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Floating agriculture: A nature-based solution to adapt to changing climate

Presentation · September 2022

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Haseeb Md. Irfanullah
Independent Consultant

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Floating agriculture

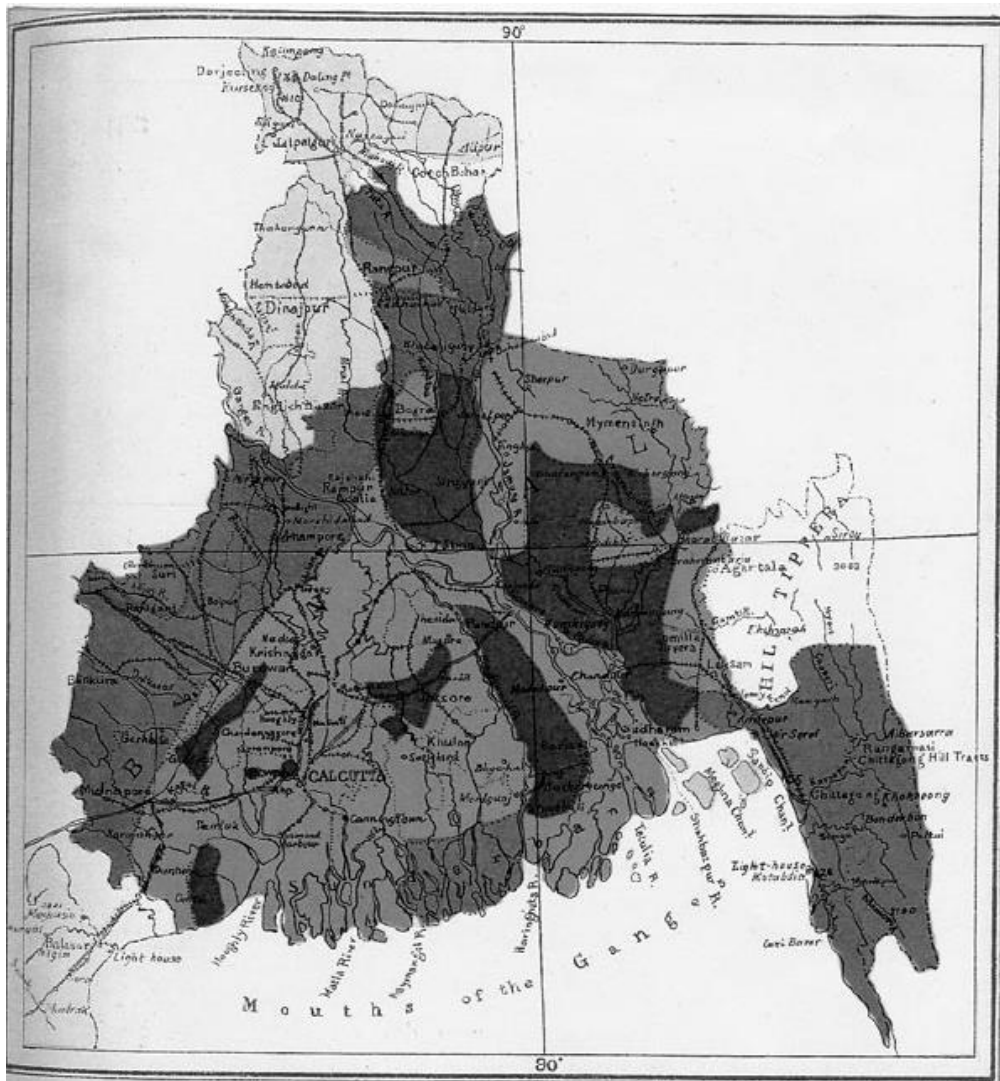
A nature-based solution to adapt to changing climate

Dr. Haseeb Md. Irfanullah

Independent Consultant – Environment, Climate Change, and Research System

Exchange Meeting on Floating and Resilient Development | Virtual | 29 September 2022



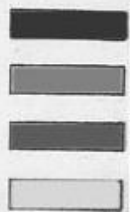


Areas reported as very seriously affected.

Areas reported as less seriously affected.

Areas reported to contain weed in tanks, etc.

Areas reported to contain no water hyacinth.



Kenneth McLean (1922) "Water Hyacinth. A Serious Problem in Bengal", *Agricultural Journal of India* in [Iftexhar Iqbal \(2009\)](#)

Phase 1

Phase 2

Phase 3

Phase 4

Phase 5

Traditional agro-practice by local community

Paddy straw-based

Water hyacinth-based

Community-based natural resource management

*NGOs (BCAS/IUCN-Central, Practical Action-North, CARE/IUCN, Helvetas-East), Development partners facilitated, Local government (Rangamati)
Livelihoods | Nutritional security | Poverty alleviation*

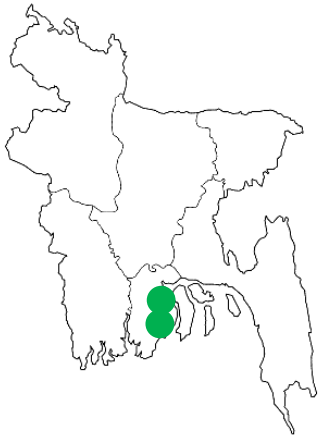
Climate change adaptation / EbA

NGOs (CARE, RVCC project)

National CC Strategies & Plans; National Communications to UNFCCC (2005-)

Government-led CCA

*2 projects (2012-17; 2017-22)
24 districts out of 64 districts*



Water hyacinth was introduced to Indian Sub-continent in 1890s

High-yielding rice varieties with brittle straw

Media attention

1600s?

1800s?

1960s

1990

2004 –

2012 –

Indigenous Innovation

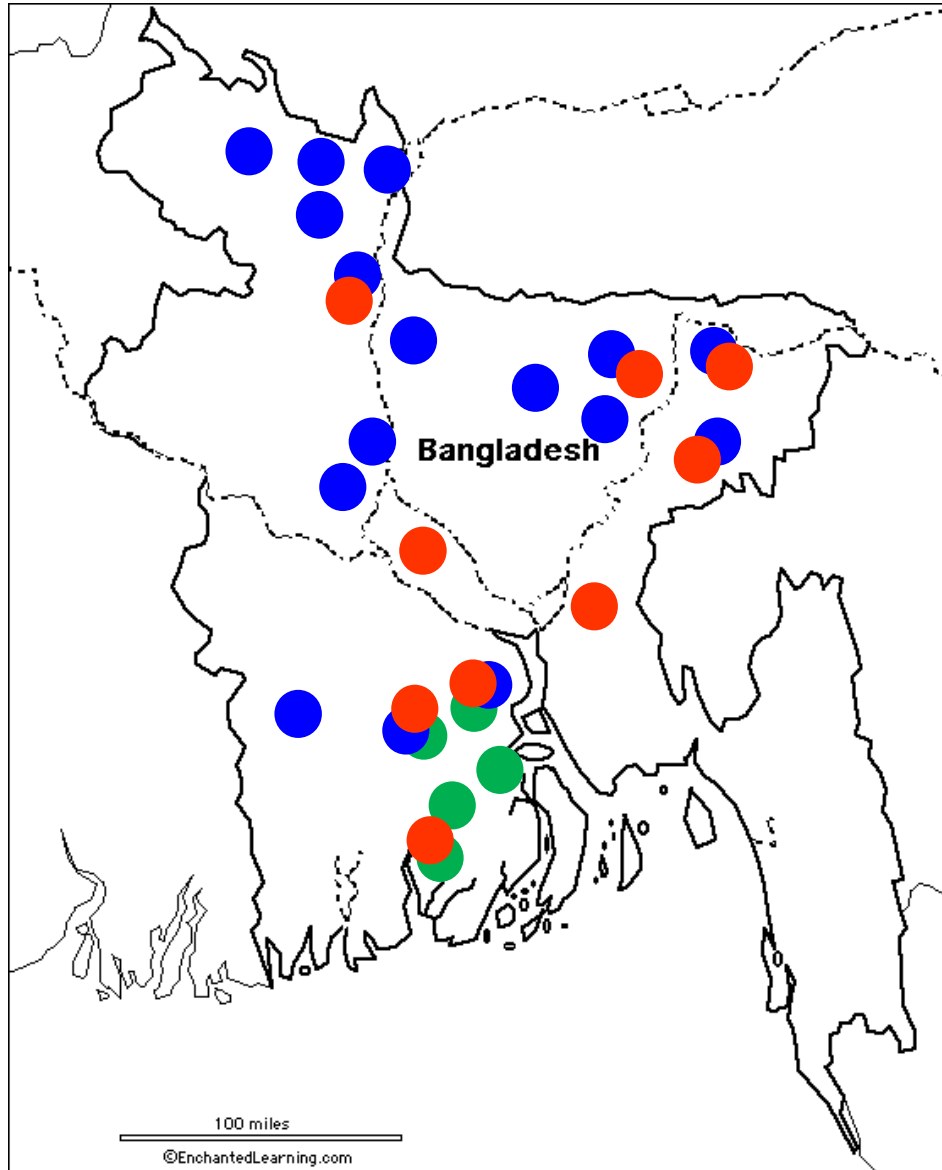
- A traditional practice showed potentials to tackle new challenges posed by climate change and climate variability
- Became an **adaptation sensation**



Floating Gardening: a local lad becoming a climate celebrity?

Floating gardening in Bangladesh is an example of how a traditional practice can become a development sensation. **Haseeb Md. Irfanullah** asks if this picturesque technique will be compatible with climate change.

Evolution of a Nature-based Solution (NbS)



- Traditional (for ages): **Livelihoods**
- NGOs (2000-): **Nutrition Livelihoods Adaptation**
- Government (2011-): **Livelihoods Adaptation**



Original locations
a local, efficient, self-sustaining
business model



©Haseeb Md. Irfanullah

Lost in transfer



Photo: Practical Action

New areas
Nutritional security for the extreme poor
sustained by external support

© Haseeb Md. Irfanullah

Phase 1

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Phase 6

Traditional agro-practice by local community

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Artificial structures

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NGOs (BCAS/IUCN-Central, Practical Action-North, CARE/IUCN, Helvetas-East), Development partners facilitated, Local government (Rangamati)
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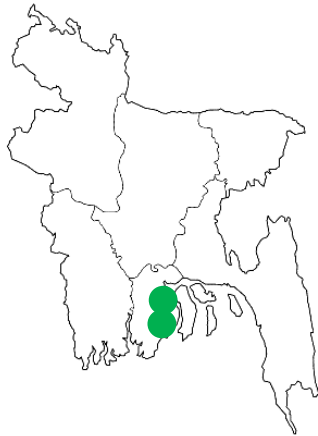
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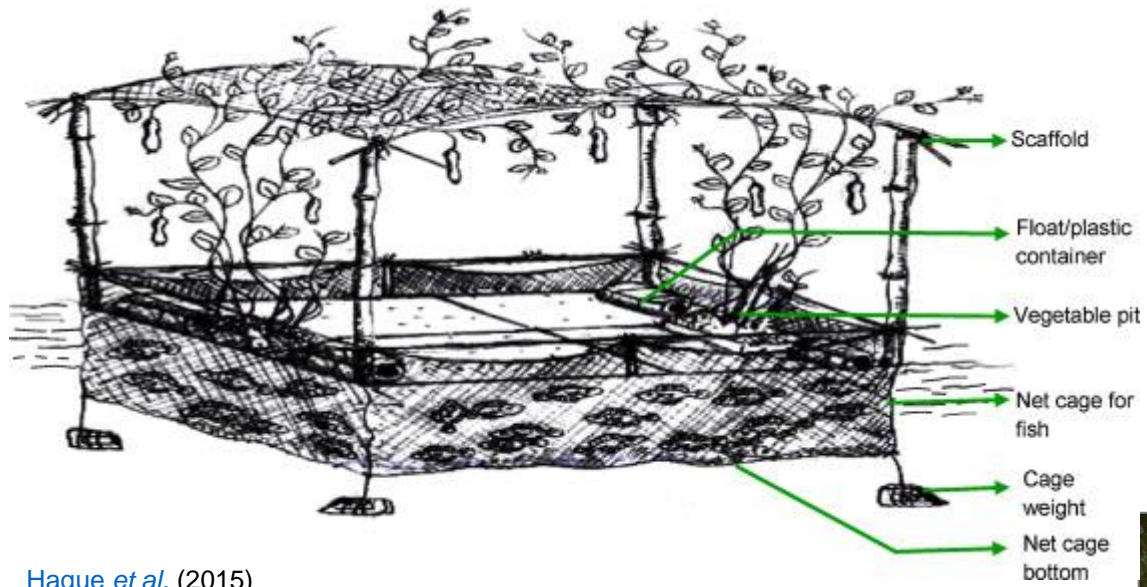


Floating Gardening: Scope for Innovation

Aqua-geoponics in Satkhira

Practical Action (2017)





[Haque et al. \(2015\)](#)



Phase 1

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Phase 3

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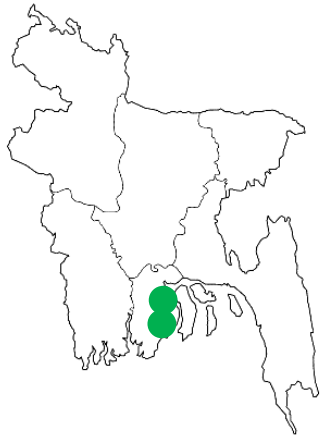
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- TEC-UNFCCC (2014)
- Globally Important Agricultural Heritage Systems (GIAHS) of FAO (2015)



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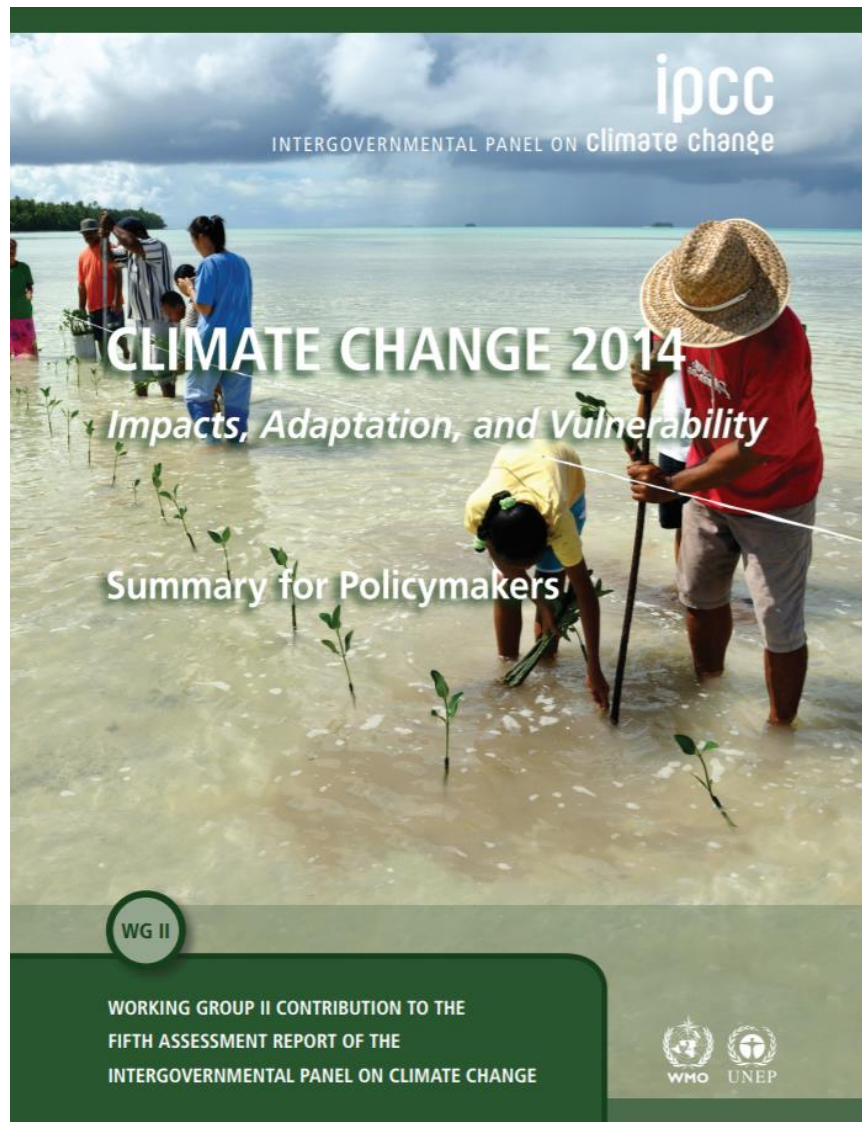
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IPCC (2014)

United Nations
Framework Convention on
Climate Change

TEC Brief #4

Technology Executive Committee

Technologies for
Adaptation in the
Agriculture Sector

Why this TEC Brief?

Agriculture represents the single most important sector in the economy of many low-income countries, and 75 per cent of the world's population is engaged in related activities (UNFCCC, 2006). In acknowledgement of the sector's vulnerability to climatic impacts (IPCC, 2014), countries have prioritised agriculture as a critical focus for climate change adaptation. Technologies are often highlighted as a crucial resource for ensuring effective adaptation in agriculture. Their role has been emphasised in the Fifth Assessment Report of Working Group Two of the Intergovernmental Panel on Climate Change (IPCC WGII AR5) (IPCC, 2014), and the agriculture sector has been prioritised by 84 per cent of Parties in their Technology Needs Assessments (TNAs) (UNFCCC, 2013).

The Technology Executive Committee (TEC) has recognised the need for appropriate policies to support countries in applying adaptation technologies to meet the objectives of the United Nations Framework Convention on Climate Change (UNFCCC). This brief has primarily been developed for policy makers within national and local government institutions. It draws upon lessons learned from various relevant experiences and provides recommendations for policy makers, incorporating consideration of the principles of effective adaptation (outlined in Section C-1 of the Technical Summary of the IPCC WGII AR5) and TNA recommendations for practitioners and policy makers (highlighted in the United Nations Environment Programme's TNA Guidebook on Technologies for Climate Change Adaptation in the Agricultural Sector). Similarly, the water sector has been prioritised as a focus for policy development and a separate policy brief for this sector can be referred to for further understanding of the symmetries, co-benefits and integration between the two sectors.

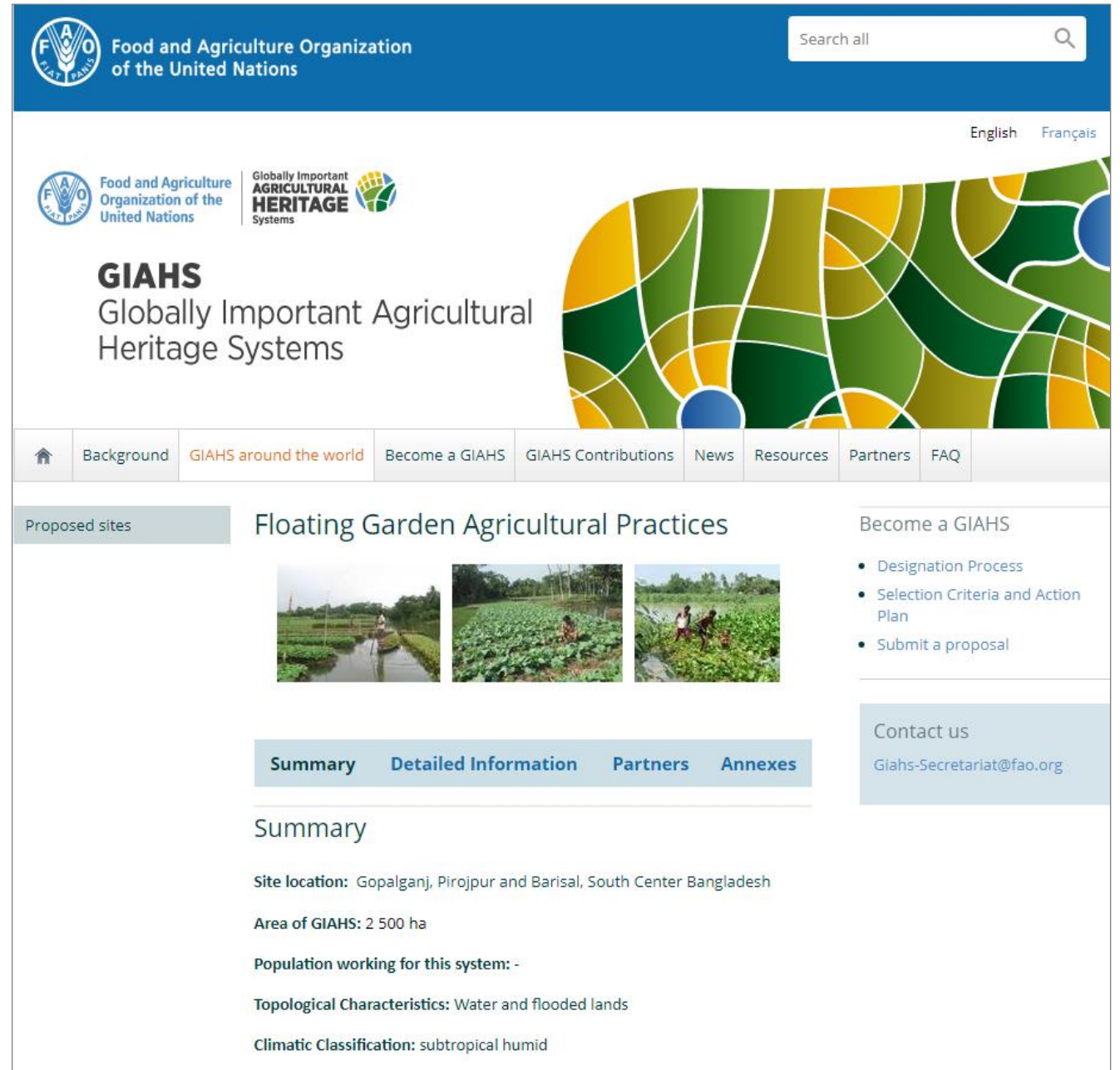
UNFCCC (2014)

UNFCCC (2014)

Globally Important Agricultural Heritage Systems (GIAHS) by FAO (2015)

“This system is an example of the adaptation to hard climatic conditions but also to climate change.”

FAO (2022)



The screenshot shows the FAO website interface for Globally Important Agricultural Heritage Systems (GIAHS). The header includes the FAO logo and the text 'Food and Agriculture Organization of the United Nations'. A search bar is located in the top right corner. Below the header, there are language options for 'English' and 'Français'. The main content area features the GIAHS logo and the title 'GIAHS Globally Important Agricultural Heritage Systems'. A navigation menu includes links for 'Background', 'GIAHS around the world', 'Become a GIAHS', 'GIAHS Contributions', 'News', 'Resources', 'Partners', and 'FAQ'. The main content area is titled 'Proposed sites' and features a section for 'Floating Garden Agricultural Practices'. This section includes three images showing people working in flooded agricultural fields. To the right of the images, there is a 'Become a GIAHS' section with a list of links: 'Designation Process', 'Selection Criteria and Action Plan', and 'Submit a proposal'. Below the images, there is a 'Contact us' section with the email address 'Giahs-Secretariat@fao.org'. The 'Summary' section provides details about the site: 'Site location: Gopalganj, Pirojpur and Barisal, South Center Bangladesh', 'Area of GIAHS: 2 500 ha', 'Population working for this system: -', 'Topological Characteristics: Water and flooded lands', and 'Climatic Classification: subtropical humid'.

What make floating gardens so attractive adaptation option?

- Simple
- Natural
- Traditional
- Control over water!

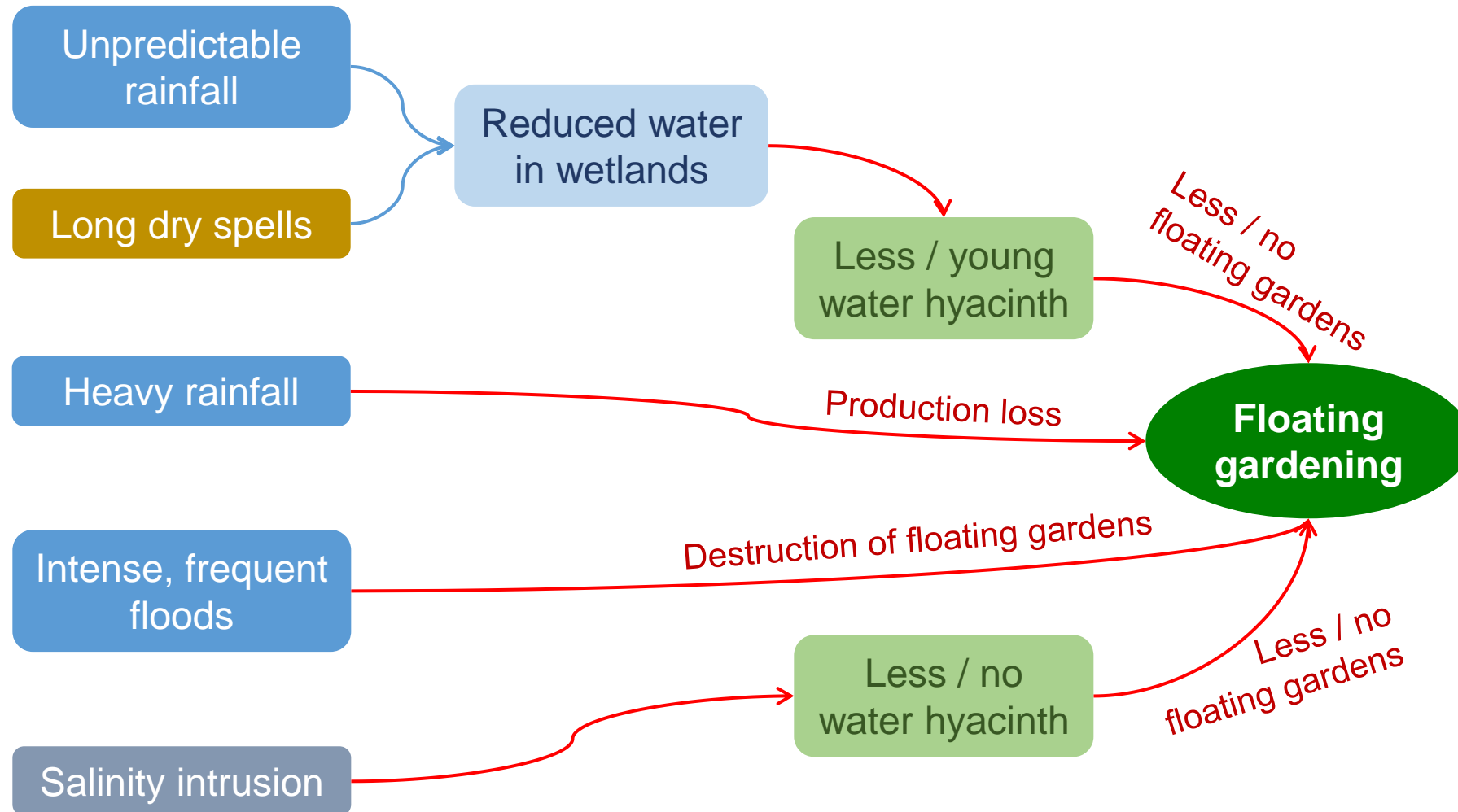


Focus on research & knowledge generation as we scaling up

- Limited compare with the enthusiasm, promotion or scaling up
- Rarely going back to see, if the introduction is sustaining or not
- Hardly any research on if the technology would survive under changing climate



Floating Agriculture: Adaptive or Sensitive to Climate Change?



Phase 1

Phase 2

Phase 3

Phase 4

Phase 5

Phase 6

What's next?

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Paddy straw-based

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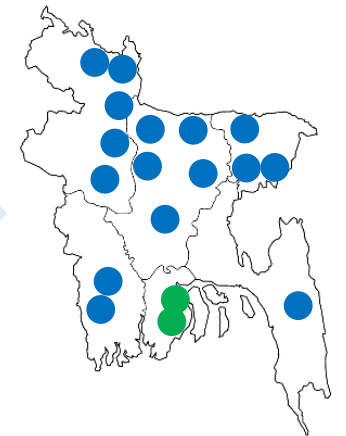
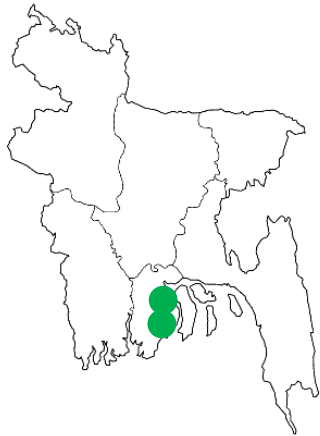
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Thank You

Ref.:

- [Exclusive publications on floating agriculture of Bangladesh](#)
- [What will the next phase of floating agriculture look like?](#)

Dr. Haseeb Md. Irfanullah

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