flows into water bodies including rivers and canals.
- e. Initiating a mission-mode programme to clean and rejuvenate critically polluted water systems.
- f. Strengthening the existing legal framework to protect water bodies against encroachment and solid/liquid waste.
4. Strengthen mechanisms to monitor and augment groundwater potential through
 - a. Regulating the ground water potential of the State through effective implementation by the Water Resources Department of the PWD in all areas mentioned in Public Works (R2) Department, G.O.Ms.142 dt:23.07.2014 except Chennai where the Chennai Metropolitan Area ground water (Regulation) Act, 1987 extends
 - b. Building on its success of implementing rainwater harvesting in Chennai to aggressively adopt Rainwater Harvesting on similar scale and attention State-wide.
 - c. Building on the atlas of aquifer mapping for Tamil Nadu prepared by Central Ground Water Board which provides a base for identifying data gaps, delineating the vulnerable areas and demarcation of areas which need Government intervention. Aquifer mapping at a cadastral scale would be undertaken to enable mapping, monitoring status on water availability, creation and restoration of water bodies.
5. Implement an independent and comprehensive quality monitoring and dissemination protocol covering river basins, canals, water reservoirs, lakes and local sources including water distribution systems, tanks and wells across the State.

6. Identify and tackle sources of water pollution taking along with stringent enforcement of standards covering
- Measures to monitor, trap and treat industrial effluent to required standards including wider adoption of zero liquid discharge approaches.
 - Elimination of open defecation, provision of universal toilet access and appropriate infrastructure including city-wide sewerage systems, decentralised treatment, on-site sanitation and septage management systems to treat domestic sewage and waste water reclamation programme across the State.
 - Implement measures to control and minimise eutrophication effects and pollution of water systems from nutrient loads and pesticide use.
7. Promote demand management and increased efficiency of water use across all sectors including agriculture, industry and domestic use. Given the limited availability of water, GoTN would initiate water efficiency improvement programmes across all sectors:
- Initiatives in agriculture would focus on improving 'crop per drop' and incentivising adoption of water efficient methods and sustainable practices including drip irrigation and crop diversification.
 - Industry would be encouraged to adopt efficient water management systems to bring them on par with international benchmarks on water use, recycling and pollution standards.
 - Efficiency in drinking water supply systems (both urban and rural) would be improved by progressively tracking and reducing Non-Revenue Water (NRW) across all urban and rural areas in the State.
 - The construction sector would be encouraged to adopt efficient use of treated sewage for non-potable purposes like toilet flushing and gardening.

2.1.2. Air

Notwithstanding the several steps taken by GoTN and the Tamil Nadu Pollution Control Board (TNPCB), Tamil Nadu recognises the risk it faces to deterioration of its air quality in view of it being a rapidly industrialising State which is also the most urbanised State in the country. There are several industrial clusters within the State in which air pollution is emerging as a concern, even as growth in personalised transportation contributes to degradation of air quality in urban areas. Along with these challenges, the expected increase in thermal power generation to meet the growing power demand makes it necessary to accord greater focus and thrust on minimising risks of air pollution.

Strategies and Actions

GoTN would undertake the following actions in this regard:

- Strengthen systems for monitoring air quality. Continuous Emission Monitoring Systems (CEMS) shall be implemented in all industry clusters, thermal power plants and urban areas.
- Urban air quality monitoring:
 - The TNPCB monitors ambient air quality at 28 stations in major cities and towns under National Ambient Air Quality Monitoring Programme (NAAQMP) Tamil Nadu. These cities include Chennai (Eight stations), Coimbatore (Three stations), Thoothukudi (Three stations), Madurai (Three stations), Salem (One station), Trichy (Five stations), Cuddalore (Three stations) and Mettur (Two stations). This network shall be expanded to monitor air quality in all large urban agglomerations with population greater than 5,00,000.
 - Continuous air quality monitoring for industry areas and thermal power plants: In order to monitor source emissions and ambient air quality on a real-time basis, TNPCB has established a Centre for Accessing Real Time Air (Quality) Information Reports (CARE AIR) at its Head office. A first-of-its

- kind in the country initiative, CARE AIR is a continuous real-time emission monitoring system in which when emission levels exceed norms, an in-built alarm system is activated to inform concerned industry and environment officials.

3. Enforce legislation, policies and rules to establish and meet air quality standards with focus on reducing industrial air pollution. GoTN shall ensure appropriate locating of industries and shall strengthen enforcement mechanisms to control pollution from industries. Thrust shall be given to cleaner technologies, use of cleaner fuels and energy efficient devices.
4. Promote use of public transportation in urban areas. GoTN would initiate projects and programmes to increase the share of public transport in urban commuting. The Integration of Multi modal transport system including metro, mono-rail, bus rapid transit with cycle tracks and walk ways shall be implemented wherever necessary in the State. GoTN had made necessary amendments in the Tamil Nadu Motor Vehicle Rules, 1989 to get Pollution Under Control (PUC) certificate for goods vehicles in Chennai from authorised private testing centres. This initiative will be launched in other large urban centres (with population greater than 5,00,000).
5. Minimize Vehicular Pollution
 1. Alternative low polluting fuels such as CNG will be expanded.
 2. Strengthen standard and enforcement of vehicular pollution, monitoring and inspection.
6. Maintain leadership in Clean Energy. Tamil Nadu is committed to maintain its leadership position in clean energy production, given its strengths in wind energy and its thrust through TN Solar Policy 2012. GoTN is cognisant of the need to increase the share of thermal power generation and would put in place mechanisms to effectively implement air quality standards for this capacity addition.

2.1.3. Land

Forty four percent of Tamil Nadu's land area of 13 million hectares is net sown area and used for agriculture. Degradation of productive land occurs on account of soil erosion, alkali and salinization, water logging, pollution and reduction in organic matter content etc. Disposal of domestic and industrial wastes (both solid and liquid) on productive land, river systems and water bodies also lead to degradation. Insufficient empowerment of local institutions for management of grazing lands leads to overexploitation of biomass base. Unsustainable grazing, excessive irrigation, improper use of pesticides and chemical fertilisers, diversion of animal wastes for domestic fuel also contribute to land degradation. Implicit/explicit subsidies (for water, power, fertilizer and pesticides), lack of conducive policies and regulatory environment often act as causal factors and drive excessive consumption and create inefficient and inequitable land allocation, management and thus leading to land degradation.

With increase in economic growth and given the trends towards greater industrialisation and urbanisation, there is likely to be a greater demand of land for non-agricultural purposes. GoTN recognises that a sound land-use policy coupled with a review of the fiscal and non-fiscal incentives that are creating unintentional impacts is critical for effective land management and environmental health of the State.

Strategies and Actions

1. Formulate and implement a comprehensive Land-use policy: GoTN will formulate and implement a land-use policy that enables
 - a. Environmental sustainability and protection of vulnerable ecosystems: The land-use policy would accord priority to protection and preservation of vulnerable ecosystems including forests, bio-reserves, wetlands, coastal ecosystems and other such habitats critical to the environmental health of the State.
 - b. Agriculture and food security: The Government has resolved to usher in a Second Green Revolution in Tamil Nadu to improve the economic status of the farmers and has initiated steps to increase net cultivable area (apart from

increases in productivity) by bringing in fallow lands suitable for agriculture under cultivation.

- c. Planned expansion of urban areas: As the most urbanised State in the Country, it is expected that over sixty percent of Tamil Nadu's population will live in urban areas within the next ten to fifteen years. GoTN has already initiated preparation of Master plans for large urban areas to facilitate efficient land-use, appropriate zoning and plan creation of basic infrastructure towards guiding urban development in a more systematic manner. Sound environment management principles shall be integrated into preparation and implementation of these master plans.
- d. Creation of environmentally sustainable industrial nodes and corridors: As a leading industrial State, Tamil Nadu continues to attract industrial investment and employment and plans creation of industrial infrastructure along select corridors and nodes to guide and promote balanced industrialisation across the State. Appropriate locating (depending on category of industry) and environmental safeguards will be built into planning and management of these industrial corridors and nodes.

2.1.4. Coastal Zones

Tamil Nadu has a long coastline of about 1076 km, covering thirteen coastal districts which are home to several productive ecosystems including coral reefs, sea grasses, mangroves, estuaries, tidal flats, islands, lagoons, rocky shores and sandy beaches. Human influences like population growth, dependence on coastal wealth, over exploitation of resources and unscientific developmental activities and natural impacts such as cyclones, tsunamis and climate change have placed the coastal areas and resources in a highly vulnerable state.

Unscientific coastal development practices lead to various environmental disorders and impact on ecological balance even as global warming is posing a serious threat to mankind and environment, particularly on account of sea level rise and loss of coastal areas and over-fishing, migration of fishes and the resultant loss of livelihood,

food and income. Given Tamil Nadu's long coastline, the large population living in these areas and presence of vulnerable biosphere reserves / habitats, GoTN would accord high priority to coastal zone management.

Strategies and Actions

1. Prepare and implement an Integrated Coastal Zone Management Plan(ICZMP):

The coast of Tamil Nadu is replete with several economic activities like industries, tourism and fisheries. At the same time the State recognises the imperatives of enforcing the Coastal Regulation Zone Notification of the Ministry of Environment, Forest and Climate Change, Government of India in order to ensure sustainable development in the coastal zones. To minimize the conflicts of interest and enable enforcement, an appropriate management plan rationally integrating the activities of all the stakeholders will be essential. In order to achieve economic prosperity without sacrificing ecological security, an Integrated Coastal Zone Management Plan (ICZMP) has been prepared and steps to implement the same will be undertaken in phased manner as Integrated Coastal Zone Management Project –Phase II in Tamil Nadu.

2. Create and update benchmark information on coastal environment and biological resources.
3. Develop a practicable monitoring protocol covering (a) endangered species and respective habitats, (b) industrial and other developmental zones, (c) underwater resources like coral reefs, sea grass beds and associated bio-diversity.
4. Initiate coastal ecosystem rehabilitation initiatives covering coral reefs, sea grass, mangroves, artificial reefs, endangered species and commercially important species while providing specific guidelines for introduction of exotic species.
5. Promote indigenous traditional knowledge regarding resource use in coastal areas and eco-friendly fishing practices.

6. Develop specific guidelines for introduction of exotic species, covering comprehensive EIA, analysis of history and impact in other parts of the world.

2.1.5. Forests, Wildlife and Bio-diversity

Tamil Nadu has nearly 22,877 sq.km of Recorded Forest Area which translates to about 17.59 percent and nearly 2.99 percent of the total Recorded Forest Area in the Country. Tamil Nadu has about nine of the 16 major forest types occurring in the Country. It has approximately 15,000 of the Country's 45,000 plant species and about 30,000 animal species out of 81,000 in the Country. With 5,640 species of flowering plants, Tamil Nadu tops the Country in terms of angiosperm diversity.

The Western Ghats, the longest hill range in the State is one of the 25 global hotspots of bio-diversity and one of the three mega centres of endemism in India. The forests of Kanyakumari, Kalakadu Mundanthurai, Anaimalai, Mudumalai, Mukkurthi, Srivilliputhur and Megamalai owe the abundance of flora and fauna due to their position in the Western Ghats. The Eastern Ghats also support diverse forest types. The forest uplands and watersheds in Western Ghats and Eastern Ghats play a major role in protection of low land river valleys, by storing water received during rainfall and gradually releasing it so as to reduce the severity of floods and droughts.

Owing to the presence of vast altitudinal gradient (100 - 2600m), all major forest types reported from the Western Ghats are found within Tamil Nadu giving rise to a high level of species richness. Tamil Nadu has a series of Protected Areas (PAs): Fifteen Wildlife Sanctuaries, five National Parks, four Elephant Reserves and four Tiger Reserves in addition to several Reserve Forests. Indigenous people live in harmony with nature in many locations. People's participation in conservation of nature is being promoted through eco-development committees in tiger reserves. Benefit sharing with locals pertaining to income generated through ecotourism is in place in certain locations. Research and development with respect to conservation of forests and wildlife is in progress at many parts of the Western Ghats.

Systematic harvest of timber and firewood, introduction of exotic species, diversion of forest lands for development projects, leasing of forest lands for cultivation

of plantation crops, are the reported causative factors for forest degradation. Spread of Alien shrub and tree species like *Prosopis juliflora* and *Acacia mearnsii*, *Lantana camara*, *Eupatorium sp.*, *Ulexeuropaeus*, *Cytisis scoparius* are noticed in many areas. Anthropogenic pressures from the forest dwelling and forest fringe communities by way of grazing, fire, illicit collection of medicinal plants and destructive harvest of Minor Forest Produce led to depletion of the resources and consequently fall in productivity and quality of forests. In respect of collection of medicinal plants from forests, loss of habitat and bio-diversity due to human pressure go unrecognized.

The Government of India framed the National Forest Policy, 1988 for management of State Forests in the Country which aims at maintenance of ecological balance and environmental stability that is vital for the sustenance of all life forms. The Policy seeks to bring at least one third of the total land area of the Country under forest and tree cover (FTC). Against this stated goal, the Country's forest and tree cover stands only at 24.16 percent of the total geographical area, thus mandating the Country to take urgent measures to improve the country's FTC. The State broadly follows the National Policy priorities in all its forest management efforts.

Strategies and Actions

1. Conserve Bio-diversity and Forest Genetic Resources: Tamil Nadu has been in the forefront in protecting its wildlife. The State added about 1,608 sq.km. of forest area to the Protected Area (PA) network by declaring Nellai Wildlife Sanctuary and Oussudu lake Bird Sanctuary during 2014-15. This has led to an increase of Protected Areas (PAs) in the State from 5,465 sq.km. to 7,073 sq.km. The State, at present, has fifteen Wildlife Sanctuaries, five National Parks, fifteen Bird Sanctuaries and two Conservation Reserves, declared under Wildlife (Protection) Act, 1972. GoTN is committed to further increase the extent of Protected Areas in the State with an object of conserving wild biodiversity and genetic resources.
2. Increase tree cover outside forests: To increase the green cover outside forests, programmes like tree cultivation in private lands, raising teak plantation in Padugai lands and free distribution of seedlings to institutions and individual

households are being implemented. The ongoing Tamil Nadu Bio-diversity Conservation and Greening Project helps in green cover private lands.

3. Facilitate socio-economic development in fringes of forests: Considering the importance of equity issues in efficient implementation and universal coverage of Joint Forest Management in the forest fringe villages, social, economic, political, gender and inter-generational equity, including in decision-making with regard to resource use, in sharing of benefits, in access to and protection of knowledge and information relevant to biodiversity will be emphasized.
4. Other actions: GoTN would also undertake actions to promote watershed management, to enhance climatic resilience in moderately dense and open forests, to enable tribal development and to promote eco-tourism for sustainable livelihoods, taking into account, the carrying capacity of existing and potential tourist destinations. Preservation of natural resources, nature education and awareness and livelihood options for native people would be the cornerstones of GoTN's eco-tourism policy. Further, a judicious review of existing land use patterns (like tea and coffee plantations, hydel projects, etc.) will be undertaken to evolve means and ways to reduce increasing human-animal conflict in the State.

2.2. Integrate environmental well-being into developmental programmes

While specific actions to protect and conserve various natural and environmental resources of the State have been identified in the earlier section, significant risks to environment often occur when environmental impacts of anthropogenic activities considered critical for socio-economic growth are ignored. GoTN recognises that weaving sound environmental principles into all its developmental programmes and projects is critical not just for environment protection but also for sustainably achieving the very socio-economic goals that these programmes seek to achieve. Environmental sustainability will be a key boundary condition for developmental programmes and projects undertaken by GoTN. The following section identifies some critical imperatives, strategies and actions in key economic sectors:

2.2.1. Agriculture

Notwithstanding the higher growth rate of secondary and tertiary sectors in recent years, over 40 percent of the population of the State depends on the primary sector and this assumes tremendous significance with respect to food security goals and supporting growth of secondary and tertiary sector. GoTN thus accords the highest priority to agriculture with its declared intent to usher in a second Green Revolution in the State.

Agriculture faces several challenges including pressure for diversion of productive agricultural lands to non-agricultural purposes, fragmented land holdings, spatial and temporal variability in water availability, dwindling ground water resources, shortage of farm workers, weak adoption of improved crop management practices, weak post harvesting and marketing linkages. GoTN has resolved to usher in a Second Green Revolution in Tamil Nadu to improve the economic status of the farmers and has initiated a number of steps to address the above challenges.

Strategies and Actions

1. Preserve and augment water availability for Agriculture: GoTN would initiate measures to augment water sources for farmers (while enabling increase of area under cultivation from the current levels) through extensive expansion of watershed development programmes and creation of rain-water harvesting structures, so as to make water available for agriculture in a sustainable manner without excessive ground water abstraction beyond recharge potential.
 - a. The share of tank irrigation has declined due to siltation and encroachments in tank beds, damaged sluices, weirs and bunds. Greater focus would be accorded to increase the water holding capacity of the existing water bodies through desilting, besides encouraging usage of Tank Silt for agriculture purpose. Further, action to prevent and remove the encroachments along water bodies would also be initiated.
 - b. In the case of locations where tanks are not significant, water harvesting structures such as major check dams, minor check dams, percolation ponds

and farm ponds would be given priority. The State aim is to construct more farm ponds to augment the water resources.

2. **Improve water efficiency in Agriculture:** Over the years, ground water status in many water shed blocks have become over exploited. To face the challenge, the State will initiate measures to achieve more crops per drop of water with emphasis on micro irrigation. GoTN will promote scientific approaches including crop diversification, intercropping, integrated farming, improving water holding capacity of the sub-basins, promotion of precision farming and micro irrigation, provision of water conveyance pipes to prevent percolation and evaporation loss, emphasis in whole village concept on water saving techniques such as SRI, SPI, SSI and promotion of less water consuming crops like pulses, millets etc. Drip and sprinkler needs considerable scaling up as studies show that water saving in this method compared to surface irrigation is about 40 to 80 percent and helps to increase yield. 100 percent subsidy assistance is given to small and marginal farmers and 75 percent subsidy assistance to other farmers for putting up drip and sprinkler irrigation systems under micro irrigation scheme.
3. **Solar pumps:** Solar power is highly reliable, low on maintenance and easy to install and operate. They are also eco-friendly and reduce the dependence on fossil fuel. Solar water pumps are ideal for agriculture and related activities and are a great alternative to conventionally powered systems and are being promoted in Tamil Nadu.
4. **Preserve soil quality and improve nutrient status:** To address soil preservation and concern relating to depletion of soil nutrient status, GoTN has initiated adoption of the following measures:
 - a. **Organic farming:** In order to switch over from the use of chemical inputs that are hazardous to human health, awareness is being created among the farming community to use organic inputs viz., need based products, vermi-compost and bio fertilizers like Azospirillum, phosphor bacteria etc. Based on this concept, focus is given to organic farming. Organic farming is

promoted in this State that focus on improving soil health through emphasis on Green manuring, Green leaf manuring, vermi-composting, use of Azolla, Blue-Green Algae (BGA) etc.

- b. **Appropriate Land Use System:**
 - i) Introducing a well-defined and sustainable pattern of utilization of our land resources to meet the consumption needs of the growing population by reducing the yield gap and increasing the productivity of the available agricultural lands.
 - ii) The existing land use pattern will be evaluated based on a resource survey of production potential of land in a given agro climatic zone in order to plan for effective use. Cropping pattern will be suitably defined at farm level so as to increase the economic profitability of farmers. In view of this, Government is focusing on promotion of farm specific cropping pattern so as to exploit the land use potential to its maximum.
 - iii) Government is giving thrust to preserve the prime agricultural lands and control its diversion for non- agricultural purposes by recommending suitable and profitable cropping system, reclamation of problem soils, identification and conversion of fallow lands for agriculture, increasing the productivity of agricultural lands by village based Integrated Nutrient Management through stratified soil sampling and analysis, promotion of organic farming, integrated farming, diversified farming, rainfed area development and appropriate market linkages to enable the farmers to take up agriculture as a lucrative profession.
- c. **Adoption of Integrated Pest Management (IPM) and Non-Pesticidal Management (NPM):** Use of synthetic pesticides/weedicides has an adverse impact on the crop eco system besides polluting the environment. Hence, Tamil Nadu is focusing on increased adoption of cost-effective and eco-friendly cultivation practices. The strategies contemplated are: (i) Creating awareness on the indiscriminate usage of chemical pesticides, (ii) Promoting

knowledge on local production of bio pesticides, (iii) Promoting farmer's field based Non-Pesticide Management (NPM) awareness programmes and (iv) Providing subsidies for technologies that are part of IPM and NPM practices. The Government encourages NPM practices to prevent air pollution.

- d. As precision farming and micro irrigation schemes are being taken up in a large scale, the Government will promote Water Soluble Fertilizers (WSF)/Liquid bio fertilizers for various crops, as this provides optimum quantity of water and nutrients in well balanced proportion directly to the active root zone.
 - e. Soil analysis and database creation: Government is exploring all avenues to rejuvenate the soil health and fertility through detailed soil survey, soil sample collection and analysis. GoTN has initiated steps to analyse nutrient status of soil samples of individual farm holdings and identify problematic soils. The recommendations will be recorded in "Farmers Integrated Hand Book" a comprehensive record for effective planning. Farmers Integrated Hand book, an information on soil fertility status of the farmers field has been distributed to 67.45 lakh farmers. It has been programmed to distribute 81.18 lakh Soil Health Cards in a period of three years from 2015-16 onwards under "Mission Soil Health Card". The Central Control Laboratory located at Kudumianmalai, is the Apex Organization which provides technical competence through training to the laboratory personnel and ensures the precision and accuracy of analysis in the laboratories. Computers with internet facilities have been provided to all thirty Soil Testing Laboratories functioning in the State to upload details of soil samples analysed and the database is managed through Tamil Nadu Agriculture Information Service Network.
5. Promote integrated farming: Integrated Farming or enabling farmers undertake a combination of activities including cropping, animal husbandry, fishery, agro forestry, etc., helps optimise resource utilization and sustainability while improving the economic status of the farmers. GoTN would facilitate this

through collection and analysis of farm information covering categorisation of villages based on micro climatic conditions, development of crop plan (both Agriculture & Horticulture) in relation to soil type, irrigation and rainfall and integrating with other enterprises like dairy, poultry etc.

6. Environment Friendly Cultivation: Burning of agricultural wastes especially sugarcane trashes leads to air pollution and disturbs soil microbial activities. To manage this issue, the Government has resolved to popularize the habit of mulching sugarcane trashes, alter shredding and in-situ ploughing to enrich the soil besides weed control. This practice will be up scaled. Likewise, awareness among farmers and initiatives to convert agricultural waste into compost will be taken up in a massive way.

2.2.2. Industrial development

Tamil Nadu is one among the most industrialised States in the Country. It ranks first in terms of number of factories and number of people employed in factories. It has a diversified industrial base and is a leader in several manufacturing sectors including automobiles and auto components, light engineering, textiles, leather, electronic hardware, software, cement, sugar, chemicals and petrochemicals. The State's business-friendly policies and pro-active initiatives have played a key role in attracting investments in manufacturing and industry. GoTN has announced a slew of policy measures to further accelerate industrial development and employment generation in the State.

Apart from a sizeable presence of large industrial units including investments by multi-national corporations, industrial development in Tamil Nadu is also characterised by a large presence of Micro, Small and Medium Enterprises (MSMEs). There has been a steady growth in the number of MSMEs registered units in Tamil Nadu from 83,348 in 2012-13 to 1,43,104 in 2014-2015. While the presence of MSMEs is a good sign that indicates a thriving entrepreneurial base, nearly seventy percent of industrial pollution load in India is attributable to MSMEs. While MSMEs contribute to nearly forty percent of India's industrial production and forty five percent of country's exports, the unorganised and unregistered units in this category are often weak in adoption of good practices for environmental sustainability and hence present risks of environment

degradation. Further, the fragmented nature of MSME industry presents challenges to effective monitoring and surveillance.

Environment risks arising from industrial development are primarily on account of pollution impacts (on air, land and water) and excessive resource use. As pointed out in the NEP 2006, industrial development bears a dichotomous relationship with environment. On one hand, growth tends to create the risk of environment degradation through excessive resource use and pollution and on the other hand, it also creates the opportunity to make available resources for environmental investments.

Strategies and Actions

1. Prepare Industrial Master Plans for all new identified industrial corridors and nodes : GoTN will prepare comprehensive master plans to guide industrial development in a planned manner in all new industrial corridors and nodes. These would transparently identify areas and zones identified for industrial development and would comprehensively assess and address environmental impacts. The plans would be integrated with the plans formulated by the Chennai Metropolitan Development Authority (CMDA), and the Department of Town and Country planning (DTCP), to enable environmentally sustainable development of urban areas. Further, the plans will be prepared to preserve forest cover in corridors, to maintain stability of the ecosystem, including soil and water conservation and protection of livelihoods of communities dependent on them.
2. Prepare and enforce Environmental Management Plans for existing Industrial Areas to identify and address gaps in environmental infrastructure and monitoring. These plans would be prepared based on a comprehensive independent assessment of total pollution loads in addition to concentration based standards. Additional measures to tackle pollution in line with modern environmental standards with sound environment principles and provision for creation of shared facilities for waste management (including hazardous wastes), effluent management and other environment infrastructure would be initiated.

3. Remediate critically polluted industrial areas. Industrial areas classified as critically polluted would be taken up for remediation measures on priority in a time-bound manner.
4. Implement Continuous and Emission Monitoring Systems in all industrial areas. The Tamil Nadu Pollution Control Board (TNPCB) would expand the Continuous Pollution and Emission Monitoring Systems across all industrial areas in the State in a phased manner covering all industrial areas managed by SIPCOT, TIDCO and SIDCO and private developers.
5. Stringent enforcement of guidelines for conduct of Environment Impact Assessment and its compliance. GoTN shall strictly enforce guidelines for conduct of Environment Impact Assessment (including transparent conduct of public hearings) and its compliance.
6. Periodic review of pollution standards: GoTN shall periodically review pollution norms and standards in line with National legislation, guidelines and International best practices.
7. Transparent mechanisms and on-line tracking of issue of consents: TNPCB is already in the process of web-enabling and online integration of line departments, and issue of consents. The consents provided can be tracked online.
8. Review guidelines for locating industries: GoTN would review its policy and guidelines for locating of industries and infrastructure facilities to remove discrepancies and contradictions in existing guidelines, incorporate best practices in environment management and factoring lessons from implementation.
9. Environment audits: GoTN would collaborate with industry to evolve a system of environment audits and disclosure of environment resource use by industry. The objective would be to develop a comprehensive baseline of environmental resource use by industry in the State and to progressively minimise resource intensity of industrial activity. Regular monitoring of the industrial effluents would help achieve better compliance of environmental standards.

10. Promote water recycling and re-use: GoTN shall progressively move to comprehensively limit extraction of ground water for industrial use while taking steps to provide alternate options for industrial water use including desalination and recycling of domestic sewage. The State has taken a lead on implementing the zero liquid discharge system and TNPCB is the first in the country in implementing Zero Liquid Discharge (ZLD) concepts in Textile and Tannery sectors. Environment-friendly technologies including recycling and reuse are being encouraged and incentivised.

2.2.3. Urbanisation

Tamil Nadu ranks first on share of urban population among large States in the Country and third in terms of absolute urban population. As per provisional estimates of 2011 Census, Tamil Nadu, with a provisional urban population of 34.9 million, has 48.45 percent of its population living in urban areas. Urban population growth in the State (27 percent during 2001-11) outpaced rural population growth (6 percent) during the same period. Nearly, 58 percent of the urban population live in the top 25 Urban Agglomerations (UAs). In many of these UAs including Chennai, extended areas beyond the core city are exhibiting faster growth, yet urban services have tended to lag their core city counterparts.

Given that basic urban services like public transport, affordable housing, piped water supply, sewerage and solid waste management continues to elude a substantial portion of existing urban population, this rapid growth in urbanisation is causing several adverse environment implications with negative impacts for public health and quality of urban living with such impacts being most severe on the urban poor. GoTN recognises the importance of correcting this scenario and a number of infrastructure investments and service delivery targets envisaged under Vision TN 2023 have a direct bearing on urban environment.

Strategies and Actions

1. Formulate Master plans and land-use guidelines across the State. These master plans would define land-use and zoning for urban development and

would comprehensively factor environmental considerations. GoTN and its agencies recognise the need to plan for earmarking additional land for non-agricultural use particularly in peripheries of large cities. GoTN would streamline policies and guidelines for land-use planning and shall use mechanisms such as land pooling, Transferable Development Rights etc., to allocate land for urban development in an equitable and transparent manner.

2. Necessary modifications shall be made in Development Rules and Regulations taking into consideration the environmental concerns.
3. Expedite creation of affordable housing starting with urban agglomerations (with population greater than 5,00,000) with specific focus on creation of affordable housing for the Economically Weaker Sections for all the urban areas. In order to make spatial planning effective, Regional Plan, Master Plan and Zonal Plan will be prepared and periodically updated state-wide.
4. Initiate a mission mode programmes to renew and clean up river systems and water bodies in all cities. The Chennai City River Restoration Trust has been set up with the mandate of development and improvement of eco-parks, eco-restoration of rivers, water bodies and waterways with the view to maintain eco-balance, water conservation, minimize and mitigate pollution and increase carrying capacity in rivers in Chennai city. Further, Tamil Nadu State Wetland Authority has been constituted and is the nodal agency for conservation and sustainable management of Wetlands in the State.
5. Implementation and enforcement of legislation to promote rainwater harvesting (mentioned in page number 5 under 2.1.1 Water Resources; Para 4.b in this document)
6. Programmatic provision of infrastructure to facilitate universal water, sewerage and sanitation access in all urban areas with focus on urban poor. As envisaged in Vision TN 2023, GoTN would achieve universal water and sanitation access in all urban areas by 2023. GoTN shall also target to achieve recycling and reuse of at least 30 percent of domestic waste-water generated in all cities by 2020.

7. Increase share of public transport. (mentioned in page number 9 under 2.1.2 Air; Para 4 in this document.)
8. Effective mechanisms for safe management of solid waste: GoTN would accord highest priority to achieve compliance to SWM (Solid Waste Management Rules, 2016) in all urban centres by 2020. A special task force will be constituted at district level to find sustainable solution to the management of municipal solid waste in urban localities in the districts. It already has formulated policies and rules for management of bio-medical waste, plastic waste and e-waste. Facilities for handling construction waste and debris would also be created in all large cities.
9. Promotion of Green Buildings: GoTN would incorporate green building norms in municipal building bye-laws and code including implementation of provision for rainwater harvesting and waste-water recycling in all municipal corporations.

In addition State level actions arising out of the recently formulated guidelines for construction projects in urban areas will be reviewed and implemented.

2.2.4. Energy

The energy sector in Tamil Nadu has been the prime mover of the economy over the last several decades. Growth in manufacturing was aided by sufficient availability of power. GoTN is cognisant of the need to increase the share of thermal power generation and would put in place mechanisms to effectively implement air quality standards for this capacity addition. The State has also planned to develop transmission infrastructure to effectively evacuate power from the existing and new power generating stations to the Grid for distribution.

Strategies and Actions

1. Measures to reduce air pollution and improve water efficiency of thermal power plants: Continuous Emission Monitoring systems would be installed at all thermal power plants in the State. To minimize environmental impacts, efficient thermal technology and clean coal technology shall be used. Measures to audit and improve water efficiency at power plants would also be initiated.

2. Continued thrust to clean and renewable energy: Tamil Nadu is committed to maintain its leadership in clean energy production. The Vision TN 2023 document of Government of Tamil Nadu envisages the development of eleven marquee projects which includes clean energy projects mainly solar generation that will create a huge positive impact and provide significant spin-off benefits. Overall 10,000 MW of solar power is envisaged to be created through State sector investment and private sector investments.

Solar energy can be used as an alternative for fossil fuels as it is non-polluting, clean reliable and renewable source of energy. Thrust to Demand Side Management and adoption of Energy Efficiency measures: GoTN would initiate Demand Side management measures to conserve and reduce energy intensity in various economic sectors. It will implement energy conservation measures in all government buildings in a phased manner. Universal energy efficient street lighting would be implemented in all parts of the State in a phased manner by 2023.

2.2.5 Mining and Quarrying

The State Government would continue to regulate the mining and quarrying operations in such a way that they lead to the least environmental damages.

Inline with the Government of India's direction, District Level Environment Impact Assessment Authorities and District level Expert Appraisal Committees are being constituted to accord Environmental Clearances for mining and quarrying projects.

Strategies and Actions

1. Comprehensive Environmental Impact Assessment studies to be the basis for allocating mining and quarrying activities.
2. Effective Implementation of all regulations for mining and quarrying.
3. Implementation of appropriate Environmental Management Plan for the restoration of affected areas.
4. Recycling of construction debris and promotion of alternative construction materials to avoid pressure on natural resources mainly river sand.

2.3. Tackle Climate Change impacts

The NEP 2006 observes that climate change, resulting from anthropogenic emissions of a suite of gases called Greenhouse gases or GHGs due to fossil fuel use, certain agricultural and industrial activities and deforestation, lead to their increasing concentrations in the atmosphere and has the potential over the next few generations, to significantly alter global climate. Climate change is expected to result in large changes in ecosystems, leading to possibly catastrophic disruptions of livelihoods, economic activity, living conditions and human health. On the other hand, abatement of GHGs would involve significant economic costs with the impact more severely felt by the poor who have the least adaptive capacity.

The National Action Plan on Climate Change (NAPCC) taken up by Ministry of Environment, Forests and Climate Change (MoEF&CC), GoI clearly outlines its first principle as “protecting the poor and vulnerable sections of the society through inclusive and sustainable development strategy, sensitive to climate change”. GoTN recognises that proactive measures for adaptation to climate variability and change can substantially reduce many of the adverse impacts and thus contribute to livelihood security particularly of the vulnerable sections of population.

Strategies and Actions

1. CCARAI: Tamil Nadu is one of the four partner States of an Indo-German development cooperation project for Climate Change Adaptation in Rural Areas of India (CCARAI) which aims to contribute to improved livelihoods and adaptive capacities of vulnerable rural communities in India. The Department of Environment, Government of Tamil Nadu is the nodal agency coordinating this initiative. The project focuses on integrating the issue of climate change adaptation in various sector policy decisions that reduce risk and enhance the adaptive capacity of the most vulnerable sectors and groups. It will also develop concrete adaptation measures together with the Indian State development programmes and supports the up-scaling of successful technical and financial adaptation approaches. In order to achieve this, the project has the following components:

State Action Plan on Climate Change

- Vulnerability and risk assessment.
 - Development of technical adaptation options.
 - Climate proofing of rural development programmes.
 - Development of adaptation oriented financial instruments.
 - Information and knowledge management to support mainstreaming national discussions on climate change adaptation.
 - Capacity development.
2. Preparation and implementation of the State Action Plan on Climate Change: The State Action Plan on Climate Change (SAPCC) for Tamil Nadu (in line with NAPCC guidelines) has been endorsed by the MoEF&CC, GoI on 31st March 2015. The SAPCC covers the past and current scenario and future climate projections, as well as the adaptation and mitigation strategies for seven sectors identified by the Steering Committees of the State, constituted for seven different themes including (1) Water Resources, (2) Sustainable agriculture, (3) Sustainable habitat (4) Forest and biodiversity, (5) Energy efficiency and renewable energy, (6) Coastal area management and (7) Knowledge management. Each of these Steering Committees was represented by respective Chairman/ Secretary, Nodal Officers and Working Group Members. These members include Government Departments, NGOs, Academic Experts and Scientists. Consultative inputs were sought from wide range of stakeholders in all the agro-climatic zones of the State covering all the districts. The wide range of stakeholders included farmers, fishermen, tribal groups, people in rural and urban areas, students and scientists in periodically revising and updating the SAPCC. At present, the strategies framed in the Tamil Nadu State Action Plan on Climate Change (TNSAPCC) are in the process of being implemented within each of the identified sector by seeking funds from various project financing mechanisms like Adaptation Fund Board, Green Climate Fund and National Adaptation Fund for Climate Change and also from all the National Missions of the Country pertaining to NAPCC. GoTN recognises that adaptation to climate change requires integrated solutions that simultaneously address livelihood improvements and environmental sustainability.

3. Commitments to reduction in GHG emissions: A study on Carbon Footprint of Tamil Nadu estimated that the baseline emission during 2009-10 was 111.86 million tonnes of which power generation were estimated to contribute 84.7 million tonnes while industry and agriculture contributed an estimated 18.12 million tonnes and 16.42 million tonnes respectively. Tamil Nadu will place strong emphasis on reducing GHG emissions and shall strive to exceed the targets and goals set under the National Action Plan on Climate Change by the Government of India.

2.4. Strengthening environmental governance and institutional capacity

Several constitutional, legislative and regulatory provisions related to environment have been enacted and institutionalized by Central, State and Local Governments. Box 1 captures the prevailing legislative framework for environment management.

Box 1 Prevailing legislation for environment management

The present legislative framework is broadly contained in the umbrella Environment (Protection) Act, 1986; the Water (Prevention and Control of Pollution) Act, 1974; and the Air (Prevention and Control of Pollution) Act, 1981. The law in respect of management of forests and biodiversity is contained in the Tamil Nadu Forest Act, 1882, the Indian Forest Act, 1927; The Forest (Conservation) Act, 1980; the Wildlife (Protection) Act, 1972; Biological Diversity Act, 2002 and Biological Diversity Rules, 2004. The following Acts and Rules framed are of particular relevance:

Environment

- Environment (Protection) Act, 1986
- Environment (Protection) Rules, 1986 as amended

Water

- The Water (Prevention and Control of Pollution) Act, 1974 as amended in 1978 and 1988
- The Tamil Nadu Water (Prevention and Control of Pollution) Rules, 1983
- The Water (Prevention and Control of Pollution) Cess Act, 1977 as amended in 1991 and 2003
- The Water (Prevention and Control of Pollution) Cess Rules, 1978 as amended in 1992

Air

- The Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987
- The Tamil Nadu Air (Prevention and Control of Pollution) Rules, 1983

Noise

- Noise Pollution (Regulation and Control) Rules, 2000 as amended in 2010

Solid waste

- Fly Ash Utilization Notification, 1999 as amended in 2016
- Plastic Waste Management Rules, 2016
- Solid Waste Management Rules, 2016

Hazardous waste and others

- Hazardous and other Wastes (Management and Transboundary Movement) Rules, 2016
- Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 as amended in 1994 and 2000
- The Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms / genetically engineered organisms or cells Rules, 1989
- The Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996
- Bio-Medical Waste Management Rules, 2016

- The Batteries (Management and Handling) Rules, 2001 as amended
 - E-waste (Management) Rules, 2016
 - Construction and Demolition Waste Management Rules, 2016
- Coastal Zone Regulation
- Coastal Regulation Zone Notification, 1991 as amended in 1994, 1997 and 2011
- EIA
- The Environment Impact Assessment Notification, 2006 as amended in 2009
 - The District Level Environment Impact Assessment Authority Notification, 2016
- Environment Tribunal
- The National Green Tribunal Act, 2010
- Others
- The Public Liability Insurance Act, 1991 as amended in 1992
 - The Public Liability Insurance Rules, 1991
 - The Wetlands(Conservation and Management) Rules, 2010

Institutional framework for environment management and protection in Tamil Nadu flows from the above legislative framework and comprises a range of institutions as shown in Box 2 below.

Box 2 Prevailing Institutional framework for environment management

Tamil Nadu Pollution Control Board (TNPCB): TNPCB was constituted by GoTN in 1982 in pursuance of the Water (Prevention and Control of Pollution) Act, 1974 (Central Act 6 of 1974). It is responsible for enforcing provisions of the Water (Prevention and Control of Pollution) Act, 1974, the Water (Prevention and Control of Pollution) Cess Act, 1977, the Air (Prevention and Control of Pollution) Act, 1981, and the relevant rules made under the Environment (Protection) Act, 1986. Main functions of the TNPCB are to plan a comprehensive programme for the prevention, control and abatement of water and air pollution, inspection of sewage and trade effluent treatment plants for their effectiveness, inspection of industrial plants control equipment and to give directions to take steps for the prevention, control or abatement of air pollution, collect samples of sewage, trade effluents, emissions of air pollutants and to analyze the same for specific parameters and to perform such other functions as may be prescribed by the State Government or the Central Pollution Control Board.

Department of Environment (DoE): DoE was created in 1995 as the Nodal Department for dealing with environmental management of the State. Department's responsibilities include:

- Implementation of National River Conservation Plan (NRCP) and National Lake Conservation Plan (NLCP)
- Carrying out Environmental awareness programmes for school students through National Green Corps.
- Enforce the provisions of the Coastal Regulation Zone (CRZ) Notification.
- Implementation of Coastal Disaster Risk Reduction Project and Integrated Coastal Zone Management Plan with World Bank assistance.
- Implementation of Tamil Nadu State Action Plan for Climate Change
- Provide web-based environmental information through Environmental Information System (ENVIS) on State of Environment and related issues of Tamil Nadu.

Tamil Nadu State Level Environment Impact Assessment Authority (SEIAA) and District Level Environment Impact Assessment Authority (DEIAA): The State Level Environmental Impact Assessment Authority (SEIAA) has been constituted as an arm of Government of India vide the EIA notification issued by the Ministry of Environment, Forest and Climate Change, Government of India under the EPA, 1986 in September 2006 for issuing Environmental clearance for various developmental projects. The function of SEIAA covers screening, scoping and appraisal of projects or activities as specified under the said notification.

The MoEF& CC, GoI has also constituted the District Level Environment Impact Assessment Authority (DEIAA) in January 2016 for grant of environmental clearance for Category 'B2' Projects pertaining to mining of minor mineral of lease area less than and equal to five hectare as specified under the said notification.

Tamil Nadu State Coastal Zone Management Authority (TNSCZMA): Notified by Government of India under EPA Act 1986, the TNSCZMA is responsible for regulating coastal developmental activities falling under the Coastal Regulation Zone (CRZ) and is mandated to implement CRZ 1991 and the current CRZ 2011 Notifications.

Role of other departments and agencies: In addition to the above, several agencies/departments of Government of Tamil Nadu would also address environmental concerns in discharge of activities falling within their domain for the purpose of mainstreaming environmental consciousness and for tackling environmental issues on a holistic manner on all fronts in the State.

GoTN is acutely aware of the fact that notwithstanding the plethora of legislation and a variety of institutions set up for monitoring and managing the Environment, effective regulation, monitoring, surveillance and protection of environment remains a challenge in view of the following gaps and concerns:

- Clarity on Institutional roles, mandate and charter with respect to environment: While a number of institutions have been notified and set up for managing the environment to address various legislative requirements, there is a need to review the institutional framework for environment management with respect to clarifying their roles and fixing accountability. This policy also recognises that environment management is a cross-cutting subject with line departments and agencies required to play a vital role in implementing safeguards and mechanisms to protect environmental resources.
- Inadequate capacity and expertise: Most of the institutions set up for monitoring and managing the Environment have been constrained by inadequate capacity and expertise to deal with the growing and often changing demands on them. Further, these agencies are sometimes inadequately equipped with technical capabilities and expertise to deal with modern practices and newer industry sectors that Tamil Nadu is managing to attract by its intrinsic industrial strengths and improving investment climate. Despite fairly extensive legislation and regulations, enforcement tends to be a challenge due to ambiguity in institutional roles, weak accountability, inadequate monitoring capacity and expertise within agencies.
- Inadequacies in Information Infrastructure: Several initiatives have been undertaken and are under way to improve the information infrastructure for environment management. The Department of Environment and Forest Department have initiated several studies and interventions to improve both the quality and quantity of baseline information on a wide variety of environmental resources including coastal areas, forests, wetlands, bio-diverse areas etc., through use of modern methods including remote sensing, GIS etc. Similarly, the TNPCB has launched Continuous Ambient Air Quality Monitoring in select industrial areas and urban centres. There is need for further efforts in this direction.
- Need for closer engagement with stakeholders: Despite fairly intensive efforts to involve wider set of stakeholders in decision making, there is clearly more to be done in this regard. While processes for impact assessments and public participation need to be strengthened, GoTN is critically aware of the need for proactive awareness generation efforts and transparent stakeholder engagement early-on for sustainable development.

- Need for strengthening and streamlining process of consents, approvals and clearances: GoTN is acutely aware that making the process of consents and approvals more transparent, stringent and yet time-bound is critical to improve the investment climate to promote environment friendly investments in the State. While several initiatives including online tracking of applications etc., are underway, GoTN recognises further streamlining of these processes is critical for addressing environmental concerns as well as improving investment climate.

Given that Tamil Nadu is rapidly urbanising and industrialising, it is critical to ensure that the above constraints to governance and institutional framework dealt with are continuously improved upon. Key actions towards improving environmental governance and strengthening the institutional framework are listed below:

Strategies and Actions

1. Augmentation of managerial and technical expertise and capacity in GoTN agencies: GoTN will carry out a zero-base assessment to identify and assess the specific technical and managerial gaps within GoTN agencies with respect to environment management and would initiate steps to address these gaps on priority through options including:
 - a. Training and up-skilling actions to develop additional capabilities and expertise.
 - b. Creation and induction of expert panels wherever felt necessary to bring forth specialised one-off expertise requirements that are not of recurring nature and to facilitate a system of advance ruling on compliance requirements and issue of clarifications.
 - c. Exploring use of independent third party audits to complement TNPCB's surveillance and monitoring as is being done in a few other States.
2. Improving technical facilities and information management infrastructure. GoTN would continue its thrust to improve information management and technical facilities. This would particularly focus on the following:

- a. Building a comprehensive mapping of environmental resources in the State through extensive use of technologies including GIS and remote sensing.
 - b. Expand, modernise facilities including equipments, testing labs, online and continuous monitoring of pollution levels and environment resources.
3. Strengthen and streamlining processes and mechanisms for consents, impact assessments and approvals: GoTN would continue to strengthen its processes for consents, assessments and approvals to enable stringent enforcement of regulations while making the process transparent, environmentally sound, efficient, citizen and investor friendly covering the following:
- a. Continuous improvements to the CARE initiative of TNPCB to reflect and enable web-enabled online tracking and dissemination of status of applications.
 - b. Strengthen the single window process and further streamlining of process for issue of Consent to Establish green and orange category industries for which a composite No-Objection Certificate is issued by the Single Window Committee.
 - c. Time-bound decision making, issue of consents and reporting of information online on consents issued including time taken for issue.
4. Comprehensive assessment of environmental standards, benchmarks and implementing monitoring protocol to ensure enforcement of legislation and standards: GoTN shall undertake a comprehensive review of environment norms and standards based on a benchmarking of national and international best practices and shall revise the same periodically. Further, these norms and standards shall be reviewed and updated periodically. In addition, GoTN shall review monitoring protocol to ensure appropriate enforcement of environmental legislation and applicable standards/norms.

5. Foster Research and Development (R&D): GoTN recognises the need to foster capable institutions to promote research and development and will encourage collaborative partnerships among Government, industry and academia to develop innovative solutions for meeting environmental challenges. GoTN would support academic and research institutions in establishing and scaling up R&D initiatives to engender innovative solutions to deal with present and future environment challenges.
6. Build Awareness and enable greater stakeholder's involvement: GoTN recognises the need to build greater awareness among various stakeholders on their rights and responsibilities towards the environment. GoTN would launch specific initiatives to create awareness involving participation of women, self help groups, communities, civil societies, Government Organizations, NGOs and other stakeholders through employment generation, human development and sustainable environment management. Guidelines and actions for public hearings and participation shall be adhered to in letter and spirit.
7. Alignment of actions towards achieving Sustainable Development Goals: For achievement of sustainable development in the long run, Tamil Nadu will coordinate actions towards achievement of National Sustainable Development Goals (SDGs) by mainstreaming them into the planning process. The SDGs would be integrated into the three pillars of sustainable development viz. Economic, social and environmental with a clear set of implementation actions towards achieving them.
8. Financing and Resource Allocation: As indicated in the NEP 2006, the principle that economic efficiency should be sought to be realised in public actions for environmental conservation (along with its implications of Polluter Pays and Cost minimisation) will be upheld. Accordingly, the policy would promote the internalization of environmental costs, including through use of incentive-based policy instruments, taking into account, the approach that the polluter should, in principle, bear the cost of pollution, with due regard to public interest and without distorting international trade and investment.



GoTN would explore other potential fiscal instruments for augmenting resource availability for 'greening' and environment management initiatives including (a) Cess on specific user groups with a relatively higher polluting status including polluting industries and on vehicles; (b) Subsidies and incentives to promote environment friendly interventions; (c) Make environmental management self driven in Tamil Nadu by introducing eco taxes and integrating it into the Goods and Services Tax (GST); (d) Tamil Nadu will strive towards ensuring that taxation of petroleum products and other greenhouse gas emitting fuels is done in such a way as to ensure that the polluters are forced to pay at the location where the pollution occurs i.e., at the point where the fuel is sold and consumed; (e) Tax rebates for green buildings and other initiatives to promote energy efficiency; (f) Viability support to Public-Private Partnership initiatives for creation of environmental assets.

3. POLICY REVIEW AND IMPLEMENTATION

To facilitate implementation of the TN State Environment Policy 2017 the Government will constitute a TN Environment Mission under the stewardship of Hon'ble Chief Minister, GoTN. The Mission will be supported by Task Forces constituted with a clear terms of reference, institutional arrangements and resources for implementation of specific components and measures identified in the policy. Detailed modalities for the TN Environment Mission would be issued separately.

GoTN recognises that development priorities and their environmental implications dynamically change with new challenges and opportunities emerging from time to time. GoTN is also cognisant of the need to factor changes and adopt best practices in National and Global environmental governance in a timely manner.

The TN State Environment Policy 2017 is thus envisaged as a dynamic document which would be periodically reviewed to align it with newer information, knowledge and developments to keep it current and contemporary. In this regard, consultations shall be undertaken with diverse stakeholders once in five years to review progress with respect to priorities, strategies and actions identified, address emerging environmental issues if any and to undertake course corrections as needed.

