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# Standards as Trade Barriers: The Case of Shrimp Export of Bangladesh to EU

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## Abstract

The gains of the least developed countries from lower tariffs on food products in the wake of the creation of World Trade Organisation (WTO) were much less than anticipated because of the stringent food safety standards of EU and other countries. These standards have *in effect* become additional ‘barriers’ to trade for the food exporters of the least developed world, such as Bangladesh. The principal food export item of Bangladesh to the European Union (EU), shrimp, was adversely affected by the application of the tough sanitary and phytosanitary (SPS) measures by EU. The economic and social costs of the rejection and detention of shrimp consignments because of allegations of not meeting these standards were considerable in view of the fact that the industry was dominated by relatively small farmers and enterprises. Since SPS measures are consistent with WTO laws, the shrimp industry had little choice but to comply with the SPS and other standards of EU. It has coped with the emerging hurdles or barriers to trade with some effort; but costs increased, competitive strength of the exporters suffered and the quantity of shrimp export stagnated.

## 1 Introduction

Global shrimp production is dominated by developing countries with China alone contributing nearly 38 per cent of the total output (see Table A1 in Appendix). Another 35 per cent comes from Indonesia, Vietnam, India and Thailand. There are only two developed countries, viz. Canada and USA, among the top-ten producers, and they account for less than 4 percent of the total supply. The output of developed countries is gathered from the wild, while the developing countries depend mostly on aquaculture for their output. In Bangladesh, nearly three-fifths of the total domestic production comes from aquaculture and this share is increasing (see Table A2).

The shrimp export industry of Bangladesh, based almost exclusively on aquaculture, ran into a problem that they had either not foreseen or simply ignored. Shrimp being a food item, its import was subject to stringent SPS standards of the European Union. The nascent shrimp sector, dominated by small farmers, petty traders and relatively small processors, did not have adequate knowledge of these food standard requirements nor the means to address them quickly. Shipments of shrimp frequently ran into embargoes and outright bans that caused substantial damage to the financial health and viability of the shrimp farms and processors. The EU food standards *in effect* became non-tariff trade

barriers, no less severe than tariffs, which posed a serious challenge to the growth of the sector. There were of course other factors also influencing shrimp trade; but these are not the focus of the following analysis.

This paper narrates the growth of shrimp aquaculture and shrimp trade of Bangladesh and the evolution of the SPS standard issues in shrimp export trade with EU countries, and their impact on the export of shrimp in a descriptive manner. The EU standards issues did not slow down shrimp export of the country greatly or in a sustained way because the sector, despite many limitations, responded in a responsible manner in order to assuage the concerns of the importing countries such that a major damage was averted.

## 2 Shrimp Aquaculture in Bangladesh

Commercial shrimp aquaculture is of relatively recent origin in Bangladesh. It was initiated only in late 1970s, but really took off in the late 1980s. The growth of this sector was essentially driven by shrimp export opportunities. Hence, shrimp aquaculture in Bangladesh is devoted largely to shrimp export. A buoyant international market demand promised potentially high

returns from shrimp culture. Large areas of low lying tidal land in the coastal belt provided excellent opportunities for brackish water shrimp cultivation, while further up fresh water shrimp could be cultivated. Nearly 700,000 hectares of mangroves also provided a favourable environment. The potential for large foreign exchange earnings from exports and substantial employment in shrimp farming in the coastal areas where there are few such opportunities made it an attractive proposition for both the policy makers and the private sector.

Most of the shrimp cultivation is concentrated in Khulna, Bagerhat and Satkhira in Khulna division that has large areas under mangroves, and Cox's Bazar and Chittagong in Chittagong division. The total area under shrimp cultivation increased rapidly in these districts from 55,500 hectares in 1980 to nearly 200,000 hectares by the beginning of the new millennium. Shrimp area increased further to over 275,000 hectares by 2010-11. There are more than 150 shrimp processing factories mostly in Chittagong and Khulna, and about 60 hatcheries mostly in Cox's Bazar.

Aquaculture has grown rapidly in importance as a supply source of shrimps. It now provides about 58 per cent of the total shrimp catch of the country (Table A2 in Appendix). Another 20 per cent is provided by marine catch while the remaining 22 per cent comes from catches in the myriad of inland water bodies.

Several varieties of shrimp are produced in the country. However, the main farmed species is *Penaeus monodon* (tiger shrimp), locally known as *Bagda*. About 85 per cent of the shrimp farm area in 2001 was devoted to the cultivation of *Bagda*, but it fell gradually to 76 per cent by 2012-13. The yield rate of *Bagda* shrimp was quite low in the last century, in the range of 100-200 kilograms per hectare. This was much less than one-tenth of the yield rate achieved by such countries as Thailand and Taiwan. However, by 2012-13 the yield rate of shrimp farms had risen to 486 kg/ha.

Fresh water *Golda* farming increased rapidly from only 3500 hectares in 1980 to 30,000 hectares by the beginning of this century. There were about 105,000 farms engaged in *Golda* farming. The yield rate was much higher compared to *Bagda*; it averaged about 336 kilograms per hectare. Despite the higher yield, the profit rate per unit of land was lower in *Golda* production due to higher input costs.

### 3 International Trade in Shrimps

In recent years, shrimp has emerged as an important export earner for Bangladesh. Total export of shrimp

stood at US\$151 million in 1990; it rose gradually to its peak value of US\$564 million in 2007. The financial crisis of 2007-08 in the West and the subsequent global recession of 2008-09 and more importantly industry related problems had an adverse impact on shrimp export from Bangladesh. It declined during the next 3 years by 30 percent. The decline was caused by a fall in both quantity and the unit price of shrimp. Although export earnings increased thereafter, it is yet to attain the previous peak value. Most of the exported shrimp is produced by aquaculture in the coastal belt of the country. Sea trawling also provides a small quantity of exported shrimps. More than nine-tenths of the total frozen food exports of the country comprise shrimps.

The rapid increase in shrimp export from Bangladesh was made possible by a very buoyant world trade in shrimp from the mid-1970s to the beginning of the new millennium. The value of world export of shrimps multiplied nearly 9 times between 1976 and 1995. The increase in export value was due to an increase in both supply and unit prices. The quantity of export increased during the period by about 4 times. The rest of the increase in value was due to an increase in the unit price. Export value remained stagnant during the rest of the millennium. It increased by about 50 percent during the next decade. The major exporters of shrimps in value terms are Thailand, Vietnam, China, India, Indonesia and Ecuador (see Table 3 in Appendix). Bangladesh is the fourteenth largest exporter of shrimp in the world in both value and quantity terms.

Much of the increase in the export of shrimp from Bangladesh was achieved during 1981-87 period when shrimp export increased more than four times. But export quantity stagnated after that. There was no increase till 2001 despite the fact that during this period world export increased by 127 percent. Bangladesh accounted for about 4 percent of world export of shrimp in 1987, but 14 years later in 2001 its share halved to 2 percent. By 2011 its share dwindled further to only 1.8 percent. The dwindling share of Bangladesh in the global shrimp export market might be indicative of domestic industry-related problems of increasing production in excess of domestic consumption.

Most of the shrimp export of the world is destined for the OECD countries. There are no developing countries among the top-ten importers of the world. This is in sharp contrast to export supply where there are only two developed countries among the top-ten exporters. The single largest importer of shrimp is the USA followed by Japan, Spain and France. These four countries together accounted for 56 percent of the global import in value terms and over 42 per cent in quantity terms in 2011 (see Table 4 in Appendix).

#### 4 Standards as Trade Barriers

In the early years Bangladesh showed excellent prospect of rapid expansion of production and export of shrimp. However, the export performance of the country has been rather lacklustre since the mid-1990s due to a host of internal and external factors.

EU has emerged as the most important export market of Bangladesh. Over the years the export market of shrimp has become more concentrated. In 2008-09, export of shrimp to EU constituted 58.5 percent of the total shrimp export. Actually only five of the EU countries, viz. Belgium, Netherlands, UK, Germany and France, accounted for more than 95 percent of the export to EU. By 2014-15, shrimp export to EU comprised 81.3 percent of the total shrimp export. Shrimp export to USA fell off sharply from 29.6 percent of the total export in 2008-09 to only 6.9 percent in 2014-15. Given the dominance of EU market, the fortunes of shrimp export industry depend much on the conditions under which shrimp is exported to EU.

The export of shrimp from the least developed countries does not attract tariffs or para-tariffs in the major markets such as EU, USA and Japan, and hence these are no longer significant barriers to the expansion of export of shrimp from Bangladesh. But the international shrimp market has become highly competitive with a large number of producers and exporters permitting buyers to be choosy about the product. Not only do they want cheaper prices, they are also imposing increasingly rigorous specifications for the imported shrimp and requiring the exporting countries to comply with tough health, social and environmental standards. These standards are set by law of the importing countries which all consignments, brought in by private (and any public) importers, must adhere to strictly. Private importers may sometimes impose additional specifications in respect of size, homogeneity and colour of the products negotiated with individual exporters. In view of the recent trend it can be reasonably assumed that in the near to medium term an important hurdle or trade barrier to export of shrimp from Bangladesh (and other developing countries) to EU and the rest of the developed world will be the SPS standards. It is worth emphasising that the SPS standards are WTO-legal and applied uniformly to imports of all countries as well as domestic production; consequently there is no scope of negotiating a reduction in these standards for an individual country. Although it may appear so, these standards are not necessarily meant to restrict trade; indeed shrimp trade of Europe has experienced a robust growth during the new millennium except when the economy was in a downturn. But if an exporter fails to maintain these standards properly, they become effective trade barriers leading to a reduction or loss of the export market.

#### 5 Sanitary and Phytosanitary Standards

As a result of the agreements at WTO, developed countries have fairly low bound tariffs on most industrial and many agricultural products. The simple average bound tariff rates on industrial products in USA, EU and Japan are only 3.9, 4.1 and 3.5 per cent respectively while for fish and fish products these are 1.1, 11.8 and 6.2 per cent respectively. It is no longer possible to provide protection to domestic competing industries through border measures beyond the bound rates. However, developed countries are at liberty to impose rules or other measures that are permissible under WTO rules. Some of the rules or measures that may effectively discourage exports from developing countries are the stringent health (sanitary and phytosanitary) and technical standards.

*Sanitary or phytosanitary measure* - Any measure applied:

- (a) to protect animal or plant life or health within the territory of the Member from risks arising from the entry, establishment or spread of pests, diseases, disease-carrying organisms or disease-causing organisms;
- (b) to protect human or animal life or health within the territory of the Member from risks arising from additives, contaminants, toxins or disease-causing organisms in foods, beverages or feedstuffs;
- (c) to protect human life or health within the territory of the Member from risks arising from diseases carried by animals, plants or products thereof, or from the entry, establishment or spread of pests; or
- (d) to prevent or limit other damage within the territory of the Member from the entry, establishment or spread of pests.

Sanitary or phytosanitary measures include all relevant laws, decrees, regulations, requirements and procedures including, *inter alia*, end product criteria; processes and production methods; testing, inspection, certification and approval procedures; quarantine treatments including relevant requirements associated with the transport of animals or plants, or with the materials necessary for their survival during transport; provisions on relevant statistical methods, sampling procedures and methods of risk assessment; and packaging and labelling requirements directly related to food safety.” (WTO. *The Legal Texts*)

Article XX of GATT 1994 also permitted such health measures:

“Subject to the requirement 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, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:

... necessary to protect human, animal or plant life or health; ...”

Seafood (including shrimp) industry in Bangladesh has a poor perceived record of health safety standards and quality assurance in the developed countries. This is reflected in the generally low prices received by shrimps exported from Bangladesh, relative to, say, Thai shrimps which get substantially higher price. As early as late 1970s, US Food and Drug Administration placed seafood imports from Bangladesh under ‘automatic detention’. Since then a number of initiatives have been taken by the government and international organisations for better safety standards and quality control. The government enacted Fish and Fish Product Ordinance (Inspection and Quality control) in 1983 and upgraded the inspection laboratory in 1985. FAO organised a seafood safety and quality control program based on Hazard Analysis Critical Control Point (HACCP) approach. However, the initiatives could not fully address the concerns and the industry continued to be plagued by real problems for many years.

## 6 EU Enforcement of Standards and Shrimp Export

The seafood industry took a battering, not altogether unexpected, when on July 30, 1997 the European Union banned imports of fishery products from Bangladesh after an inspection of seafood processing plants, which discovered serious deficiencies in the infrastructure and sanitary standards of the plants and unsatisfactory quality control by government officials. The ban caused serious dislocation in the industry and it suffered heavily in lost revenues in 1997. The ban, while causing short-term losses, did goad the industry and the government to take measures to raise product quality and ensure compliance with international standards. These measures persuaded the EU to lift the ban for six enterprises, subject to some provisions, for products processed after the end of 1997. By July 1998, another five farms were exempted from the ban. Continued efforts of the stakeholders to improve health and safety standards bore

fruit, and by 2002, 48 of the 65 plants licensed by the government for export had EU approval for export to its territories.

The procedures for checking quality are complex and done at various stages after a consignment is delivered from the home country. For instance, European Union has established border inspection check posts for these purposes. Three main types of veterinary checks are required for all consignments. These are documentary evidence, identity check and physical verification.

As noted earlier the export destination of Bangladeshi shrimp is not much diversified in the European market. Belgium continues to be the top importer of Bangladeshi shrimp by a large margin despite its notifications in 2009 regarding the presence of semicarbazide, a metabolite of nitrofurantoin antibiotic. Introduced in 1979, Rapid Alert System for Food and Feed (RASFF) facilitates cross-border flow of information within EU to swiftly react when risks to public health are detected in the food chain. The legal basis of the RASFF is now given by Regulation (EC) N° 178/2002.

An analysis of the data for Bangladesh for the period 2000–2014 in RASFF portal database of the European Commission under the heading “crustaceans and products thereof” reveals the following: a total of 162 notifications (40 alerts; 48 border rejection and 74 cases of information for follow up or information for attention) were issued against Bangladesh out of 1673 notifications against all countries. Thus Bangladesh received 9.68 percent of the total notifications issued under “crustaceans and products thereof” from EU. EU issued a worldwide total of 4980 notifications on fish and fish products during this period. As a consequence of the notifications issued by the EU countries, 48 consignments were re-despatched to Bangladesh while 11 consignments were destroyed at the EU border. Overall, this has been a regular picture for most countries that export shrimp to EU countries.

Importing countries face a number of food safety problems with respect to fish and fish products, which include microbiological contaminants due to a lack of hygiene in the production process, poor packaging and transportation, residues from the use of prohibited antibiotics, metal contaminants, parasites and poor cold storage facilities (Willems, Roth and Roedel 2005). Residue detection by national authorities is quite common. As a result the frequency of rejections has grown over the years. It has become a major concern for both importing and exporting countries. The importing countries are increasingly worried about the potential health risks. On the other hand the exporting countries, mainly developing, are concerned about loss of export revenue and livelihood. Table 3 below shows the trend

of notifications by EU on fish and fish products for all countries over the years.

**Table 3:** Notifications by EU on all imported fish and fish products

Year	Alerts	Border Rejection	Information	Total
2000	32	0	133	165
2001	87	0	145	232
2002	112	0	368	480
2003	54	0	139	193
2004	113	0	184	297
2005	143	0	169	312
2006	111	0	180	291
2007	139	93	119	351
2008	61	89	107	257
2009	88	228	137	453
2010	111	183	157	451
2011	95	217	179	491
2012	63	166	144	373
2013	77	86	148	311
2014	118	82	123	323

Source: RASFF Yearbook, various issues

Bangladesh had more than its fair share of the rejections, and this was a cause for worry. The food safety rules were in fact working as a constraint on its export to the developed world market. EU issued notifications to Bangladesh through RASFF after their inspections of shrimp consignments returned negative results. A sharp increase in RASFF notifications in the early part of 2009 forced Bangladesh to voluntarily impose a temporary self-ban on the export of fresh water prawn to EU fearing a possible ban on shrimp import from Bangladesh by EU. The ban lasted for six months and was withdrawn only after it was discovered that the higher incidence of rejections was the outcome of incorrect EU laboratory test procedures. The large losses suffered by Bangladeshi exporters, for no fault of their own, made them acutely aware that these health standards were in fact more stringent barriers to export than tariffs or para tariffs.

Bangladesh received notifications from EU member countries since the inception of RASFF network of inspection. Belgium was at the top of the list in issuing notifications against Bangladesh (Table 4). Great Britain and Norway were also prominent in issuing notifications. There were fewer notifications from the rest of the countries. The first three countries accounted for 90 percent of the notifications. Belgium also led the list of border rejection notifications with 36 rejections, followed by Great Britain with 9 and Netherlands with 2 rejections.

**Table 4:** Number of EU notifications issued against Bangladesh by country 2000-14

Country	Number of Notifications
Belgium	63
Great Britain	60
Norway	19
France	5
Italy	3
Germany	2
Netherlands	2
Denmark	2
Finland	2
Luxembourg	1
Austria	1
Sweden	1
Greece	1

Source: [https:// webgate.ec.europa.eu/rasff-window/portal](https://webgate.ec.europa.eu/rasff-window/portal)

**Table 5:** Types of EU notifications against Bangladesh by year

Year	Alerts	Information	Border Rejection
2000	0	5	0
2001	7	2	0
2002	3	0	0
2003	0	2	0
2004	3	10	0
2005	8	13	0
2006	5	22	0
2007	0	6	0
2008	4	2	8
2009	9	8	33
2010	1	2	4
2011	0	0	2
2012	0	2	0
2013	0	0	0
2014	0	0	1

Source: [https:// webgate.ec.europa.eu/rasff-window/portal](https://webgate.ec.europa.eu/rasff-window/portal)

The lack of appropriate SPS measures can also cause serious damage to the domestic industry. This was amply demonstrated in Bangladesh in 1994 and 1995 when there was an abnormal increase in the prices of shrimp fries. Encouraged by the high prices, some irresponsible traders imported 500-750 million shrimp fries from some Asian countries with a history of shrimp

diseases and large scale destruction of the crop. The indiscriminate import of fries without any SPS restrictions was followed by a severe outbreak of the white spot viral disease in many shrimp farms causing substantial losses. Many also believe that imported *Golda* fries were responsible for its poor growth quality.

To meet the SPS standards it is necessary to test for the presence of pathogens such as E.coli, salmonella and cholera that might contaminate shrimps. But reliable testing facilities are scarce in the country and exporters are sometimes forced to send specimen to Singapore for testing. These facilities need to be developed to ensure that their certifications are universally accepted and shrimp exports do not suffer because of a suspicion of the presence of microbial organisms.

Traces of mercury are sometimes found to contaminate shrimp crop. Improper discharge of effluents from the shrimp farms is believed to cause such contamination. The presence of mercury makes consumption of shrimps a health hazard; import of such shrimps will almost certainly be restricted. To avoid such an eventuality it is essential that farmers are educated and trained to adopt appropriate methods of effluent discharge that do not cause environmental damage or contaminate shrimps.

Another worrying development was the reported discovery of prohibited antibiotics in shrimps imported from several developing countries. EU, USA, Canada and Japan have all complained about traces of the antibiotic chloramphenicol in the shrimps from China,

Vietnam, Thailand and several other countries. Another banned substance nitrofurans has been discovered in shrimps imported from some countries including Bangladesh, India and Thailand. EU banned the import of shrimp from China early in 2002. It then required inspection of all consignments from China for chloramphenicol. Japan requires tests on 10 per cent of the shrimps imported from China, Myanmar, Thailand and Vietnam while 5 per cent of the imports from Bangladesh, India and Indonesia are tested for the presence of chloramphenicol. Even the possibility of the presence of the substance in shrimps can have disastrous consequence for exports. Many of the countries including Thailand, Vietnam, India and Indonesia have taken stringent measures; including banning the use of the substance in aquaculture, to ensure that it does not show up in the final product. Bangladesh lags behind in taking effective steps. Its testing facilities are outmoded and unreliable. Given that Bangladeshi shrimps are suspect in the export markets, and that the country has a reputation for producing seafood that sometimes does not meet minimum international standards as specified by Codex Alimentarius Commission, it is imperative that stringent measures are taken to assure the consumers of the purity of the exported shrimps.

During 2005-2009 about 100 shipments from Bangladesh were rejected by EU. The crisis was triggered by the presence of Nitrofurans, a harmful chemical in the exported shrimp. The following table presents the number of consignments rejected by EU and the cause of their rejection by year.

**Table 6:** EU Alert notifications against import of 'Crustaceans and Products thereof' from Bangladesh

Year	Total export to EU (MT)	No. of notifications against Bangladesh	Total no. of notifications against all countries	Ratio of Notifications against Bangladesh to notifications against all countries (ratio)	Causes of Notification
2005	23790.5	21	159	0.13	Nitrofurans
2006	26379.3	27	142	0.19	Nitrofurans
2007	26992.6	6	124	0.05	CAP, Nitrofurans & Decomposition
2008	27917.3	14	126	0.11	Nitrofurans
2009	32366.4	50	176	0.28	Nitrofurans
2010	34300.7	7	78	0.09	Nitrofurans, Veterinary Drug Residue, Semicarbazide(SEM), Fraudulent Health Certificate
2011	35616.9	2	75	0.03	Poor Hygienic State, Nitrofurans(Metabolite) Furazolidone(AOZ)
2012	35224.3	2	60	0.03	Vibrio Cholerae, Residue
2013	35441.1	0	53	0.00	NA
2014	34198.3	1	71	0.01	Nitrofurans(Metabolite), Nitrofurazone(Sem)

Source: RASFF and Eurostat portals



There was an increasing trend of notifications against Bangladesh up to 2009, but it declined after the self imposed ban by Bangladesh in 2009. During 2010 to 2015 Bangladesh received 18 notifications against export consignments of shrimp. Following table summarises the reasons of receiving notifications.

**Table 7: Reasons of notifications against Bangladesh**

Reason of Notification	Frequency
Nitrofurantoin (Metabolite) Nitrofurazone (SEM)	3
Nitrofurantoin (Metabolite) Furazolidone (AOZ)	1
Semicarbazide (SEM)	3
Fraudulent Health Certificate	2
Veterinary Drug Residues	1
Salmonella Bareilly	1
Residue Level Above MRL for Oxytetracycline	1
Vibrio Parapaemolyticus	1
Salmonella Brunei	1
Poor hygienic State and Poor Temperature control	2
Unsuitable organoleptic Characteristics of and Sulphite reducing anaerobes in and high aerobic plate count	1
Vibrio Cholerae	1
<b>Total</b>	<b>18</b>

*Ref:* Compiled from information received from the EU Delegation, Dhaka

Shrimp is a fragile and high-risk food export item that is vulnerable to weather condition, natural disaster, salinity of water and viruses. White Spot Syndrome Virus affects the *bagda* species, and bacterial infections affect the *golda* species. Moreover, both species are prone to contamination, improper handling and improper freezing temperature. The EU banned shrimp imports from Bangladesh in 1997 and again in 2001, and USA in 2004 because of the failure of Bangladeshi exporters to comply with quality regulations. Following alerts by EU countries about shrimp contamination from banned antibiotics, Bangladesh decided on a self-imposed ban on fresh water shrimp exports to EU countries in 2009 for six months. In June 2011, the USA announced mandatory stringent testing requirements under its new Food Safety Modernization Act (FSMA) that is harsher in terms of quality requirement.

Not all countries are suffering a loss of export market due to the SPS standards. Some countries have adopted modern technology of shrimp production and processing which enabled them to avoid contamination and disease related problems. This has helped them to increase shrimp export despite standards. Countries that have not done well, such as Bangladesh, are still continuing with

traditional methods that do not fully ensure safe products since they are more prone to various health and environmental risks. Hence, concerns regarding SPS standards of imports from these countries remain. Importers in developed countries switch to other countries which can more reliably deliver products meeting the food safety requirements. These countries gain at the expense of countries which fail to deliver shrimp in accordance with the specifications of the importers.

The strict application of SPS standards by EU had a negative impact on shrimp export from Bangladesh. The voluntary export ban reduced shrimp export. The quantity of shrimp exported to EU stagnated after 2010. The total export of shrimp to EU in 2014 (34.2 thousand tons) was less than the total export in 2010. Shrimp export to USA suffered a massive blow in the new millennium. Bangladesh exported 19 thousand tons of shrimp to USA in 2006, but export declined to only a thousand tons by 2014. USA also had serious reservation about the SPS standards of shrimp imported from Bangladesh. A thorough study of the reasons of the decline of US import from Bangladesh should be interesting, but it is not the focus of this study. The situation is unlikely to improve in the near future. The promise of shrimp cultivation for a better future for the farmers is yet to materialise.

## 7 Conclusion

Bangladesh exports shrimp mostly to rich countries. In the post-GATT world trade order tariffs and para-tariffs have ceased to be important trade barriers in the developed countries for most products including shrimp. Consequently, the least developed countries including Bangladesh do not face much price-based trade barriers in exporting such products. However, these countries are applying increasingly tougher health standards for their imported items, particularly foodstuff. The food industry has to comply with stringent SPS standards, in order to be able to export. These standards have been applied on more than one occasion by EU which resulted in the restriction of shrimp export from Bangladesh. This caused significant losses to the industry dominated by firms of relatively modest size and poor farmers.

Tracing the source of a health hazard and taking appropriate measures are expensive which no doubt increase the costs of raising the crop and exporting the final product, and hence reduce the profit margin and competitive edge of the industry. It is not entirely coincidental that the quantity of shrimp export, which more than trebled during the ten year period prior to large scale rejections of consignments, stagnated thereafter.

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## Appendix

**Table A1:** Shrimp production of major producing countries 1991-2000

(Thousand metric tons)

Country	1990	2000	2010	2013
China	532154	1070973	2582662	2955765
Indonesia	257953	390937	603539.5	863632
Viet Nam	65264	186689	642220	806661
India	251041	440575	404471	680519
Thailand	224357	394487	619583	376339
Ecuador	84723	52371	230977	310958
Mexico	62299	95077	167017	187932
Malaysia	106732	111870	203181	157967
Canada	39980	139494	164784	148816
United States of America	160142	153760	118817	134015
<b>World Total</b>	<b>2 637304</b>	<b>4 081134</b>	<b>6 892128</b>	<b>7 873996</b>

Source: FAO. *Globefish*. (Data include all types of shrimp, namely farm-raised shrimp and wild shrimp)

**Table A2:** Shrimp Production of Bangladesh, 2012-13

Source	Metric ton
Inland	185,274
of which Shrimp farm	133,818
Other	51,456
Marine	46,568
<b>Total</b>	<b>231,842</b>

Source: Fisheries Statistical Yearbook of Bangladesh 2012-13

**Table A3:** Export of Shrimp of the Major Exporters of the World

Country	Value ('000 US\$)			Quantity (metric ton)		
	1990	2000	2011	1990	2000	2011
Thailand	1,003,192	2,698,077	3,627,382	116,404	249,638	394,370
Viet Nam	112,290	656,760	2,412,742	30,059	67,341	362,028
China	698,526	375,452	2,188,082	117,294	93,881	305,205
India	346,518	899,632	1,752,172	61,910	128,827	262,011
Indonesia	653,238	948,877	1,285,893	88,557	104,793	152,155
Ecuador	372,783	274,518	1,183,803	58,050	34,502	188,097
Netherlands	164 215	279 817	684,189	22,031	57,362	83,905
Denmark	399,352	411,633	600,732	59 610	98 389	97,979
Argentina	53 470	247 342	515,520	9,094	32,821	77,752
Malaysia	119,239	102,217	482,819	24,312	19,029	85,493
Belgium	71,539	159,433	467,714	9 333	21 148	55,327
Bangladesh	151,079	311,294	423,034	25,996	28,664	48,027
<b>World Total</b>	<b>6,778,760</b>	<b>11,010,762</b>	<b>19,497,932</b>	<b>985,183</b>	<b>1,496,852</b>	<b>2,726,637</b>

Source: FAO, Fishery Commodities Global Production and Trade (online)

**Table A4:** Import of Shrimp of the Major Importers of the World

Country	Import Value ('000 US\$)			Import Quantity (Metric ton)		
	1990	2000	2011	1990	2000	2011
United States of America	1,624,321	3,142,649	4,025,476	215,798	283,288	432,557
Japan	2,545,884	2,800,661	2,230,085	288,235	250,295	208,548
Spain	455,366	765,304	1,238,388	71,159	113,980	175,405
France	310,659	431,915	769,384	43,967	56,143	95,762
Belgium	87,298	199,297	513,491	13,375	24,845	60,336
Italy	197,628	275,729	488,042	23,531	39,950	66,476
United Kingdom	151,671	292,188	435,141	25,490	36,590	44,125
Canada	150,364	329,324	344,480	17,522	60,211	39,056
Korea, Republic of	10,450	78,465	327,637	2,565	28,564	65,862
Germany	89,373	134,976	321,217	10,167	14,731	34,458
Total	6,578,359	10,017,189	14,160,106	956,659	1,319,310	1,903,101

Source: FAO, Fishery Commodities Global Production and Trade (online)