



Deltas under Pressure: transition pathways for salinity and drought (KB35-101-002)

Project team: Catharien Terwisscha van Scheltinga (WENR), Lotte Caarls (WPR), Ayodeji Deolu-Ajayi (WPR), Katja van Dongen (WFSR), Hager Fakhry (WECR), Feroz Islam (WENR), Lotte Klapwijk (WPR), Esther Koopmanschap (WCDI), Vincent Linderhof (WECR), Tania Mubita Zambrano (WFBR), Rosa Safitri (WFSR), Marianna Siegmund-Schultze (WPR), Judit Snethlage (WENR), Theun Vellinga (WLR), Charlotte Verburg (WLR), Jan Verhagen (WPR), Erik Vriezেকolk (WFBR), Frank van der Weerd (WCDI), and Gert-Jan Wilbers (WENR).

Background and objectives

People living in deltas worldwide face challenges in creating safe living environments, producing safe and sufficient food, and maintaining or improving their livelihoods. A key challenge is to establish viable and feasible transition pathways for sustainable, safe and resilient food systems in deltas.

Our research project 'KB Deltas' is based on a collaborative analysis carried out in Vietnam and Bangladesh between 2019 and 2022 (www.wur.eu/food-in-deltas). We are examining the interactions between plants, livestock and water and the effects of water management on salinity and agriculture and livestock in Vietnam and Bangladesh

The objective is to understand the current situation and identify possible future of food systems in delta areas, and work together with our partners towards implementing transition pathways.

Partners

We work closely together with colleagues at Can Tho and Tra Vinh Universities in Vietnam, Cordaid and Solidaridad in Bangladesh, and the CGIAR Asian Mega-Deltas research team.

Outputs

- 'Delta Talks' co-organized by WUR together with colleagues from CGIAR's research programme *Asian Mega-Deltas* to exchange views and insights on on-going research.
- Policy brief on salinity and agriculture
- Papers, such as on salinity hotspots, response of crops to saline irrigation, food safety in food systems in deltas, quinoa, while fly, livestock etc
- Contributions to international events, like the UN Water Conference, and COP28 (planned)

Outcomes

- Use of water and food systems approach in deltas in related Partners for Water study: pilots to be installed at 4 locations
- Further development and use of the conceptual framework 'Food Safety in Deltas', based on application to several case studies and supported by sampling
- Special Issue on Food in Deltas of the International Journal on Water Governance (forthcoming)
- Use of the storyline www.wur.eu/food-in-deltas
- Contribution to NFP/NWP Global Campaign on Salinity
- Making water pivotal in food systems – Follow up of the contribution to the UN Water Conference of WUR



Livestock in deltas, Vietnam



Farmers discussing salinity pathways, Bangladesh



Field work, Bangladesh

How do we work (methods)

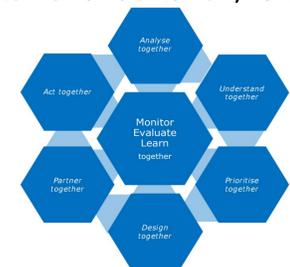
We look at the Food System and Water-Food-Nexus at the field, farm, regional and national scale in deltas. Using the integrated framework to understand current food systems in deltas under pressure, we now focus on transition pathways in deltas. In 2023 we focus in particular on salinity:

- Fieldwork is undertaken in Bangladesh and Vietnam regarding transition pathways on salinity (see figure 'guidelines').
- Hotspot analysis is done, to map current and future hotspots of salinity and the impact on agriculture
- We develop a framework for food safety in deltas (see figure below).
- Bringing together of knowledge and experiences in different settings to exchange views and insights is undertaken, and to stimulate action.

Food safety: farm to fork approach



Food safety in deltas research framework



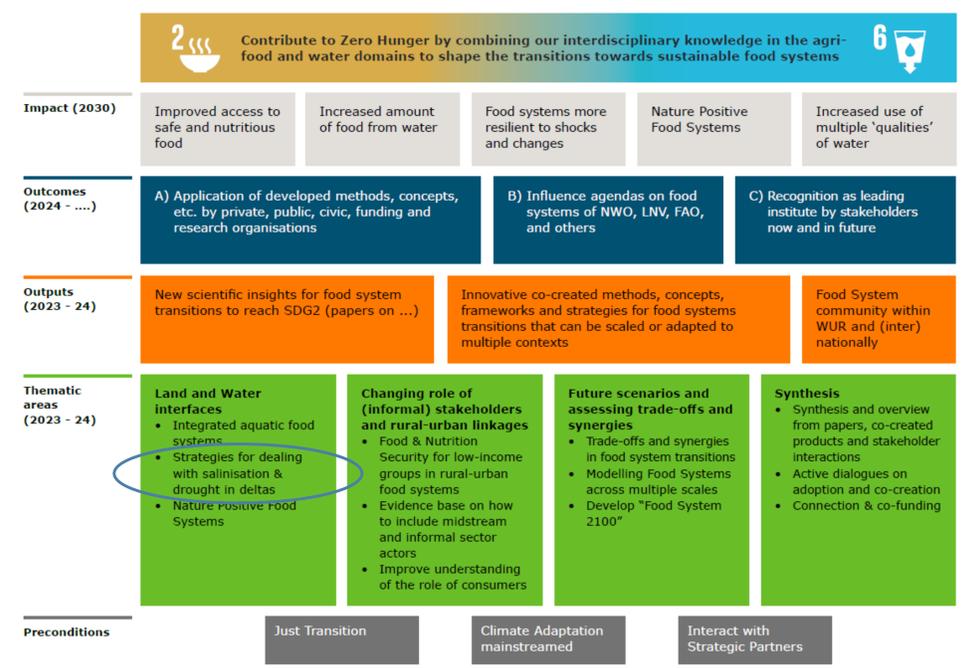
Guidelines for formulating transition pathways in water and food systems in deltas (Verhagen et al, 2022) (QR code for quick link)



Part of KB35 Food and Water Security

The team contributes to the Theory of Change of KB35 with strategies for dealing with salinization and drought in deltas in the thematic area **land and water interfaces**. The methods developed, papers published, combined with interaction with strategic agendas on food systems at LNV, FAO and others (e.g. UN Water Conference, International Panel on Deltas and Coasts), contribute to impact, i.e. tools for more resilient food systems and increased amounts of food from water, while taking other goals into account.

Theory of Change Food and Water Security



References

- Verhagen et al (2022) Deltas under pressure, guidelines to facilitate transition pathways <https://www.wur.nl/en/Publication-details.htm?publicationId=publication-way-353934313238>
- Terwisscha van Scheltinga et al. (2023) Food systems in the Bangladesh Delta: Overview of food systems in Bangladesh with a focus on the coastal south west. <https://doi.org/10.18174/580735>
- Siegmund Schultze et al (2023) What can farmers do to adapt to climate change in the Mekong River Delta? Final report of the case study on the Mekong River Delta within the project 'Deltas under Pressure'. <https://doi.org/10.18174/633921>