Adaptation in Deltas

Reaching Impact at Scale

Key Points

- Deltas are one of the most vulnerable landscapes to climate change impacts. Frequently occurring hazards include floods, droughts, tropical cyclones and rising sea levels causing coastal losses and saline intrusion.
- Implementing a large-scale, multisectoral planning approach is crucial for effective adaptation and management of deltas.
- Significant investment in delta adaptation efforts is needed to have impact at scale.
- Ensuring local voices are included in adaptation planning and implementation is critical in promoting not only more equitable, but also more effective, outcomes.
- Nature-based solutions (NBS) for delta adaptation should be scaled as a critical part of basin-level integrated water resources management (IWRM) as well as delta ecological management.

The Importance of Delta Adaptation

- Strengthening delta resilience is crucial for the well-being of nearly 339 million delta dwellers, their livelihoods and the sensitive/delicate delta ecosystem.
- Delta regions are home to rich biodiversity, extensive agricultural lands and fisheries as well as thriving economies – ranking among the most productive socio-ecological systems in the world.
- Sea-level rise coupled with human interventions, however, are resulting in the shrinking and sinking of deltas, while more frequent climate disasters threaten lives and hard-won development gains.
- In the absence of adaptation interventions, climate change could result in significant damages and losses felt in infrastructure, agriculture and fisheries sectors and severely impede progress toward achieving 2030 Sustainable Development Goals.

The Complexity of Delta Adaptation

- Adaptation efforts in deltas can be complicated by high population densities and rapid urban development as well as geographical challenges stemming from their environmentally sensitive and hazard exposed locations. Also, deltas frequently cut across administrative and national boundaries, creating significant governance challenges.
- The challenge of deltas in poorer countries also stems from the high concentration of poverty, unequal distribution of economic development as well as increasingly ad hoc physical modifications of canals, dykes and polders. Under a changing climate coupled with upstream damming and other land use modification which will stifle sediment flows, deltas are expected to undergo fundamental structural and environmental changes.

- Enhancing delta resilience involves complex governance, planning and environmental management action. Short-term economic gains are frequently prioritised over long-term resilience planning and management.
- Many deltas still lack integrated climate-adaptation plans, in part because of the difficulties of aligning institutional incentives, responsibilities and budgets across government levels and bodies.

Key Policy Recommendations

- Conserve natural capital and implement ecosystem services, which demonstrate benefits for nature-based adaptation as well as sustainable development in deltas.
- Implement large-scale integrated planning at national government level with dedicated long-term budget. Linkages between flood risk management, integrated water resources management (IWRM), urban and spatial planning as well as other key development sectors such as energy, housing, agriculture, and the environment are critical.
- Raise awareness of the effectiveness and economic benefits of integrated Nature-based Solutions (NbS) to attract and coordinate adaptation investment. This should however not lead to a dichotomy between green and grey solutions rather promote a synergy to tap into risk reduction benefits that nature offers. In this regard a blended design approach should be adopted to maximize system performance and achieve greater benefits of delta dwellers and deltaic ecological systems.
- Ensure local community voices are included in the adaptation and planning process. Working with frontline communities is crucial in understanding the root causes of vulnerability and ensuring equitable adaptation. Resulting interventions must address concerns beyond climate change and address unemployment, food insecurity and other community challenges.
- Consider not only incremental adaptation policies and programs, but also transformational action which induces the radical changes across systems needs to effectively address climate change. Examples include restoration and reactivation of flood plains, removal of existing barriers to water flows (e.g. dikes) and managed retreat of infrastructure from low-lying areas.

Lessons Emerging from Implementation

- Accelerating adaptation action at an early phase is crucial. Early intervention allows sufficient time for adaptation planning and implementation.
- Adopting a systems perspective helps in accurately identifying challenges to upscaling climate adaptation. As there is growing recognition that adaptation will involve trade-offs and requires shifting from current business-as-usual practice, employing a macro perspective on the inter-connections of climate adaptation intervention is critical.
- Information sharing and good governance are key for effective delta management. There is an urgent need to improve understanding of what works in delta environments and share lessons and information across countries for scaling up. IPDC can play an useful role in this regard.
- Successfully implementing an integrated landscape approach requires a high level of organizational, financial and technical capacity. Bridging different disciplines, local knowledge, and sectoral expertise is vital to ensure an inclusive and equitable approach to adaptation.

This briefing is derived from a series of webinars, meetings, and dialogues with water practitioners across the globe, who are part of the Water Adaptation Community, hosted by the Global Center on Adaptation. It is intended to advance engagement and facilitate knowledge sharing on the subject of water adaptation.

GCA would like to acknowledge and thank the members of the Water Adaptation Community for contributing their perspectives to this community-sourced briefing, which may not necessarily represent those of GCA.

Additional Resources and Further Reading

- Connect to the Water Adaptation Community's Delta's Community of Practice
- Watch the Water Adaptation Community's webinar on 'Adaptation in Deltas: Good Practices and Reaching Impact at Scale.'
- The Wadden Sea region: a testing ground for climate adaptation
- Working with nature in the Mekong Delta (Lighthouse case study)
- Paraná Delta in Argentina - Climate adaptation practices (Lighthouse case study)
- Building with nature in Demak, Indonesia
- A patient process-oriented approach in Beira, Mozambique
- Managing Water Resources and Disaster Risk in Bangladesh
- GCA Delta Lighthouse report
- International Panel on Deltas and Coastal Areas (This initiative is supported by the Water Adaptation Community)
- Connect with Other Networks: Resilient Asian Deltas (RAD), Delta Alliance, Restored flooding for living deltas, Living Deltas Research Hub, Holwerd aan Zee, The Netherlands
- https://link.springer.com/chapter/10.1007/978-3-030-23517-8_9
- The Delta Program, The Netherlands
- Okavango Delta Management Plan (Botswana) and Okavango River Basin Planning (transboundary: Angola, Namibia and Botswana)
- Bangladesh Delta Plan
- New Professor of Delta Urbanism: "More focus is needed on the role of design in flood risk management in deltas" (tudelft.nl)
- Delta Alliance - Nature-Based Solutions for Resilient Asian Deltas - Guidance for implementation, bridging the gap between policy and finance (delta-alliance.org)
- WWF and Delta Alliance policy brief: Assessment report: implementing an integrated landscape system approach for nature-based solutions in Asian deltas