



# ENVIS

## Newsletter



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# Coastal Management in Tamil Nadu



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# Coastal Management

Managing the coast in the face of climate change involves both ecosystem based adaptation measures and community based adaptation measures. Coastal adaptation and risk management includes number of activities related to the social and institutional processes of framing the adaptation problem, identifying and appraising adaptation options, implementing options, and monitoring and evaluating outcomes. The IPCC classification of coastal adaptation strategies consisting of retreat, accommodation and protection is now widely used and applied in both developed and developing countries.

As a consequence of climate change induced sea-level rise coastal systems and low-lying areas face the threat of submergence, coastal flooding, and coastal erosion. Subsequently acidification and warming of coastal waters are predicted to continue with significant negative consequences for coastal ecosystems. The population and assets exposed to coastal risks as well as human pressures on coastal ecosystems will increase significantly in the coming decades due to population explosion. Thus managing the coast in light of climate change is highly imperative.

With lessons learnt from the global experiences, serious attempts have been made to manage the Indian coast during the last 25 years in terms of regulating the activities and managing disasters. In course of time many policies have been framed to maintain environmental quality and sustainably manage the coastal resources. India's coastal zone has to address the demands of all the stakeholders ranging from traditional local communities, administrators, to academic researchers etc. After facing tremendous challenges regulatory measures like Coastal Regulation Zone (CRZ) was issued in 1991 in India with provisions and prohibitions for various activities. The concept of Integrated Coastal Zone Management (ICZM) has been taken up with the support of spatial decision-support tools derived from satellite data. Since 2004 a series of disasters that struck the Indian coast necessitated the formulation implementable approaches through regulatory measures. Subsequently, the CRZ 2011 notification was framed based upon a bottom-up approach as a good governance tool. The country has strengthened its potential in coastal management, disaster management and several community based field projects to enhance participation of stakeholders.

# Coastal area management in Tamil Nadu

Dr. H. Malleshappa ,I.F.S.\*

Realizing the importance and vulnerability of the long coastline of Tamil Nadu, the Tamil Nadu State Action Plan on Climate Change (TNSAPCC), endorsed by the Ministry of Environment, Forests and Climate Change, Government of India had identified Coastal Area Management as a separate sector and undertake exclusive adaptation strategies to face climate change impacts. The strategies to manage climate change impacts as envisaged by the TNSAPCC are as follows:

**Strategy 1: Develop a Tamil Nadu-Integrated Coastal Protection Plan (TN-ICPP) to adapt to projected sea level rise, enhanced intensities of cyclones, storm surges, and extreme rainfall. Under the strategy specific activities include**

- i. Assess the intensity and recurrence frequency of cyclones and storm surges and their land fall locations due to Climate Change.
- ii. Evaluate the individual and combined impacts of sea level rise, cyclones, storm surges, extreme rain fall and Tsunami on TN coast due to Climate Change.
- iii. Accordingly revise the norms for (a) coastal zone infrastructure development including housing, bridges, roads, power installations, Ports, etc. (b) waste management.

**Strategy 2: Avert enhanced coastal erosion due to Climate Change and protect the coastal zone.**

- i. Undertake a study to assess impacts of different climate scenarios on coastal erosion.
- ii. Assess the design augmentation requirement/ retrofitting/preserve different coastal protection works such as sea wall, groynes, jetties, sand dunes etc. due to projected moderate and intense erosions due to climate change and implement giving protection to river banks, dredging and de-siltation and restoring river runoff.

iii. Identify and plant appropriate heat tolerant, location specific mangrove species for rejuvenation/ afforestation in moderate and high erosion areas along the TN coast line for preventing enhanced erosion and for enhancing carbon sequestration.

iv. Increasing tree cover along the coastal zone with appropriate trees and identify stretches where it can be done.

v. Improve and/or create channels for rainwater/river water drainage into the sea in view of extreme rainfall and for facilitation of draining out of inundated coastal water in a climate change scenario.

**Strategy 3: Strengthen resilience of coastal communities in view of projected climate change**

- i. Strengthen resilience of fishing communities by assessing the likely impact on fish catch off the coast of Tamil Nadu. Design programmes to adjust to the changes and ensuring livelihoods. There is a need for demonstration of technologies using resilient species and assess health of the resources and the diversity.
- ii. Strengthen resilience of farmers (agriculture) through –Identification of cultivars that can grow in on farm conditions in a warming scenario -Identify cultivars that are tolerant to saline soils.
- iii. Strengthen resilience of coastal rural habitats by advising measures on retrofitting/ relocation of coastal rural housing in view of the recurrence and intensity of extreme events and sea level rise due to climate change. Facilitate through policy formulation for support of the above measures financially and Build/ retrofit dykes or apply appropriate locality specific measures in view of climate change impacts.

\* Director, Department of Environment, Govt. of Tamil Nadu.





#### Strategy 4: Avert enhanced salt water intrusion in the ground water and ensure water security in coastal Tamil Nadu

- i. Increase network monitoring of wells to assess water quality on a regular basis and take appropriate timely action.
- ii. Identify appropriate areas for new bore wells.
- iii. Encourage soil management, through soil moisture retention measures, and continuous vegetation to support soil infiltration and groundwater recharge besides reducing erosion risk in rural areas.
- iv. Reduce extraction of ground water through mandatory use of low horse power pumping machines.
- v. Identify areas where ground water has become saline and salinity is likely to increase with climate change. Establish desalination plants in such areas.
- vi. Undertake artificial recharge of wells to secure water availability - Locally capture surface water runoff into derelict wells to restore groundwater levels and engineer infiltration with recycled wastewater.

#### Strategy 5: Conserve biodiversity in the coastal zone

- i. Assess base line flora and fauna data on biodiversity of the TN coastal zone – richness, distribution, present status, threats, anthropogenic impacts etc.
- ii. Conserve and protect marine biodiversity in Gulf of Mannar all marine and coastal sanctuaries, endangered and vulnerable bar mouths, estuaries, salt marshy lands, sand dunes, mangroves, in view of warming of the sea



iii. Ensure livelihood of fishermen in the Gulf of Mannar Tamil Nadu, through alternate technologies (solar energy/ wind energy for fishing, open sea cage culture, low intensive sea food production systems like mussels & seaweeds)

iv. Coastal marine habitat enhancement / restoration programmes, sea ranching, transplantation and germplasm conservation

#### Strategy 6: Avert pollution of water and soil in the coastal zones caused by industrial (power plants and other industries) and domestic wastewater and solid waste management practices

- i. Implement the integrated waste water and solid waste management plan in coastal areas. Harness energy from municipal solid waste (MSW) including provision of new technologies that reduce waste water discharge through sedimentation and filtration microbial conversion, Nutrient and mineral extraction and by composting / fermentation / biogas
- ii. Undertake additional cooling of wastewater from power plants, RO plant, and nuclear plant by mixing with domestic effluents to reduce thermal load on the coast.
- iii. Reuse waste water through biological treatment (social or community water budgeting-air conditioners, generators, furnaces, heaters, chimneys, ice plants, cold storages and introduction of heat tax)

Thus it is expected that the above mentioned strategies would improve resilience to climate change through biodiversity conservation and sustainable livelihood. These strategies are on par with the ecosystem based and community based adaptation strategies as mentioned in the IPCC 2014 as well as with the National and State Policies related to coastal management.

Source: Department of Environment, 2015. Tamil Nadu State Action Plan on Climate Change, 232pp.

Photo credits: D. Senthil

## EVENTS

### Centenary Walk of the Zoological Survey of India

The Zoological Survey of India completed 100 years on 1<sup>st</sup> July 2015. A centenary walk was organized by the Zoological Survey of India, Southern Regional Centre, Santhome Chennai on 01.07.2015 at Gandhi statue, Marina Beach, Chennai. Thiru Thoppu N. D. Venkatachalam, Hon'ble Minister for Environment



Principal Secretary to Government, Environment and Forest Department, delivered the special address and highlighted the importance of biodiversity and the urgent need for taxonomic research. Dr. Jayanthi M., I.F.S. Additional Director, Department of Environment along with the staff of the ENVIS Centre, Department of Environment also participated in this programme. More than 100 school students along with the staff of the Zoological Survey of India also participated in this event.



### Awareness programme for Tamil Nadu Forest Department Staff

A one day awareness programme on biodiversity was conducted on 13<sup>th</sup> September 2015 at Kalakad Mundanthurai Tiger Reserve, Tirunelveli. Thiru Hans Raj Verma I.A.S., Principal Secretary to Government, Environment and Forest Department, delivered the special address and highlighted the importance of biodiversity and the need to conserve the



tiger as a flagship species. He later distributed T-shirts to the department staff. Dr. H. Malleshappa, I.F.S., Director, Department of Environment, also interacted with the staff present there. An inspection of the Kalakad Mundanthurai Tiger Reserve was also carried out after the awareness programme.



### Training Programme on ICZMP

A one day Training programme on Integrated Coastal Zone Management Plan (ICZMP) was conducted on 29.07.15 at Hotel Clarion, Chennai by the Department of Environment, Government of Tamil Nadu through the Care Earth Trust, for State level officers in various line departments. Thiru. Hans Raj Verma I.A.S., Principal Secretary, inaugurated the training programme. Dr. H. Malleshappa, I.F.S., Director, Department of Environment welcomed the participants and briefed them about ICZMP. Presentations on various topics such as Coastal Biodiversity, Alternative Livelihoods, Shore line Management, Marine Pollution, Eco-tourism, Coastal vegetation were handled by experts from different institutions like SDMRI, NCSCM, Care Earth etc.





## One day training programme for the NGC teacher co-ordinators

The one day training programmes for the NGC teacher co-ordinators was conducted by the Department of Environment, Government of Tamil Nadu at the Guindy National Park on 7th August 2015. Dr. H. Malleshappa, I.F.S., Director, Department of Environment, inaugurated the programme and interacted with the NGC teacher coordinators from various districts. He asked the NGC teacher coordinator to evaluate themselves and how they could improve the performance of



their district. The Director, Department of Environment also assured the NGC teacher coordinators that the Department will provide all the support for creating awareness on various environmental issues such as plastic avoidance etc., Dr. Jayanthi M. IFS., Additional Director, Tmt. N. Krishnaveni, Executive Engineer, EMAT and the staff of the ENVIS centre also participated in the workshop.

## Training programme for Indian Administrative Service probationers

A half day training programme for Indian Administrative Service probationers of the 2014 batch was conducted at the Anna Institute of Management, Greenways Road, Chennai on 9<sup>th</sup> July 2015. Dr. H. Malleshappa, I.F.S., Director, Department of Environment, Government of Tamil Nadu addressed the probationers and outlined the activities of the Department of Environment and the ENVIS centre. Dr. Jayanthi M. IFS., Additional Director and the staff of the ENVIS centre also participated in the training programme.



## Policy workshop on Agricultural Biodiversity

A one day policy workshop on the topic “Agricultural Biodiversity for Resilience: Needs of Farming Communities” was conducted by the DHAN foundation at the Koodal Hall, Anna Univeristy, Chennai on 24<sup>th</sup> July 2015. Dr. H. Malleshappa, I.F.S., Director, Department of Environment, Government of Tamil Nadu inaugurated the programme and delivered the inaugural address. He highlighted the need and the importance of agricultural biodiversity



for sustainable development. He also said that the farmers are the backbone of the society. Dr. Jayanthi M. IFS., Additional Director and the staff of the ENVIS centre also participated in the training programme. More than 50 farmers participated in this programme. Farmers with innovative ideas and success stories were felicitated at the end of the programme.

## ENVIS Advisory Committee Meeting

The ENVIS Advisory Committee was convened by the Director of Environment at his chamber on 25th August 2015 at 3.00 P.M. The meeting was conducted to review the activities of the ENVIS centre by the Advisory Committee members. The following Advisory committee members were present, Dr. H. Malleshappa, I.F.S., Director, Dept., of Environment, Dr. Jayanthi .M., I.F.S., Additional Director, Dept., of Environment, Dr. J.K. Patterson Edward, Director, SDMRI, Dr. K. Dhanasekaran, Retd., Professor, Anna University, Dr. G.S. Vijayalakshmi, Retd., Professor, Manonmaniam Sundaranar University. In addition Shri B. Sugirtharaj Koilpillai, I.F.S Retd., Member, SEAC and Dr. Jayshree Vencatesan, Managing Director, Care Earth Trust were also present as expert invitees.



The Director of Environment welcomed the gathering and explained about the ENVIS scheme to the Advisory Committee members. The activities of the ENVIS centre were elaborated by the Senior Programme Officer. After the brief presentation, the Advisory Committee Members gave the suggestions to improve and strengthen the ENVIS activities. The Advisory Committee members appreciated the ENVIS activities and encouraged that the 'A' grade received by the centre to be maintained in the future also.



## International Coastal Cleanup day

International Coastal Cleanup day is organized around the world on 3rd Saturday of September every year. It is dedicated to the improvement of beaches, coastal regions and surrounding areas throughout the world. In order to honour this day and also to educate and give awareness to locals on the importance of Clean beaches and trash free oceans, the ENVIS centre of the Department of Environment, Government of Tamil Nadu conducted a coastal cleanup programme on 19th September 2015 at the Marina beach, Chennai.



The programme was inaugurated by Dr. H. Malleshappa, I.F.S., Director, Department of Environment. He explained the importance of keeping the coastal areas clean so that the marine biodiversity is not affected. The Officials of the Department of Environment and the District Institute for Education and Training, South Beach Road, Kamarajar Salai, Triplicane, Chennai along with more than 100 student teacher trainees participated in the cleanup along a 2 km stretch on the marina beach. The waste collected was handed over to the corporation solid waste management unit. The cleanup campaign was aimed to raise awareness on the vast amounts of waste accumulated due to anthropogenic activities on the beaches which if not removed will end up in the ocean.





# PLASTIC OCEAN

192 COUNTRIES BORDERING THE ATLANTIC, PACIFIC, INDIAN OCEANS AND MEDITERRANEAN AND BLACK SEAS PRODUCED 2.5 BILLION METRIC TONS OF SOLID WASTE IN 2010. AN ESTIMATED 8 MILLION METRIC TONS OF PLASTIC ENTERED THE OCEAN THAT SAME YEAR.



## 2.5 BILLION

METRIC TONS OF SOLID WASTE IS PRODUCED ALL AROUND THE WORLD

AND WITHIN THAT  
**275M**  
METRIC TONS IS PLASTIC WASTE

2 BILLION PEOPLE WITHIN 30 MILES OF THE COAST CREATE

**100M**  
METRIC TONS OF COASTAL PLASTIC WASTE

AND EVERY YEAR,

**8 MILLION**  
METRIC TONS OF PLASTIC GOES INTO THE OCEAN

WHAT WE CAN DO

REDUCE PLASTIC IN WASTE STREAM

IMPROVE SOLID WASTE MANAGEMENT

INCREASE CAPTURE & REUSE

HEALTHY OCEANS



JANBROCK ET AL., SCIENCE 2010  
VALDES-LEVINSON, "PLASTIC WASTE IN THE PACIFIC OCEAN", 2007, SANTA BARBARA  
"OCEANICITY", 2010, OCEANICITY.ORG

## 6 DEGREES OF SEPARATION

### How does trash travel?



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**Disclaimer:** The information in this newsletter has been compiled from various sources and does not necessarily depict views of the ENVIS Centre, Department of Environment, Government of Tamil Nadu.