

**Rapid Trade and Environment Assessment (RTEA) Thailand**

# **Fisheries – Environmental impacts of trade liberalization**

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Thailand's fisheries sector constitutes an important source of export earnings, livelihoods and domestic food supply. The country ranks second among the world's leading fish exporting nations after China. The sector brought in almost US\$4.9 billion in export earnings in 2005, making it one of the country's top 10 foreign exchange earners (DOF, 2006). Thailand is also one of the world's largest importers of fish, primarily in the form of low-value fish for processing and re-export. Some of the key markets include: China, Japan, Singapore, the U.S. and other Asian countries. The expansion in fishing efforts and aquaculture production—not least fuelled by significant export interests—has brought with it a range of environmental challenges that threaten to undermine the long-term sustainability of the sector.

## Key environmental concerns in the fisheries sector

**Capture fisheries**, in particular marine species, continues to make up the larger share of fish production by volume (ca. 75 per cent with the remainder produced by aquaculture). Capture volumes saw a steep incline after 1960 following the introduction of demersal (deep water) trawl gear. However, due to the over-exploitation of most demersal fish resources, total catch has remained largely stagnant since 1995, while the catch per unit effort for desirable demersal species has declined substantially (Pauly and Chuenpagdee, 2003). Today, most of the demersal fish resources near the coast and some pelagic species have been severely depleted and are now considered over-exploited (DOF, 2006). Factors contributing to fish stock decline include: overcapacity of the fishing fleet; inappropriate fishing gear (notably trawlers); land- and marine-based pollution that harms the marine environment; and weak management systems.

While **aquaculture** production might provide a means to take some of the pressure off fish stocks, the industry has also had significant environmental impacts. Fish farming has significantly expanded since the mid-1980s, which saw an increasing shift from extensive to mainly intensive and some semi-intensive coastal aquaculture production. While farmed fish in 2002 provided only about a quarter of total fisheries production in volume, it contributed 45.5 per cent in value (DOF, 2006). Thailand is the world's largest exporter of shrimp, which are shipped primarily to the U.S. and Japan (Lebel *et al.*, 2002). However, while constituting an important source of income—in particular from high-value crustaceans—aquaculture production has resulted in the destruction of mangrove forests and the ecosystem functions they provide and contributed to the degradation of land and aquatic environments from effluent discharges and the contamination of abandoned ponds, putting further pressure on fish stocks as a source of fish feed.

In line with increased catches and aquaculture output, production volumes of different commodities (i.e., fresh, frozen, canned, dried or salted fish) have increased more or less steadily since the mid-1970s. The **fish processing** industry has a number of environmental impacts, including the use of significant amounts of fresh water, effluent discharges containing high levels of organic matter, phosphates and nitrates, and high energy demand (UNEP and DEPA, 2000). Data on the water use, effluent discharge and energy consumption of the Thai fish processing industry remain scarce, making it difficult to assess the scale of associated environmental impacts.

## Regulatory and policy frameworks

Numerous government departments are involved in Thailand's fishing sector (including management, production and trade), with at times overlapping responsibilities and a myriad of laws, regulations and standards. Efforts have been made to foster collaboration and coordination between the different ministries and departments through joint projects and regular meetings, as well as to engage the private sector and civil society groups. The environmental challenges of the fisheries sector have been widely recognized and policy and regulatory frameworks have been developed to address them, including fisheries management measures, the designation of marine protected areas, the introduction of standards to improve the quality and environmental sustainability of aquaculture production and measures to regulate the processing industry. Some key legislation includes:

- *Fisheries Act*, B.E. 2490 (1947) – revised in 1953 and 1985 (B.E. 2528) and currently again under revision;

- *Act Governing the Right to Fish in Thai Waters*, B.E. 2482 (1939) – revised in 1959 (B.E. 2502) and 1996 (B.E. 2539);
- *Act Organizing the Activities of the Fish Market*, B.E. 2496 (1953);
- *Wildlife Reservation and Protection Act*, B.E. 2535 (1992);
- *Enhancement and Conservation of National Environmental Quality Act*, B.E. 2535 (1992); and
- *The Factory Act* B.E. 2535 (1992).

In the area of **aquaculture**, much of the effort to improve the quality and environmental sustainability of production has focused on the shrimp culture industry (see [www.thaiqualityshrimp.com](http://www.thaiqualityshrimp.com)). Two non-binding instruments have been developed:

- A *code of conduct* (CoC) for the marine shrimp culture industry, which provides an approach to managing shrimp production to achieve international quality standards and to managing the environment for the entire production line, including farms, distributors and processing plants; and
- The *good aquaculture practice* (GAP) guidelines, which were developed for hygienic shrimp production.

Certification of shrimp producers is carried out by the Department of Fisheries. Shrimp processors can apply for the “Thai Quality Shrimp” label by providing the DOF with CoC farm, distributor and processor certificates. Priority has been given to ensuring compliance with food safety standards as a prerequisite for gaining access to overseas markets (Suwanrangsi, 2002). However, while adoption of GAP guidelines has been fairly widespread (about two thirds of Thailand’s shrimp farms), CoC certification remains very limited with just 107 of approximately 30,000 shrimp farms certified (as of September 2006). This difference has been attributed to the fact that farmers expect greater market-related benefits (in the form of consumer acceptance and demand) when complying with food safety standards (GAP) than with environmental standards (CoC) (Pongthanapanich and Roth, 2006).

In addition to the guidelines and standards specifically aimed at shrimp production and processing, all **fish processing** plants are subject to mandatory standards developed for the industrial sector as a whole, including industrial wastewater standards that set limits, *inter alia*, for solid waste content, heavy metals, nitrogen and chemical and biochemical-oxygen demand. Voluntary Codes of Practice for Industrial Pollution Prevention and Mitigation have also been developed specifically for the sector. A separate effluent standard has been applied to coastal aquaculture farms, which, *inter alia*, establishes limits for nitrogen and phosphorous content. The standard applies to farms with a pond area of 1.6 ha or more, which includes about half of the country’s production area (Pongthanapanich and Roth, 2006).

## Trade and environment issues in the fisheries sector

Seafood exports, in particular from aquaculture production, can be expected to expand further as tariff rates and non-tariff measures are reduced through multilateral, regional and bilateral trade negotiations. In the absence of effective management schemes for **capture fisheries**, market liberalization in the fisheries sector is likely to encourage increased fishing efforts, leading to further declines in fish stocks and consequently trade losses (OECD, 2003). The anticipated impacts are most likely to occur in “open access” fisheries, which are still found in Thailand and are only gradually being replaced with rights-based fisheries management schemes.

**Aquaculture** production is likely to increase in response to new export opportunities, thereby further exacerbating the negative environmental impacts outlined above. Shrimp farming in particular is likely to increase given high economic returns and strong demand. Similarly, larger fish catches (e.g., through high seas fishing), increased aquaculture production (and the associated demand for feed) and increased imports of fish for reprocessing (e.g., due to lower tariffs) would provide additional input into the **fish processing** industry and put further pressure on the environment.

At the same time, increased export opportunities for “green” products might provide an incentive for sustainable production as demand for certified seafood products continues to increase (Roheim and Sutinen, 2006). The aquaculture sector, particularly sustainably-farmed shrimp where demand is expected to grow rapidly, might provide the most promising opportunities in the short term. Several certification schemes already exist that could be explored (FAO and NACA, n.d.), and various private and donor-driven initiatives are being implemented to develop sustainable shrimp production. To make certification viable and attractive for producers, the economic returns from organic farms will need to be sufficiently high to recover additional expenses for compliance with the standards.

## Policy recommendations

To ensure coherent and effective policy-making in the Thai fisheries sector, cooperation needs to be strengthened between the many different ministries involved in fisheries management, production and trade in order to develop joint objectives and strategies. Such efforts also need to involve other affected stakeholders (including non-governmental actors) at various stages of decision-making to ensure that decisions respond to local needs and realities and to secure the “buy-in” necessary for effective implementation. Moreover, the success of existing legislative efforts will depend on their widespread implementation, strong enforcement and further strengthening of regulations and institutions.

### Capture fisheries

- Fishing efforts should be reduced through the implementation and effective enforcement of comprehensive management schemes, such as restricting the number of licences for all types of fishing methods, regulating vessel sizes and fishing methods, limiting fishing seasons, introducing decommissioning schemes, developing strategic plans for specific areas or fisheries, strengthening co-management and the decentralization of fisheries management, addressing illegal, unregulated and unreported fishing, and strictly enforcing protected areas (see also Ahmed *et al.*, 2007).
- Any measures to limit fishing efforts should be supported by providing viable livelihood alternatives for fishermen, (e.g., through retirement schemes or moving fishermen into other sectors, and addressing possible conflicts over fishing rights that might arise).
- Current subsidy schemes should be reviewed to ensure that they do not contribute to enhancing fishing efforts beyond sustainable limits.
- Further efforts should be made to reduce the volume of trash fish, such as by regulating fishing gear (e.g., mesh sizes and design), limiting fishing in areas where juveniles are common, setting bycatch limits and encouraging alternative aquaculture feed.
- The use of less-destructive fishing gear that is better adapted to the marine environment (such as more selective gear) should be strongly encouraged, (e.g., through regulations and/or subsidy schemes).
- Priority should be given to the collection and analysis of additional data on the state of fish stocks and the marine environment to develop effective management schemes and inform policy-making.
- Fishing operators should be required to register all fishing gear (rather than only gear with large impact as is currently the case) and a single registration system for fishing vessels and gear should be considered to develop a better understanding of and more effectively regulate current fishing capacities.
- Efforts to address land- and marine-based pollution needs to be strengthened.

## Aquaculture

- Access to more environmentally-benign (and affordable) technologies should be facilitated, including alternative feed that does not rely on trash fish.
- Ongoing government efforts to encourage wider compliance with the CoC should be strengthened, including through the development of supporting policies (such as incentive measures).
- New aquaculture operations should be required to submit an environmental impact assessment to identify potential environmental concerns and mitigating measures, including waste-water treatment, which should be required of all aquaculture farms.
- Rehabilitation of ponds and mangrove forests should be stepped up.
- Marketing campaigns for the “Thai Quality Shrimp” label should be strengthened to raise awareness among consumers abroad in an effort to stimulate demand for labelled shrimp.
- The viability of various certification schemes should be explored further to identify and take advantage of market opportunities.

## Fish processing

- Efforts should continue to reduce tariff escalation in key markets in order to facilitate exports of value-added products, thereby obtaining more value from fewer resources.
- The nature and scale of environmental impacts of the Thai fish processing industry should be examined to identify possible needs for additional standards, regulations and enforcement mechanisms.

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