

Transdisciplinary science insight for understanding managed retreat across hazards, scales and geographies

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Climate resilient development pathways

There is a rapidly narrowing window of opportunity to enable climate resilient development



Illustrative climatic or non-climatic shock, e.g. COVID-19, drought or floods, that disrupts the development pathway

IPCC SPM, 2022 Figure SPM 5

Pathways and transformation in coastal systems: (managed) retreat





Settlements by the Sea, 2022, Figure 2

Responses to ongoing sea level rise and land subsidence in low-lying coastal cities and settlements and small islands include protection, accommodation, advance and planned relocation (*high confidence*). These responses are more effective if combined and/or sequenced, planned well ahead, aligned with sociocultural values and development priorities, and underpinned by inclusive community engagement processes (*high confidence*).

Disaster and climate resilience in a changing climate. What capacities for what change?





Adapted from Thornton & Manasfi, 2010; IPCC, 2018



Flood Resilience Alliance

Paszkowski, A. et al. Capacity for addressing geomorphic and climatic change? Measuring community resilience in riverine Bangladesh, *in preparation*

Paszkowski, A., Goodbred, S., Borgomeo, E. *et al.* Geomorphic change in the Ganges–Brahmaputra–Meghna delta. *Nat Rev Earth Environ* 2, 763–780 (2021). https://doi.org/10.1038/s43017-021-00213-4

Paszkowski, A., Laurien, F., Mechler, R., Hall, J. (2021). Time for change: Assessing the transformational capacity of riverine Bangladesh. IIASA YSSP report.

Mechler, R., Deubelli, T., Venkateswaran, K. Transformational risk management - science, practice and policy perspectives, Springer, forthcoming

Methods:

- Geomorphic change analysis
- Measurement of resilience and adaptive capacity
- Assessment of risk management options

In partnership with:



















Methodological approach





Paszkowski et al., 2021

Geomorphic change and floods in Bangladesh





Paszkowski et al., 2021

Measuring Resilience Capital/Capacity Flood Resilience Measurement for Communities (FRMC) tool





- Indicator-based resilience capacity assessment tool
- 5 capacities logic associated with livelihoods model
- Research working with implementation
- Boundary object and work: Engagement and trust
- Used in >250 communities globally

FRMC indicator system to understand capacities





Heatmap of disaster risk management across riverine communities in Bangladesh



		Preparedness									Response								Recovery					Corrective Risk Reduction											Prospective Risk Reduction									
	Community	Business continuity	Household income continuity strategy	Evacuation and safety knowledge	First aid knowledge	Flood emergency infrastructure	Community participation in flood activities	Inter-community flood coordination	Early Warning Systems	External flood response and recovery services	National forecasting policy & plan	Water and sanitation awareness	Flood healthcare access	Transportation interruption	Flood emergency food supply	Flood safe water	Flood waste contamination	Community structures for mutual assistance	Disaster response budget	Communication interruption	Household asset recovery	Community disaster fund	Provision of education	Flood energy supply	Community safety	Flood exposure awareness	Asset protection knowledge	Governance awareness	Priority managed units	Household flood protection	Large scale flood protection	Community representative bodies	Social inclusiveness Bick reduction invicetments		hatarated flood management nlanning		Education commitment during iloods	Future flood risk awareness	Environmental management awareness	Priority natural units	Community disaster risk management planning	LOCAL FEAUET SHIP	Natural capital condition	Natural resource conservation
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Transformational capacity in key riverbasins in Bangladesh





Paszkowski et al., 2021

Geomorphic hazard vs. prospective risk reduction



Summary



- Managed/strategic retreat moving to the spotlight in the context of worsening riverine and coastal floods hazards (as well as other hazards) – to anticipate forced displacement
- Adaptation Pathways offer technical insight into the options space and timing of potential actions
- Comprehensive capacity assessment can support change where and when needed – to consider intensifying efforts *in situ* along a spectrum of change as well as *ex situ systemic change* (e.g., retreat)- e.g., programme managers
- Int'l policy debates on Adaptation and Loss&Damage starting to consider action and support for transformation and retreat