

Development Pathways that define Adaptation Futures

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What are Development Pathways

Introduction and gap

- Adaptation pathways start from the present and take communities towards climate resilient futures, factoring in multiple perspectives, especially of those without power.
- We bring in a historical perspective to illustrate how *adaptation space becomes constrained* in urban and rural India.
- We encountered a conceptual contradiction: Actions not termed as adaptation can't be called maladaptation but **development trajectories shape adaptation futures which are potentially maladaptive.**
- Our approach is linked to policy interventions not necessarily termed as adaptation, but resulting in a reduced capacity to adapt, at various levels of governance.

Maladaptation

Existing definitions

- Barnett and O'Neill (2010):
 - *"action taken ostensibly to avoid or reduce vulnerability to climate change that impacts adversely on, or increases the vulnerability of other systems, sectors or social groups"* (p.10)
 - 5 typologies: increasing GHG emissions, disproportionately burdening most vulnerable, high opportunity costs, reducing incentives to adapt, and path dependency
- Juhola et al. (2016)
 - Has to be understood in context of "adaptation as an intentional action"
 - Three maladaptive outcomes: Shifting vulnerability, rebounding vulnerability, eroding sustainable development
- Magnan et al. (2016)
 - four critical dimensions which capture the risk of maladaptation "as a process influenced by multiple drivers across spatial and temporal scales"

Pathways approaches

Conceptual ideas

- Pathways approach (Leach et al. 2010) is a useful conceptual frame to understand and explain past and current instances of policies and practices that shape current actions.
- CCA and path dependencies: "*adaptation is essentially about 'persistence through change', which raises the questions of **what persists and what changes***" (Rickards and Howden 2012:242).
- Most adaptation in India is an extension of development work (Singh et al., 2016)
- We distill dominant trajectories that erode the *potential* for sustainable development and adaptation.

Urbanisation compromises ecological functionality in Bangalore

- **Network of tanks and streams:** conceived as an interconnected system to support a growing settlement
- **Embedded in the city system:** acquired cultural significance, ecosystem services (flood regulation, bioremediation, irrigation, domestic use, livelihood support)
- **Rapid urbanization:** population growth 40% (2001-2011), concretization, incorporating seven towns and >100 villages.
- **Sites of elite activism and protectionism:** not as a network of water bodies for multiple uses by all social groups.
- **Current state:** higher risk of urban floods, water scarcity, unsustainable reliance on water sources beyond the city, access to nature denied to those who lack power.



Input-intensive agriculture

An example from rural India

- Post-independence: land redistribution, initially pro-farmer
- 1960s-1980s: Green Revolution
 - Input-heavy, ecologically extractive, mechanised agriculture that was at odds with dryland farming practices and ecological limits.
 - Focused on addressing food security, not factoring in climate change concerns.
 - Landholders in resource-rich regions benefitted most (Bardhan 1970)
- 1990s: Market liberalization, predatory commercialization of the countryside (Sainath 2007)

- 2000s: Climate change discourse enters
 - International pressure and emerging science on climate impacts drive mainstreaming adaptation in national policies.
 - 'climate smart agriculture' vs. investment in large irrigation projects, technology-based solutions, no market reforms



http://www.huffingtonpost.in/chandni-singh-/what-farmers-really-need-1_b_8299824.html

(Mal)adaptation implications

The city and its residents have a progressively narrower relationship with city nature

Input-intensive, market-centric agriculture as an unsustainable pathway

Sustainability indicators
(for development)

Maintaining climate regulation and water recharge functions of lakes becomes expensive.
Economic

Individual lakes cut off from the complete network only serve narrow purposes for city residents.
Environmental

Access to lakes, surrounds denied to social classes lacking political power
Social

Regional concentration of benefits, entrenched existing inequalities, changed aspirations, hegemonic construction of *aadarsh kisan*
Social

Agrarian crisis (debt, suicide), exposure to global price fluctuations
Economic

Groundwater, soil, and ecosystem multi-functionality degradation
Environmental

Vulnerability indicators
(for adaptation)

Increased exposure to urban floods, water scarcity due to erratic rainfall.
Exposure

Lower capacity to access nature and its services for particular social groups, entrenching unequal distribution of resource based
Adaptive capacity

Increased exposure to natural resource and market price fluctuations
Exposure

Lower capacity since institutions, processes for iterative learning, flexibility, adaptive management and integrated systems approach to rural livelihoods missing. Unequal asset and power regime being further entrenched.
Adaptive capacity

Increased sensitivity to heat island effect and during heat spells
Sensitivity

Lower diversification in cropping system
Sensitivity



Conclusion

Tracing back to move ahead

- The cases are descriptions of development trajectories that were never articulated as adaptation but are locking the system into a pathway that will exacerbate vulnerabilities and foreclose certain adaptation options.
- Development and adaptation action have to be assessed across spatial and temporal scales to test maladaptive outcomes.
- **Locked in vulnerability:** Certain development decisions lock-in vulnerability, close down the response space (options available), and increase opportunity costs.
- Failed policies (or even successful ones) have adaptation repercussions and lock systems into trajectories of **potential maladaptation**.
- **Adaptation constrained futures** are maladaptive, not transformative.

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