It is the silt, you silly! Tidal river management as a strategic innovation for the management of water, silt and land in south-west Bangladesh

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My poster in 1 minute

- Problem: Conventional delta planning can often not resolve development challenges of urbanizing deltas.
- Strategic innovations may offer prospects for the kind of change to make, away from mainstream strategies.
- Objective: We analyse Tidal River Management (TRM) as a strategic innovation for management of silt, water and land in Bangladesh.
- Findings: TRM is regarded a viable but complex alternative for hard infrastructure. Support for TRM is rather weak as decision-makers prefer hard infrastructure.
- Conclusion: TRM is a feasible strategic alternative for the southwest of Bangladesh, yet the strategic choice to opt for long-term sediment has not been made yet.

1. Strategic innovations and change in delta management

This poster presents our findings on Tidal River Management (TRM, Fig. 1) as a strategic innovation for the delta of Bangladesh. Change is often needed as **conventional delta planning** ('business as usual') cannot resolve the development challenges many urbanizing, engineered deltas face [1].

In the southwest (SW) of Bangladesh, limits of prevailing strategies are increasingly experienced as rivers are dying and water logging problems become more severe (see Fig. 3). A large-scale system of flood embankments and sluice gates has provided fertile and flood-free areas, yet local communities increasingly criticise dredging and sluice gates.

Strategic innovations may offer prospects for the kind of change to make. A s**trategic innovation** entails a fundamental reconceptualization of mainstream strategies, and a substantive improvement for local livelihoods [2].

3. Research design

In a **case study** we explored who supports TRM, and to what extent it is included in policies and field-level pactices.

5 sources of data collection:

- Field visit shown in Fig. 3.
- Focus group discussion Pakimara Beel, 21 villagers impacted by on-going TRM project (Fig. 3 #4)
- Semi-structured interviews with governmental and non-governmental agencies at local (7) and national level (10),
- grey literature, a scan of research/consultancy reports (12), Governmental Plans (3), IFI policy documents (2)
- media, a screening of how Bangladesh newspapers covered TRM (9 English daily papers).

Qualitative data analysis: template coding of FGD and interviews, triangulation with other data sources.

5b. What do interviewees say on upscaling TRM in the SW delta?

Enable: since 1997 local people are demanding TRM. Despite all constraints (see below), benefits for own and next generations are recognized. Supporters see TRM as the only solution to overcome water logging.

Constrain: Local support is not automatically present. People have to be motivated to provide their land for TRM for several years, and without proper compensation mechanism people will not do it. Stronger support is needed at local policy level (who now prefer dredging or side with shrimp farmers against TRM), and at higher policy levels (who are inclined to dredging and hard infrastructure).

2.a What is TRM?

TRM (Fig. 1) is about natural flows of sediment and water to elevate low-lying water-logged areas ('beels'). It involves a temporal cut of polder embankments for 3-5 years, resulting in elevation gains of 1-3 meters [3] and scouring of rivers. Water management in the south west is mainly undertaken through sluice gates, dredging, and reinforcement of polder embankments. **Silt is largely neglected** herein, whereas ~10% of Bangladesh silt is deposited in the southwest (see Fig. 2). Fig. 3 shows impacts of that neglect.

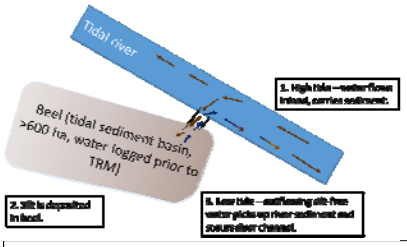

Fig.1. Conceptual figure of Tidal River Management, after Shampa et al. (2012).

2b. And why is silt relevant for south-west Bangladesh?

Fig. 2. ~10% of Ganges and Brahmaputra sediment is transported into the south-west delta. Sources: (a) Milliman et al. (1995), (b) Goodbred et al. (1999), (c) Rogers et al (2013).

4. Results field trip

#1 Water logging: Primary school closed for 2 months. Villagers lose 50% of rice yield, advocacy to remove Bhobodaho sluice gate which is blocking river flow and sediment.

#2 Dredging at Bhobodaho sluice gate. House of sluice gate operator fully covered in mud. Locals about the dredging "half the money disappears, and due to siltation dredging is undone within one month".

#3 Siltation of Horihor River. (New) land on silted river bank is grabbed by local elites.

#4 FGD Pakimara Beel Main issues in TRM project: power play by local elites and administration, compensation mechanism overly complex and corrupt, local knowledge neglected.

Fig. 3. Field trip in Jessore Khulna area, 13-14 Oct 2017. The #1-4 in map link with photos on the right. Scale: ~40 km from #1 to # 4. Source: Google Earth

5a. Key findings

2 very different strategies to overcome water logging.

TRM is conceived as a natural, local people's solution. One which requires participation, compensation of landowners, transparency. It is often associated with conflicts and implementation difficulties.

Hard infrastructure (dredging, embankments, sluice gates) is easy to implement, enables centralised management, provides quick results and has opportunities for corruption. However, it is often criticised as it increases siltation (Fig 3 #1-3).

Support for TRM long-lasting but weak.

Outspoken supporters are found at especially the local level –since 1997- as it benefits local livelihoods (local communities, NGOs, researchers from the SW delta). However, key individuals in the Ministry, Planning Commission, and Water Development Board prefer hard infrastructure. As a result, TRM is applied in one-off projects with unfair compensation schemes, and TRM is limitedly included in investment packages.

Strategic thinking on TRM and silt is emergent, not in policy and planning. Understanding emerges that along each river stretch an active TRM project is needed, to avoid that the river silts up again. Sequencing should be from downstream to upstream. Researchers start to ask questions about the long term applicability of TRM, sediment management, and fair compensation schemes. Such strategic thinking is very limitedly reflected in policy and planning.

6. Conclusions on the role of TRM in re-thinking Bangladesh delta management

- **Tidal river management is a feasible strategic alternative**. Previous TRM projects have shown that the technological means are there (though with scope for improvement), it is based on local people's knowledge, is an improvement for local livelihoods, and is radically different from mainstream strategies. TRM thus represents a strategic alternative [2] to cope with land and water resources in the southwest delta of Bangladesh.
- The **strategic choice to opt for long-term sediment management – and thus TRM - has not been made yet**. Although a proposal for a TRM Master Plan has been made, vested interests, knowledges and planning cultures constrain to date a more strategic and wider application of TRM (see also Box 5b for constraints to up-scaling).

Further reading [1] Seijger et al. (2016): An analytical framework for strategic delta planning:negotiating consent for long-term sustainable delta development, Journal of *Environmental Planning and Management* 60:8. [2] Schlegelmich et al. (2003): Strategic innovation: the construct, its drivers and its strategic outcomes. *Journal of Strategic Marketting*, 11:2. [3] Gain et al. (2017): Tidal river management in the south west Ganges-Brahmaputra delta in Bangladesh: Moving towards a transdisciplinary approach? *Environmental Science and Policy 75.*

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