

State Climate Change Action Plan and Forestry Sector: Challenges and Mitigation in Odisha

GITANJALI PANDA

Assistant Professor of Economics
Department of Social Science, Fakir Mohan University, Balasore (Odisha) India

ABSTRACT

The impact of climate change has a disproportionate effect on the state of Odisha because of its location and geophysical conditions, thus carrying a special relevance. Secondly, an urgent developmental imperative has forced the planners to adopt such strategies to ensure a decent standard of living to its people which can have a significant impact on biodiversity. Under these circumstances the Climate Change Action Plan for the state of Orissa assumes greater significance. The state is endowed with rich natural resources which have made people of Odisha more vulnerable, since three-fourth of our state's population depends on climate sensitive natural resources based livelihood such as Agriculture, Forestry and Fisheries. The State of Odisha has a total recorded forest area of 58,140 sq km. As per the State of Forest Report 2017, the total forest cover of the State does 51,345 sq km which constitute 32.98% of the total geographic area of the State. As is true across India, there is tremendous pressure on the forests. Climate change is likely to add to these pressures and forest management will become a greater challenge. On the other hand, addressing climate change could also serve as an excellent opportunity to arrest forest degradation and develop more forest cover (and carbon stocks/sinks) through protection, afforestation and reforestation measures. Forestry sector is particularly important both from mitigation as well as adaptation perspectives. A lot of bottlenecks have been faced in terms of lack of finance, and technical knowledge in its implementation along with increased afforestation and forest coverage in Odisha.

Key Words : CAMPA (Compensatory Afforestation Fund Management and Planning Authority), NAPCC(National Action Plan for Climate Change), Adaptation, Mitigation

INTRODUCTION

Forestry sector provides livelihood support to more than a million people in the state of Odisha Around 25% of the state's Scheduled Tribe population are forest dependant. Livelihood of the forest dependent community has been impacted under the current and the projected intensity of land use and degradation. Odisha is endowed with rich biodiversity and natural resources. It is one of the first states in the country to recognize the vulnerability of people to climate change and develop an action plan for climate change.

On the other hand, addressing climate change could also serve as an excellent opportunity to arrest forest degradation and develop more forest cover (and carbon

stocks/ sinks) through protection, afforestation and reforestation measures. Forestry sector is particularly important both from mitigation as well as adaptation perspectives. Forest acts as a carbon stocks/sinks that pertains to mitigation. Benefits of forest resources like conservation of soil, water and preservation of local micro climatic condition pertains to climate adaptation. The continual degradation of the natural forest and urban plantation paves way and causes decline in the ambient air and water quality leading to health hazards. Therefore, Odisha is one of the first states to formulate a comprehensive action plan to address the climate change issues. The plan which has been formulated by an inter-departmental team is a coordinated government response to this important problem which looms large. Considering

the concerns of adverse climate change conditions on livelihood loss, assets and infrastructure, Odisha has taken early initiative to formulate Climate Change Action Plan in a holistic manner. Climate Change Action Plan for the State of Odisha assumes greater significance. Forestry is one of the most important sector where special attention has been given for mitigation and adaptation purpose.

Review of Literature:

A few literature is available, particularly in the context of India regarding the consequence, operation and bottlenecks of implementing State Action Plan for Climate Change. A modest attempt has been done to review some of the available literature. Roy and Kumar have reviewed the challenges and opportunities in health sector while implementing the state action plan for climate change in 11 Indian States Inadequate literature on the projected impacts of climate change on human health is a major issue that requires immediate attention. Absence of national mission on health has affected the level of prioritization given to the health sector in SAPCCs. Emphasis should be given to enhance the resilience of tribal population, forest dwellers and other backward groups and to the participation of private sector in creating health infrastructure.

Peter E Duinker explores expected sensitivities of the world's managed forest, forest environment and forest sector to future climate change. He has pointed out that the path and magnitude of future anthropogenic emissions of carbon dioxide will likely influence changes in climate that may impact the global forest sector. This study takes a step toward including the role of global forest sector in integrated assessments of the global carbon cycle by linking global models of climate dynamics, ecosystem processes and forest economics to assess the potential responses of the global forest sector to different levels of greenhouse gas emissions Forest management has high potential for mitigating these effects, but only with support of insightful policy initiatives that take account of potential climatic changes

John Perez-Garcia, Linda. A. Joyce, Mcquire & Xiao, Xiangming, (2002) review the application of various regional climate models and remote sensing techniques to understand and define impacts of climate change on the forest resources with specific reference to India. It illustrates the potentials and limitations of regional climate models, vegetation models and remote sensing techniques like normalized difference vegetation index time-series

analysis, change detection method and phenological attributes in assessing and monitoring the impacts of climate change on vegetation. The study recommends that regional climate models and remote sensing techniques need to be integrated in tandem for understanding the present and future impacts of climate change on forest ecosystems. This could help to improve the accuracy and prediction, which can contribute to planning effective adaptation strategies in the forestry sector.

Research Gap:

The present study will analyze for the first time the initiatives taken in the forest sector under State Action Plan for Climate Change in Odisha and its progress so far. A modest effort has been done to find out the bottlenecks in financing and the implementation of the plan by the forest department based on the information elicited from forest officials, thereby bringing out suggestions for the future.

Objectives of the study:

1. To describe the various initiatives taken in the forestry sector to mitigate climate change consequences in Odisha
2. To analyse the budget for climate change purpose and in the forestry sector in particular in Odisha
3. To discuss the challenges faced in implementing the State Action Plan for Climate Change in Odisha

METHODOLOGY

The study is descriptive and analytical in nature. The data and information are collected from secondary reports such as Odisha State Climate Change Action Plan 2010-15, 2018-23, A Review of Odisha State Action Plan for Climate Change, 2017, Highlights of Odisha Forestry Sector, 2019, etc. Information regarding bottlenecks in implementation of State Action Plan are solicited from forest officials.

RESULTS AND DISCUSSION

Priority provisions in the forestry sector to challenge climate change:

Availability of funds from CAMPA (Compensatory Afforestation Fund Management and Planning Authority (CAMPA) Odisha was constituted in 2009 with an objective of conservation, protection, regeneration and

management of existing natural forests. There has been enhanced allocation in the forestry sector for developing site specific compensatory afforestation and penal compensatory afforestation which covers larger programmes on afforestation and protection measures. Under the NAPCC, there is a separate National Mission for a Green India. This mission recognizes that forests constitute one of the most effective carbon sinks, and also that they play an indispensable role in the preservation of ecological balance and maintenance of biodiversity. Odisha received the highest Rs. 5933.98 crore Campa Fund in the country. Odisha, which is the fourth largest State so far as forest cover is concerned, has increased its forest coverage by adding 885 square km of forest during the last two years by afforestation and forest protected measures. The State had received Rs 2,644 crore in 9 years between 2009-10 and 2017-18. Out of this, the State had already utilised Rs. 2,607 crore or 92% of the fund received by now.

Key priorities in the forestry sector are as follows:

Increasing reforestation, afforestation in degraded forest area has a tremendous potential to increase the carbon stock within the state.

Aforestation initiatives towards increasing the carbon stock within the state have increased several folds. The Increase of afforestation on and avenue plantation will result into increase the GHG sequestration, declining the level of air pollution, prevention of soil erosion, increased resilience of the forest ecosystem and biodiversity conservation, sustaining livelihood of the forest fringe/communities depending upon the NTFPs. There is tremendous potential to increase the carbon stock within the state. The Table 1 shows the increased forest area since 2003. There has been increase reforestation activities in degraded forest area to the tune of 392.759 hectares. The forest cover of Odisha is 32.97% of total

geographical area.

Protecting existing forest stocks to act as carbon sink with stronger conservation:

Protecting existing forest cover/carbon stocks is as important as undertaking reforestation/ afforestation. Stronger protection measures and people participation in forest conservation can achieve the goal. The objective is to revisit the current working plans with a climate change lens. Emphasis have been given on mixed and qualitative forest, so that it will be a carbon sink and not a carbon source. Carbon accounting at the beginning and end of the plan period will be integrated. Prescriptions for increased carbon stock will be formulated with stronger protection measures and community participation. Forest protection squads have been constituted and engaged under various schemes. These squads are deployed over vulnerable locations of different forest divisions and work in close proximity with forest officials in protection duties. Increasing planting on non-forest land and also exploring where new and increased tree planting could create barriers to storm and cyclone impacts in coastal zones.

Mangrove plantations are initiated to reduce the detrimental impact of natural disaster in the coastal areas that are likely to increase as a consequence of the climate change. The mangrove plantations also act as add on to the existing forest sink in terms of sequestration of carbon-di-oxide.

Covering Bald-hills with suitable species mix:

Initiatives are taken to increase plantation in the scrub land across the state that are mostly bald hills devoid of appreciable forest growth and are the most vulnerable mountain patches for soil erosion and accelerated soil loss. Plantation of suitable species will counter desertification and prevent soil erosion during flood and

Table 1 : Change in the forest cover in Odisha 2003-2017

Year	Very Dense	Moderately Dense	Open forest	Total	Mangrove	Scrub	Tree cover
2003	288	27882	20196	48366	203	5346	NA
2005	7077	21421	20257	48755	217	4797	4589
2007	7073	21394	20388	48855	221	4852	4435
2011	7060	21366	20477	48903(31.41)	222	4737	4301
2013	7042	21298	22007	50347(32.33)	213	4427	4013
2015	6985	21470	22005	50460(37.58)	231	4499	3986
2017	6967	21370	23008	51345(39.31)	251	4306	3993

Source : Highlights of India's Forest Report, 2017

Table 2 : Budgetary allocations for climate change and Forest and Environment					
The budgetary allocation for the sector has been given below for three years.	Figures are in Rs. Crore				
	2016-17	2015-16	2014-15	2013-14	2012-13
Odisha Total Budget	86902.80	79114.09	80,139.58	60,303.09	52,030.70
Budget for Forest and Environment	585.12	579.31	716.01	665.19	589.98
	(0.67%)	(0.73)	(0.89)	(1.10)	(1.13)
Climate change related	N.A	N.A	554.59	310.05	246.39
			(77.45)	(46.61)	(41.76)

Source: Progress Report on SAPCC2015, State Budget of Govt of Odisha

other weather extremes, etc. Species like Simul, Simaruba, Sana Chakunda, Acacia, Sitapala, Neem, Sisris, Bahada, Cashew, etc. are some of the common species planted under the programme.

Improving tree planting and forest management to integrate with watersheds and water resources management:

Improved tree plantation is taken up in the watershed area as a soil conservation and water retention method. Plantation are initiated under 13th FC Grant Scheme and Annual Plan Operation through CAMPA.

Working to establish new systems to support for user community:

Climate change is projected to impact the natural ecosystem including the forest reserve. Forest that acts as source of livelihood might exacerbate the vulnerability of the communities that depend totally on the natural resources. Therefore actions are being initiated to enhance the capacity of the communities to manage risk through sustainable forest management plan. One of the endeavors is to establish a new system to support the community users towards honey collection.

Capacity building of JFM and CFM Committees and Panchayati Raj Institutions to adapt to climate change:

The Vana Samrakshyana Samitis (VSS) and Eco-Development Committees (EDC) have been empowered through Joint Forest Management Resolutions to protect forests adjoining the villages. The JFM committees were made responsible for protection, conservation and regeneration activities while the control of non-timber forest produce has been transferred to Panchayats. The state has formed 12,166 numbers of VSSs and 463 Eco Development Committees to manage forest fringe areas in Joint Forest Management Mode.

Monitoring carbon stock and biodiversity at regular intervals:

The forest which acts as a carbon sink and store house of biodiversity is required to be monitored to gauge the success of various programme implemented. The growing stock is being monitored at regular intervals through the Forest Survey of India (FSI) and biodiversity assessment are being conducted by institutions like Regional Plant Resource Centre (RPRC), Wild life wing of the Forest department, Odisha Forestry Sector Development Project (OFSDP), Chilika Development Authority (CDA), etc. Forest Department is also taking up studies like NTFP survey and biodiversity assessment and growing stock estimation of natural forests through working plan exercise. The afforestation activities of the entire state are being monitored departmentally with help of modern tools and techniques like DGPS survey, Google imageries and e-green watch, etc.

Analysis of the Budget Allocations for Climate Change:

The Table 2 shows the budget allotted for Forest and environment sector is not significant. It was only 1.13% in 2012-13 which has further declined only 0.67% in 2016-17. The percentage of the budget exclusively used for climate change purpose has increased from 246.39 crores to 554.59 crores.

The Table 3 shows the proportion of the climate change –related funds allotted for adaptation , mitigation and both in 2014-15.

Table 3 : Distribution of climate change-related funds towards adaptation, mitigation and both in 2014-15	
Adaptation	60.00
Mitigation	254.59
Both	240.00
Total	554.59

Source : Same as Table 2

Challenges before State Action Plan for Climate Change in Forestry Sector:

No assessment of the impact of climate changes on Odisha's forests has yet been undertaken using the latest range of climate scenario. Further there are the uncertainties about the future of the monsoon in all the models. At the national level past studies have indicated that whilst Odisha's forest areas are not the most vulnerable, more recent work indicates that within 50 years, most of India's forest biomass would be highly vulnerable to the change in climate. The forestry community nonetheless needs to evaluate the long-term effects of climate change on forests and determine what the community might do now and in the future to respond to this threat. A large part of these forests in Odisha are degraded and therefore there is scope for increasing forest cover as well as forest density.

Conclusion and suggestions:

Though Government has made various schemes to promote forestation, reforestation, and plantation with an objective of mitigating the challenges of climate change, yet the allocation of fund for the purpose has always been insufficient in comparison to the goals set. Not only financial resources but also human resources and infrastructural arrangement for achieving the goal have been quite inadequate. Planning and framing policies for restoring the bio-diversity appear to be very much ambitious, but without being associated with allocation of resources and infrastructural inputs and timely implementation and proper monitoring of the consequences on climate change which demand a high technical knowledge cannot render the desired output. The process of accessing international fund is quite cumbersome. Political sensitiveness to address issues relating to climate change is low. Above all, there is a lack of awareness on the part of government officials to implement the schemes. No assessment of the impact of climate changes on Odisha's forests has yet been undertaken using the latest range of climate scenario. Further there are the uncertainties about the future of the monsoon in all the models. At the national level past studies have indicated that whilst Odisha's forest areas

are not the most vulnerable, more recent work indicates that within 50 years, most of India's forest biomass would be highly vulnerable to the change in climate. The forestry community nonetheless needs to evaluate the long-term effects of climate change on forests and determine what the community might do now and in the future to respond to this threat. A large part of these forests in Odisha are degraded and therefore there is scope for increasing forest cover as well as forest density.

REFERENCES

- A Review of the State Action Plan on Climate Change, Special Focus on Women and Children, 2017, OXFAM India, CYSD
- Climate Budget 2020-21, Finance Department, Govt. of Odisha
- Devi, Rinku Moni, Patasaraiya, Maneesh Kumar, Sinha, Bhaskar, Saran, Sameer, Dimri, A.P. and Jaiswal, Rajeev (2018). Understanding the linkages between climate change and forest. *Curr. Sci.*, **114** (5), 10 March 2018.
- Duinker, Peter N. (2013). Climate change and Forest Management, policy and land use. *Land Use Policy*, **7** (2): 124-137.
- Highlights of Odisha Forestry Sector (2019). Principal Chief Conservators of Forest, Aranya Bhavan, Bhubaneswar
- Intergovernmental Panel on Climate Change (IPCC): 1995, 'Climate Change 1994' in Houghton, J. T. et al. (eds.), *Radiative Forcing of Climate Change and an Evaluation of the IPCC IS92 Emission Scenarios*, Cambridge University Press, New York.
- John Perez-Garcia, Linda, A. Joyce, Mcquire and Xiao, Xiangming (2002). Impact of Climate Change on the Global Forest Sector", *Climate Change*, **54** (4) : 439-461.
- Roy, A.B. and Kumar, G.S. (2013). An assessment of health sector in the "state action plans on climate change" for India, *Global Health Perspectives*, **1** (2) : 67-70 .
- Odisha Climate Change Action Plan (For the period 2018-23), Forest and Environment Department, Government of Odisha
- Odisha Climate Change Action Plan (2010-15). Forest and Environ Department, Govt of Odisha.
