Sustaining Ethical Aquaculture Trade

SYSTEMS OVERVIEW AND SUSTAINABILITY ISSUES IN THE PRODUCTION, PROCESSING AND TRADE OF MAJOR AQUACULTURE SPECIES IN THAILAND

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Arlene Nietes-Satapornvanit[1,2]†, Kriengkrai Satapornvanit[2], Francis J. Murray[1] and David C. Little[1]

[1]Institute of Aquaculture, University of Stirling, Stirling FK9 4LA, Scotland, UK; [2]Faculty of Fisheries, Kasetsart University, Bangkok 10900 Thailand
†Corresponding author: ans1@stir.ac.uk

Introduction

The Sustainable Ethical Aquaculture Trade Project (EU FP7) is conducting research to look at the sustainability of international seafood trade between Asia and Europe, for four major species, namely penaeid shrimp, freshwater prawn, tilapia and pangasid catfish.

Thailand's successful aquaculture industry has made it one of the leading exporters of seafood in the world, as it responds to the growing global demand for seafood. In 2009, Thailand exported nearly 400,000 T of shrimp, prawn and tilapia, out of which 96% were shrimp (DOF 2010).

The objectives of the scoping phase are:

- to describe the value chains (from production to export) and their development trends
- to identify constraints and their potential to influence the sustainability of international trade
- to develop a sample frame for site-selection for follow-on research

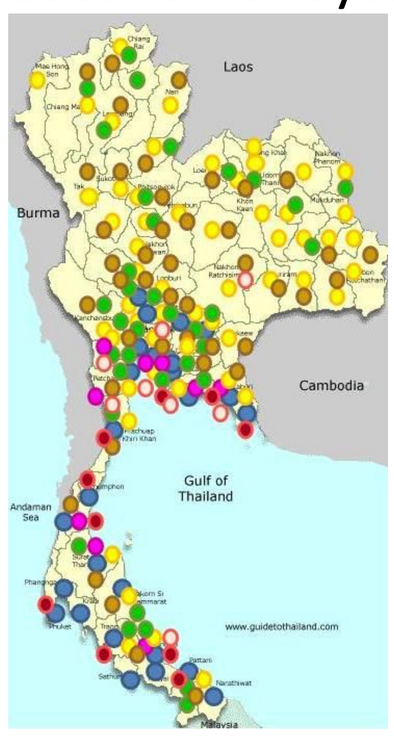
Materials and Methods

The scoping phase period was conducted from February to May 2010 with the following activities:

- direct observation & site visits
- key informant interviews with checklist of questions
- collection of primary and secondary information from district and national level sources
- participation in various stakeholder meetings
- questionnaire surveys of processors/exporters in a meeting
- data analysis & processing by descriptive statistics

Sites were selected based on their importance to production and trade, focusing on shrimp and tilapia. Visits and interviews were conducted among value chain actors in provinces considered important for production and trade of focus species, as well as accessibility for future return visits and research work (Figs. 1 & 2; Table 1). Association meetings and exhibitions were also attended to obtain information and meet with potential informants.

Location of Systems in Thailand



Legend and top provinces by production (2007)		
Tilapia	Samut Prakan Khon Kaen Nakhon Pathom
Prawn	Nakhon Pathom Ratchaburi Suphanburi
Striped catfish	Nakhon Sawan Bangkok Pathumthani
Shrimp	Songkhla Surat Thani Chanthaburi
Processing plants	Samut Sakorn Samut Prakan Songkhla Surat Thani
Fishmeal plants	Samut Sakorn Songkhla Nakhon Sri Thammarat
Feedmills	Samut Sakorn Samut Prakan

Source: DOF (2009)

Figure 1. An overview of the concentration of activities for the four species and major industries (feed, processing) related to aquaculture

Stakeholders' Profiles

Table 1. The number of value chain actors interviewed or visited during the scoping phase.

Value chain actor	Number interviewed/visited			
	Shrimp	Prawn	Tilapia	Striped Catfish
Hatchery operator	3 Chachoengsao, Chanthaburi, Phang Nga	2 Suphanburi	3 Nakhon Pathom, Petchburi, Prachinburi	
Growout producer	18 Chanthaburi, Rayong, Surat Thani, Phuket, Samut Songkram, Suphanburi	5 Nakhon Pathom, Suphanburi	10 Nakhon Pathom, Petchburi, Samut Songkram, Suphanburi, Ubon Ratchathani	1 Bangkok
Feed Retailer	3 (includes probiotics, supplements, vitamins for many species but mainly shrimp) Prachinburi, Phuket, Surat Thani			
Fishmeal producer	1 (used for general livestock feed; special grade for shrimp, Phuket)			
Processing plant/ exporter	16 (only 1 was visited in Samut Sakorn; the rest were given questionnaires in a meeting in Bangkok)			
Company extension	1 Nakhon Pathom			
Dept of Fisheries	9 Bangkok, Chanthaburi, Nakhon Pathom, Phang Nga, Phuket, Rayong, Suphan buri, Surat Thani , Ubon Ratchathani			

Important Species for Export

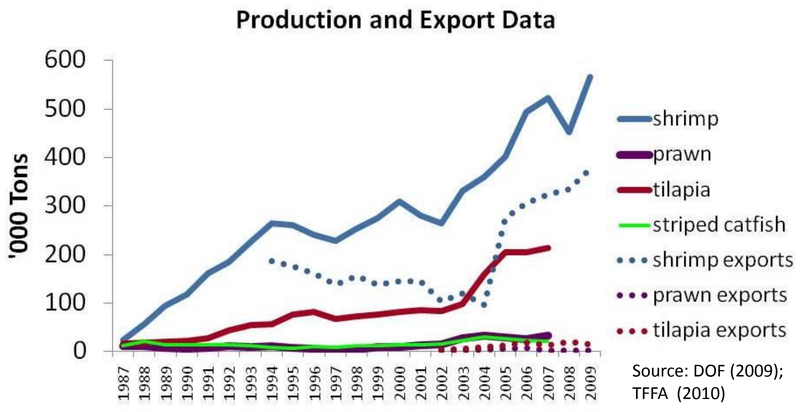


Figure 2. Shrimp (*Penaeus vannamei* from 2003 onwards) dominates aquaculture production and export. Shrimp is the most important with exports projected to increase in 2010; then tilapia, which the Thai government is promoting to increase exports.

Figure 3. Left to right - small, medium and large-scale shrimp farms, showing some of the differences presented in Table 2.

Shrimp Production Scale Differences

Shrimp farming requires high cost for operations, innovation and compliance to consumer driven certifications/standards – a burden to majority of small- and some medium-scale producers who want to continue with the shrimp business (Fig. 3).

Table 2. Comparison among different scales of production of shrimp

Criteria	Small	Medium	Large
Area	< 2 has.	> 2 has.	> 100 has.
Facilities	1-2 ponds, some storage and wastewater ponds	>3 ponds, storage and waste water ponds, laboratory, feed storage	tanks, storage and waste ponds, waste water recycling, laboratory, sanitation, feed storage, office
Human Resources	Owner/hired caretaker	Owner, Farm Manager/ 1 worker per pond	Farm Manager, technicians, workers, accountant, administrator, lab workers
Biosecurity	Closed system	Pond plastic lining; strings over pond; closed system	Concrete tanks/ floors; canvass covering; closed system; sanitation system
Ownership	Individually owned/ family/Rented	Individually/ family-company owned/rented	Corporate
Certifications	GAP/CoC	GAP/CoC/ International	GAP/CoC/ International
Feed supply	Local shops/ agents	Local agents/Direct from feed company	Direct from feed company/Own feed mill
Integration	None	None/semi-integrated	Fully-integrated
Social responsibility	Close contact with local community; many activities	Close contact with local community; many activities	Distant from local community Some activities

Constraints affecting sustainability

Table 3. Stakeholders (see legend below) identified the following issues that are constraining the sustainability of their operations. Some efforts are being made by themselves and the government to overcome these constraints.

	Disease	Rising input costs	Low farm-gate price	Environ-mental quality	Costs of certification & compliance	Quality †	Supply/ demand	Competit-ion/tarriff barriers/ regulations
Shrimp	◆	✹◆	◆	✹◆	✹◆	✹◆	⌘	◆⌘
Prawn	✹◆	◆	◆	✹◆		✹		✹
Tilapia	◆	◆	◆	✹◆	◆	✹◆⌘	⌘	⌘
Striped catfish	ndy	ndy	◆	ndy	ndy	✹◆⌘	⌘	ndy

Some ways stakeholders have done to address these issues:
- formation of groups
- innovation of techniques e.g. Sustainable Shrimp Programme, aqua engineering
- negotiations with government & other sectors
- research collaboration
- access more information

✹ Seed producers ◆Growout producers ⌘Processors/exporters ndy – no data yet

†broodstock, labour (shrimp), off-flavour & chemical residues (tilapia), seed (tilapia), species (striped CF), flesh colour (striped CF)

Discussion and Conclusions

- Constraints to sustainability of shrimp producers (esp. small scale) and to quality production & processing of tilapia need to be addressed (Tables 2 & 3).
- Antibiotic and chemical use (esp in shrimp culture) has decreased, while use of probiotics and enzymes has increased, but their efficacy and benefits are not yet understood.
- Better information flow among producers, exporters, importers and consumers, regulators and other relevant groups regarding export regulations and requirements is also necessary (Table 3).
- Suggested sites for follow-on research, chosen for their importance to the export industry:
  - Chanthaburi (east) and Surat Thani (south) for shrimp
  - Nakhon Pathom and Petchburi for tilapia (west)
  - Samut Sakorn for processing plants (central/west)

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Impact Statement

The results of this study will contribute to the design of the follow-on research on sustainability of seafood trade, aiming to result in better linkages among stakeholders, and more exports from Thailand to Europe

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