HOISA presents

Observing Resilience: Coastal South Asia

on 28 November 2023 at 16h30 IST on Zoom

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Due to accelerating climate emergency, the coastal region of South Asia will face unprecedented loss and damage not just in the coming century but in the coming decades. When observed differently, the loss and damage offer opportunities for transformative resistance building. To underline these opportunities to the South Asia participants of COP 28 UAE and beyond, HOISA is hosting a roundtable on coastal risk assessment, preparedness, community mobilising, and capability building to observe the coastal loss and damage differently and thereby suggest opportunities for transformative resilience building in the region.

28 November, 16h30IST on Zoom

Register on www.hoisa.org or email to hoisa.now@gmail.com

(A) Background

The Humanitarian Observatory Initiative in South Asia (HOISA) and Coastal Development Planning Centre (CDPC) jointly organised a virtual round table, 'Observing Resilience: Coastal South Asia ', on Tuesday, November 28, 2023, 04:30 pm to 06:00 pm (IST).

(B) Summary of the Roundtable

(1) Building Coastal Resilience in South Asia against Extreme Events

According to a 2020 report by the UN, more than 7000 extreme events have been identified since 2000 resulting in a sharp increase in floods and droughts globally. With the accelerating climate change, warmer weather, and frequent marine heatwaves, our coasts are particularly at a greater risk of facing frequent flooding, soil erosion, and loss of agriculture and natural defense systems that have been protecting us since centuries. Continuing the discussion on building coastal resilience, HOISA conducted a panel discussion with expert panellists from the subcontinent to chart a way ahead.

Dr MV Ramana Murthy from the National Centre for Coastal Research, Ministry of Earth Sciences India highlighted that over the last century and particularly since 1950, we have been witnessing a global trend of a decrease in the number of rainy days, and an increase in intense rainfall events of 10-15 cms of downpour per day. The situation is alarming as it causes more destruction to crops, infrastructures and livelihoods with flash floods and soil erosions. This can be seen in the heavy downpour in Mumbai on 26 July 2005, with 944 mm of rainfall in 24 hours, and in Chennai on 1 Dec 2015, with 494 mm of rainfall in one day. In both these cases, critical data on vulnerable areas, the extent of flooding, low-lying areas, and early warning systems were missing.

Researchers are currently working on a model called INFLOWS that gathers all information related to the urban infrastructure and coastal population by using various models to then predict the potential inundation areas, thereby providing sufficient time for early warning systems. With an increase in extreme events, we require a two-fold approach – both short-term and long term to strengthen our existing infrastructure along with an efficient warning system to build the much-necessary coastal resilience.

Coastal resilience implies building the ability of a community to bounce back after hazardous events such as hurricanes, coastal storms, and flooding, instead of simply reacting to impacts. Over the coming decades, the population of India's Coastal regions and cities is expected to increase further. Coupled with the potential impacts of climate

change, coastal communities, homes, infrastructure, and ecosystems are staring at increased disaster risk. The recent trends in the Arabian Sea are particularly worrying as we are witnessing increased cyclonic systems, depressions and wave power on the coasts. Further the coasts are also under heavy stress with increased development of ports, coastal structures, damming of rivers and dredging of tidal inlets.

To counter these challenges, the National Shoreline Assessment System is building a database of Shoreline change atlas for the entire Indian coast using 12 sets of satellite images (1990-2018). This data is being updated annually and state-wise to identify vulnerable hotspots and thereby provide solutions.

There are various coastal management strategies at play today, such as: Managed Realignment - where a new line of defense is identified inland; Move seawards – where new defenses are constructed towards the sea; and Limited interventions – where adjustments are made to be able to cope with erosion or inundations. It is recommended to look towards sustainable solutions that are cost-effective in responding to the natural ecosystem in the area. However, it must be noted that a mixture of strategies may be required depending on the context and the community being affected. For example, Chellanum in Kerala saw the construction of flood barriers on the coastline which worked in its favour as there has been no flooding since three years. Ramaypatnum in Orissa, on the other hand required a very minimal intervention to protect the coastal communities. Pondicherry employed a strategy that is mimicked from the Lakshadweep where the wave power is broken while creating a beach at the coast. A living shoreline with natural habitats such as the mangroves, enhance and protect the coast.

As we look forward into the future, an informed and prepared community will have a greater opportunity to bounce back from disasters. Resilience should be measured by the information a community possesses. This allows better decision-making, lower carbon footprint, and improved citizen response in times of crisis.

(2) Opportunities and Challenges of Nature-Based Solutions

Sourav Kumar Biswas from Sponge Collaborative shed light on the opportunities and challenges of nature-based solutions in the current context of increased risk of cyclones, storm surges and flooding resulting in coastal erosion, groundwater and saltwater intrusion and habitat loss.

While looking at nature-based solutions, strategic conservation or restoration of mangroves, coral reefs and dunes can comprehensively

mitigate all dimensions of risks linked to multi-hazards. These solutions can be prospective, wherein natural landscapes are protected; they can be corrective, where natural or hybrid systems are leveraged (planting mangroves, reef restoration, etc.); or they can be compensatory, where bio-economy and blue economy are promoted (agroforestry, sustainable fisheries, eco-tourism).

An analysis by the Council on Energy, Environment, and Water (CEEW) suggests that three out of four districts in India are extreme event hotspots for floods, drought and cyclones. More than 95% of coastal Indian districts are prone to extreme events. In such a scenario, discussing different solutions becomes imperative.

The South Asian coasts can particularly learn from the three cases laid out as below.

Marshall Islands are deeply at risk with the rising sea levels. With only about 0.5m sea level rise, 8.5% of the buildings in the Marshall Islands are at risk of inundation. The same climbs up to 37.1% with a 1m sea level rise and 92.4% with a 2m sea level rise. In such a scenario, seawalls are a common response to mitigate flooding, however, they may not withstand the future sea level rise with a risk of increased erosion, wave overtopping and scouring processes in the reef. Nature-based and hybrid solutions can particularly help in such cases where we must not only protect the shoreline by building coastal structures to limit intrusion but also strengthen reef beds to ensure a natural protection barrier against waves. Long-term climate adaptation in coastal areas is about pursuing multiple adaptation pathways to prepare for different climate scenarios. Avoiding maladaptation and figuring out which strategies receive adequate investment is the biggest challenge we are facing.

On the other hand, Tampa Bay in Florida shows the opportunities but also challenges of Nature-based solutions. The bay has a diverse coastal and nearshore ecosystem. With various natural and constructed coastal conditions, they face varying degrees of exposure to sea level rise. The present coastal systems, including dunes, seagrass, mangroves, salt marsh and wetland forests, all play a very critical role in its protection. The sea level rise, coupled with urban land use and human activity, is a challenge to this ecosystem. This is where we must protect, restore, enhance and deconstruct to build coastal resilience.

Lastly, in the case of Dhanushkodi in Tamil Nadu, we can see how integrating the blue economy agenda in building coastal resilience can help its ecosystems. Coastal eco-tourism, sustainable agriculture, salt extraction, fisheries and mariculture, and climate-resilient settlements

and ports form part of the agenda. Currently, Dhanushkodi is facing challenges in health, nutrition, education, agriculture, financial inclusion, and skill development. Due to its geographical position, Dhanushkodi can be leveraged as a tourism destination within a diverse ecosystem and home to the community of fishermen and salt pan workers. Developed salt marshes, a pilgrimage corridor, coastal uplands and reefs, and coastal lagoons can together create a framework for the development of its community as well as of the ecology of Dhanushkodi against future threats.

These examples show that depending on the case, its socio-cultural-ecological context, different methods may be adapted to build coastal resilience. While nature-based solutions form an integral part of all these strategies, we must think of hybrid solutions to better defend our coasts while ensuring the sustained development of coastal communities.

(3) A Perspective from a Community-based Organisation

Flora Bawi Nei Mawi, co-founder and director of Community Care for Emergency Response and Rehabilitation in Myanmar, contributed to this panel by highlighting the importance of bringing communities to the centre of all policy changes and transformation. From their previous experience of dealing with cyclones and storm surges, they believe that the main actor in bringing the solution to a crisis must be the community itself. When the humanitarian sector or government, labels a particular group as vulnerable who need constant help, they are othering them by not allowing them to empower. The act of coming together, community memory and experience, collective response, decision-making, and learning are essential in building resilience and recovering from any man-made or natural disaster.

Resilience means taking the space, claiming the rights of accountability, shifting the power to the community, generating data and interpretation, and collaborating with others with mutual respect. Flora recommends that we must allow for stronger local leadership, accountability, and abolishing aid hierarchies by addressing the underlying problem in part if not all.

While a long road lies ahead in strengthening the South Asian coasts from increased risks of climate change, we must continue to exchange information, ideas, and strategies, as each of the panellists highlighted, while adapting hybrid solutions from bottom-up and top-bottom to ensure a thriving shoreline that the regions are blessed with.

Contributions by Dr. M.V. Ramana Murthy, Sourav Kumar Biswas, and Flora Bawi Nei Mawi. Edited by HOISA.

(C) Resources on Cyclones

1. Report on Recovery and Construction following the Orissa Super Cyclone 1999, https://www.adrc.asia/publications/recovery_reports/Orissa.pdf
2. Experience of Orissa Super Cyclone 1999, http://admin.indiaenvironmentportal.org.in/files/Orissa%20super%20cyclone.pdf
3. Mitigation of Flooding and Cyclone Hazard in Orissa, https://core.ac.uk/download/pdf/291519656.pdf
4. Orissa Super Cyclone - A synopsis, https://www.researchgate.net/publication/356546933_Orissa_super_cyclone_-_A_Synopsis#:~:text=Orissa%20was%20battered%20by%20a,lives%20of%20nearly%2010%2C000%20people.
5. Learning from Cyclone Nargis – UNEP, https://wedocs.unep.org/bitstream/handle/20.500.11822/14116/myanmar_cyclonenargis_case_study.pdf
6. Cyclone Nargis Storm Surge in Myanmar, https://www.researchgate.net/publication/251183953_Cyclone_Nargis_storm_surge_in_Myanmar
7. Cyclone Nargis and the Responsibility to protect Myanmar, https://r2pasiapacific.org/files/582/briefing_no2_cyclonenargis_r2p_myanmar.pdf
8. Meandering to Recovery - Post Nargis Social Impacts, https://www.gfdrr.org/sites/default/files/publication/post-nargis_social_impact_monitoring_10_year_aftersim_5_eng_version.pdf
9. Tropical Cyclones and Climate Change – ScienceDirect, https://www.sciencedirect.com/science/article/pii/S2225603220300047
10. Biparjoy Unleashed: A comprehensive analysis of geographical and social impact, https://isdesr.org/wp-content/uploads/2023/07/9.-Mehnaj-Sheikh-and-M-M-Sheikh.pdf
11. Climatic Risks and Impacts in South Asia, https://centaur.reading.ac.uk/62915/3/Climatic%20Risks%20and%20Impacts%20in%20South%20Asia.pdf
12. Climate-Related Disasters in Asia and the Pacific – Asian Development Bank, https://www.adb.org/publications/climate-related-disasters-asia-and-pacific

(D) List of Participants

Sr. No.	Full Name
1.	Rana Mahendra
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9.	Prajapati Nikeeta
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12.	Vishal Pathak
13.	Mahesh
14.	Asmita Deo
15.	Jyoti Agrawal
16.	Ajit Tyagi
17.	Prem Singh
18.	Binu Mathew
19.	Sanchita Chanda
20.	Mojibul
21.	Flora Bawi Nei Mawi
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23.	Ananya Bhatia
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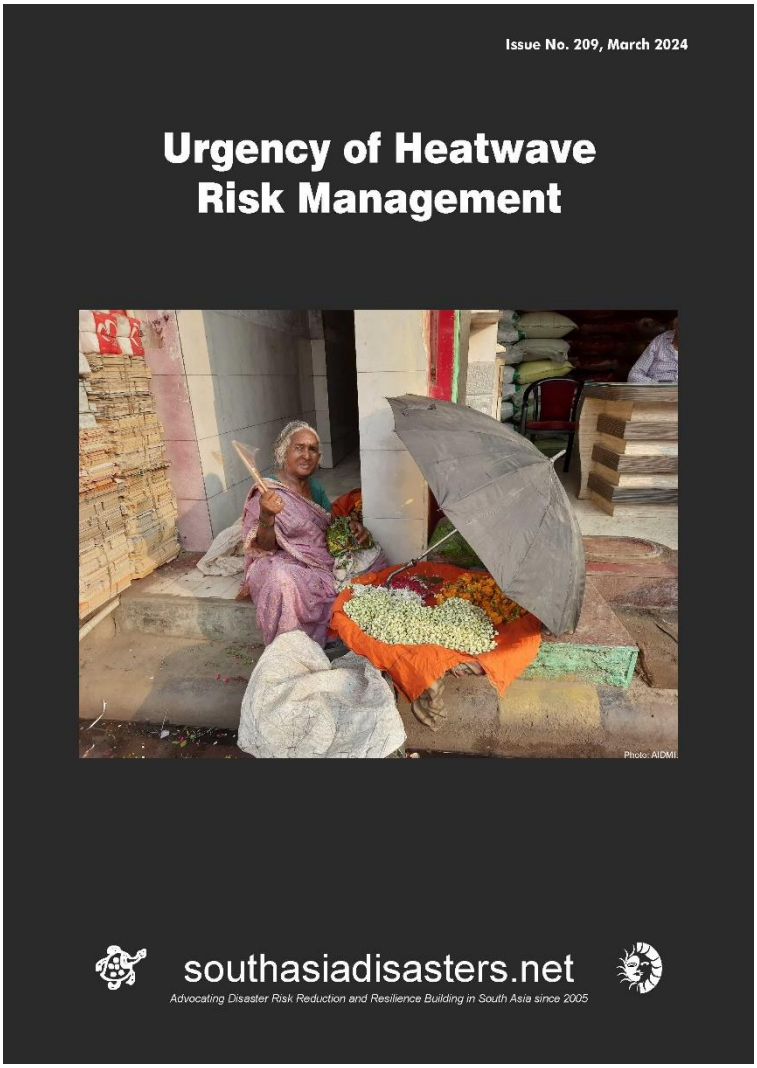

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