Salinity in water and food systems and its long-term perspectives in a dynamic delta: research in Bangladesh in 2023

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September 2023

Overview

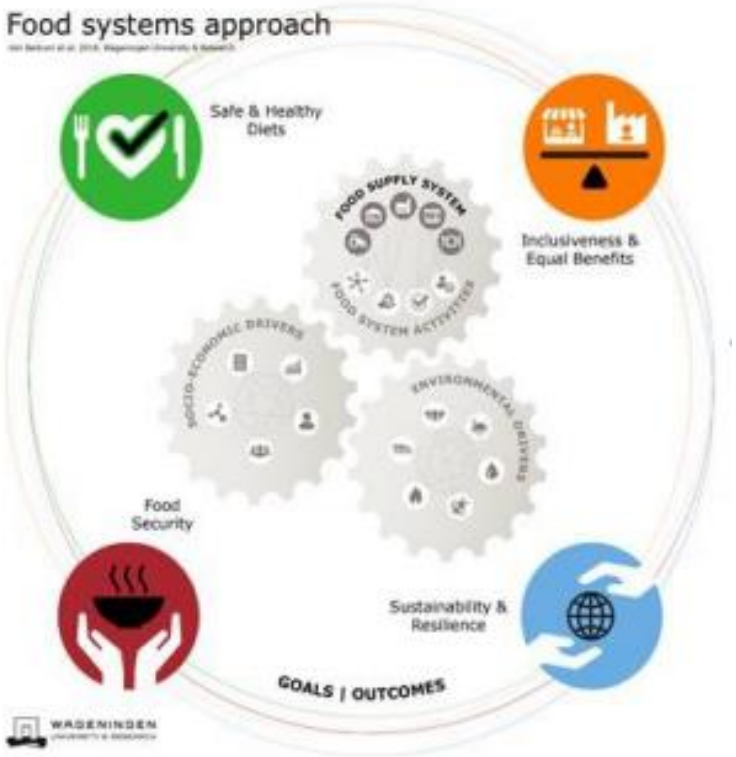
1. Food system approach
2. Examples of WUR research in BD
3. Planning 2023 and beyond

Short CV

Md Feroz Islam

- Researcher, Water & Food, Wageningen Environmental Research
- Hydrologist and hydro-morphodynamic modeller
- Hydrological models, Soil Water Atmosphere Plant (SWAP), LPJML, Salinity and Agriculture
- Feroz.islam@wur.nl
- *https://weblog.wur.eu/fnh-ri/combined-insights-stimulate-sustainable-food-production-in-deltas-under-pressure/*
- *www.wur.eu/food-in-deltas*

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

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

Bangladesh agriculture system change

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

https://research.wur.nl/en/publications/food-systems-in-the-bangladesh-delta-overview-of-food-systems-in-

Knowledge question: can we use these (water and) food system guidelines to link BDP and AT programmes to create synergy?

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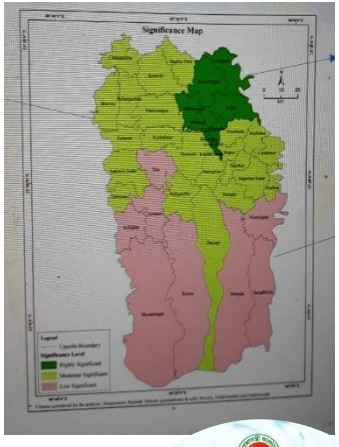
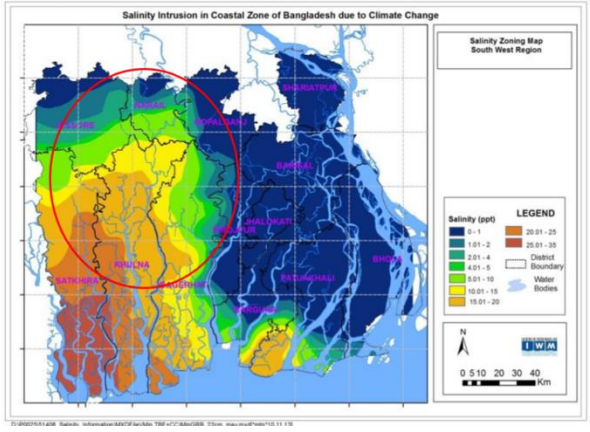
Bangladesh agriculture system change

Monitor Evaluate Learn together | Analyse together (overview of what's at stake) | Understand together (food system mapping) | Prioritise together (targets for change) | Explore together (transition pathways) | Partner together Build pathway partnerships | Act together Implement pathways

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



May, 2030 climate change (A1B) with minimum Transboundary flow under Ganges Treaty




NEC approves 100-year delta plan

Published: September 04, 2018 17:26:27 | Updated: September 06, 2018 20:15:17

The National Economic Council (NEC) has approved the long-awaited mega strategy 'Bangladesh Delta Plan (BDP) 2100' in a bid to tap the huge potentials of Bangladesh as a delta country through water resources management, ensuring food and water security and tackling disasters.

http://www.plancomm.gov.bd/

Using our guidelines to facilitate transition pathways: a food systems approach for adaptation in the Mekong delta

WUR research collaboration with universities in Vietnam/Mekong delta: Can Tho and Tra Vinh

- Farming systems evolution
- Crop breeding for biotic and abiotic stress
- Water management adaptation measures
- Food safety – hazardous contaminants

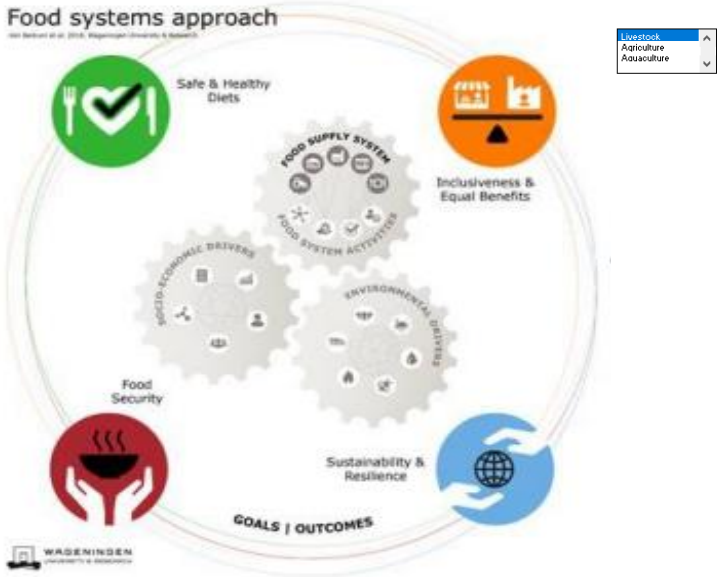
WUR engagement in Bangladesh

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 forcasting (S2S)
6. Climate Smart Agriculture
7. Water, Energy and Food Nexus

Collaboration with

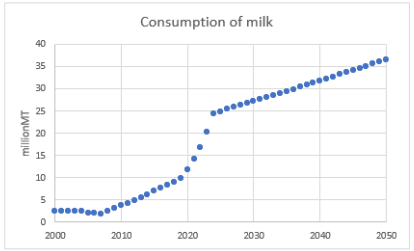
- knowledge institutes (IWM, CEGIS, BUET, BAU, KU, PSTU), government organizations (DAE, BMD)
- NGOs (Solidaridad, Uttaran, Max Foundation) and private sector (Lal Teer)
- and international organizations (FAO, WB, ADB, IRRI, CIMMYT)

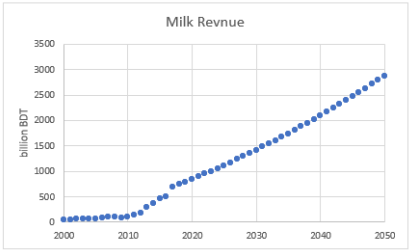
1. Trade-off and Synergies

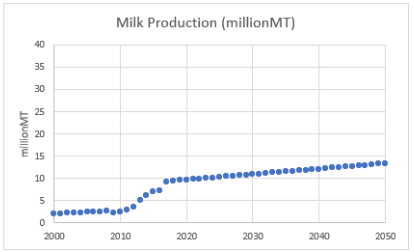


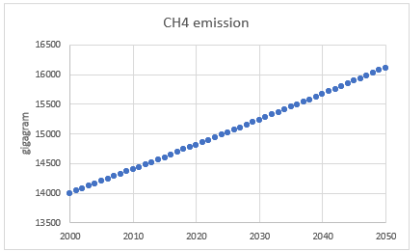
Livestock
Agriculture
Aquaculture

Livestock



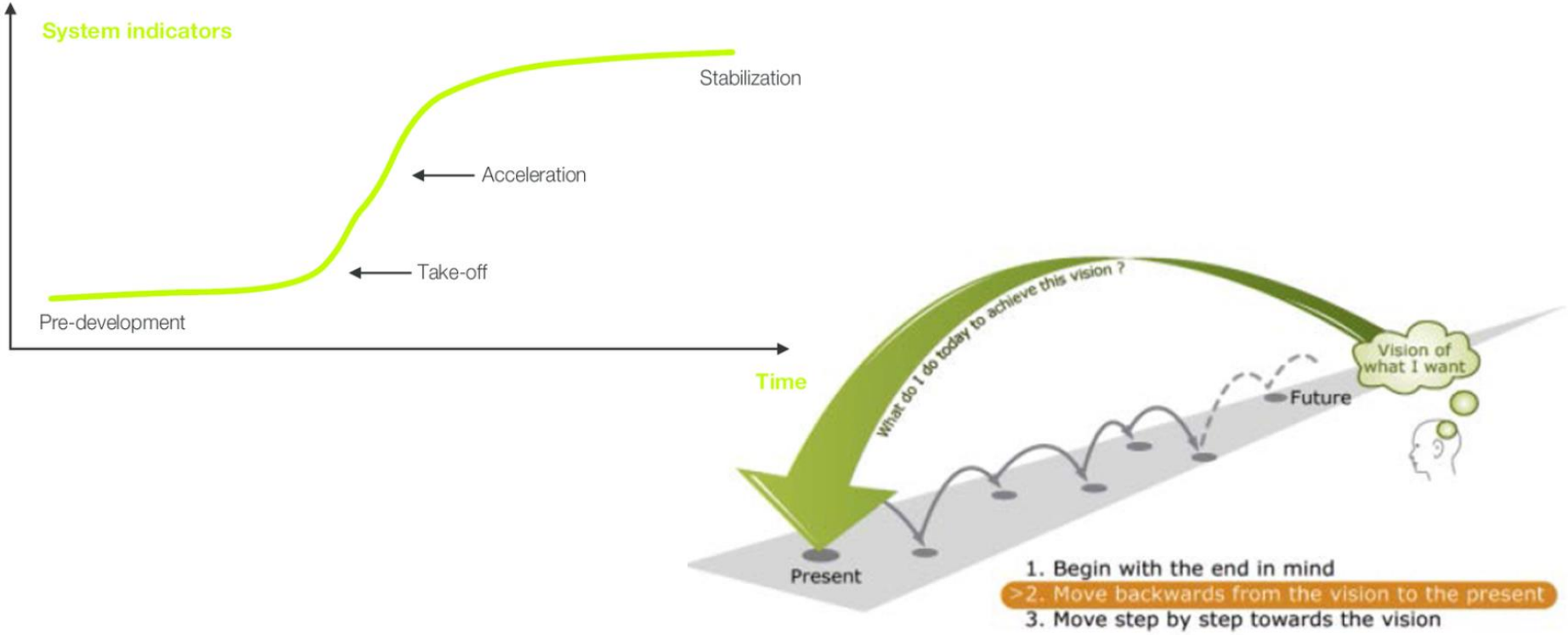






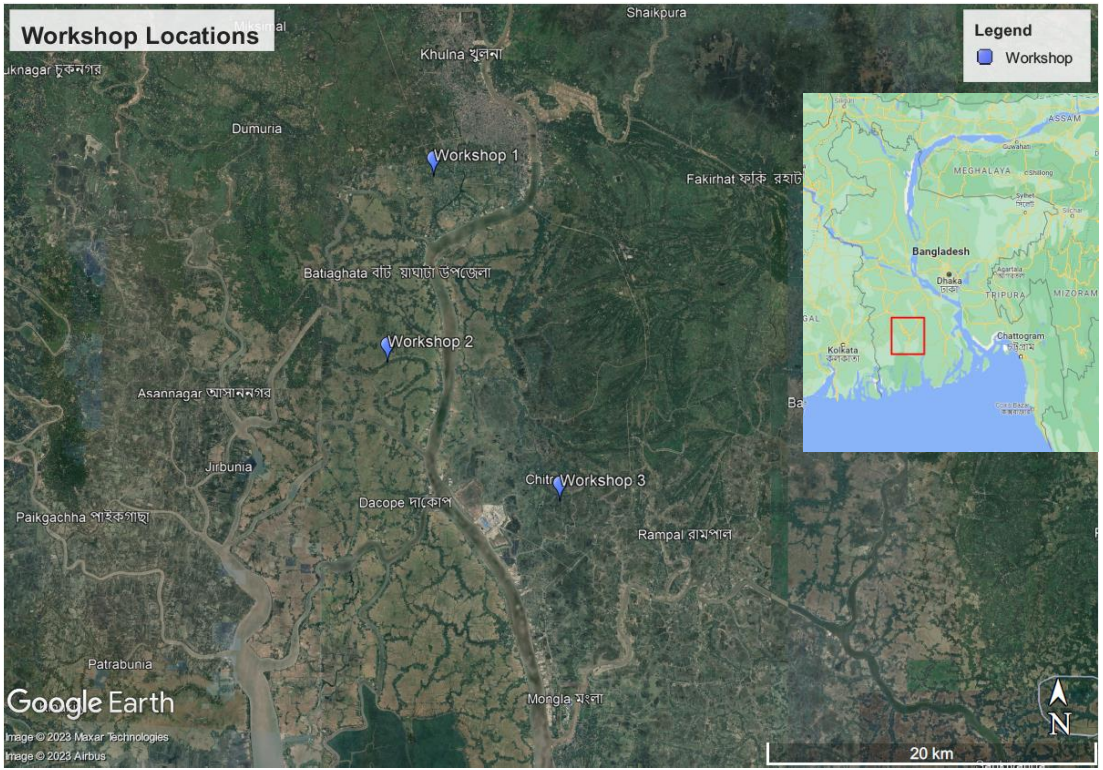
2. Transition Pathway (Longer term planning, uncertainty)

Transition Pathway (Back casting)



Transition Pathway (Consultation at Field Scale, Bangladesh)

- The objective: To gather knowledge about the farmers perception on salinity, now and in the future and their transition pathways for salinity-water-food



Transition Pathway (Consultation at Field Scale, Bangladesh)





Experience in south west Bangladesh	Current		Future		Transition Pathway towards perceived sustainable future
General information • Salinity level • When highest • where highest					
Agriculture 					
Livestock  					
Shrimp 					
Drinking Water 					

Transition Pathway (Consultation at Field Scale, Bangladesh)

- Salinity has seasonal and spatial variation
- Salinity is increasing
- Local people are experiencing impact higher salinity and are aware of possibility of increased salinity in the future
- Willing to adapt to new agicultural practices and strategies but wants to continue farming

- Consultation with Regional stakejolders October 2023

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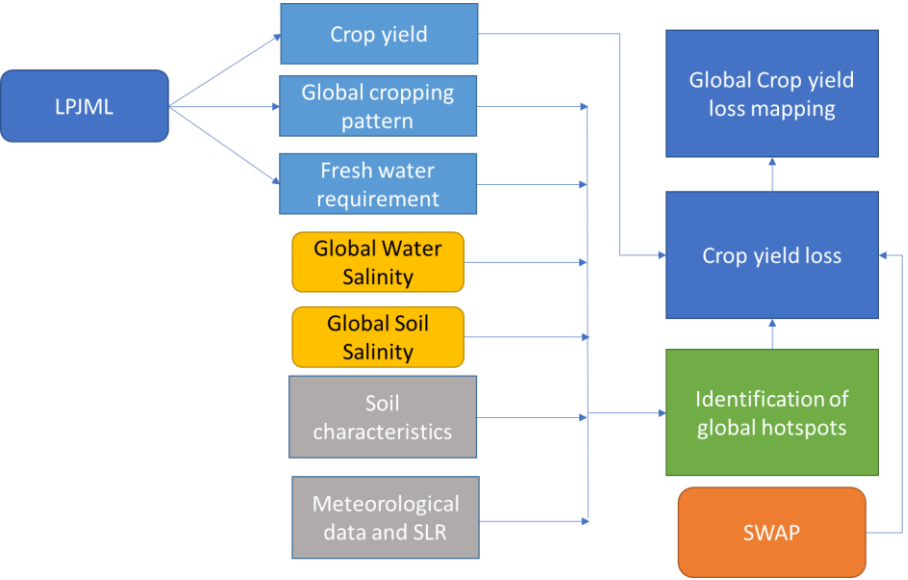
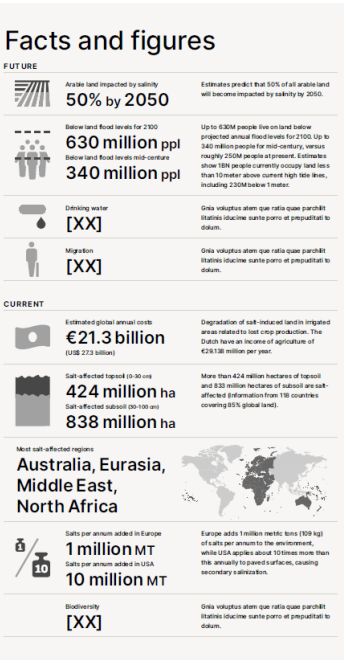
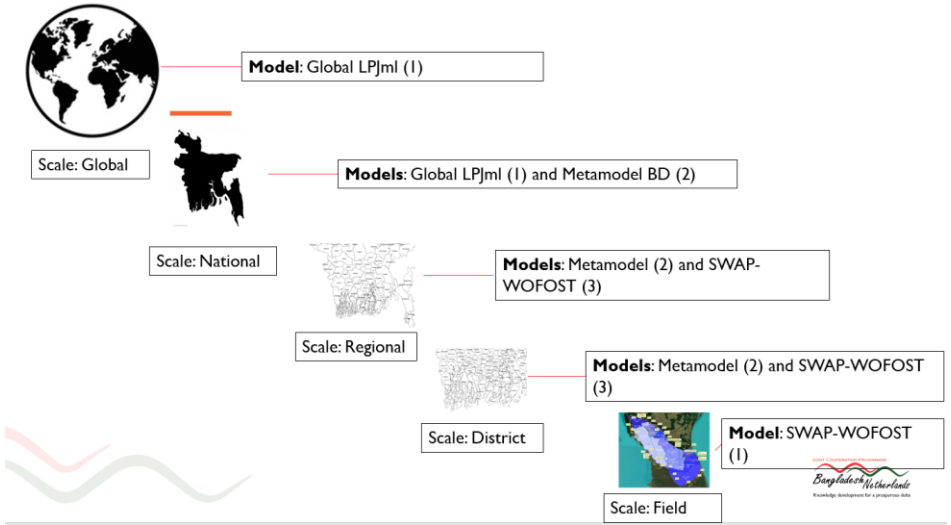
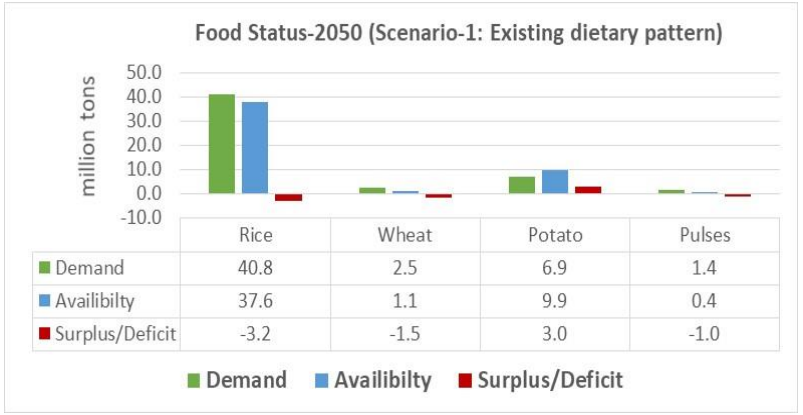
3. Salinity Hotspot Identification

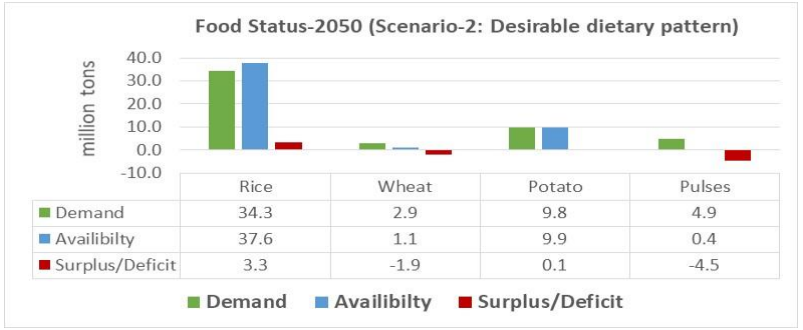




4. Water – agriculture – food - future







JCP – Make it Real – www.jcpbd.nl
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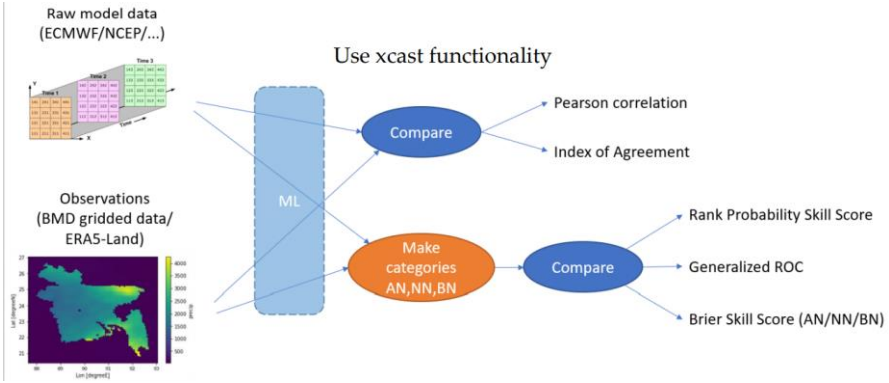
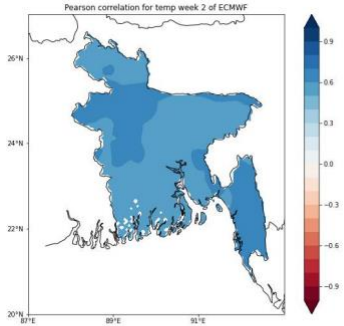
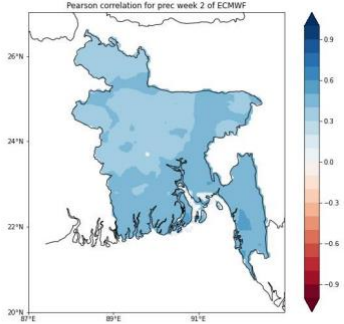
5. Sub-seasonal to seasonal forecasting (S2S) for agriculture

- Collaboration with DAE / BMD
- Weather Impact – lead, WUR agricultu

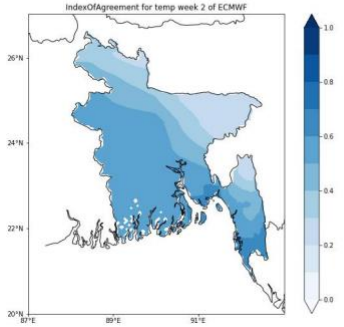


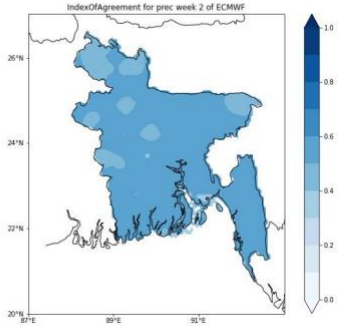




temperature

precipitation





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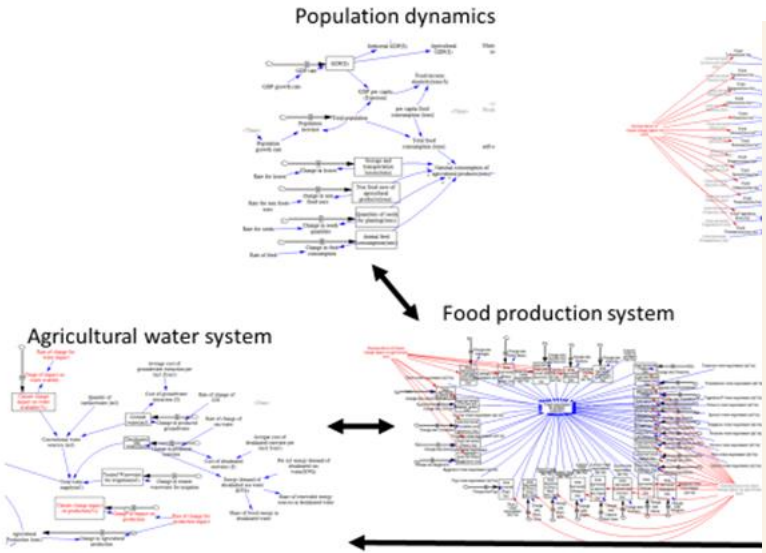
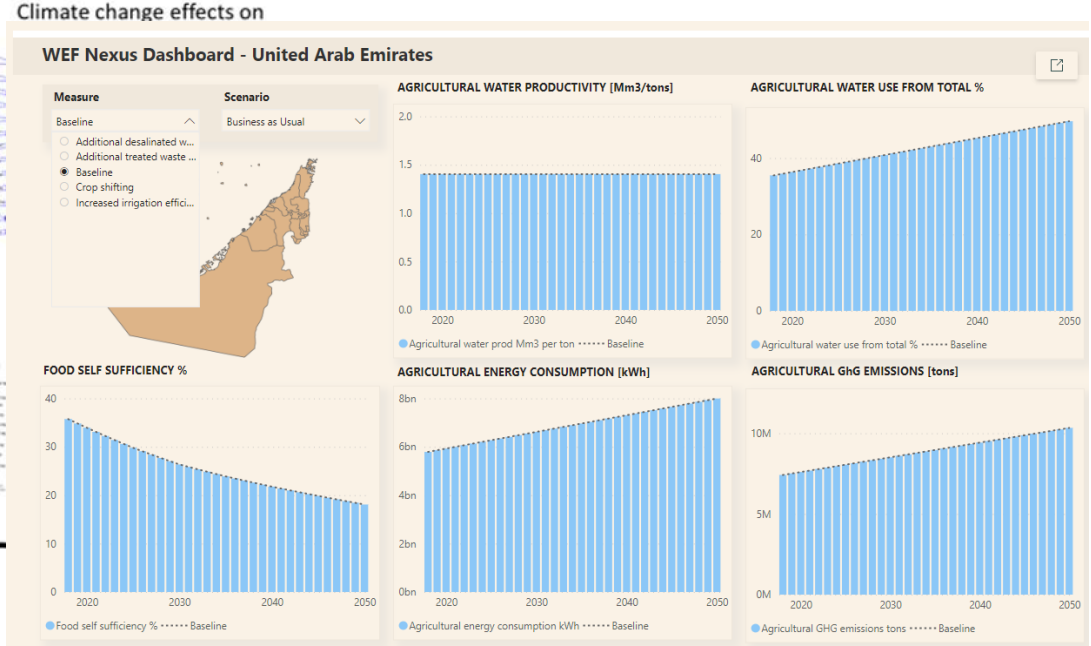
6. Climate Smart Agriculture

- Collaboration with PSTU
- Climate Smart Agriculture
    - Salinity
    - Climate information services

7. Water Energy Food Nexus





https://storymaps.arcgis.com/stories/9a3fd17260254a56ae52c293e4bc901d

Planning 2023: focus on salinity

Storyline: www.wur.eu/food-in-deltas

- International level
  - Working on hotspots salinity
- National level
  - S2S
  - Trade-offs and synergies in FS
  - Workshop salinity future (ICWFM9)
- Local level
  - Working on local level salinity perception by farmers
  - Link to CGIAR research

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Thank you

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