



9. SUSTAINABLE AGRI-AQUACULTURE DEVELOPMENT IN THE MEKONG RIVER DELTA, VIETNAM

The Living Deltas Hub is providing evidence that feeds directly into national and provincial level sustainable agriculture and ecosystem protection policy development. Asian Mega Deltas are under huge threat from synergistic factors including climate change, sea level rise and population growth. Decades of land use change and ecosystem simplification to increase crop yields have reduced delta resilience and impacted livelihoods.



Foreign, Commonwealth & Development Office



Climate change & biodiversity



Science, research, technology



Trade & economic development

SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY



3 GOOD HEALTH AND WELL-BEING



6 CLEAN WATER AND SANITATION



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



17 PARTNERSHIPS FOR THE GOALS



Achievements

The Hub's work promotes the shift from quantity-based to high quality-based agri-aquaculture development to achieve sustainable development goals in rural areas of the Mekong River Delta. Here we outline two specific examples of the Hub's development impacts aiming to enhance social equity, grow rural incomes, reduce poverty, conserve biodiversity, adapt to climate change and achieve sustainable development goals.

The Mekong River Delta is the largest agricultural and aquaculture production hub in Vietnam, but it is facing severe challenges from climate change, coastal erosion, sea level rise, land subsidence and changes in hydrological regime. 60% of the delta is vulnerable to sea level rise and ~1.7 million ha of area will be affected by saline intrusion in the dry season. Intensive shrimp farming in the coastal provinces of the Mekong serves as an important driver of mangrove loss and causes acute environmental pollution. Therefore, farmers are being encouraged to switch to organic farming practices to improve production standards with the goal of reaching international seafood certifications while adapting to climate change.

The Hub is providing key evidence to support the implementation of Vietnamese government policy, in particular:

- Resolution 120/NQ-CP to transform from low to high-quality food production to promote sustainable agricultural and aquaculture development and adaptation to climate change (Government of Vietnam 2017);
- Decision 109/2018/ND-CP (2018) on organic agriculture development in Vietnam;
- Prime Minister's Decision 885/QD-TTg 2020 planning for organic agriculture across Vietnam.

Who benefits?

Sustainable mangrove-shrimp aquaculture: a solution for building climate-resilient livelihoods and adaptation to climate change in the MRD

The Hub's goal is to facilitate the transition toward compliance with international sustainability requirements and enhance public-private partnerships (PPP) between smallholder farmers, private shrimp exporters, and regional and national policymakers, to catalyze transitions to eco-shrimp farming in the region. The Hub is developing and introducing sustainable aquaculture models that restore and protect mangroves, while enhancing smallholders' livelihoods within the region. The rapid development of shrimp farming in the Mekong contributes to deforestation, erosion, pollution and rising salinity levels that are threatening the stability of the region. Most natural mangroves have been replaced by shrimp aquaculture ponds.

Policies such as payments for environmental services (PES) or blue-carbon valuation as a solution to mangrove loss are not yet available in Vietnam and the Ministry of Agriculture and Rural Development (MARD) is seeking to develop a decree on payments for mangrove environmental services (PMES), which they strongly believe will significantly contribute to sustainable mangrove forest management at the local level. The British Embassy in Hanoi is facilitating this new decree with the Hub as a key partner with the aim being to promote the free trade agreement that has been signed between Vietnam and the UK through certified shrimp exports. In addition, the Hub is facilitating new trends that are emerging in production and marketing, such as traceability, eco-labeling, and certification. Living Deltas contributes to sustainability initiatives set to improve production standards with the goal of reaching international seafood certifications that require environmental and social awareness. We will be working with Quoc Viet, one of Vietnam's largest shrimp exporters who has been working towards ASC certification and international environmental organizations, like WWF Vietnam, to make sure that the sustainable transition of shrimp farming is a success. The Hub will provide MARD with the evidence base and be instrumental in defining the remit of the decree on PMES.

Impact: sustainable development of shrimp farming, mangrove area and biodiversity protected, water pollution minimized, and social equity and better economies for local shrimp farmers created.

Shifting from conventional to organic agriculture and restructuring provincial government agriculture policies

While improved rice yields and multiple rice crops grown in one year have enabled Vietnam to become the world's fourth-largest rice exporter in 2019, intensive rice farming methods have significant negative impacts on the environment. Hub research demonstrates the intensification of rice production requires the application of increasing amounts of agri-chemicals, and reduced nutritional supplies and agro-biodiversity from wild food systems. The Hub will address this knowledge gap to provide the evidence for Nature-based Solutions to the identified problems and instill this into new policy governing provincial farming practices.

The Hub has already had a strong impact on the provincial government's agricultural transformation policies. We have established a private-public partnership to support Soc Trang province, a coastal province in the Mekong to transform conventional rice farming systems into organic rice-fish/shrimp farming systems. With the involvement of the private sector, NGOs and the provincial government, small-scale farmers are more confident in adopting organic farming practices as they can access the market and sell products at a premium price. Importantly, the organic rice-fish/shrimp systems are more resilient to saline intrusion and climate change. As a result of the Hub's work, organic farming practices have been adopted in Nga Nam town and Tran De District of Soc Trang Province and will be replicated in three other districts of Soc Trang - My Tu and Chau Thanh (rice-fish farming), and My Xuyen (rice-shrimp farming).

The Hub supports 30 small-scale farmers to convert to organic rice-fish/shrimp systems in Soc Trang. In Soc Trang, 2,800 households covering 3,500 ha of paddies will benefit from the organic rice-fish system, while 11,857 households covering 8,300 ha will benefit from the organic rice-shrimp system. The agricultural transformation from the conventional rice farming system into organic rice-fish/shrimp farming systems is acting as a demonstration/test scheme for neighboring coastal provinces in the Mekong where thousands of small-scale farmers (<2ha/household) extensively harvest 153,000 ha of rice-shrimp farming area.

The benefits of conversion into organic rice-fish/shrimp farming are based on four key criteria: (1) the natural conditions; (2) willingness of farmers, government, and the private sector to participate in the project; (3) higher

economic returns, environmental and social gains; and (4) healthy food for consumers and the communities. The involvement of female and male farmers in promoting organic food production and trade is significantly promoted by the Hub. Going forward in 2021-2022 the Hub will evidence the project success by (1) monitoring the improvement of water quality and biodiversity in the adjacent farming areas; (2) improved human health through household survey; and (3) improved household incomes, socio-economic indicators, and gender through farming system analysis.

Impact: The agricultural transformation work carried out by the Hub is highly influential for small-scale farmers' livelihoods, governmental policies, and agri-business development towards sustainable, climate-resilient agriculture and aquaculture in the Mekong.

Summary of development impact of this work

Institutional & policy gap	Living Deltas contribution	Pathways to impact
Lack of tools to translate scientific knowledge into information useful for policy making	Development of tools appropriate for translating scientific knowledge into information useful for design of policy.	Through interdisciplinary and action-oriented research; consultation workshops, policy dialogues and policy advocacy.
Lack of appropriate approaches and evidence base to promote sustainable agricultural and aquaculture practices to implement the resolution 120 on sustainable and resilient development, and new decree on payments for mangrove environmental services	<p>Promotion of development of sustainable mangrove-shrimp aquaculture protocol suitable for MRD based on the ASC certification standards.</p> <p>Providing evidence-based approaches through farming system analysis for the adoption of organic rice-fish/ shrimp farming.</p> <p>Supporting the consistency of data available through monthly monitoring and analysis including tracing sources of pollution and calculating pollution load from agriculture, domestic, industry</p>	Through engaging public-private partnerships (PPP) between smallholder farmers, private shrimp exporters, rice traders, fishery producers, gender, and regional and national policymakers.

People involved in this work

Name	Gender	Discipline	Work Package	Institution	Country
Trung Tran Chi	M	Environmental science	Delta-level Interventions	Vietnam National University	VN
Ly Bui Ha	F	Biology	Delta Social Ecological Systems	Vietnam National University	VN
Duc Ngoc Huynh	M	Soil Science	Delta Social Ecological Systems	An Giang University	VN
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Lan Nguyen Ngoc	F	Community development	Delta Social Ecological Systems Delta SDGs	WARECOD	VN
Hoang Han Nguyen	M	Biotechnology & agricultural science	Delta Social Ecological Systems	An Giang University	VN
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Hue Le Van	F	Environmental policy	Delta-level Interventions	Vietnam National University	VN