



CBI
Ministry of Foreign Affairs of the Netherlands

The Philippine seafood sector

A value chain analysis

Compiled for CBI by LEI, part of Wageningen UR

March 2012



**The Philippine seafood sector
A value chain analysis**

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Management summary

The Asian region is a major supplier of fish products to the EU market. Over the period 2005-2010 in particular, the aquaculture sector in some Asian countries became an important producer as well as exporter of whitefish and shrimps. Within the Asian region CBI is currently studying the possibilities of developing integrated programmes for the seafood sector for specific countries. This follows up on CBI's current seafood activities in Indonesia with the Ministry of Marine Affairs and Fisheries (MMAF) and the Surabaya Seafood Centre.

Based on the results of the desk study which was carried out in phase one of this seafood export VCA, the following subsectors in the Philippines were selected for value chain analysis:

- Shrimp
- Tuna
- Seaweed

Shrimp subsector

The Philippines used to be one of the prime movers in the Asian shrimp industry. At present this is no longer the case. Production of Black Tiger shrimp was only 10,000 tonnes in 2010 due to disease outbreaks and crop failures, which resulted from lack of quality seeds and bad farm management practices. The production of Pacific White shrimp is currently limited to the domestic market that is estimated to be around 4,500 tonnes a year. Three main bottlenecks for the export potential of the Philippine shrimp subsector have been identified as a result of the desk study, field work and validation workshop. These are presented in Table 1.

Table 1 Main bottlenecks of the shrimp subsector	
Bottlenecks	Level in the value chain
Lack of EU certified processing establishments	Processors and exporters
Lack of competitiveness of White shrimp	Primary production
Traceability	Primary production and trading

Shrimp exports are confronted with significant problems from the domestic supply chain as well as from the international market. Participants during the conference expressed their hope that if more companies get EU certified, the sector would receive a boost. However, this is not at all certain, as many export companies who previously were EU certified have not renewed their EU approval because the costs were higher than the expected benefits. The companies that are trying to get approved now face difficulties with complying with the BFAR procedures. Despite the current crisis, there is great potential in the Philippines for shrimp farming. Conference participants underlined that EU buyers often are not aware that shrimp is produced in the Philippines. The two companies that are EU certified both found customers in the EU and export Black Tiger shrimp. These two companies are the largest shrimp exporters in the country. If other smaller or medium-sized companies get EU approval they will need additional support to get market information and to make themselves visible in the EU market.

Tuna subsector

In 2010 almost 500,000 tonnes of tuna were caught in the Philippines. This catch consisted of different species, of which Skipjack and Yellow fin tuna were the most important ones, amounting to nearly 180,000 and 85,000 tonnes respectively. Tuna from the Philippines were exported as fresh, frozen and canned products. According to BFAR statistics in the period 2000-2010 the export of canned tuna increased while the export of frozen tuna (various product types) fluctuated. While the export value of

canned tuna in 2000 was USD64M, in 2010 the export value increased significantly to USD242M. Six main bottlenecks for the export potential of the Philippine tuna subsector were identified as a result of the desk study, field work and validation workshop. These are presented in Table 2.

Table 2 Main bottlenecks of the tuna subsector	
Bottlenecks	Level in the value chain
Lack of quality fingerlings	Primary production
Lack of capital investments in infrastructure	Primary production
Lack of cooperation between value chain operators and BSOs	All levels
Lack of vertical cooperation and integration in the value chain	All levels
Complexity and diversity of international buyer requirements	Processors and exporters

The bottlenecks quality and safety issues and producer competency occur at the level of the fishing fleet, fish landing sites and also the middlemen. Although large investments are needed (both on vessels and on the landing sites) to improve quality and safety issues of handling tuna after catch, better training and inspection can also contribute to removing this bottleneck or at least to improving the quality of the landed fish. The dwindling stocks and data gaps mainly occur on the level of the fishing fleet. Fluctuations and declining tuna stocks are difficult to tackle since tuna is a highly migratory species. Although some data gaps can be solved, the most essential data gaps, such as monitoring tuna stocks, would require long term planning.

Most of the bottlenecks that have been discussed demonstrate that there seem to be clear differences between the value chain of frozen tuna and canned tuna. Canning companies are large companies that are already certified to export to Europe. Although most of the bottlenecks that have been discussed apply to the Philippine sector in general, they primarily occur in the value chain of frozen tuna. Most of the fishermen and processing companies are small or medium-sized. These small and medium-sized processors have to deal with middlemen and have to rely on the fluctuating catch of small fishers who often lack the facilities to store the tuna after catching. Furthermore, the share of frozen tuna that is exported to the EU is small since most of the frozen tuna products are exported to Japan. Small and medium-sized exporters are hesitant to export to the EU because of the high standards and the fact that export prices for frozen tuna for Japan often are higher than for the EU.

Seaweed subsector

More than 70% of total seaweed production comes from Mindanao, in the southern part of the country. In addition to the local production, the Philippines also imports Raw Dried Seaweed (RDS) to fulfil the demand from local carrageenan processing companies. The combined volume of RDS from local production and imports was more than 90,000 tonnes in 2010. Four main bottlenecks for the export potential of the Philippine seaweed subsector have been identified as a result of the desk study, field work and validation workshop. These are presented in Table 3.

Table 3 Main bottlenecks of the seaweed subsector	
Bottlenecks	Level in the value chain
Lack of finance and investment	Primary production
Lack of government support (R&D)	All levels
Limited market access to export markets for carrageenan	Processors and Exporters
Strong competition from international RDS buyers and cheaper gums	Processors and exporters

The Philippine seaweed sector is strong and offers employment to lots of coastal communities and also contributes to foreign trade. The Philippine carrageenan processing industry is the second strongest in

Asia after China. However, it is under threat of competition from China and, increasingly, Indonesia. In order to survive, it is crucial for the sector to increase domestic production and productivity. Improved productivity could reduce production costs and make the product more competitive. It is clear that to achieve this, the government and private sector need to invest both capital and knowledge in the seaweed farming sector. Also, the sector should organise itself better and overcome disputes about competition that hamper cooperation between companies and suppliers.

Although it is often argued that carrageenan exporters should be able to survive on their own because they are full grown businesses which are often in the hands of multinational companies, there is also a group of local business which are struggling to survive. Some of these have already left the sector and others look for inventive strategies and product development to maintain their position. This group of companies is in need of support to increase their visibility in the international market and to get market intelligence about opportunities for marketing innovative products such as organic seaweed fertiliser. The issue here is that the products produced by these companies are not suitable for seafood trade fairs. Therefore it is doubtful whether the seaweed sector fits in the seafood programme. The Philippine government has made the same conclusion by placing the carrageenan exporters under the authority of DTI instead of BFAR.

1 Introduction

1.1 Rationale/Background

The Asian region is a major supplier of fish products to the EU market. Over the period 2005-2010 in particular, the aquaculture sector in some Asian countries became an important producer as well as exporter of whitefish and shrimps. Within the Asian region CBI is currently studying the possibilities of developing integrated programmes for the seafood sector for specific countries. This follows up on CBI's current seafood activities in Indonesia with MOMAF and the Surabaya Seafood Centre. For the development of these programmes, a good understanding of the supply and demand side of the industry is essential. For CBI to support further export growth of the seafood sectors of the Philippines, additional research on the value chains of the most relevant seafood products in the Philippines is required.

1.2 Objectives

The main objective of this research is to identify the bottlenecks in three distinct but interconnected seafood export value chains in the Philippines and to advise CBI as to whether an intervention is possible, feasible and expected to contribute significantly to export growth within the seafood sector programme period. Within the value chain analysis (VCA) sustainability is a leading principle.

1.3 Approach

This VCA consisted of four phases. The first phase consisted of a desk study. During this desk study a demand and supply analysis was carried out for the Philippine seafood sectors and three subsectors were selected for further investigation. The second phase consisted of field work. During this phase in-depth field research was undertaken by local experts in the Philippines. These local experts were hired for the specific purpose of collecting missing data, assessing the specific situation and engaging with stakeholders. The third phase consisted of a country visit and validation workshop. During this phase the results of the field research undertaken by the local experts were discussed in a workshop with key stakeholders. Following validation of the collected information, the main bottlenecks in the entire value chain that can hinder exports were discussed and possible intervention strategies to overcome the main bottlenecks were identified. The fourth phase consisted of the reporting. During this final phase, the analysed value chains were described and depicted based on the results of the previous phases.

1.4 Structure

This final report consists of five chapters. Chapter two includes the general features and trends of the seafood sector in the Philippines. In this chapter the significance of the different subsectors for the national economy and the general features and trends in the different subsectors are described. Information about the EU market for seafood products with the main trends and barriers for the Philippines is provided in chapter three. Chapter four includes the value chains and bottlenecks for exports. For each of the selected subsectors the value chains will be presented visually and the bottlenecks preventing exports will be listed and prioritised. Following each subsector analysis, the bottlenecks that can be eliminated will be identified. Chapter five presents the general conclusions. Appendix one provides a stakeholder assessment grid for each subsector with information about the interest and influence of the different stakehold-

ers. Appendix two contains the relevant baseline data for each of the subsectors as a point of reference for monitoring and evaluating the results of the seafood programme.

2 General features and trends of the seafood sector in the Philippines

2.1 Introduction

This chapter serves as the background for the value chain analysis that is presented in chapter four. It describes the general features and trends of the Philippine seafood sector. General information is provided about the significance for the national economy. Furthermore, trends in production or catch and export trends to the main destinations are described for each of the selected subsectors.

Based on the results of the desk study, which was carried out during phase one of this seafood export VCA, the following subsectors in the Philippines were selected for value chain analysis:

- Shrimp
- Tuna
- Seaweed

2.2 Significance of the different subsectors for the national economy

Figure 2.2.1 presents a map of the Philippines with the different regions.

Figure 2.2.1 Map of the Philippines with the different regions

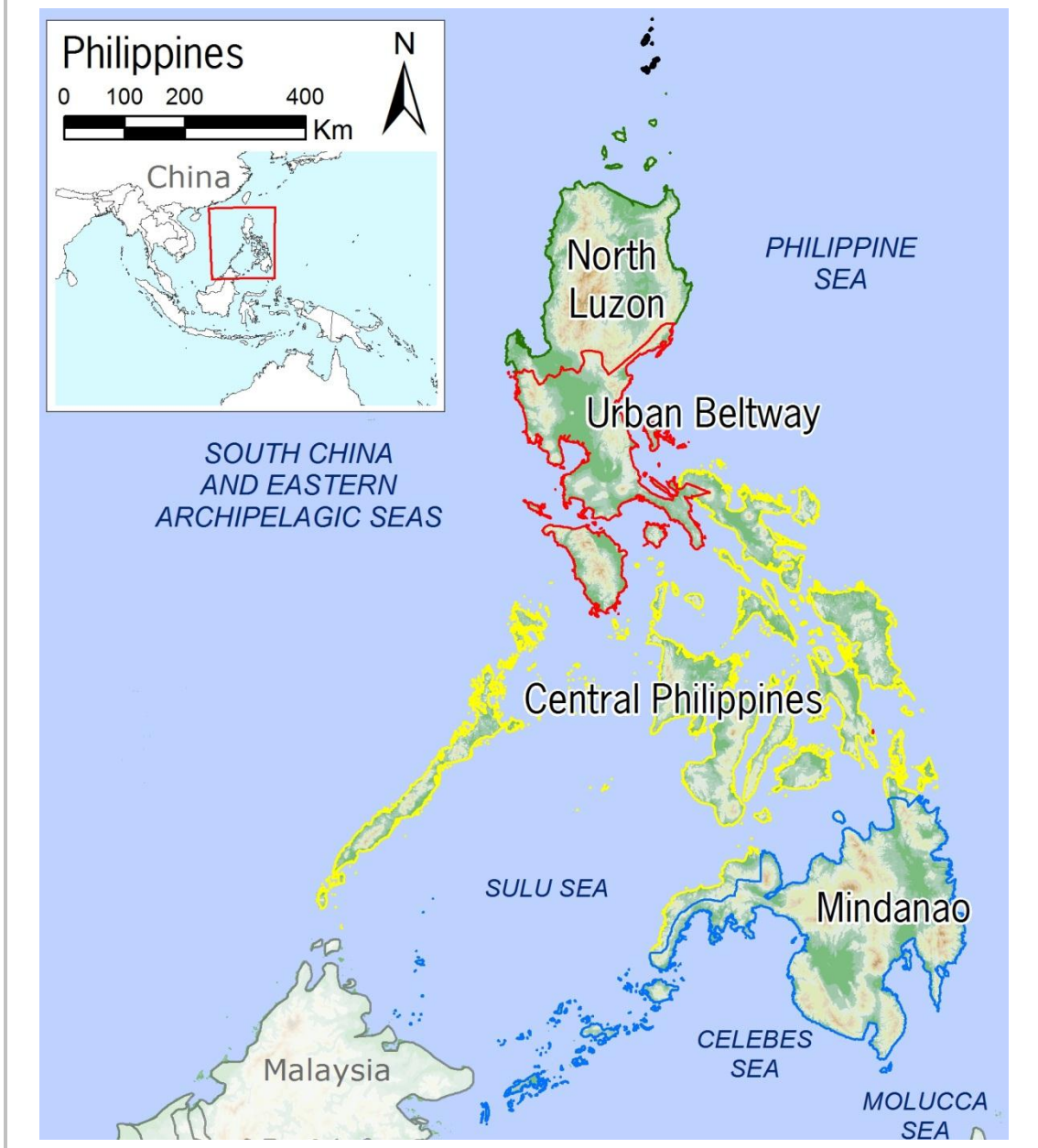


Table 2.2.1 presents the production of fisheries and aquaculture in 2008-2010. The total production was more than 5M tonnes. Production of fisheries in 2010 was nearly as high as production from aquaculture. Seaweed was the most important product with a share of 36%. Indian sardines and Roundscad were the marine species with the highest catches. Tuna species such as Skipjack and Yellow fin were also important species.

Table 2.2.1 Production of fisheries and aquaculture in 2008-2010 (1,000 tonnes)			
	2008	2009	2010
Marine Species	2,378	2,414	2,426
Indian sardines	236	324	334
Roundscad	294	244	269
Skipjack	222	252	228
Yellow fin tuna	169	152	147
Frigate tuna	156	152	150
Other species	1301	1290	1298
Aquaculture Species	2,408	2,477	2,456
Seaweeds	1,667	1,740	1,801
Milkfish	351	348	349
Tilapia	257	261	259
Other species	133	128	47
Inland Species	182	189	187
Snail (Suso)	56	53	53
Carp (Carpa)	12	13	12
Other species	114	123	122
Total production	4,968	5,080	5,069

Source: BFAR (2011).

In 2010, the country's Gross National Product (GNP) went up by 7.16%. The Gross Domestic Product (GDP) grew by 7.33%. The agriculture and fishery sector contributed 17% to the GDP. The country had a labour force of 38.89M in 2010. The employment rate was 93%. About 11.96M persons were employed in the agriculture sector. This comprised 33% of the national employment.¹

The Philippines has more than 100 seafood processing firms, of which 90 were EU certified in 2004. However, currently only 37 processing factories are approved for exports to the EU. Additionally there are about 50 freezing vessels that have EU approval numbers. The 37 companies export frozen milkfish (6), frozen, fresh and canned tuna (18), shrimp paste (3) and frozen shrimp (2) and companies that export a range of other products such as octopus, squid, sardines and mackerel (8).

2.3 Shrimp subsector

Shrimp production

The Philippines used to be a prime mover in the Asian shrimp industry. At present this is no longer the case. The quality and accuracy of production statistics of cultured shrimp over the period 2005-2010 are doubtful. Local experts indicate that both FAO and BFAR statistics are not up to date. However, based on expert judgement and newly available data, some estimates can be made.

Although wild shrimp yields are relatively high in the Philippines, accounting for 47,000 tonnes in 2009, these are mostly domestically distributed. Therefore, this study focuses mostly on cultured Black Tiger and Pacific White shrimp, both of which have a high export potential. Production volumes of Black Tiger shrimp reached almost 95,000 tonnes in 1993². However, after disease outbreaks and crop failures which resulted from lack of quality seeds and bad farm management practices, production of Black Tiger

¹ Countrystat.bas.gov.ph, 2011 p. documents.

² FAO FIGIS database 2011.

shrimp dropped dramatically to around 10,000 tonnes in 2010. In 2002, as a response to the crisis in the production of Black Tiger shrimp, the Philippine government approved the introduction of Pacific White shrimp for commercial farming. However, due to the high production costs compared to other countries as a result of high electricity costs and the exchange rate of the Philippine peso, the distribution of Pacific White shrimp is currently limited to the domestic market, estimated at around 4,500 tonnes a year. This is considerably lower than the production capacity of existing farms that are able to produce Pacific White Shrimp at perhaps more than 20,000 tonnes a year. Table 2.3.1 gives an estimation of total shrimp production per region in 2010.

Philippine Region	Pacific White shrimp	Black Tiger shrimp	Total
Luzon	?	4,846	?
Visayas	?	1,576	?
Mindanao	?	5,111	?
Total	8,000	11,533	19,533

Source: BFAR and personal communication (2011).

Shrimp exports

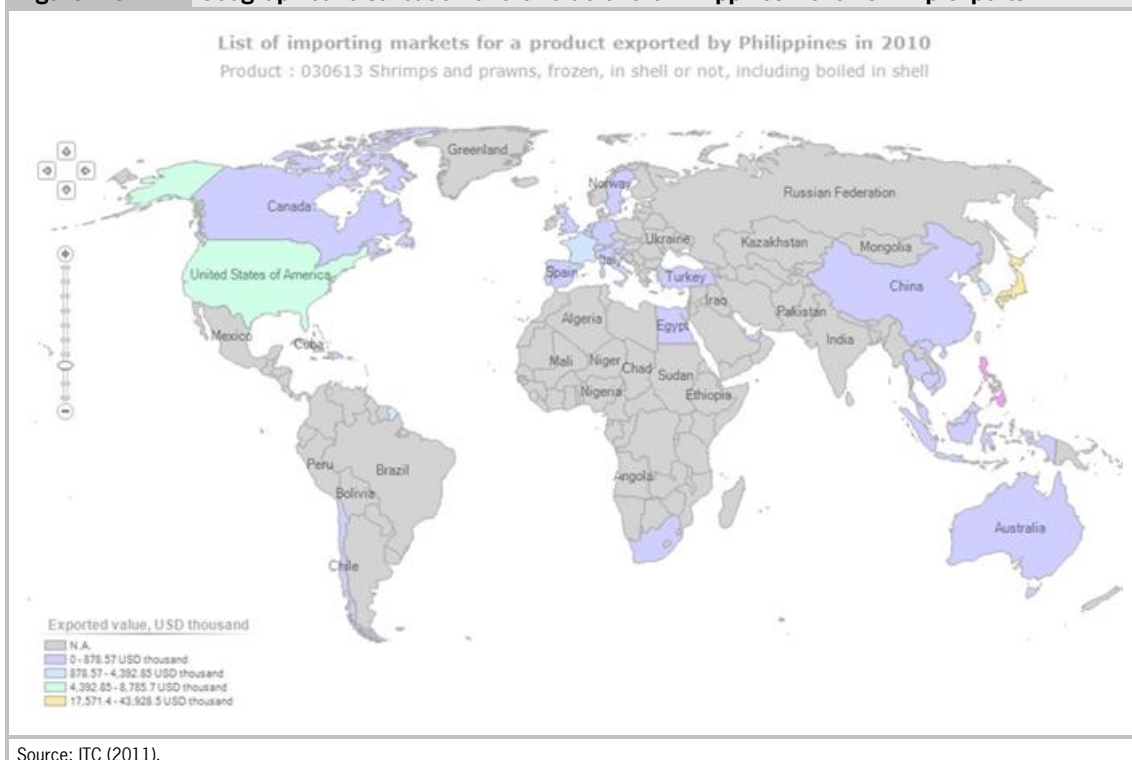
As can be seen in Table 2.3.2 the most important export market for Philippine shrimp is Japan. Although small volumes are traded with the EU and US, most exports are currently marketed within Asia. As have production volumes, export volumes have dropped drastically from more than 90,000 tonnes in the mid-1990s to around 12,000 tonnes in 2010. In 2010, Philippine shrimp exports were almost entirely in frozen form; only a very small portion was exported as shrimp paste.

	EU		US		Japan		Others	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value
2006	369	3,077	2,439	12,763	9,175	46,960	6,758	95,441
2007	330	3,092	1,444	7,834	7,524	41,505	5,741	81,760
2008	336	3,017	948	5,396	6,376	37,167	4,217	65,763
2009	372	2,461	1,194	4,983	7,776	36,080	3,790	51,904
2010	219	1,483	1,467	6,874	7,066	33,581	3,331	50,103

Source: ITC (2011).

Figure 2.3.1 shows the geographical distribution of the value of the Philippines frozen shrimp exports.

Figure 2.3.1 Geographical distribution of the value of the Philippines frozen shrimp exports



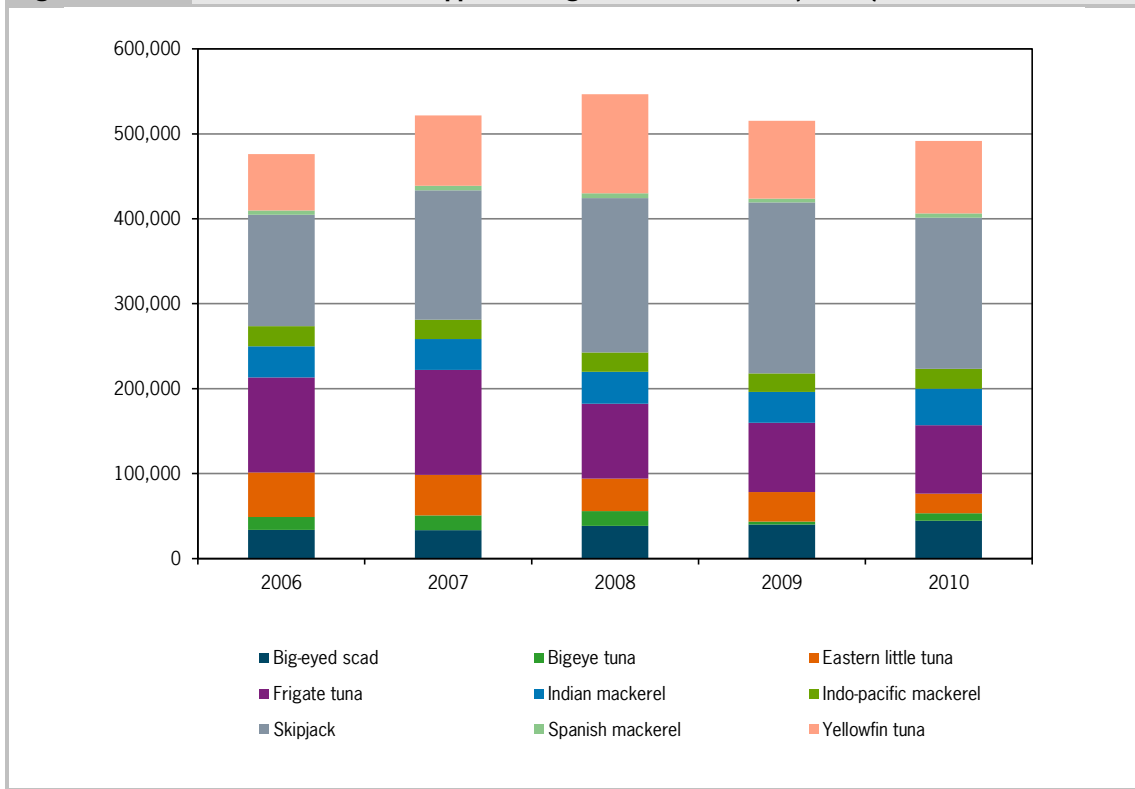
It is estimated that approximately 90% of total shrimp exports consist of Black Tiger shrimp. The remainder consists of a mixture of Pacific White and wild shrimp. To the EU there is currently only a small volume of Black Tiger shrimp exported. Figure 2.3.1 shows that indeed the most important markets in 2010 were Japan and the US. Other markets are China, Thailand, Vietnam, Australia, Canada and France.

2.4 Tuna subsector

Tuna production

From figure 2.4.1 it can be seen that in 2010 almost 500,000 tonnes of tuna was caught in the Philippines. This catch consisted of different species, of which Skipjack and Yellow fin tuna were the most important ones, amounting to nearly 180,000 and 85,000 tonnes respectively. The tuna fleet in the Philippines is composed primarily of large purse seiners (>250 GT), small/medium purse seiners (<250 GT) and the hand line fisheries (pump boats). Large purse seiners (>250 GT) fish outside the Philippine Exclusive Economic Zone (EEZ) in international waters. These purse seiners target Skipjack and Yellow fin tuna, which supply the Philippine tuna canneries. Small/medium purse seiners (<250 GT) catch Skipjack, Yellow fin, and small pelagic species. About half their catches go to the domestic market and the other half goes to the canneries. The hand line fisheries catch large Yellow fin and Big eye tuna. Hand line fisheries supply fresh and frozen tuna to both foreign and domestic markets.

Figure 2.4.1 Catches of tuna of Philippine fishing fleet in 2006-2010 (tonnes)



Source: BFAR (2011).

The three main fishing grounds for tuna in the Philippines are the South Chinese Sea, the Philippine Sea and the Celebes Sea. As can be seen in Table 2.4.1 most of the Yellow fin and Skipjack is caught in the Celebes Sea and subsequently landed in the Soccsksargen region in Central Mindanao. For Big eyed scad, Eastern little tuna, Frigate tuna and Spanish mackerel, the South Chinese Sea is the most important fishing ground, while most of the Big eye tuna and Indian mackerel are caught in the Philippine Sea. The Philippines also import several tuna species for processing. In 2010 about 23,000 tonnes of frozen Skipjack were imported. In addition, 16,000 tonnes of frozen Yellow fin and 17,000 tonnes of other frozen tuna species were imported.

Table 2.4.1 Tuna catches per different catching areas in 2010

Tuna species	South Chinese Sea	Philippine Sea	Celebes Sea	Total
Big-eyed scad	66%	21%	13%	100%
Bigeye tuna	36%	52%	12%	100%
Eastern little tuna	77%	12%	11%	100%
Frigate tuna	51%	32%	17%	100%
Indian mackerel	45%	51%	4%	100%
Indo-pacific mackerel	50%	48%	2%	100%
Skipjack	17%	7%	76%	100%
Spanish mackerel	51%	35%	14%	100%
Yellow fin tuna	27%	17%	56%	100%

Source: BFAR (2011).

Tuna exports

Tuna from the Philippines is exported as canned and frozen products. According to BFAR statistics in the period 2000-2010 the export of canned tuna increased while the export of frozen tuna (various product types) fluctuated. While the export value of canned tuna in 2000 was USD64M, in 2010 the export value increased significantly to USD242M. Based on these data it appears that especially during the period 2006-2010 export prices (USD per tonne) of both frozen and canned tuna were higher than in previous years. The main export markets for frozen tuna are Japan, other Asian countries such as Korea and Hong Kong, and the US. It is estimated that 70% of the export of canned tuna goes to the EU, while the rest goes to the US (20%) and Japan (10%). Because there are inconsistencies in the export data to the main export markets from BFAR compared to trade data from ITC, no specific export volumes or values to the main markets have been presented.

Year	Export volume frozen (tonnes)	Export value frozen (USD)	Export volume canned (tonnes)	Export value canned (USD)
2000	43,000	62,000	36,000	64,000
2001	24,000	51,000	34,000	69,000
2002	24,000	51,000	48,000	93,000
2003	28,000	45,000	57,000	112,000
2004	24,000	41,000	54,000	114,000
2005	14,000	102,000	32,000	55,000
2006	26,000	54,000	46,000	89,000
2007	27,000	94,000	48,000	125,000
2008	20,000	75,000	77,000	276,000
2009	20,000	75,000	84,000	254,000
2010	30,000	109,000	77,000	242,000

Source: BFAR (2011).

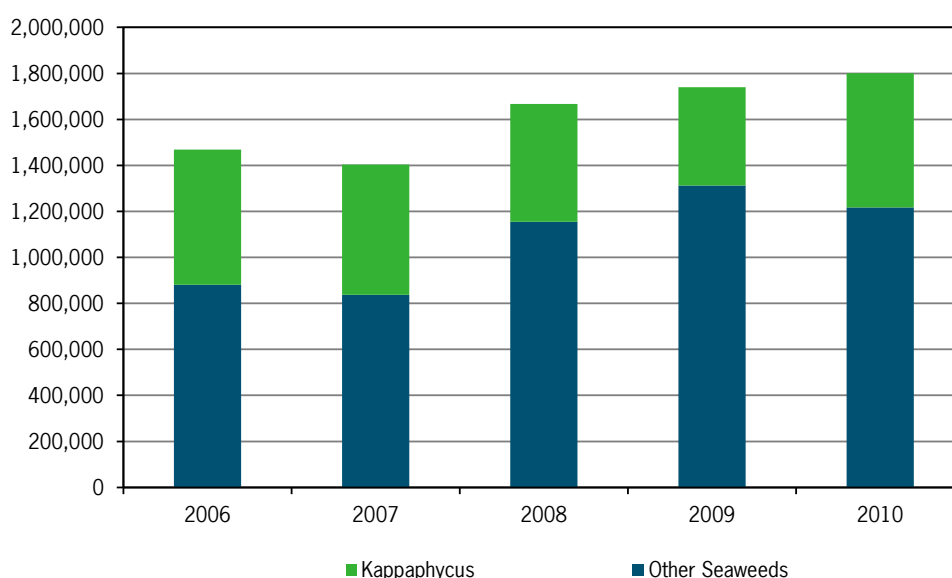
2.5 Seaweed subsector

The study of seaweed focusses on the commercial species that are currently being traded with the EU and are mainly used for the production of carrageenan but also for alternative products such as liquid fertiliser.

Seaweed production

Figure 2.5.1 shows the total production volume of seaweed in the Philippines. The volume in this figure represents wet tonnes. Table 2.5.1 subsequently shows the raw dried production volume of *Kappahycus* and *Euchema* species that are mainly used for the production of carrageenan and have the highest commercial value.

Figure 2.5.1 Philippine production of seaweed including red seaweed *Kappaphycus* sp. 2006-2010 (wet tonnes)



Source: BFAR unpublished.

From Table 2.5.1 it appears that the production of seaweeds increased over the period 2006-2010. The production of *Kappaphycus* remained stable.

Table 2.5.1 Production of Commercial Red raw dried seaweed *Kappaphycus* sp. and *Euchema* by region in 2010

Region	Production Volume (dry tonnes)	Share of Total Production (%)
Mindanao	60,316	72
Palawan	12,057	14
Visayas	9,773	12
Luzon	1,316	2
Philippines	83,462	100

Source: BFAR unpublished.

More than 70% of total seaweed production comes from Mindanao, in the southern part of the country. Within Mindanao, most dried seaweed is produced in the far south, around the city of Zamboanga. Together Palawan and the Visayas, in the centre of the country, account for more than 25% of the total production. However, exact data for the production volume of carrageenan is lacking. It appears that in 2007 the country produced a total of 34,500 tonnes of carrageenan which, in that year, accounted for 41% of the total world production of 84,700 tonnes³.

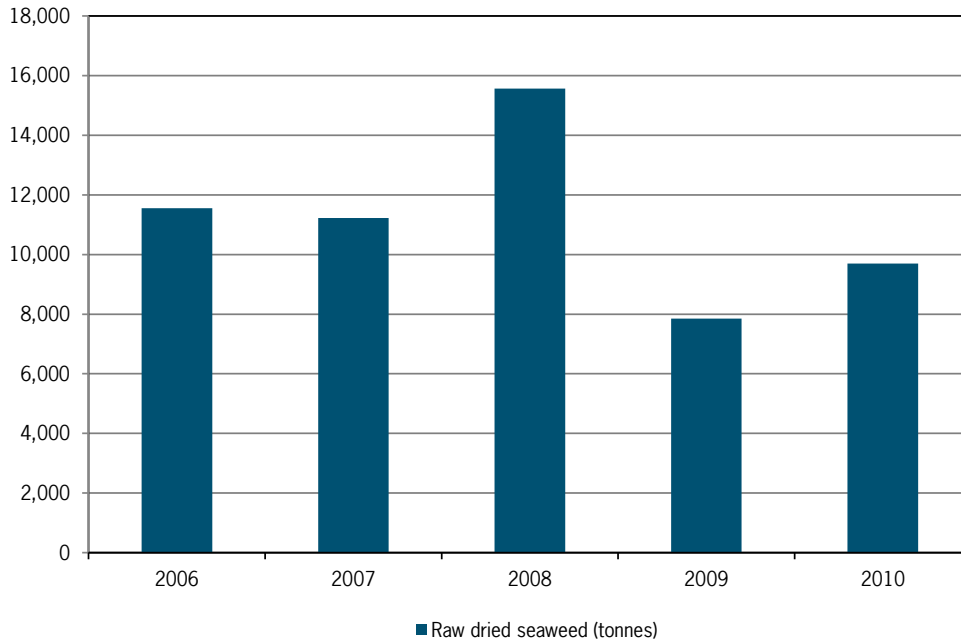
Raw Dried Seaweed (RDS) imports

In addition to the local production, the Philippines also imports Raw Dried Seaweed (RDS) from Indonesia (more than 90% of total imports) and some other countries, such as Chile, to fulfil the demand from local carrageenan processing companies. Figure 2.5.2 shows the import volume of RDS over the period 2006-

³ <http://www.mb.com.ph/articles/243264/shemberg-seeks-seaweed-export-curb-ensure-raw-material-supply>

2010. The combined volume of RDS from local production and imports was more than 90.000 tonnes in 2010.

Figure 2.5.2 Raw Dried Seaweed imports to the Philippines

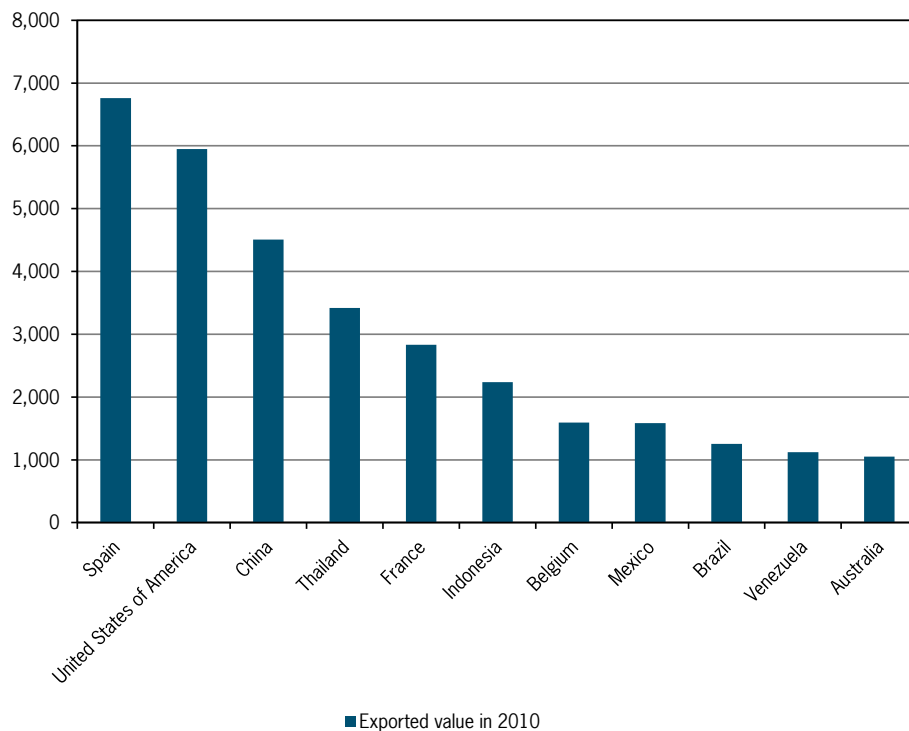


Source: ITC (2011).

Seaweed exports

The Philippines exports both RDS as well as carrageenan. Figure 2.5.3 shows that RDS is mainly exported to countries such as China, Thailand, the US, Spain, and France, where the seaweed is processed into carrageenan by other companies. It is not clear why the Philippines also exports seaweed to Indonesia.

Figure 2.5.3 Exports of RDS from the Philippines



Source: ITC (2011).

Because exact data for the export of carrageenan from the Philippines is more difficult to find, Table 2.5.2 shows the share of the EU, US and Japanese markets.

Table 2.5.2 Export of Philippine carrageenan to the most important markets

Year	EU		US		Japan		Others	
	Value (USD 000)	%	Value (USD 000)	%	Value (USD 000)	%	Value (USD 000)	%
2006	13,763	29.64	4,530	9.75	404	0.87	27,939	59.74
2007	26,093	37.26	11,739	16.76	574	0.82	31,617	45.16
2008	39,683	41.05	13,822	14.30	256	0.26	42,908	44.39
2009	33,005	38.38	13,483	15.68	356	0.41	39,129	45.53
2010	41,531	35.78	20,708	17.84	2,172	1.87	51,662	44.51

Source: DTI unpublished.

The EU imports both carrageenan and RDS from the Philippines. The import of RDS will remain important as a raw material for the large European carrageenan producers. What is obvious from Table 2.5.2 is that the export volume of carrageenan increased rapidly in the period 2006-2010. Although the EU is the largest market for carrageenan from the Philippines, other markets such as China are important markets as well.

3 EU demand for seafood products from the Philippines

3.1 Introduction

This chapter provides an overview of the EU demand for seafood products from the Philippines. Relevant information about suppliers of seafood to the EU located in other than the Philippines is also included in the analysis. Section 3.2 describes the general trends and future prospects in the EU seafood market. Sections 3.3 and 3.4 analyse the EU demand for seafood in general and from the Philippines. Relevant barriers to export to the EU market are described in Section 3.5.

3.2 General trends and future prospects in EU seafood market

In 2007 the per capita consumption of fish and shellfish in EU Member States amounted to about 7 kg. The FAO recommends a consumption level of fish and seafood per capita per year of 14.5 kg. Countries such as Portugal and France consume the highest volumes of seafood. Only the Portuguese meet the level of consumption recommended by the FAO. The Dutch level of consumption, about 6 kg, is slightly below the EU average.⁴ The EU seafood market has grown over the past few years and this growth is expected to continue. The main EU trends and developments are:

- a. European fish landings are stable or decreasing. In terms of absolute volumes, the EU fish processing industry has become increasingly dependent on imports. During the period 2000-2009 the import from third countries increased by more than 30%.
- b. European consumption of fish products is increasing. On the one hand European consumers have become increasingly interested in value added products from non-EU countries. On the other hand EU consumers tend to buy more frozen seafood instead of fresh products because of the current financial situation.
- c. The reform of the Common Fisheries Policy (CFP) and Common Market Organisation (CMO) will be finalised in 2013. Reforms may create new opportunities (higher tariff quotas) or pose new threats (additional import restrictions) to developing countries.
- d. A new EU regulation regarding fishing activities, Illegal, Unregulated and Unreported fishing (IUU), took effect in 2010 and might pose restrictions to fish caught in developing countries.
- e. Increased labelling of fish products. As of 2011 refreshed fish products may no longer be labelled as fresh fish products. In Southern European countries in particular, consumers prefer fresh products. In North-Western Europe most consumers seem to be indifferent.
- f. Sustainable seafood is becoming the standard. Sustainably produced seafood is increasingly becoming the standard to get access to important market channels such as supermarkets. The environmental aspects of production in particular are receiving more and more attention. However, in other market channels sustainability is still not the standard. Nevertheless, supermarkets emerge as the most important market channel. This development is visible in Northern as well as in Southern Europe, where supermarkets are increasing their market share.
- g. Increased certification and eco-labelling. Certification programmes and eco-labelling schemes for fish products have become indispensable for companies in Northern Europe that sell fish products

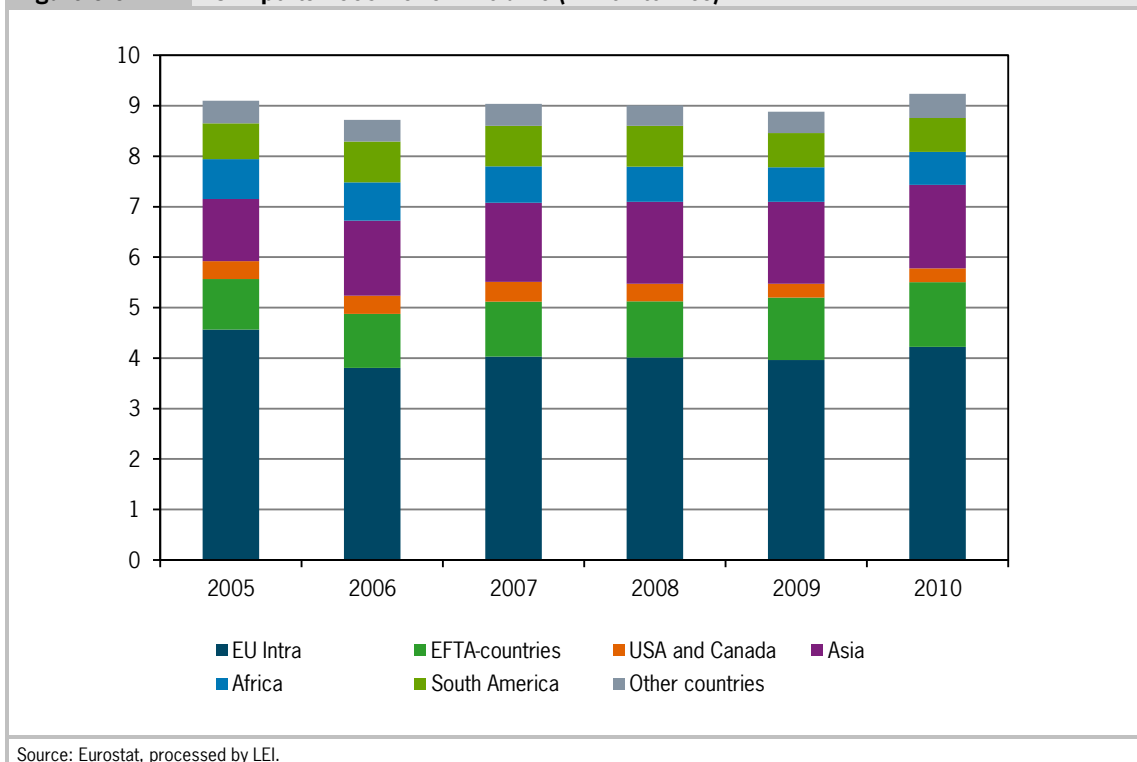
⁴ PBL, The protein puzzle; the consumption and production of meat, dairy and fish in the European Union. PBL Netherlands Environmental Assessment Agency, The Hague, 2011.

to maintain their market position. In Southern European countries, certification and eco-labelling are also receiving increased attention.

3.3 General EU demand for seafood products

In the period 2005-2010 the EU Member States imported about 9 million tonnes of fish products per year. In 2010 46% of the fish products in terms of volume were imported from other EU Member States. EU imports from EFTA countries accounted for 14% of the import volume while the USA and Canada together supplied 3%. Asian countries supplied 18% of the import volume. Other products were imported from Africa (7%), South America (7%) and other countries (5%). In terms of value, 53% of total EU imports concerned intra-EU trade, while Asian countries had a share of 16% of the total EU import value. Compared to intra-EU trade, Asian countries supplied more high volume/low value products.

Figure 3.3.1 EU imports 2005-2010 in volume (million tonnes)

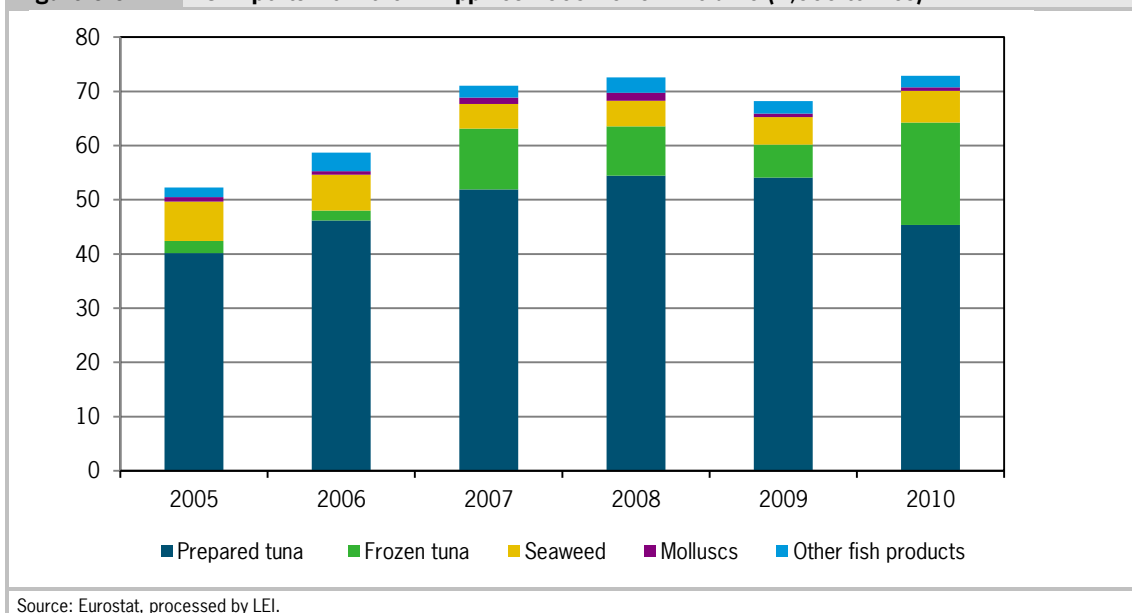


Most of the imports from countries other than EU Member States consisted of raw material or primary processed products that were further processed and traded in the EU. In 2010 the main imported product categories in terms of volume were frozen fish fillets (21%), frozen fish (20%) and fresh/chilled fish (16%).

3.4 EU demand for seafood from the Philippines

EU seafood imports from the Philippines were dominated by tuna with a share of 85-90%. Most of the tuna was in the form of preserved products, although frozen tuna was also exported. Other relevant products were seaweed and molluscs. While there was a decline in 2009, EU seafood imports from the Philippines increased in 2010. In 2010 73,000 tonnes of fish products were supplied to the EU, an increase of almost 40% compared to the supply to the EU in 2005.

Figure 3.3.2 EU imports from the Philippines 2005-2010 in volume (1,000 tonnes)



3.5 Barriers to export to the EU market

There are basically two main barriers for export to the EU market, namely food safety standards and import tariffs. Both aspects are discussed briefly in this section. Ultimately the competitiveness of the sub-sectors in the Philippines depends to a large extent on the degree to which these two barriers constitute a bottleneck for access to the EU market.

Standards with respect to sustainability and food safety

The increased focus on sustainability and food safety results in higher quality standards with respect to production and hygiene. The high level of EU food safety standards compared to the level of standards in markets such as the US, Japan and especially alternative markets such as South Korea or the Middle East may constitute a barrier for exporters for whom the costs of compliance are too high.

For cultured shrimp, for instance, the EU demands that an EU authorised authority in each country tests and labels products from every shrimp farm in order to guarantee full traceability and that no forbidden medicines are used during the production cycle. If, for whatever reason, the local supply chain in shrimp producing countries cannot meet these requirements or is not able to pass the tests that need to be carried out, this may constitute a reason to export to other countries instead. In recent years it has happened that as a result of rejection by the EU (and also US and Japanese) health authorities, on the basis of the presence of antibiotics, for example, exporters shifted their focus to other markets where health standards are less stringent than in the EU. This ultimately results in different supply chains for specific end markets that each have their own levels of quality. Contrary to other barriers, such as import tariffs, this barrier may be eliminated in the countries where shrimp are produced, as institutions can be strengthened and producers can be trained for compliance with EU standards.

Traceability is an issue in aquaculture production, as it is used as a means to be able to trace the origins of unsafe seafood. However, it is also an issue for capture fisheries since the EU has demanded the availability of catch certificates for each fish that is imported in the EU since 2009. These certificates are part of the EU regulations concerning Illegal, Unreported and Unregulated (IUU) fishing. As many fisheries in developing countries consist of small-scale vessels that are often not properly registered, and are for a large part operated by uneducated fishermen, the introduction of catch certificates has proven to be a barrier for exports to

the EU. However, it is reported that by now most of the important fisheries have registered all vessels and implemented new policies that support fishermen and exporters in being able to provide the documents that are required for export to the EU market. The CBI modules may be useful tools to deal with this barrier, as many of the solutions may be found in export coaching and the strengthening of business support organisations.

EU import tariffs

Discussions regarding EU import tariffs mainly concern tuna and shrimps. Import tariffs for tuna have been debated widely, as the Philippines faces higher import tariffs compared to other countries that supply tuna to the EU, especially for canned tuna products (20-25%). These tariffs are also applied to imports from other Asian countries, such as Vietnam and Indonesia. Countries such as Fiji and Papua New Guinea have signed (interim) Economic Partnership Agreements (EPAs) with the EU and thus enjoy comparatively favourable conditions to trade tuna and other fish products. For shrimp, tariff issues currently focus on the US, where anti-dumping duties act as a barrier for shrimp exporters that are faced with high duties compared with exporters from other countries. Several countries have successfully objected to the US policies and duties have been reduced. Nevertheless unequal duties still influence the competitive position of one country compared to another. At this time the Philippines falls under the General System of Preferences (GSP) system in the EU. However, as the status of all the countries is being reviewed, it may be that in the future they are confronted with higher tariffs. An example of the consequences of higher import tariffs is the Thai shrimp industry, which lost its preferential status for the EU market in the year 2000. As a result exports to the EU dropped dramatically while exports to the US increased rapidly. Only after the Tsunami in 2004, when Thailand regained its preferential status, did shrimp exports to the EU recover slightly. A major problem with import tariffs is that the procedures to fight cases objecting to them are often long and drawn out.

3.6 Market trends and growth potential for selected seafood products

This section elaborates on the market demand and growth potential as well as the value added potential for each of the selected subsectors.

Shrimp

Market demand for shrimps in the EU is strong. Demand for shrimp products has increased during the past few years, and despite the financial crisis, the EU demand remained strong. In the near future competition in the main shrimp markets is expected to increase as EU trading and processing companies are able to source different shrimp species from a wider variety of countries. Growth potential therefore seems high. As with tuna, there are different market segments for shrimp products. Therefore its value added potential is relatively high. Throughout the EU, shrimps are consumed as various products in several market segments. Since most shrimp products are value added products, these products are more sensitive to changes in demand as a result of economic situation and outlook.

Tuna

Market demand and growth potential for tuna products is strong. Product differentiation has resulted in demand for different tuna products in different market segments such as traditional products (canned tuna) and products designed for convenience. Furthermore, demand for sustainably produced tuna is increasing in North-Western Europe.⁵ Other important suppliers of tuna to the EU, such as Ecuador, are

⁵ CBI, Sustainable tuna in the United Kingdom, The Netherlands and France. Centre for the promotion of imports from developing countries, The Hague, 2011.

favoured by a 0% tariff and therefore have a comparative advantage over most Asian countries. Canned tuna products from Vietnam compete with canned tuna from Spanish and French canning companies.

Seaweed

EU market demand for seaweed in 2010 was 56,000 tonnes. In 2005-2010 the import volume of seaweed from the EU decreased by more than 20%, but the growth potential was promising. Seaweed is a versatile product that has several other applications besides in human consumption, such as fertiliser, animal nutrition and cosmetics. These applications require high value/low volume seaweed. Seaweed products from South-east Asia and South America are offered to the EU market at competitive prices compared to seaweed in the EU.⁶ The Philippines is one of the most important producers of seaweed. In 2010 the country supplied more than 10% of the total imports of seaweed to the EU. Most seaweed from Indonesia and the Philippines is supplied to China. Although the current EU market demand is relatively low compared to China, growth potential seems promising.⁷ Furthermore, the demand from China and the USA is growing. Because of the different applications of seaweed there is potential for adding value in some market segments.

⁶ AquaFUELS, *Algae and aquatic biomass for a sustainable production of 2nd generation biofuels; deliverable 3.2 Technological Assessment including downstream added value products*. AquaFUELS FP7 - 241301-2, Coordination Action FP7-ENERGY-2009-1. 2009.

⁷ Bixler, H.J. and H. Porse, 'A decade of change in the seaweed hydrocolloids industry.' In: *Journal of Applied Phycology*, May 2010.

4 Subsector value chains and bottlenecks for exports

4.1 Introduction

In this chapter the value chains of the selected subsectors in the Philippines are analysed and the main bottlenecks are identified and prioritised. The value chain analysis for each of the subsectors consists of two sections. In the first section the value chain is mapped. This section includes a visual representation of the value chain with its operators, supporters and influencers. It also provides information about the flow of products along, and the relationships within the value chain. The second section includes the key bottlenecks of the value chain as well as a visual representation of these bottlenecks. For each of the key bottlenecks the main solutions and actions, stakeholders that need to be involved, and donor agencies that are already working on specific bottlenecks are mentioned.

The main stakeholders for each country and subsector are described. In order to avoid repetition and/or conflicting descriptions of stakeholders in different subsector descriptions, a complete stakeholder description is only provided in the first subsector where the stakeholder is mentioned. Relevant additional details regarding these stakeholders are provided when relevant for each following subsector.

4.2 The influencers and supporters of the Philippine Seafood Industry

The first part of this section describes the main government authorities that shape the institutional framework in which the Philippine seafood industry operates. The descriptions of the institutions are general and limited to the overarching roles and responsibilities that they have in regulating, supporting and promoting the seafood sector. The second section elaborates on all the other supporters of the Philippine seafood sector, including producer associations, exporter associations, financial institutions and research institutes. The specific roles and responsibilities of all the influencers and supporters in the four subsectors will be explained in Section 4.3 to Section 4.5.

The Institutional Framework

*The Department of Agriculture (DA)*⁸

The DA is responsible for supporting, regulating and managing the agriculture and fisheries sector. In the Philippines, the competent authority appointed by the EU for issuing EU health certificates and processing establishment approvals is the Bureau for Fisheries and Aquatic Resources (BFAR), which is under the authority of the Undersecretary of Fisheries, one of the main sections within the Department of Agriculture (DA). Besides BFAR, there are two other departments within DA that have a role in regulating and supporting the fisheries sector: 1) the Philippines Fisheries Development Authority (PFDA), and 2) the National Fisheries Research and Development Institute (NFRDI). NFRDI is a research institute but is listed here because it is an integral part of the DA.

a. Bureau for Fisheries and Aquatic Resources⁹

The Bureau for Fisheries and Aquatic Resources (BFAR) is the government agency responsible for the development, improvement, management and conservation of the country's fisheries and aquatic resources. It was reconstituted as a line bureau by virtue of Republic Act No. 8550 (Philippine

⁸ <http://www.da.gov.ph>

⁹ <http://www.bfar.da.gov.ph>

Fisheries Code of 1998). The bureau is part of the Department of Agriculture. The responsibilities of BFAR are wide-ranging. In order to carry out all its tasks and responsibilities, BFAR has a number of national offices, of which the most important are listed below:

- Fisheries Resources Management Division
- Enforces fisheries laws, rules and regulations on the management and protection of fishery/aquatic resources within the Philippine territorial waters including the exclusive economic zone (EEZ).
- Capture Fisheries Technology Division
- Provides overall technical advisory and support services to the Bureau and higher level management on matters pertaining to capture fisheries/fishing technology.
- Fisheries Post Harvest technology Centre
- Assists in the implementation of the utilisation of fish/fishery aquatic products as support for the Comprehensive National Fisheries Industry Development Plan.
- Inland Fisheries and Aquaculture Division
- Assists in the preparation and implementation of a National Inland Fisheries and Aquaculture Development and Management Program, Fish Diagnostic and Quarantine System and the Environmental Impact Assessment in coordination with the National Aquaculture Centers and the Fisheries Regional Offices.
- Fisheries Planning, Policy and Economics Division
- Analyses industry, economic, institutional and such other related studies on the various aspects of fisheries, to form bases in the formulation and recommendation of appropriate policies and programmes for the utilisation, management, development, conservation and allocation system of fisheries and aquatic resources.
- Fisheries Regulatory and Quarantine Division
- Registers and issues licences for fishing gears used in commercial fishing vessels.
- Legal Division
- Reviews joint fishing agreements between Filipino citizens and foreigners who conduct fishing activities in international waters and ensure that such agreements are not contrary to Philippine commitments under international treaties and convention on high seas fishing.

As the competent authority appointed by the EU, BFAR is also responsible for auditing and licensing processing companies for export certificates for the EU (and also for all other markets). Furthermore, BFAR is responsible for setting the national standards for both the registration of fishing vessels, hatcheries, feed mills, aquaculture farms and processing facilities. The headquarters of BFAR is located in Manila. The Philippines is divided into eleven administrative regions. In each region BFAR has a regional fisheries office which performs the local tasks. Furthermore BFAR has several national centres for research activities in all the sectors of the Philippine seafood industry. There is a seaweed centre, an inland fisheries centre, a marine fisheries centre, a brackish water aquaculture centre, a fresh water aquaculture centre, etc. These centres are located across the countries in the most suitable locations. Finally, BFAR has six regional training centres where farmers and fishers are trained in sustainable production methods.

b. Philippine Fisheries Development Authority¹⁰

The Philippine Fisheries Development Authority (PFDA) is a government owned and controlled corporation attached to the DA and was created to promote the development of the fishing industry through the provision of post-harvest infrastructure facilities and essential services that improve efficiency in the handling and distribution of fish and fishery products and enhance their quality.

¹⁰ <http://www.pfda.da.gov.ph>

The Department of Trade and Industry (DTI)¹¹

The Department of Trade and Industry (DTI) is the primary government agency with the dual mission of facilitating the creation of a business environment wherein participants can compete, flourish, and succeed and, at the same time, ensuring consumer welfare. Overall, DTI's role is to contribute to the country's goal of achieving economic growth towards poverty reduction. Its mandate calls for the expansion of Philippine exports, increase in investments, and the development and promotion of the country's micro, small, and medium enterprises (MSMEs). In order to achieve this there are 33 foreign trade service posts, sixteen regional offices, 81 provincial/city/area offices, thirteen bureaus, seven attached agencies, seven attached corporations, and ten service offices which all together need to provide an enabling business environment. DTI has officers for the seafood sector and for the processed seaweed sector. However, from correspondence with the seafood officer, involvement of DTI in the seafood sector seems to be low.

The Department of Science and Technology (DOST)¹²

DOST is the government agency that is mandated to perform research to develop technology. Under the authority of DOST, the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD) focuses on research within the agriculture and fisheries sector. PCAARRD will be discussed briefly in the section on research institutes.

The Philippine Export-Import Credit Agency (PhilEXIM)¹³

The last important agency, PhilEXIM, also known as the Trade and Investment Development Corporation of the Philippines (TIDCORP), is a government financial institution attached to the Department of Finance.

PhilEXIM supports exporters/importers through:

- Guaranteeing loans granted by Philippine banking and financial institutions to qualified exporters, producers of export products, and contractors with approved service contracts abroad.
- Facilitating and assisting in the implementation of approved service contracts abroad entered into by Philippine entities, enterprises, or corporations with foreign exchange earning potentials, by providing counter-guarantees to Philippine banks and financial institutions issuing stand-by Letters of Credit or of Letters of Guarantee for the performance of said service contracts.
- Fulfilling requests from domestic entities, enterprises, and corporations to assist them in the coordination of their development and expansion plans with a view to achieving better utilisation of their resources.
- Providing insurance cover, credit and appropriate services to facilitate the export of Philippine goods or services by any entity, enterprise or corporation organised or licensed to engage in business in the Philippines.
- Providing direct credits and loans to exporters of Philippine goods and services.
- Providing technical assistance in the preparation, financing, execution of development or expansion programmes, including the formulation of specific project proposals.

Local Government Units (LGUs)

LGUs operate at the lowest political level. There are LGUs at the regional, the provincial, the municipal and the neighbourhood level. They play a role in giving approval for certain land uses, to build aquaculture farms and fish landing sites. Also, LGUs play a role in traceability as they together with BFAR are responsible for giving certificates of origin.

¹¹ <http://www.dti.gov.ph>

¹² <http://www.dost.gov.ph>

¹³ <http://www.philexim.gov.ph>

Research institutes

There are a number of universities, such as the National University of the Philippines, with research and educational programmes for the seafood sector. There are three other research institutes that play an important role in the Philippine seafood sector: 1) the Southeast Asian Fisheries Development Center (SEAFDEC), 2) the National Fisheries Research and Development Institute (NFRDI), and 3) the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD).

The Southeast Asian Fisheries Development Center (SEAFDEC)¹⁴

SEAFDEC is an intergovernmental organisation established in December 1967 for the purpose of promoting sustainable fisheries development in the region. Its current Member Countries are Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam. The Aquaculture Department (SEAFDEC/AQD) was established in 1973 to conduct research, develop technologies, disseminate information, and train people in the farming of fishes, crustaceans, molluscs, and seaweeds for food, livelihood, equity, and sustainable development. The Philippines, as host, provides AQD with the physical facilities and funds for operations and the salaries of researchers, scientists, and service personnel. AQD works closely with various universities, fishery schools, and government agencies in the Philippines. AQD also has strong connections with foreign research and academic institutions and international agencies. SEAFDEC/AQD is mandated to:

- Promote and undertake research on aquaculture relevant and appropriate to the region.
- Encourage human resource development in aquaculture through training and extension.
- Disseminate and exchange information in aquaculture.

Through these functions, the SEAFDEC/AQD implements programmes comprising research, training and information dissemination, and technology verification and commercialisation activities as approved by the Council of Directors, in order to promote sustainable aquaculture development in Southeast Asia.

National Fisheries Research and Development Institute (NFRDI)¹⁵

Previously the National Fisheries Research and Development Institute (NFRDI) was part of BFAR but currently it is an independent institute. The main goal of NFRDI is to generate scientific information, technologies and knowledge that will respond to the needs of the fisheries industry and fishers and to serve as a basis for sustainable fisheries management and policy formulation. The objectives of the institute are:

- To raise the income of the fishers and to elevate the Philippines to within the top five fish-producing countries in the world.
- To make the country's fishing industry in the high seas competitive.
- To conduct social research on fishers' families for a better understanding of their conditions and needs.
- To coordinate with the fisheries schools, Local Government Units and private sectors regarding the maximum utilisation of available technology, including the transfer of such technology to the industry and particularly to fishers.

Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD)¹⁶

Established in 1972, PCAARRD is a sectoral council of the Department of Science and Technology. It is the apex organisation of the Philippine national agricultural research system and provides unified and focused direction for national research and development efforts in agriculture, forestry, and natural re-

¹⁴ <http://www.seafdec.org.ph>

¹⁵ <http://nfrdi.da.gov.ph>

¹⁶ <http://www.pcarrd.dost.gov.ph>

sources, including the fisheries sector. It is mandated to help and support farmers and fishers to cope with changing technological needs. However, the work of DOST-PCAARRD is relatively unknown to industry insiders.

Producer and Exporter Associations

There is only one overarching association for SMEs in the Philippines, the Philippine Exporters Confederation (PHILEXPORT).¹⁷ The mandate of PHILEXPORT covers all export sectors. PHILEXPORT is the umbrella organisation of Philippine exporters accredited under the Export Development Act (EDA) of 1994. It is a non-stock, non-profit private organisation born out of the unification of the Philippine Exporters Foundation and the Confederation of Philippine Exporters in October 1991. It is mandated to strengthen the country's export industry through its export promotion and development programmes. PHILEXPORT is a long-standing partner of CBI.

Financial institutions

There are some private banks that provide loans to the fishery sector, but these are not sufficient to cover all the needs of the sector. BFAR has several programmes providing small loan schemes to fishers and farmers. As already mentioned, Philexim also provides loans for SMEs in the seafood sector. Although commercial companies can access commercial loans, most small-scale fishers and farmers are dependent on the small subsidy and loan programmes of BFAR, the Landbank and some international NGOs such as USAID.

Certification bodies

There are several private certification agencies active in the Philippines, such as BRC and ISO. These are mostly small private companies that offer certification for different sectors, including seafood.

4.3 Shrimp subsector

Figure 4.3.1 presents the shrimp value chain in the Philippines and includes the priority bottlenecks which are crucial for the export potential of the shrimp industry in the Philippines. Where relevant, the differences between the value chains of Pacific White and Black Tiger shrimp are specified. In the Philippine shrimp value chain four main categories of operators can be distinguished:

1. Input suppliers: e.g. hatcheries, feed suppliers, medicines and chemicals suppliers and equipment suppliers
2. Farmers: e.g. traditional and semi-intensive
3. The Luzon fish market and middlemen
4. Processors/exporters

Furthermore, five different categories of influencers and supporters can be distinguished:

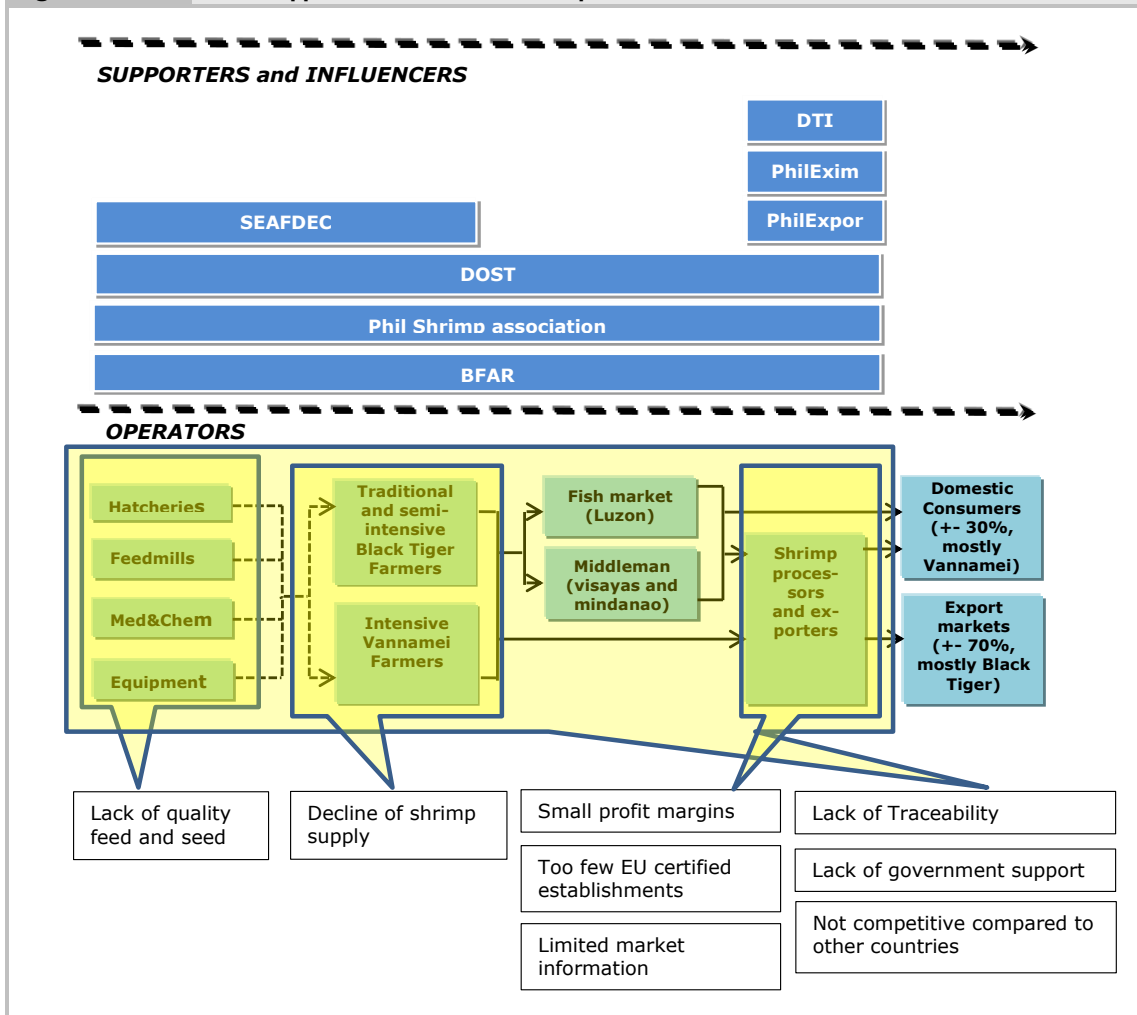
1. Government authorities (BFAR)
2. Research institutes (DOST-PCAARRD and SEAFDEC)
3. Producer and exporter associations (PHILEXPORT and Philshrimp)
4. Certification bodies (BFAR)
5. Financial institutions (PhilEXIM)

¹⁷ <http://www.philexport.ph>

Finally, a long list of bottlenecks have been identified as a result of the desk study, field work and validation workshop:

1. Lack of government support
2. Limited number of EU-certified processing facilities
3. Lack of traceability
4. Decline in shrimp supply
5. Very small profit margins for exporters
6. Not competitive to other Asian shrimp exporters
7. Limited market information about the EU
8. Lack of quality shrimp seeds

Figure 4.3.1 The Philippine value chain for shrimp and its main bottlenecks



Operators within the value chain

Input suppliers

There are four main inputs being supplied to the shrimp farm subsector: 1) seed, 2) feed, 3) chemicals and medicines and 4) equipment. Supplies of chemicals and medicines, and equipment are mostly channelled through local distributors that supply also to fish farmers. Seed and feed are the most important two and are shortly elaborated on below.

1. Seed

There are only a limited number of hatcheries in the Philippines. For Pacific White shrimp, Dobe Export International claims that it supplies 70% of the total seed input in the subsector. There are more Black Tiger shrimp hatcheries. However, it is argued that there is still a lack of quality seed, especially for Black Tiger shrimp. This may have been one of the major reasons behind the recurring disease outbreaks in the Black Tiger subsector that eventually caused the production of Black Tiger to decrease dramatically over the period 2006-2010.

2. Feed Suppliers

Recent data on the availability of shrimp feed is lacking, but in 1997 there were 22 companies that were licensed to produce commercial aquaculture feeds. Of these companies, eleven produced both fish and shrimp feed, three exclusively produced shrimp feed, and the others exclusively produced fish feeds (FAO 1997). Since then, the rampant outbreak of diseases and low survival obtained in shrimp ponds have led feed companies to develop special feed formulations in addition to their regular product lines. There is as yet no proof of success. One of the large Pacific White shrimp producers explained that due to a lack of quality feed in the Philippines he is forced to import feeds from Vietnam.

Shrimp Producers

Traditionally, shrimp in the Philippines were cultured in traditional small scale polyculture systems where the culture of shrimp was combined with Milkfish. In the mid-1990s more large-scale monoculture farms arose, especially in the central Visayas. In more recent years other commercial farms have arisen in Luzon and Mindanao, but here culture practices are still dominated by polyculture. According to industry insiders, most of the commercial farmers in the Visayas have changed from Black Tiger shrimp production to Pacific White shrimp production as a result of problems with the production of Black Tiger shrimp. Pacific White shrimp are produced in intensive systems, which can yield more than 20 tonnes/ha/cycle. However, there are some commercial companies that still produce Black Tiger shrimp. For example, there is a fully integrated shrimp company that possesses its own feed mill, hatchery, farm and processing facility and which has been requested by its regular EU buyers to continue to supply Black Tiger shrimp.

Although BFAR makes efforts to regulate the shrimp sector by forcing farmers to license their farms, until now only 137 shrimp farms have been registered. The main problem is that many of the polyculture farms do not want to register themselves because this makes them visible to the government, including tax collectors. It can be assumed that all of the registered farms are commercial enterprises that produce shrimp on a relatively large scale. Table 4.3.1 shows the number, type and location of the registered shrimp farms. The table shows that the average size of the registered farms varies between 2 and 100 hectares. The reason for the relatively large size is that most of the small farmers are not willing to register because this would make them visible to the government and force them to pay taxes. Additionally it is important to note that the polyculture farms in particular are large. These farms mainly produce fish, which requires larger ponds and which takes place on a relatively large scale in the Philippines.

Region Name	Monoculture		Polyculture	
	Number of Farmers	Hectares Farmed	Number of Farmers	Hectares Farmed
Ilocos Region	-		1	15
Central Luzon	-		19	982
Calabarzon	9	37	-	-
Mimaropa	-		1	23
Bicol	-		6	86
Western Visayas	1	6	8	221
Central Visayas	9	146	7	210
Eastern Visayas	2	2	6	30
Western Mindanao	-		22	821
Northern Mindano	8	13	21	100
Southern Mindano	-		1	90
Soccsksargen	5	66	3	300
Caraga region	3	22	7	63
ARMM	-		8	41

Source: BFAR (2011).

Middlemen and the fish market

In the Philippines, large scale commercial farmers mostly sell their products directly to processors. This is also the case for almost all Pacific White shrimp. However, shrimp harvested from the numerous polyculture farms are mostly traded through middlemen. In Luzon most shrimp from small scale producers are traded through the local fish market, where traders collect all the shrimp and sell them to exporters and local buyers. The fact that small scale producers are not registered and market their product through middlemen or the fish market creates several issues relating to traceability and food safety. Large scale commercial farms that are registered by BFAR are more suited to controlling these issues, as most shrimp from these farms do not pass through middlemen or the fish market.

Processing and export companies

In recent years, as a result of declining shrimp supply, many exporters closed down their factories. Most of the remaining processors (thirteen in total) are medium to large size companies. From this it could be inferred that small companies could not thrive in today's business environment. There are only two companies that own their own farms and these companies are the only EU approved companies. These two companies have fully integrated activities with their own hatcheries, feed mills, farms and processing facilities. As a result they have complete control over input and output and have no difficulties with meeting requirements for EU certificates.

Medium-sized companies generally do not have their own farms but depend more on individual farmers, middlemen and the fish market and therefore have much more difficulty in getting access to the EU market. There is also some foreign investment in the processing sector. Currently there are three processing establishments that are owned by Japanese companies. Table 4.3.2 shows the main size categories of Philippine shrimp export companies based on the average production, the number of employees and the number of companies per category.

	Average Production Volume (tonnes)	Number of Employees	Number of companies
Small	100 below	50	0
Medium	100-200	51-75	8
Large	200 above	75-100	5

Source: DTI and personal communication (2011).

It is important to note that unlike the situation in Vietnam and Indonesia, Philippine shrimp is mostly exported as block frozen or semi-Individual Quality Frozen (IQF). Processing activities are mostly limited, as shrimp products for Japan and other Asian countries are mostly unpeeled and always headless. The limited processing requirements in these markets mean that exporters have slightly larger profit margins for Black tiger shrimp compared to Pacific White shrimp, as the demand for the latter is mostly in peeled and headless products. However, the limited processing capacities of medium-sized exporters in particular might also be a barrier for exports to the EU, as the demand for shell on shrimp is limited. From the total export basket approximately 75% is exported as block frozen, 15% as semi-IQF and only 10% as IQF.

Flow of products along the value chain

The flow of products along the value chain varies significantly between Luzon in the north of the country and Visayas and Mindanao in the centre and south of the country. There is also variation in the marketing channel of Pacific White shrimp. As already discussed in the previous section, in Luzon a large portion of the production is traded through the shrimp market, where buyers and sellers meet. It is estimated that in Luzon only 25% of Black Tiger shrimp is sold directly from farmers to exporters, 5% is traded through middlemen and roughly 70% is sold through the fish market. In Visayas and Mindanao it is estimated that approximately 20% is traded through middleman while 80% is sold directly to the processing companies. It should be noted that only 70% of Black Tiger shrimp is exported and that 30% is distributed on the domestic markets. Domestic supplies are almost always distributed through local fish markets.

Currently 90% of Pacific white shrimp products are distributed to the domestic market. This often goes directly through the fish markets or through processing companies where the shrimp is peeled and frozen for the retail market.

Supporters and influencers within the value chain

Most of the supporters and influencers have already been discussed in the first section of this chapter. Therefore only the organisations that have a specific function in the shrimp subsector will be discussed here.

Government institutions

The Bureau of Fisheries and Aquatic Resources (BFAR)

BFAR has a number of specific responsibilities in the aquaculture sector that also apply to the shrimp subsector. Within the shrimp subsector these responsibilities apply to different steps in the value chain.

- a. Hatcheries
 - Registers shrimp farms to ensure fishery and aquaculture product quality and safety in compliance with the existing relevant national standards.
- b. Farms
 - Registers shrimp farms.

- Inspects, monitors, and certifies shrimp and fish farms to ensure fishery and aquaculture product quality and safety in compliance with the existing relevant national and international food safety legislations and regulations.
- c. Shrimp auctions
 - Formulates standard protocols/procedures on Hazard Analysis and Critical Control Points (HACCP) based food safety programme. Aside from the ordinary sanitary permit, no agency handles issues such as traceability of products.
- d. Processors
 - Laboratory services are available but the regional offices are not fully equipped with all the necessary test facilities. Most of the tests are carried out at the head office in Manila. This requires personnel in Manila, which complicates matters for small to medium-sized companies that do not have an office in Manila and therefore are required to travel to Manila for every required test.

Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD) PCAARRD has some specific programmes for the aquaculture sector. Within the shrimp subsector these programmes apply to different steps in the value chain.

- a. Fry
 - The National R&D programme on shrimp has a component titled evaluation and refinement of management schemes and products used in intensive culture. This component aims to prevent diseases and sustain production efficiency in an environmentally sound practice, to stimulate the use of probiotics in the control of diseases in shrimp hatchery and to evaluate commercially available immunostimulants in shrimp hatcheries.
- b. Farm
 - PCAARRD provides funds for the national shrimp R&D program. This programme focuses on the development of good quality captive Black Tiger shrimp broodstock, environmentally friendly production techniques and handling protocols and VCA for fresh/chilled/frozen shrimps reared in commercial and organic culture.
- c. Processor
 - PCAARRD provides manufacturing productivity programmes such as energy audits and technology needs assessments. PCAARRD can also perform microbial tests and chemical analysis for products.

Producer/Exporter associations

PhilShrimp

PhilShrimp is an association of shrimp producers and processors that focuses on setting up trade shows for the industry. A trade show is organised in the Philippines once every two years. Although PhilShrimp used to have quite a strong role in facilitating cooperation throughout the shrimp sector, the association is not so active at the moment, due to conflicts within the association and continuous crop failure which has reduced the perspective for Philippine shrimp. Before, the association attempted to promote research for hatchery and farm technology, to introduce the newest production technologies into the sector, and to lobby for the concerns of the industry players to the national government.

Information about how different stakeholders should be involved in a possible seafood programme is presented in a stakeholder assessment grid for the shrimp subsector in Appendix one. The assessment grid differentiates between different degrees of involvement, ranging from merely keeping stakeholders informed to regular face-to-face contact to ensure a strong commitment.

Bottlenecks and solutions

From the desk study, the fieldwork and discussion with the conference participants there was established a long list of bottlenecks. However, after discussion it became clear that there are two main bottlenecks for improving the long-term prospects for the shrimp sector and one to improve the situation in the short term. In this section a short explanation will be provided of the eight bottlenecks noted in the introduction of this sub-section. Subsequently the three bottlenecks that have been prioritised and highlighted as crucial for increasing the potential of the shrimp sector in both the long and the short term will be elaborated upon.

Bottlenecks	
Lack of quality seeds and feeds	Industry insiders argue that one of the main reasons for the continuous crop failures in the Black Tiger shrimp farms is the lack of quality seed. Although the government has attempted to improve the quality of seeds produced in the hatcheries, the results are not yet visible.
Decline of shrimp supply	The bad experiences of Black Tiger shrimp farmers in the previous 10 years have resulted in a reluctance to grow Black Tiger shrimp. Almost all of the large scale commercial producers and even some of the small scale producers have shifted their production to Pacific White shrimp. This has resulted in a decrease of production of Black Tiger shrimp from more than 50,000 tonnes in 2005 to only about 10,000 tonnes in 2011. This drop in production has partially been compensated by an increase in Pacific White shrimp production. However, almost none of the production of this new species is currently exported. The main reason is that the price of Philippine Pacific White shrimp is not competitive in the international markets. Therefore, it is not likely that a CBI intervention would improve this situation.
Pacific White shrimp cannot compete with supply from other countries	Producers argue that as a result of high operational costs in the Philippines, Pacific White shrimp cannot compete with supplies from other countries. Moreover, producers are of the opinion that there is no market for Pacific White shrimp in the EU. As a result, large scale Pacific White shrimp farms currently do not produce at full capacity. They only produce the volume of shrimp that can be sold in the domestic market. This creates a catch-22. Producers wait for exporters to open up new markets so that the producers can start to increase the productivity and produce larger volumes of shrimp which would reduce the operational costs. However, at the same time processors urge farmers to increase production so that the farm gate price is reduced and they can become competitive in the export markets.
Traceability	The traceability of shrimp is limited as a result of the lack of an administrative system for the fish market and middlemen marketing channels. Therefore, exporters can currently only buy directly from the shrimp farms. This causes major issues.
Limited number of EU certified processing facilities	Although at one time there were over 20 EU-certified shrimp exporters, currently there are only two left, and there are about four to eight others in the process of certification. This has two causes, namely the complexity of EU standards and certification procedure and the investment costs for EU certification.
Very small profit margin for exporters	As a result of high farm gate prices, high transportation costs and high laboratory costs, exporters are confronted with profit margins below US\$1 per kilogram. The profit margins are especially low for Pacific White shrimp because these require more processing steps such as peeling and deheading to meet product specifications in the international market. Black Tiger shrimp is mostly exported as whole frozen shrimp, which requires only limited processing activities.
Lack of government support	In general it is stated that the national government has only limited interest in the shrimp subsector. The lack of support refers to both financial assistance and technical assistance. The lack of interest for the shrimp sector started during the time when the shrimp subsector flourished and the government argued that the sector could take care of itself. However, currently there is an urgent need for assistance. Unfortunately, the shrimp subsector will not be

Bottlenecks	
	<p>one of the priority sectors for BFAR until 2015 at least.</p> <p>One major issue that BFAR is blamed for is that the only testing laboratory that can give health certificates for exports to the EU is located in Manila. This means that for every consignment, exporters have to travel to Manila in order to obtain the certificate. Although this is not an issue for companies that have a marketing or sub-office in Manila, for smaller companies that do not have their office in Manila this is a major obstacle for exports to the EU.</p>
Limited market information about EU and about the Philippines	<p>Conference attendants feel that they don't know enough about EU market potential and that EU buyers don't know enough about the shrimp subsector in the Philippines.</p>

According to the conference participants, the main bottleneck is the limited number of EU processing facilities, which relates closely to the lack of government support. The second most important bottleneck is the lack of competitiveness of Pacific White shrimp. The more short-term priority bottleneck is the lack of traceability of Black Tiger shrimp, which is crucial for exports as long as Pacific White shrimp does not become a major export product. The boxes below provide further explanations about these three bottlenecks, actions and solutions, stakeholders involved and donors already working on the issue.

1. Limited number of EU certified processing facilities	
Description	<p>There are two reasons for the limited number of EU certified processing facilities: 1) the high costs vs. the uncertain benefits and 2) the lack of clarity about the implementation of the EU regulations.</p> <p>Many of the Philippine export companies lack the capital to make the necessary investment for EU certification. The procedure for obtaining EU certification takes a maximum of five years. According to one of the exporters, the investment cost to get EU certified is approximately USD25,000. Even if companies get EU certified, the current market options in the EU are limited (especially for exporters that do not have their own farms) because Pacific White shrimp is currently not competitive and there is only a limited supply of Black Tiger shrimp. As already mentioned, exporters urge farmers to increase production; however, at the same time farmers urge exporters to first start buying Pacific white shrimp for exports. Who is going to take the risk?</p> <p>According to the exporters interviewed, the second cause of the lack of EU certified companies is that BFAR is not clear about the implementation of the regulations. It is argued that the BFAR staff is not providing correct or clear advices about how to make factory adjustments. It is also argued that different inspectors may have different opinions and that there is therefore a risk that an adjustment suggested by one inspector may not be approved by the other. According to BFAR these issues have indeed been present in the past. However, they argue that as a result of additional training programmes the inspectors are currently better able to serve the industry. However, BFAR also argues that they need to be very strict with the shrimp export companies because the risk of complaints of the EU health authorities are relatively high for shrimp products, and a ban could bring great harm to the entire seafood sector.</p>
Solution and actions	<p>Conference participants have made some very simple suggestions about what can be done to make the process of obtaining EU certification simpler and more efficient:</p> <ol style="list-style-type: none"> 1. BFAR and a hired consultant should make a simplified checklist for exporters making it clearer to them what investments they need to make, and how, in order to get EU approval. 2. Philshrimp should lobby to the national government for a subsidy scheme for investments that are needed to get EU approval. <p>More information should be provided about the EU market and assistance to create</p>

	more market visibility for the companies that have EU approval.
Stakeholders	BFAR, PHILEXPORT, Philshrimp, processing companies, PhilEXIM,
Donors already working on it	The EU has conducted a training programme to educate BFAR inspectors about EU food safety regulations and audit procedures. This project was completed in 2011.

2. The competitiveness of Pacific White shrimp

Description	As already mentioned, Pacific White shrimp farms are currently not running at full capacity. Also, as a result of high operational costs, farm inefficiency and low productivity, farm gate prices are too high to be competitive in the international market. Currently these farms produce only around 8,000 tonnes, of which 95% is sold on the domestic market. The main reasons that farmers are not able to increase production are a lack of proper shrimp farm knowledge and technology and a lack of market knowledge.
Solution and actions	According to producers, if exporters guarantee that they will buy the product, they will definitely start producing more. However, in the meantime there should be more investments in improving farm technologies which are intended to result in lower mortality rates, higher productivity and reduced energy use. According to the producers present at the conference, this bottleneck will be eliminated automatically when exporters open up new markets for the Pacific White shrimp.
Stakeholders	PCAARRD, SEAFDEC, farmers, hatcheries
Donors already working on it	SEAFDEC

3. Traceability

Description	As already mentioned, the fact that most of the polyculture farms do not want to be registered and the fact that neither middlemen nor the Luzon Fish market have a traceability system are important obstacles for exports to the EU and an increasing number of other export markets. For exporters it is not only an issue that they cannot export untraceable shrimp, but also that if the shrimp in their factory is not traceable, it becomes more difficult to get EU export approval for other products as well. At this moment, traceability of aquaculture products is not one of BFAR's priorities. This bottleneck only applies to the exporters that source their raw material indirectly.
Solution and actions	In particular, the exporters agree that it would be very valuable to implement traceability systems. It was suggested after discussion that BFAR investigate how other countries such as Indonesia and Thailand have implemented traceability systems for both middlemen (Indonesia) and the fish market (Thailand).
Stakeholders	BFAR, Exporters, farmers, middleman, fish market operators
Donors already working on it	None

Conclusion

Although shrimp was at one time the most prosperous subsector within the Philippine seafood sector, currently it is not an understatement to say that the sector is in a crisis. Shrimp exports are confronted with significant problems from the domestic supply chain as well as from the international market. Conference participants expressed their hope that if more companies get EU certified, the sector would receive a boost. However, this is not at all certain, as many export companies that previously were EU certified have not renewed their EU approval because the costs were higher than the expected benefits. The companies that are trying to get approved now face difficulties complying with the BFAR procedures. Although this is quite a negative story, the Philippines has a great potential for shrimp farming considering the natural environment. Conference participants also underlined that EU buyers are often unaware that shrimp is produced in the Philippines. The two companies that are EU certified both found customers in the EU and now

export considerable volumes of Black Tiger shrimp. However, these are the largest shrimp exporters in the country. If other smaller or medium-sized companies get EU approval they would need additional support to get market information and to make themselves visible in the EU market.

4.4 Tuna subsector

Figure 4.4.1 presents the tuna value chain in the Philippines and the bottlenecks for the export of the tuna industry in the Philippines that have been prioritised.

In the Philippine tuna value chain four main categories of operators can be distinguished:

1. Fishermen
2. Fish landing sites
3. Middlemen
4. Processors/exporters

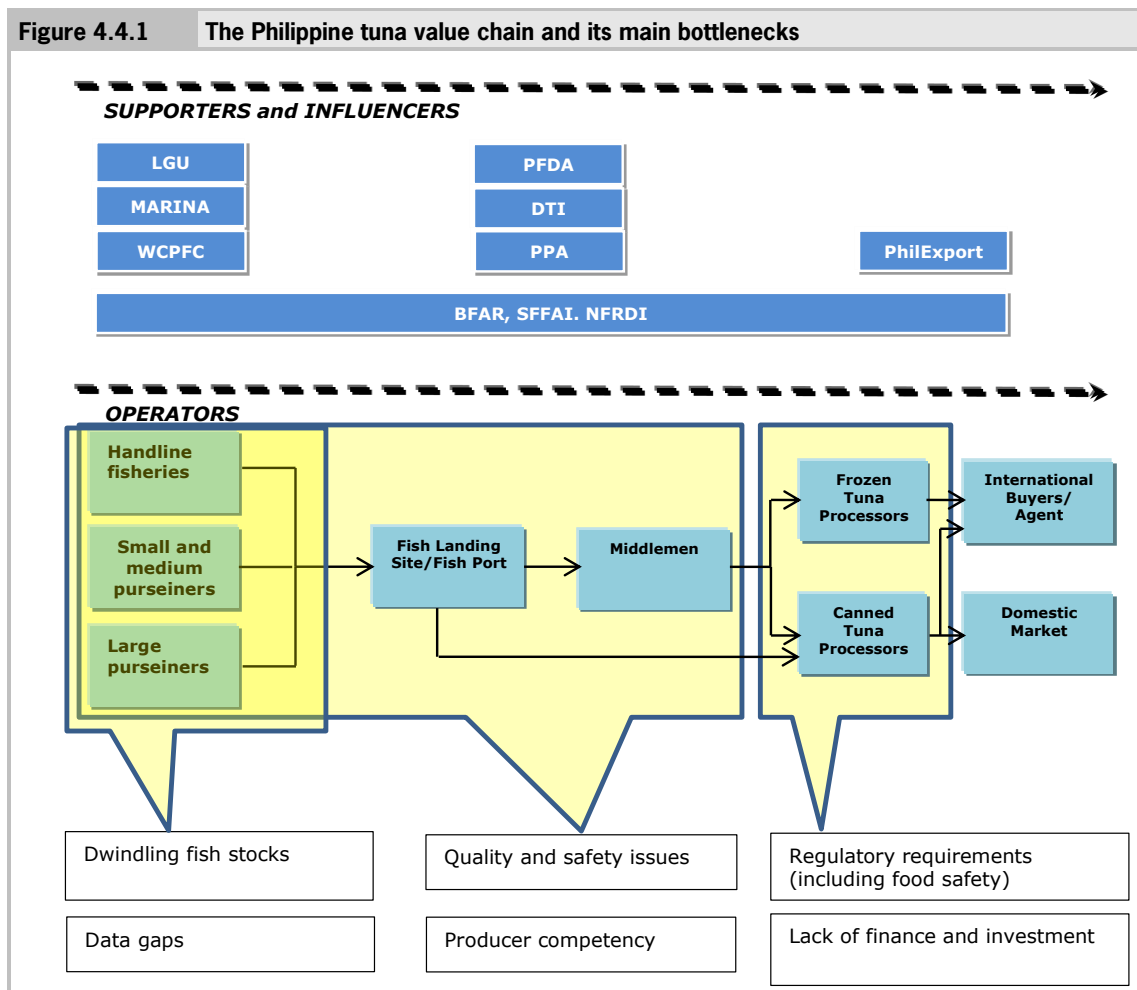
Furthermore, four different categories of influencers and supporters can be distinguished:

1. Government authorities (BFAR, PFDA, LGU's, MARINA, PPA, DTI)
2. Research institutes (NFRDI)
3. Producer and exporter associations (SFFAI, Philexport)
4. Other supporters and influencers (WCPFC and test labs)

Six bottlenecks have been identified as a result of the desk study, field work and discussions at the strategic conference:

1. Quality and safety issues
2. Lack of finance and investment
3. Regulatory requirements and overlapping authorities (including food safety)
4. Producer competency
5. Dwindling fish stocks
6. Data gaps

Figure 4.4.1 The Philippine tuna value chain and its main bottlenecks



Operators within the value chain

Fishermen

The catching methods of the Philippine tuna fishing fleet can be divided into handline fisheries, small and medium purse seiners, and large purse seiners. Large purse seiners mainly catch Skipjack, while the handline fisheries and the small and medium purse seiners mainly catch Yellow fin tuna. The Yellow fin tuna life cycle lasts 4-7 years. The highest quality tuna meat is about 5-7 years old. The life cycle of Skipjack lasts at least 4 years. Skipjack spawns all year round. In 2009, some purse seiners and handline fisheries (23 vessels) that catch Skipjack and Yellow fin tuna were awarded the Friends of the Sea certificate. The vessels within the Philippine tuna fishing fleet can be categorised into municipal fisheries, small vessels (3 gross tonnes to 60 gross tonnes) and large vessels, mostly purse seiners (60 gross tonnage to 80 gross tonnage). Municipal fishers fish mostly by using handlines on small boats with less than three gross tonnes capacity. Large vessels often make use of Fish Aggregating Devices (FADs).

Fish landing sites

The handling and distribution of fish and fishery products is carried out at fish landing sites and fish ports. This involves unloading and marketing of marine products for both local and foreign markets as well as processing and refrigeration activities. The Philippine Fisheries Development Authority (PFDA) was created to monitor and promote the development of the fishing industry of the Philippines. In order to respond to the need of the sector for post-harvest facilities and services, the PFDA has three programmes: the Regional Fish Ports Program (RFPP), the Municipal Fish Ports Program (MFPP) and the Ice Plants and Cold

Storage Program (IPCSP). Under the RFPP eight fish port complexes in Navotas, Sual, Lucena, Camaligan, Iloilo, Davao, Zamboanga and General Santos are managed by the PFDA. Municipal fish ports cater to the post-harvest requirements of municipal fishers. This entails providing smaller fish landings and market facilities in selected fishing communities. Some of these municipal fish ports act as satellites for the regional fish port. Other fish ports are either jointly managed by the PFDA and the Local Government Units (LGUs) or solely managed by the LGUs.

Middlemen

Within the tuna subsector middlemen and *jamboleros* are the primary actors in the trade of captured tuna. Middlemen mediate for the commercial handliners. *Jamboleros* are local middlemen who sell the catches of the municipal fishers. Some middlemen rely on a preferred client system in selling tuna. Most traders pay only after a 10-15-day waiting period. Preferred clients are selected by middlemen based on their capacity to pay immediately. However, there are also instances when boat owners cannot select a trader or buyer because their catch is automatically sold to their moneylender who also acts as a trader. By financing the cost of fishing operations, these traders are assured of a steady supply of tuna at a price that they can impose. Within the seafood industry this is referred to as 'cornered catch'.

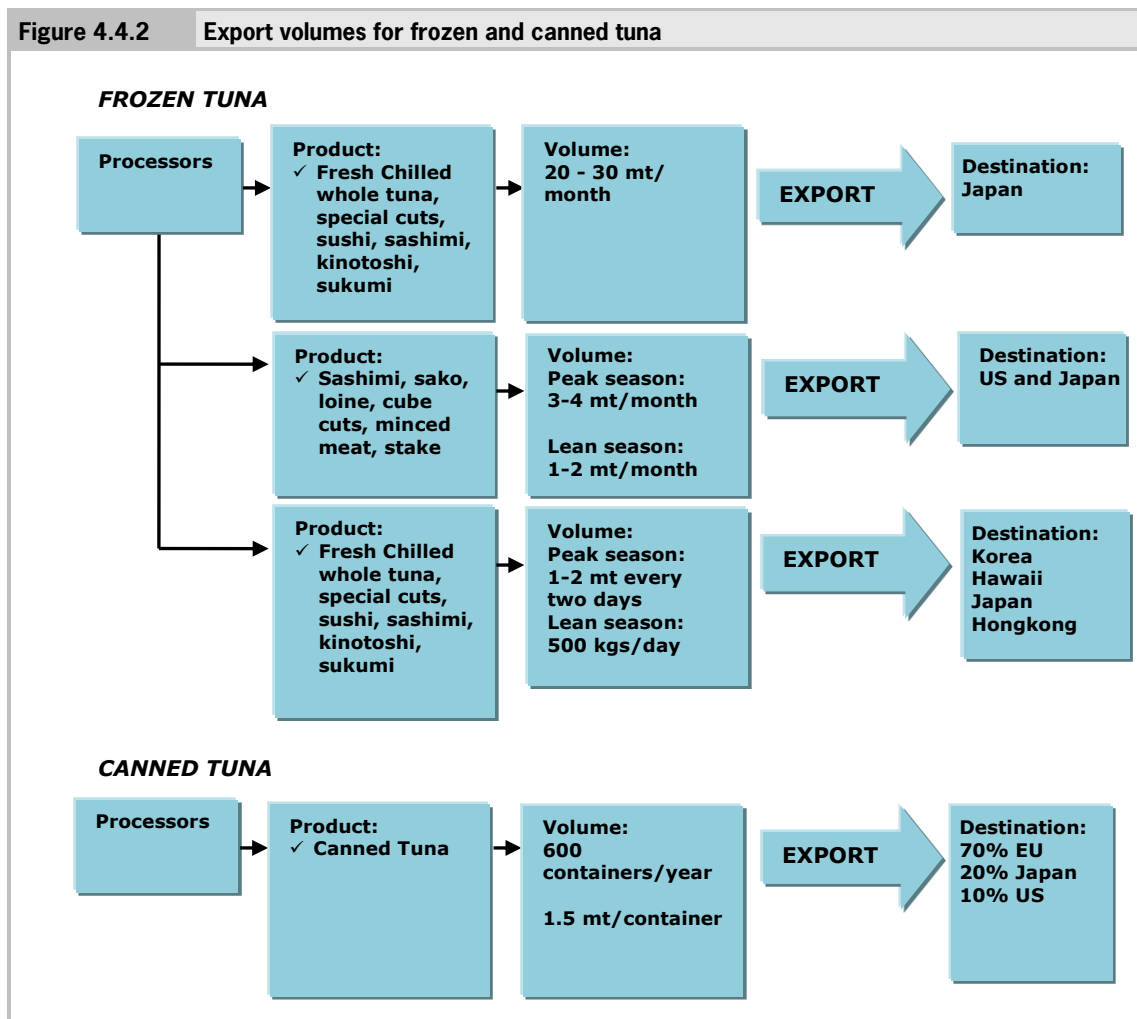
Processors/exporters

Tuna is processed into specific products such as fresh and frozen whole tuna, head on and head off, cubes, sashimi, pellets, sako, minced meat loins, steak and canned tuna. In 2010 there were 36 companies processing tuna in the Philippines, of which 28 produced fresh and frozen tuna products, while six specialised in canned tuna. Processors of fresh and frozen tuna are concentrated around Manila and in the south part of the Philippines, while all canned tuna companies are based in the south (General Santos area and Zamboanga).

Flow of products along the value chain

For frozen and canned tuna figure 3.4.2 provides an estimate of the different export volumes to the main export markets. For frozen tuna, several products types can be distinguished.

Figure 4.4.2 Export volumes for frozen and canned tuna



The different qualities of tuna are graded according to class: A, AA and B. Class A goes directly to processing plant, class AA is directly exported and class B (considered as other) goes to a local market. Tuna catch used for canning (purse seiners) goes directly to processors without the intervention of middlemen. Although there are no formal contracts, often there are long term relationships between fishers and processors. The canned tuna processors normally source their fish from vessels registered in the Philippines, but they also import Skipjack from other countries like South Korea, Taiwan and Papua New Guinea.

Supporters and influencers within the value chain

Government authorities

The Bureau of Fisheries and Aquatic Resources (BFAR) is responsible for the sustainability of tuna and tuna-like fisheries, and to manage the limit of entry of fishing fleets and the installation of vessel monitoring systems. The Philippine Fisheries Development Authority (PFDA) monitors and promotes the development of the country’s fishing industry. The PFDA is responsible for supporting facilities such as ice factories that are relevant to the tuna industry (see fish landing sites or fish ports, under operators). Also LGUs play a role in the value chain as they are responsible for managing fish ports (often jointly with the PFDA).

Besides the Philippine government authorities mentioned earlier, the position of the Philippine Maritime Authority (MARINA) under the Ministry of Transportation and Communication (MOTC) is also relevant in the tuna sector. MARINA has jurisdiction over the development, promotion and regulation of all enterprises

engaged in marine activities. For the tuna fisheries MARINA is responsible for issuing licenses for vessels in the tuna subsector. The Philippine Ports Authority (PPA) also falls under the MOTC. The PPA has been created to facilitate the implementation of the integration of planning, development, financing operations and maintenance of ports for the entire country. The PPA offers harbour terminal operations and maintenance, port development, real estate management, ports information services and port regulations. Because of the Country's archipelagic nature, the PPA delivers frontline services through its five Port District Offices (PDOs) in Manila, Luzon, the Visayas, Northern Mindanao and Southern Mindanao. The PDOs directly manage and supervise 122 ports under the PPA port system. The PPA is relevant to the tuna subsector in terms of tuna landings and export. Finally, the Department of Trade and Industry (DTI) contributes to the expansion of exports, including tuna exports, by assisting with investment and trade related issues.

Research institutes

The position of research institutes in the value chain for tuna was not explicitly mentioned. However, the National Fisheries Research and Development Institute (NFRDI) is included, since the activities of the institute may possibly contribute to eliminating bottlenecks within the value chain.

Producer and exporter associations

The Soscksargen Federation of Fishing and Allied Industries (SFFAI) has an important role in the different parts of the tuna value chain in Mindanao. The federation has nine members representing purse seine and handline fishing groups, canners, processors, traders and equipment technology support service providers in the Soscksargen growth region (primarily in General Santos City). It provides best production practices among its members and has also undertaken a quality enhancement initiative which includes Hazard Analysis and Critical Control Points (HACCP) training for fishing and processing sectors. Furthermore it includes improvement of private and public infrastructure and practices to meet international standards.¹⁸ The Philippine Exporters Confederation (PHILEXPORT) covers all export sectors, including tuna.

Other supporters and influencers

Financial institutions and certification bodies do not seem to have a major role in the tuna value chain. The Western Central Pacific Fisheries Commission (WCPFC) seeks to address problems in the management of high seas fisheries that result from unregulated fishing, over-capitalisation, excessive fleet capacity, vessel re-flagging to escape controls, insufficiently selective gear, unreliable databases and insufficient multilateral cooperation in respect to conservation and management of highly migratory fish stocks (WCPFC 2011). Although the WCPFC is not a direct influencer, being a member of the WCPFC means that the Philippines is obliged to comply with the regulations of the WCPFC such as the operation of purse seine and ring net vessels using FADs. Test labs for food commodities like tuna provide information about the sanitary and phytosanitary regulations and health certifications required by foreign markets.

Information about how different stakeholders should be involved in a possible seafood programme is presented in a stakeholder assessment grid for the shrimp subsector in Appendix one. The assessment grid differentiates between different degrees of involvement, ranging from merely keeping stakeholders informed to regular face-to-face contact to ensure a strong commitment.

Bottlenecks and solutions

All bottlenecks preventing tuna exports

Based on the desk study and the outcomes of the conference, a number of bottlenecks that prevent the tuna sector from reaching its full potential have been identified.

¹⁸ (www.minbc.org/featured/industry-association/soscksargen-federation-fishing-and-allied-industris-inc-saffai; Mindanao Business Council web site).

1. Quality and safety issues	
Description	The main quality and safety issues are related to improper handling of fish between capture and unloading, bad practice of icing and cooling, and poor sanitation of equipment. Although this was mentioned as a general issue, more quality issues occur on smaller vessels than on large purse seiners.
Solution and actions	Funding support for the training of fishers to improve the handling of tuna after catch was mentioned as a solution, as was better inspection of the tuna handling.
Stakeholders	Business Support Organisations (BSOs) such as SFFAI and PHILEXPORT were mentioned during the conference as stakeholders that are able to provide a solution. In addition to this, BFAR, MARINA, PFDA and LGUs can also contribute to eliminating this bottleneck by setting standards and improving facilities to maintain the quality of the tuna.
Donors already working on it	No donor agencies are working on this bottleneck in the tuna sector.

2. Lack of finance and investment	
Description	This bottleneck is especially relevant to exporters of frozen tuna. Frozen tuna companies want to increase their production and operate their own processing plant with improved facilities in freezing, but are hampered by little capital and investment. These companies are often impeded in expanding their industry by acquiring more capital through a loan from the bank by the requirements of the financing institution. Banks require collaterals that these companies do not have.
Solution and actions	Bank loans for small exporters so they can obtain capital for investment in processing and freezing facilities. Furthermore, partnerships could be set up between processors and foreign buyers, although it is not clear if foreign buyers are willing to invest. Finally, banks should be trained so as to improve their fisheries expertise and create a better understanding and a greater willingness to invest in the fisheries sector.
Stakeholders	BSOs such as PHILEXPORT could contribute by organising trainings or matchmaking activities. Donor organisations such as the Centre for the Promotion of Imports from developing countries (CBI) were also mentioned to facilitate matchmaking between processors and foreign buyers.
Donors already working on it	No donors are working specifically on this bottleneck. However, USAID and its Growth with Equity in Mindanao (GEM) programme contribute to economic growth in Mindanao in general. The GEM programme includes the seafood sector. Examples of this programme include support for HCCAP certification and visits to seafood trade shows in Europe and the US.

3. Regulatory requirements and overlapping authorities (including food safety)

Description	There are companies which already meet the standards set by EU, Japan and the US such as Hazard Analysis Critical Control Points (HACCP), Good Manufacturing Practices (GMP) and Sanitation Standard Operation Procedure (SSOP). Nevertheless, there are still some companies hesitant to expand into the EU market because of its strict requirements. Furthermore there are several government agencies that are responsible for the different standards that must be met by exporting companies. This results in the overlap of authorities, which makes it difficult for companies to find out which agency is responsible for a certain requirement. Even with concerted efforts between and among the government agencies, some issues still remain. Finally there is a difference between the EU and US certification standards.
Solution and actions	Processes should be streamlined for exporters to meet the standards for exporting to the EU. It is first necessary to raise awareness of the problem of overlapping activities.
Stakeholders	Government authorities may be able to eliminate this bottleneck. Stakeholders that were mentioned include BFAR and BSOs such as PHILEXPORT.
Donors already working on it	No donors are working on this bottleneck, although the GEM programme of USAID may contribute to the development of the tuna industry in Mindanao in general.

4. Producer competency

Description	In particular, municipal fishers face limitations on the catch efficiency, considering the small size of their boats and a lack of storage space for the catch (see also the first bottleneck). Most of the small and medium companies producing frozen tuna are hesitant to enter the EU market because of the concern of insufficient supply of fish. The volume of Yellow fin tuna that is supplied is limited because it is caught by long liners and handliners on a small-scale basis. Companies producing canned tuna do not face this problem as they are sufficiently provided with tuna by purse seiners.
Solution and actions	This bottleneck was not discussed during the conference. As with the first bottleneck, support for the training of fishers to improve the handling of tuna after catch and better inspection on the handling of tuna are solutions to eliminate this bottleneck. Improving and modernising small vessels that catch tuna could also be an option, but this requires large investments in the Philippine fishing fleet. In order to carry out these investments, the Philippine government needs to be willing and financially able to make these investments.
Stakeholders	Like the bottleneck regarding quality and safety issues, BFAR, MARINA, PFDA and LGUs may also contribute to eliminating this bottleneck by investing in improving facilities to maintain the quality of the tuna at small vessels after catch.
Donors already working on it	A Partnership Programme Towards Sustainable Tuna (PPTST) was started in 2011. This programme deals with the implementation of management improvements within two tuna handline fisheries in the Philippines. BFAR, the German government, Blueyou consultancy and seafood companies from the Netherlands and Switzerland participate in the PPTST. The programme is coordinated by WWF.

5. Dwindling fish stocks	
Description	Dwindling fish stocks are a main concern, especially the reproduction of tuna. Another concern also mentioned is the imposition of a fishing ban during the breeding season that limits the fishing effort and the non-renewal of contracts to the BIMP-EAGA Members. BIMP-EAGA is an economic cooperation programme between different regions in Brunei, Indonesia, Malaysia and the Philippines. In the Philippines Palawan and Mindanao are involved in this programme.
Solution and actions	This bottleneck was not discussed during the conference. Although it is difficult to deal with fluctuations in tuna stocks, regular stock assessments and monitoring can provide insight in the development of tuna stocks and fishing areas. Because this bottleneck is also an issue for other countries bordering the South Chinese, Celebes and Philippine Seas, it would be preferable to work on this bottleneck on an international level.
Stakeholders	The WCPFC and the national government already deal with tuna fisheries and stocks; and the WCPFC seems to be an essential stakeholder to address this bottleneck. The National Fisheries Research and Development Institute (NFRDI) could also have a role in this.
Donors already working on it	As already mentioned, the WCPFC works on the management of tuna fisheries on an international level.

6. Data gaps	
Description	There are concerns regarding the availability of data as at this time no data is available about certified fishing vessels in the south of the Philippines. Moreover, data about fishing stocks and fishing areas are also needed to improve the fisheries policies in the Philippines.
Solution and actions	This bottleneck was not discussed during the conference. Actions to eliminate this bottleneck are related to the previous bottleneck about the dwindling stocks. It appears that for a country such as the Philippines, with many different islands and many small fishing vessels, it can be difficult to establish a data collection system that covers the entire fisheries sector.
Stakeholders	BFAR, NFRDI and WCPFC could have an important role in the establishment of an improved data collection system. The position of LGUs here might also be important.
Donors already working on it	It is unknown whether there are donor agencies that are specifically working on this bottleneck.

Conclusion

The bottlenecks concerning quality and safety issues and producer competency occur at the level of the fishing fleet, fish landing sites and the middlemen. Although large investments are needed - both on vessels and on the landing sites - to improve quality and safety issues of handling tuna after catch, better training and inspection can also contribute to eliminating this bottleneck or to at least improving the quality of the landed fish. The dwindling stocks and data gaps mainly occur on the level of the fishing fleet. Fluctuations and declining tuna stocks are difficult to tackle since tuna is a highly migratory species. In theory, a temporary ban on tuna fishing could eliminate this bottleneck. However, this is difficult to implement and is therefore not a realistic scenario. Although some data gaps can be solved, the most important of these, such as monitoring tuna stocks, would require long-term planning.

Most of the bottlenecks that have been discussed show that there seem to be clear differences between the value chain of frozen tuna and canned tuna. Canning companies are large companies that are already certified to export to Europe. These companies source their raw material from large purse seiners that are well equipped to maintain the quality of the Skipjack tuna after catch. Skipjack tuna is also imported to secure raw material. Although most of the bottlenecks that have been discussed apply to the Philippine sector in general, they particularly occur in the value chain of frozen tuna. Most of the fishers and processing companies are small or medium sized. These small and medium sized processors have to deal with mid-

dlemen and have to rely on the fluctuating catch of small fishers who often lack the facilities to store the tuna after catching. Furthermore, the share of frozen tuna that is exported to the EU is small since most of the frozen tuna products are exported to Japan. Small and medium exporters are hesitant to export to the EU because of the high standards in the EU and the often higher export prices for frozen tuna for Japan than for the EU.

4.5 Seaweed subsector

Figure 4.5.1 presents the seaweed value chain in the Philippines and includes the priority bottlenecks which are crucial for the export potential of the seaweed industry in the Philippines. Where relevant the differences between the value chains of seaweed are specified.

In the Philippine seaweed value chain, four main categories of operators can be distinguished:

1. Input supplier: equipment and seedlings
2. Seaweed farmers
3. Small island traders and middlemen
4. Raw dried seaweed (RDS) and carrageenan exporters

Furthermore, five different categories of influencers and supporters can be distinguished:

1. Government authorities (BFAR)
2. Research institutes: (DOST-PCAARRD and SEAFDEC)
3. Producer and exporter associations (PHILEXPORT and Philseaweed)
4. Certification bodies (BFAR)
5. Financial institutions: (PhilEXIM)

Finally, a list of bottlenecks has been identified as a result of the desk study, the field work and the validation workshop:

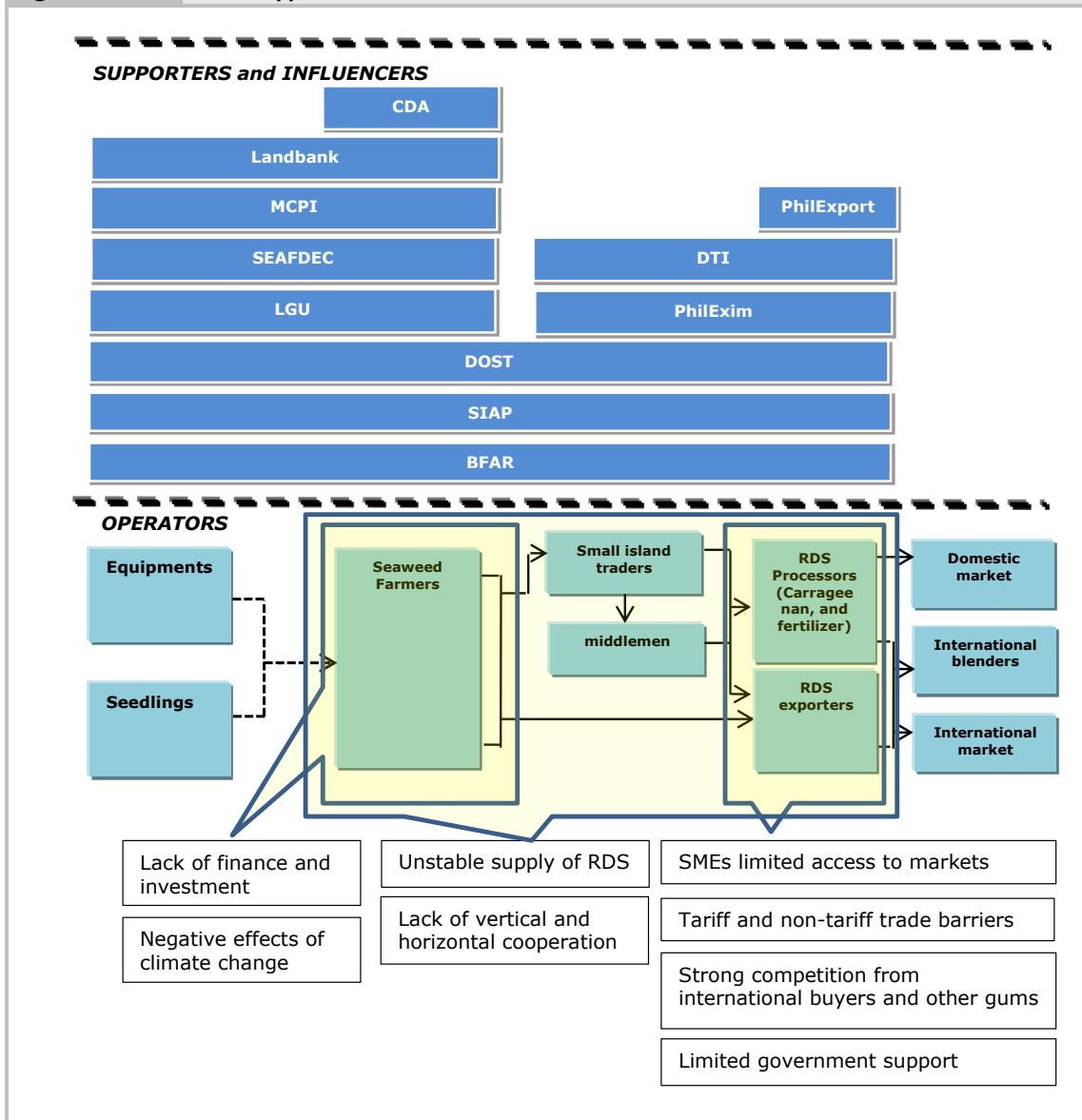
Seaweed

1. Lack of finance and investment for seaweed farmers
2. Limited government support (R&D and R&D dissemination)
3. Strong competition from overseas processors and other gums
4. Negative effect of climate change on production sites
5. Lack of vertical and horizontal cooperation

Carrageenan

1. Limited access to export markets for exporters
2. Strong competition from other gums and international RDS buyers
3. Unstable supply of raw dried seaweed (RDS)
4. Lack of finance and investment
5. Limited government support (e.g. R&D and R&D dissemination)

Figure 4.5.1 The Philippine value chain for seaweed and its main bottlenecks



Operators within the value-chain

Input Suppliers

The only input supply to seaweed farmers is equipment such as nets and other materials to construct the seaweed production systems and seedlings. There are specialised farmers and government institutes that grow seaweed seedlings and sell it to farmers. Some small-scale farmers buy seedlings from other farmers who have a surplus.

Seaweed farmers

In the Philippines there are approximately 2,200 hectares of seaweed farms and a total number of approximately 96,000 farmers. Smaller production areas can be found across the country, but the main areas for seaweed farming are in the southern province of Mindanao. While some of the carrageenan processors have their own integrated seaweed production, most seaweed is produced by small-scale producers. For

the Philippine carrageenan sector the majority of seaweed is cultured but some species are captured in the wild and also used as raw material for carrageenan.

Small traders and middlemen

Because seaweed production is spread out over the country, there is a large network of small island traders who link the seaweed farmers to carrageenan processors and raw dried seaweed (RDS) exporters. Small island traders generally collect the seaweed from farmers who are mostly relatives or close associates. Although small traders sometimes have direct connections to exporters and processors, very often they sell the seaweed to larger traders or middlemen who are often contracted by processors and exporters. These middlemen are mostly not from the farming area itself but arrange transport and give cash advances to small island traders in exchange for a buy back guarantee. The middlemen mostly work on a commission basis.

Raw dried seaweed processors and exporters

The Philippines traditionally has quite a large carrageenan processing sector, and it is the second largest Asian producer after China. Of the total production of RDS, 22% is exported as refined carrageenan, 65% as semi-refined carrageenan and 13% as RDS. Exporters attempt to produce new products from the leftovers from carrageenan processing, such as liquid fertiliser. However, the technologies for and market potential of these new products are still in an experimental phase.

Many of the processing establishments are owned by multinational companies. However, a few, such as MCPI, are still locally owned. The presence of foreign companies with good financial resources makes the business climate more competitive, because compared with local companies, the large multinational companies are able to pay a higher price for the generally scarce raw material. As a result, in recent years many of the smaller companies have shut down their carrageenan production and have now moved into other products, are trading RDS or have quit the business entirely.

Table 4.5.1 shows the average sizes of carrageenan and RDS exporters, while Table 4.5.2 shows the number of companies that fit in the three categories defined in Table 4.5.1. All seaweed exporters can export to the EU market. The majority of seaweed processors are located in Cebu. It is important to note that a large share of the processed seaweed exporters are joint ventures with foreign companies. However, the exact number is unknown. It is known that there are at least two processed seaweed producers that are not owned by foreign companies.

Table 4.5.1	Categories of RDS and carrageenan exporters based on production volume and number of employees			
	Carrageenan exporters		RDS exporters	
	Production volume (tonnes)	Number of employees	Production volume (tonnes)	Number of employees
Small	<99	10 - 99	<999	<9
Medium	100 - 999	100 - 199	1,000 - 1,999	10 - 99
Large	>1,000	>200	>2,000	>100

Source: DTI and personal communication.

Table 4.5.2		Number of companies per category	
Size	Number of exporters		
	Carrageenan	RDS	
Small	4	1	
Medium	4	4	
Large	7	4	
Total¹⁹	15	9	

Source: Personal communication.

Flow of products within the value chain

Processed RDS and carrageenan products are sold on the domestic market and are exported. As mentioned before, 22% of the production of RDS is exported as refined carrageenan, 65% as semi-refined carrageenan and 13% as RDS.

Supporters and influencers within the value chain

Government institutions

- a. Local Government Units (LGUs)

At the provincial level, LGUs are responsible for issuing farming permits to seaweed farmers. Furthermore, LGUs are responsible for providing invoices (receipts) on the seaweed that is produced in the waters of their administrative boundary. This invoice is the basis for the certificate of origin issued by BFAR.
- b. Bureau for Fisheries and Aquatic Resources (BFAR)

Seaweed is one of the priority subsectors for which the BFAR has set up a programme and a commodity roadmap. Therefore, BFAR has several programmes that aim at developing and consolidating seaweed production and export. The activities and responsibilities of BFAR include:

 - Providing training to seaweed farmers regarding better farm management.
 - Providing inputs such as materials and seaweed seedling.
 - Establishing seaweed nurseries to support the planting need of seaweed farmers for good quality seed stocks.
 - Issuing certificates of origin that have to be provided by traders to processors and exporters.
 - Issuing phytosanitary permits to exporters of RDS.
- c. Department of Trade and Industry (DTI)

Since processed seaweed is not a real seafood product, but an industrial product, for several years now exporters have been regulated through the Department of Trade and Industry (DTI). DTI has the following responsibilities:

 - Accreditation of transport ships.
 - Standard and Conformance.
 - Philippine Accreditation Office.
 - Accreditation of Conformity Assessment.
- d. Southeast Asian Fisheries Development Centre (SEAFDEC)

¹⁹ Approximately five exporters export both carrageenan and RDS. Therefore, in total there are actually only nineteen seaweed exporters.

SEAFDEC has several research projects to improve the productivity of seaweeds and to search for new uses and processing options.

- Development of molecular genetic markers for *Kappaphycus*.
- Seed production of *Kappaphycus* hybrid.
- Studies in bioremediation capacity of the seaweed species *Gracilaria heteroclada* and *Caulerpa racemosa*.
- Evaluation of *Kappaphycus alvarezii* as a bioremediator in intensive seaweed culture in order to remove pollutants.
- Screening of anti-microbial activities of crude extracts from Philippine seaweed.

e. Cooperative Development Authority (CDA)²⁰

The mission of the CDA is to be a proactive and responsive lead agency in advancing and sustaining the growth of the cooperative sector by pursuing a holistic development approach, establishing support systems and structures, and building strong connections with stakeholders, thereby optimising benefits to cooperatives in particular and to society in general. CDA's vision is a strong and visible cooperative sector that is able to create and equitably distribute wealth, expand socio-economic opportunities, and help bring about conditions to overcome poverty and strengthen the middle class in the Philippines. The CDA is not noted as active in other fisheries subsectors but does support cooperatives that are involved in the production of seaweed. It supports these cooperatives by improving their organisational strength and providing opportunities for financing.

Research Institutes

There are no research institutes that are only active in the seaweed subsector. Seaweed farmers depend on the same research institutes as the other subsectors. These are noted in Section 4.2.

Producers/Exporters Associations

a. Seaweed Industry Association of the Philippines (SIAP)

SIAP is an umbrella organisation for all seaweed industry stakeholders. It provides a forum to discuss issues of common interest. It collaborates closely with BFAR to formulate programmes to support the development of the sector. Furthermore, it functions as a lobby organisation that represents the entire seaweed sector. All stakeholders, ranging from producers and middlemen to exporters, are represented on the board of SIAP. SIAP also represents the Philippine seaweed subsector in international forums.

b. MCPI

MCPI is a carrageenan processing company that also unites seaweed producers in a large cooperative where the entire production process is managed collectively. MCPI also cooperates with BFAR in setting up training programmes for seaweed farmers. There are no comparable companies in the country.

Financial Institutions

There are no financial institutions that are only active in the seaweed subsector. Seaweed farmers depend on the same financial resources as the other subsectors. These are noted in Section 4.2.

Information about how different stakeholders should be involved in a possible seafood programme is presented in a stakeholder assessment grid for the shrimp subsector in Appendix one. The assessment grid

²⁰ <http://www.cda.gov.ph>

differentiates between different degrees of involvement, ranging from merely keeping stakeholders informed to regular face-to-face contact to ensure a strong commitment.

Bottlenecks and solutions

For seaweed and carrageenan the two bottlenecks with the highest priority have been analysed in more detail. The boxes below describe these bottlenecks in detail, suggest actions and solutions, indicate the stakeholders that should be involved and finally indicate which donors are already working on the bottleneck.

Seaweed

1. Lack of finance and investments for seaweed farmers	
Description	The main reason for a lack of investment in seaweed farms is that the subsector is dominated by small scale production in mostly poor coastal communities. These farmers lack collateral and therefore do not have access to credit and loans. This is a common issue within the entire fisheries sector.
Solutions and actions	In order to increase the access of farmers to capital and financing, the conference participants formulated an action plan that consists of the following steps: <ol style="list-style-type: none"> 1. Farmers must be trained and educated and supported to unite in associations and cooperatives. This should be supported directly by the CDA. 2. There should be more cooperation between associations, cooperatives, traders and exporters. The idea is that if there is closer collaboration in the sector, banks will be more willing to supply credit and loans to farmers through associations or cooperatives. This might especially be the case if traders or exporters guarantee the bank loans. 3. In order to convince banks, farmers and traders must professionalise and introduce bookkeeping systems or at least have proper administration. Farmers should also be formally registered and pay their taxes.
Stakeholders	Farmers, traders, processors. SIAP and BFAR. It is important to only involve organisations that can unite all the stakeholders; this might be difficult due to conflicts between different stakeholders in the sector.
Donors already working on it	USAID, Canadian International Development Agency and the STRIVE (an action for enterprise programme) have supported seaweed farmers in improving their operations, also through credit systems. It is unclear to what extent these programmes are currently still going on.

2. Lack of government support (R&D and R&D dissemination)

Description	Although seaweed is one of the BFAR's priority subsectors, industry insiders complain that the budget of BFAR is limited and more attention from the central government is going to other subsectors (e.g. rice). Furthermore, there is a lack of cooperation between the government, the industry and research institutions. This results in ineffective implementation of research findings (i.e. transfer of technology). Finally, there are complaints that the government does not provide the necessary facilities to conduct research that is important for the subsector.
Solutions and actions	Conference participants argue that the central government should allocate more funds for the production of seaweed production because it is a large export earner. This can be achieved through a strong advocacy group/association. Here again, professionalisation of the subsector is indicated as a main solution. In addition, organising the seaweed farmers in cooperatives and a stronger association may further raise their voice to policy makers. A major issue here is the fact that conflicts that result from the strong competition between different players in the subsector create an obstacle for closer cooperation in the seaweed industry. One concrete step suggested by the conference participants is that BFAR initiate a Philippine seaweed council, which would be able to find common ground among the value-chain actors and unite with SIAP. It is argued that SIAP is not representing the entire sector and is not able to overcome competitive issues between different stakeholders and the government in the seaweed sector.
Stakeholders	Farmers, processors, traders and government. PPP provide training. Donor organisations such as UNIDO and JICA.
Donors already working on it	USAID, Canadian International Development Agency and the STRIVE (an action for enterprise programme) have supported seaweed farmers in improving their operations. It is unclear to what extent these programmes are currently still going on.

Carrageenan

1. Limited access to export markets for exporters

Description	According to the conference participants, small and medium-sized seaweed exporters in particular do not have the resources to undertake marketing activities (e.g. shows, exhibitions and fairs). As a consequence, their visibility in the international market is limited. This is only a problem for small and medium-sized processors/exporters and not for the relatively large carrageenan exporters. Finally, competition hampers cooperation in this aspect.
Solutions and actions	Small and medium-sized exporters should receive support to participate in local and international trade fairs. As information is often lacking, information should be provided about when trade fairs take place. There should also be more support to match marketing departments of small and medium-sized carrageenan exporters with end users of the product. Finally, strengthening SIAP is needed to find common ground among the processors.
Stakeholders	BFAR, DTI (BETP/CITEM), SIAP and PHILEXPORT
Donors already working on it	PHILEXPORT is already working on matchmaking facilities.

2. Strong competition from overseas gums and international RDS buyers

Description	Carrageenan exporters face competition from two sides: first from international buyers of RDS and second from other gums. In particular, Chinese processors that purchase RDS in the Philippines can offer higher prices for RDS because the Chinese government has implemented a high export subsidy for processed seaweed products. If Indonesia limits its RDS exports this will aggravate the situation, and the Philippine carrageenan processing sector may face huge shortages of raw material. As a result of shortages, processors are not strictly following the standards, because it is a seller's market. The industry faces competition in the international markets from other gums (e.g. starch) that can be applied for the same uses but have lower prices.
Solutions and actions	Participants of the conference suggest solutions for both sources of competition. To deal with competition from other gums the quality of the product and production volumes should be increased and stabilised. With financing for farmers, productivity is likely to increase as they would be able to farm year round. This will reduce the price of RDS and eventually reduce the price for Philippine carrageenan (60-65% of the price of carrageenan). To achieve this, farmers should be encouraged or even forced to improve the quality of the product so that less RDS is wasted and the quality of Philippine carrageenan is improved. This could be achieved by introducing regulations among the members of SIAP. The government should intervene in order to level the playing field between Chinese buyers and local processors. Exporters should be supported with export subsidies or Chinese buyers should be confronted with export duties for RDS. This would also help the Philippine sector to overcome the reduced supply of RDS if Indonesia starts to limit RDS exports.
Stakeholders	BFAR, DTI, SIAP, processors, farmers, financiers, central government.
Donors already working on it	No donors are working on this bottleneck.

Conclusion

The Philippine seaweed sector is strong, and it offers employment to many coastal communities and contributes to foreign trade. The Philippine carrageenan processing industry is the second strongest in Asia after China. However, it is under threat of competition from China and, increasingly, from Indonesia. In order to survive it is crucial for the sector to increase domestic production and productivity. Improved productivity could reduce production costs and make the product more competitive. To achieve this, the government and private sector need to invest capital and knowledge in the seaweed farming sector. The sector should also organise itself better and overcome disputes about competition that hamper cooperation between companies and suppliers.

Although it is often argued that carrageenan exporters should be able to survive on their own because they are full grown businesses which are often in the hands of multinational companies, there is also a group of local business which are struggling to survive. Some of these have already left the sector and others look for inventive strategies and product development to maintain their position. This group of companies is in need of support to increase their visibility in the international market and to get market intelligence about opportunities for marketing innovative products such as organic seaweed fertiliser. The issue here is that the products produced by these companies are unsuitable for seafood trade fairs. Therefore it is doubtful whether the seaweed sector fits in the seafood programme. The Philippine government has drawn the same conclusion and has placed the carrageenan exporters under the authority of DTI instead of BFAR.

5 Conclusion

This chapter offers a short discussion of the potential for increasing seafood exports to the EU market (Table 4).

Table 4 Summary of bottlenecks in the subsectors of the Philippine seafood sector		
Subsector	Bottlenecks	Level in the value chain
Shrimp	Lack of EU certified processing establishments	Processors and exporters
	Lack of competitiveness of White shrimp	Primary production
	Traceability	Primary production and trading
Tuna	Producer Competency	Primary production
	Data gaps	Primary production
	Dwindling fish stocks	Primary production
	Quality and safety issues	All levels
	Regulating requirements and overlapping authorities	All levels
	Lack of finance and investment	Processors and exporters
Seaweed	Lack of finance and investment	Primary production
	Lack of government support (R&D)	All levels
	Limited market access to export markets for carrageenan	Processors and Exporters
	Strong competition from international RDS buyers and cheaper gums	Processors and exporters

Shrimp

The shrimp sector is in crisis. Production is stagnant and only Black Tiger shrimp is exported to the international markets. Exports to the EU are limited to two companies with fully integrated production facilities. Unless more shrimp exporters get EU approval for their processing establishments, it will be impossible to increase shrimp exports to the EU. If more factories get EU approval, it will be crucial to increase the competitiveness of Pacific White shrimp or to encourage farmers to start to grow Black Tiger shrimp again. If this does not happen, the export potential will be limited to about 11,000 tonnes. The key to increasing the export potential of Philippine shrimp lies in eliminating these bottlenecks. Sustainable certification should not be considered relevant to the sector at this time. The most urgent steps must be to support processors to get EU approval and to develop a proper physical and regulatory infrastructure which complies with EU demands on food safety and traceability.

Tuna

Most of the bottlenecks within the tuna value chain occur at the production level. However, a distinction between frozen tuna and canned tuna value chains is essential. There are only a small number of canned tuna exporters which are all EU certified and which do not seem to need additional support to utilise their market potential. Most of the small and medium exporters of frozen tuna are currently not able to meet EU standards; however, some already do export to the EU. Moreover, if the quality of frozen tuna after catching could be increased, there seems to be a good market potential for frozen tuna in the EU, especially if this tuna is caught in a sustainable way. The certification of tuna fisheries in the north of the Philippines illustrates this potential. These small and medium exporters might need additional support, not only to meet EU requirements, but also to be able to search for market opportunities in the EU and other export markets.

Seaweed

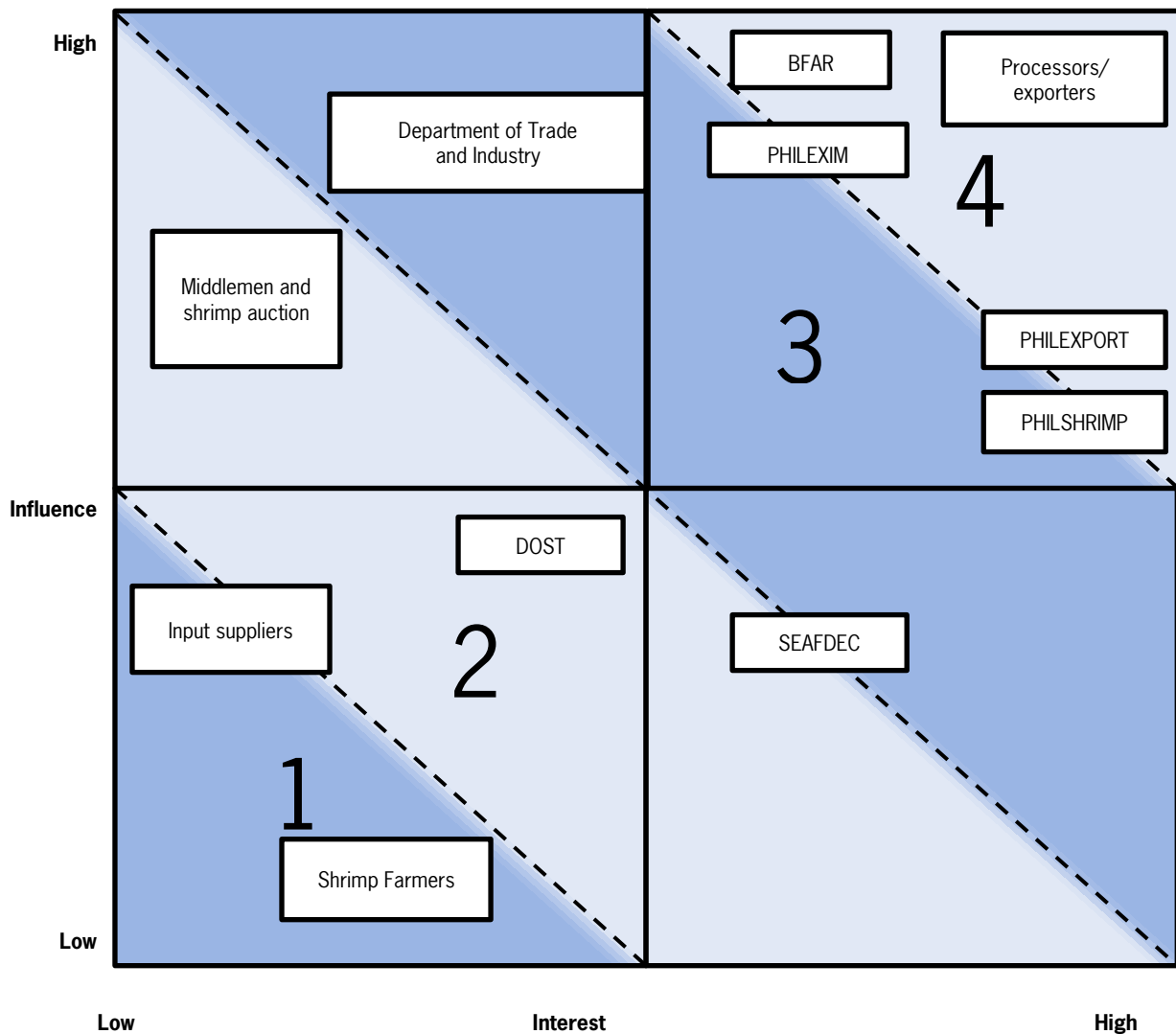
For the carrageenan processors it is essential that domestic production increase and that the government take action to protect the competitive position of Philippine processors compared to Chinese RDS buyers. This is crucial if the sector is to maintain its current leading position in the exports of carrageenan to the world market. However, at the same time, small and medium-sized processors in particular lack the means to undertake marketing activities that help them to position themselves internationally. According to the conference participants, creating more market visibility and also improving the availability of market intelligence about business opportunities for carrageenan and other seaweed products might substantially increase the export volume and value of small and medium-sized processors.

Appendix 1 Stakeholder assessment grids

Introduction

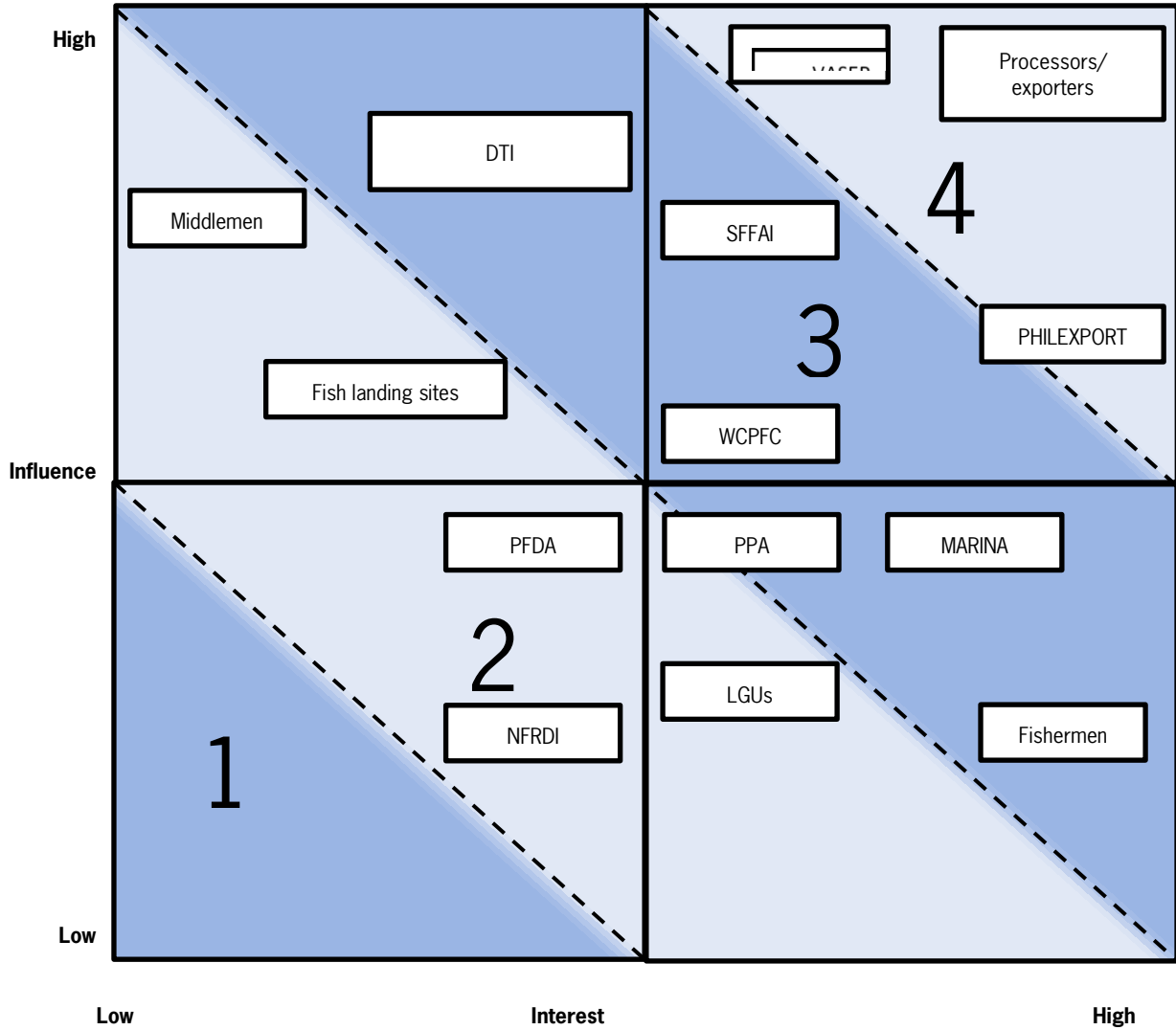
The stakeholder assessment grids for the four subsectors are presented in Appendix one. Stakeholders are agencies, organisations, financial institutions, groups or individuals with a direct or indirect interest in a possible intervention of CBI in the value chain. Based on the level of influence and the level of interest, the involvement of a particular stakeholder in a CBI programme can be determined.

Shrimp Stakeholder Assessment Grid



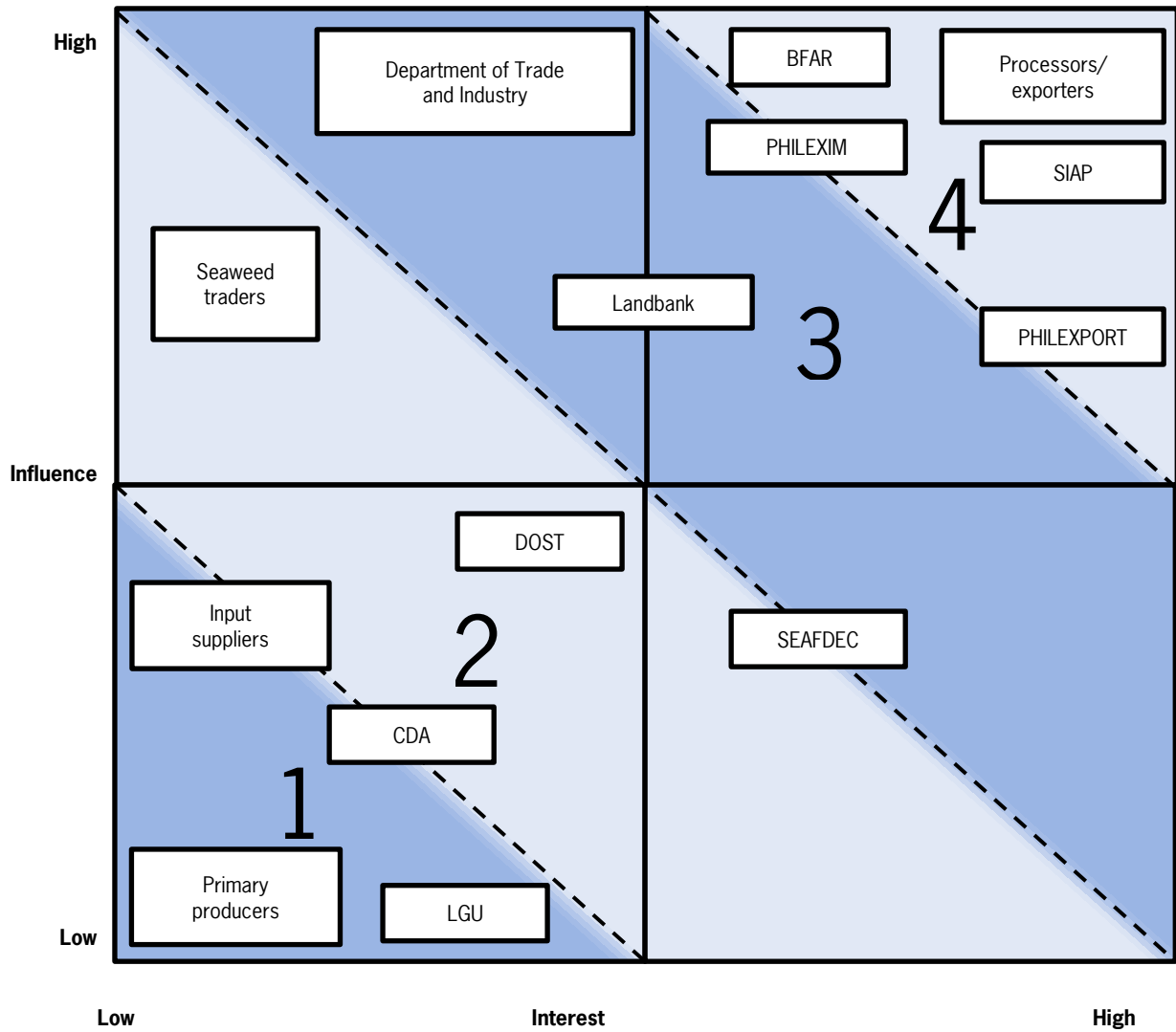
- 1 = Keep informed
- 2 = Maintain interest
- 3 = Active consultation
- 4 = Strong buy-in required

Tuna Stakeholder Assessment Grid



- 1 = Keep informed
- 2 = Maintain interest
- 3 = Active consultation
- 4 = Strong buy-inn required

Seaweed Stakeholder Assessment Grid



- 1 = Keep informed
- 2 = Maintain interest
- 3 = Active consultation
- 4 = Strong buy-inn required

Appendix 2 Baseline data

Shrimp subsector

Registered primary producers of shrimp in 2010		
	Number of farmers	Area under cultivation (ha)
Monoculture	37	294
Polyculture	110	2,982
Total	247	3,276

Average production volume of small, medium and large processors and exporters of shrimp in 2010 (tonnes)		
	Number of companies	Average export volume
Small	0	Less than 100
Medium	8	100 - 200
Large	5	More than 200
Total	13	

Export company information of companies interviewed (1)			
Company	Export volume 2010 (tonnes)	Export value 2010 (USD)	Main export products 2010
A	100	920,000	Monodon
B	500	5,500,000	Monodon
C	500	5,000,000	Monodon
D	700	7,700,000	Monodon
E	400	4,000,000	Monodon

Export company information of companies interviewed (2)				
Company	Main export markets 2010 (%)	Number of employees	Production costs (USD/kg)	Selling price per product (USD/kg)
A	Japan (? %)	35	8.2	9.2
B	Japan (? %)	90	9.8	11
C	Japan (? %)	75	9.0	10
D	Japan (? %)	180	n/a	n/a
E	Japan (? %)	n/a	9.0	10

Export volume and value for shrimp in 2000-2010

Year	Export Volume (tonnes)	Export Value (USD 000)	Export of sustainable produced products (%)
2001	19,727	231,735	n.a.
2002	24,317	238,231	n.a.
2003	25,726	191,794	n.a.
2004	21,551	184,459	n.a.
2005	18,074	157,445	n.a.
2006	18,741	158,241	n.a.
2007	15,039	134,191	n.a.
2008	11,877	111,343	n.a.
2009	13,132	95,428	n.a.
2010	12,083	92,041	n.a.

Source: ITC (2011)

The main export markets for shrimp in 2001-2010

Year	EU		US	
	Volume (tonnes)	Value (USD 000)	Volume (tonnes)	Value (USD 000)
2001	242	1,409	2,256	15,807
2002	2,601	10,244	1,570	10,920
2003	5,536	20,983	1,966	11,821
2004	429	2,809	2,919	16,589
2005	472	3,243	2,740	14,174
2006	369	3,077	2,439	12,763
2007	330	3,092	1,444	7,834
2008	336	3,017	948	5,396
2009	372	2,461	1,194	4,983
2010	219	1,483	1,467	6,874
Year	Japan		Others	
	Volume (tonnes)	Value (USD 000)	Volume (tonnes)	Value (USD 000)
2001	14,206	90,169	3,023	124,350
2002	13,955	86,398	6,191	130,669
2003	10,577	54,379	7,647	104,611
2004	10,867	55,528	7,336	109,533
2005	9,621	49,815	5,241	90,213
2006	9,175	46,960	6,758	95,441
2007	7,524	41,505	5,741	81,760
2008	6,376	37,167	4,217	65,763
2009	7,776	36,080	3,790	51,904
2010	7,066	33,581	3,331	50,103

Source: ITC (2011).

Tuna subsector

Tuna production volumes in 2010 *	
Tuna species	Production volume (tonnes)
Big-eyed scad	44,643
Bigeye tuna	8,575
Eastern little tuna	23,103
Frigate tuna	80,622
Indian mackerel	43,152
Indo-pacific mackerel	23,392
Skipjack	177,698
Spanish mackerel	5,178
Yellow fin tuna	85,352
Total	491,715

* No recent information about the fishing vessels and the number of boats is available. In 2006 3,588 Philippine fishing vessels were registered according to WCPFC. Most vessels use ring net techniques (859 vessels), handline techniques (715), Danish seine techniques (528) or purse seine techniques (397).
Source: BFAR (2011).

Number of employees of small, medium and large processors and exporters of frozen tuna		
	Number of employees	Average production volume
Large (30-100 tonnes per month)	200 and over	US/EU/Japan
Medium (10-30 tonnes per month)	100- 199	US/JAPAN/EU
Small (1-10 tonnes per month)	10-99	Japan/Hong Kong

Number of employees of small, medium and large processors and exporters of canned tuna		
	Number of employees	Average production volume
Large (50-100 tonnes per month)	300 and over	US/EU/Japan
Medium (30-50 tonnes per month)	100-300	US/JAPAN/EU
Small (30 containers per month)	Fewer than 100	Japan/Hong Kong

Number of processors of frozen and canned tuna			
Product		Processors	Of which EU-certified
Frozen tuna		28	11
Canned tuna		7	7
Total		35	18

Export company information of interviewed companies (1)			
Company	Export volume 2010 (tonnes)	Export value 2010 (USD)	Main export products 2010
A	240-360	1,800,000	Fresh/chilled/loins
B	655-873	6,545,520-8,727,280	Fresh/chilled/loins
C	30	480.00	Fresh/frozen/loins
D	900 million cans	n.a.	Canned tuna in brine solution and oil
E	10-40	13,500	Fresh/frozen/loins
F	30-40	1,800,000	Milkfish/tuna/octopus

Export company information of interviewed companies (2)

Company	Main export markets 2010 (%)	Number of Employees	Production costs (USD/kg)	Selling price per product (USD/kg)
A	Japan	80-100	1.73-2.00	15.00-16.00
B	US/Japan	250	2.00	10.00-18.00
C	Korea/Hong Kong/Japan	30	1.5	10.00-16.00
D	EU (70%), Japan (20%) and US (10%)	3,000	n/a	n/a
E	Japan/Korea/Hong Kong	10	1.5	13.00-14.00
F	EU/Japan/US	160	2.00-3.00	10.00-15.00

Export volume and value for frozen tuna in 2000-2010

Year	Export Volume (tonnes)	Export Value (USD)	Export of sustainable produced products (%)
2000	43,060	61,696	n.a.
2001	23,621	50,648	n.a.
2002	23,621	50,648	n.a.
2003	27,949	44,702	n.a.
2004	24,319	40,941	n.a.
2005	14,405	101,903	n.a.
2006	25,992	53,993	n.a.
2007	26,863	93,646	n.a.
2008	20,100	74,827	n.a.
2009	20,100	74,827	n.a.
2010	29,644	109,155	n.a.

Source: BFAR Fisheries Profile Year 2000- 2010/BAS Fisheries Statistic of the Philippines (2008 - 2010).

Export volume and value for canned tuna in 2005-2010

Year	Export Volume (tonnes)	Export Value (USD)	Export of sustainable produced products (%)
2000	36,458	64,492	n.a.
2001	33,909	68,803	n.a.
2002	47,970	93,173	n.a.
2003	56,854	111,752	n.a.
2004	53,873	114,056	n.a.
2005	32,277	54,684	n.a.
2006	45,611	88,986	n.a.
2007	48,284	124,980	n.a.
2008	76,910	275,727	n.a.
2009	83,847	254,465	n.a.
2010	76,801	242,365	n.a.

Source: BFAR Fisheries Profile Year 2000- 2010/BAS Fisheries Statistic of the Philippines (2008-2010).

The main export markets for tuna in 2000-2010 (frozen tuna)

Year	EU			US		
	Volume (tonnes)	Value (USD)	%	Volume (tonnes)	Value (USD)	%
2000	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2001	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2002	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2003	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2004	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2005	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2006	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2007	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2008	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2009	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2010	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Year	Japan			Others		
	Volume (tonnes)	Value (USD)	%	Volume (tonnes)	Value (USD)	%
2000	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2001	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2002	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2003	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2004	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2005	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2006	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2007	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2008	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2009	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2010	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

The main export markets for tuna in 2000-2010 (canned tuna)

Year	EU			US		
	Volume (tonnes)	Value (USD)	%	Volume (tonnes)	Value (USD)	%
2000	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2001	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2002	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2003	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2004	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2005	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2006	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2007	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2008	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2009	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2010	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Year	Japan			Others		
	Volume (tonnes)	Value (USD)	%	Volume (tonnes)	Value (USD)	%
2000	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2001	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2002	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2003	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2004	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2005	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2006	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2007	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2008	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2009	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2010	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Seaweed subsector

RDS Production		
	Production volume	Production value (USD per ton)
2006	84,000	748
2007	81,000	947
2008	73,000	2,342
2009	61,000	1,280
2010	83,462	1,300

Source: DTI.

Average production volume of small, medium and large processors and exporters of seaweed in 2010 (tonnes)		
	RDS	
	Number of companies	Average Export Volume (tonnes)
Small	1	Less than 999
Medium	4	1,000 - 1,999
Large	4	More than 2,000
Total	9	

	Processed	
	Number of companies	Average Export Volume (tonnes)
Small	4	Less than 99
Medium	4	100 - 199
Large	7	More than 200
Total	15	

Source: DTI and personal communication.

Export company information of interviewed companies (1)			
Company	Export volume 2010 (tonnes)	Export value 2010 (USD)	Main export products 2010
A	Carrageenan: 1,200 tonnes RDS: 3,000 tonnes	Carrageenan: \$9,600,000 RDS: \$4,500,000	Carrageenan RDS
B	100,000 litres	400,000	Seaweed Fertiliser
C	25,000 litres	55,000	Seaweed Fertiliser
D	2,000	14,000,000	Carrageenan
E	<i>Cottonii</i> : 2,400 <i>Spinosum</i> : 1,800	<i>Cottonii</i> : \$3,480,00 <i>Spinosum</i> : \$1,080,000	RDS
F	<i>Cottonii</i> : 720 tonnes/year	<i>Cottonii</i> : \$1,0440,000	RDS

Export company information of interviewed companies (2)				
Company	Main export markets 2010 (%)	Number of Employees	Production costs (USD/kg)	Selling price per product (USD/kg)
A	Asia (40%), US/Canada (25%), EU (10%), Others (25%)	100		RDS (\$1.45/kg)
B	Japan, Australia, China	50	2.40	4.00
C	Sri Lanka, India, South Africa	11	1.32	2.20
D	US, Asia, EU	270	6.50	7.0
E	<i>Cottonii</i> : EU/France <i>Spinosum</i> : China	30	<i>Cottonii</i> : 1.40 <i>Spinosum</i> : 0.420	<i>Cottonii</i> : 1.50 <i>Spinosum</i> : 0.60
F	EU/France	6	\$1.16/kg	\$1.45/kg

RDS export Volume and Value in 2006-2010		
	Export volume (tonnes)	Export value (USD)
2006	33,763	25,255,211
2007	22,845	21,635,043
2008	10,828	25,361,017
2009	9,930	12,710,659
2010	29,412	38,236,592

Source: DTI.

Carrageenan export value 2006-2010	
	Production value (USD)
2006	42,371,289
2007	70,019,388
2008	96,669,439
2009	85,967,362
2010	116,004,076

Source: DTI.

The main export markets for Carrageenan in 2006-2010				
Year	EU	US	Japan	Others
	Value (USD 000)	Value (USD 000)	Value (USD 000)	Value (USD 000)
2006	13,763	4,530	404	27,939
2007	26,093	11,739	574	31,617
2008	39,683	13,822	256	42,908
2009	33,005	13,483	356	39,129
2010	41,531	20,708	2,172	51,662

Source: DTI.