

# Stories of Impact

*A series highlighting achievements in disaster risk management initiatives*

## Building Coastal Resilience in India



Photo by NASA

### RESULTS & ACHIEVEMENTS

- The World Bank is providing \$910 million in funding to scale up risk management efforts in ten states along India's vast coastline. This is being carried out through the two-phased NCRMP, as well as the CDRRP.
- Successful disaster risk management initiatives, some involving GFDRR support, enabled a 99.6% reduction in fatalities during Cyclone Phailin in October 2013 from a comparable cyclonic storm system 14 years prior. Cyclone Hudhud, which hit the state of Andhra Pradesh in October 2014, also only caused comparably minor loss of life due to disaster risk management practices in place.
- With GFDRR and World Bank support, India's ten coastal states are adding over 1,500 km of new evacuation roads, 30 bridges to better connect vulnerable communities, 200 km of improvements to existing coastal embankments, and 200 km of electrical undergrounding as part of cyclone recovery and resilience efforts. In addition, over 110 of out of 905 planned cyclone shelters have been built.

**REGION: SOUTH ASIA**  
**COUNTRY: INDIA**  
**FOCUS AREA: RISK REDUCTION**

Cyclone Phailin, the strongest cyclone in nearly a decade and a half, made landfall in Odisha, India on October 12, 2013, with a Category 4 rating. Three-meter storm surges and sustained wind speeds of well over 200 kilometers per hour battered the coastline for hundreds of kilometers. But amazingly, fewer than 50 lives were lost—a dramatic reduction from historical precedents.

The limited loss of life was largely due to effective disaster risk management (DRM) and preparation by the government of Odisha, along with support organizations, which enabled a massive evacuation of residents from vulnerable coastal areas. The Global Facility for Disaster Reduction and Recovery (GFDRR) and the World Bank are supporting the strengthening and scaling up of these efforts throughout India through two phases of the National Cyclone Risk Mitigation Project (NCRMP) and the Coastal Disaster Risk Reduction Project (CDRRP).

## Context

Cyclone 05B in 1999 was the most powerful tropical cyclone ever recorded in the North Indian Ocean, bringing catastrophic losses in human life and property throughout the state of Odisha and surrounding areas. With nearly 10,000 fatalities and \$5 billion in property damage, the tragedy emphasized the need for improved resilience and risk-preparation.

Because of sustained efforts by government agencies, civil society, and partners like GFDRR, the effects from the similarly-intense Cyclone Phailin in 2013 were considerably less severe. However, vulnerabilities in the region and along India's 7500 km coastline remain and the country is looking to improve its social preparedness and economic resilience from future cyclonic events.

## Approach

Since 2011, the World Bank has supported the NCRMP, the first preventative DRM initiative in India. In the wake of Cyclone Phailin, the program has grown significantly in funding, as well as beyond its initial focus on the states of Odisha and neighboring Andhra Pradesh. Along with the CDRRP, it now covers eight additional states that also benefit from work on building coastline resilience – Karnataka, Kerala, Goa, Gujarat, Maharashtra, Pondicherry, Tamil Nadu, and West Bengal.

Working in conjunction with the various state governments, these projects aim to:

- Streamline comprehensive early warning systems for hydrological events through the selection, purchase, and installation of communication networks.
- Prevent ocean waters from flooding agricultural lands through the construction of saline embankments and coastal canals.
- Improve roadways, bridges, and shelters, contributing to the government of India's larger goals of building resilience to a changing climate and risks from natural disasters.
- Help undertake risk and damage assessments to better inform disaster risk reduction strategies.

These projects also seek to reduce disruptions of economic activity after a natural hazard. For example, in the state of Tamil Nadu, funding has been used for undergrounding electrical cables in several villages prone to power outages during cyclones. This helps to ensure a steady electricity supply so that businesses can continue to operate.

## LESSONS LEARNED

**Successful disaster risk management can dramatically reduce casualties from natural hazards.** The stark contrast in loss of life between the 1999 event and Cyclone Phailin clearly shows the dramatic potential of well-planned and carefully-executed disaster risk management initiatives. As changes in climate increase the size, strength, and frequency of tropical storm systems, the coordinated efforts of the governments of Odisha and Andhra Pradesh, GFDRR, and the World Bank to mitigate risk stand as an exemplary model for building disaster management capacity in vulnerable Indian states, as well as other developing regions around the world.

**Community engagement is critical to implementing disaster reduction strategies.** The success of Odisha at reducing loss of life was due in part to engaging the local community in disaster risk management strategies. As part of the initial NCRMP, each cyclone shelter is overseen by a committee made up of community members who are responsive to local needs. During Cyclone Phailin, 25 of the newly constructed shelters were used to protect approximately 50,000 people. This model is being replicated in all other Indian states that are receiving new cyclone shelters built with NCRMP funding.

## Next Steps

Building on the exceptional success of past DRM efforts, the government of India is working with the coastal states to pursue a zero-casualty target for cyclonic and other natural disasters. This entails further penetration of early warning systems in rural areas and higher capacity for existing emergency infrastructure. Emphasis will continue to be on creating more resilient infrastructure and communities to lessen the financial and social impacts of major disasters.

*“The success of minimizing human casualties was due to the resolve of the State and our team’s preparedness. We recognize that each disaster is an opportunity to improve our resilience and risk measures.”*

—JK Mohapatra, Chief Secretary, Government of Odisha

## Contact

Deepak Singh  
dsingh2@worldbank.org  
www.gfdrr.org

\*All figures in US Dollars