

5. Private standards and certification for food safety and quality in fisheries and aquaculture

5.1 PUBLIC FRAMEWORKS FOR FOOD SAFETY AND QUALITY

In 2006, some 194 countries around the world reported exports of fish and fishery products. Increasing amounts of fish and seafood are now caught in one part of the world, transported to another for processing and finally consumed in yet another country. Food safety systems that function across national borders are therefore vital. A range of national and international regulatory frameworks has been developed accordingly.

The international regulatory framework for fish safety and quality takes its origin in two WTO agreements: the SPS Agreement, and the TBT Agreement.

The SPS Agreement confirms the right of WTO member countries to apply measures necessary to protect human, animal and plant life and health. This right was included in the original 1947 General Agreement on Tariffs and Trade as a general exclusion from the provisions of the agreement provided that “such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade”. However, despite this general condition for the application of national measures to protect human, animal and plant life and health, these measures became, whether by accident or design, effective trade barriers.

The SPS Agreement was introduced to ensure that measures established by governments to protect human, animal and plant life and health in the agriculture sector, including fisheries, are consistent with obligations prohibiting arbitrary or unjustifiable discrimination on trade between countries where the same conditions prevail and are not disguised restrictions on international trade. To promote harmonization of sanitary measures, WTO members are encouraged to base their national measures on international standards, guidelines and other recommendations adopted respectively by the Codex Alimentarius Commission (CAC) for food safety (Box 12), the sanitary measures of the World Organisation for Animal Health (OIE) for animal health or the phytosanitary measures of the International Plant Protection Convention (IPPC) for plant protection. This does not prevent a member country from adopting stricter measures if there is a scientific justification for doing so, or if the level of protection recommended by the CAC or the OIE is inconsistent with the level of protection generally applied and deemed appropriate by the country concerned.

The TBT Agreement is a revision of the agreement of the same name first developed under the Tokyo Round of negotiations (1973–79). The objective of the TBT Agreement is to prevent the use of national or regional technical regulations and standards as unjustified technical barriers to trade (TBTs). The TBT Agreement covers standards relating to all types of products including industrial products and quality requirements for foods (except requirements related to sanitary and phytosanitary [SPS] measures). It includes numerous measures designed to protect consumers from deception and economic fraud.

The TBT Agreement basically provides that all technical regulations and standards must have a legitimate purpose and that the impact or cost of implementing the standard

BOX 12

The Codex Alimentarius

The Codex Alimentarius (Food Code in Latin) is the joint FAO/WHO Food Standards Programme. It was created in 1962 for the purpose of developing food standards to protect the health of consumers, providing assurance of fair practices in food trade and for coordinating the international work on food standards.

The Codex Alimentarius Commission (CAC) is an intergovernmental body with a membership of 165 member governments. In addition, observers from international scientific organizations, food industry, food trade and consumer associations may attend sessions of the CAC and of its subsidiary bodies. An executive committee, six regional coordinating committees and a secretariat based in Rome assist the CAC in administering its work programme.

The work of the Codex Alimentarius is divided between two basic types of committees:

- nine general subject matter(s) committees that deal respectively with general principles, food hygiene, veterinary drugs, pesticides, food additives, labelling, methods of analysis, nutrition, import/export inspection and certification systems;
- twelve commodity committees that deal respectively with a specific type of food class or group, such as dairy and dairy products, fats and oils, or fish and fish products.

The work of the Codex committees on food hygiene, fish and fishery products, veterinary drugs, methods of analysis and import/export inspection and certification systems are of paramount interest to the safety and quality of internationally traded fish and fishery products.

In the environment of the Uruguay Round agreements, the work of the CAC has taken on unprecedented importance with respect to consumer protection and international food trade. The specific Codex food safety provisions, which are recognized by the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), include the maximum residue limits for pesticides and veterinary drugs, the maximum level of use of food additives, the maximum levels of contaminants, and food hygiene requirements of Codex standards.

In the specific area of food hygiene, the CAC has revised its main document on food hygiene to incorporate risk assessment principles and to include specific references to the Hazard Analysis and Critical Control Point (HACCP) system.

Since its foundation, the CAC has adopted (as of 2006):

- 186 food standards and 46 commodity-related texts;
- 9 texts of food labelling, 5 on food hygiene, 15 on sampling and analysis, 8 on inspection and certification procedures, 3 on risk assessment, 7 on food additives and 6 on animal food production;
- 2 930 maximum limits (MLs) for pesticide residues, covering 218 pesticides;
- 12 provisions for contaminants in foods (MLs, detection and prevention);
- 1 112 provisions for food additives, covering 292 food additives; and
- 441 maximum residue limits (MRLs) covering 49 veterinary drugs.

The following Codex standards, guidelines and codes are relevant to fisheries and aquaculture:

- the Code of Practice for Food Hygiene;
- 14 standards for fish and fishery products (Volume 9A);
- the Code of Practice for Fish and Fishery Products;
- several risk assessments (Vibriosis in seafood, biotoxins, antimicrobial resistance);
- several principles and guidelines for food import and export inspection and certification;
- MRLs for veterinary drugs;
- MRLs for contaminants; and
- work in progress (EC viruses, risk/benefits of methylmercury or active chlorine, antimicrobial resistance).

must be proportional to the purpose of the standard. It also states that if there are two or more ways of achieving the same objective, the least trade-restrictive alternative should be followed. The TBT Agreement also places emphasis on international standards; WTO members are obliged to use international standards or parts of them except where the international standard would be ineffective or inappropriate in the national situation.

Both the SPS and TBT Agreements call on WTO member countries to:

- adopt international standards of the CAC, the OIE and the IPPC and participate in their elaboration;
- promote international harmonization and equivalency agreements;
- facilitate the provision of technical assistance, especially to developing countries, either bilaterally or through the appropriate international organizations; and
- take into consideration the needs of developing countries, especially the least-developed countries, when preparing and implementing SPS measures, technical regulations, standards or conformity assessment procedures.

This international regulatory framework has been adopted at the national or regional level by major fish producing, exporting or importing countries. This has become necessary amid increased globalization of fish trade, which has highlighted the risk of cross-border transmission of hazardous agents. Likewise, the rapid development of aquaculture has been accompanied by the emergence of food safety concerns, in particular regarding residues of veterinary drugs. The food and feed scares of recent decades (see Box 1) have exacerbated the concerns. International organizations such as FAO, the World Health Organization (WHO) and the OIE have responded by promoting the adoption of a “farm or sea to table” strategy applicable throughout the entire supply chain. This strategy, which addresses production, process and product control (Box 13), must be scientifically based, adaptive and responsive to changes in the food production chain. It should be articulated around the use of risk analysis to develop food safety and animal health objectives and standards and the HACCP-based preventive systems to manage food safety hazards.

The implementation of the food chain approach requires an enabling policy and a regulatory environment at the national and international levels with clearly defined regulations and standards, establishment of appropriate food control systems and programmes at the national and local levels, and provision of appropriate training and capacity building. Development and implementation of good aquaculture practices (GAPs), good hygienic practices (GHPs) and HACCP are required along the food chain. Government institutions are responsible for developing an enabling policy and a regulatory environment, organizing the control services, training personnel, upgrading the control facilities and laboratories, and developing national surveillance programmes for relevant hazards. The industry is responsible for adopting good practices and for training personnel to implement GAPs, GHPs and HACCP.

The ISO on food safety certification and accreditation is another international organization of relevance.

Despite these international frameworks and attempts to harmonize requirements and conformity assessment procedures, fish exporters still face safety and quality control regimes that vary from one jurisdiction to the next. Even within the EU, where the goal is to harmonize food safety regulations, differences in national regulations still exist for several issues. The United States has its own particular requirements, as do other key import markets such as Japan and the EU (FAO, 2005). This multitude of approaches imposes significant compliance costs¹¹⁸ on exporters, particularly those in

¹¹⁸ Costs also include detentions and rejections of products deemed not to be in compliance with importing countries' requirements.

developing countries where there is limited capacity to develop comprehensive safety and control infrastructures, let alone several different systems to meet diverse import market requirements.

BOX 13

Product versus process control

For many years, food quality and safety experts have known that sampling and testing finished products for conformity present many shortfalls, not the least giving a sensation of “being in control” and creating a strong but false sense of security.

This can be easily demonstrated theoretically as follows. The probability of accepting a lot of seafood products (a shipment of shrimp cartons for example) depends on the percentage of defective units (cartons) in the lot, on the number of samples drawn (n) and the maximum allowable number of defective samples (c). Assuming a lot with 1 percent defective units, a sampling plan with $c = 5$ (5 randomly drawn cartons) and $n = 0$ (none of the drawn samples is defective), the probability of accepting the lot is $P = C50 (0.99)^5 (0.01)^0 = (0.99)^5 = 0.951$ or slightly above 95 percent.

The accompanying table was constructed using the same method of calculation for different combinations of percent defective, n and c . It shows clearly that testing of foods offers very little protection even when large numbers of samples are drawn. For example, with 1 percent defective units in a lot, drawing 60 samples, which is usually not feasible on a lot-by-lot basis in routine food inspection (and not economical at all for destructive sampling), yields a probability of acceptance equal to 54.7 percent. In other words, assuming 100 such lots of a prepacked fish product containing 10 000 units each, thus 100 defective units in each lot, even with a sampling plan of $n = 60$ and $c = 0$, more than 54 lots will be accepted (pass food sampling and control) because no defective units will be found in their samples of 60 each. To decrease the probability of acceptance, more than 3 000 or 5 000 units would need to be sampled and tested in order to detect a 1 percent defect rate with 95 percent or 99 percent probability (to accept the lot with 5 percent or 1 percent probability).

Effect of lot quality (percent defective in a lot) on the probability of acceptance (percent) for different sampling plans

% defective units in lot	Probability of acceptance (%) given sampling plans with a total of “n” samples and allowance of “c” defective samples			
	n=1, c=0	n=5, c=0	n=10, c=0	n=60, c=0
1	99.0	95.1	90.4	54.7
2	98.0	90.4	81.7	30.0
5	95.0	77.4	59.9	4.6
10	90.0	59.1	34.9	0.18
20	80.0	32.8	10.7	0.00015

Consequently, even the most elaborate sampling and testing plans of end product, although unrealistic and uneconomical for routine testing, cannot guarantee safety of the product. There is no way to avoid some degree of risk and error in each acceptance and each rejection of lots unless the entire lot is tested, in which case no edible food will be left for sale.

Furthermore, where the distribution of contaminants in units is heterogeneous, as is the case in the fish industry, as compared with the soft-drinks or dairy industry, the probability of detection is even much lower. That is why scientists, industry and regulators have been promoting for many decades approaches such as HACCP, which prevents the hazard from entering the supply chain at the source or reduces its likelihood to acceptable levels, reflecting proper application of codes of practice, control and corrective measures.

5.2 THE EMERGENCE OF PRIVATE STANDARDS FOR FOOD SAFETY AND QUALITY

Further complicating the variety of public sector food safety regulations is the multitude of standards applied by the private sector. These relate to a range of objectives, including food safety and quality but also to animal health, environmental protection and even social development, and are often linked to private firms' CSR strategies.

As noted in Chapter 1, a range of factors has fuelled the trend towards private safety and quality standards. Food safety scares have weakened public confidence in governments' abilities to guarantee food safety, especially the safety of imported food. Government policies related to product liability and due diligence as well as the shift towards more performance-based regulatory frameworks put the onus on private sector firms to assume responsibility for food safety management. Large food firms, especially retailers, have increasing bargaining power *vis-à-vis* other businesses in the supply chain, and are requiring suppliers to be certified to private FSMSs.

Private standards provide buyers with some insurance against food scares and a due diligence defence. Third-party certification offers buyers direct access to written audit reports and/or their results. In contrast, certification by competent authorities (government inspection agencies) and their compliance-conformity evaluations are targeted at providing assurance to other public control authorities, not individual private sector buyers. Publicly available results might only be presented in the aggregate to give assurance that the overall system is functioning well.

The increasing vertical integration and complexity of supply chains in fish and seafood also stimulate the growth of private standards, as B2B tools used in the context of direct procurement contracts, which are starting to replace the traditional structure of "importer–wholesaler–retailer". Complex value chains – where raw materials are potentially sourced globally, processed in a second country and retailed in yet another – require sophisticated systems for ensuring traceability and guaranteeing that sanitary and hygiene standards are maintained at every stage of the value chain – from farm or boat to fork. These traceability and chain of custody systems are built into the frameworks included in most private standards schemes.

Private safety and quality standards related to fish and seafood apply to both wild capture and farmed fish post-harvest. A number of private standards schemes specific to aquaculture have also emerged in the past decade that cover the entire supply chain. Most aquaculture certification schemes include multiple standards criteria (safety, quality, animal health, environment, social) and are used to market farmed fish as a safe, sustainable and environmentally sound alternative to fish and seafood from dwindling marine capture stocks. As noted above, aquaculture now accounts for almost half (47 percent) of fish for food supply. Private standards are a mechanism for responding to concerns about aquaculture by offering guarantees related to quality, safety, environmental impacts, traceability, and transparency of production processes.

5.3 TYPES OF PRIVATE SAFETY AND QUALITY STANDARDS IN FISHERIES AND AQUACULTURE

There are many different private safety and quality standards applying to fisheries and aquaculture, including: private in-house standards (producers or processors manuals of standard operating procedures [SOPs]), buyer guidelines, collective private quality standards (codes of conduct or codes of practice) developed by local, regional or national producer/industry groups; NGO-driven schemes; and national and international FSMSs.

The following sections give an overview of the various types of standards, including illustrative examples. They are organized as follows:

- private in-house standards (guidelines) of large retail firms;
- collective private standards (codes of conduct) developed by local, regional or national producer/industry groups;
- NGO-driven schemes (mainly related to aquaculture); and
- national and international FSMSs.

5.4 PRIVATE IN-HOUSE BUYER GUIDELINES OF LARGE RETAIL FIRMS

Setting product and process specifications, and requiring suppliers to meet those specifications, is not a new phenomenon. Most large retailers, as well as large processors and catering firms, have developed their own detailed product and process specifications. Most take mandatory national (or EU in the case of European retailers) food safety regulations as a baseline and then build on other specifications in line with their in-house SOPs. These additional requirements are typically related to quality rather than food safety. Industry sources suggest that they are less likely to include more stringent safety-related criteria than required by national regulations, such as “use by” dates or more stringent requirements in terms of acceptable levels of pathogens (e.g. *Salmonella*) or contaminants (such as heavy metals). However, they usually include stringent SOPs or requirements for certification to an FSMS, which include detailed traceability and audit requirements and documentation.

Retailer product specifications are usually treated as confidential as they are considered commercially sensitive in what is a highly competitive market (World Bank, 2005a). However, the package of specifications is likely to include detailed:

- product specifications: organoleptic and/or sensory and/or taste, metrological (size, block, dimension, etc.), chemical and physical, bacteriological;
- packing and packaging, labelling requirements;
- delivery conditions (where, when, how much); and
- demands for information about the supplier company’s safety and sanitary management capacities: SOPs, safety and quality management process (including details on product controls), traceability and recall procedures.

These specifications are typically communicated to the next level down in the supply chain – to processors, brokers or importers, which subsequently translate those specifications to their suppliers.

The practice of buyers inspecting suppliers’ facilities, and auditing their food safety management systems, has occurred for decades in relation to processed (frozen, canned) fish products. Some retailers are now buying direct from aquaculture producers and, therefore, communicating specifications directly to them. Many have their own audit and inspection requirements. For example, Carrefour, the world’s second largest retailer, buys shrimp directly from farmers in Thailand, which involves sending their own inspectors to verify that products and farming practices meet their own standards.¹¹⁹ In the United States, Whole Foods Market¹²⁰ has developed its own standards for a range of farmed fish and seafood. The standards require that all documentation, records, farms, and processing plants be subject to annual inspection (both announced and unannounced spot inspections) by independent third-party auditors, selected by Whole Foods Market. Suppliers are required to meet the costs of those third-party audits.

However, most large retailers, commercial brand owners and foodservice industry firms prefer to align themselves to (and require suppliers to be certified to) private

¹¹⁹ V. Sowanapreecha, quoted in “Carrefour leading trend to buy shrimp direct from farmers”, IntraFish, 7 October 2008.

¹²⁰ www.wholefoodsmarket.com/products/aquaculture.php, accessed 30 November 2009.

standards schemes developed by other bodies, rather than to develop their own certification and verification schemes. Therefore, in addition to their firm-specific product and process specifications, firms might also require their suppliers to be certified to:

- For processed fish and seafood: a national or international FSMS, such as the British Retail Consortium (BRC), International Food Standard (IFS), Safe Quality Food (SQF) (all described below). For example, most large-scale British retailers require BRC certification as a standard requirement for doing business.¹²¹
- For aquaculture: to one or other of the schemes that merge quality and safety with environmental protection, animal health and even social development. For example, Wal-Mart has pledged to buy only farm-raised shrimp from sources certified by the Aquaculture Certification Council (ACC) (described below).¹²² Darden Restaurants, the largest casual dining restaurant company in the United States, also requires all its suppliers of aquacultured shrimp to be certified by the ACC.
- For wild capture fish and seafood: to an ecolabelling scheme (as described in Chapter 4).

Requiring suppliers to conform to the firm's own quality and safety standards and/or requiring certification to an FSMS offers assurances of quality, safety and traceability; in short, an insurance policy to protect the value of the firm and its brand.

Adherence to these and a range of other private standards (related to environmental protection, animal health and social development) usually forms part of firms' "corporate social responsibility" (CSR) strategies, which are marketed both to other businesses as well as to consumers, to enhance the firm's overall reputation.

Safety and quality requirements are supported by multilayered audit and inspection requirements. Independent private certification schemes are attractive to large-scale buyers – requiring third-party certification is cost effective as it can reduce the need for companies to carry out their own inspection and audit of suppliers.

However, large retailers and food firms may not be equally demanding of all their suppliers or product lines. The pressure on suppliers to conform to stringent private standards depends on the market and the type of product in question. For example, requirements are more stringent for private label and high-risk processed fish and seafood products than for basic commodity fish and seafood. This is discussed further below.

5.5 COLLECTIVE PRIVATE STANDARDS DEVELOPED BY REGIONAL OR NATIONAL PRODUCERS ORGANIZATIONS

Discussions about private standards usually centre on standards imposed by retailers or other food firms on suppliers further down the supply chain. However, some producers or groups of producers have also developed standards and/or schemes as self-imposed specifications or codes of conduct. These are typically B2B communication tools to reassure buyers of the safety and quality of products and production processes, and are often linked to the origins of the products, which are marketed as an indicator of superior quality.

In the past 15 years, seafood producers have also developed brands promoting safety and quality linked to the geographical origins of the product. The motivation is to:

- Establish quality criteria and good practices and diffuse them throughout the local industry (standards creation and implementation).

¹²¹ P. Hajipeiris, Director of Sustainability and International Relations, Birds Eye Iglo, personal communication, 2009.

¹²² P. Redmond, Vice-President, Wal-Mart, United States, in OECD/FAO, 2007.

- Promote those good practices as indicators of quality to buyers. Quality assurance is verified through inspection and certification.

Wild-seafood quality schemes have emerged usually at the local or regional level. They operate as B2B tools aimed at reassuring buyers of the quality of products. A few illustrative examples are given below.

5.5.1 Alaska Quality Seafood

Alaska Quality Seafood (AQS),¹²³ is a private, non-profit organization, based in Anchorage, Alaska, in the United States, focused on providing value-adding services to the Alaska seafood industry. It:

- provides specialized services certifying that best management practices (BMPs) are applied throughout the production chain, from fishers to processing plants, to ensure repeatable quality results for all grades of seafood. A final inspection covering 30 criteria is conducted or audited by third-party inspectors to ensure compliance before a quality seal (label) – “Certified Alaska Quality Seafood” – is attached to final products; and
- works with a certification body to deliver MSC ecolabel certification and auditing services to the Alaska-based industry.

Since 2000, the AQS’s affiliate base has included 10 seafood plants, 20 receiving stations and more than 200 fishers. Its voluntary board of directors includes expertise in quality food processing and handling standards, ISO 9000¹²⁴ management systems, economic development, seafood marketing, fisheries management, seafood harvesting, production and international food markets.

5.5.2 Integrated Management System (SIGES) – Salmon Chile

The SIGES standard was developed for the Chilean salmon producers association, Salmon Chile.¹²⁵ It is managed by the institute for salmon technology in Chile (INTESAL), and functions as a certifiable integrated management system, dealing with:

- food safety and quality management;
- environmental issues;
- fish health; and
- occupational safety.

It incorporates all relevant legislation, plus technical standards, and is based on international norms and standards including ISO 9001 and ISO 14001.¹²⁶ As of August 2008, 31 companies were participating in the SIGES, which accounts for 90 percent of the companies associated with Salmon Chile.¹²⁷ Wal-Mart requires that all its Chilean suppliers have SIGES certification.¹²⁸

5.5.3 The Scottish Salmon Producers’ Organisation (SSPO)

The SSPO¹²⁹ is the trade association for the Scottish salmon farming industry, whose membership accounts for 95 percent of the tonnage of Scottish salmon production. It has developed a Code of Good Practice for Scottish Finfish Aquaculture that includes more than 300 main compliance points covering: consumer assurance issues (traceability), animal health, environmental issues, and feed requirements (including the sustainability of sources of fish used as fish feed). The organization also offers

¹²³ www.alaskaqualityseafood.com, accessed 1 December 2009.

¹²⁴ ISO 9000 deals with quality management systems. See: www.iso.org.

¹²⁵ www.salmonchile.cl.

¹²⁶ ISO 14001 deals with environmental management systems. See: www.iso.org.

¹²⁷ FIS.com, accessed 26 January 2009.

¹²⁸ Food and Beverage online, www.21food.com, accessed 26 January 2009.

¹²⁹ www.scottishsalmon.co.uk.

access to certification schemes including Label Rouge (Scottish salmon was the first non-French product to gain the French public quality mark).

5.6 PUBLIC CERTIFICATION SCHEMES

The focus of this chapter is on private standards for safety and quality. However, it should be noted that a number of public certification schemes have also been developed. Label Rouge is a well-established French quality label (albeit not exclusively related to fish and seafood). Other examples – such as Thai Quality Shrimp – are described below in relation to governments' responses to demands for certified fish and seafood. Most relate to aquaculture.

5.7 NGO-DRIVEN STANDARDS AND CERTIFICATION – AQUACULTURE

Some NGOs have also been active in developing private standards and related certification schemes, specifically for farmed fish and seafood. These schemes have been borne out of a desire to improve the image of farmed fish and seafood as a safe and sustainable alternative to wild capture fish, and are aimed at improving practices generally throughout the industry, including reducing the negative environmental impacts. Most of the work to improve management practices has been carried out on salmon and shrimp, mainly owing to their high commodity value and importance as the most traded fish and seafood products (Box 14).

5.7.1 Aquaculture Certification Council (ACC)

The certification scheme developed by the Global Aquaculture Alliance (GAA) is one of the most significant aquaculture schemes in terms of volumes and global coverage. The GAA first developed a voluntary best practice programme for aquaculture producers. The Responsible Aquaculture Program included various guiding principles, codes of practice and best practice standards. Responding to industry calls for more formal recognition of these practices, it aligned with the Aquaculture Certification Council (ACC),¹³⁰ a non-governmental body based in the United States, to develop a certification of aquaculture production processes. The Global Aquaculture Alliance's Best Aquaculture Practices (BAPs) Standards are applied in a certification system that combines site inspections and effluent sampling with sanitary controls and traceability. Certified producers are entitled to use the "BAP certification mark"; a label attached to products from certified fish farms. Standards cover a range of considerations including: food safety, traceability, animal welfare, community and social welfare, and environmental sustainability. Both farms and processing facilities can be certified.

The ACC has accredited 113 independent inspectors and auditors from 30 countries. As of December 2009, the ACC had inspected more than 50 farms, certifying 38, and conducted seminars for various governmental and non-governmental organizations, as well as industry groups in 12 countries. It has also audited 88 aquaculture processing facilities, and certified 54 of them.

The ACC professes to work at arm's length from the GAA to maintain the "objectivity and credibility" of the certification process. It has also sought input from NGOs and other stakeholders to ensure its auditing and inspection requirements are "objective and transparent".

The importance of the ACC scheme was enhanced by Wal-Mart's announcement that it would only buy farm-raised shrimp from ACC-certified sources. Darden Restaurants also require its suppliers of aquacultured shrimp to be ACC certified.¹³¹ The seafood industry media recently commented that ACC "has had great momentum

¹³⁰ www.aquaculturecertification.org, accessed 1 December 2009.

¹³¹ R. Bing, Vice-President, Protein Procurements, Darden Restaurants, United States, in OECD/FAO, 2007.

in the farmed shrimp sector, with major buyers, growers and processors coming out in strong support of the standard”.¹³²

BOX 14

Aquaculture production and trade

In the last three decades, aquaculture has been the fastest-growing animal production system worldwide. The average yearly growth in volume in the aquaculture sector has been estimated at 8.5 percent in the period 1990–2005. Currently, aquaculture provides about 47 percent of fish for human consumption. This percentage is expected to reach 60 percent by 2020.

The accompanying table lists the 15 major aquaculture producing countries and the 15 most important aquaculture species traded internationally.

Aquaculture – main producers and main species traded internationally

Country/territory	Main producers (2008)		Main species traded internationally (2008)	
	Production (1 000 tonnes)	Species	Production (1 000 tonnes)	
China	32 736	Shrimp	3 450	
India	3 479	Tilapia	2 500	
Viet Nam	2 462	Salmon	1 540	
Indonesia	1 690	Pangasius	1 375	
Thailand	1 374	Channel catfish	350	
Bangladesh	1 006	Trout	320	
Norway	844	Seabream	160	
Chile	843	Seabass	150	
Philippines	741	Other flatfish	125	
Japan	732	Barramundi	45	
Egypt	694	Cobia	40	
Myanmar	675	Atlantic cod	23	
United States	500	Oysters	4 320	
Republic of Korea	474	Clams, cockles, arkshells	162	
Taiwan Province of China	324	Mussels	1 620	

This table shows clearly the importance of China and Southeast Asia, where more than 80 percent of aquaculture production takes place. The majority of the 15 major aquaculture producers are developing countries. While a major share of the production from these developing countries is exported mainly to Europe, the United States and Japan, a large proportion of the export comes from small-scale producers. For example, 55 percent of shrimp from India comes from small-scale farms. This percentage is 70–75 percent for shrimp and catfish from Thailand and Viet Nam, respectively.

In addition to aquaculture species such as shrimp and salmon that have been traditionally traded on the international markets, other species such as tilapia and Pangasius catfish have gained significant acceptance in international market. Likewise, the increasing demand for marine species such as seabass, seabream, Atlantic cod and shellfish is being increasingly met by aquaculture. As advances in aquaculture technology enable more domestication of marine species, the limiting factor remains the availability and sustainability of wild fish stocks for the production of fishmeal and especially fish oils.

¹³² “Who will win the certification showdown?”, www.intrafish.no, 30 January 2009.

The ACC has also expanded into finfish, with recent standards developed for tilapia and channel catfish. It claims certified volumes of product amounting to:¹³³

- shrimp – 139 000 tonnes (farm), 416 000 tonnes (plant);
- tilapia – 22 000 tonnes (farm), 100 000 tonnes (plant); and
- channel catfish – 16 000 tonnes (farm), 8 000 tonnes (plant).

The ACC announced an agreement to cooperate with GLOBALG.A.P (a certification scheme with strong support in Europe, discussed below) to develop and harmonize certification systems for the aquaculture sector worldwide. A “joint checklist approach” to farm audit would be designed to facilitate efficiencies at the farm audit level, and it is expected to benefit producers exporting to both the United States and Europe and related seafood buyers.¹³⁴

5.7.2 WWF “Aquaculture Dialogues” and the Aquaculture Stewardship Council

Following on from its involvement in the certification of sustainable forestry (Forestry Stewardship Council) and wild-capture fisheries (Marine Stewardship Council), the WWF has developed standards for aquaculture certification, with an emphasis on eliminating the negative environmental and social impacts of aquaculture. It has organized a range of round tables involving aquaculture producers, buyers, NGOs and other stakeholders in an attempt to develop standards for aquaculture certification. The goal of the Aquaculture Dialogues is to create standards for 12 aquaculture species by the end of 2010. As with the MSC, the standards will be handed over to an arms’-length, independent standards-holding entity.¹³⁵ The WWF recently announced the formation of the Aquaculture Stewardship Council, which will be responsible for hiring independent third-party auditors to certify the compliance of aquaculture farms with the Aquaculture Sub-committee (ASC) standards. Those standards will be finalized for 11 species (salmon, shrimp, pangasius, tilapia, abalone, clams, trout, oysters, scallops, mussels, *Seriola* and cobia) that the WWF says “have the greatest impact on the environment, highest market value and or the heaviest trading in the global market”.¹³⁶ As with the MSC, the ASC will also be aimed at consumers, giving them “assurance that their food purchases are good for the environment”, whereas its competitors in the aquaculture area are largely B2B schemes. The ASC is expected to be operational within the next two years.

5.7.3 Friend of the Sea¹³⁷

Friend of the Sea (FOS) was set up in 2006 and has origins in the Earth Island Institute. It covers both wild capture and farmed fish and seafood with an environmental focus. Its “criteria for sustainable aquaculture” require, *inter alia*, that:

- an environmental impact assessment or equivalent be run before the development of a farm;
- the farm is not impacting critical habitats, such as mangroves, wetlands, etc;
- procedures are in place to limit escapes of fish to a negligible level;
- there is no use of genetically modified organisms and growth hormones;
- there is no use of antifouling paints;
- waste, water, feed and energy management are in place; and
- only FOS certified feed is used (where available).¹³⁸

¹³³ D. Lee, GAA, presentation to IAFI World Seafood Congress, Morocco, October 2009.

¹³⁴ “GAA, GlobalGap join forces on aquaculture certification”, www.intrafish.no, 1 February 2009.

¹³⁵ www.worldwildlife.org/what/globalmarkets/aquaculture/whatwearedoing.html.

¹³⁶ “WWF unveils Aquaculture Stewardship Council”, www.intrafish.no, 27 January 2009.

¹³⁷ www.friendofthesea.org, accessed 1 December 2009.

¹³⁸ Certified FOS feed ranges for seabream, seabass and trout became available in late 2009.

The FOS criteria for sustainable fisheries and aquaculture also include recommendations on carbon footprint reduction and offset (20 percent per year) and “social accountability”. However, they do not include criteria for food safety and quality. Friend of the Sea has certified about 30 aquaculture facilities. It claims to have certified 500 000 tonnes of farmed products.

5.7.4 Organic aquaculture

Other niche markets, such as organic aquaculture, are also being developed. Sometimes, certification for fish and seafood products are linked to existing certification schemes for agricultural products. For example, the United Kingdom Soil Association and the New Zealand organics certifier BioGro have added aquaculture to their schemes. There are about 20–25 certifying bodies for organic aquaculture products. For example, Naturland,¹³⁹ based in Germany but operating internationally, certifies organic farmed seafood. It is said to be widely accepted in both the United States and in Europe, although some European buyers also insist on certification by local organic organizations (such as Bio Suisse in Switzerland and the Soil Association in the United Kingdom).¹⁴⁰ However, organic aquaculture accounts for very small volumes of production – only about 1 percent of overall aquaculture production.

5.7.5 Food safety management schemes (FSMSs)

Until the mid- to late 1990s, retailers typically had their own product and process specifications as well as associated verification criteria or audit schemes. As a result, a supplier often had to pass several different audits, one for each of its customers. Collaborative certification schemes, often designed for coalitions of retailers, were created to reduce the cost for certification and improve efficiency throughout the food chain. Most were designed for food generally but are now increasingly applied to fish and seafood products. These are arguably the most important schemes in terms of the impacts of private standards on the food industry generally – they represent comprehensive food safety management systems and are internationally significant.

5.7.6 Operationalizing HACCP

In terms of food safety, most FSMSs have at their core a requirement for HACCP. The HACCP system is an internationally recognized system for risk analysis in the handling of foods (see Box 15), and is widely used by the seafood industry worldwide. It has become a mandatory requirement for exporting to the major markets in developed countries. However, HACCP is a method and the quality of its implementation varies significantly. Several FSMSs have been developed specifically to operationalize and verify the implementation of HACCP.

5.7.7 The Netherlands HACCP, or CCvD HACCP

In 1996, a group of certification bodies in the Netherlands developed a standard for food safety management, “The Requirements for an HACCP based Food Safety System”. The first version of this standard was published on 15 May 1996 by the National Board of Experts HACCP, a group of experts on food safety representing all parties in the Netherlands food chain. Commonly called the Netherlands HACCP, or CCvD-HACCP, it is based on the Codex Alimentarius. The latest version contains all the relevant elements of ISO 22000 (described below), and is accompanied by an HACCP certification programme, which is well recognized in the seafood industry.

¹³⁹ www.naturland.de.

¹⁴⁰ “Taking the organic route”, Seafood International, October 2008, p. 48.

BOX 15
The HACCP system

The Hazard Analysis and Critical Control Point (HACCP) system is a science-based preventive system for food safety and quality assurance. The HACCP system consists of seven principles:

- identification of all potential hazards and their control measures (CMs);
- determination of critical control points (CCPs) where the identified CMs should be applied to prevent the identified hazards;
- establishment of the critical limits for each CM at each CCP;
- establishment of a monitoring system to ensure proper implementation of the CM at each CCP;
- establishment of the corrective actions to undertake when monitoring reveals that a particular CCP is not under control;
- establishment of verification procedures to confirm that the HACCP system is working effectively; and
- establishment of documentation concerning all procedures and records appropriate to these principles and to their application.

Credit for the development of the HACCP system is traditionally given to the 1971 United States Food Protection Conference, with the first industry application by the Pillsbury Company in the 1960s for astronaut feeding during the inception of the National Aeronautics Space Association (NASA) manned space programme. The basic concepts of the HACCP system are however found in the hazard opportunity studies (HAZOPs), which have been used by the chemical and engineering industries for hazard controls since the mid-1930s.

Following introduction of the HACCP system, the food canning industry and the United States Food and Drug Administration quickly adopted the preventive controls and the documentation aspects of the HACCP system. Other segments of the food industry voluntarily and gradually introduced the HACCP system, or elements of it, into their food safety and quality assurance programmes. However, it was not until the mid-1980s that the HACCP system became a major focus of regulatory agencies and industry, mainly in the United States, but also in Europe, Canada, New Zealand and Australia. It was clearly established that the HACCP system had to be an industry-driven programme, with regulatory and control agencies being in charge of certifying the food facilities and conducting on-site verification of proper HACCP implementation.

Since then, the HACCP system has been in a constant state of evolution. Implementation by the food industry has been slow and at times painful – it is a process that is still in progress. Application guidelines, prerequisite programmes, decision trees and training programmes have been developed and implemented. Coalitions of industries, such as the United States Seafood HACCP Alliance, have been formed to train and certify HACCP trainers, develop hazard analysis and generic HACCP plans. At the international level, the Codex Alimentarius Commission has adopted guidelines for the application of the HACCP system in food production and processing. Based on this, the Codex Committee on Fish and Fishery Products has developed a specific code of practice on how to adapt HACCP principles in fisheries and aquaculture.

Currently, most national food safety regulatory agencies and international institutions have adopted regulations, guidelines and procedures for the development and implementation of HACCP plans by industry. However, now that the HACCP system has become the food safety regulatory system of choice, policy issues rather than science are likely to shape its evolution in the future.

5.7.8 Danish HACCP

The Danish Standards Association, Denmark's national standardization body, has also developed a certification model – the DS 3027 HACCP certification (called the Danish HACCP) – to enable food producers to verify their effective implementation of the HACCP method.

5.7.9 British Retail Consortium Global Standards

In 1996, United Kingdom retailers realized that on the issue of food safety, there were many advantages to sharing experience and developing robust systems together. The development of the BRC Global Standards¹⁴¹ was initially driven by the need to meet legislative requirements of the EU General Product Safety Directive and the United Kingdom Food Safety Act, that is, for retailers and brand owners to use in their “due diligence” defence should they be involved in a safety failure. It was soon seen as having significant benefits to the suppliers of product to the United Kingdom retailers and, subsequently, European and global retailers.

The first issue of the BRC Global Standard – Food was published in 1998. It is regarded as a benchmark for best practice in the food industry. It is a food safety and quality management protocol including:

- implementation of an HACCP system;
- a quality management system;
- factory environmental standards;
- product control;
- process controls; and
- personnel requirements.

It has evolved into a global standard (called the Global Standard for Food Safety – Issue 5)¹⁴² and is used not just to assess retailers' suppliers, but as a framework upon which many companies have based their supplier assessment programmes and the manufacture of some branded products.

Suppliers to firms under the BRC umbrella must undergo an evaluation by a BRC-certified auditor. As overseas suppliers see the benefits of accreditation to the BRC, the number of licensed certification bodies has grown. There is currently a network of more than 80 accredited and BRC-recognized certification bodies around the world. The BRC is developing a database that will allow retailers to check the accreditation of any of the more than 13 000 suppliers in 90 countries certified to the BRC Global Standards. The BRC's claim that “the majority of United Kingdom, and many European and Global retailers, and brand owners will only consider business with suppliers who have gained certification to the appropriate BRC Global Standard”¹⁴³ was confirmed by industry sources consulted for this technical paper, especially in relation to the United Kingdom. In the United Kingdom, BRC members (including Tesco, Marks and Spencer, and Sainsbury's) account for about 90 percent of retail trade.

5.7.10 International Food Standard

In 2002, German food retailers from the Hauptverband des Deutschen Einzelhandels developed a common audit standard on food safety called the International Food Standard (IFS).¹⁴⁴ It was designed *inter alia* to bring transparency to the supply chain. In 2003, French food retailers and wholesalers from the Fédération des entreprises du Commerce et de la Distribution joined the IFS Working Group. The IFS operates as a uniform tool to ensure food safety and to monitor the quality level of producers of

¹⁴¹ See www.brc.co.uk.

¹⁴² Issue 5 has some 326 clauses, expanded from 270 in Issue 4, including those related to increased clarity and guidance to auditors assessing food safety plans.

¹⁴³ www.brc.org.uk/standards, accessed 22 January 2009.

¹⁴⁴ www.ifs-online.eu.

retailer-branded food products. The standard can apply for all steps of the processing of foods following primary production. The standard includes:

- HACCP;
- management systems (quality, responsibilities, resources);
- traceability; and
- corrective action plans.

The IFS reports association with a range of retailers and wholesalers, mainly in Europe, including: Metro Group, Edeka, Rewe Group, Aldi, Lidl, Auchan, Carrefour Group, EMC – Groupe Casino, Leclerc, Monoprix, Picard Surgelés, Provera (Cora and Supermarchés Match), Wal-Mart, Système U, COOP, CONAD and Unes. Its Web site notes that “Nine of the ten biggest European food retailers use the IFS as their food safety standard.”¹⁴⁵ Registered retailers, certification bodies and certified suppliers have access to a database of IFS audit reports and certification information.

5.7.11 Safe Quality Food

In 1995, the Western Australia Department of Agriculture developed The Safe Quality Food (SQF) Programme for the purpose of verifying the safety of food exported to other countries, particularly to the United States. The programme was modelled after ISO 9000 standards. In 2003, the FMI, based in Washington DC, purchased the SQF programme. The FMI is a non-profit association conducting programmes in research, education, food safety, industry relations and public affairs. It has some 2 300 members, including food retailers and wholesalers, covering about three-quarters of retail sales in the United States. International membership includes companies from 50 countries.

Currently, there are two SQF codes: SQF 1000 for farmers and producers; and SQF 2000 for food manufacturers and distributors. The two codes are based on HACCP principles, Codex, ISO and quality management systems.

Safe Quality Food provides “independent certification that a supplier’s food safety and quality management system complies with international and domestic food safety regulations. This enables suppliers to assure their customers that food has been produced, processed, prepared and handled according to the highest possible standards, at all levels of the supply chain”.

The SQF programme has been implemented by more than 5 000 companies operating in Asia-Pacific, Europe, the Near East, South America and the United States.¹⁴⁶

5.7.12 GLOBALG.A.P.¹⁴⁷

EurepGap was developed in 1997 by the Euro-Retailer Produce Working Group (Eurep), a private sector body driven by a group of British and European retailers. In late 2007, it changed its name to GLOBALG.A.P to reflect its more international focus. EurepGap was initially designed as a standard for good agricultural practices. Its food safety criteria are based on the HACCP system.

Originally applying to fruits and vegetables, EurepGap was later extended, including to fish farming practices. It was the first to develop an Integrated Aquaculture Assurance Standard (in late 2004). In addition to the general code of practice, specific criteria have also been developed for salmonids, tropical shrimp, pangasius and tilapia. Its Integrated Farm Assurance Standard includes an overall base of requirements for all farms and a specific rubric of standards for crops, livestock and aquaculture.

GLOBALG.A.P has 100 independent and accredited certification bodies in more than 80 countries. Notably, it also allows other schemes to be benchmarked against it. Moreover, in June 2009, it announced a “voluntary add-on module to its existing food

¹⁴⁵ www.food-care.info, 22 January 2009.

¹⁴⁶ www.sqfi.com, accessed 2 December 2009.

¹⁴⁷ See www.globalgap.org, accessed 2 December 2009.

safety, environmental and social requirements with the metrics-based environmental and social standards”¹⁴⁸ under development by the WWF Aquaculture Dialogues (described above). It is of particular interest in developing countries because it allows certification at the level of the cooperative (rather than a separate certification for each operator). GLOBALG.A.P has strong support in the retail sector in Europe¹⁴⁹ and elsewhere, including the Netherlands giant Royal Ahold, Carrefour, Tesco, Wegmans (United States), Aldi (Germany) and Asda (United Kingdom arm of Wal-Mart). GLOBALG.A.P-certified products are automatically given the “green light” on the United Kingdom retailer Sainsbury’s “traffic light” procurement decision tree¹⁵⁰ (which includes safety and sustainability criteria).

5.8 THE NEED FOR HARMONIZATION

As noted above, GLOBALG.A.P and the ACC have reached agreement to cooperate through a “joint checklist approach”, which according to GLOBALG.A.P “is a way to harmonize existing standards, create robust and accredited programs, and avoid costly and confusing duplication of efforts for producers”.¹⁵¹ Indeed, industry sources suggest that rivalry between schemes – particularly related to aquaculture – has created confusion in the market, with producers not sure as to which scheme, if any, to sign up to: “There is a disturbing level of over criticism by rival standards setting bodies of each others’ efforts – WWF has been particularly outspoken”.¹⁵²

GLOBALG.A.P’s add-on module based on WWF Aquaculture Dialogues might help to encourage further cooperation rather than competition.

In terms of food safety generally (not exclusive to, but including fish and seafood products), other attempts at reducing the confusion around the proliferation of private standards and to seek some harmonization or international norms have occurred – the first driven by an international coalition of retailers, the other in the context of the ISO.

5.8.1 Global Food Safety Initiative

In April 2000, chief executive officers (CEOs) from a range of international retail firms identified the need to enhance global food safety, including by setting requirements for food safety schemes. They were concerned that retailers were having to deal with a multitude of certificates issued against various standards in order to assess whether the suppliers of their private label products and fresh products had carried out production in a safe manner. They noted that their suppliers were being audited many times a year, at significant cost and with what they perceived to be little added benefit. The Global Food Safety Initiative (GFSI)¹⁵³ was developed as an attempt to improve cost-efficiency throughout the food supply chain.

The GFSI’s main objective is to implement and maintain a scheme to recognize food safety management standards worldwide, including by:

- facilitating mutual recognition between standard owners; and
- working towards worldwide integrity and quality in the certification of standards and the accreditation of certifying bodies.

The GFSI does not undertake any certification or accreditation activities. Instead, it encourages the use of third-party audits against benchmarked standards. The overall vision is to achieve a simple set of rules for standards, harmony between countries, and cost-efficiency for suppliers by reducing the number of required audits.

¹⁴⁸ www.globalgap.org/cms/front_content.php?idart=883.

¹⁴⁹ “Who will win the certification showdown?”, www.intrafish.no, 30 January 2009.

¹⁵⁰ “Firm Commitment”, Seafood International, September 2008, p. 14.

¹⁵¹ GLOBALG.A.P Secretary K. Moeller, quoted in “GAA, GlobalGap join forces on aquaculture certification”, www.intrafish.no, 1 February 2009.

¹⁵² A. MacFarlane, NZ Seafood Industry Council, personal communication, 2009.

¹⁵³ www.ciesnet.com.

A guidance document lists key requirements against which food safety management standards can be benchmarked. Those requirements include three key elements:

- food safety management systems;
- good practices for agriculture, manufacturing or distribution; and
- the HACCP system.

Notably, the application of the benchmarked standards to particular products is at the discretion of retailers and suppliers. This process will vary in different parts of the world, depending on:

- company policies;
- general regulatory requirements; and
- product liability and due diligence regulations.

A number of relevant standards have been benchmarked as compliant with the GFSI, including:¹⁵⁴

- BRC Technical Standard (Version 5);
- IFS (Version 5);
- The Netherlands HACCP;
- SQF 2000 Code level two (manufacturing), SQF 1000 level two (primary production);
- GAA BAP (GAA seafood processing standard); and
- GLOBALG.A.P IFA Scheme Version 3 (Aquaculture Version 1.02–March 2010).

The board of the GFSI is its main governing body. It is responsible for policy-making and overall decisions. The board is made up of representatives from the largest retail and wholesale food companies in the world, namely: Royal Ahold, Carrefour, Delhaize, Metro, Migros, Tesco and Wal-Mart. The board is supported by a task force, which acts as a consultation body. Overall, the coalition accounts for more than 70 percent of food retail sales worldwide.

The GFSI is an important development in that it is an attempt to reduce the transaction costs associated with retailers and their suppliers having to apply a multitude of different standards. Suppliers to European retailers report needing BRC certification for the United Kingdom market and IFS certification for the French and German markets. In theory, having a standard benchmarked against the GFSI should mean that there is some form of mutual recognition or equivalence.

All the schemes benchmarked to the GFSI require traceability systems and monitoring as well as auditing in line with Codex and the HACCP system. In practice, differences remain in terms of the specific requirements of schemes and their related certification and audit processes. Indeed, in a survey conducted by the OECD (OECD, 2006), retailers that were members of the GFSI reported that they not only used GFSI benchmarked standards, but often a combination of them. Moreover, they also often add on firm-specific standards. This is especially the case with owners of private label and brand name products. Many retailers remain members of several schemes. Carrefour, for example, is a member of the GFSI, the IFS, and it is also a member of the FMI, which owns SQF. The United Kingdom's Tesco is a member of SQF, the BRC and the GFSI. Work has also been undertaken by the GFSI on differences and similarities with ISO 22000 (described below).

¹⁵⁴ www.mygfsi.com/about-gfsi/gfsi-recognized-schemes.html.

BOX 16

ISO Technical Committee ISO/TC 234, Fisheries and Aquaculture

In 2007, the International Organization for Standardization (ISO) established Technical Committee ISO/TC 234, Fisheries and Aquaculture. The work the ISO/TC 234 focuses on areas where:

- performance can be assessed against specified benchmarks (e.g. under global sustainability market certification regimes);
- actors in the sector can learn from one another's experience, develop best practice, efficiently exchange knowledge and utilize international expertise in the field;
- food business operators can reduce workloads by avoiding conflicting documentation requirements and re-using data;
- electronic data interchange and automatic translation of product and process parameters can be enabled;
- there are global markets for equipment and technology, and sufficient similarity in operating conditions to warrant establishing minimum design, testing or performance standards;
- there is a desire for international transparency in import requirements used by various countries, in order to support fair trade; and
- comparability of data can be promoted.

The ISO/TC 234's activities in fisheries and aquaculture include the creation of:

- Working groups:
 - traceability of fish products,
 - environmental monitoring of seabed impacts from marine finfish farms,
 - aquaculture technology,
 - food safety for aquaculture farms,
 - methodology for sea lice counts, and
 - calculation of "fish-in, fish-out" (FIFO) and feed conversion ratios (FCRs)
- Advisory group:
 - Aquaculture advisory group.

The GFSI has announced that its "vision of 'once certified, accepted everywhere' has become a reality".¹⁵⁵ Carrefour, Tesco, Metro, Migros, Ahold, Wal-Mart and Delhaize have all agreed to reduce duplication in supply chains through the common acceptance of any of the GFSI-benchmarked schemes. Impacts on suppliers will need to be monitored. While experts have yet to reach on a consensus on whether the GFSI has reduced the proliferation of private standards, it has clearly increased awareness of global food safety issues and facilitated cooperation between international retailers.

5.8.2 International Standards Organization – ISO 22000 (ISO, 2005)

In addition to the adoption of private standards, many food companies and retailers have also adopted international voluntary standards developed in the context of the ISO. The ISO (Box 16) is a network of national standards bodies, based in Geneva, Switzerland. It is an NGO that is the product of collaboration between public and private sector bodies. Its members include national standardization bodies as well as industry associations. Despite this public/private mix, the WTO recognizes the ISO as providing internationally recognized standards. As international standards, these allow some assurance of safety and quality across national borders. In late 1980s, the ISO developed the ISO 9000 series for quality management in all sectors. Although

¹⁵⁵ www.ciesnet.com/2-wwedo/2.2-programmes/2.2.foodsafety.gfsi.asp. Accessed 2 December 2009.

ISO 9000 helped food companies to improve the organizational and operational aspects of quality management, it lacked food safety specifics, especially reference to HACCP requirements. Subsequently, ISO 22000 was developed in 2005, building on previous food-safety-related standards, as an attempt to establish one internationally recognized standard for food safety management systems. To date, however, it sits alongside the range of other private and public schemes.

There has been some collaboration between the ISO and the GFSI. For example, the ISO participates in the GFSI Technical Committee. A comparison conducted by the GFSI of the GFSI Guidance Document and ISO 22000¹⁵⁶ showed strong similarities. However, different approaches to accreditation and differences in ownership – retailer-driven GFSI versus the diverse public/private ISO 22000 membership – were cited as the stumbling blocks to formal recognition by the GFSI of ISO 22000. It was thought that retailer-driven GFSI-benchmarked schemes had a “specific reactivity” and could implement changes agreed in the GFSI, whereas the decision-making structures of the ISO were thought to be less conducive to “timely and efficient” adjustments in the light of changes in market conditions and demand.

5.9 CALLS FOR INTERNATIONAL GUIDANCE

The preceding descriptions attest to the multitude of different food safety management systems and related private standards that have emerged over the past decade and a half, and which are increasingly being applied to fish and seafood either at the post-harvest level (food safety schemes) or throughout the supply chain (aquaculture-specific standards). Despite attempts at harmonization, there is little evidence to date to suggest that retailers are prepared to give up their own mix of specifications and requirements for certification. Instead, it appears that global schemes sit over national collaborative schemes, which individual retailers sign up to and then add on their own individual product and process specifications (related to safety and quality as well as other aspects of their CSR policies). This is perhaps the clearest evidence that private standards are not only designed to provide guarantees against food safety failures, they are also tools for differentiating retailers and their products.

The work of the GFSI and the development of ISO 22000, and the specific cooperation between GLOBALG.A.P and the ACC in aquaculture, are indicators of the need for some harmonization of private standards. International organizations have been asked to play a role in this context. Discussions on private standards generally have been held in the context of the WTO. These are described below in a discussion of the impacts of private standards on international trade. The OECD has carried out a number of studies on private standards, albeit concentrating on agricultural products and excluding fish and seafood (OECD, 2006). FAO has been asked by its Member Countries, in the context of the COFI, to help clarify and resolve some of the challenges related to private standards as they apply to fish and seafood. Discussions have been had in the context of two COFI sub-committees – on aquaculture, and on fish trade (described in Chapter 4 in relation to ecolabels).

5.9.1 FAO Sub-Committee on Aquaculture

While recognizing the value of better management practices (BMP) and of certification for consumer confidence in the safety of aquaculture practices and products, the Sub-Committee on Aquaculture became aware of the disquiet associated with private certification schemes. The Sub-Committee noted that the emergence of a wide range of standards, certification schemes and accreditation bodies was causing some confusion among the various actors in the supply chain, but particularly among producers. The potential increased costs to producers wanting to participate in those schemes,

¹⁵⁶ “What is ISO 22000?”, www.ciesnet.com.

in particular small-scale producers, was an additional concern. The Sub-Committee subsequently requested that FAO play a lead role in the development of national and regional aquaculture standards. It highlighted a need for more globally accepted norms for aquaculture production, which would serve as a basis for improved harmonization, or mutual recognition, of the various certification schemes.

Since 2006, FAO has organized six consultative workshops in Asia, Europe, North America and South America to develop draft guidelines for aquaculture certification. A precedent had been set in the development of guidelines on ecolabelling – the 2005 FAO Guidelines for the Ecolabelling of Fish and Fisheries Products from Marine Capture Fisheries (described in Chapter 4) – which were similarly aimed at mitigating the confusion around the potential proliferation of private standards and certification by setting out: general principles and definitions, minimum substantive requirement and criteria, and the procedural and institutional aspects any certification scheme should include.

Draft guidelines on aquaculture certification were submitted to the FAO Sub-Committee on Aquaculture in October 2008. The Sub-Committee called for a further process of consultation. Sticking points included the lack of agreement over, *inter alia*, the inclusion of criteria such as economic and social development in definitions of “sustainability”, for which there was no consensus.

Subsequently, a Technical Consultation was held in February 2010 in Rome, Italy, to advance consensus significantly on the guidelines for certification in aquaculture. Consensus was reached on most provisions, except for two sticking points, which were discussed further at the fifth session of the FAO Sub-Committee on Aquaculture in September 2010 in Thailand, where the guidelines were finally approved by consensus.

5.10 MARKET IMPORTANCE OF PRIVATE STANDARDS

There is little empirical evidence of the market significance of fish and seafood certified to private safety and/or quality standards or to a specific aquaculture certification scheme. However, it appears that the pressure on producers (fish farmers) and processors (of both wild capture and farmed fish) to comply with private standards depends on the market, how that market is structured, and on the type of product being sold.

To take the European market as an example, all seafood entering the EU must comply with mandatory EU food safety and quality regulations. However, within that market, there are regional differences that have implications for the pressure to comply also with private standards. The pressure is more intense in northern Europe, and especially in the United Kingdom and Germany where a higher proportion of fish and seafood is sold in supermarkets, and where there is a greater predominance of processed and value-added products, as well as more private label products. These characteristics seem to drive the pressure for suppliers to comply with and be certified to an FSMS. There is less evidence on other markets, but in the case of private standards (for safety and quality as well as ecolabels), it could be argued that the European market, and in particular the United Kingdom, often acts as a harbinger for other markets. In terms of requirements for certified aquaculture, the United States market is also important.

5.10.1 Large retailers – stringent demands

Large supermarket chains are the most demanding in terms of private standards. In an increasingly competitive market, large food companies search for ways to distinguish their products, brands or firm from competitors. As the link between the rest of the supply chain and consumers, they are under pressure to respond to consumer expectations for safe, quality food, to show due diligence in terms of food safety assurance, and increasingly to present their CSR credentials. Private standards play an

important role in all of these aspects and subsequently provide opportunities to both protect (risk management) and enhance reputation.

While there were traditionally fewer retailer guidelines for fish than for fresh fruit and vegetables, this is changing as supermarkets attempt to increase their fish sales potential. To take advantage of the positive image of the health benefits of fish and to develop the concept of the “one-stop shop”, retailers are expanding the fish sections in their shops. They are also trying to offer a greater range of fish products, including pre-prepared, ready-to-serve meals. Moreover, as noted above, fish products are increasingly being sold under retailers own-brand or private labels. The larger the chain, the more economically attractive it is to invest in private label products (FAO, 2008). Suppliers are required to provide levels of information and compliance – from basic information to detailed questionnaires to certification to an FSMS – depending on the product and the form in which it will be sold.

5.10.2 Private labels

Supermarket chains impose relatively stricter standards on their private label products, whether they are fresh, frozen or canned. Private labels operate as a market differentiator helping to build up a retailer’s reputation *vis-à-vis* other retailers, as well as allowing retailers to compete with large commercial “brands”. This trend towards private labels is likely to continue. Research by AC Nielsen suggests that: “Private label products, especially in refrigerated foods continue to steadily increase their share of the global marketplace, eating into processors’ brands”.¹⁵⁷ Interviews conducted for this technical paper indicated that safety and quality requirements were significantly more stringent for private label or house brand fish and seafood products:

- “The fact that the product is safe to eat and correctly labeled may be good enough for ‘commodity’ product, but branded consumer producers are generally more concerned with identifying indicators that enable them to control consistency of product and maintain consumer experience. So they need to specify attributes in buying specifications.”¹⁵⁸
- “We supply private label and non private label seafood from Thailand, Viet Nam and China to our customers. IFS certification is highly recommended (not strictly required) by our French customers for their private label line; they are far less demanding for the other segments.”¹⁵⁹

It should be noted, however, that while steadily increasing, the proportion of fish and seafood sold under private labels is still fairly limited in terms of volume.

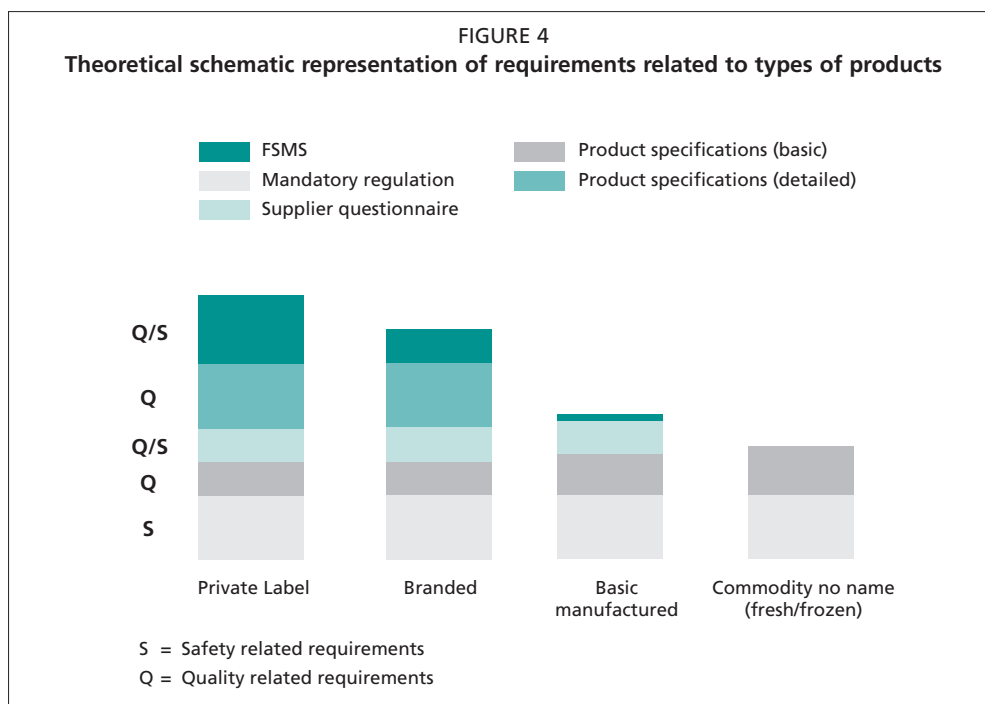
5.10.3 Product type – processed products

Branded products in supermarkets, including house brands, are more likely to be found in the freezer case rather than as chilled products (OECD/FAO, 2007, p. 21). Again, proportions vary between markets, appearing higher in northern Europe and lower in southern Europe, differences that seem linked to the type of products preferred by consumers in those markets. For example, whole fish remains standard fare for people in southern Europe (overall the largest European seafood consumers) while people in northern Europe prefer frozen and breaded fillets and portion-sized items. Less than 10 percent of the seafood market in Germany is fresh fish, while 40 percent is frozen. Germany and the United Kingdom are the largest markets for breaded and battered seafood products (Seafood Choices Alliance, April 2007).

¹⁵⁷ Foodnavigator-usa.com, 28 September 2005.

¹⁵⁸ A. MacFarlane, NZ Seafood Industry Council, personal communication, October 2008.

¹⁵⁹ French seafood importer, personal communication, 2007.



Source: FAO (2009b).

The intensity of the pressure to meet above-the-legal-requirements, including by certification to an FSMS, varies greatly by market, by market segment (product type), and according to the importance of the segment for seafood items that carry a “name” linking products directly to a brand owner or supermarket chain.

Figure 4 shows the relative levels of compliance required depending on the type of product and level of processing.

5.10.4 Procurement strategies and supply chains

In terms of procurement, food retailers’ buying strategies also differ around the world. “In Europe supermarkets are increasingly contracting directly with processors for supply and may also secure wet fish from wholesale markets. In the United States supermarkets use the services of brokers. In Asia and Australia there is a mix of buying from auction and contracting for supplies” (OECD/FAO, 2007, p. 21). Recently, supply relationships have tended towards more direct contracts. The more direct the supply relationship and the more integrated the supply chain, the more private standards are likely to enter the equation. Where retailers contract directly with producers or processors, they are able to impose more controls, including product and process standards.

The characteristics of supply chains also seem to have an impact on the relative importance of private standards. A World Bank study found that differences in the organizational structures of supply chains result in differences in the implementation of food safety and quality control systems (World Bank, 2005a). In general, there is a lack of vertical integration in fish supply chains compared with other sectors of the global food industry. While there might be integration from the retail sector into the processing sector, this rarely extends into the catch sector. There is relatively more integration in aquaculture, where there is scope to produce to specification. Three separate supply chains for fish and seafood products have been identified: (i) vertically integrated supply chains; (ii) collaborative supply chains; and (iii) fragmented supply chains. These are discussed further below in relation to the interface between developing

country producers and processors and private standards. However, the scant evidence that exists suggests that private standards are more significant in vertically integrated supply chains.

5.10.5 Conclusions

The pressure to comply with private food safety and quality standards therefore depends on the market (related to the regional differences described above), on the procurement strategy (direct contracts) and the type of product the fish or seafood is destined to become (highly processed, private label, brand), and it therefore affects:

- Products for sale in supermarkets that have built up a strong brand policy, and whose products, whether they are private labelled or not, carry the image of the retail shop; this is the case for retail chains such as Waitrose, Marks and Spencer, and Tesco in the United Kingdom, Carrefour in France and other European markets, Wal-Mart in the United States and elsewhere. Consequently, these chains have set up very tight quality policies and engage in direct supply relationships.
- Products supplied to the segment of the processing industry selling branded products e.g. companies such as Food Vest (Young's and Findus brands) and Bird's Eye Iglo (the number one frozen food company in Europe).

In terms of pressure to comply with private quality and/or safety standards, processors can be affected whether they are dealing with wild capture or farmed fish and seafood. In contrast, producers are affected relative to the sector, with fish farmers being under potential pressure to comply with an FSMS or specific aquaculture certification scheme, and wild capture fishers largely unaffected.

5.11 PRESSURE ON DEVELOPING COUNTRIES TO MEET PRIVATE STANDARDS

As noted in earlier chapters, developing countries represent about half of world exports of fish and fishery products by value and about 60 percent in terms of quantity (FAO, 2009a). Developing countries have expressed concerns, for example in the context of the WTO, that private standards could pose a barrier to their access to lucrative developed country markets.

Research on the implications of private standards and retailer procurement strategies on developing country producers and processors is fairly limited. However, it appears that, with the exception of aquacultured shrimp, developing countries have so far had relatively little exposure to the pressure to comply with private standards. This is due to three key factors:

- They supply proportionately smaller volumes into markets where private standards are most prevalent.
- They supply non-processed, or minimally processed, fish and seafood, while private standards apply mainly to processed value-added products for brands or private labels.
- They tend to operate in supply chains with low levels of integration and, therefore, a limited direct interface with retailers and private standards schemes.

5.11.1 Export markets for developing country fish and seafood

The markets that are most demanding in terms of private standards are the markets where imports from developing countries are lowest. For example, the percentage of European imports from developing countries that end up in Germany and the United Kingdom, where private labels and private standards are more dominant, is relatively low. These markets tend to prefer North Atlantic and North Pacific species to tropical species from developing countries (again, with the notable exception of shrimp, catfish and species typically sold as canned products – tuna, sardines etc.).

5.11.2 Relative absence of value-added products

An FAO study of developing country products on sale in supermarkets in France and Italy found that: “One of the striking features is the absence of prepared seafood in the developing country range” (FAO, 2008). The study estimated that processed products from developing countries accounted for less than 10 percent of retail sales of processed fish and seafood in those markets. Fish and seafood from developing countries tend to be imported as frozen whole fish or fillets: “most fresh fishery products exported from developing countries undergo minimal (if any) value addition at the developed country level” (OECD/FAO, 2007, p. 287). These products demand few requirements above those mandated by public regulation. A large proportion of value-added seafood products on sale in Europe, with the exception of canned fish (tuna, anchovies, sardines), has been processed in factories located in Europe (or some other third country). This is where the responsibility for complying with private standards would fall.

5.11.3 The impact of different supply chains

As noted above, differences in supply chain structures result in differences in the implementation of food safety and quality control systems and exposure to pressure to comply with private standards. Three types of supply chains are discussed below in relation to developing countries.

5.11.3.1 Vertically integrated supply chains

“In the vertically integrated supply chain, the chain activities of fish farming, processing and transportation to the European wholesaler/retailer are fully under the control of one transnational company (in most case of Western origin)” (World Bank, 2005a). Large retailers or processors typically source fishery products from developing countries through “wholly or partly owned processing facilities in these countries or through contracts with independent firms in the developing countries” (FAO, 2008). Under this scenario, information about safety and product specifications flows down to producers, sometimes via representatives of the company based in the producer country. Producers are therefore linked into the production process and are supported in their activities, including with compliance to private safety and quality standards.

This would be the minority scenario for most developing country producers and processors. While acknowledging the limited evidence of its own inquiry, an FAO study concluded that: “developing countries have yet to exploit the benefits from value addition gains associated with product certification” (FAO, 2008). Even in Asia, where certification is more prevalent compared with other areas (especially in relation to the growing aquaculture industry), certified farms tend to be those closely associated with, if not owned by, companies from developed importing countries. For example, an FAO study in Asia-Pacific found that: “the distribution of certified farms appears to be strongly biased towards American businesses, with Asian farmers being poorly represented” (FAO, 2007d).

5.11.3.2 Collaborative supply chains

A second type of supply chain is characterized by larger producers or groups of producers that work with exporters. In their turn, these, via their relationships with importers, translate market specifications back down to those producers. This can apply to both the wild-catch sector and to aquaculture. In terms of developing countries, “most European importers who source fish from a particular country or from selected traders have established local offices in the developing countries to coordinate activities in the supply chain (processing, transportation, quality control, export papers)” (World Bank, 2005a). The importer advises the chain actors as to food safety and quality requirements, both public and private. This type of chain was found

to be operating for Nile perch (from Lake Victoria in East Africa) and some farmed tilapia. Under this scenario, importers are the link between the source and the market, making the complexity and evolving nature of the market requirements understood by producers. It is this intermediary that experiences the most pressure to respond to private standards, including by seeking additional information about methods implemented at earlier stages of the supply chain.

5.11.3.3 Importer-driven or fragmented supply chains

Where there is a more fragmented supply chain, categorized by a range of small-scale suppliers, there are less direct relationships by which information about food safety and quality requirements can be passed on to producers. Those producers typically sell into open commodity markets via an intermediary buyer or exporter. At the production end, there is little information about the specifications required at the import end. Under this scenario, there is a reliance on product testing at the point of importation, as safety management systems further down the chain cannot be guaranteed. Most of the exports from developing countries are traded in this type of supply chain. As an FAO (2007f) study of the Asia-Pacific area explained: “For small-scale farmers, establishing a direct link with the market would be in most cases almost impossible. Farming systems in the Asia-Pacific region are in fact dominated by networks of traders which are making quality assurance and traceability huge challenges for all stakeholders... for small-scale producers to have access to and benefit from a certification schemes they would have to be part of more direct supply chains.”

5.11.3.4 Conclusions

In terms of the three chains, only producers in the first and the second would have any interface with private standards, the first directly, and the second indirectly whereby standards are translated via close exporter–importer relationships. However, most of the fish from developing countries is traded via the latter type of supply chain, that is: “in commodity trade arrangements where little is traded in more secure supply contracts or conducted as a result of transfer trading between companies that relate to each other through shared equity” (OECD/FAO, 2007, p. 26). Therefore, it seems that, to date, developing country producers, and most processors, have experienced minimal pressure to comply with and be certified to a private standards scheme. However, their limited interface with private standards also reflects their inability to engage with such schemes. The result is that they are missing out on the opportunities that such schemes might offer in terms of the potential to produce more value-added products and to access lucrative segments of developed country markets.

5.12 COSTS AND BENEFITS OF PRIVATE STANDARDS – STAKEHOLDER ANALYSIS

This section describes the potential costs and benefits of compliance with private standards, as they apply to the various stakeholders. Examples of the actual costs of certification and audit are given first. These are based on a limited number of respondents interviewed for this technical paper and published material, and are indicative only. The FAO study of certification in the Asia-Pacific region (FAO, 2007c) found that it was difficult to determine the actual costs of certification, also because the actual fees are set by certification bodies and are subject to market conditions. Certification costs are also difficult to disaggregate from the costs of complying with mandatory regulatory requirements (which typically form the baseline of compliance with private standards). Moreover, costs are dependent on the size and type of business being certified. In addition, product specifications increase as the level of processing and value-added increases, which is also reflected in the costs of certification and audit (more specifications against which to verify compliance).

5.12.1 Compliance costs

The actual costs of compliance include:

- costs associated with upgrading infrastructure and practices including staff training; and
- certification and audits.

Based on information gained from a limited number of respondents interviewed for this study, the cost of certification against one or other of the FSMSs ranges from several thousand to hundreds of thousands of United States dollars, depending on the size of the company, the type of operation, and the gap between current systems and those required by the private standard schemes. Some costs are direct (e.g. the actual certification fee) while others are indirect (e.g. management time spent in planning and implementing any improvements required, developing new systems, and the costs of actual upgrades and staff training). Often it is difficult to disaggregate the costs related to certification or the introduction of an FSMS because these are part of wider quality management systems.

Companies that need more than one certification might try to have them established at the same time to maximize synergies. Similarly, many try to reduce the costs of multiple audits by finding a certification company accredited to more than one FSMS and able to audit against more than one set of standards at the same time. Audits are typically carried out annually.

Some examples of FSMS certification costs are:

- A processing company in Indonesia reported costs associated with certification and audit to BRC standards at US\$10 000.
- A processing company in Viet Nam reported costs of audit and certification related to SQF certification at US\$6 500.
- A European company reported costs associated with certification to the BRC and the IFS at EUR4 000.

Examples of costs or aquaculture-specific certifications are:

- Friend of the Sea – FOS has a maximum audit period for a plant of one day, which would mean that costs would vary between auditors depending on their daily rate. Audit is conducted once every three years.¹⁶⁰ A licensing fee is also payable for companies using the logo.¹⁶¹
- GAA/ACC – Certified facilities pay a processing fee (US\$500 in 2007) and an inspection fee, which includes a daily consultation fee that can vary from US\$400 to US\$800 depending on location (a shrimp farm or facility takes several days to assess) and the expenses of the auditors (travel, accommodation, etc.) (FAO, 2007c). Processing facilities also pay a fee based on the amount of product exported from the facility in the previous calendar year. A recent estimate costed an overall inspection or re-inspection of a hatchery or farm at US\$3 000, or US\$5 000 for a processing plant.¹⁶² The ACC's Web site notes that it has: "simplified and standardized program application forms and basic facility certification agreements. Fees have also been revised to relate more closely to facility production volumes, with minimums and maximums...fees for the certification program... should be less than US\$005/lb of product produced."

However, it should be noted that most of the financial burden does not come from certification or audit *per se*, but from the changes required to practices and infrastructures to comply with the standards criteria. One respondent to this study perceived these to be significant: "Moving from HACCP to one of the GFSI standards

¹⁶⁰ P. Bray, Friend of the Sea, presentation to OECD/FAO Round Table on Ecolabelling and Certification in the Fisheries Sector, The Hague, April 2009.

¹⁶¹ www.friendofthesea.com, accessed 2 December 2009.

¹⁶² "Freedom of choice", Seafood International, February 2009, p. 34.

is not easy and will be financially taxing on the industry, especially in emerging markets. Depending on the current system you employ, the bridging exercise may cost millions”.¹⁶³

This might be particularly burdensome for producers and processors in some developing countries where the pre-existing infrastructure (public and private) can be poor, although those with well-entrenched HACCP systems (a prerequisite for any private certification) will have a head start. Moreover, the costs of compliance are disproportionately higher for small operators – the norm in many developing countries – where there are few economies of scale. Even the cost of acquiring information and introducing management systems is proportionately heavier for smaller operators.

5.12.2 Producers – costs and benefits

The costs to producers of compliance with private standards are likely to vary depending on the pre-existing state of the operations. As noted above, for bulk unprocessed fish and seafood, there are very few requirements demanded on top of the mandatory regulatory requirements associated with exporting to developed country markets. For producers already operating effective hygiene and management practices, and with an HACCP system in place, the costs of complying with any private standards would be marginal – some fixed costs associated with certification, and some ongoing costs related to audit and record-keeping (including for traceability purposes). This would be the case for many developed country fishers and fish farmers.

The costs of certification escalate if a variety of certifications are required, which might mean multiple audits against a variety of standards (although, as noted above, there is often an attempt to be audited by one certifier that is accredited to audit against more than one standard). The pressure to comply with private standards is in addition to requirements to meet public regulatory standards. Producers exporting to Europe, for example, have to comply with EU regulations, various national safety regulations, and any private standards. For those exporting to France or Germany and the United Kingdom, both IFS and BRC certification might be required.

Producers in developing countries already struggle to meet mandatory requirements. Certification might require the introduction of new management systems, record-keeping and even gear, the costs of which would be prohibitive for small operators. Moreover, they are often not supported by the public infrastructure. An FAO study concluded that, “achieving certification appears to come at a heavy cost for producers... conformity assessment frequently requires relatively large financial inputs to be paid by farmers” (FAO, 2007c).

Overall, the costs of complying with private standards, varies considerably from one operator to another, depending on the gap between the current status and that required by the private standard. However, the costs need to be weighed against the potential benefits of being certified to an FSMS. These benefits might include:

- Access to new markets or consolidation of position in existing markets. This is particularly true where certification offers access to an integrated value chain and long-term contractual supply relationships.
- Improved quality of products and subsequent reductions in costly rejections based on poor sanitary status or inferior quality.
- While there is no evidence of a price premium generally, more stable supply relationships are likely to mean less price volatility. Premium-quality products might attract a price premium.

¹⁶³ D. Brickles, Quality Assurance Manager – RSA Operations, Irvin and Johnson Ltd, South Africa, personal communication, 2009.

In the Asia-Pacific region, there was some evidence that GLOBALG.A.P.-certified shrimp farmers were enjoying some benefits from being treated as “preferred suppliers”, having access to a larger market, and receiving prompter payment (indicating enhanced relationships with buyers) (FAO, 2007f). There was also some evidence of a price premium, although this was put down to superior quality (GLOBALG.A.P itself does not raise expectations of any price benefits from certification).

Producers, particularly in developed countries, but also in developing countries where production is geared towards export to developed countries, are increasingly seeking certification against multiple standards. For example, an Irish salmon farming operation has a stable of certifications, including: FOS, Label Rouge, ISO 9001, ISO 14001, Occupational Health and Safety Advisory Services (OHSAS) 18001 and BRC.¹⁶⁴ The extent to which producers decide to seek certification is an indicator of the perceived, if not actual, benefits.

Overall, general concerns have been raised that, whatever the costs of certification, fish farmers and processors bear a disproportionate share of the burden compared with those at the retail end of the supply chain (where demands for certification generate). In terms of aquaculture, both producers and processors are likely to assume a significant proportion of the costs of certification to an FSMS. In the wild-capture area, processors are likely to feel the weight of private standards more than their counterparts in the harvest sector.

5.12.3 Processors – costs and benefits

Fish and seafood processors are likely to feel some pressure to comply with private safety and quality standards, depending on the level of value addition and the types of products produced. For those producing brand products or private label products for large-scale retailers, certification would be essential. In developed countries where plants are likely to be fairly attuned to safety requirements, including as a result of robust national regulations, the costs of certification might be limited to the fixed costs of the initial certification process and the costs of ongoing audit. As noted above, the costs increase if multiple certifications are required. A World Bank survey found that: “Currently some processing companies deal with retailers that require one or more of the following: BRC certification (mainly European retailers), HACCP and ISO certification (Netherlands retailers), IFS certification (German retailers) or SQF 2000 certification (mainly retailers in Australia and the United States)” (World Bank, 2005a).

The costs of certification are perceived to be far greater where significant upgrading of plant and methods is required to achieve certification: “Our two major plants in Cape Town have been certified to both the BRC Global Food Standard and IFS standards. The process took between 2 to 3 years as we have had to move from HACCP certification, which concentrates on food safety to an all inclusive standard (food safety, quality, traceability, allergens etc.) Some structural changes were necessary and new requirements like allergen inclusion was some of our biggest challenges”.¹⁶⁵

Other respondents to this study suggested that upgrading existing premises was often more problematic than creating new plants specifically designed to conform to criteria set by the BRC and the IFS.

Clearly, in the processing sector, economies of scale lower the relative costs of safety and quality systems. Those costs might also be offset by the potential benefits. For example, it has been suggested that the costs of installing and operating HACCP systems remain low in comparison with the potential revenue lost by exporters when product is rejected at the border (FAO, 2005). Similarly, some respondents interviewed

¹⁶⁴ “Marine Harvest Irish salmon farms certified Friend of the Sea”, Sustainable Seafood News, Friend of the Sea Newsletter, 22 January 2009.

¹⁶⁵ D. Brickles, Quality Assurance Manager – RSA Operations, Irvin and Johnson Ltd, South Africa, personal communication, 2009.

for this technical paper suggested that, while the costs of certification to private standards were high, they amounted to a worthwhile investment, noting improvements in quality management and products, increased customer confidence, and access to more sophisticated market segments (private label, high value-added products), with potential for some price premium.

Certification to private standards might provide new opportunities for developing countries in the processing sector of the fish and seafood industry. Processing rather than primary production is where globalization of the seafood sector is developing most. The growing importance of China as an importer, processor and subsequent exporter of value-added seafood products is a key example of this trend. China is now the world's largest fish exporter, but also the sixth largest importer (FAO, 2009a).

Developing countries have a competitive advantage in terms of lower labour costs. Certification to developed-country private standards might help to overcome some of the traditional prejudices towards fish and seafood products from certain geographical origins. As was suggested at an OECD/FAO workshop on globalization: "Consumer purchasing patterns suggest that customers are neutral on origin, provided that they can be assured about safety and integrity ... Fish products are being packed under the most well known of European, American or Japanese household brand names in China, Thailand and Viet Nam and consumers are buying them without obvious sensitivity to their countries of origin, but with confidence in the integrity of the brands" (OECD/FAO, 2007, p. 18). Private standards might open new opportunities for value-adding in developing countries.

5.12.4 Importers and export agents

Importers and agents in exporting countries play an important role in translating standards up and down the supply chain. They are particularly important where supply chains are less integrated. The costs to these actors would include those associated with more record-keeping and explaining clients' requirements to their suppliers. Importers interviewed for FAO research¹⁶⁶ had diverse views. One seafood importer based in the United Kingdom described this as problematic but a growing fact of doing business: "The United Kingdom retailers now ask our suppliers to comply with BRC, a very detailed system that regulates all, from the thermometer to the colour of the plaster.¹⁶⁷ Our suppliers don't understand the rationale of these stringent criteria. We must accompany them."

Another importer noted the increasing pressure to provide information about production processes implemented at the production and processing level in order to meet buyers' standards, although this had not yet extended to requiring certification: "When I receive from my clients their private standards (cahier des charges), I translate them, and make them intelligible to my suppliers. On regular basis, I run audits at my suppliers' processing plants; encourage them to change their practices. I may run on their behalf, chemical/ bacteriological analysis that are easier and faster to order here than at the source. I do not necessarily ask them to go for certification. I consider that a well-implemented HACCP method guarantees the safety of the products. My clients ... increasingly require information about the methods implemented upstream. Associated cost for us to comply with private standards includes some additional time compared with what is necessary to comply with the stringent EU rules. Altogether, the quality issue means the employment of one of us for a third of the time, and five weeks or more of traveling for the manager for inspecting suppliers." (European based seafood importer of shrimp and cephalopods from developing countries).

¹⁶⁶ Interviews conducted by M.C. Monfort in 2007.

¹⁶⁷ This refers to a "detectable blue metal strip" attached to the fish.

In contrast, another importer argued that certification reduced uncertainty and provided the benefit of easing business transactions: “According to our clients needs, we look for potential suppliers who have FSMS certification. Dealing with a quality conscious operator in a developing country will considerably ease the business downward and upward.” (large-scale European importer).

5.12.5 Retailers

Retailers are the main drivers of the private food standards trend. As noted above, food safety is increasingly considered a pro-competitive issue, which drives groups like the GFSI to benchmark a range of FSMSs to assist their members. Other retailer groups are encouraging their members to include private standards in their procurement strategies. For example, the FMI, which represents three-quarters of all grocery sales in the United States, includes on its Web site a list of relevant (wild capture and aquaculture) certification programmes.¹⁶⁸ The seafood industry media also offers advice to buyers related to certification, advising them to ask suppliers if seafood is certified and to check the acceptability (by various means) of certification standards.¹⁶⁹ Requiring suppliers to be certified is a growing trend: “There is no question that there is increasing pressure to source seafood from approved sources ... In the future there are likely to be more strategic cross-border alliances, particularly to gain security of supply, quality and traceability” (OECD/FAO, 2007, p. 83).

Retailers, alongside commercial brand owners, stand to reap the main benefits of private standards, including:

- The ability to impose more detailed safety and quality specifications on suppliers, thereby offering more security in terms of product safety and consistency of quality and supply, as well as providing an insurance policy against litigation related to food safety failure (and in the area of sustainability protection against negative attention from NGOs and the media).
- More secure supply relationships: certifications act as a link between the supplier and the retailer. When the supplier has invested in certification there is likely to be more commitment to the ongoing business relationship. Certification acts as an integrating factor in supply chains, which in the light of globalization are characterized by increasing complexity.
- Guarantees of traceability up the supply chain.
- Reputation enhancement, where private standards are linked to a retailer’s private label. Private standards can be used as a marketing tool to improve customer confidence in quality, safety and sustainability, and to build brand loyalty.

For retailers, any costs involved in developing private standards or managing membership in an FSMS are seen as investment in reputation. Adherence to an FSMS run by a coalition of retail firms (IFS, BRC, GFSI) offers efficiencies in that each retailer is not obliged to “re-invent the wheel”.

When buying packaged or processed food products, large-scale retailers increasingly require their suppliers to be certified against their own FSMS standard or to a private one that they are aligned to. Interviews conducted for this technical paper suggested that, if processors are not certified, retailers carry out their own audit of the supplier’s premises (or will contract an external audit company to do so). The costs of these audits are typically charged to the processor (such as in the Whole Foods Market example described above).

Pressure for certification also appears to be moving further and further down the supply chain. For example, Wal-Mart first required aquaculture processing facilities

¹⁶⁸ “Largest U.S retail trade group OKs sustainable seafood policy”, www.intrafish.no, 23 January 2009.

¹⁶⁹ See for example, “Making sense of farmed-salmon certification”, www.seafoodbusiness.com, 15 June 2007, accessed 26 January 2009.

to be ACC-certified (in 2006), following which it turned its attention to producers (requiring they be certified by early 2008), explaining that: “The intention of certification at the farm level is to coordinate supply, ensure strategic partnerships with suppliers, processors and companies and countries they source from. The other tangible benefit of farm certification is food traceability and food safety. Food traceability and food safety are clearly issues that require risk mitigation” (OECD/FAO, 2007, p. 79).

5.12.6 Governments – costs and benefits

The trend in food safety regulatory regimes in the last 20 years, especially in OECD countries and developing countries exporting to the OECD market, has been to restructure “away from command and control towards performance auditing of self managed food safety systems that the food producers own ... In food safety management, it is up to the producer to identify food safety hazards and appropriate controls to manage them. The role of the regulator is to set the standards for performance outcomes and audit the producer’s performance against the standards” (OECD/FAO, 2007, pp. 24–25). Public management reforms encouraged by the World Bank and the International Monetary Fund mean that this “performance-based management” is starting to permeate the developing world as well.

Under this scenario, the role of government is to impose performance-based regulation coupled with process standards based on the HACCP system. The proliferation of private standards might be seen simply as the private sector responding to incentives set by government – by developing robust food safety systems based on mandatory regulation, with certified verification that standards have been met, and with guarantees of traceability. Indeed, the organization responsible for the GFSI, the Comité International d’Entreprises à Succursales, lists in a recent paper the benefits to government of its activities as follows: “Business is promoting compliance with legislation; and business is self regulating and is driving continuous improvement and best practice” (CIES, 2007).

In theory, this is all well and good. In practice, however, some concerns have been raised about the impacts of private standards on various aspects of government policy. In essence, private standards represent the introduction by the private sector of parallel systems to counter shortfalls, either perceived or real, in governments’ abilities to carry out their responsibilities to ensure food safety, including in relation to imported products.

5.12.6.1 Compliance costs to business

One of the drivers for a shift in regulatory regimes away from command and control towards performance-based systems is the desire to promote a risk-based approach, to improve efficiency and innovation and to reduce the compliance costs to business. Private FSMSs might be viewed as undermining this trend by imposing additional compliance costs. Moreover, private standards tend to be prescriptive and highly detailed, rather than performance-based, with little recognition of different ways of achieving the same outcome (referred to as the acceptable level of consumer protection). As one commentator noted: “private certification schemes tend to be prescriptive, based on blind compliance to a set of structured checklists, while the contemporary approach for seafood safety management is based on outcomes”.¹⁷⁰

In addition, as noted above, the compliance costs are borne disproportionately by those at the front end of the supply chain (producers as well as processors) rather than those downstream where the demands for certification generate.

In developed countries, where producers and processors have robust food safety management arrangements in place, the costs of certification are arguably minimal

¹⁷⁰ F. Blaha, FAO, personal communication, 2009.

(involving the actual certification fees and the costs of additional documentation). Under this scenario, private standards might be seen as of no particular concern to government as they form part of purely commercial relationships between private sector buyers and sellers, which OECD governments at least, are reluctant to interfere with. Moreover, in those countries, in relation to imported fish and seafood, private standards might be seen as an additional food safety guarantee and a protection for consumers. Indeed, concerns about compliance costs and market barriers have been raised almost exclusively by exporting countries, and in particular developing countries (discussed further below).

5.12.6.2 Shift of food safety governance to the private sector

Some countries, again especially developing countries, fear a loss of sovereignty with large international firms making demands on local producers and processors, or seeking safety assurances that go beyond those that have been deemed adequate by local legislators and/or public authorities in importing countries. Private standards relating to food safety in essence indicate a lack of confidence in local food safety management. This is particularly irksome for governments in exporting countries that have been certified by public authorities in importing countries as having an effective food safety management regime. For example, to export to the EU, a country must be certified by the EU as having a “competent authority” responsible for food safety management. In essence, following a country evaluation by EU inspectors of the exporting country’s legal and technical competencies as well as its human resources and infrastructure capacities, the EU “delegates the control of food safety to a Competent Authority in each country, who in turn ensures that exporting farms, vessels and processing plants are producing safe food under a system equivalent to that in the European Union – the principle of equivalence” (FAO, 2005). Without a country being certified as having a competent authority, products from that country – regardless of how modern and efficient particular producers or processors might be and how many private certifications or labels their products carry – cannot enter the EU market.

Critics of private standards argue that not only are retailers who request certification to a private standard displaying a lack of confidence in the competent authority of the exporting country, they are also showing a lack of confidence in their own country’s food safety policy and administrative frameworks – in the case of EU countries, in EU food safety management systems. Other markets too rely primarily on guarantees from competent authorities (albeit, as in the EU, backed up by checks at the border, with some also sending inspectors into exporting countries).

A relatively new development is the use of private voluntary standards in public policy frameworks. For example, the United States FDA is undertaking a voluntary third-party certification pilot programme for imported farmed shrimp.¹⁷¹ A range of certification bodies, including private certifiers like the ACC, as well as public bodies such as the Thai Department of Fisheries for Thai Quality Shrimp, and the United States Seafood Inspection Service of the National Marine Fisheries Service are part of the pilot. The intention is to evaluate third-party certification schemes with the possibility of eventually allowing products from facilities certified by those bodies expedited entry into the United States. The programme responds to the “President’s Action Plan for Import Safety”, which called for the development of voluntary third-party certification programmes for foreign producers who export to the United States. The FDA’s Food Protection Plan (November 2008) “emphasizes qualified and legitimate third party certification as a way to help verify the safety of products from both foreign and domestic food companies”. The FDA defines a third-party certifier

¹⁷¹ www.fda.gov, 2 December 2008.

as any entity, private, NGO, government or stata with no conflict of interest with the FDA.

This programme might signal the increasing importance of private standards and certification schemes as facilitators of entry to important fish and seafood markets. Indeed, the ACC is referring to the pilot as an indicator of its “regulatory recognition” and suggesting that ACC certification has “the potential for expedited entry for certified products”.¹⁷² The results of the pilot and future developments should be closely monitored.

5.12.6.3 Fisheries and aquaculture policies

A recent FAO report on the state of world fisheries notes that opponents of private standards “see them as a private-sector attempt to replace/duplicate governmental policy in fisheries and aquaculture” (FAO, 2009a). For example, private standards in the sustainability area are effectively questioning governments’ abilities to manage their natural resources effectively. Ecolabelling schemes inevitably involve private outside interests passing judgment on the effectiveness of a country’s fisheries management regime. Similarly, private aquaculture standards seem to suggest that governments are not capable of managing not only the food safety aspects but also the environmental impacts and even the labour conditions and social impacts associated with the aquaculture industry. These concerns have been more acute in developing countries where policy frameworks and administrative systems can be weaker. However, the question is raised as to whether private standards are creating confusion among local producers and processors as to their obligations (to meet private or public requirements) and/or undermining governments’ attempts to develop and implement more robust policies and administrative systems by diverting attention and resources towards meeting private rather than public requirements.

5.12.6.4 Potential barriers to trade

Concerns have also been raised that private standards schemes might undermine international attempts to reduce non-tariff barriers to trade, and that requirements on exporting country fish producers and processors to comply with standards set by private sector actors in importing countries might amount to a non-tariff barrier to trade. This is discussed below in relation to discussions of private standards in the WTO.

5.12.7 Developing countries – particular costs and potential benefits

Fish and seafood are crucial income earners for many developing countries. As noted above, developing countries account for about half by value, and about 60 percent by volume, of all seafood traded internationally. Trade liberalization has reduced tariff barriers, which should have a positive impact on developing countries’ access to developed country markets. However, it is increasingly clear that the main barrier to increased exports is no longer import tariffs but the difficulties developing countries have in meeting import market quality and safety related import requirements (FAO, 2009a).

Developing countries have pointed to the challenge presented by government safety and quality control regimes that vary from one jurisdiction to the next. This multitude of approaches imposes significant costs on exporters in countries where there is limited capacity to develop comprehensive safety and quality management systems and infrastructures, let alone several different systems to meet diverse import market requirements. Although progress has been made in terms of harmonization, in particular via the WTO and Codex, it has been slow and more work is required.

¹⁷² D. Lee, ACC, presentation to IAFI World Seafood Congress, Morocco, October 2009.

The concerns expressed by developing countries in relation to public regulation in importing countries are mirrored in their concerns related to private standards: the costs of compliance (including the duplication of effort required to complete various levels of documentation), the need to respond to a multiplicity of different standards, the increasing specificity of those standards, and the lack of harmonization between them. A great deal of effort has gone into meeting EU and other requirements in many developing countries. Consequently, some 102 of them are included in the List 1 of countries authorized to export to the EU because they have FSMSs equivalent to the EU one. However, for other developing countries, poor public infrastructure challenges their abilities to meet either public or private overseas standards. Specific hurdles include:

- The absence of a national strategy on food safety and supporting regulatory frameworks consistent with market requirements in key import markets.
- Poor institutional capacities: an absence of, or poorly performing, competent authorities, weak inspection and monitoring services, insufficient data collection and analysis, weak or non-existent testing facilities, and the absence of technical and advisory services (including advice on food safety management and international import market requirements).
- Poor physical infrastructure: including transportation networks, and a reliable electricity supply. For example, the activities of a well-performing processor might be undermined by an inconsistent power supply (necessary for effective refrigeration), or not being able to shift fresh product fast enough because of poor transportation systems.

Similarly, some of these hurdles make it costly and more difficult for exporting countries to maintain the equivalency status, especially as food inspection services are competing with other departments for shrinking public funds.

The fish and seafood industry in many developing countries is highly fragmented, characterized by small production units in both the farming and wild capture sectors. For example, it is estimated that more than 80 percent of the 12 million aquaculture farmers in Asia operate small-scale farms (FAO, 2009a). An FAO study found that small-scale operators were typically unable to break into the market for certified fish and seafood and that “only a few and relatively larger producers appear able to access” those markets (FAO, 2007c). The costs of certification are proportionately higher for smaller operators. Moreover, without some form of cooperative arrangements, small-scale operators are not able to deliver the volumes of supply required by buyers, nor do they have the wherewithal to engage in direct supply relationships or to manage contracts with large-scale international buyers.

Developing countries have sought assistance to build their food safety infrastructures, including legislative and regulatory frameworks, institutional capacities and physical infrastructures. Progress in all of these areas would provide the foundations for developing countries to further exploit their trade potential as well as having the positive effect of reducing the health risks for local populations. Well-functioning public physical and institutional infrastructures are prerequisites to meeting both mandatory standards in importing countries as well as the growing volume of voluntary private standards.

During a recent WTO discussion on private standards, members discussed how to focus technical assistance to help developing countries respond to demands for certification to private standards schemes. A number of countries insisted that a continuing focus on government requirements was a more effective strategy than branching out too much into private-sector territory.¹⁷³ In any case, developing basic

¹⁷³ “WTO body debates public, private food safety standards”. *Bridges Trade BioRes* Vol.7 no.5, 16 March 2007.

but robust food safety systems would provide the foundations for future responses to private standards, if and when this was deemed necessary.

As discussed above, developing countries have not yet experienced a great deal of direct pressure to respond to private standards, except in relation to several species in the aquaculture area. However, as the dominance of supermarkets continues to grow internationally and as large retailers impose more and more requirements on their suppliers, this pressure to become certified to private standard schemes is likely to increase. Moreover, private standards might offer opportunities for developing countries to diversify away from the traditional raw-commodity products (unprocessed or minimally processed fish and seafood) to more value-added products.

5.12.7.1 Opportunities for more value-added products

To date, many developing countries have been unable to access the growing market for higher value-added products. Instead, their processing activities have been limited to less sophisticated types of processing (filleting and canning). Private sector companies appear unwilling to invest in more sophisticated production equipment in developing countries if their activities are not supported by the public infrastructure. Companies can and do relocate processing to developing countries – including to take advantage of lower labour costs – if they are confident in the local administrative systems (including safety and quality management regimes). The importance of China as a fish and seafood processor provides a good example of this: “China has become a leading location for processing imported fish raw material in Customs free zones for re-export to developed country consumer markets. In the period 2002 to 2004 more than US\$580 million of seafood products were exported on average annually from North America to China and more than US\$1.4 billion imported. Much of that trade was relatively unprocessed frozen fish products exported to China for further processing and re-importation back into the United States” (OECD/FAO, 2007, p. 19). However, reports of contaminated Chinese fish and other products entering the United States market shows how dependent this trade is on robust food safety management systems and how fragile buyer confidence can be.

5.12.7.2 Linking into supply chains

As discussed above, integrated supply chains mean closer collaboration with import markets. It could also mean opportunities for transfers of technology and expertise in developing countries.

A World Bank project in the United Republic of Tanzania found two distinct fish supply chains in operation. The first was an international supply chain characterized by “good integration, low transaction costs, high levels of investment and well-employed technologies”, where specialized agents to the export processors input equipment, finance and training. The second was a domestic chain characterized by “poor organization and little information sharing, which results in high risks for fishermen and boat operators and high transaction costs” (World Bank, 2005a). Indeed, this scenario is fairly typical for many fish-exporting countries in Africa. Similar dual supply chains were also found in Thailand in relation to shrimp, with larger processing factories supplying the international high-end markets while “smaller factories with less capital investment to implement good quality management systems are supplying local markets and countries with less stringent sanitary requirements” (World Bank, 2005b).

An option for developing countries is to seek ways to transfer information and expertise from one chain to the other. Indeed, some countries have taken important steps in this direction, which are briefly described below.

5.12.7.3 Utilizing market mechanisms

Some countries have introduced State-mediated certification procedures to certify their safety and environmental credentials, in particular in their aquaculture industries. This can be seen as a proactive strategy to respond to safety and quality demands from import markets by promoting themselves as suppliers of safe and high-quality fish and seafood. In some cases, this has involved the development of a public certification scheme (see Box 17). Three States that are members of the East African Community (Kenya, Uganda and the United Republic of Tanzania) have developed a trademark as part of their efforts to promote Nile perch as a safe, high-quality product in export markets. In this way, governments are using market mechanisms as tools to gain traction in their own policy frameworks.

BOX 17

Thai Quality Shrimp

Thailand has taken a proactive strategy to access high-end markets by trying to build its national reputation as a producer of safe quality products. Ninety-five percent of Thai shrimp is destined for export markets. In the last ten years, it has increased the proportion of value-added prepared and processed shrimp it exports – now well over half is exported in this form. In 1995, three-quarters was exported in frozen form (World Bank, 2005b).

The strategy pursued by the Government of Thailand has included: a code of conduct (COC) for sustainable shrimp aquaculture; a one-stop-shop service agency for food safety; the creation of a national committee on food safety; the alignment of national sanitary standards with international standards; and a strengthened approach to food safety management generally (even distributing a simple testing kit to shrimp farmers to undertake disease diagnostics themselves) (World Bank, 2005b).

The Department of Fisheries is actively encouraging Thailand's shrimp farmers to meet good aquaculture practice (GAP) standards or better for marine shrimp farming, incorporating various international standards including Codex, ISO 14001 and relevant FAO codes. If farms are up to standard, the Department of Fisheries issues a one-year GAP certification. Standards for distributors and processing plants have also been developed to meet international standards, namely Codex and the HACCP system. Products are marketed as COC-certified Thai shrimp. Processing plants are HACCP certified.

The Thai Department of Fisheries uses the COC as: “a guideline for certifying the whole shrimp production line, from farm to table, to create a sustainable shrimp culture industry in Thailand. Furthermore, DOF has established quality shrimp guidelines that allow producing safe products for consumers without therapeutic agents and chemical residue and impacts to the environment.”¹

It has been argued that these improvements have allowed shrimp farmers to enter into direct supply contracts with supermarkets: “Shrimp farmers now have more experience in making contracts with foreign foodservice providers themselves without using any brokers”.² Moreover, to help promote exports, the Department of Fisheries has entered into mutual recognition agreements with buying countries – for example, with the Republic of Korea – to speed product inspection procedures. The Department of Fisheries is also one of the third-party certification bodies chosen as part of the United States Food and Drug Administration's pilot programme for farmed shrimp.

¹ www.thaiqualityshrimp.com accessed 1 December 2009.

² V. Sowanapreecha quoted in “Carrefour leading trend to buy shrimp direct from farmers”, IntraFish, 7 October 2008.

5.12.7.4 *Organizing fishers and fish farmers*

Organizing small fishers in developing countries, for example, by encouraging farmers and fishers associations or clusters (Box 18), would enable them to respond collectively to the requirements of both public and private standards, and would ensure that they are able to take advantage of available technical assistance. Industry groups can play a vital role in disseminating information (on import country specifications), good practices (good hygienic practices, good management practices, record-keeping) and technology, and provide a link to government (including pressuring government to provide an enabling infrastructure – both regulatory and physical – for developing export potential).

Some FSMSs such as GLOBALG.A.P will certify private sector industry groups or cooperatives, and not just individual operators. Industry bodies might also help to develop criteria against which local operators could decide when evaluating whether seeking certification to a private standards scheme would be a cost-effective option (along the lines of the decision tree developed by the FAO for Asia-Pacific fisheries operators) (FAO, 2007c). In Viet Nam, an industry group has developed a programme to encourage its members to comply with a private standards scheme required by buyers in the key United States market (Box 19). Success stories in developing countries need to be better documented and shared with other groups and countries facing similar challenges.

5.12.7.5 *Improving audit and accreditation capacities*

The costs of certification to an FSMS are typically prohibitive for small-scale operators in developing countries. Often, the costs include flying in overseas auditors and certifiers. Accrediting auditing agencies in developing countries would reduce the costs of having to contract-in foreign certifiers. Where the market is too small to sustain an accreditation agency, some regional solution might apply. For example, the countries of the East African Community have agreed on shared laboratory and testing facilities.

5.12.7.6 *Compliance with public requirements first*

For developing countries to take advantage of the opportunities presented by private standards, they must first be able to meet the requirements of mandatory regulatory requirements in importing countries. This would create the foundations for future responses to private sector standards. Indeed, an FAO study (FAO, 2007c) on the costs and benefits of certification concluded that: “It is almost certainly more important to comply first with the basic mandatory requirements of food safety and hygiene (i.e. in terms of HACCP compliance).” As noted above, compliance with mandatory requirements is a prerequisite for any private sector certification, but the reverse is not true. Certification to a private standards scheme will not allow access to the EU market for example, if the exporting country itself (and its competent authority) has not been given the green light to export to the EU.

5.13 PROTECTION OR PROTECTIONISM? IMPACTS OF PRIVATE STANDARDS ON GLOBAL TRADE

As noted above, the WTO has generated a regulatory framework to facilitate international trade. The SPS Agreement and the TBT Agreement of the WTO are particularly relevant to trade in fish and seafood products.

The impact of private standards on international trade has been raised for discussion at the WTO, first at the 2005 meeting of the SPS Committee, and subsequently in March 2007. In 2008, the chair of the SPS Committee circulated a list of questions to members seeking their views on what the committee could and should do about private standards. Responses were received from 30 members and were summarized

by the Secretariat along with a three-phase proposal for future work in the area (WTO, 2008a).

A note by the WTO Secretariat produced for the 2007 meeting outlined the main ongoing concerns of member countries in relation to private standards. They included concerns related to the content of private standards, issues related to compliance with private standards, and their overall implications for international trade. These and other issues are briefly summarized below.

BOX 18

India – clustering fish farms to improve production and market access

Ninety five percent of Indian aquaculture shrimp and prawns are exported. The demands of international markets, including for certification, have been problematic for Indian farmers. As 90 percent of them operate ponds that are smaller than two hectares, traceability and meeting certification requirements and costs is especially difficult. To counter some of these problems, the aquaculture industry is now regulated by the Coastal Aquaculture Authority Act, which includes codes of practice for aquaculture operators and registration of farms, hatcheries and processors.

In 2006, the Marine Products Export Promotion Authority (MPEDA) of India, which operates under the auspices of the Ministry of Commerce and Trade, created the National Centre for Sustainable Aquaculture (NACSA), headquartered in Kakinada, Andhra Pradesh, with the mission to organize small-scale fish farmers into societies that can collectively benefit from the NACSA's technical support and advice to address production and market access issues. The aim is to promote sustainable small-scale aquaculture through empowerment of farmers to access credit, quality seeds, feeds and other inputs and to implement better management and good aquaculture practices to reduce fish diseases, improve product quality and access international markets, including through certification.

The farmers' societies have clear organization with strict conditions for membership and elected board members. In addition to training and awareness improvement programmes for society farmers, the NACSA technical staff monitor inputs (seed, feed) to ensure the use of disease- and residue-free inputs and proper traceability. The NACSA is developing a digitalized database supported by GIS for all society farms. Ponds will be identified by a nine-digit code, with each society maintaining a complete record from stocking to harvest, including traceable seed and feed.

In 2009, the NACSA reported more than 7 000 farmers organized into 250 societies. The NACSA aims to organize 75 000 farmers into 1 500 societies by the end of 2012. The experience since 2007 has demonstrated major benefits for farmers in terms of access to microcredit, better bargaining position for inputs and final product prices, as well a better integration of the sector (hatchery–society–processor/exporter).

Source: OECD/FAO (2007).

BOX 19

Viet Nam and SQF 1000

In Viet Nam, the Fresh Water Fish Association is training catfish breeders on the Hau River in the southern province of Can Tho to introduce technologies and processes to meet SQF 1000 standards favoured in the important United States market. The Fresh Water Fish Association controls the programme and monitors farmers against the standard. Farms are audited at least once every three months, and any farm not in compliance is removed from the programme.

5.13.1 Non-scientific basis and lack of consistency with SPS obligations

Article 2 of the SPS Agreement states that: “Members shall ensure that any sanitary or phytosanitary measure is applied only to the extent necessary to protect human, animal or plant life or health, is based on scientific principles and is not maintained without sufficient scientific evidence” (WTO, 1994). Private standards schemes cover a broad range of specifications relating to food safety, environmental protection, animal welfare, labour standards, etc. Some members of the SPS Committee have argued that private standards invariably exceed the minimum standards set by government regulation, that those related to food safety are not backed up by science-based risk analysis, and that related product and process specifications often include non-safety and quality criteria (that have no particular scientific rationale). A note by the OIE circulated to the SPS Committee in February 2008 concurred with this assessment: “The OIE considers that private standards seldom have a scientific basis, especially if they are introduced for purely commercial reasons (e.g. to differentiate in the marketplace products that are equivalent in sanitary terms)”. The OIE also noted that, “there is reason to believe that many private standards are not consistent with SPS obligations”.

The OIE insisted that private standards had never been tested for compliance with the SPS Agreement. Indeed, comparisons of private standards and relevant international public standards (OIE, Codex and the IPPC) formed part of the 2008 proposals put to the SPS Committee, albeit with varying views on who should conduct such comparisons. To date, there has been no robust analysis of whether private standards are, or are not, consistent with international standards or with SPS obligations.

It should also be noted that some of the “international standards” referred to in these discussions are not themselves mandatory. In terms of consumer protection and food safety, Codex has taken on unprecedented international importance. Yet Codex standards themselves are meant to be voluntary and adopted by consensus. However, given their importance under the SPS and TBT Agreements, whereby they are used as a reference in trade disputes, Codex standards in practice are neither voluntary nor fully mandatory, but fall into a category known as “voluntary under duress”.

5.13.2 Interface between official SPS measures and private standards

There are concerns that private standards might start to influence government regulatory frameworks, including those affecting trade. For example, a government standards body might develop an official standard based on ISO 22000, or might give the “green light” in terms of ease of entry to imports certified against a trusted private FSMS, thereby offering those products preferential treatment. Again, there is little empirical evidence to respond to these concerns, or to quantify any potential impacts on trade.

5.13.3 Costs of and access to certification

Members of the SPS Committee, in particular from developing countries, have raised concerns about the costs of third-party certification to private standards, especially the burden they place on small- and medium-sized enterprises and producers in developing countries. Multiple audits, as a result of a lack of mutual recognition between schemes, have also been identified as costly and burdensome. The requirement of many FSMSs to use a limited number of accredited certification bodies has also been seen as a barrier to entry of developing country products into lucrative import markets.

5.13.4 Technical barriers to trade

The TBT Agreement is also relevant to a discussion of private standards. The TBT Agreement makes a distinction between “technical regulations”, which are mandatory, and “standards”, which are voluntary requirements. In its Code of Good Practice for the Preparation, Adoption and Application of Standards, the TBT Agreement prohibits

both technical regulations and standards from discriminating between domestic and foreign products that are alike (the national treatment principle) and between “like products” from different WTO members (the most-favoured nation principle). Where a technical regulation is applied in accordance with a relevant international standard, then it is presumed not to create an unnecessary obstacle to trade. However, there is no such interpretation in relation to voluntary private standards. While, as discussed above, private standards schemes are often based on international Codex Alimentarius standards (including the HACCP system), they invariably go beyond them – in terms of specificity if not in stringency – rather than being applied “in accordance” with them. As noted above, there has been no analysis comparing the requirements of international standards with those of private standards.

5.13.5 Jurisdiction over private sector actors

While governments have the right to challenge the actions of other governments within the context of the WTO, the grounds for challenging non-governmental actors is less clear. A note by the WTO Secretariat discussed governments’ responsibilities *vis-à-vis* non-governmental bodies in relation to private standards. The note explained that: “Were a particular private standard to fall within the definition of a standard under the TBT Agreement, then Article 4 would apply. This Article requires Members to take reasonable measures to ensure that non-governmental bodies accept and comply with Annex 3 to the TBT Agreement (the Code of Good Practice for the Preparation, Adoption and Application of Standards)” (WTO, 2007).

It is not clear what mechanisms governments have to control the private contractual relationships of private sector firms. Jurisdiction over transnational firms, or coalitions of firms, would be even more problematic. The SPS Agreement offers no direction on this front and “there is no jurisprudence on this matter” (WTO, 2007, para. 26).

5.13.6 Trade enhancing or trade restricting? – divergent views

In the context of discussions on private standards at the SPS Committee of the WTO, differences of opinion have been expressed, including differences between members from developing countries. For example, while some countries have argued that private standards help to expand trade, others counter that they pose challenges to small producers, processors and traders, noting the relative costs of compliance, the multiplicity of schemes and the lack of mutual recognition between them. Some members have gone as far as to claim that private standards are “in conflict with the letter and the spirit of the SPS Agreement, veritable barriers to trade and having the potential to cause confusion, inequity and lack of transparency”.¹⁷⁴ They point to compliance costs and the perceived arbitrariness and lack of objectivity of verification systems, which they argue should be more flexible and take into account country differences.

Differences of opinion have also been expressed on the way forward for the SPS Committee in relation to private standards. Some members have called for clarity in terms of the legal relationship between private standards and WTO agreements, suggesting that the legality of the situation should be ascertained before any further analysis is undertaken on the negative or positive impacts of private standards on international trade.

Clearly, further evidence is needed of the actual effects of private standards on trade opportunities, especially for developing countries. The SPS Secretariat noted that the number of SPS Committee members in favour of a study comparing private standards with the corresponding Codex, IPPC or OIE standards “is a clear indication of the

¹⁷⁴ “WTO body debates public, private food safety standards”, Bridges Trade BioRes Vol. 7 no. 5, 16 March 2007.

desire for the Committee to take some concrete steps on this matter” (WTO, 2008a, para. 5). Part of the proposal for future work of the SPS Committee is for members to submit information related to the impact of private standards on specific export products, so as to generate some concrete evidence as to the actual impacts on trade.

5.14 FUTURE SCENARIOS AND AREAS FOR ATTENTION

The impact of private safety and quality standards is likely to increase as supermarket chains increasingly dominate the distribution of fish and seafood products, and as their procurement policies move away from open markets towards contractual supply relationships. These supply relationships are increasingly defined by private standards with detailed product and process specifications. As large European retailers (the vast majority of leading retail transnationals, with the exception of Wal-Mart, are west European) become increasingly globalized, their buying strategies will influence retail markets in East Asia, Africa, Eastern Europe and Latin America.

While there are a myriad of opinions on the impacts of private standards on global food governance and international trade generally, there remains a dearth of empirical evidence. In terms of international trade and marketing of fish and seafood, the gaps in evidence are even more pronounced. Some key questions remain.

5.14.1 Are private standards adding value to food safety governance?

Whether or not private standards are adding value to food safety governance is arguably in the eye of the beholder. For retailers seeking quality assurance, robust risk management and clear lines of traceability, then the answer is undoubtedly “yes”. They do address additional quality requirements, document the implementation of good practices and provide a separate level of assurance for liability purposes. In terms of bottom-line food safety and consumer protection however, the answer is probably “no”. Most private FSMSs are based on mandatory regulation with additional specifications related mainly to quality aspects and the aforementioned risk and traceability assurances. While there has been no systematic comparison of the private sanitary requirements of individual firms with those encapsulated in public regulation, industry sources supplying to those firms suggest that key safety criteria (such as “use by” dates, and acceptable levels of additives or contaminants) are not more stringent than those required by public authorities. In any case, both public and private standards are typically based on Codex and the HACCP systems. Despite some misconceptions that private standards schemes encapsulate lower levels of “tolerance” – or zero tolerance (see Box 20) – there is no evidence that they are stricter in terms of food-borne hazards, or that they have reduced the incidence of food scares, or that they result in safer food.

Some research comparing private standards with mandatory public standards (at least in the main fish and seafood import markets) to test the relative value added by private schemes would be useful. This would, however, probably be limited to a selection of the larger food safety management certification schemes (given commercial sensitivities and the confidential nature of individual firm-based specifications). Any such enquiry would need to cover both the content of the schemes and their related standards, as well as the compliance and verification procedures, as it is often the audit requirements and traceability aspects that those seeking certification find most burdensome and that the organizations demanding certification consider most important (and readily accessible in public food safety management regimes).

BOX 20

Zero tolerance

Zero tolerance is a powerful term, with the intended connotation of the complete absence of the hazard¹ or inappropriate behavior at issue, and it is popularly perceived as assurance of protection against--or at least official intolerance of--that hazard or behavior. The term zero tolerance is commonly used in the media in many contexts, including food safety. For example, zero tolerance has been used to comment about drug-law enforcement, drug-testing policies in sports, crime, and security violations. Businesses frequently highlight their zero tolerance of offensive behavior (for example, zero tolerance for hate messages in chat rooms and message boards) or consumer protection.

In food safety, the term zero tolerance often resonates well with the public which is seeking assurance of the safety of the products it consumes. Consequently, food safety regulators often confront the notion that they should have “zero tolerance” policy for anything that is deemed to pose a risk² to public health or safety, including in reference to a pathogen or environmental contaminant to indicate that whenever a particular problem is found, strict regulatory action will be taken.

But, zero tolerance in food safety does not always mean zero risk or total absence of a contaminant in a food. For example, there can be no zero risk (total absence) for some contaminants such as mercury in fish and seafood, because mercury is a natural contaminant of the aquatic environment which naturally finds its way through the aquatic food chain and bio-accumulation into some seafood. Likewise, certain bacteria such as *Vibrio parahaemolyticus* are part of the normal flora of the aquatic environment, but represent a hazard only at high concentrations. In this case, the regulatory zero tolerance policy will aim to ensure the presence of the contaminant only at levels far below the hazard level, to ensure no health risks to consumers.

Scientists are often dismayed by the use of this term because they recognize the inability to ensure, in many situations, the complete absence of certain pathogens and contaminants from the food supply and the limitations of feasible sampling plans to check for their total absence (see box 12). But, scientists do recognize that a preference for zero “is influenced by the wish to emphasize that absence of the hazard is the desired objective (although it cannot be always guaranteed) and by the knowledge that once pathogens or contaminants are found, the finding cannot be ignored”. The various uses of and limits of this term, therefore, must be properly analyzed and understood.

¹ In food safety, hazard is defined as a biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect (*Codex alimentarius*)

² A risk is defined as a function of the probability of an adverse health effect and the severity of the effect, consequential to a hazard(s) in food.

Comparing private standards with international public standards, such as Codex, the IPPC and the OIE, as envisaged in WTO discussions would also be useful. However, it should be noted that, while these standards are developed in an international context and by mutual agreement, the monitoring and verification aspects of compliance are left to individual national authorities. As noted above, large-scale retailers requiring certification to private standards express a lack of confidence (whether justified or not) in the “competence” of some competent authorities.

What is definitely not adding value to global food safety governance is the growing proliferation of private standards and certification schemes. It has led to confusion and could undermine confidence in standards overall. Various stakeholders at different levels of the supply chain have expressed concerns about the number and varying quality of schemes. Producers and processors are unsure as to what scheme to seek

certification with and even retailers and large brand owners have doubts about which FSMSs are most robust. Signing up to a rainbow of schemes – for example, an FSMS, a specific aquaculture certification, and some environmental standard, or some combination of these – creates inefficiencies and unnecessary costs. A plethora of labels on one product is likely to result in confusion rather than customer confidence.

5.14.2 Evaluating the relative quality of private standards certification schemes

As in the area of ecolabels, industry sources have highlighted the need for a benchmark against which to judge the quality and credence of the various certification schemes. The aforementioned GFSI has a mechanism for this in terms of FSMSs. A gap exists for aquaculture certification schemes. The forthcoming FAO aquaculture guidelines, once agreed, will provide minimum substantive requirements against which aquaculture certification schemes can be assessed. However, as in the ecolabels area, there is likely to be some debate as to assessment methodologies and who should carry out any benchmarking exercise. While the FAO Members are likely to agree to guidelines for aquaculture, there is less agreement – and no clear mandate – as to whether FAO should assess any private scheme against those criteria.

Assessing the quality and utility of private standards and certification schemes that cover a range of criteria – from safety and quality to environmental impacts to social and economic sustainability – is arguably even more problematic than assessing the quality and credence of ecolabelling schemes. Methodological issues such as the lack of any consensus on definitions of “sustainability” or “social sustainability” are particularly challenging. The WWF has attempted to benchmark a range of private aquaculture certification schemes, albeit against criteria of particular interest to the WWF (see Box 21). Despite this, the study might provide a useful analytical model for any future benchmarking or evaluative studies.

5.14.3 Do private standards conflict with, complement or duplicate public regulation?

Again, because there has been no systematic comparison of private standards with public regulation, there is no concrete evidence to assess the relationship between public and private standards. Several areas are especially pertinent.

5.14.3.1 Food safety

As noted above, private standards are typically based on mandatory regulation and, therefore, are not likely to demand more in terms of acceptable levels of contaminants, or more stringent “use by” dates, etc. Hence, they are unlikely to conflict with public food safety regulation. Duplication is more likely to be an issue, if not in relation to the content of requirements, then in methods of compliance and verification (including multilevel documentation).

Concerns about having to comply with a variety of standards need to be addressed. Those concerns are likely to mirror concerns about the relative lack of harmonization of public regulation, including the lack of harmonization between the safety and quality requirements of public authorities in various export markets. Some harmonization and mutual recognition of public regulatory frameworks for food safety would go a long way towards reducing the current complexity in global food safety governance and would facilitate international trade. It is perhaps disingenuous of public authorities criticize the private sector when the private sector has arguably been as active as the public sector in terms of harmonization of food safety standards (the activities of the GFSI is a case in point). Improved dialogue between the public and private sectors at the international level, with the aim of reducing the complexity of food safety

governance overall, would be useful (the dialogue between the ISO and the GFSI might act as a harbinger).

There is little evidence to suggest that compliance with private standards might facilitate the implementation of public standards. Indeed, the inverse is a more likely scenario. Compliance with public standards provides a baseline, and is therefore essential, for meeting the requirements included in private standards schemes.

As noted in Chapter 4, fisheries that typically achieve certification to a private ecolabelling scheme are those that are already well managed. The same might apply to certification for safety and quality: Do demands from buyers for suppliers to be certified and the certification process itself incentivize better food safety management, or are operators who achieve certification mainly those that already run effective food safety management systems? A further key question for policy-makers, especially in the context of an apparent shift in responsibilities from the public to private sector for food safety management is: Are profit-maximizing private sector firms the best agents for incentivizing better food safety management throughout the supply chain?

BOX 21

WWF benchmarking study of certification programmes for aquaculture

In 2007, the World Wide Fund for Nature (WWF) conducted a study on standards and certification schemes currently used in aquaculture, whereby a wide range of schemes was evaluated and benchmarked against a range of criteria. It found significant shortcomings in all of the schemes studied, including:

- limited openness in standards governance, and insufficient multistakeholder participation in their development;
- inadequate meaningful, measurable and verifiable criteria for addressing key areas of concern (as defined by the WWF);
- weak independence in the operations of the bodies responsible for creating, holding, inspecting and certifying standards;
- deficient mechanisms for certification of chain of custody; and
- poor mechanisms for applying corrective measures and sanctions.

While all of the schemes studied were considered inadequate, it should be noted that they were judged against criteria set by the WWF (mainly environmental impacts, social issues and animal welfare), some of which were arguably outside the objectives set by the schemes themselves. For example, several schemes in Europe or developed nations were judged inadequate because they did not specifically encompass labour rights and social issues, which in those countries would be a “given” and well controlled by public regulation and authorities. The WWF counters stating that “WWF does not accept that any key impacts can be ignored because an industry or stakeholder group decided not to work on them”.¹ However, the benchmarking study excluded issues concerning “food safety, product hygiene and product quality”, which are the primary focus of many of the standards and certification schemes.

¹ WWF. 2007. *Benchmarking study: certification programmes for aquaculture: environmental impacts, social issues and animal welfare*. Zurich, Switzerland, and Oslo, Norway. p. 13.

5.14.3.2 Traceability

The traceability requirements of private standards schemes – often requiring full traceability from farm or boat to fork – are likely to be as robust as most public requirements. The EU traceability requirements are arguably the most stringent in terms of public regulatory requirements, based on the principle of “one step backwards, one step forwards” (International Trade Centre, 2008), and requiring all aspects of the

supply chain¹⁷⁵ to be approved for purpose by the EU-approved competent authority. However, as noted earlier, private standards schemes require traceability requirements to be verified by private sector certification companies, possibly owing to a lack of confidence in the capacities of local competent authorities (even those that have been approved as fit-for-purpose under strict EU criteria) because public audit reports are not readily available to buyers. Assisting with capacity building in countries with weak administrative systems would arguably be a more effective strategy than imposing a parallel private system to compensate for perceived or real administrative shortcomings. Moreover, a company certified to a private standards scheme will still not have access to certain markets, such as the EU, if the competent authority of the country in which it operates, has not been approved by public authorities in key import markets. Traceability, and potential options for integrated traceability to achieve various traceability goals, is discussed further in Chapter 6.

5.14.3.3 *Audit and documentation – duplication and complexity*

It is in the area of audit and verification, and the related documentation required, where duplication between public and private requirements is perhaps most evident. Separate sets of compliance documents relating to public and private certification (or even several public and several private certifications) amount to heavy compliance costs. Those costs are especially burdensome where there is a prescriptive rather than an outcomes-based approach to compliance. It has been argued that while the public sector trajectory is towards more outcome-oriented systems (defining outcomes or the acceptable levels of consumer protection and allowing operators the flexibility to choose how to achieve them), private standards schemes remain wedded to a substantive checklist approach including precise product and process requirements. There is a need to promote more outcome- or performance-based compliance management and verification. Producing two (or more) compliance documents according to who is conducting an audit is not only “a waste of resources, it diminishes the value of true compliance, as it is seen as a paper exercise”,¹⁷⁶ rather than as a tool for continuous management and quality improvement.

5.14.4 **Do private standards facilitate market opportunities or act as a barrier to trade?**

There is still no definite consensus on whether private standards are a bonus or pose a barrier to international trade. On the one hand, they can be trade-creating in that compliance offers opportunities to access lucrative markets in developed countries, where large-scale buyers increasingly include private standards and requirements for certification in their fish and seafood procurement strategies. However, as noted above, compliance with private standards schemes is highly problematic for some operators, especially small-scale producers and processors in developing countries.

Market liberalization and the reduction of trade barriers negotiated by national governments in the WTO will not facilitate market entry for developing countries if public requirements are replaced by new rules set by large international private firms or coalitions of them. Moreover, while private standards are on the surface “voluntary”, they could become de facto mandatory standards if compliance with them becomes necessary to access developed country markets.

¹⁷⁵ Vessels, landing sites, transporters, processors, etc. for capture fisheries, and feed producers, hatcheries, farms, transporters, processors, etc., for aquaculture products.

¹⁷⁶ F. Blaha, FAO, personal communication, 11 February 2009.

5.14.5 Areas for attention

This chapter has highlighted the dearth of empirical evidence and the need for further research and some action in the following areas:

- **Comparing public with private standards for safety and quality management.** Comparisons of public with private food safety management requirements are needed in order to determine where there are synergies to be exploited, efficiencies to be gained, and duplication to be avoided. Moreover, what role can and should the public sector take in regulating the activities of private sector standards schemes?
- **Private safety and quality standards and impacts on international trade.** There is a need for more evidence and analysis on the impacts of private standards on international trade based on concrete country evidence. Do they really act as non-tariff barriers to trade, generally, and specifically in relation to fish and seafood?
- **Assessment tools and methodological advancement.** There is a need for some guidelines or assessment criteria so that industry players can judge the quality of private standards schemes to assess which certification schemes carry most value and have most credence in the market. The GFSI provides a mechanism for benchmarking FSMSs and food safety generally, which covers fish processing activities whether from wild capture or aquaculture sources. The FAO aquaculture guidelines provide minimum criteria for aquaculture certification schemes.
- **Harmonization and mutual recognition – public and private.** There is a need for further harmonization of government food safety regulations. This is gradually being implemented by the relevant Codex committees and by the OIE. The GFSI goal of “once certified, accepted everywhere” is a step towards harmonization of private FSMSs. The FAO aquaculture guidelines could provide the basis for mutual recognition of certification schemes specific to aquaculture. The interface between public and private harmonization efforts could be explored further. The key question is: Which overall global food safety governance framework will best serve consumer protection and public health, as well as industry needs for traceability and risk management, while also promoting efficiencies for the various stakeholders in the supply chain? Some sort of roadmap with desired outcomes and interim deliverables would need to be developed with both public and private sector participation. This would facilitate trade, and would decrease the current complexities in global food safety governance.
- **Support to developing countries.** Support to developing countries would likely be best in the form of assistance to improve the infrastructure (physical, regulatory and institutional) that is a prerequisite for compliance with both public and private food safety and quality standards. This might involve some supply chain development. The transfer of information, technology and expertise from integrated supply-chain actors to other parts of the industry might help fisheries stakeholders move beyond “entry-level commodity trading relationships with international markets” (OECD/FAO, 2007, p. 26) to take advantage of opportunities for more value-addition and subsequently improve access to more lucrative markets or market segments in importing countries. Documenting success stories and sharing these with industry stakeholders in other developing countries would be valuable. In particular, sharing examples of how small-scale fisheries and aquaculture operations have organized to achieve export success, including through group certification, would be useful (see Box 18).