Webinars for Futureproofing with Adaptation Strategies and Financing Water and Climate Adaptation Strategies – the Case of Bangladesh

20 October 2023, 11:00 CEST
Knowledge Kit Content

○ Background

○ Presentation: *Climate and Land Use Changes - Implications for Water and Food Security in Bangladesh* Catharien Terwisscha van Scheltinga and colleagues Wageningen University and Research


○ Presentation: *Stress-Testing Infrastructure in Bangladesh*, Tanim Istiaque Senior Program Officer, Infrastructure and Nature-Based Solutions Program, GCA

○ Related Links

○ Stay Connected
Background

As the impacts of climate change continue to intensify, coastal flooding risk will increase, affecting the lives of hundreds of millions of people and putting infrastructure valued between US$7.9 - 12.7 trillion. Globally, 40% of the population live within 100 km of the coast, and 11% live in low-lying coastal areas, where the impacts of sea level rise could be felt as soon as 2050. Accelerating adaptation efforts is essential to protect people, landscapes, economies, and even the very existence of some islands and deltaic coasts.

‘Futureproofing: Water and Climate Adaptation’ was a webinar series focused on adaptation strategy, practices, and financing for coastal areas, including islands and deltas. ‘Water and Climate Adaptation Strategies – the Case of Bangladesh’, features cases of linking water and climate adaptation for project implementation in Bangladesh. The series was designed to support the ambition of the International Panel on Deltas and Coastal Areas - to build capacity for effective adaptation planning, governance, and finance.

- Learn more and join the Water Adaptation Community: https://communities.adaptationportal.gca.org/
- Learn more about the International Panel on Deltas and Coastal Areas: https://deltasandcoasts.net/

Chair:
H.E. Md. Abul Kalam Azad, Climate Vulnerability Forum
Bangladesh, Special Envoy

Speakers & Topics:
- H.E. Mr. Riaz Hamidullah, Ambassador of Bangladesh to the Netherlands, Opening Remarks
- Dr. Nurun Nahar, Planning Commission of Bangladesh, Bangladesh 2100 Plan
- Ms. Catharien Terwisscha van Scheltinga, Wageningen University & Research, Climate and Land Use Changes - Implications for Water and Food Security
- Ms. Hasin Jahan, WaterAid, Bangladesh Country Director, Locally Led Water Adaptation
- Mr. Tanim Istiaque, Senior Program Officer Infra & NbS, GCA, Stress testing Infrastructure

Watch the recording here.
Climate and Land Use Changes - Implications for Water and Food Security in Bangladesh

Catharien Terwisscha van Scheltinga and colleagues
Wageningen University and Research
Catharien.Terwisscha@wur.nl

IPDC Webinar Water and Climate Adaptation Strategies – The Case of Bangladesh, 20 October 2023
Overview

1. Introduction
2. Climate and land use change in Bangladesh
3. Implications for water and food security
4. Reflection on possible next steps
Wageningen domain:
Food and Living Environment

- Sustainable production and food processing
- Animal feed and biobased products
- International food chains and networks
- Food security and food health aspects

Mission:
to explore the potential of nature to improve the quality of life

www.wur.nl

Starting soon: International student challenge on nature based futures in deltas – focussing on Bangladesh - https://www.nbfchallenge.nl/
WUR engagement in Bangladesh

1. Trade off and Synergies
2. Transition pathways
3. Salinity Hotspot Identification
4. Water for food for future (JCP – MIR)
5. Seasonal to sub-seasonal forecasting (S2S)
6. Climate Smart Agriculture

Collaboration with

- knowledge institutes (IWM, CEGIS, BUET, BAU, KU, PSTU), government organizations (DAE, BMD)
- NGOs (Solidaridad, Uttaran, Max Foundation) and private sector (Lal Teer)
- and international organizations (FAO, WB, ADB, IRRI, CIMMYT)
Different types of change, simultaneously

Climate Change

- IPCC expects the total annual amount of rain to go up
- At ICWF9M9: Increase in extreme events of higher intensity

= More, at uncertain times – uncertain patterns

Land use change

- Cities increasing
- Forest, nature, wetlands decreasing
- Agricultural land decreasing

NB: Diet also changing
Complex: data / facts

- Land use classification Bangladesh, combining and downscaling existing databases (figure 10) (Van Haren et al, 2022)
- DOI: 10.18174/576671
Complexity – regarding facts on salinity:
- Water (ground water and surface water) and soil related salinity (not same)
- Salinity is seasonal (not same throughout the year)
- and not same over the years (increasing)
- Different depths
- Affected by rainfall – variability and change
- Affected by water management and land use
- Affected by sea level rise
WUR currently working on global hotspot identification
- also interested to work at national level.
2. Longer term: uncertainty and complexity
Transition to future - Pathway

1. Begin with the end in mind
2. Move backwards from the vision to the present
3. Move step by step towards the vision

System indicators:
- Pre-development
- Take-off
- Acceleration
- Stabilization

Time
Food System Approach: Changing agriculture and food situation in deltas

- Value chain
- Environmental factors
- Socio-economic factors

1. Focus on production alone is not enough
2. Need for a systems approach: Bringing balanced approach in the picture
3. Need to deal with uncertainty and complexity

Van Berkum et al, 2018  https://library.wur.nl/WebQuery/wurpubs/fulltext/451505
Bangladesh agriculture system change

- WUR research collaboration with Solidaridad: exploring pathways
  - Dairy/salinity
  - Mango export
  - Shrimp/mangrove
  - Vegetables

http://www.plancomm.gov.bd/
Cattle - future

- More demand for milk
- Need safe drinking water
- Water more saline in future
- Start fodder cultivation
- Road development
- Personal circumstances
Transition Pathway: farmers perceptions at field scale

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<th>Experience in south west Bangladesh</th>
<th>Current</th>
<th>Future</th>
<th>Transition Pathway towards perceived sustainable future</th>
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<td>General information</td>
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Bangladesh agriculture system change

WUR research on water management and food systems in deltas: www.wur.eu/food-in-deltas


Interesting question: can we use these (water and) food system guidelines to link e.g. BDP and AT programmes to create synergy?
Next steps

- BDP2100 – regular update
- Further alignment, e.g. water and food: explore synergies between BDP2100 and Agric Transformation Program
- Strengthen the link international-national-local, e.g. on salinity
- Information services for farmers
- Youth – capacity building – e-learning on BDP2100 and water and food alignment
Thank you धन्यবाद

Summary

1. Water and food decisions interrelated – systems approach

2. Climate and land use change are happening simultaneously

3. Study, data and monitoring parallel with implementation

Next steps
1. Address salinity
2. Info services for farmers
3. Youth – E-learning

Catharien.Terwisscha@wur.nl
Spark the future, join the challenge!

Nature-based Future Challenges

https://www.nbfchallenge.nl/

Judit.Snethlage@wur.nl

JCP – Make it Real – www.jcpbd.nl

Food Status-2050 (Scenario-1: Existing dietary pattern)

Food Status-2050 (Scenario-2: Desirable dietary pattern)
Locally Led Adaptation:

Ensuring Water, Sanitation and Hygiene in the coastal belt of Bangladesh

Presented by
Hasin Jahan, Country Director, WaterAid Bangladesh
1. **Context:** Understanding the WASH and Climate Lens

2. **Our Participatory Ward Vulnerability Assessment Approach:** Recognizing the value of local knowledge and expertise to address climate risk

3. **Case Study of the Water Entrepreneurship for Women’s Empowerment (WE-WE):** Working on ensuring local actors on the frontline of climate change have equitable access to power and resources to build resilience
Understanding Context
Climate Change & WASH in Bangladesh

Climate change induced shocks and stresses

- Sea level rise
- Increase in Temperature
- Erratic Rainfall/drought
- Increased Intrusion of saline water
- Cyclone and storm surges
- Tidal surge and Coastal flooding

Climate change impacts on WASH

- Water quality
- Water quantity
- Water access
- WASH Infrastructure
- Health and well-being

Exacerbated by climate change: 3.79 million people don’t have access to clean water. 75.4 million people don’t have a decent toilet.

These figures not only important to change to achieve SDG targets however these figures shows how inaction to climate change can change this figures drastically

For every $1 spent on making WASH infrastructure resilient to flooding could avoid at least $62 in flood restoration costs

Slow onset shocks

Sudden stresses
Context: Our approaches to CR WASH

Our Adaptation Pathways

- Anticipatory Adaptation i.e., CR infrastructures
- Vulnerability/need Assessment i.e., Approaches

Transformative change

Target by 2030

Achieving Climate Resilience
Recognizing the value of local knowledge and expertise: Participatory Ward Vulnerability Assessment
Participatory Ward Vulnerability Assessment

LLA Principles: How do we orient people from the lowest tier? (Devolving Decision Making, Investing In Local Capacities)

- Debates about how development or climate interventions focuses on what “Donors or INGOs” want
- We are changing this narrative. PRA tools are not new neither approaches are different from existing ones
- However, our approaches include certain aspects that makes different

Participatory Ward Vulnerability Assessment

**P**
- Bottom-up approach
- Community based
- Engagement with local government
- Involvement of stakeholders

**W**
- WDMC
  - Leads the PWVA
  - Comprises 20-25 members irrespective of age, gender and religion
  - Vital role in raising awareness, building capacity and motivating the community

**V**
- WASH
- Agriculture
- Fisheries
- Health
- Education
- Transportation

**A**
- (Participatory Rural Appraisal) PRA Tools
- HH survey
The community together produces a geographic map of the area including socioeconomic status and WASH situation of households.
A Case Study of LLA: Water Entrepreneurship for Women’s Empowerment (WE-WE)
Understanding the WE-WE Approach

LLA Principles: Social Justice and Gender Equality (Devolved Decision Making, Addressing Structural Inequalities, Investing in Local Capabilities)


Publication by GCA in association ICCCAD, IUB
WE-WE Approach – Water Entrepreneurship for Women’s Empowerment (WE-WE)

Context Analysis

Women Group formation

Agreement with changemaker/Women Leader

Preparatory formalities (acquiring lands/opening bank accounts)

Construction & Cost Distribution through Local NGO, and Local Markets

Committee Formation through election

Business Training by WaterAid

Launching of the infrastructure

Global and National Replication

Local

Global
Successes and Challenges

Successes:
- women becomes independent
- they venture into other businesses after repaying loans through profits

Challenges:
- Long term sustainability
- Discrimination
- Technological Cost
- Finance
How do we approach full localization?
Climate finance not adequate and not reaching the frontlines

Climate Finance Shadow Report 2023: Assessing the delivery of the $100 billion commitment

We are still figuring out top-down approaches
How do we finance the missing middle

- Globally less than 3% of Global Climate Finance are allotted for the water sector (WaterAid, SIWI 2021)

- It is seen that for locally led adaptations like the WE-WE to succeed we need long term incubation finance to see adaptability of such initiatives

- The ‘missing middle’ in climate finance to incubate local institutions (Principles of Locally Led Adaptation; A call to Action, January 2021) is not just a necessity it is essential
Way forward: Towards LLA and *Business Unusual*

- Promote “one ward one committee one plan” approach that can avoid duplication with donors, national governments and local actors.
- Integration of various actors with different development focus under one umbrella.
- Promoting horizontal and vertical integration is a key sustainability objective of this program.
- Climate information tools are co-produced and tailored to local people’s context and needs can solve the missing middle.
Thank you
Stress-Testing Infrastructure in Bangladesh

Tanim Istiaque
Senior Program Officer
Infrastructure and Nature-Based Solutions Program, GCA
National Infrastructure Stress-test: Goals

- Quantify infrastructure networks’ vulnerabilities to climate hazards
- Prioritize investments on the most effective Adaptation and Resilience measures
- Support national stakeholders in integrating climate resilience into policy and planning
The Global Center on Adaptation

• The Global Center on Adaptation advances bold actions that help societies across the world become more resilient to climate-related threats.

• Aim to scale-up and accelerate climate adaptation worldwide

• Offices in Netherlands, Africa, South Asia and Asia Pacific.
GCA: Three strategic approaches for Adaptation

Advocacy and Agenda Setting

Knowledge

Programs

Program Infrastructure and nature-based solutions:

- National Infrastructure Stress-Tests and Adaptation Pathways
- Climate Resilient Infrastructure Assets & Green Adaptation Solutions
- Masterclass for Climate Resilient Infrastructure and Public-Private Partnerships
Climate-Resilient Infrastructure and Stress Test in Bangladesh
Project partners and Approach

1. ASSESS CLIMATE RISK
   - Developed in consultation with Government of Bangladesh
   - Characterization of social and economic impacts of infrastructure disruption
   - Link household service access and disruption to wealth and development outcomes (through SDGs)

2. PLAN RESILIENT INVESTMENTS
   - Integrate and inform key national plans and strategies
   - Evidence-based adaptation projects and policies, prioritizing Nature-Based Solutions
   - Reduce climate risk for Bangladesh’s infrastructure and economy
   - Mobilize investments in adaptation

3. IMPLEMENT FOR IMPACT
   - Enabling Environment

Project partners include:
- Government of Bangladesh
- Ministry of Infrastructure and Water Management of the Netherlands
- Global Center on Adaptation
- UNOPS
- c2s
- Oxford
- CGI
- The World Bank Group
National infrastructure assessment

**STRESS TESTING BANGLADESH’S INFRASTRUCTURE TO CLIMATE RISKS**

**Part 1: Assessing climate hazard impacts on infrastructure assets and networks**

Intersecting spatial hazard and infrastructure data to identify critical assets and pinpoint hotspots of risk for baseline present day and a range of future climate scenarios.

**Part 2: Calculating economic damage to infrastructure systems**

Use well-established depth-damage functions to assess the direct damage of climate hazards on critical infrastructure systems, now and for a range of future climate scenarios.

**INFRASTRUCTURE SERVICE PROVISION TO HOUSEHOLDS IN COASTAL BANGLADESH**

**Part 1: Assessing climate hazard impacts on infrastructure assets and networks**

Use household-level data to assess how infrastructure service disruptions affect household welfare through inaccessibility to basic services. Analyse how service disruptions affect households differently across wealth groups and demographic characteristics.

**Part 2: Calculating economic damage to infrastructure systems**

Through stakeholder consultation and analysis of key national documents, assess how household service disruptions affect progress towards attaining relevant SDGs.
Focus on Bangladesh Coastal Zone across assets

**Transport**
- Roads: 46,993 km
- Railwayline & Stations: 111 nodes, 513 km
- Airports: 5 nodes
- Ports: 12 nodes
- Waterways & Terminals: 33 nodes, 1,586 km

**Energy**
- Powerplants: 31 nodes
- Electricity substations: 30 nodes
- Electricity grid: 1,183 km
- Gas fields: 4 nodes
- Gas lines: 2,461 km

**Social**
- Hospitals: 138 nodes
- Health facilities: 858 nodes
- Cyclone shelters: 3,741 nodes
- Market centres: 597 nodes
- Education facilities: 20,097 nodes
Results: Quantifies Exposure to Climate Hazards...

- Coastal flooding event likely to cause €9.13 billion of economic damage annually

- Riverine flooding event likely to cause €7.63 billion of economic damage annually
In rural Bangladesh, the poorest are the most impacted.

100% of the almost 9 million households are impacted by at least one climate hazard.

Climate change and impacts to infrastructure systems is putting at risk sustainable development goals.

Impact on Decent work and economic growth sustainable development goal
Key Upazilas at risks with priority adaptation options to consider for Bangladesh’s infrastructure

◍ Several coastal upazilas most severely impacted: Shyamnagar expected to experience damage of ~€390million, Patuakhali Sadar ~€385million, and Hatiya ~€295million to transport sector

◍ Social infrastructure sector is most impacted in several coastal upazilas, including Shyamnagar where damages are expected to be ~€710,000, Paikgachha ~€663,000, and Patuakhali Sadar ~€660,000

◍ Further consultation ongoing to support prioritisation and integration in Plans and Policies
Lesson Learned and Way Forward

- **Stress-test provides insights at the national level.** Locally-led identification and prioritization is also needed for successful implementation of interventions in the hotspots of risks identified.

- **Climate change has impacts across infrastructure sectors... and more broadly across sectors.** Need to be addressed in an integrated manner across national and sectoral plans and policies.

- **Building institutional capacity remains key** for stakeholders to have the tools and methods to include climate change risks within their projects planning, design, and implementation.
Related Links

- National Adaptation Plan of Bangladesh
- Mujib Climate Prosperity Plan
- Bangladesh Delta Plan 2100 & Online Knowledge Portal
- GCA’s Global Hub on Locally Led Adaptation
- Webinar Recording
# Stay Connected

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- Online space for articles and case studies, access content posted by others
- Register for events or watch event recordings
- Connect deeper and more informally with the other members with to share questions, resources & opportunities
- Subscribe to the newsletter GCA Adaptation Update and the Water Adaptation Community Newsletter

[https://communities.adaptationportal.gca.org/](https://communities.adaptationportal.gca.org/)  
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