

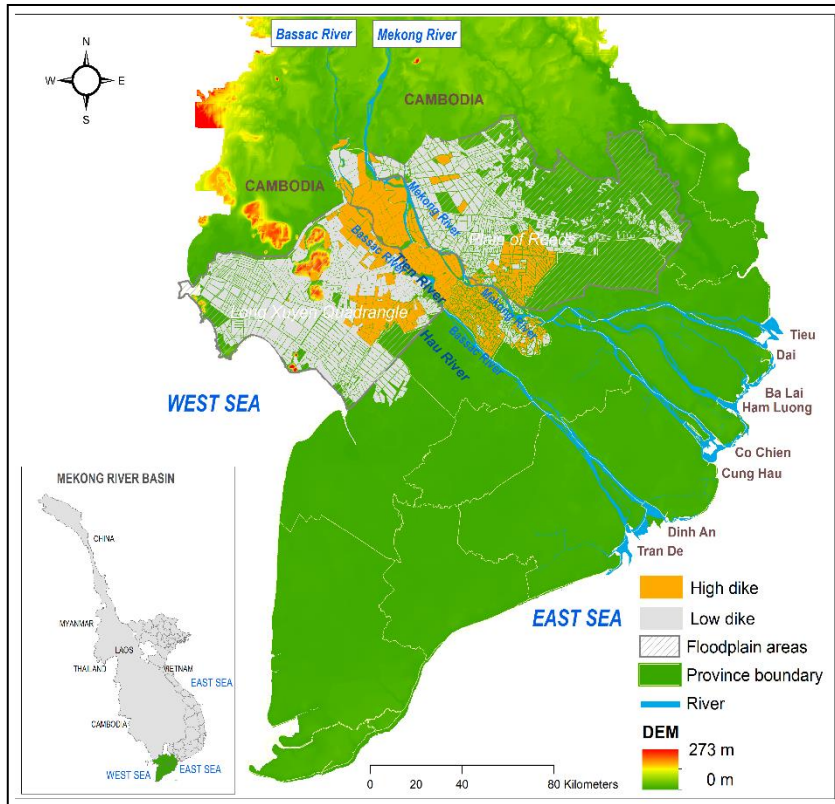


IHE-DUPC2 Webinar Building resilient rivers and deltas – taking stock from research and practices from the DUPC2 program

Flood-based farming systems for enhancing livelihood resilience in the floodplain of upper Mekong delta

Hong Quan Nguyen, Luu Thi Tang, Nguyen Minh Tu, Nguyen Thanh Binh, Tran Duc Dung





- Flood-based farming system has been considered as a multi – purpose solutions for flood plain preservation, protection and restoration.
- The complexity of social – ecological systems of the flood plain areas such as water modification (dikes), social – economic development (e.g. agricultural intensification focusing on multiple rice cropping systems) in the upper Mekong delta
- This study is focusing on the flood plain areas of the upper Mekong delta with several ecological-sub regions including the Plain of Reeds, Long Xuyen Quadrangle in Vietnam. In the later stage it can be a reference for the neighbouring areas of Cambodia.

This study aims to address the following questions

1. What are the most dominant social – hydrological systems of the upper part of Mekong Delta? Are we able to map these systems? What are the current livelihoods and their resilience to the water dynamics and complexity?
2. How would flood-based farming system within the delta floodplains enhance the livelihood resilience under increasingly unpredictable nature of hydro-social dynamics?
3. How flood-based crops improve productivity and create a stable market for the production? How to develop an effective, efficient, sustainable and inclusive value chain and market systems for flood-based farming systems?
4. How are women and men affected by and deal with impacts of delta floodplains within the context of Lower Mekong region? And In what ways are women and men engaged in the decision-making process in relation to water governance and development?
5. What are adaptive measures and pathways of flood-based farming system can contribute to and enhance the resilience of the flood-based communities in the delta?

Hydro-social complexity

- Climate change and water development upstream
- Intensive modified hydrological systems (dykes, sluice gate)
- Society (religion, minority, gender) and economical factors (market)
- Local and national agriculture policy (e.g. Rice-based intensification) and initiatives.

Livelihood context and resilience

- Livelihood capitals (physical, natural, social, financial and human capitals)
- Existing livelihood strategies.
- Impacts of national, local economical policy
- Roles of women in livelihoods
- Flood and social resilience of farmers and communities.



Flood-based farming systems

- Piloting in hydrological zones (low and high dikes).
- Flood-magnitude based livelihoods (e.g. floating rice, floating vegetable)
- Flood prediction scenarios (combined 1-2D modeling).
- Community (and gender) – based water management
- Business and market linkages (value chains).



Dynamic adaptation pathways

- Farmer/authority motivations and abilities for plan implementation
- Solution for enhancing resilience
- Future Scenarios of adaptation measures
- Road maps for adaptive plans.

Publications (DUPC2 and linked projects)

- Luu Thi Tang, Mark Verhallen, Tran Duc Dung, William B. Sea, Nguyen Thanh Binh, Hong Quan Nguyen. Statistically examining the connection between dike development and human perceptions in the floodplains' socio-hydrology system of Vietnamese Mekong Delta. *Science of The Total Environment*. <https://doi.org/10.1016/j.scitotenv.2021.152207>
- Hong Quan Nguyen, Tran Duc Dung, Dang Kim Khoi, Dorien Korbee, Pham Dang Manh Hong Luan, Ho Huu Loc, Vu Thi Lan, Luu Thi Tang, Nguyen Tan Phat, Ngo Thi Thu Trang, Nguyen Thi Kim Dung, Andrew Wyatt, Maaïke van Aalst, Tran Anh Thong, William Sea, 2020. *Land use dynamics in the Mekong delta: from national policy to livelihood sustainability*. *Sustainable development* <https://doi.org/10.1002/SD.2036>
- Haomiao Du, Khoi Dang, Hong Quan Nguyen, Marleen van Rijswijk. A framework for reviewing laws and policies for climate resilience: The case of the Vietnamese Mekong Delta. *Journal of Environmental management and Planning*. <https://doi.org/10.1080/09640568.2022.2026308>
- Nguyen Thanh Binh, Le Van Thuy Tien, Luu Thi Tang, Nguyen Minh Tu, Tran Duc Dung, Hong Quan Nguyen. Resilience of various innovative water management practices: The case of rice production in the Vietnamese Mekong Delta floodplains. *Agricultural Water Management* 270 (2022) 107739. <https://doi.org/10.1016/j.agwat.2022.107739>
- Ellen Minkman, Hong Quan Nguyen*, Luu Thi Tang, Dang Kim Khoi, Nguyen Sy Linh, Tanya Huizer, Jeroen Rijke. From national vision to implementation: governance challenges in sustainable agriculture transitions in the Vietnamese Mekong Delta region. *Regional Environmental Change*. <https://doi.org/10.1007/s10113-022-01898-z>
- Tang Luu, Derk Voorintholt, Ellen Minkman, Nguyen Thanh Binh, Gvantsa Gverdtsiteli, Tran Che Linh and Hong Quan Nguyen. Mismatches between policy planning and implementation on the actively living with flood approach in the Vietnamese Mekong Delta. *Water International*. <https://doi.org/10.1080/02508060.2022.2043015>
- M.A.van Aalst, E. Koomen, D.D. Tran, H.M. Hoang, Hong Quan Nguyen, H. L.F. de Groot. The economic sustainability of rice farming and its influence on farmer decision-making in the upper Mekong delta, Vietnam. *Agricultural Water Management*. S0378-3774(22)00565-0
- Tran Duc Dung, Nguyen Hong Quan, Dang Kim Khoi, Luu Thi Tang. Future of rice cultivation in the Mekong delta: a lesson learn from Tam Viet Farm (*in preparation*)
- Dang Kim Khoi, Nguyen Hong Quan, Luu Thi Tang, Tran Duc Dung, Hoang Phi Long. Transitioning to climate – resilient and sustainable livelihoods in the Vietnamese Mekong delta: barriers and the way forward (*in preparation*)

Examples

Science of the Total Environment 810 (2022) 152207

Contents lists available at ScienceDirect

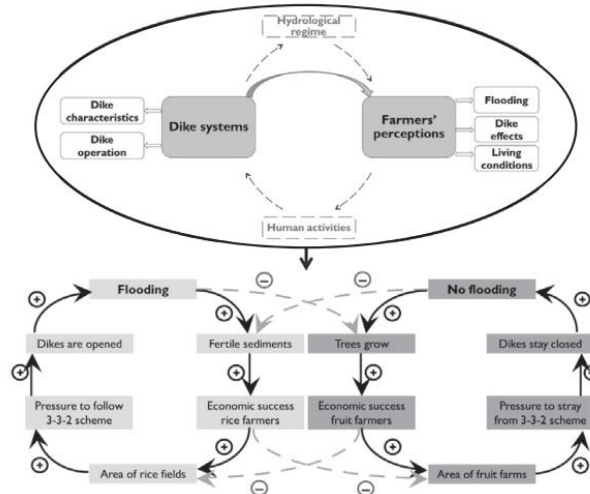
Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv



Statistically examining the connection between dike development and human perceptions in the floodplains' socio-hydrology system of Vietnamese Mekong Delta

Tang Luu^a, Mark Verhallen^b, Dung Duc Tran^{a,*}, William B. Sea^c, Thanh Binh Nguyen^d, Hong Quan Nguyen^{a,e}



Dike-flood-livelihood feedback loop in the floodplain of the Vietnamese Mekong Delta

- High-dike development versus its operation has been somewhat ad hoc in the VMD.
- Relations between dike development and human perceptions are statistically examined.
- Farmer perceptions are statistically significantly different under low and high dikes.
- A connection between dike development and human perception on flooding is suggested.
- Findings contribute materials to further develop socio-hydrology predictive models.

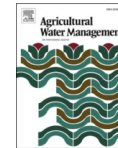
Examples

Agricultural Water Management 270 (2022) 107739



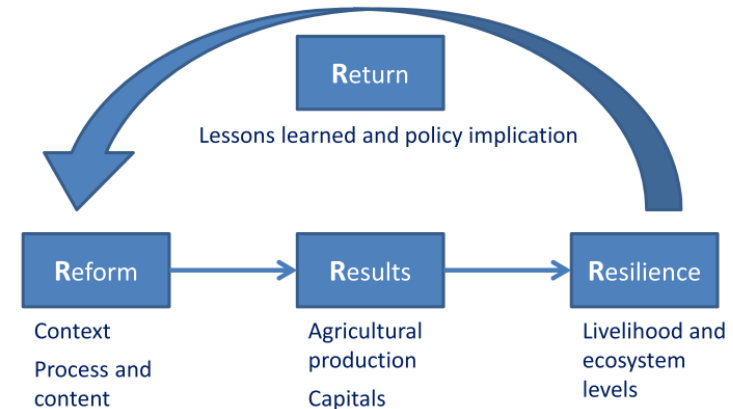
Contents lists available at ScienceDirect
Agricultural Water Management

journal homepage: www.elsevier.com/locate/agwat



Resilience of various innovative water management practices: The case of rice production in the Vietnamese Mekong Delta floodplains

Nguyen Thanh Binh^{a,b,*}, Le Van Thuy Tien^a, Luu Thi Tang^b, Nguyen Minh Tu^c,
Tran Duc Dung^{b,d}, Nguyen Hong Quan^{b,c}



- Different historical contexts creating various cropping systems
- Different systems resulting different resilience levels
- “New context” rethink about resource uses (i.e. land, water) and ecosystem services

Acknowledge

- DUPC office (Wim, Kimberly and Nadine)
- All partners, students
- Local supports (WACC, An Giang DARD)

and apologies

- Those who could not (or partly) join the project as we planned in the beginning



THANK YOU

CONTACT:

Assoc. Prof. Dr. Nguyen Hong Quan

Director, Institute for Circular Economy Development (ICED)

Vietnam National University - Ho Chi Minh city (VNU - HCM)

Address: 01 Marie Curie, VNU campus, Quarter 6, Linh Trung, Thu Duc Dist., HCM city, Vietnam

Mobile: +84-908275996

Email: nh.quan@iced.org.vn