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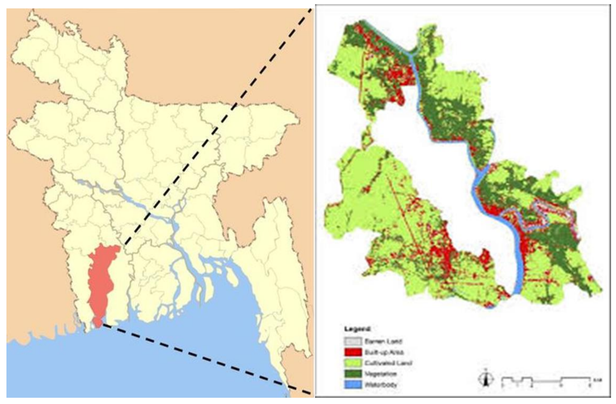
COMMUNITY BASED APPROACH TO BUILD CITY RESILIENCE THROUGH NATURE BASED SOLUTION IN COASTAL KHULNA CITY, BANGLADESH: A SCOPING STUDY

Nuzhat Fatema, PhD Student, Department of Geography, Rutgers, The State University of New Jersey, USA

Mustafa Saroar, Department of Urban and Regional Planning, Khulna University of Engineering & Technology (KUET), Khulna 9203, Bangladesh

INTRODUCTION AND OBJECTIVES

Nature based solutions (NBS) to build resilience have emerged as a new research frontier in sustainability science. However, an overwhelming majority of research is done on the topics of coastal forests, fisheries, agriculture, and disaster management; taking regional development in perspective. Yet, there are considerable gaps in research that explored the potential and challenges of NBS to build city resilience where local communities are the lead actor. This research fills this knowledge gap in two ways. First, it identifies pathways through which a host of NBS adopted by communities can build their resilience against various climatic events. Second, it appraises the challenges that communities encounter to scale up highly potential NBSs to build resilience.



METHODOLOGY

- This presentation heavily draws on a review of the literature (both academic and planning documents) and field experience.
- We made several field visits being part of different research projects in coastal Khulna region.
- Several Focus Group Discussion sessions and Experts interviews that we conducted earlier helped us to gain deeper insight about the current role and future potential of NBS to build resilience of the peri-urban communities.
- In FGDs and Expert Interviews discussion were limited to the exploration of the pathways how NBS build city resilience and the challenges communities encounter to move ahead with NBS.
- Coastal peri-urban Khulna city region was taken as a case for the study.
- Transcriptions of records are analyzed and inline with findings the recommendations are provided

FGD Session

KII Session

RESULT AND DISCUSSION

CLIMATIC EVENTS AFFECTING COMMUNITY RESILIENCE

- The peri-urban coastal Khulna city region is highly vulnerable to Climate Change induced waterlogging/floods, cyclone/surges, droughts, heat waves and salinity intrusion.
- However, this peri-urban region receive huge influx of environmentally displaced migrants from more vulnerable coastal rural regions.
- Close proximity to urban services, employment opportunities in informal sectors and easy access to informal settlements are the key attraction for such influx of migrants.

Water Logging

Cyclone

Flooding

Erosion

VULNERABILITY OF PERI-URBAN COMMUNITIES TO CLIMATIC EVENTS

Infrastructures	Impacts of Climatic Events				
	Salinity intrusion	Flood/ Water logging	Drought/ Heat waves	Cyclone/ Surge	River/Bank Erosion
Market place, economic and employment infrastructure	Low	Very High	Medium	Very High	High
Roads, walkways and other mobility/ transport infrastructures	Low	Very High	High	High	Low
Water supply, & drainage, system	High	Very high	Medium	High	Low
Settlements, and neighborhood	Medium	Very High	High	Very high	Medium
Education, Health & recreational infrastructures	Medium	Very high	Medium	High	Medium

ADOPTED NBS TO BUILD RESILIENCE

Urban Greening

Wetland Conservation

Rainwater Harvesting

Canal Restoration

Hydroponic Agriculture

Roof Garden

Adopted NBS measures	Brief Illustration about the adopted NBSs
Restoration of natural canals	Khulna City Corporation (KCC) has taken initiative to recover illegally occupied 22 natural canals which used to drain out storm & municipal waste water to three rivers.
Urban forestry/ afforestation	To increase the canopy coverage new plantation scheme has been taken in median of roads, green parks, publicly owned vacant lands.
Rooftop gardening	Two NGOs have initiated green roofing program in urban and peri-urban Khulna.
Rainwater harvesting	Three NGOs have initiated rainwater harvesting program in peri-urban Khulna city that experience high salinity in water.
Hydroponic agriculture	Several NGOs and community have initiated hydroponic and aeroponic farming in peri-urban and rural Khulna
Urban greening	Urban greening program is initiated to stabilize the urban heat island effects, soil erosion and (earthen) embankment failure and to moderate the force of cyclonic wind.
Wetlands & pond restoration activities	In urban and peri-urban Khulna wetland conservation and pond restoration programs are undertaken to moderate the impacts of flood and heatwave.

Findings show the adoption of a host of NBSs to build the resilience of the communities' livelihoods, transport and mobility, water and drainage and other infrastructure. Communities rely on a combination of portfolios of NBS to build their resilience against a multiplicity of climatic and related events including flooding/water logging, torrential rainfall, hailstorms, and heat waves. The most effective NBS are the restoration of natural canals, rooftop gardening, rainwater harvesting, urban greening, and pond and wetland restoration. However, NBS encounter an array of problems which include access to finance, technology, training, and organization issues.

KEY CHALLENGES & WAY FORWARD

- Mostly top driven and project based; grassroots/community co-financing is limited.
- Community participation is mostly in the implementation stage and thus uptake of technology is rather slow
- Most of the NBAs involve so many stakeholders; coordination and avoidance of conflict of interest is really a challenging task.
- There is an urgent need for integrated and holistic approach in designing NBS for building resilience in peri-urban landscape.

CONCLUSION

The NBS has immense potentials to build resilience through community based approaches; however, the challenges need to address from a wider perspective covering policy, finance and technology. This scoping study would help formulation of a bigger project that would inform policy process to build sustainable community resilience.

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Victoria C. Ramenzoni, Assistant Professor
Department of Human Ecology, Rutgers, New Brunswick

Lisa Auermuller, Administrative Director
Megalopolitan Coastal Transformation Hub, Rutgers

CONTACTS

nuzhat.fatema@rutgers.edu
saroar.mustafa@yahoo.com

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