

Building Integrated Coastal Resilience

ADB's Experience

Blair Spendelow

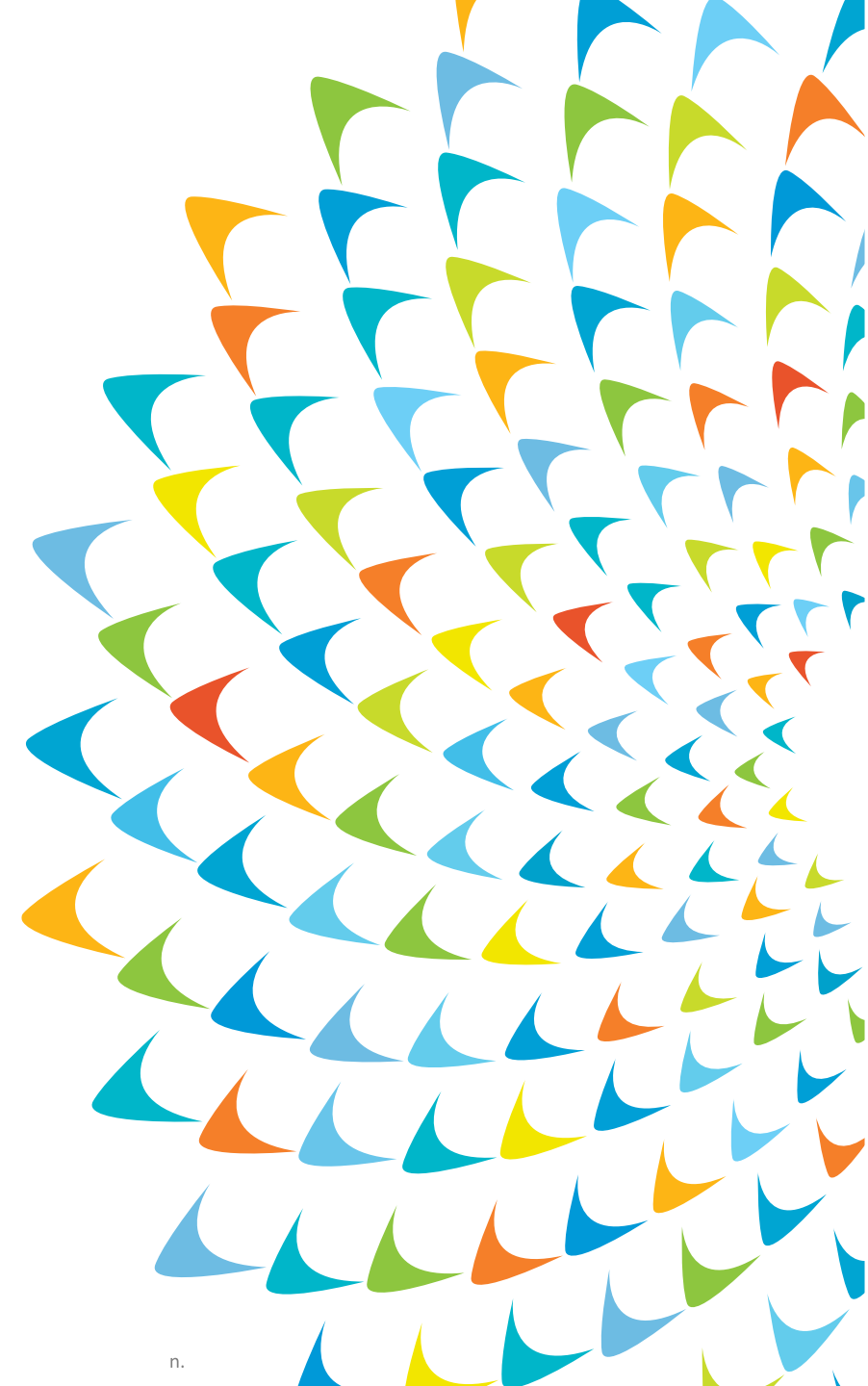
Senior Coastal and Marine Specialist

Natural Capital and Climate Team

Sectors Group: Agriculture, Food, Nature and Rural Development (AFNR)

Asian Development Bank

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Dynamic Equilibrium

Littoral processes

People

Livelihoods



Dynamic **Dis**Equilibrium

Shorelines cannot regenerate

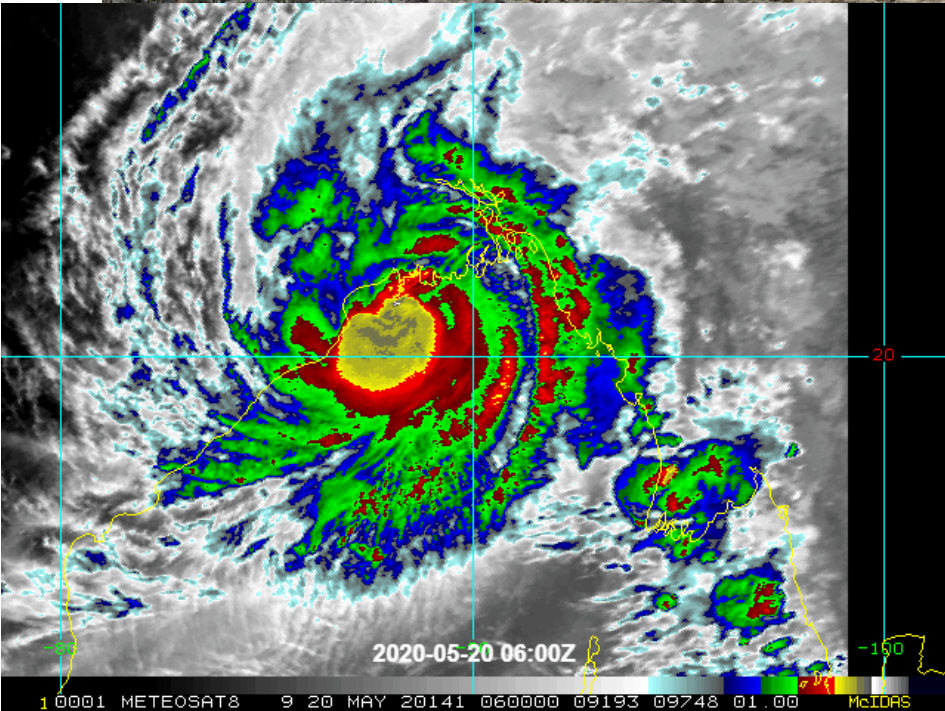
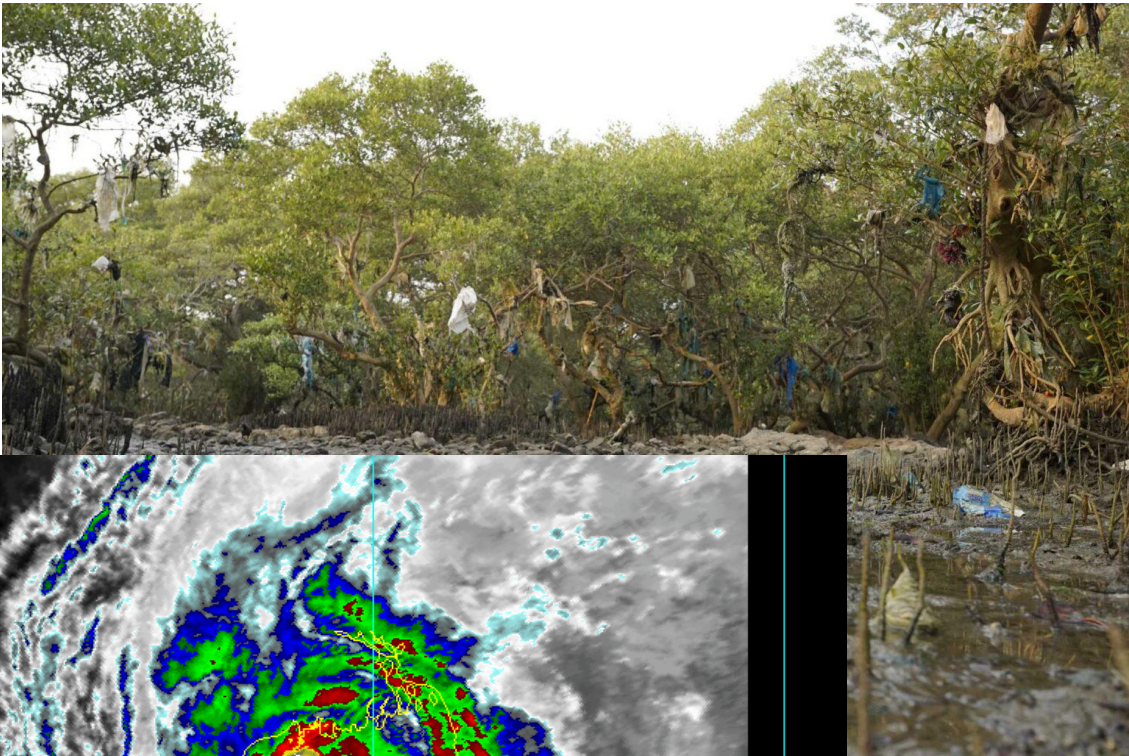
Threats to people/property

Livelihoods cannot be sustained

*Localised erosion or flooding is often a
symptom of systemic stress*



India’s Specific Coastal Resilience Challenges



Credits, clockwise top left:
Saumitra Shinde/Mongabay
Voice of America (VOA)
Sugam Pokharel/CNN
NOAA



Global Principles & Lessons Relevant to India's Coasts

“An Innovative and Climate Resilient Approach to Coastal Management and Adaptation for India” (ADB, 2024)

- **Clear picture of India's coastal risks** – Explains the economic and ecological value of coasts and the compounded threats from erosion, climate change, and human-driven “coastal squeeze.”
- **Integrated management framework** – Promotes shoreline plans built on **system-wide diagnosis**, valuing ecosystems, and blending nature-based, hybrid, and engineered solutions.
- **Proven ADB interventions** – Showcases successful projects in Kerala, Karnataka, and Maharashtra, including offshore reefs, sand nourishment, and dune restoration.
- **Scalable, forward-looking strategy** – Outlines adaptive, inclusive investment approaches aligned with ADB's Healthy Oceans Action Plan.



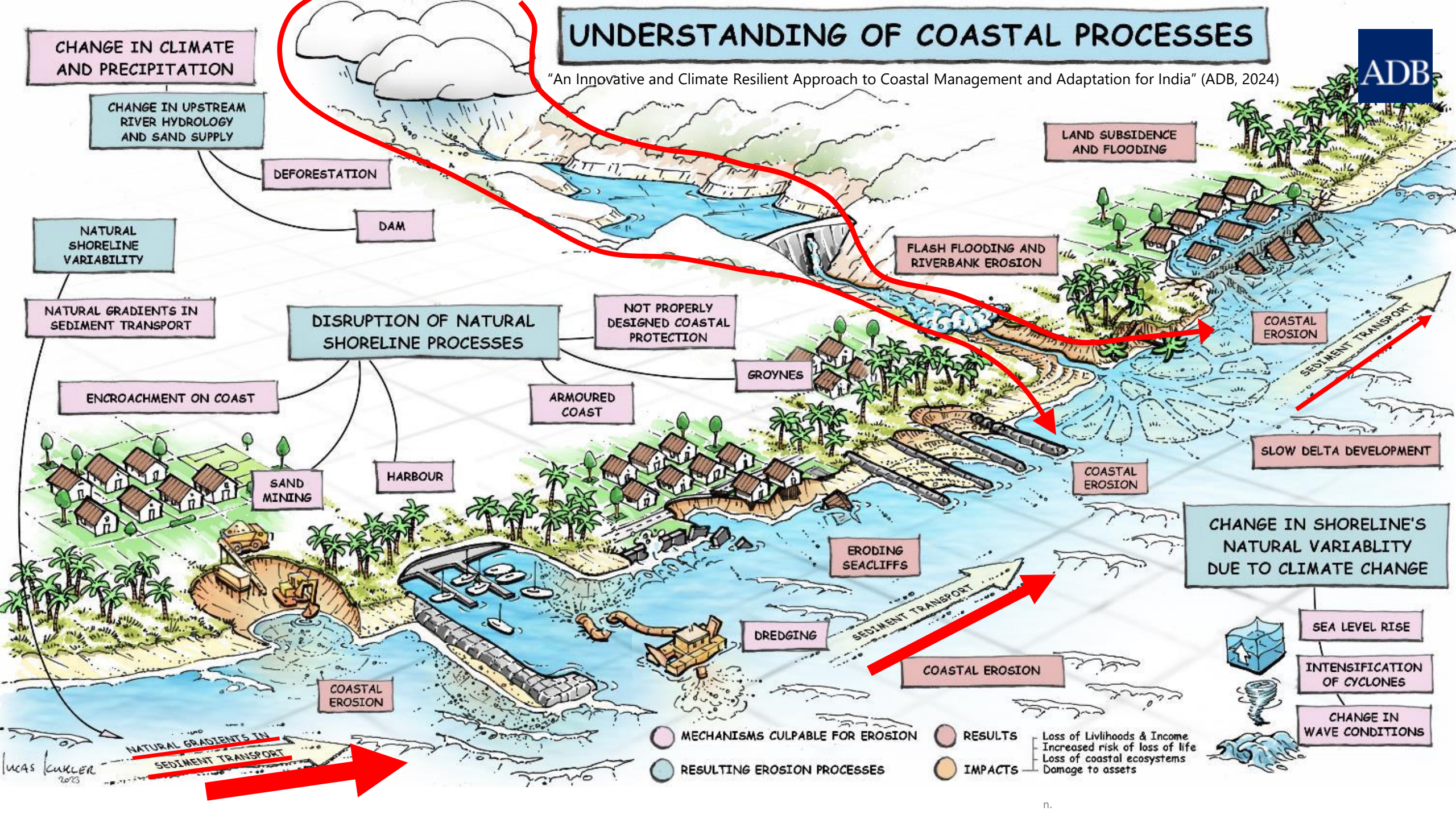
INTRODUCTION

India's coastal areas are increasingly confronted with escalating challenges. A priority challenge is coastal erosion and flooding, further intensified by climate change. A climate-resilient, integrated, and adaptive approach to coastal erosion is needed. To this end, the Asian Development Bank (ADB) has been helping India's state governments in Kerala, Karnataka, and Maharashtra adopt innovative climate-resilient integrated measures that will increase the resilience of coastal communities. To upscale these measures to other states, ADB is working closely with our partners to address the consequences of climate change and finance innovative approaches to a prosperous, inclusive, resilient, and sustainable Asia and the Pacific.

UNDERSTANDING OF COASTAL PROCESSES

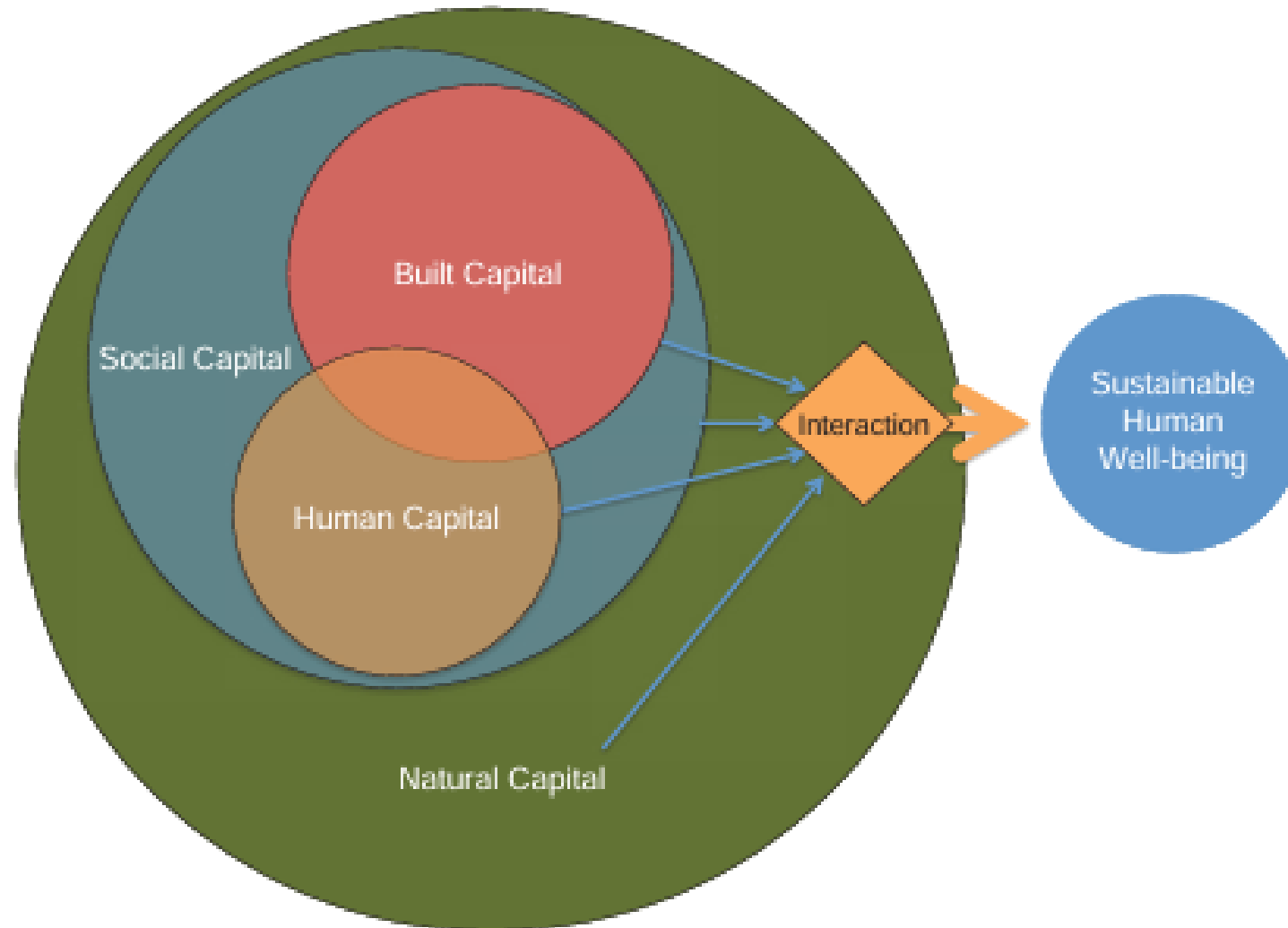
"An Innovative and Climate Resilient Approach to Coastal Management and Adaptation for India" (ADB, 2024)

ADB



Key Approach to Solution Design

- Value Nature



Source: Costanza et al. (2014).

Key Approach to Solution Design

- Engineering + nature



Key Approach to Solution Design

- Holistic, Integrated Solutions



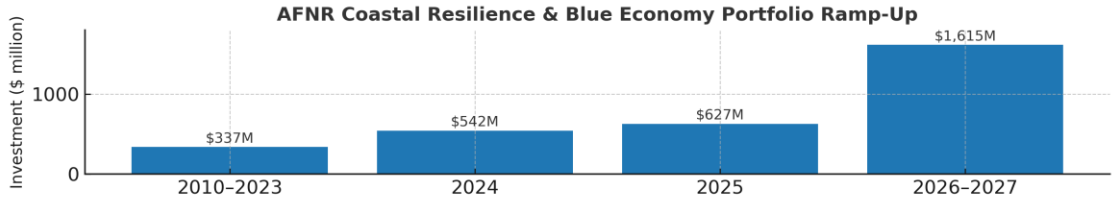
Source: Asian Development Bank. Illustration by Lucas Kukler.

AFNR's Indicative Investments

- Projects may comprise **strengthening governance and multi-sectoral grey/grey/hybrid investments**.
- **Lending modalities**: PBL, RBL, SDP, FIL, NSO, blended, project
- **Green investments** may include:
 - Spatial planning
 - Ecosystem restoration such as mangroves, coral reefs, seagrasses, wetlands, and agroforestry
 - Coastal erosion control, beach replenishment, dune restoration
 - Measures to prevent groundwater salinization
 - Sustainable tourism development
 - Establishing, expanding and maintaining protected reserves in marine, coastal and hinterland zones.
 - Sustainable fisheries management.
 - Community-based coastal management.
 - Small-scale fisheries.
 - Urban green infrastructure (natural stormwater treatments, green spaces, buffer zones, etc)
- **Grey investments** may include:
 - Seawalls and bulkheads
 - Breakwaters and jetties
 - Storm surge barriers
 - Embankments and revetments
 - Groynes
 - Floodgates
 - Artificial reefs
 - Emergency storm shelters etc.
 - Wastewater treatment
- **Private sector investments** may include:
 - Aquaculture
 - Sustainable tourism development
 - Renewable energy (wind, tidal, and waves)
 - Facilities for transport, trade and logistics
 - Coastal protection infrastructure
 - Land reclamation
 - Sustainable real-estate development

AFNR’s Recent, Existing Portfolio & Pipeline Investments

Year	DMC	Project Title	ADB Amount (\$ M)
2010	IND	Sustainable Coastal Protection and Management Investment Program - Tranche 1	51.56
2013	INO	Coral Reef Rehabilitation and Management- Coral Triangle Initiative Project	7.85
2017	IND	Sustainable Coastal Protection and Management Investment Program - Tranche 2	65.50
2018	CAM	Tonle Sap Poverty Reduction and Smallholder Development Project (additional financing)	45.73
2022	CAM	Sustainable Coastal and Marine Fisheries Project (NCC)	63.00
2022	INO	Infrastructure Improvement for Shrimp Aquaculture Project	93.00
2023	INO	Integrated Fishing Ports and International Fish Markets Phase II – Project Readiness Financing	10.00
2024	IND	Maharashtra Sustainable Climate Resilient Coastal Protection and Management Project	42.00
2024	INO	Reducing Marine Debris in Indonesia Subprogram I	500.00



Note: Figures represent AFNR-managed projects only, excluding ports and other sectors.

Year	DMC	Project Title	ADB Amount (\$ M)
2025	FIJ	Enhancing Climate Resilience of Coastal Communities Project	2.00
2025	PAK	Sindh Coastal Resilience Project	125.00
2025	PHI	Sustainable Development of Coastal and Marine Ecosystems and Biodiversity Subprogram 1	500.00
2026	IND	Kerala Sustainable Coastal Protection and Climate Resilience Planning Project	175.00
2026	INO	Reducing Marine Debris in Indonesia Subprogram 2	500.00
2026	FIJ	Enhancing Climate Resilience of Coastal Communities Project Phase II	10.00
2026	TUV	Funafuti Climate and Disaster Resilience Infrastructure Project	30.00
2026	VIE	Restoration and Sustainable Management of the Coastal Forests in the Mekong Delta	35.00
2027	IND	Climate Adaptation Coastal Protection and Management in Karnataka	175.00
2027	INO	Integrated Fishing Ports and International Fish Markets Phase II	190.00
2027	PHI	Sustainable Development of Coastal and Marine Ecosystems and Biodiversity Subprogram 2	500.00

Thank you

Blair Spendelow
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bspendelow@adb.org

