

BUILDING DISASTER RESILIENT SEAPORTS EXPLORING ADAPTATION IN PRACTICE



The DRI Dialogue on 'Building Disaster Resilient Seaports: Exploring Adaptation in Practice,' discussed the challenges, best practices and opportunities in disaster resilient seaport development. Speakers from international organizations, government agencies and think tanks in the maritime sector emphasized the importance of adaptation actions in seaports and associated systems in wake of the frequent and extreme disasters exacerbated by climate change.

Key Discussion Points

-  **Seaports and disaster risks:** Challenges and risks in port systems due to disasters and ramifications of interruptions
-  **Adaptation in practice:** Best practices and innovations to enhance resilience of port infrastructure
-  **Opportunities in transitioning to a resilient future:** Anticipated changes in the maritime sector and strategies to promote adaptation



Seaports and Disaster Risks

The frequency of extreme events has increased and is happening at regular intervals. India is the fifth most vulnerable country to the impacts of climate change and in the top three globally when it comes to sea level rise. The Maritime India Vision 2030 focusing on creating smart ports and port-led industrialization failed to emphasize protecting maritime infrastructural assets against the ever-growing impacts of climate change.

Ports are lifelines for Small Island Developing States (SIDS) that are sea-locked and everything they need i.e., trade, tourism, energy and food, depends on their seaports. At the same time, these countries are highly

exposed to hazards which will be further exacerbated due to climate change.

In the context of climate change, risk is a function of hazards, exposure (people and assets) and vulnerability (capacity to respond). As per the sixth Intergovernmental Panel on Climate Change (IPCC) report, hazards are increasing and as is the exposure and vulnerability of SIDS since they lack adaptive capacity.

Port disruptions not only affect ports but also impact the hinterland, global supply chains as well as urban areas or economic centres that are hundreds of kilometres away from the ports.

Adaptation in Practice

- **Study on impacts and risks of climate change to Brazilian coastal public ports:** A study by the Brazilian National Waterway Transportation Agency (ANTAQ) assessed the impacts and risks of climate change to 21 public coastal ports in Brazil and identified adaptation options to increase the resilience in the face of climate change. A climate risk index for ports under three climate hazards (strong wind, thunderstorms and sea level rise) was developed. The study identified 55 adaptation measures, 21 of which were structural and 34 non-structural. The study used climate model data as well as observational data, which provided a more realistic condition of the current climate and risk level.
- **Climate change adaptation for seaports in SIDS - Insights from United Nations Conference on Trade and Development's (UNCTAD) work:** As part of UNCTAD's project, 'Climate Change Impacts on Coastal Transport Infrastructure in the Caribbean: Enhancing the Adaptive Capacity of Small Island Developing States (SIDS)', a methodology was developed to assist transport infrastructure managers and other relevant entities in SIDS. The Climate Risk and Vulnerability Assessment Framework for Caribbean Coastal Transport Infrastructure developed as part of the project provides a structured framework for the assessment of climate change impacts and vulnerability to identify priorities and assist in effective adaptation planning for critical coastal transport infrastructure. The methodology is transferable, subject to location-specific modification, for use in other SIDS within the Caribbean and beyond.
- **Adaptation strategies between cities and ports - Best practices recommended by AIVP (Association Internationale Villes et Ports):**
 - The Netherlands is well known for its preparedness for sea level rise and flooding and the Port of Rotterdam in Netherlands has also taken adaptation measures such as raising barriers, sites and bank structures, spatial adaptation by preparing sites and assets, and crisis and flood risk management with collaboration between ports and city stakeholders.
 - Port of Santiago deployed a native oyster living shoreline to increase biodiversity and protect the shoreline from impacts related to future sea level rise. They also installed 72 low-carbon concrete tide pools providing shoreline stabilization, guarding against coastal flooding, and improving the ecology of the bay water.
 - The eThekweni (South Africa) municipality, in collaboration with other stakeholders, has developed the Forecast Early Warning System, a disaster management and data monitoring tool that simulates flood scenarios, environmental water quality, coastal erosion and wave behaviour.

Recommendations

Developing adaptation strategies

- High-quality evidence-based risk and vulnerability assessments are essential to improve the understanding of impacts on ports, guide effective adaptation responses, prioritize resources, and develop policies, plans and action.
- The catchment area of port operations extends beyond the immediate location, thus, the emerging climate risks in both the foreland as well as hinterland must be factored in. Port expansion projects may have negative impacts on the surrounding coast due to changes in maritime flows, ecosystem etc., hence a broader perspective is important.
- Adaptation to climate change must account for local conditions, the lifetime of port infrastructure, and the operability and resilience of the port under extreme conditions.
- The port planning system and documents need to be updated regularly based on the latest information on climate change (e.g., IPCC reports) to reduce the impacts of hazards.
- The resources used in adaptation measures should not speed up climate change. Investments for adaptation need to be made after ensuring that the investment itself will not contribute to climate change.

Special case for SIDS

- For SIDS, building the capacity of human resources and institutions to be able to access climate finance, develop adaptation actions and innovative technologies is critical.
- Finance for adaptation must be affordable for SIDS which also entails funds to be available in the form of grants rather than only loans which further increases the debt burden.

Financing for resilient ports

- Future-proofing ports against disaster events is expensive. Affordable financial support models for adaptation need to be developed. It is difficult for small island countries to tap a funding mechanism that is not usurious or not attached to geopolitical penalties for funding the huge cost associated with adaptation.
- There are very few insurances available for port infrastructure and operations. Existing insurance schemes are extremely expensive and difficult to purchase. Affordable insurance solutions for safeguarding port infrastructure are necessary, which include insurance rewards for risk reduction and adaptation.
- Climate change represents a business risk and failure to adapt is not an option. Rather than considering the cost of adaptation, the

focus should be on potential economic losses that can be avoided if timely and effective action is taken. Presenting the economic consequences of impact is the first step.

- There is a good opportunity to include private finance for resilient and sustainable ports which needs to be explored.

Collaborations for building resilience

- A coherent vision and multistakeholder engagement are inevitable for building resilient seaports considering the scale of investments, the impact of the climate change and the territory involved. The governance structure, decision-making chains and institutions have to be considered to identify responsibilities and assess the capacity to act in a specific territory.
- Mainstreaming climate change considerations in port infrastructure planning and operations means cross-cutting through all departments and all processes not just in the environmental context but also in the business aspect. All stakeholders have to be aware of the impact that climate change is going to have on their business models.
- Potential infrastructure investments need to be made with a holistic vision of the impact of investment in a broader territory and collaboration with other

actors to make the investments more secure.

The way forward: Future of seaports and adaptation

- More mainstreaming actions and innovative and out of box ideas are required. Ecosystem approaches to adaptation are an important element in any future strategy.
- Successful adaptation strategies need to be underpinned by strong legal, regulatory and policy frameworks as well as standards. These should be reflected in national adaptation plans and development of disaster risk reduction and Covid 19 recovery policies and planning.
- The three major changes anticipated in the maritime sector are: (i) new geography of trade (US-China trade war and new geopolitical tensions that may increase regionalization), (ii) Covid 19 pandemic - infrastructure investments have fallen as a result of Covid; countries should consider resilience in Covid 19 recovery strategies of build back better as well as sustainable development and climate policies; and (iii) need for severe energy efficiency measures, decarbonization and investment in renewables in light of the rising cost of energy across the world.
- Energy efficiency, decarbonization and renewables offer important benefits not only for mitigation but also for adaptation, and also for keeping energy costs low, thereby, increasing energy security.

Panellists



LIVE WEBINAR

Building Disaster Resilient Seaports: Exploring Adaptation in Practice

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75 Minutes | Virtual



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