

Exploring the climate-sanitation nexus in rapidly urbanising towns in Asia and Africa: a climate justice perspective

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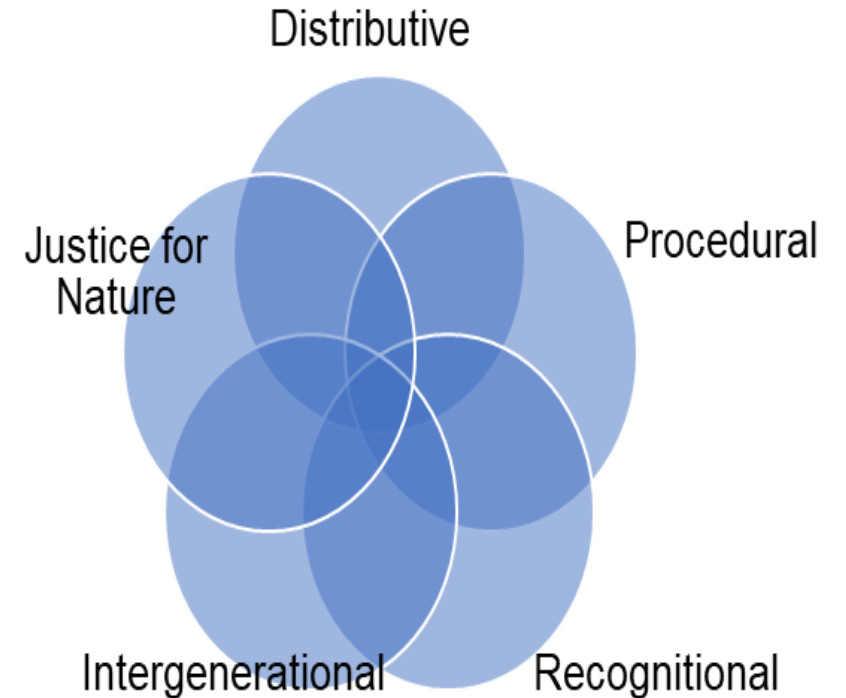
21st - 23rd February 2025, Ahmedabad



The climate-sanitation nexus

- From the ‘the last taboo’ to key to realising the SDGs
- Toilet coverage has increased due to massive sanitation campaigns, but many challenges remain
- Creation of ‘sanitation divide’ not only within big cities but also between big cities and numerous small towns that are poorly served (Neelam and Narayanan 2018)
- Climate change is a stress multiplier and can exacerbate structural inequalities
- Context of cascading risks and uncertainties (from variability to volatility)

Pillars of climate justice



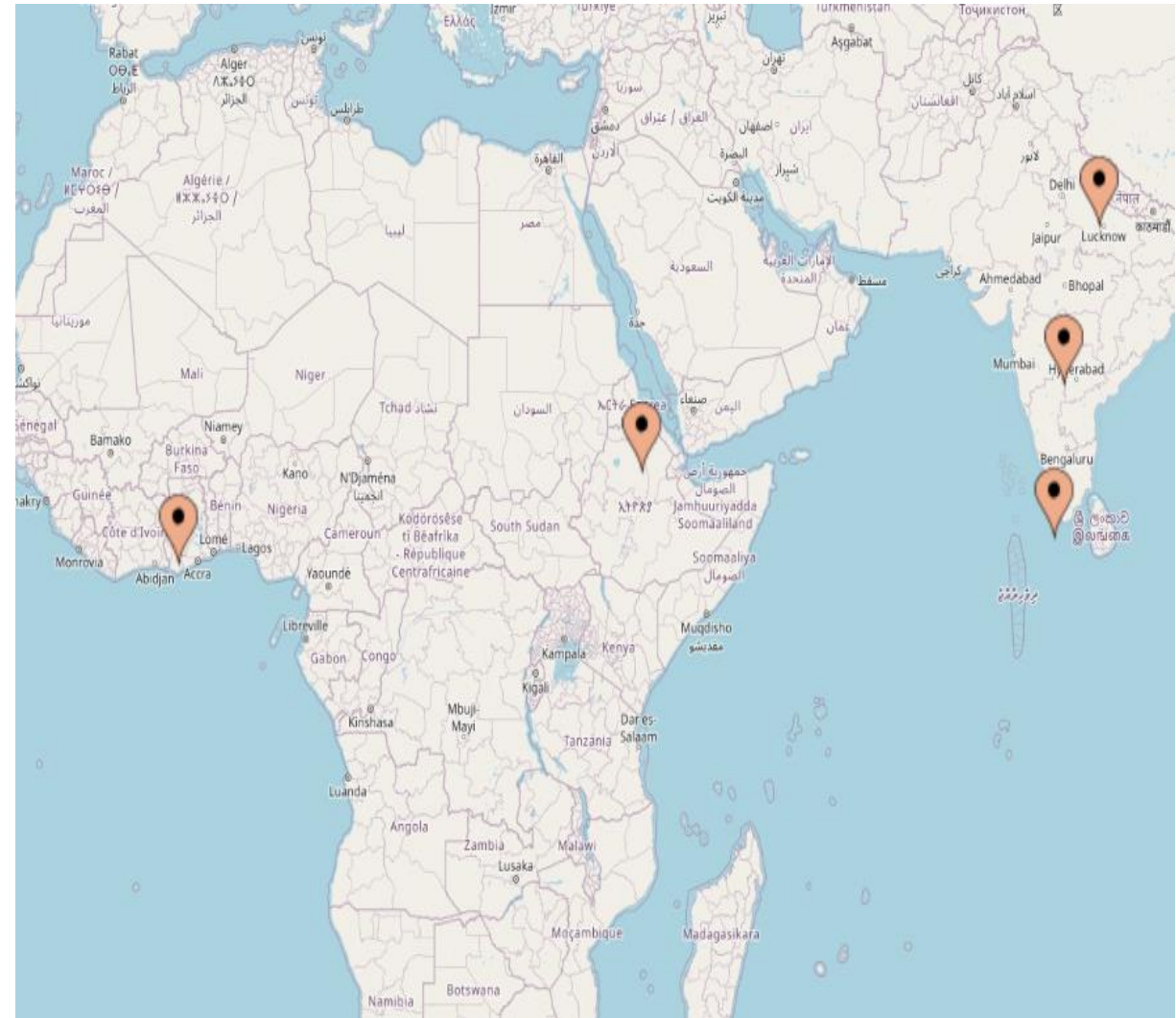
Source: Newell et al. 2021



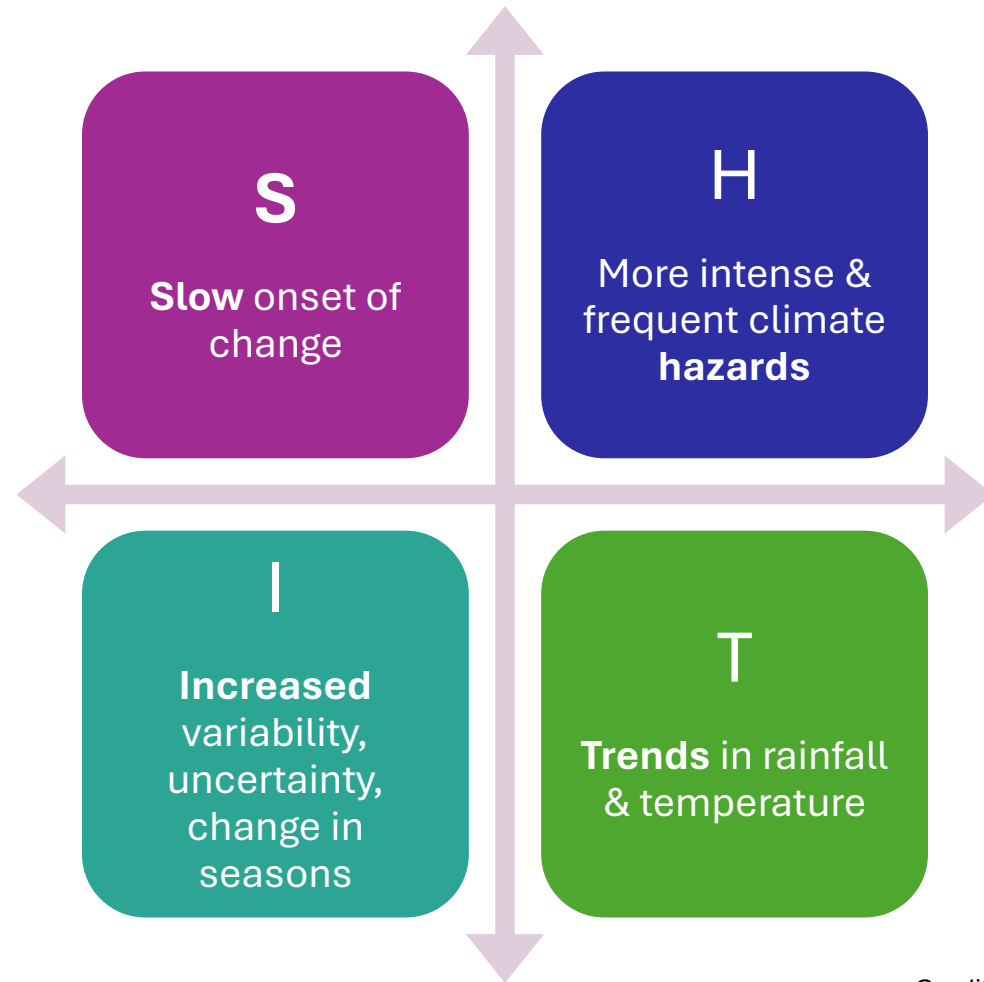


Focus

- How do local communities live with off-grid sanitation challenges?
- Which kinds of socio-technical and institutional processes/ innovations are required to **re-imagine shit as 'brown gold'**?
- How can **locally appropriate innovations** be facilitated to be socio-culturally acceptable, and socially inclusive? What are **the trade-offs**?
- What kinds of policy, business and regulatory frameworks **enable/ disable** the uptake, scaling up and sustenance of these innovations?



Climate change is SHIT



Attributed to: Terry Cannon
with MSc Climate Change
students (2017-2020)

Credit: Glory Edwards, MSc CC&D graduate 2017 and Billie Selby for the HITS approach 2020

Sites and methods

Sites	Topography	Climate context	Vulnerability context	Vulnerable groups
Ethiopia -Mekelle	Highlands	Drought, floods water scarcity, high variability	Protracted conflict and displacement	Refugees
India -Alleppey	Coastal	Floods, storm surges	Unplanned development, high water table	Migrant workers; Informal septic tank emptiers
Nepal-Gulariya	Terai	Heatwaves, floods and high variability	Heat extremes lead to reduced work efficiency; WASH infrastructure damage	Dalit workers

Qualitative (ethnography, interviews, focus group discussions, document reviews)

Quantitative (sanitary survey, shit flow diagrams, water quality analysis)

Creative (photovoice, art performance, photo elicitation)



Nepal: High variability magnifies health risks

- Temperature extremes impact on taste, odour, colour and **acceptability**
- Can also affect safety (regrowth of microbes /pathogens), especially in nutrient-rich waters*
- 93.3% of households avoided stored water (treated or untreated) and reverted to drinking directly from groundwater sources
- 68.7% stored water (treated/untreated) characterised as unsafe (including piped supplies)
- 33.3% of tanks **overflow during rainy season** and 42.3% have **never been emptied**

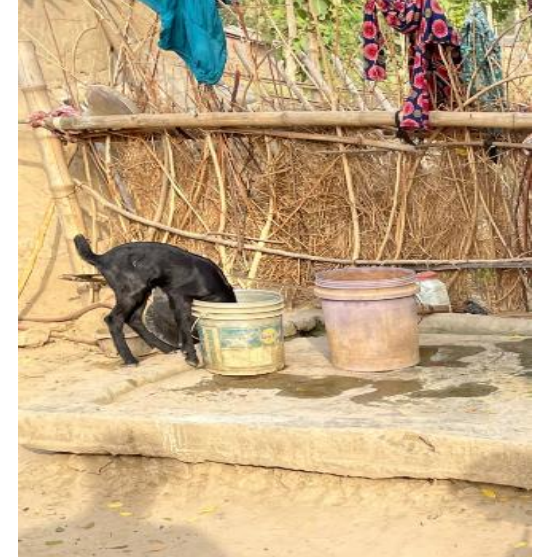


Photo credit: Sabitri Tripathi



Alleppey: Spatial inequalities compound vulnerability

- Canals become open sewage network, not only the stormwater but also the waste produced in the town flows through it
- Downstream areas becomes waste sink
- A combination of flooding and improper septic tanks leads to the need for constant de-sludging
- Sanitation work as labour-intensive

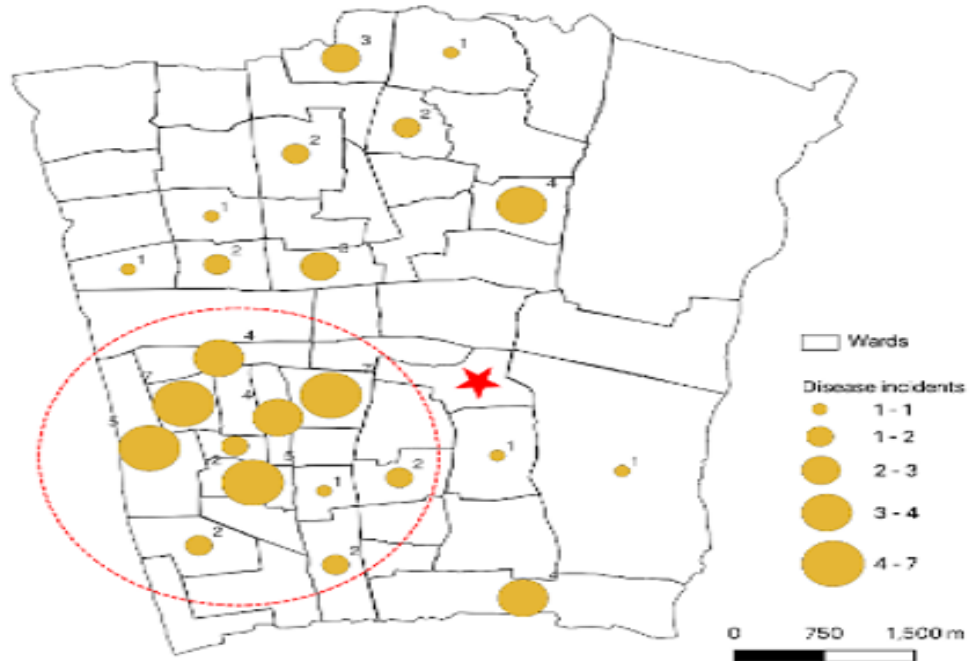


Photo credit: Rohit Joseph

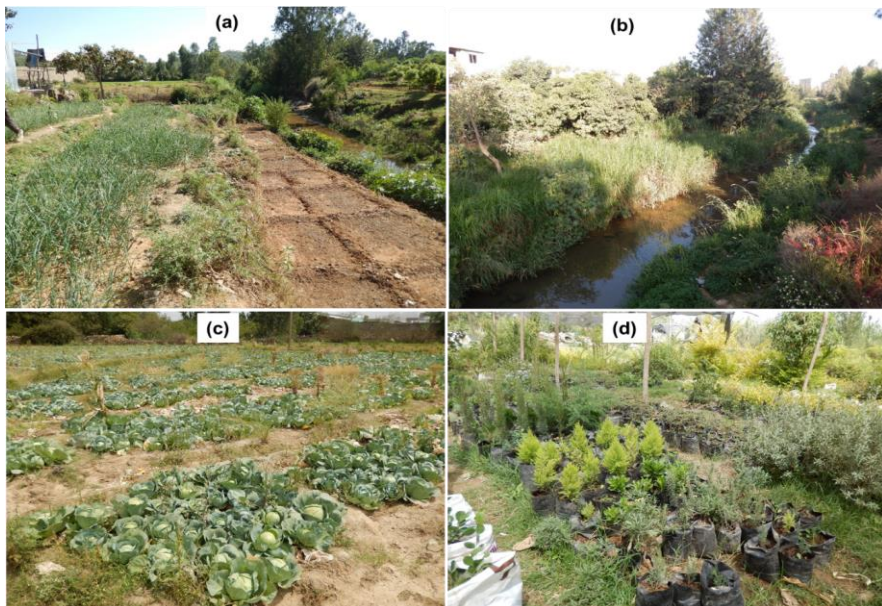


Mekelle: Conflict-climate and sanitation

- Sanitation and water systems were damaged during the war (2020-2022)
- Increase in open defecation
- Floods and droughts compounded the situation
- Wastewater use and shit reuse received a boost
- Lead to experiments with circular innovations



Photo credit: Kifle Woldearegay



Preliminary conclusions and ways forward

- Distributive inequalities are pervasive in the sanitation-climate nexus
- Exacerbated by procedural and recognitional injustices as bottom-up perspectives missed
- The temporal and spatial context (when hazard strikes, where and for whom) critical in understanding both short and long-term impacts of the climate-sanitation nexus



Sanitation as pivot for mitigation and adaptation
Bottom-up understandings, centering community perspectives



Amplifying citizen science- bringing evidence from different lens (social, ecological, technological and embodied)



Taking uncertainty seriously!



Towards Brown Gold?

The challenges and opportunities of reuse in realising universal sanitation in rapidly urbanising areas

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Project: <https://medium.com/@TowardsBrownGold>

Thank You

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