

# Practical ACTION



## MANGROVES FOR CYCLONE RESILIENCE : A COMMUNITY-CENTERED APPROACH TO DISASTER PREPAREDNESS IN COASTAL ODISHA

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## **Community Based Disaster Preparedness: Mangroves for Resilience**

Repeated and recurrent cyclones are intrinsic aspect of the 480km coastline of Odisha makes the people baffle with tormenting devastation and destruction. The world witnessed the agonizing experience of Odisha during the onslaught of the Super Cyclone that hit the state at Jatadhar estuary in Jagatsinghpur District on 29<sup>th</sup> October 1999, resulting colossal damage of life and property for the state.

In the subsequent period, the local administration focused on the early preparedness as a key to reduce the disaster generated death toll, effectively administered during the onslaught of cyclone Phailin hitting the state on 12<sup>th</sup> October 2013. The shift of focus from response to early preparedness accomplished the task of saving lives by evacuating millions of people to safer places, reducing death toll from more than ten thousand in 1999 to double digit number 23 only. The effort of the state government earned many accolades across national and international arena.

The success story of efficient management of disasters by the Government of Odisha got repeated in the subsequent unfolding of cyclones Hudhud (12<sup>th</sup> October 2014), Titli (10<sup>th</sup> October 2018), Fani (3<sup>rd</sup> May 2019), Bulbul (9<sup>th</sup> November 2019), Amphan (20<sup>th</sup> May 2020) and Yaas (26<sup>th</sup> May 2021). Focus on the early preparedness restricted the human death toll to double digit, in some cases single digit number irrespective of ferocity of the wind speed of the cyclone, but could not save the loss of property of the victims. Each cyclone resulted in humongous loss for the state adding to the impoverishment condition of the economy.

### **Cyclone Dana, 24<sup>th</sup> Oct 2024**

Crop loss, property loss, infrastructure loss associated with the cyclone has been a habitual experience with the locals of Odisha, got deviated this time with the spreading out of cyclone "Dana", that directly hit the state at Habalikhati, Kendrapada district on early hours 24<sup>th</sup> October 2024. Before the coming off the cyclone Dana, IMD (which has been always proven precise and accurate) predicted the ferocity of the cyclone and issued red/orange signals for the probable impacted districts. There upon, the state machineries in tandem with the central government took all the preparatory measures to save lives as has been the proven track record of the state. But this time something miraculous happened that protected the property of the locals making the experts wonder about the implication of cyclone Dana despite of its predicated ferocity.

## The Path of Cyclone Dana:



Source: <https://www.independent.co.uk/asia/india/cyclone-dana-landfall-map-evacuation-b2635445.html>

The cyclone made its process of landfall at midnight near Habelikhati, in the abode of mangrove forest ecosystem of Bhitarkanika. However, its speed immediately got reduced as it came in contact with the mangrove forest.

## Gupti Panchayat Road on 25<sup>th</sup> October 2024:



The Principal Chief Conservator of Forest (PCCF) as predicted “the cyclone will be less impactful as it is going to make landfall in the mangrove areas” became accurate. The cyclone lost its strength and ferocity instantaneously as it entered the mangrove area giving relief to the locals. The cyclonic wind could do no harm to the mangrove canopy coverage but terrestrial green canopy coverage in periphery areas got impacted because of their high vulnerability to the wind. There was hardly any property loss, leave aside the issue of causality. Simultaneously the pneumatophores root system of the mangroves checked the gigantic wave force, restricting the damage brought by the storm surge, providing respite to the local dwellers.



Interaction with community members post cyclone Dana on 25<sup>th</sup> October 2024 in Gupti Panchayat, Kendrapada

### **Cyclones, Mangrove Forest and Kendrapada District:**

Kendrapada, coming under the coast line of Odisha used to remain highly vulnerable to the impact of cyclones. This region had experienced a ferocious cyclone in 1971 that hit at Satavaya on 29<sup>th</sup> October, causing reported death toll of 9,658 humans, countless animals and a substantial green canopy coverage loss. Simultaneously, the cyclone unleashed the process of engulfment of Satavaya region under the blue brine by submerging two out of the seven villages and killing around one thousand people of the village by drowning. Now the Satavaya village is completely submerged under the sea water and the villagers are re-settled at Okilpada and Bagapatia, the first ever climate refugee settlement in Odisha. The 1971 cyclone had a grievous consequence for the state economy, as it had affected 49 lakh people's life making around 20 lakh people homeless. However, in the aftermath of that furious cyclone, conservation efforts were initiated at Bhitarkanika by the Government in 1975, that generated a sense of security to the locals against the ferocious cyclone. Even the Super Cyclone's intensive wind or the furious wavelet couldn't do much harm to the people living near mangrove forest of Bhitarkanika.

### **Small and Sturdy:**



“I was little bit worried about the cyclone as it is coming to our place, yet confident with the mangrove forest that it will protect our small houses. By the mid night of Wednesday, as the cyclone was about to make its landfall, the wind speed gave a scary feeling and we shifted to safer place. In the morning when we returned to assess our loss, everything was intact. No loss and no damage to our house. It all happened because of the mangroves” – Bishwanath Mandal, Debendra Narayanpur, Gupti, Kendrapada

### **Mangrove Ecosystem:**

Mangroves act as a first line of defence against storm surge, cyclonic wind pressure and tsunami in protecting coastline and coastal villages.



The dense vegetation coverage of multiple varieties of mangroves acts as a barrier of storm wind and surge of water. Tightly packed arching prop roots and low-lying branches creates solid obstacles to waves and wind, reducing the height of the winds and swell of the waves, perpetrator of coastal devastation during storm surge. In case of coastal flooding due to storm surge, the debris movement during rolling back of sea water gets reduced by the intricate roots and branches of the mangroves thus reducing the loss of life and property. In many instances it is seen that the loss of valuables during coastal flooding is found in the mangroves swamp, dangling in the branches and ariel roots of the trees. The big energy of waves and wind flow gets dissipated by the low canopy shrub of mangroves, reducing potential damage to the coastal infrastructure, precious lives and property.

Mangroves play an essential role in enhancing the resilience of coastal communities to climate change. They act as natural buffers, absorbing the energy of storm surges and reducing the impact of waves and flooding. Further to this it stabilizes shorelines, prevent erosion, protect coastal infrastructure and agricultural lands. Additionally, healthy mangrove ecosystems support fisheries and provide livelihoods for local communities, contributing to their economic stability and food security.

## Happy smiles of conservator and promoters of mangroves in post cyclone Dana:



*"We get fish and crab from the swamp to meet our daily needs of our families and above all feel a sense of security against cyclones here under the guardianship of Mangroves"- Sundari Mandal, Gartaganda Village, Kendrapada. Sundari Mandal and her friend have planted more than 2,00,000 mangrove trees in last fifteen years near their villages under the initiatives of community conservation of mangrove forest ecosystem.*

### **Lesson learnt from cyclone Dana:**

Early preparedness can save lives but coastal ecosystem restoration can protect the property and the lives as well. Mangroves are critical to the health of our planet and the well-being of human societies. These unique ecosystems serve as natural coastal defenders, reducing disaster risks, preventing erosion, and protecting shorelines from storm surges. They support diverse ecosystems, provide habitat for numerous species of flora and fauna and offer essential resources for local communities, including food, timber, and medicine. Furthermore, mangroves play a crucial role in carbon sequestration, capturing and storing significant amounts of carbon, thereby helping to mitigate climate change. It is high time that we must come forward to protect our planet by conservation and promotion of marine ecosystem to save the lives and livelihoods of the coastal communities.



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