

Sanitary Standards in the EU: The Impact on Malaysian Fishing Industry

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Malaysian seafood exports to the EU faced blanket ban in 2008. The European Union is known to have the most stringent regulations with regard to food safety and standards. This has caused significant impact on the fisheries industry in Malaysia because the EU is the principal export market for the Malaysian seafood products and the fisheries sector is the second most important foreign exchange earner of the country. This industry employs about 10,000 workforce who are directly involved in the industry in addition to 50,000 others who are indirectly employed in the sector. As of January 2009, Malaysia lost about RM1.5 billion as a result of this ban. The objective of this paper is to evaluate the implications of the EU's restriction on Malaysian seafood industry. The findings show that the impact is significant especially in terms of border rejection rates, cost of compliance and upgrading the facilities, lost of employment and adjustment costs. Technical and financial assistance from the government are crucial for the industry in coping with the moving targets of safety requirements imposed by the EU. Other incentives such as tax exemption, soft-loan facilities, subsidised rate for electricity and energy, support in the form of trade promotion and enhancing trade with other Muslim countries especially the Gulf States are deemed important to assist the industry.

1. Introduction

In 2008, Malaysian seafood products were banned from entering the EU market. It was due to the failure of Malaysian seafood producers in maintaining quality and sanitary standards of their products such as the

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usage of contaminated ice, unhygienic condition of the ice factories and dirty landing jetties². This is not surprising because the EU has been at the forefront in setting stringent food safety standards and regulations. Experiences of the developing countries suggest that sanitary and phytosanitary (SPS) and technical barriers to trade (TBT) are two measures that have significant impact on fisheries trade. SPS measures concern food safety to protect human, animal and plant health which involve inspection, assessment and certification requirements. TBT focuses on product standards and technical regulation which include provisions on quality, standards, source of origin and now a number of developed countries have introduced additional requirements on traceability and labelling schemes (ICTSD, 2006). Under the WTO, the SPS and TBT Agreements call for transparency in the measures applied and these agreements support equalisation of international standards and harmonisation of the procedures, assessment process and approval system.

These requirements have been evolving continuously in response to emerging problems and hazards, advances in scientific knowledge, consumer awareness and concerns and political pressures (Henson et al., 2004). As a consequence, developing countries often find it difficult to meet these moving targets of safety requirements imposed by the industrial economies (ICTSD, 2006). Export consignments from developing country have been facing rising number of rejections at the EU borders for failure to meet quality standards despite their efforts to conform to the required standards. The EU's high sanitary and phytosanitary standards have had significant impact in terms of lost of export earnings, bankruptcies and unemployment. The recent ban on Malaysian seafood products for example has cost the industry more than RM1.5 billion to date and about 10,000 people who are directly involved in this industry would be affected in one way or another.

The Malaysian seafood industry is the second largest food export industry in Malaysia with a total export value over RM2.5 billion

² NST (2008), Fish Product Ban by EU Results in RM600 million Loss by Malaysia", taken from http://www.nst.com.my/Current_News/NST/Saturday/NewsBreak/20080830174049/Article/index_html (1/9/2008)

annually. The European market is the main export market for Malaysian seafood and it constitutes about one third of the total Malaysia's fish export. The recent ban on the Malaysian seafood exports to the EU has prompted the interest to undertake this study to examine the impact of the EU's sanitary standards on fisheries industry in Malaysia. The discussion is arranged as follows. Section 2 examines the trend in fisheries sector in Malaysia. The trend and development in the EU's seafood trade and Malaysia's trade with the EU are analysed in sections 3 and 4. Section 5 evaluates trade barriers in fisheries trade and the focus of the discussion here is on the sanitary standards imposed by the EU. Analysis on the impact of these measures on Malaysian fish industry is deliberated in Section 6. Section 7 draws policy conclusions.

2.0 Malaysia's Fish Production and Trade

2.1 Production

Fish industry in Malaysia is relatively insignificant in terms of its contribution to GDP (1.7 percent of GDP in 2004) and foreign exchange earnings (0.5 percent of total exports). Fish production in Malaysia largely comes from marine capture sources, accounting for 87 per cent in 2004 (Department of Fisheries Malaysia, 2004). The rest of production is contributed by inland fisheries and aquaculture. Since 2000 the government has been seriously encouraging the aquaculture production and its result in terms of the sector's contribution to total fish output is apparent as shown in Table 1. The share of aquaculture in total fisheries production rose from 13 per cent to 19 per cent between 2000 and 2001, and the share remained at this level since then.

The sector's contribution to rural employment is notable. In 2004, there were about 89,453 fishermen working on licensed fishing vessels and 21,507 fish culturist involved in various aquaculture systems (Department of Fisheries Malaysia, 2004). Sabah has the highest total number of the fishermen working on licensed vessels with a total of 20,845 fishermen accounting for 23.3 percent of total fishermen in Malaysia. This is followed by Sarawak (13,206 of fishermen and accounts for 14.8% of total fishermen in the country), Terengganu (8,654 fishermen; 9.7%) and Perak (8,136 fishermen; 9.1%). Majority of

the fishermen in Malaysia are Malays (50%), followed by immigrant workers (31%), Chinese (17%) and Indian (less than 1%)³.

Table 1: Malaysia: Fish Production from Marine Landings and Aquaculture, 2000-2004

Year	Marine Landing		Aquaculture		Total Value (RM mill)
	Value (RM mn.)	% of Total	Value (RM mn.)	% of Total	
2000	4,399.20	87	665.3	13	5,064.60
2001	4,166.10	81	958	19	5,124.10
2002	4,206.80	83	843.5	17	5,050.30
2003	4,013.60	81	931.1	19	4,944.70
2004	4,241.50	82	903.4	18	5,144.80

Source: Base on data taken from Mohd. Fariduddin (2006)

Fish processing industry is not large and there are only about 150 enterprises involved in this activity. Most of the fish processing firms are family owned and small or medium-sized. The sector is largely export-oriented and consists of processing of prawns, canning of fish, and the production of surimi⁴ products⁵. The frozen fish and seafood industry is the largest of the fish processing industry segment in Malaysia⁶. In 2000, about 13 major enterprises were involved in the production of frozen fish and seafood products. The canned fish and seafood industry is the second largest while the surimi production is the third important fisheries processing sub-sector in Malaysia. There are only about 7 firms respectively in these two sub-sectors. The canning of fish and seafood products include canned tuna, canned mackerel and canned sardines, canned prawns or shrimps, canned crustaceans and canned molluscs. Some of the surimi producers are contract manufacturers for European and Japanese seafood companies.⁷

³ http://www.fao.org/fishery/countrysector/FI-CP_MY/en

⁴ Processed fish used in the preparation of imitation seafood, especially imitation shellfish.

⁵ MIDA (2007), "The Food Processing Industry in Malaysia", taken from <http://www.mida.gov.my/beta/view.php?cat=5&scat=9&pg=1703>

⁶ GAIN Report (2002), "The Malaysian Seafood Market 2002", obtained from <http://www.fas.usda.gov/gainfiles/200201/135683143.pdf>.

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This sector receives quite substantial amount of subsidy and other types of support from the government. Under the New Economic Policy (1970-1990), the government provided various subsidy schemes for the fishermen which include improving existing vessels, purchasing of fishing nets and ice boxes, and in some cases even providing fishing boats to fishermen who do not own them (Hashim, 1998). In addition, the government also developed infrastructure facilities for the fishing communities, assists in the marketing of fish through cooperative scheme and provide marine research and training services to improve productivity of local fishermen. Furthermore, Malaysia fishermen also receives diesel subsidy, where in year 2007 about 80,000 fishermen in the country were entitled to a subsidy-scheme where they pay just RM1 per litre for diesel instead of the market price of RM2.20⁸. Mehmet (1986) however suggests that these fisheries subsidies and support schemes have been a failure as result of inadequate and ineffective supervision. The World Bank (1991) seconded this view but added that the schemes have substantially helped poor fishermen in terms of productivity improvement and pushing their income level higher. The report noted that without the subsidy scheme, the poor farmers could have never afforded modern boats and equipments. The benefit is seen in terms of reduced poverty level among the fishermen. Hashim (1998) reported that the poverty level in the fisheries sector fell from 45.3 percent in 1980 to 24.5% in 1987 as result of these schemes.

2.2 *Fish Trade*

Malaysia is a net importer of fisheries product in terms of volume and a net exporter in terms of value. In 2004, fish product is the only sub-sector which recorded surplus balance in the food trade (see Table 2). This is contributed by exports of high-value fish (such as tuna) and high-quality shrimp species which offset high import expenditure on fish.

⁸ <http://thestaronline.com/news/story.asp?file=/2007/11/27/nation/19585429&sec=nation>

Table 2: Malaysia's Food Trade in 2004

Commodity	Exports (RM million)	Imports (RM million)	Trade Balance (RM million)
Livestocks	1005.2	2696.3	-1691
Fish products	2073	1935	138
Agricultural	4337.5	7778.4	-3441
Others	2513.8	4144.8	-1631
Totals	9930	16554.5	-6625

Source: Mohd Fariduddin Othman (2006)

Imported fish largely originates from Thailand (accounting for 59 per cent of total fish import in 2003). The rest of the imports are sourced from Indonesia (14%), China (5%) and India (5%). The top export destinations of fish and fisheries products in value terms are Singapore (14%), Japan (12%), Hong Kong (8.6%), Thailand (6%), China (5.6%) and the EU countries such as United Kingdom, Spain, Belgium, Italy and other countries (see Table 3).

Table 3: Malaysia: Top Ten Importers of Fisheries Commodities in 2003

Country	Export Value (RM)	Percentage of total fish export value (%)
Singapore	226,974,092	13.5
Japan	199,787,364	11.9
Italy	144,994,431	8.6
Hong Kong	112,743,586	6.7
United Kingdom	102,810,454	6.1
Thailand	101,458,057	6.0
Belgium	99,003,185	5.9
Spain	96,379,146	5.7
China	93,473,074	5.6
France	89,171,347	5.3
Total Export to Top Ten Countries	1,266,794,736	75.3
Total Export of Fisheries Commodities	1,682,044,328	100

Source: Based on data taken from Department of Fisheries Malaysia (2004)

The bulk of fish exports are in the processed form (processed prawns, canning of fish, and the production of surimi products). Frozen shrimps lead the list with a share of 40 per cent of total fish exports (see Table 4).

Table 4: Malaysia: Top Ten Commodities Exported in Terms of Value (2003)

Type of Commodities	Export Value (RM)	Percentage of Export Value (%)
Shrimps and Prawns, Fit for Human Consumption, Frozen	670,883,299	39.9
Cuttlefish and Squid, Frozen	157,584,339	9.4
Shrimps and Prawns Other than In Airtight Containers, Prepared or Preserved	87,820,916	5.2
Shrimps and Prawns, O/T in Shell, Fresh or Chilled	76,441,765	4.5
Other Ornamental Fish, other than Fry, Alive	71,632,621	4.3
Other Live Fish, other than Trout, Eels or Carp	67,678,871	4.0
Flours, Meals & Pellets, of Fish Meal, Unfit for Human Consumption	58,269,523	3.5
Other Fish, Whole or in Pieces, but not Minced, Other than in Airtight Containers	55,099,811	3.3
Other Prepared or Preserved Fish, in Airtight Containers	41,047,083	2.4
Other Fish, excluding Livers and Roes, Fresh, or Chilled	38,978,504	2.3
Total Top Ten Commodities	1,325,436,732	78.8
Total Export of Fish Product	1,682,044,328	100.0

Source: Department of Statistics Malaysia (2004)

Other major exports are frozen cuttlefish and squid (9%) and prepared or preserved shrimps and prawns (5.2%). Live fish, shrimps and ornamental fish account less than 15 per cent of the total exports in 2003.

2. The EU Fisheries Trade

The EU is key market and exporter of fish product in the world, where it accounted for 44 per cent and 37 per cent of total world import and export of fish respectively in 2005. The EU has trade deficit in fish and fishery product. In 2005, EU imports of fish, crustaceans and molluscs totalled US\$35.9 billion while exports totalled US\$28.8 billion, a trade deficit of US\$7.1 billion.

Major EU fisheries exporters are Netherlands, Spain, UK, France and Germany, and these five countries account 63 percent of total EU fish exports (see Table 5). In 2005, about 82 percent of EU's exports were traded between its members⁹.

Table 5: Major Fish and Fish Products Exporters in the EU, 2005

Country	Exports in US\$000	% of Total EU Exports of Fish
Netherlands	2820	17
Spain	2579	16
UK	1872	11
France	1583	10
Germany	1501	9
Total EU Fish Export	16429	63

Source: FAO, 2005

High share of fish products are traded between the EU members. In 2005, import from EU (25) accounts 43.2 percent of total EU fisheries import, while the remaining supplies were sourced from other European countries (14.7%), Africa (10.3%), South America (9%), East and Southeast Asia (5.2%) and China (2.9%). Norway is the main supplier of fish and fishery products to the EU (see Table 6). Other major suppliers are Iceland, China, United States, Morocco, Thailand, Ecuador, Argentina and India. These ten countries account for more than half of all imports into the EU fish and fishery products (European Commission, 2007).

The EU's dependence on imported non-processed fishery products to cater its processing industry has increased over the years as a result of declining fishery stocks in its waters and the reduced annual TACs (USDA, 2007). Spain accounts for 22 percent of total EU imports and other major importing countries are UK, Denmark, Germany and Italy. The largest category of fish products imported into the EU is shrimps, followed by cod, trout and salmon and tuna (Nolting, 2006). In 2005, the EU25 imported shrimps worth €2.5 billion and shrimp accounted for about 18 per cent of total import of fishery products¹⁰.

⁹ Calculated based on data obtained from FAO (2005), Yearbooks of Fishery Statistics

¹⁰ http://ec.europa.eu/trade/issues/sectoral/agri_fish/fish/pq_en.htm

Table 6: Major Exporters of Fisheries Products to the European Union, 2005

Country	Fish Trade (EUR Million)	Share in Extra EU 25 imports of fish and fishery products(%)
Norway	2386	17
Iceland	1082	
China	871	8
USA	687	6
Morocco	667	5
Chile	479	5
Thailand	429	3
Ecuador	410	3
Argentina	403	3
India	372	3
Sub- Total	7786	55

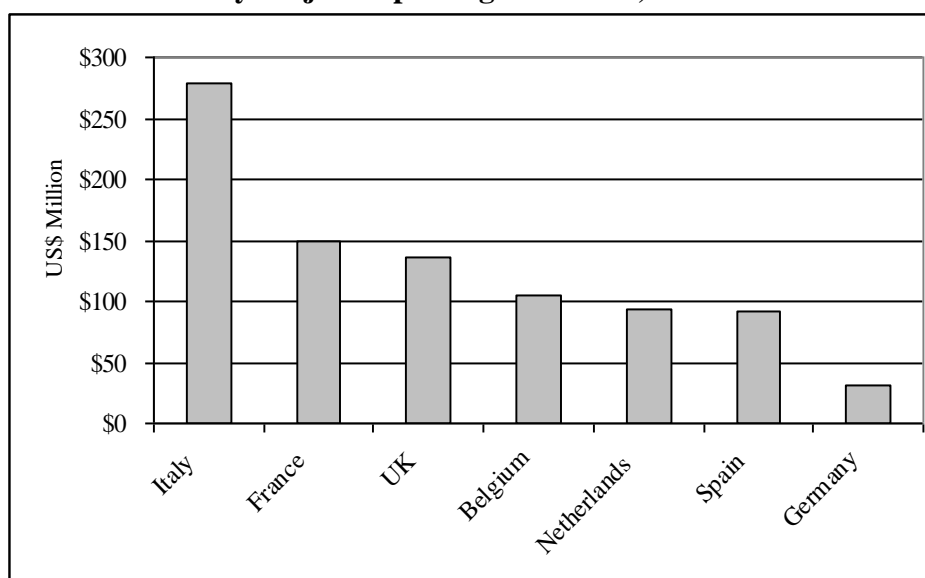
Source: European Commission (2007)

Spain is the major importer of shrimps in the EU, accounting for 25 per cent of total EU import of shrimps in 2004. This is followed by United Kingdom (17 per cent), France (13 per cent), Italy (7 per cent) and Germany (4 per cent). In 2005, the major suppliers of shrimps to the EU market (in terms of volume) are Greenland (15%), Ecuador and India (8%), followed by Brazil and Canada (7%)¹¹. Shrimps can be categorized into two types, coldwater shrimp and warm-water shrimp. Generally, consumers in North Europe prefer coldwater shrimp while the tropical warm-water shrimp are preferred by the Southern Europeans (Nolting, 2006). However, since the supplies of cold-water shrimp have reduced in the recent years, the warm-water shrimp is becoming increasingly popular in the Europe.

4. Malaysia's Fisheries Exports to the EU

The EU is the most important market for Malaysia's fish export. In 2007, the EU imported RM 630 million worth of fish and fish products from Malaysia and it constitutes about one third of the total Malaysia's fish export. Italy is the largest buyer followed by France, UK, Belgium, Netherlands, Spain and Germany (see Figure 1).

¹¹ http://ec.europa.eu/trade/issues/sectoral/agri_fish/fish/pq_en.htm

Figure 1: Malaysia's Export of Fish, Crustacean and Molluscs to the EU by Major Importing Countries, 2000-2006

Source: Comtrade Online Database

Note: Data are for Fish, Crustacean and Molluscs, SITC Code 03

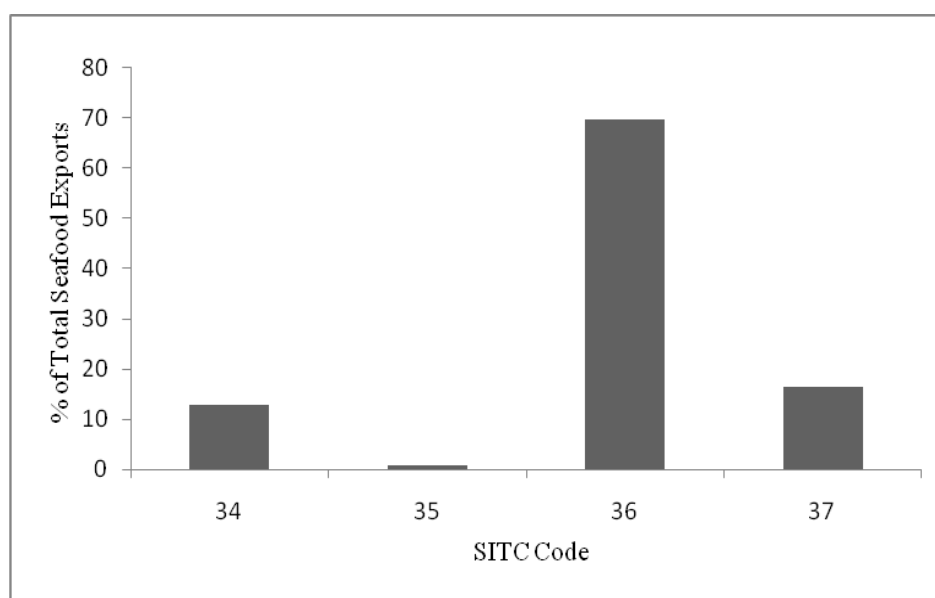
Table 7: Seafood Export from Malaysia to European Union, 2004-2007 (in Ringgit)

SITC CODE	Product Classification	2004	2005	2006	2007
34	Fish, Fresh, Chilled and Frozen	33,718,750	40,097,037	63,419,461	81,299,904
35	Fish, Dried, Salted, in Brine, Smoked	2,214,771	2,395,188	4,130,155	5,070,573
36	Crustacean, Molluscs etc	447,286,736	433,464,037	436,539,057	439,503,522
37	Fish, Crustaceans, Molluscs, nec	97,623,323	106,860,861	113,345,668	104,201,000
03	Total – Fish, Crustaceans and Molluscs	580,843,580	475,956,262	617,434,341	630,074,999
	% of Total Exports to EU	0.6%	0.5%	0.6%	0.7%

Source: Matrade, Online Database

Shrimps accounted 70 per cent of total Malaysia's exports of fish to the EU in 2007 and Malaysia is the 8th largest exporter of shrimps to the EU in 2004 with a share of 4.6 percent of the total EU imports of shrimps. Table 7 and Figure 2 show the importance of shrimp exports to the EU in comparison to other seafood product categories.

Figure 2: Malaysia's Seafood Export to the EU by Product Category, 2007



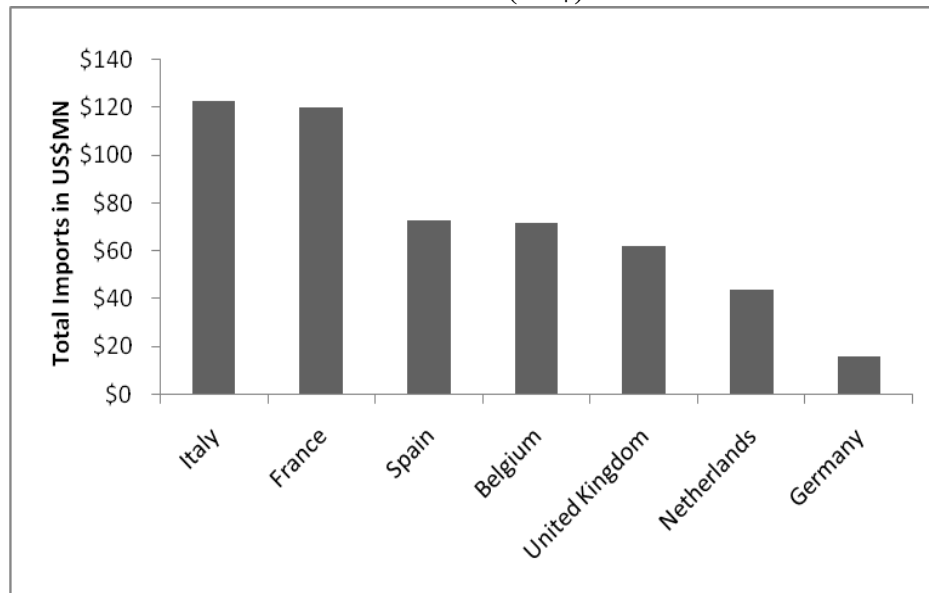
Source: Matrade, Online Database

Note: For the SITC Code, please refer to Table 8. SITC 36 is for Crustacean, Mollusc etc.

Shrimps exported to the EU are mostly sourced from aquaculture farms and the species preferred by the Europeans are giant tiger prawn and white leg shrimp¹². Italy and France are two key importers of shrimps from Malaysia. Other key buyers are Spain, Belgium, UK and the Netherlands (see Figure 3).

¹² Information obtained from discussion with an official at the Department of Fisheries Malaysia.

Figure 3: Major Importers of Malaysia's Shrimp in the EU, 2000-2006 (US\$)



Source: Comtrade Database Online

In Italy, Malaysia is the top three suppliers of shrimp 2005. However, Malaysia is not the key supplier in other important shrimps market in Europe, namely France, Spain, Belgium, UK, Netherlands and Germany.

5. The EU Sanitary Standards on Seafood

Fish and fish products intended for human consumption and sold in the EU market have to comply with the EU legislation related to food and feed safety¹³. The latest legislation is the EU General Food Law (178/2002) which was introduced in 2005. The objective of this law is to harmonise framework for food safety assurance from farm to consumer (“farm to folk”) across the 25 EU members (Bostock et al., 2004 and see Table 8). This new regulation provides a single and transparent food hygiene systems and regulations which repeals and integrates 17

¹³ http://ec.europa.eu/fisheries/legislation/other/food_hygiene_en.htm

previous rules for specific sectors and types of product into a new “Food Hygiene Package” (Ababouch et al., 2005).

Table 8: New European Union Hygiene Package of Regulations and Directives

Package	Regulation/Directive	Covering
Hygiene 1	European Parliament and Council Regulation (CE) 852/2004 on the hygiene of foodstuffs	General requirements primary production, technical requirements, HACCP, registrations/approval of food businesses, national guides to good practice
Hygiene 2	European Parliament and Council Regulation (CE) 853/2004 laying down specific hygiene rules	Specific hygiene rules for food of animal origin (approval of establishments, health and identification marking, imports, food chain information)
Hygiene 3	European Parliament and Council Regulation (CE) 854/2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption	Detailed rules for the organisation of official controls on products of animal origin (methods to verify compliance with Hygiene 1 & 2 and animal by-products regulation 1774/2002)
Hygiene 4	Council Regulation (CE) 882/04 laying down health rules governing the production, processing and importation of products of animal origin	Veterinary certification, compliance with EU rules
Hygiene 5	European Parliament and Council Directive 2004/41/EC repealing 17 existing Directives	

Ababouch et al. 2005, Table 3

These regulations cover all food products from farm to retail and the main features of the Hygiene Package that are relevant for exporters are as follows (Ponte et al., 2005)¹⁴:

1. Private enterprises need comply with the safety regulations and the HACCP system at the all level of supply chain, from

¹⁴ Appendix 1, p.10

catching the fish, handling, processing and packaging fish and fish products;

2. Countries exporting their products to the EU must practice health and sanitary regulations that are at least equivalent to the ones required by the EU;
3. Exporting countries are required to appoint competent authorities to implement the HACCP system and issue certification.

There are a few essential measures needed to regulate and manage quality and safety of food products (Huss et al, 2004) which include:

1. Good Hygienic Practices (GHP) and Good Manufacturing Practice (GMP)
2. Hazard Analysis Critical Control Point (HACCP)
3. ISO Standards
4. Other standards related to quality control and management such as Total Quality Management (TQM) and Quality Control (TC)

The European Union requires imports from third countries to comply with the general principles of HACCP. The GMP, GHP and other relevant Codes of Practice are prerequisite for the implementation of the HACCP system¹⁵. GMP is a general policy related to practices, procedures and processes that is essential to produce food products that are safe and of uniform quality while GHP is part of GMP concerning measures needed to ensure hygiene and safety (Blackburn, 2003).

5.1 *Hazard Analysis Critical Control Point (HACCP)*

The HACCP was first introduced as a measure to regulate and monitor food processing industry in the United States in 1973. The system is now being endorsed and implemented worldwide by Codex Alimentarius¹⁶, the European Union and by several countries including Canada, Australia, New Zealand and Japan (Cato et al., 1998). The European Union formally legislated HACCP system in 1991, and this assessment and quality control system is to be applied by all European

¹⁵ <http://www.sirim->

[qas.com.my/index.php?option=com_content&task=view&id=22&Itemid=204](http://www.sirim-qas.com.my/index.php?option=com_content&task=view&id=22&Itemid=204)

¹⁶ The Codex Alimentarius Commission was established in 1963 under the FAO and the World Health Organisation (WHO). The objective is to develop food standards, guidelines and related texts to protect the health of consumers, to ensure fair trade practices and to promote coordination of food standards at international level.

Union member countries and in those countries that wish to export to the European Union (Cato et al., 1998).

HACCP is a scientific and systematic approach that identifies, assesses and controls hazard to ensure the hygiene and safety of food in whole supply chain (Huss et al., 2004). This includes the whole process of preparation, processing, manufacturing, packaging, storage, transportation and distribution of food products, i.e. from the farm to the consumer¹⁷. The HACCP system is implemented based on seven principles (ICTSD, 2006; and Cato et al., 1998):

1. Conduct a hazard¹⁸ analysis
2. Determine the critical control points
3. Establish critical limits
4. Establish a system to monitor the critical control point
5. Establish the corrective action to be taken when monitoring indicates that a particular critical point is not under control
6. Establish a procedure for verification to confirm that the HACCP system is working effectively; and
7. Establish documentation concerning all procedures and records appropriate to these principles and their applications.

The EU institutes two-tier system in enforcing the HACCP system and in ensuring that the third country complies with the general principles of the HACCP system prior to arrival of the products at the EU border. First, a country must obtain approval to export to the EU or in other words a country must be *licensed* to export their fisheries products into

¹⁷ http://www.sirim-qas.com.my/index.php?option=com_content&task=view&id=22&Itemid=204

¹⁸ Food hazard is defined as “a biological, chemical, or physical agent that is reasonably likely to cause human illness or injury in the absence of its control” (USFDA, 2007). Biological hazards include pathogenic bacteria, biogenic amines, viruses, parasites and aquatic biotoxins (Huss et al, 1998). Chemical hazards refer to the presence of heavy metals, pesticides, veterinary medicines, sterilizing chemicals and food additives (NZFSA, 2007). Some marine fish contain high level of methylmercury, polychlorinated biophenyls (PCBs), dioxins and other environmental contaminants while aquacultured fish is contaminated because of the usage of chemicals to sterilize pond soils in between intervals (Venugopal, 2006). In general, aquacultured fisheries have high exposure to chemical and biological hazards than marine fisheries (Venugopal, 2006). Physical hazards are “foreign objects that may cause illness or injury” such as glass, metal, and shell fragments (NZFSA, 2007).

the EU market. Approved exporting countries are classified into two categories, i.e. List 1 and List 2. Countries that are considered to have achieved equivalent or harmonised regulations and systems on food safety standard as in the EU are placed in List 1 and these countries are allowed to export to the EU countries without having to go through further border inspection. In 2004, there were 97 countries listed under this category and Malaysia has been placed in this list. However, as a general rule 1-5 per cent of the consignments will be randomly taken as sample and subjected to sensory, chemical (histamine, mercury, total volatile bases TVB-N, etc.) or biological (total flora, indicator organisms, parasites etc.)¹⁹ tests. In the case where the analysis detects any contamination risks, the member state is required to notify all other EU member states of this border case. Notification is done through the Rapid Alert System of the European Union²⁰. Exporting countries will also be notified and subsequently the consignment will be sent back to the country of origin. Countries that are listed in the List 2 are those who are in the process of gaining approval from the EU authority. Their exports are deemed safe but shipments from these countries are subject to 100 percent border checks.

Secondly, individual exporting companies have to obtain certification from the Competent Authority (CA) that is appointed by the EU in the country of origin. Approved companies are given certification number and their particulars are posted and made known to relevant parties through the EU website and other documents (Ababouch et al., 2005). In Malaysia, fisheries supply chain is regulated by three agencies, i.e. the Food Safety and Quality Division (FSQD) within the Ministry of Health, the Department of Fisheries and the Fisheries Development Authority (LKIM). The Ministry of Health Malaysia has been appointed by the EU as the Competent Authority (CA) for fishery products in 1996 under the Commission Decision 96/608/EC.

¹⁹ Ababouch et al., 2005

²⁰ Notifications are posted on weekly basis (since 2003) and accessible through internet. There are two types of notification. Information notification is done when risk is identified in the consignment but member states do not have to take immediate action because the product has not reached the market. Alert notification is sent to members when risk is detected and the product is already in the market. Alerts are triggered by the Member state that detects the problem and immediate action is taken to withdraw or recall the product.

The HACCP certification obtained from the CA however does not guarantee the consignments would go through the EU border control smoothly; in fact there are cases where products were returned back to the importer after reaching the supermarket shelves. As mentioned earlier, export consignments could be rejected under the Rapid Alert System if the samples taken for hazard analysis detect any health risks.

5.2 *Traceability Requirement*

Requirement for traceability has become a hotly debated issue at the multilateral negotiations after the outbreak of 'mad cow disease' and other food related diseases. Consumers demand to know the food they are consuming is safe and that there is no risk of contamination or disease. Traceability can be defined as the ability to follow the movement of food through the stages of production, processing and distribution (ICTSD, 2006). It involves process of documenting all the stages of production and distribution which requires reporting of the ingredients used in fish feed, the use of medications and antibiotics in aquaculture farm, methods of harvesting, environmental monitoring, handling of the product and distribution channels. There are two types of traceability systems; internal traceability and external traceability (Lupin, 2006). Internal traceability refers to the traceability at the production site that includes traceability of raw materials, intermediate and final products. External traceability on the other hand is a system that allows the traceability of a product through the successive stages of the distribution chain (boat/fish farm to consumer). Table 9 illustrates purposes, objectives and attributes of traceability system.

In addition, it is a mandatory requirement in the EU and US to declare country of origin and method of production at each stage of processing and marketing through labelling, packaging or accompanying documentation (ICTSD, 2006).

Table 9: Traceability, Purposes, Objectives, Attributes to Trace and Examples (Regulations and Standards)

Purpose	Objective	Attributes	Example
Safety	Consumer protection (through recall and withdrawal)	Specified in food & fish safety regulations	EU regulation
			USA regulation
Security	Prevention of criminal actions (through verifiable identification and deterrence)	Specified in security regulations	USA Prevention of Bio-terrorism, regulation
		Verification of selected attributes on package and/or food	Brand & product protection
Regulatory Quality	Consumer assurance (through recall and withdrawal)	Specific attributes included in regulations	EC labelling, mandatory consumer information.
Non-regulatory quality & Marketing	Creation and maintenance of credence attributes	Specific attributes included in public standards	Public Quality seals (e.g. Label Rouge, France) Organic fish, Eco-labelling
Food chain trade & logistics management	Food chain uniformity & improved logistics	Specific attributes required to food and services suppliers by contract	Own traceability systems (e.g. Wal-Mart)
Plant Management	Productivity improvement and costs reduction	Internal logistics and link to specific attributes	From simple to complex IT systems.

Source: Lupin (2006)

6.0 The Impact of Sanitary Standards on Seafood Exports

6.1 Rejection of Consignments at the EU Border

Seafood products that do not meet the EU sanitary standards will be either rejected outright or quarantined at the EU port of entry. The

rejection and detention rate at the EU border has soared since the mid-1990s. The total number of alert notifications for food and feed products jumped from only 22 cases in 1990 to 698 in 1999, and grew further to 3024 and 6594 in 2002 and 2006 respectively (see Table 10). In 2006, there were 912 alert notifications and 1962 information notifications.

Table 10: Table: Total Number of Notifications, 1999 to 2006

Year	Alert Notification	Information Notification	Additions to Alert and Information Notification	Total
1999	97	263	338	698
2000	133	340	351	824
2001	302	406	859	1567
2002	434	1092	1498	3024
2003	454	1852	1980	4286
2004	692	1897	2778	5367
2005	956	2202	3739	6897
2006	912	1962	3720	6594

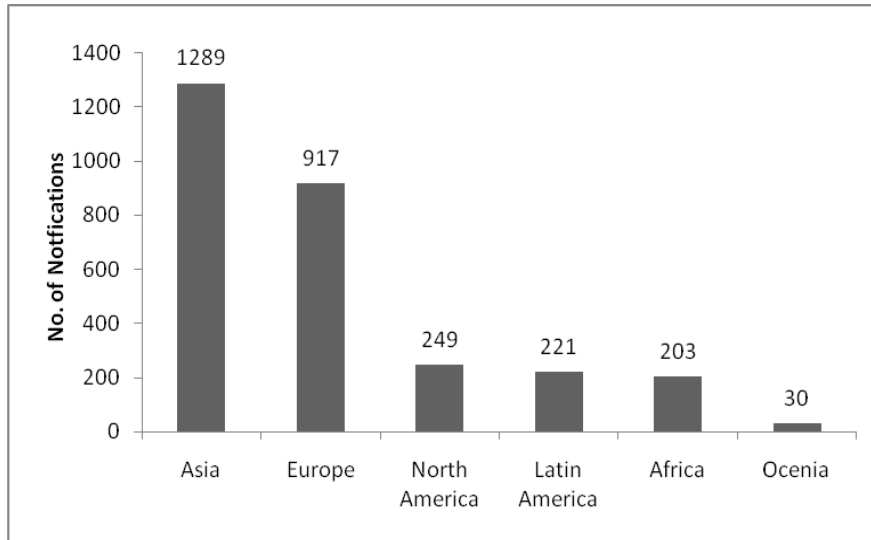
RASFF Annual Report 2006

Figure 4 shows that exports from Asia experienced the highest level of rejection, accounting for 44 per cent of the total alert cases between 1997 and 2006, followed by Europe (32%), North America (9%), Latin America (8%), Africa (7%) and Oceania (1%).

Within Asia, exports from South and Central Asia namely from Iran, India and Bangladesh are the most affected (see Figure 8). Between 1990 and 2006, there were 2816 border cases reported from this region. Southeast Asian countries had 1591 consignments rejected during this period and countries such as Vietnam, Thailand and Indonesia are top in the list of notifications. East Asia had 1380 cases and 1326 notifications were on exports from West Asia.

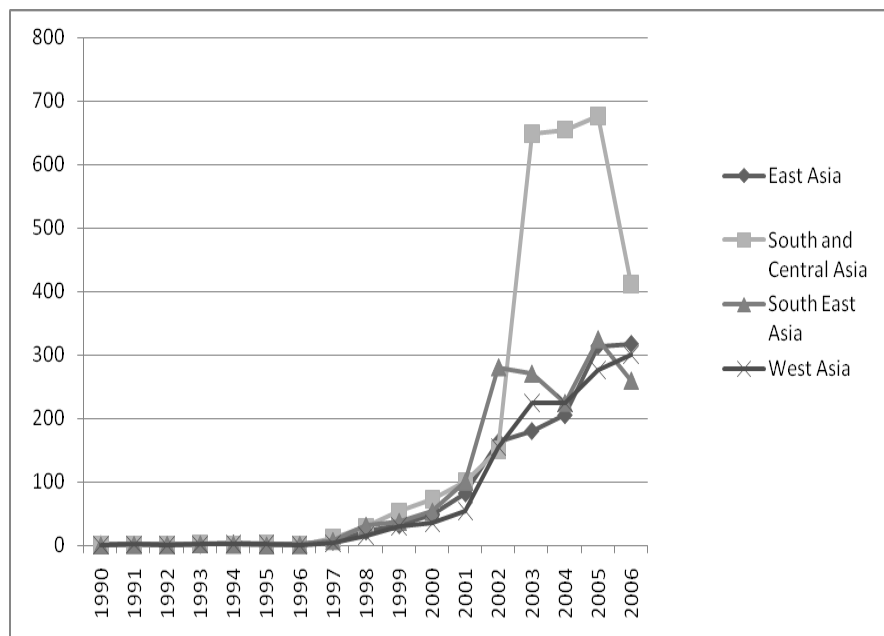
Figure 5 also shows that there was a sudden and sharp increase in the number of notifications since 1998. This owe to the implementation of Council Directive 97/78/EC of 18 December 1997 which set principles to govern and control feed and food of animal origin entering the EU from third countries.

Figure 4: Alert Notifications by Regions, 1997-2006



Source: Based on data extracted from RASFF Annual Report 2006

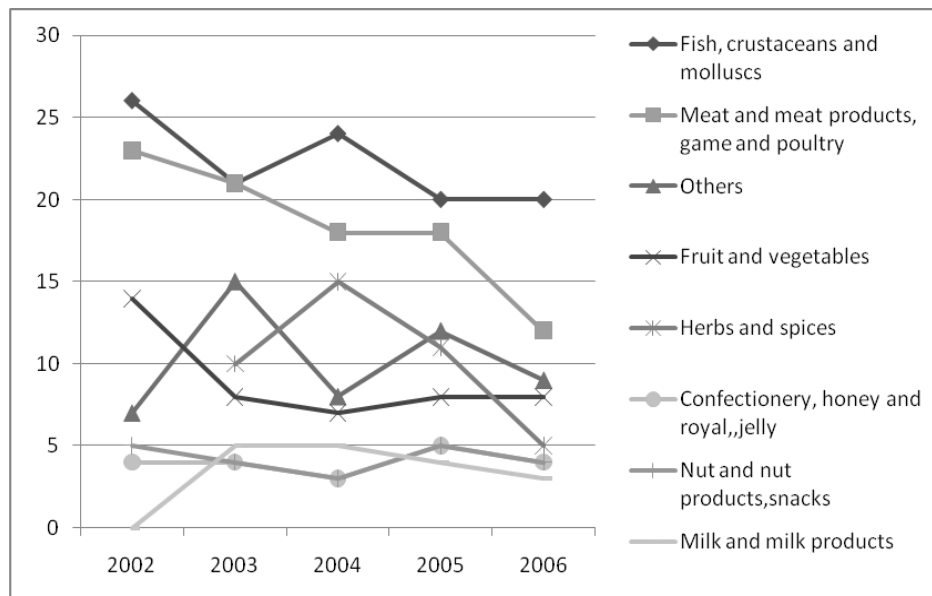
Figure 5: Notifications for Exports from Asia, 1990-2006



Source: RASFF Annual Reports

Seafood and meat related products had the highest border detention incidence in the EU. Between 2002 and 2006, fish and fish products accounted for more than 20 per cent of the total alert notification cases, while notifications on meat and meat products comprise of 12-23 per cent of the total notifications (see Figure 6). Other products with significant number of notifications were cereal and bakery products, fruits and vegetables, nut and nut products and herbs and spices.

Figure 6: EU Alert notifications by product category (% of total), 2002-2006



Source: RASFF Annual Report 2006

In 2006, there were 522 alert and information notifications for seafood alone and this account for 44 percent of the total number of notifications. Out of this 175 were alert notifications (20 per cent of total alert notifications on food and feed products) and 1962 information notifications. Within this category, fish and fish products had the highest number of alert notifications accounting for 63 per cent of total alert notifications for fish, crustaceans and molluscs category. In 2005 and 2004 it accounted for 73 per cent and 67 per cent respectively.

Crustaceans and products also had high number of detentions at the EU border (see Table 11).

Table 11: Alert and Information Notifications for Fish, Crustaceans and Molluscs, 2004-2006

Product Category	2006			2005			2004		
	Total	Alert	Information	Total	Alert	Information	Total	Alert	Information
Fish, Crustaceans and Molluscs	522	175	347	559	196	363	541	168	373
Molluscs and product thereof	86	32	54	79	10	69	83	19	64
Crustaceans and product thereof	145	32	113	168	43	125	161	36	125
Fish and product thereof	291	111	180	312	143	169	297	113	184
Total (Alert and Information Notification for Food and Feed)	2874	912	1962	3758	956	2202	2588	691	1897

Source:RASFF Annual Report 2006

Italy notified the highest number of cases in 2006 (574 notifications), followed by Germany (425), France (355), Spain (223), the Netherlands (164) and Great Britain (112).

The dominant causes of border detention in the EU in 2006 were pathogenic micro-organisms (16% of alert notifications), food additives (8%), heavy metals (8%) and mycotoxins (8%). Most cases were detected in Italy (45 notifications), Denmark (39), Sweden (37), Great Britain and Finland (25 cases).

Major causes for detention at the border were related to heavy metals, residues of veterinary medicinal products and food additives. In 2006, heavy metals were found largely in fish and fish related products (84 cases) while residues of veterinary drugs and food additives were found

mainly in crustaceans and crustacean products (54 and 52 cases respectively). Mercury and cadmium content were the greatest risks in the heavy metal contamination cases, accounting for 70 per cent of border cases in 1999 and 2000 (Ababouch et al., 2005). In 2006, the notifications for mercury were 71 (57% of heavy metal category notifications), compared to 46 in 2005 and 45 in 2004 (RASFF, 2006). Swordfish had the highest number of notifications (36) followed by shark (17 notifications) and tuna (7 notifications). Indonesia received the highest number of alert cases in relation to mercury content (18 cases in 2006).

Cases involving residues of veterinary medicinal products, especially chloramphenicol and nitrofurans, have increased over the years due to rigorous testing regimes especially on shrimp imports from Southeast Asian countries (Ababouch et al. 2005). Between 2000 and 2001, these two chemicals accounted for over 65 per cent the border cases (Ababouch et al, 2005). Between 2005 and 2006, the number of notifications for chloramphenicol has increased from 2 to 5. Countries that have given rise to border cases are Vietnam (2 cases for shrimps and another 2 cases related to fish) and Myanmar (1 case related to tilapia)²¹. Border detentions caused by nitrofurans metabolites increased from 36 in 2005 and 57 in 2006 and most of them were found in shrimps (RASFF, 2006). Most of the cases are found in exports from Bangladesh (27) and India (20), while the remaining rejected consignments are from Vietnam (3), China (1), Indonesia (1), Thailand (1) and Venezuela (1).

Pathogenic micro-organisms contamination is the second largest risks and they are largely found in molluscs and fish related products (see Table 12). Ababouch et al (2005) reported that the micro-organisms risks are mostly related to *vibrio spp.* and *Salmonella* which accounted for about 66 percent of micro-organism related border detention between 1999 and 2002. So far only cooked crustaceans and molluscs and live bivalve molluscs have harmonized microbial criteria in the EU. For other category of fish and fish products, each individual member state has their own criteria for the common indicator and specific bacteria and in addition there is lack of scientifically based risk assessment (Ababouch et al. 2005). All these had caused difficulties and confusion

²¹ Taken from RASFF Annual Report 2006.

to exporters who export to different countries in the EU. However, the EU has responded to this concern and there are efforts to harmonize the microbial standards for seafood products (Ababouch et al., 2005).

Table 12: Notifications by hazard and product category

HAZARD CATEGORY	2006				2005			
	Molluscs	Crustaceans	Fish	Total	Molluscs	Crustaceans	Fish	Total
Heavy metals	24	17	84	125	20	20	51	91
Residues of veterinary medicinal products	0	54	26	80	0	42	62	104
Food additives	1	52	26	79	0	66	2	68
Industrial contaminants (other)	0	2	39	41	0	0	5	5
Pathogenic microorganisms (potentially)	22	7	11	40	44	22	59	125
Composition	0	0	29	29	0	1	61	62
Biocontaminants (other)	0	0	29	29	0	0	22	22
Biotoxins (other)	25	1	0	26	9	5		14
Organoleptic aspects	1	5	13	19	1	1	0	2
Parasitic infestation	0	0	17	17	0	0	20	20
Not determined / other	7	3	5	15	0	0	1	1
Microbiological contamination	6	0	4	10	22	5	19	46
Bad or insufficient controls	2	4	4	10		1	6	7
Packaging defective / incorrect	0	0	6	6	0	0	4	4
Foreign bodies	0	0	3	3	1		1	2
Labelling absent/incomplete/incorrect	0	0	3	3	0	0		0
Pesticide residues	0	0	2	2	0	0	0	0
Radiation	0	0	0	0	0	1	1	2

Source: RASFF Annual Reports

As for excessive additives content in food products, the major risk is related to high level of sulphites. Notifications on this have remained high at 80 cases in 2006 and 101 cases in 2005, mainly involving

crustaceans (45 in 2006 and 63 in 2005)²². Table 12 shows that total number of notifications in 2006 relating to food additives for crustaceans was 52, fish (26) and molluscs (1).

6.1.1 Rejection Seafood Exports from Malaysia

Malaysia has been subjected to relatively high rates of alert notifications particularly for its fish and crustaceans exports (see Table 13). The highest number of rejections happened in 2003 and 2004, with 27 and 17 cases respectively. Most of the rejected consignments were crustaceans. In 2000 all the seven out of the eight cases are for shrimps and tiger prawns (one rejection for frozen cuttlefish). Similarly, 13 out 17 cases in 2004 involve shrimps and prawns. Interestingly, there appears to be a change in the trend in 2005 and 2006, where smaller number of seafood consignments has been rejected and there were no consignments containing prawns or shrimp rejected (2 cases for processed fish and 1 case frozen crabmeat). Meanwhile in 2007, only one out of 10 cases was related to prawns, and all the remaining cases are for dried fish (including anchovy, mackerel and catfish)

Table 13: Notifications on Malaysian Fisheries Exports to the EU, 2002-2006

Year	2007	2006	2005	2004	2003	2002	2001	2000
Number of Alert Cases	11	12	8	23	34	14	16	8
Notifications on Fish, Crustaceans and Molluscs	10	3	2	17	27	11	16	8

Source: RASFF Annual Reports and Ministry of Health Malaysia

Major reasons for rejection are related to pathogenic bacteria which is harmful to human health such as salmonella and vibrio spp.. However, the rate of rejection due to hygiene reasons has declined over the years with the improved processing facilities and stricter control on hygiene standards. Recent rejections (after 2005) have been mainly due to antibiotic residues and high level of heavy metal content. Another interesting trend observed is that prior to 2005, most border cases are

²² RASFF Annual Report 2006

reported by Italy while in the recent years rejection largely comes from the UK.

It has to be noted here that Malaysia's border rejection is much lower than its competitors in the region such as Thailand, Indonesia, Vietnam and China. In 2002 for example the EU decided to examine 100% shrimp products imported from China, Thailand, Vietnam, Indonesia and other countries (Bostock et al., 2004), but Malaysia was spared from this problem.

6.2 Costs of Compliance and Rejections

Stringent food safety standards and regulations imposed by the EU and other industrial countries have serious implications on developing countries, particularly in terms of costs of compliance (Bostock et al., 2004; Ababouch et al. 2005). Ahmed (2006) highlighted that these costs include production and processing costs in terms of upgrading infrastructure and buildings, monitoring, purchasing new equipment, and training and employing qualified staff. The compliance costs are highly prohibitive for poor fishers and small-scale processing firms in the developing countries.

To obtain a HACCP certificate for example, an individual fish processing firm must have certified processing plant and operations that have met various sanitation requirements and practices. These include safety of water, condition and cleanliness of food contact surfaces, prevention of cross-contamination, maintenance of hand-washing, hand sanitizing and toilet facilities, protection from adulterants, labeling, storage and use of toxic chemicals, employee health conditions and exclusion of pests (Stone, n.d). Humpal and Guenette (2000) reported that monitoring seafood HACCP would cost between \$1000 and \$5000 annually. An average plant is estimated to spend US\$34,000 to US\$72,000 per year to maintain a HACCP plant (Dey et al., 2002). In Nicaragua and Bangladesh, the costs of upgrading fishery processing facilities to comply with the EU standards were as high as US\$560,000 with annual maintenance costs of US\$290,000 and US\$18 million with annual maintenance costs of US\$2.4 million respectively (Ahmed, 2006). Cato and Santos (1998) reported that Bangladesh spent 9.4 per cent and 1.26 per cent of its fish and fish products export revenue to

install HACCP plant and to maintain the HACCP plant each year respectively.

Personnel training programmes are usually necessary to ensure HACCP compliance and this can easily cost \$100 to \$300 per employee. In fact in some countries, experts were imported to train the employees. Medical inspection of workers handling food has to be done periodically and all information must be documented. The inspection encompasses clinical inspection, bacteriological examination of faeces with regard to Salmonella bacteria, daily control of the personal to avoid purulent wounds, persons with diarrhoea and other problems to come in contact with food (Ourfood Database). Henson, Saqib and Rajasenani (2004) in their study on the impact of sanitary measures on exports from India reported that the costs of establishing facilities for inspection is estimated to be US\$6,444 per annum per plant in 2001-2.

The HACCP certification is costly. Table 14 shows that the cost of obtaining new HACCP certificate in Malaysia is RM4,505 per consignment for large-scale industry and RM3,235 per consignment for small and medium enterprises (SMEs).

Table 14: Cost of HACCP Certificate in Malaysia in Ringgit Malaysia (RM), 2008

Subject	Large Scale Industry	Small and Medium Scale Industry
New Application*	4505	3235
Renewal of Licence	600	600

Source: Ministry of Health Malaysia.

Note: * Payment for auditing for 1 day. Additional payment of RM550 is charged for additional days. All costs for air ticket, accommodation, mileage, and other costs are to be borne by the applicant company.

Large Scale Industry – more than 150 employees and turnover more than RM25 million per year

SME – Less than 150 employees and turnover less than RM25 million per year

Cost of implementing HACCP varies according to countries and firms. Evidences suggest a higher unit cost of compliance for small scale producers (ICTSD, 2006; Ahmed, 2006). Dey et al. (2002) made

comparison of the installation of HACCP plants in Malaysia, Thailand, India and Bangladesh and found that the cost is the highest in Malaysia and lowest in Bangladesh (see Table 15).

Table 15: Cost of Implementing HACCP in Selected Asian Countries

Type of Costs	Thailand	India	Bangladesh	Malaysia
Cost of a plant (US\$'000 per year)	47.62 – 71.43	41.237	34.88	
Total investment of a plant (US\$'000)	380.95-404.80	309.28	277.16	3000.00
Cost of fish processing (US\$ per kg per year)	0.010-0.014	0.21-0.28	0.033-0.090	
Total investment (US\$ million)	1.07		14.9	315.00

Source: Dey et. Al (2002), Table 6

The compliance costs are particularly high in developing countries because of the requirement of having to source the machines, technologies and some chemicals from the developed countries. Stone (n.d) reported that only a specific type of imported salt is allowed to be used in processing fried fish products in Fiji.

Time consuming process of obtaining approvals from the European Commission before export consignments are allowed to enter the market also have disruptive impact on trade²³. Some argue that measures imposed by the EU are exaggerated and unnecessary to protect human health, environment and sustainable fisheries. In addition, all by-products that contain seafood are also subject to regulations on hygiene standard. MATRADE reported that instant noodles from Malaysia which contain seafood extracts or even flavourings are not allowed to enter the EU market without relevant certifications from the CA in the country of origin. Similarly, seafood product containing non-seafood extracts are required to conform to the non-seafood sanitary standards.

²³ Malaysia External Trade Development Corporation, taken from <http://www.matrade.gov.my>

For instance, shrimp crackers containing 4 percent eggs have to be accompanied by a health certificate for eggs (MATRADE website). In addition, the exporters are also required to conform to various packaging, marking, labelling, rules of origin and environmental requirements to gain entry into the EU market.

7. Conclusions

High sanitary standards set by the EU countries on seafood products from third country have created countless problems to exporters from developing countries. The main problem is related to compliance to the standards and obtaining certifications. Small-scale enterprises are the most affected. Training, capacity building programmes and outreach activities undertaken by the government and the European Commission to inform and create awareness on various standards, regulations and procedures to ensure compliance have been very beneficial for the seafood producers. However, the real problem is that the whole process of upgrading the facilities, financial consequences, opportunity costs related to time and efforts and finally facing the uncertainty at the EU border are too much to bear for most of the small and medium scale producers, fishermen and exporters in the developing countries.

Dependency on the developed countries market presents serious challenges in terms of market access and compliance with their continuously evolving and progressing technology and standards. It is therefore pertinent that Malaysia and all other Muslim countries exporters find alternative market within their own region. Promotion and enhancement of intra-trade among Muslim countries is a way forward in coping with myriad of trade restrictions imposed by the developed countries. The rich Gulf market need to be tapped fully as they have very high purchasing power and their market has not been fully explored yet. More aggressive and effective marketing is necessary in the Gulf States to switch their preferences towards fisheries products originating from Malaysia. However, it is important to realise that the sanitary standards in these countries are equally high as that of the European Union. It is crucial therefore that the government continue to assist the small and medium scale enterprises develop their competitiveness to enter and compete in the international market. Incentives such as soft-loan (or zero interest loan) for upgrading the facilities, subsidised

electricity, tax exemption and training in the relevant areas related to the fisheries industries are necessary for the industry's development, though this may be inconsistent with the WTO rulings. Developing countries need policy space to grow and develop, and this definitely include subsidy schemes for poor fishermen.

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