

REVIEW OF TRADE, REGULATORY AND CERTIFICATION ISSUES RELATED TO FARMED AQUATIC ANIMALS

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Ingrid Kelling, Froukje Kruijssen and Chen Oai Li

The WorldFish Center



UNIVERSITY OF
STIRLING



Summary

This document describes the current policy structures and mechanisms in operation at national, regional and international levels that govern trade in aquatic produce between Europe and Bangladesh, China, Thailand and Vietnam. This report reviews trade, regulatory and certification issues related to farmed aquatic animals at these different levels. It complements other efforts within the SEAT project, such as reports on current and prospective government policy on trade agreements and existing certification schemes.

The WTO sets the main framework for managing tariff and non-tariff measures. Non-tariff measures covered in this report include, among others, the Sanitary and Phytosanitary (SPS) Agreement, the Technical Barriers to Trade (TBT) Agreement, safeguard and anti-dumping measures, as well as traceability. At the regional level the Asia Pacific Economic Forum has a Fisheries Working Group that promotes sector-specific work relating to trade and investment liberalisation and facilitation, while in Europe the European Union's Common Fisheries Policy also governs marketing policy and trade relations. Furthermore, many developing countries are negotiating bilateral agreements involving tariff exemptions, particularly through preferential agreements.

Over the past decade there has been a proliferation of national and supranational schemes designed to provide seafood buyers and consumers with more and better information on production processes. Many of these are based on voluntary standards and created by private enterprises for internal use. Voluntary standards may cover areas such as good management practices, food safety, the environment, fair trade and animal welfare. In addition, this document gives a brief overview of some codes and practices that particularly apply to aquaculture. A separate in-depth review of certification schemes is given in another deliverable (8.4).

This review raises important issues for further research during the next phase of the SEAT project. This especially refers to the impacts of regulations and standards on individual chain actors (and non-participants), possible future development and further proliferation of standards, and the way governments and industry deal with the implementation, monitoring and enforcement of standards.

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List of acronyms

AB	- Agriculture Biologique
ACFS	- Agricultural Commodity and Food Standards
APEC	- Asia Pacific Economic Forum
ASEAN	- Association of Southeast Asian Nations
BMP	- Better Management Practices
CBD	- Convention on Biodiversity
CoC	- Codes of Conduct
CFP	- Common Fisheries Policy
COFRAC	- Association chargée de l'accréditation des laboratoires, organismes certificateurs et d'inspection (official accreditation agency of the French Government)
COOL	- Country of Origin Labelling
ETI	- Ethical Trading Initiative
EU	- European Union
FLO	- Fairtrade Labelling Organisation
FAO	- Food and Agriculture Organization of the United Nations
FWG	- Fisheries Working Group
GAP	- Good Aquaculture Practices
GATT	- General Agreement on Tariffs and Trade
GFSI	- Global Food Safety Initiative
GSP	- Generalised System of Preferences
HACCP	- Hazard Analysis and Critical Control Points
HS	- Harmonised Commodity Description and Coding System
IFOAM	- International Federation of Organic Agriculture Movements
IFREMER	- Institut français de la recherche pour l'exploitation de la mer
IFS	- International Food Standard
ISEAL	- International Social and Environmental Accreditation and Labelling Alliance
ISO	- International Standards Organization
NAMA	- Non-agricultural market access
NTB	- Non-Tariff Barriers
OECD	- Organisation for Economic Co-operation and Development
OIE	- World organisation for animal health
SEAFDEC	- Southeast Asian Fisheries Development Center
SEAT	- Sustaining Ethical Aquaculture Trade
SECO	- Swiss State Secretariat for Economic Affairs
SIPPO	- Swiss Import Promotion Programme
SPS	- Sanitary and Phytosanitary (agreement)
TBT	- Technical Barriers to Trade
UNCLOS	- United Nations Convention on the Law of the Sea
WCO	- World Customs Organization
WTO	- World Trade Organization

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1 Introduction

Aquaculture is one of the fastest growing animal food production systems in the world and its contribution to global supplies of fish continues to grow (FAO, 2009). Over half of all globally traded seafood products come from farmed species and provide a high proportion of export earnings for some developing countries (Seafood Choices Alliance, 2007). The EU-funded project 'Sustaining Ethical Aquaculture Trade' (SEAT) aims to strengthen the knowledge-base surrounding EU-Asia seafood trade to provide the evidence required to support further expansion of trade in aquatic resources between Asia and the EU, whilst ensuring a fair deal for producers who are meeting appropriate social and environmental goals and offering a safe and sustainable product for consumers.

Trade in aquatic (and agricultural) products is regulated by international as well as regional trade policy agreements. Furthermore, mandatory and voluntary standards applied in international markets have a significant impact on all aspects of its production, processing and packaging, and transport. An array of certification schemes has arisen covering a range of issues both dealing with product quality and safety and sustainability issues. The sheer number and diversity in agreements, standards and schemes requires a review in order to fully understand how they may impact the functioning and development of aquaculture value chains. Compliance with these regulations and standards may sometimes be difficult, especially for small-scale chain actors, which may have obvious and important consequences for equity in the value chains and poverty reduction opportunities.

The purpose of this report is to contribute to the understanding of the current policy structures and mechanisms in operation at local, national and international level that govern trade in aquatic produce between the four Asian countries and Europe. This report reviews trade, regulatory and certification issues related to selected farmed aquatic animals, and is part of a larger scoping study that aims to give an overview of the production and governance systems in place, to guide stakeholder and case study selection for the SEAT project. It complements other efforts within the project, such as D2.2 which covers current and prospective government policy on trade agreements and D8.4 which gives an overview of existing certification schemes.

The remainder of this report is structured as follows; first a brief overview is given of the status and trends in trade in aquatic resources, particularly the four target species: shrimp, prawn, tilapia and catfish. Then, trade regulatory issues will be covered such as tariffs structures, safeguards and anti-dumping measures and the mandatory standards linked to these. This will be followed by a section on voluntary standards in both the public and private spheres. Finally the implications of these findings for the SEAT project are discussed.

2 Status and trends of production and trade in aquatic resources

Worldwide, production of aquatic resources (excluding aquatic plants) grew from 117 to 140 million tonnes between 1995 and 2007, a 1.7 percent average annual growth rate. As the catch of wild (capture) fisheries has stagnated, the aquaculture sector has continued to grow at an annual rate of 6.9 percent between 1995 and 2007. The contribution of aquaculture to total fish production has increased from about 21 percent in 1995 to 35 percent in 2007 and accounted for 47 percent of fish for human consumption in 2006 (FAO, 2008). About three-quarters of total fish production is for human consumption, providing an average of 13.6 kg per capita supply per annum (live weight equivalent), excluding China (FAO, 2009). China has remained the top producer in the aquaculture sector although their share in world's aquaculture production has reduced slightly from 65 percent in 1995 to 62 percent in 2007 (Table 1). Share in aquaculture production of other countries in the Asian-Pacific region (not indicated in Table 1) grew from 24 percent in 1995 to 26 percent in 2007.

Table 1. Status of fish production and trade

		Volume (million tons)		Average annual growth rate 1995-2007 (%)	Share in World (%)	
		1995	2007		1995	2007
World						
Production	Total	117.41	139.94	1.66		
	Capture	93.11	90.55	-0.13		
	Aquaculture	24.30	49.39	6.95		
Export		22.25	31.21	2.68		
World (excluding China)						
Production	Total	87.71	93.35	0.49		
	Capture	79.40	75.07	-0.48		
	Aquaculture	8.31	18.28	6.95		
Export		15.82	23.84	3.35		
Asia						
Production	Total	62.07	90.14	3.55	52.86	64.41
	Capture	40.47	46.43	1.34	43.47	51.28
	Aquaculture	21.60	43.71	6.99	88.87	88.50
Export		4.73	9.98	6.09	21.26	31.98
Import		5.80	9.96	4.77	37.01	36.50
China						
Production	Total	28.35	45.66	5.22	24.14	32.63
	Capture	12.54	14.73	2.46	13.47	16.27
	Aquaculture	15.81	30.94	7.05	65.06	62.64
Export		0.67	2.93	12.96	3.01	9.39
Import		0.62	2.34	14.73	3.96	8.57

Source: Fishstat, May 2010 version. Note: average annual growth rates are based on actual annual data and will show the actual average trend.

Trade has continued to grow since the 1994 WTO agreement at an average rate of 2.68 percent per annum between 1995 and 2007 (Table 1). About 32 percent of world exports originated from Asian countries in 2007, more than double the export volumes that were reached in 1995.

Overall, the participation of the EU-27 countries in fish trade has grown between the period 1995 and 2007. Net exports from Europe remained negative and had almost doubled by 2007 compared to 1995. This was due to both an increase in demand and price (Table 2). Changes occurred due to the introduction of new species/products and consumption behaviour. In the EU-27 market, demand for prawn and shrimp grew between 1995 and 2007 and new species including *Penaeus* and deep water rose shrimps entered the market. It is worth noting that despite higher prices, the share of imported *Penaeus* species alone accounted for over 50 percent of the volume of all shrimp and prawn products imported into the EU-27 countries in 2007 (Table 2).

Trade in farmed seafood between Asia and the EU is concentrated in certain markets, particularly Spain, Denmark, Germany, France, Italy, the UK and the Netherlands, which together generate 77% of the EU-27 imports by volume (FAO Stat, 2009). Seafood consumption in Europe is diverse; regionally, consumption is somewhat higher in southern Europe compared to northern Europe. For example, in 2005 Portugal was the largest seafood-consuming nation in Europe followed by Spain, Italy, France, the UK and Germany (Seafood Choices Alliance, 2007). Markets in Europe differ too and in northern Europe only four species contribute 60% of seafood sales while in southern countries a greater variety features in consumption patterns (Seafood Choices Alliance, 2007).

The above trends in aquaculture exports show that despite proliferation of standards, production and trade in fish has increased and Asian producers and processors are increasing their share in world fish trade. This indicates that a significant quantity of producers have been able to meet an increasing number of standards, even though these figures do not reveal trade barriers, particularly non-tariff barriers, that may still be faced by Asian value chain actors. However, the aggregated Asian figures conceal the major differences between countries in the region.

Table 2. Status of fish trade in EU-27 region

	Export						Import					
	1995		Price/kg (USD)	2007		1995		Price/kg (USD)	2007			
Volume (1000 tons)	Value (mill USD)	Volume (1000 tons)		Value (mill USD)	Volume (1000 tons)	Value (mill USD)	Volume (1000 tons)		Value (mill USD)	Volume (1000 tons)	Value (mill USD)	
All fish												
EU-27	4086	9944	2	6081	23316	4	5487	18264	3	8869	40373	5
Share in world trade (%)	18	19		23	26		25	33		32	43	3
Shrimp and prawn species												
EU-27												
Common (Crangon) shrimp, frozen	8	26	3	15	69	5	2	10	5	6	38	6
Deepwater rose shrimps (<i>Parapenaeus longirostris</i>), frozen	-	-	-	2	28	14	-	-	-	14	137	10
Shrimps and prawns (<i>Pandalidae</i> spp.), frozen	38	174	5	100	305	3	79	354	4	124	394	3
Shrimps and prawns (<i>Penaeus</i> spp.), frozen	-	-	-	69	559	8	-	-	-	331	2239	7
Shrimps and prawns, cooked, frozen	1	3	4	-	-	-	1	3	5	-	-	-
Shrimps and prawns, frozen, nei	42	370	9	58	467	8	219	1794	8	150	1065	7
Total	89	572	6	244	1428	6	301	2162	7	625	3872	6
World												
Common (Crangon) shrimp, frozen	8	26	3	15	69	5	3	15	4	9	44	5
Deepwater rose shrimps (<i>Parapenaeus longirostris</i>), frozen	-	-	-	2	31	13	-	-	-	14	137	10
Shrimps and prawns (<i>Pandalidae</i> spp.), frozen	71	326	5	135	371	3	79	354	4	124	395	3
Shrimps and prawns (<i>Penaeus</i> spp.), frozen	2	23	12	223	1535	7	-	-	-	334	2253	7
Shrimps and prawns, cooked, frozen	1	7	5	1	8	6	5	23	4	12	64	5
Shrimps and prawns, fan tails, frozen	-	-	-	0	3	11	-	-	-	-	-	-
Shrimps and prawns, frozen, nei	849	7743	9	1235	7387	6	647	6196	10	742	4420	6
Shrimps and prawns, not cooked, frozen	22	161	7	8	48	6	155	1545	10	263	1816	7
Shrimps and prawns, peeled, frozen	9	78	8	44	230	5	109	920	8	218	1512	7
Shrimps and prawns, tails, shell on, frozen	3	22	7	0	3	14	-	-	-	-	-	-
Total	966	8386	9	1664	9686	6	999	9053	9	1716	10641	6

Source: Fishstat, May 2010.

The countries involved in the SEAT project belong to the top ten aquaculture producing countries by volume in 2007. These are China (producing 30.9 million tonnes), Vietnam (2.1 million tonnes), Thailand (1.4 million tonnes) and Bangladesh (0.9 million tonnes). These countries also participate actively in the world market. More than half of total exports from Asian exporting countries was supplied by these four countries, and reached a 20.8 percent share of world exports in 2007 (Table 3).

Table 3. Status of imports and exports of target species in 2007

	Export			Import			Share	
	Volume (1000 tonnes)	Value (million USD)	Price/kg (USD)	Volume (1000 tonnes)	Value (million USD)	Price/kg (USD)	Asia's export (%)	World's export (%)
Total fish								
Bangladesh	90.33	630.78	6.98	7.9	5.37	0.68	0.9	0.3
China	2925.99	9230.09	3.15	2336.24	3466.7	1.48	29.3	10.9
Thailand	1723.6	5623.89	3.26	1378.97	1695.48	1.23	17.3	6.4
Vietnam	859.44	3756.93	4.37	103.65	246.92	2.38	8.6	3.2
Total	5599.35	19241.68	3.44	3826.75	5414.47	1.41	56.1	20.8
Shrimp & prawn								
Bangladesh	64.99	563.76	8.67	0.02	0.21	10.5	7.6	3.9
China	49.66	182.18	3.67	44.93	131.28	2.92	5.8	3.0
Thailand	169.45	1080.55	6.38	7.12	37.56	5.28	19.8	10.2
Vietnam	213.83	1371.56	6.41	6.38	40.73	6.38	25.0	12.8
Total	497.92	3198.04	6.42	58.46	209.78	3.59	58.2	29.9
Tilapia								
Bangladesh	-	-	-	-	-	-	-	-
China	215.23	490.79	2.28	0.05	0.05	1.00	82.0	77.8
Thailand	12.91	19.20	1.49	0.06	0.15	2.50	4.9	4.7
Vietnam	-	-	-	-	-	-	-	-
Total	228.13	509.99	2.24	0.10	0.21	2.10	86.9	82.5
Catfish								
Bangladesh	-	-	-	-	-	-	-	-
China	-	-	-	-	-	-	-	-
Thailand	4.83	11.31	2.34	1.04	3.23	3.11	1.7	1.7
Vietnam	281.00	1018.00	3.62	-	-	-	97.6	97.1
Total	285.83	1029.31	3.6	1.04	3.23	3.11	99.3	98.8

Source: Fishstat, May 2010.

The species of interest for the SEAT project are Pangasius, Prawns, Shrimp and Tilapia¹. In 2007, 29.9 percent of globally traded shrimp and prawn originated from the four participating countries in the SEAT project with Thailand and Vietnam as the two largest exporters. China dominated the

¹ Pangasius (*P. sutchii* and *P. hypophthalmus*); Prawns (*Macrobrachium rosenbergii*); Shrimps (*Panaeus monodon*, *Panaeus vannamei*); Tilapia (*Oreochromis niloticus*)

international market for tilapia, and Vietnam that for catfish. The total share of exports from the four project countries for tilapia and catfish are 82.5 percent and 98.8 percent share in the world market respectively, clearly showing their importance in the production and trade of these species. In terms of export earnings, shrimp and prawn contributed more than tilapia and catfish. Average prices for shrimp and prawn are about twice as high for Bangladesh compared to the other three countries. This is due to the country's focus on large freshwater prawns (*macrobrachium* species) which fetch a higher price in the market compared to the brackish water shrimp (*penaeus* species) more commonly traded in the international market by the other three countries. Thailand's tilapia and catfish products fetched higher prices compared to China (Table 3). In general, these figures have to be treated with some caution as double counting may happen due to fish imports from other countries for processing in the SEAT target countries (especially China).

3 Trade policy

Trade in farmed fish species occurs within a broader regulatory context, overseen by the World Trade Organisation (WTO). This section will review the global, regional and bilateral trade arrangements that play a significant role in removing and easing traditional trade barriers, some of which are also the source of trade conflicts between WTO Member states.

3.1 International Agreements

The WTO sets the main framework for managing tariff and non-tariff measures. Setting initial guidelines for acceptable use of standards, the WTO relies on a series of international mechanisms for standards, certification and harmonisation efforts including the Codex Alimentarius Commission, Hazard Analysis and Critical Control Points (HACCP), the World Customs Organisation (WCO) and the International Standards Organisation (ISO).

3.1.1 Tariff Measures

The WTO is the key international forum for the discussion of tariff liberalisation. At the WTO, tariffs for fish and fishery products are discussed as part of the broader negotiations on non-agricultural market access (NAMA). In the area of tariffs, WTO members have engaged in a series of Rounds to lower and eliminate tariffs on imports and transform quotas and non-tariff barriers into their tariff equivalent, after which they are 'bound' and cannot be raised without new negotiations.

The profiles of tariff structures vary widely among developed countries. Since developed countries are major markets for developing country seafood exports, their tariff profiles can have a significant impact on economic opportunities for developing country producers and exporters. In most developed countries, the 1986-1994 Uruguay Round of the General Agreement on Tariffs and Trade (GATT) talks left in place tariffs that vary significantly depending on the type of product (ICTSD, 2008).

Most countries classify the products they export and import according to the Harmonised Commodity Description and Coding System (HS) administered by the World Customs Organisation. This system allows distinctions between different products, enabling different tariff levels to be applied to each identified product or product line. Despite an expansion in trade to include more developing countries and new species, there is no requirement that new species entering international trade be classified separately. In practice this can lead to discriminatory tariff treatment between species (ICTSD, 2008).

Despite liberalisation efforts, some important fishery products remain subject to high tariffs. For OECD nations as a whole, about 68% of OECD fish imports are subject to tariffs ranging from zero to five percent (ICTSD, 2008). Since the end of the Uruguay Round, key fish importers have maintained higher tariff rates for most value-added processed fishery products from developing countries. For developing countries, such 'tariff escalation' (where tariffs are higher on processed and semi-processed products than on unprocessed ones) is particularly constraining as it can limit exports of processed and value-added commodities to developed countries. Overall, the EU and Korea apply the highest duties and have the highest occurrence of tariff peaks (the existence of extremely high tariffs amidst generally low tariff levels), with 41% and 69% respectively of their tariffs set at rates

higher than 15%. However, the EU does also provide duty-free access for raw seafood products from many developing countries through preferential trading arrangements (ICTSD, 2008).

3.1.2 Non-Tariff Measures

Non-tariff measures are most broadly defined as any public or private measure other than tariffs that have the potential for distorting international trade flows. This section will focus on government-imposed standards.

One of the major achievements of the GATT Uruguay Round was the inclusion of trade in agriculture and agricultural products through the global Agreement on Agriculture. However, this has caused a rise in non-tariff barriers (NTBs) in the global trading system, which has been generally unfavourable to the interests of developing countries.

Sanitary and Phytosanitary (SPS) Agreement

The main goal of the SPS Agreement is to balance human, animal and plant safety with international trade by providing a framework for members seeking to regulate such risks within their territory. The basis for SPS measures is the General Agreement on Tariffs and Trade (GATT) Article XX(b), which states that countries can take measures to protect human, animal or plant life or health, as long as these do not discriminate between countries where the same conditions prevail and are not a disguised trade restriction. Under the Agreement countries are encouraged to adopt international standards issued by international standard-setting organisations such as the International Standards Organisation (ISO) for product and product standards for manufacturing goods, and the Codex Alimentarius Commission for food safety.

SPS measures must be based on scientific evidence and new SPS measures must be notified at the WTO. However, where relevant scientific evidence is insufficient, members may provisionally adopt SPS measures on the basis of available information, provided they continue to seek sufficient scientific evidence. The Agreement also encourages members to accept another Member's SPS measures provided they achieve the same level of SPS protection as the importing member (commonly referred to as 'equivalence' or 'mutual recognition'). In practice, developing country exporters have found it difficult and cumbersome to prove that their standards should be seen as equivalent (ICTSD, 2008).

In addition to covering food safety and animal and plant health processes, SPS measures also involve inspection, examination and certification procedures. In recent years, increasing outbreaks of food-related illness and concerns about inter-regional disease transmission have driven a push towards more stringent SPS standards. While harmonisation of international standards may help simplify import requirements, the risk remains that standards will be harmonised at a level that is too high for some exporters to meet, or a level too low to adequately protect consumers (ICTSD, 2008).

Technical Barriers to Trade (TBT) Agreement

Technical Barriers to trade include technical regulations, standards and conformity assessment procedures for products including provisions on quality and composition standards, labelling and source and origin information requirements, all of which have the potential to limit exporters' capacities to enter markets.

The objective of the TBT Agreement is to ensure that product specifications and testing procedures do not create unnecessary obstacles to trade. It is intended to reduce the extent to which technical regulations and standards operate as barriers to market access, primarily encouraging the development of international standards (Khatun 2004).

Like the SPS Agreement, the WTO's TBT Agreement seeks to balance the safety and security objectives of standards against their trade-distorting potential by mandating that procedures do not create unnecessary obstacles to international trade or discriminate in favour of domestic producers. Legitimate objectives include national security requirements, prevention of deceptive practices, protection of human health or safety, protection of animal and plant life or health or the environment etc. The TBT Agreement therefore encourages standard equivalence between countries, promotes the use of international standards to increase coherence and reduce export hurdles, and mandates that countries notify each other of changes in standards. For both SPS and TBT measures, it is mostly the major importers of fishery products that make notifications.

Codex Alimentarius

The Codex Alimentarius is also known as the food code and has become the global reference point for consumers, food producers and processors, national food control agencies and international food trade. It formulates and harmonises food standards and ensures their global implementation. Codex standards were considered a vital component in promoting food control systems designed to protect consumer health including issues related to international trade and the agreements on the SPS and TBT.

Since 1993, HACCP has been the instrument for food safety management. HACCP is the method chosen by the Codex Alimentarius for ensuring the safety of a wide variety of foods provided on a commercial scale. HACCP establishes target and acceptable hazard levels and identifies the appropriate tests for monitoring, measuring and correcting these levels at a series of control points throughout the food handling process. HACCP implementation requires several substantial technical and economic resources such as worker training and monitoring equipment, comprehensive record-keeping and the continuous integration of new technologies (ICTSD, 2008).

Safeguard and Anti-Dumping Measures

At the WTO, both safeguards and anti-dumping measures are the subject of specific agreements to provide members with options for recourse when their domestic industries are threatened by cheap imports from other Member States, although the conditions under which they may be applied and the policy tools used vary. Since developed countries are the primary importers of fishery products they are also the countries that impose most anti-dumping measures and safeguards. These measures attract considerable criticism from developing countries who argue that the measures are too often deployed by developed countries to protect uncompetitive industries and market share. Of the three principal seafood importers, the EU currently uses safeguard measures to protect its domestic fish processing industry against imports of fishery products, normally applied to similar species that it produces, such as salmon (ICTSD, 2008).

The WTO defines dumping as selling on the export market at a price below the normal value. In order to retaliate, importing countries can ban imports and/or charge compensating duties on the underpriced products in order to legitimately protect their domestic industry. Anti-dumping measures are highly contentious and several tensions have resulted in the WTO's Dispute Settlement Mechanism. Developed countries (the main users of these measures) argue that they are vital for protecting their producers from dumping of cheaper developing-country products on international markets, while developing countries argue that these measures are simply another tool used by developed countries to protect uncompetitive domestic industries and that they seriously impact market access and profitability for key export industries. In order to respond to the constraints imposed by the imposition of safeguards and anti-dumping measures, some WTO Members have moved processing facilities to third-party countries (ICTSD, 2008).

Customs Valuations

Customs Valuations can act as trade barriers if prices are overestimated for customs purposes. The WTO attempts to control potential negative by-products of customs rules through its Agreement on Customs Valuation. The Agreement aims for a fair, uniform and neutral system for the valuation of goods for customs purposes that conforms to commercial realities and outlaws the use of arbitrary or fictitious customs values.

Import Licensing

This is the practice of demanding documentation other than that required for customs purposes for the importation of a good into a customs territory. The need for supporting documents and the lack of transparency in the import licensing process can substantially delay the import process, which is critical for imports of perishable fishery products (Asche and Khatun, 2006).

The WTO's Import Licensing Agreement requires governments to publish sufficient information for traders to know how and why licenses are granted. The Agreement specifies that import-licensing procedures must be simple, transparent and predictable. Furthermore, it requires that license requests are processed in a limited timeframe and that the WTO is notified upon the introduction of new import licensing procedures or a change in existing procedures.

Rules of Origin

The WTO defines the point of origin as the 'country where the good has been wholly obtained or, when more than one country is concerned in the production of the good, the country where the last substantial transformation has been carried out' (ICTSD, 2008). Various schemes exist that require a declaration of origin of fish and fishery products for different purposes including the tracing of a product through the supply chain, assessing compliance with fishing quotas and applying tariff levels or safeguard measures. At present, each importing country or region defines its own rules of origin.

The EU requires mandatory declaration of country of origin and method of production. Country of Origin Labelling (COOL) legislation outlines definitions, requirements for consumer notification and product marketing and the record-keeping responsibilities of both retailers and suppliers. This information must be available at each stage of marketing by means of labelling, packaging or accompanying commercial documentation. For developing countries, rules of origin are particularly

significant as they can influence which goods qualify for preferential market access in key markets (ICTSD, 2008).

Traceability

Traceability/product tracing is ‘the ability to follow the movement of a food through specified stage(s) of production and processing and distribution’ (ICTSD, 2008). Through these measures, regulators seek to identify unsafe products that can be withdrawn, provide consumers with information on quality, comply with security aspects of food marketing, and ensure quality controls. Product tracing rules are increasingly important in developed countries, particularly for products labelled for their production and process characteristics. In developing countries there is concern that traceability requirements may involve significant compliance costs. On the other hand there are considerable economic incentives for complying with traceability requirements. In the first instance, many importing countries may have distinct, mandatory traceability requirements. In addition, a growing number of consumers are willing to pay for organic, eco-labelling or country-of-origin labelled products. Finally, product tracing is now an integral part of many eco-labelling schemes, which aim to reward producers for sustainably-harvested fishery products (ICTSD, 2008).

3.2 Relevant Regional and Bilateral Agreements

Regional economic organisations and regional trade agreements have proliferated in the past several decades and play a key role in the management and expansion of trade liberalisation.

The Asia Pacific Economic Forum (APEC) has a Fisheries Working Group (FWG) that promotes sector-specific work relating to trade and investment liberalisation and facilitation, while in Europe the European Union’s Common Fisheries Policy (CFP) also governs marketing policy (regarding quality, packaging and labelling) and trade relations (ICTSD, 2008).

Many developed and developing countries are also negotiating bilateral agreements involving tariff exemptions for participating countries, particularly through preferential agreements. For example, the Generalised System of Preferences (GSP) provides the framework for most preferential trade arrangements, giving selected developing country exports access to developed country markets at lower or zero tariff rates, with the aim of increasing the competitiveness of developing countries (ICTSD, 2008).

3.2.1 European regulations for by-products

The further consumption, processing, recycling, transport and traceability of by-products and mortalities from aquaculture and capture fisheries within the European Economic Area (which includes Norway) are controlled by the European Animal By-Product Regulations². These regulations control the use of all animal products that are not intended for human consumption in order to maintain biosecurity measures, contamination of food and animal feed, and general hygiene (European Commission, 2002). Their implementation restricts the options available for the recycling and reuse of fish by-products and mortalities. The regulations were clarified in an amendment to the

² ABPR, Regulation (EC) No 1774/2002.

regulations³ and specifically lay down the use of fish by-products. In particular, they forbid the use of by-products from cultured fish processing in the manufacture of fishmeal for the feeding of other cultured fish, even of different species (European Commission, 2003) because of fears over transmissible spongiform encephalopathies (TSEs). This includes products which have been produced in countries outside of the EU and then imported and is particularly pertinent for some Asian countries where traceability of feeds may not be as strict as in the EU and where it is more common for farmers to mill their own feeds. However, up to 2003, after the height of the BSE epidemic, there had never been any reported cases of TSEs in fish species, although research into the possibility of this are ongoing (Matthews and Cooke, 2003) . These regulations are generally backed up by standards for the production of aquaculture species to be exported to the EU such as the new WWF⁴ and the Global Aquaculture Alliance Best Aquaculture Practises standards⁵.

In general terms, by-products are divided into 3 different categories as summarised in Table 4, where Category 3, by-products from fish processing, have many more options open to their use compared to Category 2 products (e.g. mortalities). For example category 3 by-products can be used in non-finfish feeds and for human pharmaceuticals which Category 2 by-products cannot. However, the regulations do not definitively state at what point post filleting products become by-products, not intended for human consumption. There are many parts of fish that could be directed to human consumption at the filleting stage including cheeks bellies and other off-cuts (Ramírez, 2007).

Table 4. Summary of EU by product categories and regulations on their uses

Category	By-product	Allowable uses under ABPR
I	- No fish by-products in Cat. 1	-
II	- Fish farm mortalities irrespective of cause - Fish parts collected from the effluent of Cat. 2 processing plants - Fish parts that contain excessive amounts of veterinary residues - Cat.3 material that may have been contaminated with Cat. 2.	- Incineration on site or at approved facilities - Processed in accordance with other ABPR provisions but not for animal feeds, cosmetics or medicinal uses - Ensiled, composted or used in biogas plants, meeting hygiene and biosecurity measures in the annexes of the ABPR - Disposed of in landfill if special derogations are applicable
III	- Parts of slaughtered animals considered unfit or not intended for human consumption - Fish caught for fishmeal production - By-products from fish processing plants	- Incineration on site or at approved facilities - Ensiled, composted or used in biogas plants, meeting hygiene and biosecurity measures in the annexes of the ABPR - Processed in accordance with other ABPR provisions including “technical purposes” such as pharmaceuticals and cosmetics - Used to make livestock feeds but must not be made into fishmeal for feeding fish unless from wild sources

Source: European Commission 2002, 2003.

³ Regulation (EC) No 811/2003.

⁴ See <http://www.worldwildlife.org/what/globalmarkets/aquaculture/index.html>

⁵ See <http://www.gaalliance.org/bap/standards.php>.

Although evidence from Asian stakeholders suggests that most of the by-product is being used locally some of it is used in commercial industries and then transported to the US and EU. Of particular interest is chitosan, a polysaccharide similar to cellulose and extracted from the chitin of shrimp shells, and D-glucosamine which is the further break-down product of chitosan. Chitosan has many broad uses in industries from paper and textiles, to slow release mechanisms for drug delivery and other medicinal uses. Similarly, glucosamine is commonly sold over-the-counter in European and US pharmacies for the prevention and treatment of osteo-arthritis (Lallement, 2007).

4 Voluntary standards

4.1 Overview

Poorly implemented, government-run, command and control management schemes have often failed to prevent the externalities associated with aquaculture. Alternative, market-based approaches can generate strong motivation for improved aquaculture practices. Over the past decade there has been a proliferation of private, national and supranational schemes designed to provide seafood buyers and consumers with more and better information on production processes. Many of these are based on voluntary standards and created by private enterprises for internal use. Suppliers are not required by law to meet voluntary standards but conformity may be guaranteed by internal controls or certified by an independent organization or public entity and may be marketed using a label. Voluntary standards can be differentiated according to a number of criteria such as whether they are pre- or post-gate standards, business-to-business standards, or standards tied to a particular label or logo scheme.

Voluntary standards cover areas such as:

- good management practices
- food safety
- food quality
- the environment
- social responsibility
- fair trade
- animal welfare

An in-depth review of voluntary standards and certification programmes applicable to the aquaculture sector in the Asia–Pacific region was conducted by the Asia-Pacific regional office of the FAO (Corsin et al., 2007)⁶. Their review examines, in particular, the challenges and opportunities of the most important schemes in order to advise stakeholders in the region to maximize the sustainability of the aquaculture sector for all parties involved, and especially for small-scale producers. A second review on fish sustainability information schemes, commissioned by the Fish Sustainability Information Group (FSIG), an international consortium representing a variety of national organisations concerned with seafood trade, deals with standard setting, certification and eco-labelling schemes, organic certification, and national standards and guides (MRAG, 2009)⁷. A detailed overview of certification schemes will also be provided as part of Deliverable D8.4. Therefore, certification schemes will only be mentioned briefly here.

Increasingly, codes and practices (such as Codes of Conduct (CoC), Good Aquaculture Practices (GAP) or Better Management Practices (BMP)) are equated with performance and are seen by many as a proxy for a standard or a standard in their own right. However, codes and practices are a means to an end (i.e. acceptable performance levels rather than an indicator of performance itself). It is therefore important not to confuse means with ends. This document will only consider voluntary

⁶ This report can be downloaded from <http://www.fao.org/docrep/010/ai388e/ai388e00.htm>.

⁷ This report can be downloaded from http://www.mrag.co.uk/Recent_Publications.htm.

standards applicable to aquaculture. However, the term 'principle' is often interchangeable with 'standard' and the following will consider them as synonymous.

Table 5 gives an overview of voluntary standards and codes of conduct that apply to aquaculture in Asia, exported to the European Union. We distinguish between public and private standards, i.e. standards that are implemented by national governments or international / regional governing bodies and those implemented by the private sector and NGOs. In the following sections these standards will be briefly described.

Table 5. Voluntary Standards

	Target group	Issue											
		Food safety	Food quality	Environmental integrity	Aquaculture trade	Fair trade	Social responsibility, labour and socio-economic sustainability	Animal health and welfare	Aquaculture development and management	Supply chain traceability and competitiveness	Bench-marking	Climate friendly, organic	Certification and consumer information
Public Standards													
Global													
FAO Code of Conduct for Responsible Fisheries	Members												
FAO Guidelines for the labelling of Aquaculture Products	Members												
OIE	Members												
UNCLOS	Members												
CBD	Members												
ISO	Members												
Regional													
ASEAN Shrimp Alliance	Members												
National													
ACFS (Thailand)	Industry												
Q Mark	Industry												
Thai Quality Shrimp (Thailand)	Industry												
Public/Private Mix													
International Principles for Responsible Shrimp Farming	Industry												
UN Global Compact	Industry												
Private													
Industry													
Soil Association	Industry												
AB	Industry												
BioSuisse	Industry												

	Target group	Issue											
		Food safety	Food quality	Environmental integrity	Aquaculture trade	Fair trade	Social responsibility, labour and socio-economic sustainability	Animal health and welfare	Aquaculture development and management	Supply chain traceability and competitiveness	Bench-marking	Climate friendly, organic	Certification and consumer information
KRAV	Industry												
Shrimp Seal of Quality (Bangladesh)	Industry												
Retail													
GlobalGAP	Industry												
Safe Quality Food	Suppliers												
Label Rouge	Suppliers												
International Food Standard	Suppliers												
Global Food Safety Initiative	Industry												
Not-for-profit platform													
ISEAL	Industry												
NGO													
IFOAM	Industry												
Naturland	Industry												
Ethical Trading Initiative	Industry												
Fairtrade Labelling Organisation	Industry												
Freedom Food	Industry												
Seafood Watch	Consumers												
SIPPO	Industry												

Sources: Authors' assessment of Corsin et al (2007) and MRAG (2009).

4.2 Public Voluntary Standards

4.2.1 Global

FAO Code of Conduct for Responsible Fisheries (FAO CCRF)

The Code of Conduct refers mostly to the sustainability of the fisheries sector, but does include one article (Article 9) on Aquaculture Development. The CCRF has been voluntarily adopted by several countries, and in the case of Thailand has inspired the development of a national certification programme for aquaculture commodities (Corsin et al 2007).

FAO Guidelines for the labelling of aquaculture

The guidelines provide guidance for the development, organization and implementation of credible aquaculture certification schemes. Final draft aquaculture certification guidelines are available.

Office International des Épizooties (OIE)

The OIE or World Organisation of Animal Health is an inter-governmental organization created in 1924. Under the WTO SPS Agreement, the OIE safeguards global trade by developing and publishing health standards applicable to animals and animal products. The OIE's activities on aquatic animal health are largely coordinated by the Aquatic Animal Health Standards Commission (Corsin et al 2007).

UNCLOS

The United Nations Convention on the Law of the Sea (UNCLOS) is an intergovernmental document through which the international community agrees on procedures to regulate all aspects of marine resources and ocean use. Relevance to the aquaculture sector is mostly through the interactions between culture and capture fisheries (Corsin et al 2007).

Convention on Biological Diversity

The Convention on Biological Diversity (CBD) has 150 member state governments and is dedicated to promoting sustainable development through the recognition that biological diversity is important for plants, animals, micro-organisms and their ecosystems, as well as for all mankind. The convention contains several provisions specific to aquaculture/mariculture, particularly concerning the trans-boundary movement of aquatic organisms and the control of invasive alien species (Corsin et al 2007).

International Standards Organisation (ISO)

The International Standards Organization (ISO) is an NGO constituted by a network of the national standards institutes of 157 countries, with one member per country. Although its structure may resemble that of an intergovernmental organization, ISO members are not delegates of their countries, although its structure has made the ISO arguably the most authoritative organization for standardization. Only national standardization institutions can become ISO members.

The ISO has produced generic standards such as the ISO 9000 and ISO 14000 families of standards, which are standards to be applied by organizations to improve the quality and environmental management of the processes adopted. The recently issued ISO 22000:2005 standard concerns the management of food safety issues. In addition, the ISO has also initiated activities towards the

development of standards for social responsibility. Discussions were initiated in 2004 and are still ongoing. Standards for fisheries and aquaculture, focusing in particular on traceability, are also still under development.

Because of the approach adopted by the ISO towards conformity assessment to ISO standards, it is not possible to know how many ISO-compliant aquaculture businesses there are globally. The ISO conducts regular surveys to assess the status of implementation of its ISO 9000 and ISO 14000 standards. ISO surveys indicate that the number of businesses certified for standards within the ISO 9000 family in the “agriculture and fishing” category increased from 610 in 1998 to 2 381 in 2002 globally. The number of ISO 14001 certified “agriculture and fishing” businesses followed a similar trend, rising from 16 in 1998 to 532 in 2002. Although the ISO surveys most likely underestimate the number of certified businesses, the data would seem to indicate that ISO certification of agriculture and fishing businesses globally is still limited (Corsin et al, 2007).

4.2.2 Regional

ASEAN Shrimp Alliance

Representatives of government institutions in charge of fisheries management from seven of the ten Association of Southeast Asian Nations (ASEAN) countries (Thailand, Vietnam, Malaysia, Indonesia, the Philippines, Brunei Darussalam and Cambodia) met in 2006 to discuss the establishment of an ASEAN Shrimp Alliance with the objective of establishing shrimp production standards for ASEAN countries. An agreement was reached to undertake efforts at both government and private sector levels. A detailed proposal including the role of the ASEAN Shrimp Alliance is currently being developed by SEAFDEC (Southeast Asian Fisheries Development Center) and the Thai Department of Fisheries.

4.2.3 National

Agricultural Commodity and Food Standards

The national Bureau of Agricultural Commodity and Food Standards (ACFS) is a governmental agency in Thailand that sets standards for agricultural systems, and promotes compliance among producers and processors. ACFS has developed standards for tilapia production.

Q Mark

The Department of Fisheries (DOF) in Thailand has developed a traceability system to be able to trace the origin of aquaculture products and to adopt the Quality Mark for Fishery Commodity and Standards (Q Mark) to ensure that Thai aquaculture attain international standards.

Thai Quality Shrimp

This is a scheme by DOF, Thailand, focusing on the sustainability of shrimp production. It is awarded to products that wholly comply with the Code of Conduct developed by DOF for marine shrimp farming in 1998. Auditing and certification is also conducted by DOF (MRAG 2009).

International Principles for Responsible Shrimp Farming

In 1999, the FAO in partnership with NACA, the World Bank and WWF, formed a Consortium on Shrimp Farming and the Environment, to identify issues around shrimp farming and advise on better

management of the sector. The United Nations Environment Programme (UNEP) joined the consortium in 2003 and this led to the development of the International Principles for Responsible Shrimp Farming, which address technical, environmental and socio-economic sustainability issues in the shrimp farming sector.

UN Global Compact

The UN Global Compact is a set of principles that the UN requests companies to voluntarily follow and promote and which are of relevance to the aquaculture industry. The principles include human rights, labour standards, the environment and anti-corruption.

4.3 Private Voluntary Standards

4.3.1 Industry

Soil Association

The Soil Association is a UK-based body which plays a key role in the campaigning and certification of organic food and farming. Standards for the aquaculture sector are included in a general aquaculture chapter. Shrimp also has a dedicated chapter. The Soil Association operates primarily in the United Kingdom but the Soil Association Certification Ltd. also offers certification for shrimp producers abroad (Corsin et al 2007).

Agriculture Biologique (AB)

France developed legislation on organic production for the first time in 1981. In 1985, the first state-owned logo for organic products, the AB logo, was launched. These early efforts made France a leading country in organic production and it now contains an estimated 40% of European organic land. Madagascan shrimp is AB-certified and competes with Asian shrimp in EU markets.

BioSuisse

BioSuisse is the umbrella organization of the Swiss organic farming organizations and producers. In 2000, BioSuisse adopted standards for organic aquaculture, including shrimp. BioSuisse standards cover not only organic farming but also processing and marketing of organic products. Only businesses with a Swiss partner can apply for BioSuisse certification. BioSuisse also allow for inspection and certification of cooperatives, projects and producer groups based on criteria set by Naturland, IFOAM and FVO (Farm Verified Organic) (Corsin et al 2007).

KRAV

KRAV is an association that promotes organic farming and its standards and which can be broadly applied to aquaculture production. Although the focus of its activities is Sweden, KRAV supports international activities towards organic farming through interactions with IFOAM and the European Union (Corsin et al 2007).

Shrimp Seal of Quality

The Shrimp Seal of Quality (SSOQ) was initiated in 2001 as part of the second phase of the USAID-funded Agro-based Industry and Technology Development Projects (ATDP II) in Bangladesh. It was originally intended to be implemented in close collaboration with the Government of Bangladesh, which co-funded the project, but it eventually developed into a private sector initiative promoted

mainly by project staff and shrimp processors. Standards are applicable to every step of the shrimp supply chain.

4.3.2 Retail

GlobalGAP

GlobalGAP is a private sector body that sets voluntary standards for certification for a wide range of agricultural products including aquaculture commodities. It was originally initiated by British retailers but now also includes producers and associate members (Corsin et al 2007). There are two sets of standards produced by the Program: SQF 1000 for producers and SQF 2000 for processors.

Safe Quality Food

The SQF Program is a fully integrated food safety and quality management protocol developed by the Safe Quality Food Institute based in Australia and owned by FMI, a US-based organization conducting programmes in research education, industrial relations and public affairs.

Carrefour Quality Lines

In 1992 Carrefour initiated development of Carrefour Quality Lines, which are certification schemes through which products are identified on the basis of specific quality attributes and marketed with labels indicating their ownership to the scheme. Carrefour uses the label on its own-brand products, including shrimp.

International Food Standard

German and French food trade associations, with the assistance of other international retailers developed the IFS for their suppliers. The aim of the standard is to focus the various requirements of retailers on one standard. Benefits of the standard include an enhanced transparency along the food chain and a reduced number of customer audits. The subjects covered include senior management responsibility, the quality management system, resource management, production process and measurements, analysis and improvements. In 2006 the IFS Logistics standard was developed to help close the gap between production and trade and to provide transparency throughout the supply chain.

Global Food Safety Initiative

The Global Food Safety Initiative (GFSI) is a collaborative initiative of food safety experts from retailer, manufacturer and food service companies as well as service providers associated with the food supply chain. It is coordinated by the Consumer Goods Forum, an independent global network for consumer goods, retailers and manufacturers worldwide. It was started by a group of retailers. GFSI sets requirements for food safety schemes through a benchmarking process in order to improve cost efficiency throughout the food supply chain.

4.3.3 Not-for-Profit platform

International Social and Environmental Accreditation and Labelling Alliance (ISEAL)

ISEAL is a membership-based organization that assists the development of social and environmental standards for several sectors including fisheries (Corsin et al 2007). The ISEAL Code of Good Practice is the international normative reference for good standard-setting practices. Compliance with the Code is measured through an objective and rigorous process of self-assessment and peer review.

The peer review is an effective way for organizations to gauge their practices against other leading standard-setting organizations and against international best practice.

4.3.4 NGO

International Federation of Organic Agriculture Movements (IFOAM)

IFOAM is a global grassroots umbrella organization that includes 750 member organizations operating in 108 countries involved with organic agriculture production. IFOAM provides standards that organic certification schemes should include. IFOAM operates through the three Organic Guarantee System (OGS) committees. The Organic Guarantee System is aimed at providing a market guarantee of the integrity of organic claims, fostering equivalence among participating certifiers.

Naturland

Naturland (Association for Organic Agriculture) was founded in 1982 in Germany with the objective and mission of “conserving the environment and maintaining the natural basis of life by means of organic farming in all fields of agriculture”. Compliance to Naturland standards is assessed through annual and occasional random inspections conducted by independent organizations. In 1999, standards for shrimp production were introduced. A number of projects aimed at assisting producers in complying with Naturland standards and benefiting from implementation of organic aquaculture are also being conducted in several countries (e.g. Vietnam, Bangladesh, India), often in partnership with the Swiss Import Promotion Programme (SIPPO) and with the Swiss retail group COOP Switzerland, where the certified products are marketed.

Ethical Trading Initiative

The ETI is an alliance of companies, non-governmental organizations and trade union organizations promoting ethical consumerism, with the target of promoting and improving the implementation of codes of practice that address working conditions throughout the supply chain. In 2002 a Prawn Working Group was established to address the social impact of shrimp farming and fishing in India. Following project implementation, the working group concluded that ETI members should undertake individual action with their suppliers and partners to address improvement in working conditions for employees involved in this sector.

Fairtrade Labelling Organizations International

Fairtrade Labelling Organizations International (FLO) is a non-profit association of 20 member organizations that promote and market fair-trade FLO-labelled products in their countries. FLO standards are produced by the FLO Standard Committee in which stakeholders from the FLO’s member organizations, producer organizations, traders and external experts are represented.

The so-called Standard Principles are applicable to all producers and highlight the socio-economic and environmental development scope that fair-trade standards aim to address. These Standard Principles are supported through the implementation of the producers’ Generic Standards that have been developed for both small farmers’ organizations and for hired-labour. In addition, there are other rules and standards that producers must comply with. Commodity-specific standards as well as trader’ standards exist, which consist of general rules to be followed by traders to ensure fair prices to producers.

Although the Generic Standards are theoretically applicable to any food commodities, to date there are no specific standards for the production and trade of aquaculture commodities and, as such, no FLO-certified aquaculture products. Nevertheless, the FLO has declared its intention to develop standards for fair-trade shrimp and fish on several occasions.

Freedom Food (RSPCA)

Freedom Food is the Royal Society for the Prevention of Cruelty to Animals' (RSPCA) farm assurance and farm labelling scheme. Welfare Standards have been developed for certain farmed species, which doesn't yet include shrimp. However, this is likely to become an area for future development.

Seafood Watch

The Monterey Bay Aquarium (MBA) is a non-profit organization established in 1984 to inspire the conservation of the oceans. As part of this it established the Seafood Watch programme, designed to raise awareness about sustainability issues including the farming of fish. Fish are marked according to a traffic-light system that highlights their desirability: green (best choice), yellow (good alternative), red (avoid) (Corsin et al 2007).

SIPPO

The Swiss Import Promotion Programme (SIPPO) is mandated by the Swiss State Secretariat for Economic Affairs (SECO) to promote exports to Switzerland and the European Union. SIPPO has collaborated with Naturland, COOP Switzerland and stakeholders in other countries to help shrimp farmers, including in Bangladesh, to obtain Naturland organic certification (Corsin et al 2007).

5 Discussion

Producers engaged in international trade face a growing range of standards regarding the origins of products, production process and potential dangers that accompany international trade. Many countries have raised concerns that NTBs in particular can limit or eliminate their access to key export markets, even though provisions are intended to stimulate trade among countries. A lack of proper knowledge and awareness, poor access to information on requirements, lack of expertise and trained people to examine compliance requirements, lack of technological capacity and weak implementation and monitoring capacity, have all been cited as major constraints for developing countries (ICTSD, 2008). On the other hand, compliance with standards may also have the potential to offer producers opportunities for economic growth.

Clearly, this is also the case for the producers and processors of farmed aquatic resources in the four project countries. How this exactly affects the different chain actors is an important topic that will be further examined during the course of the SEAT project. Some issues that need to be considered during the fieldwork phase of this project include:

- Disaggregation of impacts of trade regulations and mandatory standards on chain actors' access to and benefits derived from value chain participation, with special reference to small-scale actors and disadvantaged groups.
- Disaggregation of impacts of voluntary standards on chain actors' access to and benefits derived from value chain participation, with special reference to small-scale actors and disadvantaged groups.
- The manner in which industry complies with the standards: just-enough or beyond what is required.
- History of compliance and consequences of (known) non-compliance
- How compliance to policies and standards is monitored in practice
- How chain actors deal with the proliferation of standards, both in scope (horizontally) and scale (vertically in the value chain)
- Likely future standards: climate change/carbon footprints/animal welfare etc.
- Future harmonisation of standards, future development of private-public partnerships.
- Possible clashes between intended impacts of standards and economic and management realities
- (Lack of) involvement of local stakeholders in standard setting
- Role of government in standard setting and support to meeting requirements
- Effectiveness of standards in creating niche markets
- Impact of international standards for local consumers. What standards apply for the local / national market? Can local consumers buy only what does not meet the export requirements?

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