

Mangroves: Natural Defence against Climate Change Risks



Summary:

Mangroves, the life supporting eco-system those are critical for many communities are disappearing alarmingly in Odisha coast, India. Mangroves have a high potential to reduce climate change-induced threats, particularly the impacts of cyclones, storm surges, tsunami, simultaneously, they provide livelihood resources for local communities. It checks soil erosion due to sea level rise and highest carbon sink as a part of global climate changes.

Mangroves: Real Solution for Reducing Disaster Risks:

Odisha coast, India is considered amongst the world's most vulnerable to the impacts of climate change induced natural disasters. The combined effects of sea-level rise, increased frequency and intensity of cyclones, floods, soil erosion, and salinity intrusion pose a serious threat and affect hundreds of millions of vulnerable people.

The intensity of these events was relatively higher during the late 20th century and the last decade, and caused unprecedented loss of life and property in the state. The frequency and intensity of these events are likely to increase in the foreseeable future due to climate change. Mangrove forests (lifeline of coastal people) are disappearing at an alarming rate in Odisha coast. Less than half of the original mangrove forests remain, and the current rate of loss is a major cause of concern. The people living along the coastline are reliant on climate-dependent activities such as agriculture and aquaculture. The farmers and fishermen who are the traditional food producers living in such fragile environment are ecologically, geographically and economically marginalized. The livelihood security of these coastal

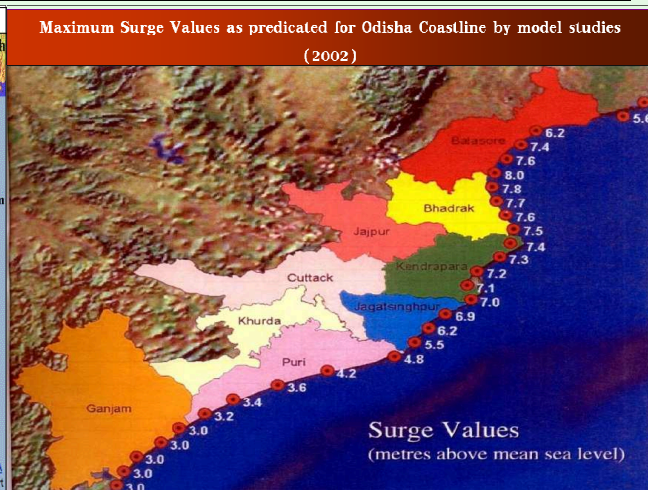
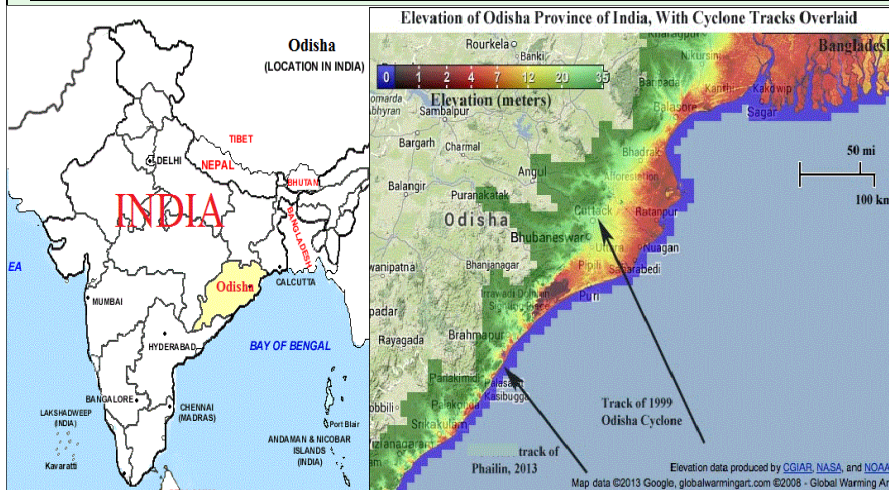


communities and ecological security of coastal areas are already under serious stress. Agricultural families, fishermen, and others will bear the full force of climate change impacts through less stable livelihoods and rising risks to their health, safety and homes. Many fisheries-dependent communities already live a precarious and vulnerable existence because of poverty, lack of access to social services.

Odisha's coastline is highly prone to cyclonic events. A slight change in the behaviour of the sea (e.g. cyclonic storm and sea level rise) causes significant impact on coastal districts of Odisha. During the period 1891–2015, 1151 cyclonic disturbances have occurred in the Bay of Bengal, including 659 depression/ deep depression, 273 cyclonic storms and 216 severe cyclonic storms; which are 85.48% of total cyclonic disturbances that occurred in both the Bay of Bengal and the Arabian Sea in India. Odisha, in particular, has faced approximately a third of the cyclonic events. Importantly, during the past few decades, the state experienced severe and super cyclonic storms in the years 1971, 1982, 1999 (the latter, e.g. 1999. included two severe events within a 15 day period) and 2013. While the estimation of crop loss was around US\$ 100 million (i.e. roughly US\$ 1= INR 8) in the year 1971, the total loss of human lives was 9177 in the 1999 super cyclone. These events disrupted the livelihoods of poor and vulnerable people living in the fragile coastal environments. (Reference "Assessment of vulnerability to cyclones and floods in Odisha, India: a district-level analysis", by Dr Chandra Sekhar Bahinipati, Gujarat Institute of Development Research, Ahmedabad). The only support and refuge from these threats is restoring and surviving mangroves in Odisha.

Recent Natural Disasters in East Coast of India

Year	Type of Disaster	Place	Affected population (million)	Loss (number of human life)	Loss to crop and property
1971	Tidal wave 15ft high swept 75 km stretch of coastline	Odisha	33.04	7,397	Houses damaged: 5,20,938, Area affected: 7,310 sq.km., Cattle casualty 77,921. Cultivated area affected: 6,065 sq.km
1977	Cyclone	Andhra Pradesh	N.A.	10,000	40,000 cattle deaths
1982	Flood	Odisha	33.78		Affected : 4,478 villages
1982	Cyclone	Odisha	46.17	201	10,017 sq.km. area, 4861 livestock perished
1983	Cyclone	Andhra Pradesh	N.A.	134	42,800 cattle deaths
1984	Cyclone	Andhra Pradesh, Tamilnadu	N.A.	658	90,650 cattle deaths
1988	Cyclone	West Bengal	N.A.	532	57,604 cattle deaths
1990	Cyclone	Andhra Pradesh	7.78	967	435,000 acres of land affected
1994	Cyclone	Andhra Pradesh, Tamilnadu	N.A.	226	444194 ha. land affected
1996	Cyclone	Andhra Pradesh	N.A.	1,000	5,80,000 houses destroyed, Rs. 20.26 billion estimated damage
1999	Super Cyclone	Odisha	12.9	9887	Livestock perished: 25 lakh, Houses damaged: about 20 lakhs, Cropped area affected: 21 lakh ha
2001	Flood	Odisha	9.7	122	18,149 cattle perished, 2,12,296 individual dwelling units were damaged and agricultural crop over 80.87 lakh ha were affected.
2004	Tsunami/Tidal wave	East Coast of India	2.79	10,749	640 persons missing, 11,827 hectares of crops damaged, 300,000 fisher folk lost their livelihood
2008	Cyclone	Tamil Nadu	N.A.	204	N.A.
2011	Flood	Odisha	N.A.	45	N.A.
2011	Cyclone	Tamil Nadu, Puducherry	N.A.	47	N.A.
2012	Cyclone	Tamil Nadu	N.A.	65	N.A.
2013	Cyclone	Tamil Nadu	N.A.	03	N.A.
2013	Cyclone	Odisha and Andhra Pradesh	N.A.	23	N.A.
2013	Flood	Odisha	N.A.	21	N.A.
2014	Cyclone	Odisha	N.A.	N.A.	N.A.



Project Action Plan:

A. Mangrove Nursery Development:

The project will establish a mangrove nursery. The mangrove nursery would supply sufficient quality of mangrove saplings for plantation. 12,000 mangrove saplings will be raised for plantation. The community members will manage the nursery on a sustainable way.



B. Community-led Mangrove Restoration, Management and Conservation:

Mangrove restoration standards shall be drawn from past successful efforts carried out by our team. The project will apply science and site based restoration methodology to create new mangrove forests. The project is target to restore in 10,000 mangroves trees in 5.2 ha degraded land in 5 vulnerable coastal villages of Odisha state, India. The project will promote 'CMEMR (Community Managed Ecological Mangrove Restoration)' method, an economical and efficient approach to mangrove restoration that follows basic natural processes. This well-considered unique model directly engages local community participation and long-term, sustainable and innovative solution to restore degraded mangrove loss. The mangrove restoration work will conduct in association with village level committees and community members. Local communities should be made to realize that they are responsible not only for the present state but also for the future state of mangrove resources entrusted to them. This to happen realistically and practically communities must have the access to and control of such mangrove resources through a collective decision making process. The project team will facilitate the formation of Village Mangrove Council (VMC) to steer the mangrove management and restoration process in each project village.



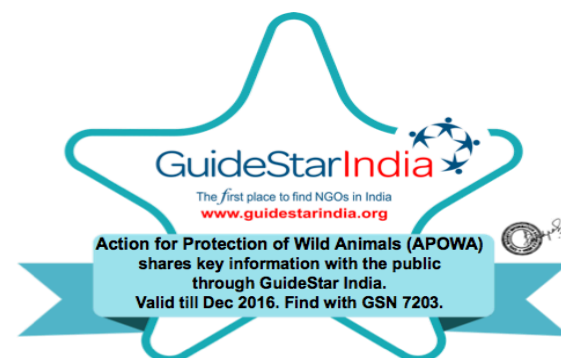
About APOWA (Action for Protection of Wild Animals):

Action for Protection of Wild Animals (APOWA) is a registered non-profit organization established in the year 1999 with a mission of partnering with local communities to protecting the animals and plants that represents the diversity of life by conserving the nature they need to survive. APOWA has been at the forefront of implementing environmental restoration and conservation to help local vulnerable communities and reduce the risks they face from natural hazards. We are deeply committed to stop the decline of mangroves and work for the restoration of mangroves. We are promoting the rights of traditional and indigenous coastal communities, including fishers and farmers, to sustainably manage their ecosystems. We are also addressing other important issues including: protection of endangered species, and their habitat conservation. Our approach is also focused on disaster risk reduction programmes and community resilience project in coastal villages. Working with local communities is a strong thread that runs right through field activities. Our grass root level networking efforts are bearing good results.

Awards and Recognitions:

The work of APOWA won various excellence awards . APOWA has been awarded the prestigious '12th Bhagwan Mahaveer Award' Award from Bhagwan Mahaveer Foundation for excellence in the sphere of Non Violence, presented by the hon'ble President of India , on 19th May 2008. APOWA awarded the "Prakuti Mitra Award 2009" by Forest and Environment Department, Govt. of Odisha for outstanding work for conservation of natural resources. It has been awarded with "Niramaya Sannman" in the year 2009 towards contribution for its noble services for the conservation of nature by International Naturopathy Organization. APOWA awarded with 'Rashtriya Swayam-siddh Samman' by JSPL Foundation, New Delhi in the field of environment for the year 2015-16. Guide star India awarded APOWA for "Guide Star India Transparency Badge 2016".

APOWA- Guide Star India certified
Organisation for Transparency and
Public Accountability



APOWA's Mission on Mangroves:

APOWA have been working on mangroves since last one decade. Community participation is the hall mark of our success and that have sustained and encouraged us to lead the way towards our mission on mangroves.

Mangrove Restoration/Plantation- Starting some small scale restoration from Badkot (Our model mangrove village) is racing forward and moving to more than 50 villages in Odisha state, India. Around 104 ha. of degraded land restored with the community participation. We are happy to inform you that, these plantation sites are now protecting some rare and endangered species of reptiles, amphibians, birds, fish, etc. The biodiversity have increased i.e. fish, many bird species like kingfisher, heron, etc, crocodile were reported residing in these sites.



Mangrove Awareness – We have been continuously creating awareness on mangroves in coastal villages and schools.



Village Mangrove Councils- Our experimentation on setting up VMC (Village Mangrove Council) has been quite satisfying as an appropriate community based institutional design for taking this initiative forward and conserving the mangroves in a sustainable manner. Now we have around 48 VMCs in coastal villages.



Sustainable Livelihood for Mangrove Dependent Communities- We have been facilitating, guiding and successfully promoting mangrove dependant families with various sustainable alternative livelihood and linkages with other service delivery organisations. We are supporting innovations in appropriate technologies, capacity building training, skill development and promotion of sustainable livelihood alternatives that help coastal communities supplement their incomes in times when fish catches are decreasing and reducing the pressure on mangrove forest. We are promoting alternative livelihood through SHGs.

Taking Forward Sustainable Development Goals (SDG)- Our project is unique, because greater community partnership ensures the sustainable management, reduction of degradation, restoration of mangroves, stability of food security, gender balanced Village Mangrove Councils and sustainability of other related development activities and thus contributes substantially towards the achievement of Sustainable Development Goals (SDG).

Way Forward:

We want to build on the momentum, strengthen & sustain community stewardship in conservation, restoration and management of mangroves taking into account the vulnerability of the area to natural disasters, ensure livelihood security for local communities and conservation of ecologically significant natural resources. We need your support to continue our efforts on mission mangroves.



Action for Protection of Wild Animals (APOWA)

At-Hatapatana, PO-Kadaliban, Dist.-Kendrapara,
Odisha state, Pin-754222, India,

Mob-09437439946, E-mail-apowa1999@yahoo.co.in, mail@apowa.org

www.apowa.org