A lot done, a lot more to do!¹

An analysis on Tamil Nadu's Coastal Area Management Policy

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EXECUTIVE SUMMARY

Several initiatives have been introduced and implemented to manage the Indian coast, overseeing activities and managing disasters. These initiatives addressing coastal area management have led to formulation of various policies to manage the coastal resources. Through an analysis of the Tamil Nadu State Action plans on Climate Change (TNSAPCC) between 2009-2020, this paper identifies activities and strategies proposed by the state to address Coastal Area Management (CAM) issues, highlights challenges and propose suitable recommendations to strengthen their policy actions. In the TNSAPCC, Coastal Area Management (CAM) has been identified as a separate sector to undertake appropriate strategies to face climate change impacts in the coastal tract of Tamil Nadu.

As a coastal state, Tamil Nadu has witnessed coastal related disasters and subsequently infrastructural and livelihood interruptions. The state is known for its strong research capabilities and effectively organizing state policies, but climate related subjects have still not made it to the top of the policy agenda. The discussion delves deeper into identifying some of the policy challenges and investigating how the state is contributing to climate policy, specifically its coastal policy theme.

The state climate plans indicate that there have been no significant changes in the strategies and proposed activities in the two plans submitted in the last decade. The revised plan only includes additional sets of tasks that complement the proposed activities. There is no mention of implementation method or monitoring tools to track progress of the activities. Largely the policies address issues surrounding the coastal area including resilience, livelihood and disaster preparedness but there are not enough policies addressing the socio-economic conditions of the communities, coastal erosion prevention or institutional cooperation factors. Finally, based on the analysis a set of policy recommendations are proposed to strengthen Tamil Nadu's state plan:

- 1. Allocate alternative living sheds/spaces in advance to facilitate pre- and post-disaster scenarios
- 2. Introduce health and education plans for coastal communities
- 3. Develop environmental/coastal clearance permits
- 4. Support and maintain the cooperation between various stakeholders working in the coastal region

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Introduction

Policymakers at the national and state levels are experiencing increased pressure to include coastal management policies within their climate and development plans (Sharma, 2016). The urgency is mainly because the coastal areas' communities are entirely reliant on the ecosystem that creates livelihoods and provides for their day-to-day needs. Reaching out to policymakers at the sub-national level the people affected raise concerns about increasing threats to coastal communities from external factors such as coastal hazards, climate change impacts and drivers that act to change local and regional economic conditions (Krishnamurthy et al, 2014). These changes at the community level, in turn, could lead to changes in employment and inequality and affect day-to-day living (Malleshappa, 2016). The federal and the state government has made efforts and are attempting to strengthen their potential in coastal management, disaster management and several community-based field projects to enhance stakeholders' participation. This paper aims to analyse the coastal area management policies implemented in Tamil Nadu since the launch of the State Action Plan on Climate Change in 2009, including a discussion on some of the challenges faced and approaches adopted to implement measures in the coastal areas of the state.

Tamil Nadu is one of the 29 states of India. Its capital is Chennai (formerly known as Madras), the largest city in the state (TNSAPCC, 2014;2020). The state has witnessed the degradation of coastal ecosystem services under continuous human intervention, which has led to the coastal communities' increased vulnerability (Malleshappa, 2016). Although specific laws of Coastal Zone Management, Disaster Risk Reduction (CZM, DRR) have been implemented to prevent such massive environmental deterioration in coastal areas, the environmental problems in coastal regions remain a complicated issue. Unfortunately, the coastal communities, especially the indigenous coastal inhabitants, remain highly exposed to a wide range of natural disasters including floods, droughts, Tsunamis. This means the decreasing ecosystem services' face challenges even though they are not always responsible for the consequences (Sharma, 2016).

Deconstructing the action plan

The State Action Plan on Climate Change of Tamilnadu has a section exclusively on coastal area management in both their 2014 and 2020 lists. In both the plans the strategies and activities proposed are almost the same however in the 2020 plan the action items are further broken down with clear tasks to implement and carry out. The strategies for adaptation to climate change presented in the TNSAPCC for Coastal Area Management have been framed to integrate within the coastal zone planning process. The activities aim to develop an Integrated Coastal Protection Plan for Tamil Nadu to adapt to projected sealevel rise, enhanced intensities of cyclones, storm surges, and extreme rainfall, prevent enhanced coastal communities given projected climate change. The 2020 plan however does not include methods and funding sources on how these activities will be implemented. The 2020 plan also does not show any significant changes in proposed strategies or actions except some additional tasks are implemented. Across both plans, Coastal area management takes priority in the state and has a similar proposed budget of around 4000 crores in both the plans.



So far, many activities are carried out under the "Management and rehabilitation of coastal habitats and biodiversity for Climate Change Adaptation and Sustainable Livelihood in Gulf of Mannar, Tamil Nadu, India" has been prepared and submitted to the Ministry of Environment, Forests and Climate Change, Government of India (MoEF&CC, Gol), for consideration under the National Adaptation Fund (NAF) and the preparation of detailed Project Report is in process (Malleshappa, 2020). The MoEF&CC, Gol has identified the Department for International Development (DFID) as the technical consultant to prepare the project proposals under the National Adaptation Fund (NAF) through National Bank for Agricultural and Rural Development (NABARD) for activities under the Integrated Coastal Zone Management. The State identifies six major action points under the coastal area management category:

- 1. Develop a Tamil Nadu-Integrated Coastal Protection Plan to adapt to projected sea-level rise, enhanced intensities of cyclones, storm surges, and extreme rainfall
- 2. Avert enhanced coastal erosion due to climate change and protect the coastal zone
- 3. Strengthen the resilience of coastal communities because of projected climate change
- 4. Avert enhanced saltwater intrusion in the groundwater and ensure water security in coastal Tamil Nadu
- 5. Conserve biodiversity in the coastal zone
- 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

Various government bodies and knowledge institutions carry out activities on CAM in the State. In the first plan submitted in 2014, a total of 6 broad strategies were proposed for Coastal Area Management in the TNSAPCC, under which 35 sub-activities were taken up. Twenty-seven of these activities were adaptation-related, seven were mitigation-focused, and the remaining one activity related to adaptation and mitigation. The total amount proposed for Coastal area management for 2012-17 was INR 4420 Crore. (TNSAPCC, 2020). In the 2020 plan, the strategies and plans remain the same, the only difference being the revised plan includes further action items to be implemented under each activity. The proposed budget for CAM is 4776 Cr. It is also seen that the total budget of the state was reduced since the funding gap in the initial phase was significant and there was some budget cuts in the Sustainable habitat and Knowledge management categories. Below is a table summarizing the budget allocation indicating almost no change between the two plans.

Details	2012-2017	2020-2030
SAPCC total funding	404,258.14 Cr	324,211.20 cr
Coastal Area Management	4420 Cr	4776 Cr
No of CAM activities	35	35

Overall, whilst there has been little revision taken place between the plans, the 2020 plan include a breakdown of action items for each activity. Find below an example of this difference:



S. No	Strategy			
Strategy 1: Develop a Tamil Nadu Integrated Coastal Protection Plan (TN-ICPP) to ad intensities of cyclones, storm surges, and extreme rainfall				
1.1	Shifting of habitations to safer areas, who are residing in vulnerable areas			
1.2	Holistic integrated development of coast line of Tamil Nadu			
1.3	Assess intensity & recurrence frequency of cyclones, storm surges& land fall			
1.4	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			
2014 5+2	to Action Blan licting out the Coastal Area Management strategy			

2014 State Action Plan listing out the Coastal Area Management strategy

Coastal Area Management

Code	Strategy		Achievements		
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					
CAM/1	Habitation shifting safer areas	to	Development in flood prone areas and resettling encroachment under Integrated Cooum River Eco		

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			restoration by CRRT and Tamil Nadu Slum Clearance Board
CAM/2	Holistic integrated development of coastline of Tamil Nadu	•	Preparation of Coastal Zone Management Plan (CZMP) for Tamil Nadu through the National Centre for Sustainable Coastal Management (NCSCM). Classification of different coastal zones, like CRZ I (ecological sensitive areas), CRZ II (developed Areas), CRZ III (Undeveloped and under developed areas), CRZ IV (Water Areas), High Tide Line (HTL), Low Tide Line (LTL) and other special features like mangroves, coral reefs etc.
CAM/3	Access intensity & recurrence frequency of natural hazards	•	Coastal Hazard Monitoring projects by Institute for Ocean Management(IOM), Anna University Hazard and Risk Zone maps prepared Real time monitoring and beach imagery software for Timely flood warning and emergency response system

2020 State Action Plan listing out the Coastal Area Management strategy



Challenges

Socio-Economic Impact on communities

Reports, and policy documents indicate that the coastal areas' communities are mainly fisher communities that are fully dependent on the coast and its resources. Coastal related disasters impact these communities the most (Kumar *et al., 2020*). In Tamil Nadu, extreme floods and water-related disasters disrupt livelihoods and destroy houses and neighbourhoods for weeks together, displacing people and communities. The solution is two-fold, one is to protect the homes and occupation of the fishermen in the coastal areas, and the second is to provide alternatives during and after a crisis (Krishnamurthy *et al.,* 2014a). The post relief measures have been far more challenging to implement without a proper system in place. In Tamil Nadu, like other coastal regions, the communities surrounding the area are from rural India from impoverished backgrounds. They survive on daily wages, minimal electricity provisions and limited access to healthcare or education. The villages have been provided with public schools, but family conditions and other obstacles prevent young children from attending school; they are instead introduced to the fishery trade at a very young age (Krishnamurthy *et al.* 2014b). Strategy 3 of the plans address parts of this problem by proposing activities for strengthening resilience of fishing communities but lacks clear action items on introducing alternative occupational skills, disaster relief sites or providing basic access to health and education.

Coastal erosion and conservation

Coastal areas are prone to water-related disasters that affect communities around the coast. However, this is not the only problem that the coastal states face. The coast is diversified into the categories of bay, cover, gulf, estuaries, and peninsula. Indian shores further have different ecosystems such as mangrove swamps, coral reefs, seagrass beds, beaches, dunes, salt marshes, and mudflats (Jeevamani *et al.*, 2013). The coastal and offshore environment of India supports a rich biodiversity. Economic activities such as offshore drilling, aquaculture, port activities all impact the coastal ecosystem. Marine environmental protection encourages the integration of marine ecological protection into relevant general environmental, social, and economic development policies and the adoption of financial incentives to apply clean technologies (Kathiresan and Rajendran, 2005). Strategies 1, 2, 4, 5 and 6 of the plan address this challenge. While most of the action points focus on prevention of erosion, not enough items are proposed on conservation of coastal areas.

Institutional cooperation mechanisms

The coastal regulation zone is enforced by the central government, whereas disaster management is a state subject. There must be coordination among the two levels to implement the right policies at the subnational level depending on the state needs and requirements (Malleshappa, 2016). The Disaster Management Act of 2005 addresses indirectly a lot of overlapping concerns of the coastal zone management, but future amendments to the act can direct the States to take up specific problems arising from local conditions. The National Institute of Disaster Management (NIDM), an apex disaster management research institute, takes up research about coastal zones that facilitate the coordination between the two levels (Das Gupta and Shaw, 2013). There is no strategy or action item that addresses this issue at all. Since the policy areas focus mainly on technical solutions, the socio-political elements are



not included in the plan at all. This has also resulted in unclear mapping of how each of the policies will be implemented, who is responsible for the policy action or how they will be reported.

POLICY RECOMMENDATIONS

Some policy recommendations to strengthen the Coastal Area Management policy area based on the challenges listed above are proposed below:

- Allocate alternative living sheds/spaces in advance to facilitate pre- and post-disaster scenarios: By allocation large building spaces such as schools and colleges as shelter areas during a time of crisis, there is less panic amongst people. Allocating each neighbourhood and providing names of shelter areas ensures that these places can be stocked with food year round and people can seek shelter in these spaces as soon as a warning has been issued.
- 2. Introduce health and education plans for coastal communities: Creating a health and education plan for families in the coastal communities creates a sense of security. Whilst health plans should cover for treatment post disaster and recovery, education plans should equip the younger age group to identify and hone newer skills as an additional asset.
- 3. Develop environmental/coastal clearance permits: Ensure coastal conservation measures distributed across all the strategies to ensure a balance in policies supporting prevention and conservation: Actions must be proposed to conserve and maintain reserved coastal areas, ban fishing of endangered species and clearing land with rare flora and fauna. Environmental/coastal clearances should be in place to carry out these activities.
- 4. Support and maintain the cooperation between various stakeholders working in the coastal region: A network of policy makers, community members, NGOs, donors and government officials to carry out continuous work in the coastal regions is essential. This improves inter and intra relations and the action items proposed in the state plan cam be distributed amongst the stakeholders to implement, monitor and report the progress.

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BIBLIOGRAPHY

Raghunathan, Raghuraman, Choudhury. (2019). Chapter 11 - *Coastal and Marine Biodiversity of India: Challenges for Conservation*, Editor(s): Krishnamurthy et al. Coastal Management. ,Academic Press, 2019, Pages 201-250.

CPCB (2001) Integrated Coastal Zone Management Plan for West Bengal accessed online:

https://www.iczmpwb.org/main/project_progress .php

CRZ Notification (2011): Ministry of Environment & Forests, Government of India available online at http://www.environmentwb.gov.in/pdf/CRZ-Notification-2011.pdf

DasGupta , Shaw.(2013) .*Changing perspectives* of mangrove management in Indian analytical overview. Ocean Coastal Management 80: 107– 118

Department of Environment. (2015): *Tamil Nadu State Action Plan on Climate Change*, Department of Environment, Government of Tamil Nadu, Tamil Nadu, India.

Department of Environment. (2020). *Tamil Nadu State Action Plan on Climate Change*, Department of Environment, Government of Tamil Nadu, Tamil Nadu, India.

Gibbs. (2009). *Resilience: what is it and what does it mean for marine policymakers?* Marine Policy, Volume 33, Issue 2, 2009, Pages 322-331.

Schiettecatte. (2015). Integrated Coastal Zone Management Project Republic of India: Restoration and conservation of mangroves, coral reefs transplantation along the coastline of Gujarat and Orissa regions. FAO.

http://www.fao.org/fileadmin/templates/ex_act /pdf/Blue_Carbon_case_studies/India_mangrov e_restoration.pdf

Jeevamani, Kamalakannan, Nagendran, and Chandrasekaran. (2013). *Climate Change Induced Coral Bleaching and Algal Phase Shift in Reefs of the Gulf of Mannar*, India S. Nautiyal et al. (eds.), Knowledge Systems of Societies for Adaptation and Mitigation of Impacts of Climate Change, Environmental Science and Engineering, Springer-Verlag Berlin Heidelberg 2013.

Kathiresan, Rajendran. (2005). *Coastal mangrove forests mitigated tsunami*. Estuary Coast Shelf Science. Volume 65, Issue 3, Pages 601-606.

Krishnamurthy, Chandrasekar, Shanmugam .(2014). *Coastal zone management in Tamil Nadu, India: Challenges and Innovations,* In: Disaster Recovery: Used or Misused Development Opportunity. In Shaw R (ed), p 225–240

Krishnamurthy, Kamala K. (2014). Impact of Higher Education in Enhancing the Resilience of Disaster Prone Coastal Communities – A Case Study in Nemmeli Panchayat, Tamil Nadu, India

Krishnamurthy, DasGupta, Chatterjee, R & Shaw, R. (2014). *Managing the Indian coast in the face of disasters & climate change: a review and analysis of India's coastal zone management policies*. Journal of Coastal Conservation, Volume 18, Issue 6, Pages 657-672.

Kumar et al. (2018). Volume II- Coping with Climate Change: An analysis of India's State Action Plan on Climate Change. Centre for Science and Environment, New Delhi.



Malleshappa, Jayanthi, Kumar, Patterson, Edward. (2016). *Planning and Implementation of Tamil Nadu State Action Plan on Climate Change for Coastal Area Management in Tamil Nadu*, India. International Journal of Current Research and Academic Review. 4. 99-112. 10.20546/ijcrar.2016.411.014.

Ministry of Environment and Forests (MoEF), Gol, "Summary of Discussion National Consultation Workshop on Preparation of State Level Strategy and Action Plan on Climate Change" (New Delhi: Gol, August 2010).

MoEF (2005) Report of the Committee Chaired by Prof. M.S.Swaminathan to review the *Coastal Regulation Zone Notification*, 1991 available online

at <u>http://iomenvis.in/pdf_documents/MSS_Rep_ort.pdf</u>

MoEF .(2010). Proposed coastal regulation zone (CRZ) amendments,

MoEF .(2011). Coastal Regulation Zone Notification, 2011 available online http://moef.nic.in/downloads/publicinformation/CRZ- Notification-2011.pdf

Nammalwar, Satheesh, Ramesh. (2013). Application of remote sensing in the validation of potential fishing zones (PFZ) along the coast of North Tamil Nadu, India. Indian J Geo-Marine Sci 42:283–292

Ramachandran. (1999). *Coastal Zone Management in India — Problems, Practice and Requirements*. In: Salomons W., Turner R.K., de Lacerda L.D., Ramachandran S. (eds) Perspectives on Integrated Coastal Zone Management. Environmental Science. Springer, Berlin, Heidelberg. <u>https://doi.org/10.1007/978-3-642-</u> <u>60103-3 12</u> Rattani et al. (2018). Volume 1- *Coping with Climate Change: An analysis of India's National Action Plan on Climate Change*. Centre for Science and Environment, New Delhi.

Sarkar S, Sharma A (2006) *Disaster management Act 2005: a disaster in waiting?* Econ Polit Wkly 41(35):3760–3763

Nayak (2017) Coastal zone management in India – present status and future needs, Geo-spatial Information Science, 20:2, 174-183, DOI: <u>10.1080/10095020.2017.1333715</u>

Sonak, Pangam, Giriyan A (2007) Green reconstruction of the tsunami-affected areas in India using the integrated coastal zone management concept. Journal of Environmental Management, Vol 89, Issue 1,2008, Pages 14-23.

UNDP (2014) Conservation and sustainable use of the Gul of Mannar Biosphere Reserve's coastal biodiversity.

