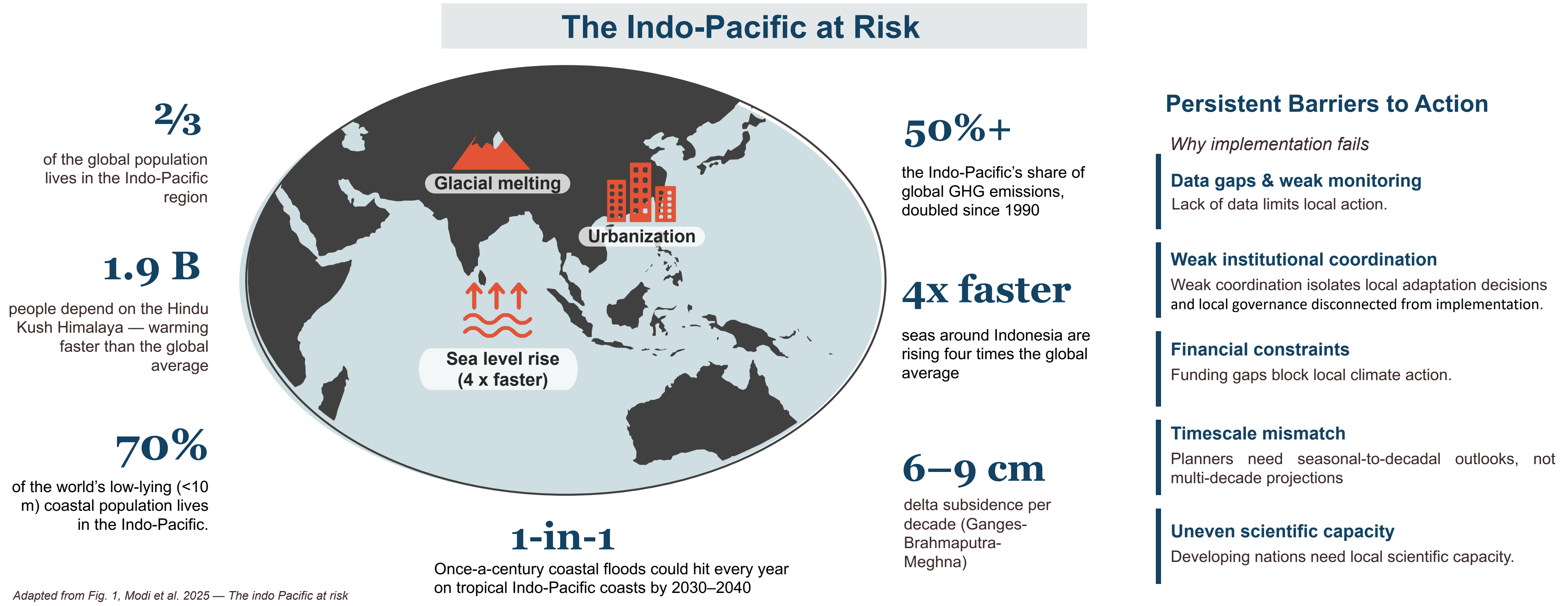


Bridging climate science, policy and communities:

Collaborative pathways for climate resilience in the Indo-Pacific

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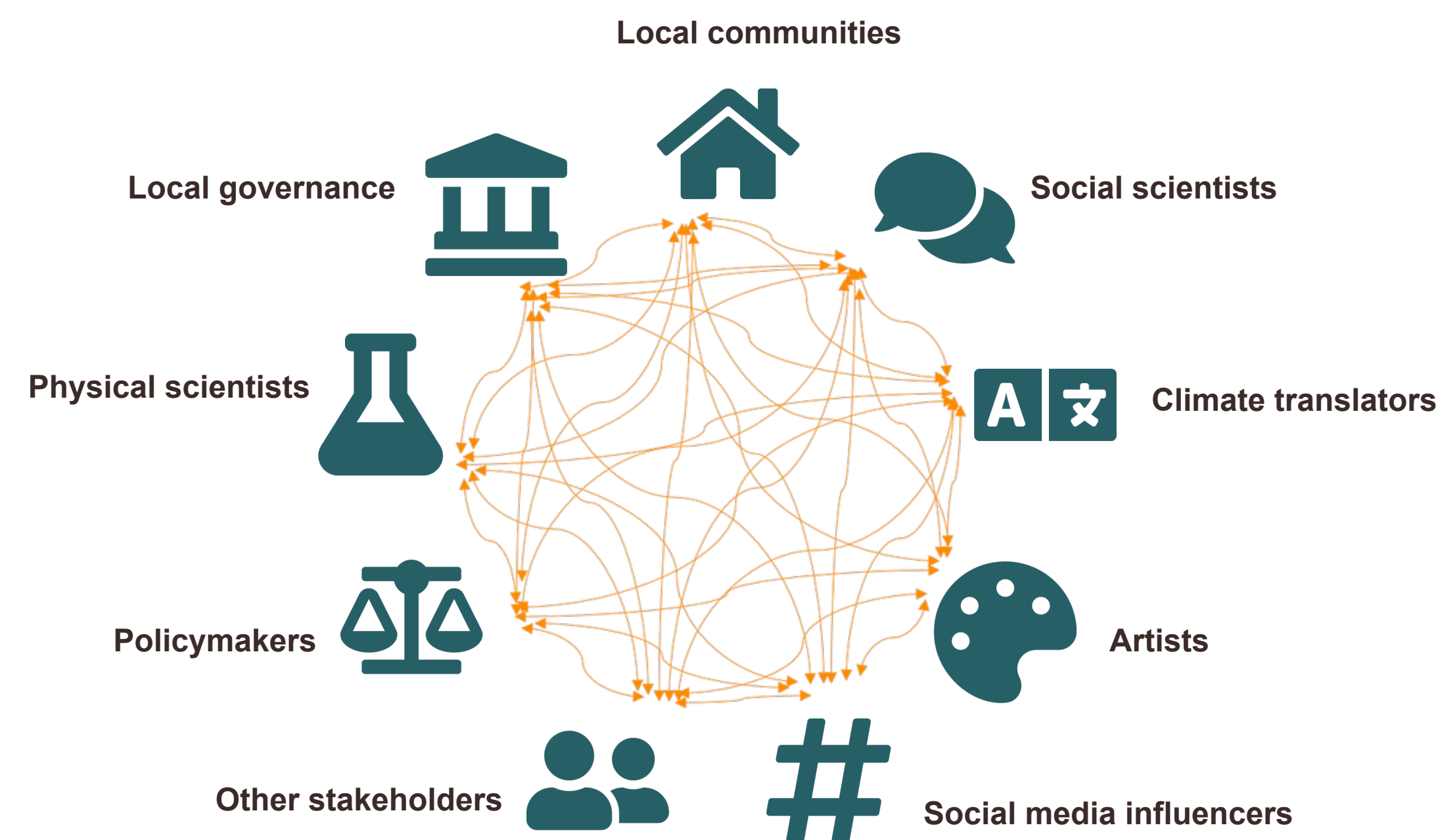
¹Centre for Climate Change Research, Indian Institute of Tropical Meteorology (IITM), Pune, India | WCRP My Climate Risk – Indo-Pacific Regional Hub at IITM Pune



Solution Pathways for Building resilience

a. From Value Chain to Value Cycle

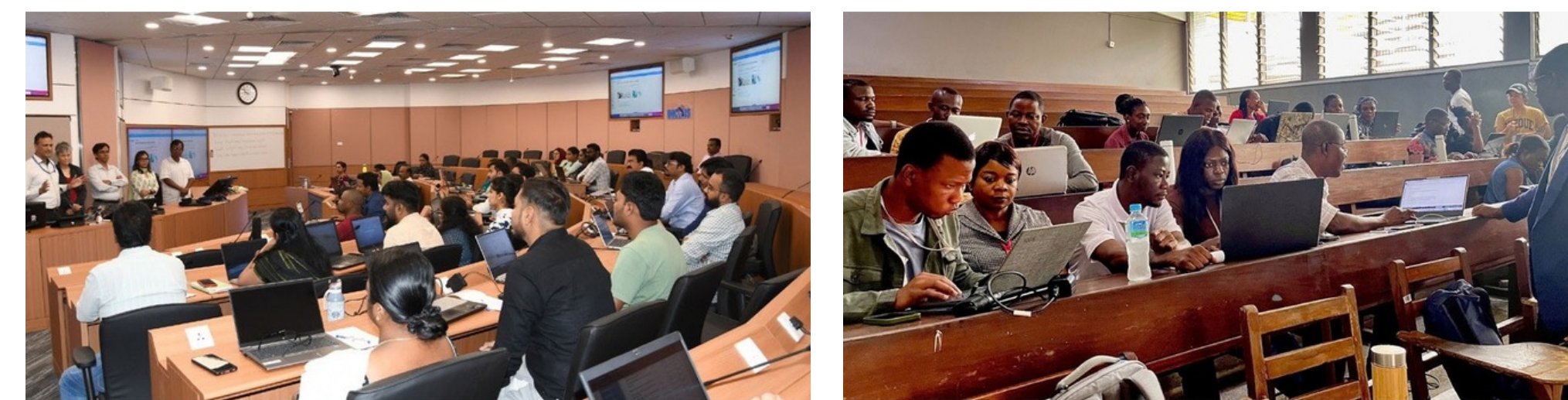
Value cycle approach: science informs policy → local context sets research priorities.



Value Cycle (Modi et al. 2025)

c. Capacity Building: Hackweeks

Each hackweek is one turn of the value cycle: local questions in, usable tools out.



ITCOcean Hack2Week (India) (left) and COESSING (Ghana) (right) — Martin et al. 2025

Self-sufficient regions

Enables developing countries to become self-sufficient, reducing reliance on external funding.

Communities at the center

Placing communities directly impacted by climate change at the center of decision-making fosters bottom-up solutions.

b. Beyond fundamental adaptation strategies

- Implementation science**
Facilitating dialogues between scientists and communities to align research with local needs
- Science Communication**
Climate translators, multilingual content (three-quarters of people don't speak English), two-way social media, and local storytelling
- Indigenous Knowledge**
local and indigenous knowledge as a baseline for adaptation (for example, mangrove species or native tree varieties)
- Machine learning / Artificial Intelligence**
Hybrid physics–AI models to resolve city-scale processes global models miss.
- Effective use of hyper-local information**
Integrating human activity data into climate models for improved projections and adaptation strategies. E.g., Factor groundwater pumping and dams into local risk models.

Key Takeaways

- Two-thirds of humanity lives in the Indo-Pacific, where climate risk is rising fast.
- Solutions exist; what's missing is the link between science, policy and community.
- Lasting resilience requires merging modern technology with nature-based solutions and indigenous knowledge.
- A value cycle, not a chain: as local context shapes the research.

For more details



***Modi et al. 2025**
Frontiers in Climate 7:1538123
doi.org/10.3389/fclim.2025.1538123



***Martin et al. 2025**
Oceanography 38(1):59–66
doi.org/10.5670/oceanog.2025.121

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