

Liberalization vs. Barriers: Experiences from Selected Fish Exporting Countries in Asia

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Abstract. In many of the developing countries fish export is a significant source of foreign exchange earning that helps to stabilize macroeconomic indicators and provides nutrition and food security to the poor people of these countries. However, performance of fish export of these countries depend on, among other things, continued access to international markets. Though traditional barriers to trade such as tariffs and quantitative restrictions are reduced following the World Trade Organization (WTO) agreement, developing countries are concerned about regulatory barriers such as food safety regulations, quality and composition standards, and labeling requirements. Many consider these policies of the major fish importing countries as protectionist measures. This paper analyzes these issues of fish trade in the developing Asian countries.

Key Words: WTO, Developing Countries, Technical Barriers, Liberalization and Protection, Asia

1. INTRODUCTION

Developing and transitional economies of the world are in the process of opening up their economies to the rest of the world. This is in pursuance of the drive of the bilateral and multilateral donor communities including the World Bank and the International Monetary Fund to restructure the developing economies towards market oriented development. Formation of the World Trade Organization is a step towards this end. The WTO has geared the process of free trade by eliminating traditional barriers to trade. This is unequivocally an opportunity for the developing countries, and the world as a whole to maximize each country's welfare through equal participation in trade and through their comparative advantages. The process of economic liberalization is expected to increase developing countries' export opportunities by reducing distortions in the international fish market in the form of protectionism.

However, simultaneously there is a growing concern among the policy makers of the developing countries that the liberalization of trade could be undermined by the new-protectionist use of regulatory barriers such as food safety regulations, quality and composition standards, and labeling requirements. Many believe that the Technical Barriers to Trade (TBT), and Sanitary and Phytosanitary (SPS) measures might affect exports of fish and other food products of the developing countries (Unnevehr 1999; Jaffe 1999). Developing countries are likely to be left behind, as they will not be able to maintain international standards for their exports given their poor economic position and lack of skilled manpower.

This paper explores the opportunities of trade liberalization and challenges put forward by the SPS and TBT agreements with special reference to fish and seafood exports of the major fish exporting countries. The paper is based on secondary information from different sources such as government documents, the FAO database, and other published literature, and on primary data collected through surveys and field visits under a WorldFish Center coordinated project entitled ‘‘Strategies and Options for Increasing and Sustaining Fisheries and Aquaculture Production to Benefit Poor Households in Asia’.

Section 2 provides an overview of the current status of world fisheries trade. Section 3 discusses status of implementation of WTO agreements in both developing and developed countries. A description of regulatory barriers such as SPS and TBT measures is provided in section 4 and section 5 discusses the implications of the regulatory barriers to the fish exporting countries and problems and potential of implementing SPS, TBT and Hazard Analysis and Critical Control Point (HACCP) by the developing countries. Section 5 concludes with a brief summary and recommendations.

2. WORLD FOOD FISH MARKET: CURRENT STATUS

Over the last decades a significant shift in world trade of fish products from developed North to developing South has occurred. Presently, the developing countries export almost 50 percent of their fish production to the developed nations, and on the other hand they import only 15 percent of their total fish requirements (Table 1). Net exports from the developing countries increased by 230 percent from US\$5 billion in 1980 to US\$16.5 in 1999 ((Delgado and Courbois 1999). On the other hand, the developed countries imported more than 80 percent of world imports in value and the EU, USA, and Japan together imported 77 percent

Table 1 Percent share (%) of fish trade in the world market by developing and developed countries

Year	Developing countries				Developed countries			
	Export		Import		Export		Import	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1995	48.49	50.37	30.31	15.56	51.51	49.63	69.69	84.44
1996	46.58	49.05	31.19	16.79	53.42	50.95	68.81	83.21
1997	47.17	51.16	29.56	17.28	52.83	48.84	70.44	82.72
1998	44.83	48.71	27.02	14.74	55.17	51.29	72.98	85.26
1999	46.96	47.60	30.01	15.12	53.04	52.40	69.99	84.88

Sources: FAO. 2000., Fishstat vol. 2&3. Available online.

Table 2 Leading food fish exporting countries of the World (in billion US\$)

Country	1997	1998	1999
Thailand	4.334	4.038	4.123
Norway	3.422	3.683	3.781
China	3.045	2.744	3.064
USA	2.913	2.452	3.004
Denmark	2.670	2.915	2.891
Canada	2.168	2.279	2.632
Taiwan	1.789	1.593	1.774
Chile	1.851	1.649	1.758
Netherlands	1.435	1.374	1.755
Spain	1.494	1.552	1.619
Indonesia	1.637	1.640	1.551
Korea	1.484	1.361	1.509

Sources: FAO. 2000., Fishstat vol. 2&3. Available online.

(FAO 2001). Other important markets for fish are China, Peoples Republic of Korea, and the Eastern European transitional states.

Among the top ten exporters of fish, Thailand is the leading country in the world in terms of value (Table 2). Other countries like China, Taiwan, Chile, Indonesia and Republic of Korea are among the top ten fish exporters of the world. Although many of the developed countries also contribute to the world export of fish, their net

export is negative and has been declining since the early 1980s. India, Philippines, Vietnam, and Bangladesh also share a significant amount of fish and fish products in world exports.

Trade liberalization calls for a gradual removal of trade barriers (tariff, quota and subsidy) and the implementation of a free market economy among the developing and transitional countries following the spirit of the WTO agreement. Tariff policies of the major fish importing countries such as the EU, USA and Japan are of special interest to the developing countries as they import 80% of their fish consumption requirements from the developing countries. The average tariff rates for the most favored nations (MFN) are 4.1 % in Japan, 10.7% in EU, and 0.9% in USA after the WTO agreement.

The current tariff structure of different fish products in EU and Japan is presented in Appendix 1. Among the major fish importers, USA cut tariffs and reduced duties and taxes significantly. Although the EU and Japan cut tariff barriers significantly from the pre WTO level, these barriers still exist even for the most favored nations and the countries that get (generalized schedule of preference) GSP advantages. The EU has zero tariffs for the GSP listed countries on all kinds of tuna (fresh, frozen and canned), skipjack, snails and seaweeds; Indian mackerels (fresh and frozen only), live fish and frog. For the same countries the EU reduced tariff rates from the conventional rates by 65 percent for crustaceans, scallops and shrimp, and 15 to 30 percent for processed sardine and Indian mackerels. Japan has two lists of countries, one is MFN and the other is GSP. However, there is no significant difference between these two types of countries, although the MFN countries pay 25 percent higher tariff for certain products such as canned tuna, skipjack, sardine, scallops and shrimp than the countries listed as GSP.

Developing countries have been endeavoring to carry out a comprehensive set of structural reforms aimed at liberalizing the fish trade regime. Table 3 shows that significant progress has been made in reducing tariff after the establishment of the WTO. Countries like China, Thailand and the Philippines have made a considerable progress among the Asian countries in reducing tariff on fish and fish products up to 50% after WTO. Being a new member of the WTO, China cut its average tariff rate reduction from 47.2 percent to the range of 12 – 23.3 percent, which is on the average 14.3 percent down in the year 2001 (Table 3). The country has a plan to reduce average tariff rates to 10-12 percent by the year 2004. Until 2004 a few of the aquatic products such as live prawn and fresh or chilled fish fillets will have protective tariff rates of 24 percent and this will be reduced by half in the year 2005 (Table 4).

Other fish exporting developing Asian countries have also reduced tariff rates on fish and fish products. Thailand and the Philippines reduced tariff rates from fish and fish products significantly by 50 – 90 and 70 – 75 percent, respectively in 1999/2000. The liberalization process has been so fast in countries like India and Bangladesh. However, they have also taken the initiative to reduce their tariff rates on fish imports. Although Bangladesh and India have reduced tariff rate on fish products by 42 percent and 52 percent, respectively, these rates are still high compared to other developed and developing countries (Table 3) Simultaneously, many of the developing countries have also taken initiatives to eliminate quota and subsidies. China and Thailand have already eliminated quota and subsidies from the production and processing of fish.

Table 3 Tariff rates (%) of selected developing countries before and after WTO

Country	Before WTO	After WTO	Year of Implementation	Source
China	47.2	12 – 23.3	1998	Collected by the authors
Thailand	60	5 – 30	1999	Custom Department 1987, 1988, 2001
Philippines	10-60	3 –15	2000	Collected and compiled by the authors
India	60	35.20	2002/3	Collected and compiled by the authors
Bangladesh	59.33	28.23	2000/01	WTO 2000

It is evident from the above discussion that the progress of implementation of free trade in the developing countries has been slow as compared to the developed countries. This is largely due to structural rigidities and most importantly, fear of losing market share for their fish and fish products both in the domestic and international market. Tariff rates are still very high in many of the developing countries. Nevertheless,

understanding the problems of the developing countries the WTO has extended time for full compliance until 2005 for few developing countries like Bangladesh, India and China. Table 4 shows the schedule of tariff reduction. In addition to the reduction of tariff barriers, the WTO has ensured increased market access for the fish producing countries by providing legal security for market access through tariff bindings.

While the developing countries have been struggling to cope with the tariff agreements of the WTO, the new health safety and TBT measures may have adverse implication for the developing countries' export of fish and other food products. The future of fish exports from the developing countries is being seriously threatened by these regulations, which are being progressively imposed by the major fish importing countries. Many developing countries face difficulty in complying with the health standards of the fish products set by the developed countries. The traditional methods of preservation, marketing and distribution practiced in many developing countries are being challenged by the requirements of applying modern quality assurance programs for fish and fish products.

Table 4 Import tariff rates (%) on selected aquatic products in China

Aquatic products	Tariff rate (as of December 2001)	Final Bound Tariff Rate	Date of Final Bound Tariff Rate
Live eels	16	10	2004
Other live fish	12	10.5	2002
Fresh or Chilled Fish			
- Trout	12	12	2002
- Pacific salmon	11.7	10	2002
- Herrings	16	12	2003
Frozen Fish			
- Trout	12	12	2002
- Eels	16	12	2003
- Pacific salmon	16	10	2004
Fresh or chilled fish fillets	24	12	2005
Frozen Fish fillets	23.3	10	2005
Frozen shelled shrimp and prawn			
Frozen unshelled shrimp and prawn	17.5	5	2003
Frozen crabs	23.5	10	2003

Source: China's WTO Protocol of Accession, November 2001

3 HEALTH SAFETY AND TECHNICAL BARRIERS TO FISH TRADE: A BRIEF REVIEW

The genesis of health safety and technical barriers follows the Codex Alimentarius Commission's (CAC 1996) recommendation to adopt a food safety management system called Hazard Analysis Critical Control Points (HACCP) in 1993 considering concerns of consumers of the food and fish importing countries. The recommendations of the CAC have got legal status of international stature when the recommendations were endorsed and made virtually mandatory by the WTO agreements on Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT) (WTO 1995).

Although the SPS and the TBT have common objectives, scope of these two agreements varies in terms of enforcement and application. The SPS include those purposes that aim to protect human or animal health from food-borne risks, animal or plant borne diseases, and pests or diseases that are technical or not (Khan 2002, Musonda and Mbowe 2002). The TBT covers all technical regulations, voluntary standards and procedures with the exception of sanitary and phytosanitary measures. The TBT measures cover any subject from car safety to energy-saving devices, to shape of food cartons and human disease control (unless carried by plants or animals). Labeling requirements, nutrition claims and concerns, quality and packaging regulations are also subject to TBT (Khan 2002; Musonda and Mbowe 2002).

Despite differences in scope and coverage both the agreements have common obligations and responsibilities. Both possess the same basic obligations of non-discrimination and unbiasedness such as, requirements for advance notification of any measure they propose and creation of enquiry points. Both the agreements encourage enforcing international standards. The SPS agreement provides harmonization of health measures of member countries with international standards. The CAC also has a clear and strategic interest in promoting maximum use of these standards both for domestic and international standards. At the national level the

institutions dealing with standardization activities are encouraged to follow international standards, guidelines and recommendations for both domestic and global trade. An important element of international standard guidelines is the compliance with HACCP.

Many countries around the world including USA, CANADA, Australia and the EU countries have been adopting this system both in domestic and global trade for fish. Countries intending to export fish and fishery products to the EU, Japan and USA must follow the standards fixed by these countries. The safety issues for seafood are highly focused, well defined, and limited to a few species. For seafood-borne illnesses (in which the cause was known) more than 90% of the outbreaks and 75% of individual cases have been associated with ciguatoxin (from a few reef fish species) and scombrototoxin (from tuna, mackerel, bluefish, and a few other species) and the consumption of raw mollusks (Garrett et al 2002). Hazards linked with the consumption of all food (including seafood) can be classified into three areas: product safety, food hygiene and mislabeling or economic fraud. Generally, the sources of safety risks of seafood products (cultured and wild-caught) have been identified to be linked with environment, food processing, distribution, and consumer-induced risks (Garrett et al 2002). The environmental risk category is further subdivided into natural hazards (e.g., biotoxins) and anthropogenic contaminants (e.g., polychlorinated biphenyls) (Garrett et al 2002).

Procedures to safeguard animal health and food born diseases are set out in the European Commission Codes of Practice, which describes how to prevent the adverse effects of introducing new and exotic species and emerging animal pathogens. They fix standards for the products to be imported to the EU and similar standards are followed by the United States and Japan. Appendix 2 shows an example of the standards set for Thailand by the European Union, Japan and the United States to export its products.

The European Union has classified the non-EU countries into two categories based on the countries' legislation for health safety measures and the authority of the country to enforce inspection services, and general health conditions. The first category is composed of countries those are fully "harmonized" (Appendix 3) and their legislation requirements are at least equivalent to those governing EU domestic production, and with whose safety requirements the EU inspection team is satisfied. The second category of countries is listed in Appendix 4, where the EU team of inspectors has not yet visited them. These countries have provided enough guarantees concerning their sanitary and health safety inspection system and requirements.

4 HEALTH SAFETY AND TBT REGULATIONS: IMPLEMENTATION STATUS IN DEVELOPING COUNTRIES

Many of the developing countries have made progress towards implementing the HACCP measures despite heavy investment requirements to install related plants and make them operational. Based on results of an FAO survey regarding the compliance of HACCP procedures, the status of the countries has been categorized. Among the developing countries Uruguay, Brazil, Chile, Ecuador, Thailand, India, Malaysia, Philippines, Indonesia, Argentina, Peru, Cuba, Morocco, Sri Lanka, Vietnam and Bangladesh have introduced HACCP procedures. In the second group of countries, the private sector is taking the lead voluntarily in trying to introduce HACCP processes for fish and seafood export. These include Madagascar, Venezuela, Honduras, Tunisia, Myanmar and Portugal. The third group consists of countries including Russia and China where governments have agreed to follow HACCP requirements but have not yet defined the process. Countries where the status of HACCP processes is unclear include Pakistan, South Korea, Iran, Colombia, Panama, and most African countries.

Fortunately, many developing countries have been authorized to export fish and seafood to the EU, USA and Japan based on their performance with respect to HACCP procedures. To ensure quality of the fish products many developing countries have promulgated or in the process of making new sanitary rules and regulations based on HACCP and have set up responsible authorities for inspection and quality control. As an example of statutory support to the Fish Inspection and Quality Control (FIQC) authority, in 1997 the government of Bangladesh amended fish and fish product (Inspection and quality control) ordinance of 1983 and related rules of 1989 to accommodate HACCP procedures (Ali and Islam, 2002). Similarly, other Asian fish exporting countries such as Indonesia, the Philippines, and Sri Lanka have some form of legislative support to comply with the HACCP requirements. Some other Asian countries like Malaysia and Thailand have made it voluntary as the fish and fish product exporters are willing to comply. China, however, is yet to formulate any law that can directly address the HACCP.

Although progress has been made in HACCP implementation, problems still remain in terms of inadequate capacity and proper management of the inspection system. The problem is perpetuated in most of the developing countries where more than one ministry or department is involved in fish inspection and quality control activities (Table 5). For example, in Thailand two government institutions and the private laboratories are responsible for the HACCP implementation. These government institutes are; (i) Fish Inspection and Quality Control Division (FIQD) of the DOF, and (ii) Food and Drug Administration (FDA) of the Ministry of Public Health (MoPH). The private enterprise body is the National Food Institute (NFI).

Table 5 Legal status of HACCP implementation in Selected Asian countries

Country	Legal status/National Regulations	Implementing Agency
Bangladesh ¹	Fish and Fish products (Inspection on quality control) Ordinance 83/89/97	Ministry of Fisheries Directorate of Fisheries
China ²	Yet to promulgate	
Indonesia ²	- Ministerial decree 41/1998 - DOF Decree 4128/1998	- Ministry of Fisheries - Provincial Laboratories
Philippines ²	Philippines Fisheries Code, 98 (and various FAOs)	Bureau of Fisheries and Aquatic Resources
Malaysia ²	Voluntary	Department of Health on request
Thailand ²	Voluntary	- Department of Fisheries (DoF) - Food and Drug Administration (FDA) - National Food Institute (NFI) - Private Labs
Sri Lanka ²	Fish product (export) regulations, 1998	- Department of fisheries - Sri Lanka Standard Institution (SIS)

Source: 1. Ali and Islam, 2002., Standard in fisheries sector vis-à-vis international standard and its role for promoting export. Paper presented in national workshop on sanitary and phytosanitary measures, May 2002, Tariff Commission, Dhaka, Bangladesh.

2. Based on field visits by the authors.

Among these institutes, the FIQD of the DOF provides services for the HACCP with the requirement that a factory needs to be a member of a fishery association, while the FDA is responsible for HACCP certification and HACCP auditing every year. The NFI are responsible for yearly auditing, while the private laboratories are responsible for HACCP certification and auditing. Thus, depending on the diversity of fishery resources and the nature of HACCP application, different government agencies and organizations having various degrees of legal and administrative authority are closely associated with the HACCP application. This has led in many cases to overlap of administrative authorities and raises administrative conflicts among implementing agencies.

4.1 Benefits and Costs of Compliance with the Health Safety Standards for the Fish Exporting Countries

Many developing countries are facing difficulties in complying with the food safety and quality assurance processes. In order to ensure adequate and quality production of fish products significant investment is needed to implement the HACCP process. Table 6 shows that investment requirements for HACCP plants are huge for selected developing countries as most of the capital goods related to the plant need to be bought from the developed countries. Installation cost of HACCP plants is the highest in Malaysia followed by Thailand. Bangladesh has the lowest installation cost after India. It is estimated that operating costs of each plant in the countries mentioned in the table ranges between US\$.27 million and US\$ 0.38 million. An average plant is estimated to spend US\$ 34,900 to US\$ 71,500 per year to maintain a HACCP plant. An important fact to note that the higher installation cost does not mean higher average cost per kg of fish processing or testing. This is evident in Thailand where cost of processing fish and fish products appeared lowest per kg. This shows efficiency in utilizing the HACCP process in the country. In a study on Bangladesh, Cato and Santos (1998)

showed that to install a HACCP plant, a developing country like Bangladesh needed 9.4 percent of its export revenue from fish and 1.26 percent of the same to maintain the HACCP plant each year.

Table 6 Cost of implementing HACCP in selected countries in Asia

Country	Thailand ²	India ²	Bangladesh ¹	Malaysia ²
Cost of a plant (US\$ in thousand/year)	47.62--71.43	41.237	34.88	
Total investment of a plant (US\$ in thousand)	380.95 – 404.80	309.28	277.16	3000.00
Cost fish processing (US\$/kg/year)	0.010 - .014	0.21- 0.28	0.033 –0.090	
Total Investment (US\$ in million)	1.07		14.9	315.00

Source: 1. Cato and Santos, 1998

2. Field survey by the authors and their research partners

As evident from the above discussion, compliance with the requirements of food safety and quality set by the major fish importing countries has huge costs. In some instances these costs are unbearable to many poor exporting countries. However, who will bear this extra cost of compliance is an important issue in the current debate on fish trade. Shifting the additional cost of compliance to the consumers of the developing countries may be a solution. Policy research can be extended to find if the proposition is politically and economically feasible. Based on the estimated per kg cost of processing shown above, one can safely conclude that it will not add too much to the retail price of the consumers. Empirical evidence also support the above argument. Degner and Petrone (1994) showed that consumers are willing to pay a premium in terms of higher price for safer and quality food. The study conducted on oysters and clams in Florida, United States indicated that the consumers and restaurant owners were willing to pay a premium for depurated food products. Using a base price of US\$.50 per oyster, 70 percent indicated their willingness to pay an average of US\$.18 more, or a 36 percent premium for sanitized products. A higher consumer price in the developed countries for quality products will reduce the burden of the developing countries to implement a food safety and quality assurance program. Consumers in developed countries may also indirectly pay for safer seafood from developing countries if aid programs to train and to create an adequate processing infrastructure in developing countries are funded by the developed countries (Cato and Santos, 1998).

One can make a different argument that if a product has a good reputation for quality and safety, consumers generally pay more. Therefore, consistent compliance of the regulatory barriers will bring "good reputation" to the exporting countries and the importing countries will be willing to pay higher prices. This might be the one of the reasons for price differentials of same products in different countries. Table 7 shows that for the same products (Headless Black Tiger Shrimp of Sizes 16/20) Thailand received a higher price in EU, Japan and US markets than its competitors.

It is evident that several bans were imposed due to non-compliance of the safety regulations on some developing countries. The EU bans on imports of shrimp from Bangladesh in 1997 and, from Tanzania and Uganda in 1999 are worth noting. In every case the effects of bans

Table 7 Average price (US\$/Kg) of frozen shrimp imported into U.S., Japan and EU from the developing countries (Headless Black Tiger Shrimp of Sizes 16/20)

Exporting Countries	1998			1999			2000		
	USA	Japan	EU	USA	Japan	EU	USA	Japan	EU
Thailand	18.32			16.77			18.36		
Indonesia	16.92	13.93		16.28	15.79		18.04	16.75	
Vietnam		14.30	17.15		14.76			16.70	13.00
Philippines		14.62							
India	16.24		16.50	15.64	14.79		17.71	16.40	12.90
Bangladesh	15.03	13.67	11.70	15.50	13.55	11.92	17.49	16.95	12.50

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Source: INFOFISH, Trade News Letter. Compiled from various issues.

on export revenues and on employment were massive. The ban remained effective for five months in Bangladesh and caused serious injury to the fishery sector as a whole. About a million people related to shrimp culture in different stages of the production process were affected. Cato and Santos (1998) made an indepth study of the negative impact of the EU ban on import of shrimp from Bangladesh. The study estimated that about US\$ 14.1 million was the cost of the EU ban on Bangladesh.

Cato and Santos (1998), Calzadilla-Sarmiento (2002) and UNIDO (2002) identified several constraints of the developing countries in complying with SPS/TBT agreements. These are as follows:

- Insufficient technical know-how, lack of competent human and financial resources.
- Deficient organizational fish inspection framework. Lack of a clear line of command and accountability due to the involvement of two or more authorities. This causes conflicts, which hamper the quality of work.
- Regulations lack updating to meet the demand of international and domestic market requirements and are not fully enforced.
- Due to weak capacity fish inspectors cannot perform their duty properly as they lack of training on HACCP.

5. CONCLUSION

Health safety concerns are vital and it is the legitimate claim of the consumers of both developed and developing countries to have safe, and contamination and radiation-free food. Developing countries should realize this fact and act as quickly as possible so that they are able to meet the safety conditions. Maintaining high quality food and fish can be viewed as a competitive strategy to stay ahead of others in the world market. However, it is extremely hard to bring all the small producers who are scattered through out rural/coastal areas to HACCP processing plants. Steps should be taken so that these long supply chains can be shortened. To this end cooperation between donor countries, international agencies, national institutions and private entrepreneurs is required to ensure optimum use of the available resources allocated to HACCP related activities.

Technical assistance is needed from the developed countries or international donors for capacity building through strengthening the regulatory framework and installation and upgrading of the testing facilities to meet of international standards. Training and motivational work needs to be intensified for the people involved in the post harvesting activities. Coordination and linkage among the regulatory and enforcement institutions are necessary for smooth implementation of the health safety program. At the international level coordination between all HACCP implementing countries should be established to resolve all related issues.

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APPENDICES

Appendix A Import taxes of fisheries product in EU and Japan

Product	European Union		Japan	
	Conventional	GSP	MFN	GSP
Tuna (Yellow Fish)				
- Fresh	22	0	3.5	3.5
- Frozen	20	0	3.5	3.5
- Canned	24	0	9.6	6.4
Skipjack				
- Fresh	22	0	3.5	3.5
- Frozen	22	0	3.5	3.5
- Canned	24	0	9.6	6.4
Tuna (Blue fin)				
- Fresh	22	0	3.5	3.5
- Frozen	22	0	3.5	3.5
- Canned	24	0	9.6	6.4
Sardine				
- Canned	12.5	10.6	9.6	7.2
Indian Mackerels				
- Fresh	20	0	0	0
- Frozen	20	0	0	0
- Canned	25	17.5	9.6	7.2
Shrimp				
- Fresh	12	4.2	1	1
- Frozen	12	4.2	1	1
- Canned	7	7	4.8	3.2
Scallops				
- Live, fresh, chilled	8	2.8	10	7.2
- Canned	20	7	9.6	7.2
Crustaceans				
- Live, fresh, chilled	10	8.2	7	7
- Canned /processed	20	7	6.7	6.7
- Other processed	20	7	6.7	6.7
Live fishes				
- Fresh water fish	Free	0	0	0
- Ornamental sea fish	7.2	0	0	0
- Carp and gold fish	8	0	3.5	0
- Others	2 - 16	0	1.7	0
Frog legs	6.4	0	0	0
Snails	0	0	0	0
Sea weeds	0	0	0	0

Source: Deere, 1999 and Dahuri, 2002

Appendix B Regulatory and Technical Standards on Thai Fish and Fishery Products Imposed by Selected Trading Partners

Country	Fish and Fishery Product	Details of the Standards
European Union	1. General Sea Food	<ol style="list-style-type: none"> 1. Sanitary Certification from the Thai DoF 2. Production factories are inspected and certified by the Thai DoF
	2. Boiled Shrimp	<ol style="list-style-type: none"> 1. GMO labeling 2. Production materials are GMO free 3. Eco-labeling 4. Benzoic acid control (not exceeding 0.2% while shrimp produced within the EU, 0.6%)
	3. Agricultural products including fishery products	<ol style="list-style-type: none"> 1. GMO labeling 2. Certified by the component authority 3. Name the list in the EU component list 4. ISO 9002 and HACCP certified
	4. Caned Sardine	<ol style="list-style-type: none"> 1. Species labeling – only <i>Sardinella pitchdu</i> is allowed to enter the EU 2. Factory/commodity certificate issued by the component authority 3. Certificate issued by the EU council
Japan	1. Processed seafood	<ol style="list-style-type: none"> 1. Japan implements the Pre-Certification (equivalent to the HACCP). Serious food safety inspection based on the pre-certification. 2. Sanitary standard under the Food sanitary laws, no trace of antibiotics deposited.
	2. Canned tuna	<ol style="list-style-type: none"> 1. Imported only canned tuna code HS 0304 10110

Appendix B continued

Country	Fish and Fishery Product	Details of the Standards
Japan	<p>3. Processed seafood</p> <p>4. Canned tuna</p>	<p>3. Japan implements the Pre-Certification (equivalent to the HACCP). Serious food safety inspection based on the pre-certification.</p> <p>2. Sanitary standard under the Food sanitary laws, no trace of antibiotics deposited.</p> <p>1. Imported only canned tuna code HS 0304 10110</p>
The United States	<p>1. Frozen shrimp</p> <p>2. Marine Prawn</p> <p>3. Frozen crab</p> <p>4. Frozen sea food</p> <p>5. Canned seafood</p> <p>6. Canned shrimp</p> <p>7. Canned Tuna</p> <p>8. Canned sardine</p> <p>9. Seafood product</p>	<p>1. Import restriction based on environmental conservation</p> <p>1. Prohibition of marine prawn import that has no or inferior measures or laws on sea turtle protection</p> <p>1. Import restriction based on environmental conservation</p> <p>1. Hazard Analysis and Critical Control Point Certification (HACCP)</p> <p>1. HACCP certificate</p> <p>1. Import restriction using environmental standard, i.e. dolphin and sea turtle conservation</p> <p>1. Import prohibition of tuna and tuna products from purse seine that is harmful to Dolphin</p> <p>2. Current Good Manufacturing Practice (CGMP) certificate</p> <p>1. CGMP certificate</p> <p>1. HACCP certificate</p>

Department of Foreign Trade. 2002. Non-tariff barriers of foreign trading partners, office of Policy and Strategy Development and Information System, Ministry of Commerce, Government of Thailand.