



The World Bank

Agriculture and Rural Development Discussion Paper

**Food Safety and Quality
Standards in Japan**
*Compliance of Suppliers
from Developing Countries*

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First printing or web posting: 2005
© 2004 The International Bank for Reconstruction and Development /The World Bank
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Contents

Foreword	v
Acronyms	vi
Executive Summary	1
1 Introduction	6
Scandals and a Major Change of Attitude.....	6
Increasing Agricultural and Food Imports.....	7
Selected Products.....	8
Methodology.....	8
2 Import and Market Developments	10
Shrimp.....	10
Distribution Structure.....	14
Restaurant and Catering Industry.....	17
Nile Perch.....	17
Fruits and Vegetables.....	18
3 Regulations and Their Enforcement in Japan	23
Revision of Food Safety Laws.....	23
Applicable Laws and Regulations.....	23
Plant Protection Law.....	23
Food Sanitation Law.....	24
Enforcement of Regulations and Standards in Practice.....	24
4 Private Sector View on Standards	26
Relative Priority of Standards in Overall Trade Relations.....	26
Company Strategies and Company-Specific Quality Standards.....	27
Implications for Developing Countries.....	28
5 Problems and Experiences with Suppliers	29
Shrimp.....	29
Nile Perch.....	32
Fruits and Vegetables.....	33
Criteria for Complying with Standards.....	34
6 Intervention by and Cost of Control for Buyers	35
Intervention and Cost of Control: Shrimp.....	35
Intervention and Cost of Control: Nile Perch.....	36
Intervention and Cost of Control: Fruits and Vegetables.....	37
Estimation of Costs of Control.....	38
Support by the Public Sector in Japan to Developing Countries.....	38
7 Suggestions for Improving Compliance of Suppliers	40
Shrimp.....	40
Nile Perch.....	41
Fruits and Vegetables.....	42
8 Conclusions and Recommendations	43
Importance of Food Safety	43
Public and Private Standards and Requirements.....	43
Buyers' Priority of Standards and Suppliers' Compliance	43

Recommendations	44
Appendixes	
1 Imports of Shrimp, 1993–2002	45
2 Shrimp Consumption and Household Expenditure	47
References	48
Boxes	
1 Vegetable imports and compliance.....	25
2 Importance of traceability: Costs included in the price	27
3 Product Liability Law	27
4 Moldy smell	30
5 Structuring the organization for food safety	35
6 Costs of controlling safety and quality as a share of total sales	36
Figures	
1 Distribution route for Taisho shrimp	14
2 Current distribution route of imported shrimp for supermarkets	15
3 Distribution route for the restaurant and catering industry	16
4 Distribution channels for imported fresh fruits and vegetables	22
Tables	
1 Volume of imported shrimp, fruits, and vegetables	7
2 Import of shrimp by countries, 1999	10
3 Volume of imported cultured versus natural frozen shrimp	11
4 Top 10 supplying countries of frozen shrimp to Japan, selected years	12
5 Comparison of Japanese and US frozen shrimp imports from selected supplying countries	12
6 Imports in Japan of frozen Nile Perch fillet by country, 1987–2002	17
7 Imports of selected fruits	18
8 Imports of selected vegetables	18
9 Ranking of major supplying countries of fresh mango to Japan	19
10 Ranking of major supplying countries of fresh pineapple to Japan	19
11 Ranking of major supplying countries of fresh asparagus to Japan	20
12 Ranking of major supplying countries of fresh green soybeans to Japan	20
13 Ranking of major supplying countries of frozen green soybeans to Japan	20
14 Infractions against regulatory standards for shrimp	29
15 Cost estimate for a medium-sized laboratory	41
A1.1 Volume of shrimp imports, 1993–2002 (<i>MT</i>).....	45
A1.2 Value of shrimp imports, 1993–2002 (<i>million yen</i>).....	46

Foreword

Food and agricultural trade is the vital link in the mutual dependency of the global trade system and developing countries. Developing countries derive a substantial portion of their income from food and agricultural trade. The emergence of food safety and agricultural health issues and the related tightening of market requirements form challenges to further gains from trade due to the lack of technical and financial capacities of many developing economies.

As part of a joint program between the World Bank's Agriculture and Rural Development Department (ARD) and International Trade Department (PRMTR), a survey on the Cost of Compliance of exporting developing countries was undertaken. The survey was focused on the supply chains of high-value food products (horticulture, fish, meat, spices, and nuts). The study quantified the costs incurred by both the public and private sectors; identified the coping strategies employed by the various stakeholders in the supply chains; determined the constraints that hinder compliance; examined the structural changes in the supply chain resulting from compliance with the safety standards; and evaluated the impact of these standards on small-scale enterprises and producers. The survey included Ethiopia (animal products), India (fish and spices), Jamaica (nontraditional agricultural exports), Kenya (fish and horticulture), Latin America Southern Cone (animal products), Morocco (fruits and vegetables), Nicaragua (shrimp), Senegal (fish and groundnuts), and Thailand (shrimp and horticulture).

A complementary perspective is provided by the companion series of buyer surveys involving representative importers, brokers, retailers, and distributors in the European Union, Japan, and the United States. This series, in turn, discusses the buyers' perception of the strengths and weaknesses of their suppliers and describes the assistance and/or interventions offered by the buyers to their developing country suppliers.

This working paper is one of a series of such buyer surveys. These surveys examined the strategies of suppliers from the buyers' perspective and the costs of intervention to assist the various developing country stakeholders to comply with international agro-food standards. This paper was prepared by Theo H. Jonker (Agricultural Economics Research Institute (LEI) at Wageningen University and Research Centre), and Hiroshi Ito and Hiroji Fujishima (Tokyo University of Agriculture), with guidance from Kees van der Meer (ARD).

The findings and conclusions derived from these country studies are discussed in a synthesis report that seeks to identify possible points of intervention by the World Bank and other donor agencies and to determine the type of technical assistance that would be most efficient and appropriate. It is hoped that the experiences of these exporter and importer countries will provide useful insights to practitioners in the field, and to national and international policymakers in both the public and private sectors.

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Acronyms

ASEAN	Association of Southeast Asian Nations
BSE	bovine spongiform encephalopathy (mad cow disease)
CIF	cost, insurance and freight (to port of destination)
GM	genetically modified
GAIN	Global Agriculture Information Network (GAIN)
GLP	on good laboratory practice
HACCP	Hazard Analysis and Critical Control Points
HS	Harmonized System
ISO	International Organization for Standardization
JAS	Japanese Agricultural Standard
JASA	Japan Agricultural Standards Association
JETRO	Japan External Trade Organization
CFTC	Japan Fair Trade Commission
JICA	Japan International Cooperation Agency
MAFF	Ministry of Agriculture, Forestry and Fisheries
METI	Ministry of Economy, Trade and Industry
MHLW	Ministry of Health, Labor and Welfare
MOF	Ministry of Finance
MRL	maximum residue limits
ODA	official development assistance; Overseas Development Administration (UK)
OFCF	Overseas Fishery Cooperation Foundation
PTO	peeled tail-on
WHO	World Health Organization

Executive Summary

A number of recent food-related accidents and scandals have made Japanese consumers very sensitive to food safety issues. This development led to the strengthening of public control and to nervous companies seeking ways to prove the safety of their food products. Food safety has become an important factor for governmental policy and corporate competitive strategies, and traceability is essential now.

Suppliers in developing countries must adjust to changing markets and tighter requirements. They have to compete for the attractive market outlets through performance. Their challenge is to meet public and private sector requirements of safety, quality, and logistics.

Japanese buyers rarely reject products, and they prefer not to change their suppliers. These Japanese companies have invested in their relationships with suppliers, either by training the suppliers' staff or by foreign direct investments. Infractions usually result in negotiated price cuts. Although Japanese companies provide assistance, the major role and responsibility remain with the suppliers and their governments.

Research objective

Both government and private sector set standards and requirements for the suppliers. This survey describes the Japanese sanitary, phytosanitary, and company-specific standards for fishery products (particularly, frozen shrimp, processed shrimp, and Nile Perch) and fruits and vegetables (particularly, mango, pineapple, green soybeans, and green asparagus). The survey analyzes the compliance of suppliers from developing countries with these standards.

Changing attitude after many food-related incidents

The food-related accidents and scandals of the last few years greatly affected Japanese consumers' consciousness of food safety. For a long time, Japanese government agencies claimed that the Japanese regulatory system guaranteed the safest food in the world. Most Japanese people believed this claim. However, the food-related accidents and scandals, that involved reputable Japanese food companies, have badly affected consumers' trust in regulatory authorities and undermined public trust in food safety. Food safety has become an important factor for governmental policy and company strategies.

Governmental policy and public standards

In the policy field, the Japanese government revised the basic food safety laws. The Food Sanitation Law was amended, and the new Food Safety Basic Law took effect by the summer of 2003. Under the latter, the Food Safety Committee, an independent advisory committee under the Prime Minister's Office, was established.

At the time of importation, there are, in principle, three requirements for fruits and vegetables: plant quarantine (according to the Plant Protection Law), food sanitation inspection (according to the Food Sanitation Law), and customs inspection. For importation of fishery products, there are two requirements: food sanitation inspection and customs inspection.

Even if the importation of certain plants or plant products is prohibited according to the Plant Protection Law, importation may be allowed under prescribed conditions of quarantine and after the completion of specified procedures. With regard to phytosanitary regulations, fruits and vegetables from a certain county or region are either allowed or not allowed to be exported to Japan, so there is little confusion or uncertainty.

The Food Sanitation Law applies at the time of importation, as well as at the time of sale. It established new specifications for pesticide residues, veterinary drugs in food, and food additives and will lead to significant changes in the way residues are regulated. Japan will adopt a system featuring a “positive list” with maximum residue limits (MRLs) for specific residues. If the residue exceeds the maximum limit, the product cannot be imported into Japan. The implication of this change is that the maximum residue levels are likely to be lower, making it more difficult for suppliers to comply. Besides this, if a product contains a chemical for which there is no specified MRL, the product cannot be imported into Japan.

At the time of importation, three inspections related to the Food Sanitation Law are conducted: document inspections, monitoring inspections, and order inspections. Since high residues of pesticides were found in Chinese vegetables in the beginning of 2002, more stringent measures were taken for monitoring inspections and order inspections.

Company strategies and company-specific standards

The sensitivity of consumers to food safety made food-handling companies, especially the leading companies with high profiles, increasingly keen to achieve food safety. These companies are fully aware that if they mishandle food safety requirements, such as mislabeling, they will be forced out of business, far more quickly than before, by the government, business partners, and consumers. Therefore, tracking and tracing becomes a requirement. The sensitivity of consumers also offers opportunities, because manufacturers can distinguish their products from their competitors’ by meeting certain standards or providing traceability information. It means that safety-conscious retailers and manufacturers can be more successful in their businesses.

In addition to the public food safety standards, Japanese supermarket chains set their own company-specific quality standards. The number of retailers with their own standards has been increasing recently. Company quality standards mainly relate to issues such as size, uniformity of size, appearance, and freshness. For suppliers in developing countries, these standards are hard to meet. Furthermore, they often differ per retailer, and retailers usually are very strict. Furthermore, it is not easy for companies from developing countries to become new suppliers to Japanese buyers, particularly, with regard to the quality aspects. The Japanese buyers prefer bigger suppliers with good access to capital and technology.

In the case of shrimp, and fruits and vegetables, all surveyed companies ranked “compliance with food safety requirements” and “overall product quality” as the most important factors in the business relations of trading companies, manufacturers, wholesalers, and retailers with their suppliers. All Japanese companies apply the regulatory standards set by the Japanese government for food sanitation. In some cases, however, supermarket chains have tighter requirements.

Shrimp import and market development

The composition of shrimp imports changed notably over the years. Although the total volume of shrimp imports decreased, the quantity of imported processed and prepared shrimp increased significantly, and it will continue to grow in the future. The shares of cultured and natural shrimp also changed. The share of cultured shrimp in all imported frozen shrimp rapidly increased from 0.9 percent in 1982 to 45.6 percent

in 2001. From 1993–2002, the five major supplying countries to Japan have remained the same, namely, China, India, Indonesia, Thailand, and Vietnam. Although Thailand lost its position as second largest exporter to Japan (because the country exports more to the US now), Japanese buyers expect a continuous and growing supply of processed shrimp from Thailand because of its great potential in food processing.

About 70 percent of the imported shrimp go to the restaurant and catering market, and the other 30 percent is sold by supermarkets for home consumption. In the particular supply chain for the restaurant and catering industry, the wholesaler specializing in shrimp distribution has the pivotal role. The demand for processed and prepared shrimp is increasing in the restaurant and catering market.

As for the distribution of processed and prepared shrimp, the supermarket chain has the dominant role in the supply chain. Supermarket chains have less severe quality control requirements for shell-on shrimp than for processed and prepared shrimp.

Nile Perch import and market developments

Japanese import of Nile Perch (in fillets form only) started in 1987 and expanded rapidly in the next year. The capacity to supply to Japan depends much on the European demand. When the EU strengthens the sanitary import examinations or bans certain supplying countries, exporters rush to export to Japan. The expectations for Nile Perch on the Japanese market are not high.

Fruits and vegetables import and market development

The Philippines has a very strong position in the Japanese market for pineapples and mango. The Philippines supplies 98 percent of Japan's imported fresh pineapples and 63 percent of its imported mango. Mexico supplies 25 percent of the import quantity of mango. About 50 percent of frozen green soybeans comes from China.

For the import quantity of fresh asparagus, Australia is the major supplying country. The Philippines and Thailand are numbers 2 and 3, respectively, in the 2002 ranking, and the imports from Thailand are increasing rapidly.

The main distribution route for imported fruits and vegetables starts from foreign producers via trading companies (importers), wholesalers, and intermediary wholesalers to the retailers. However, processed products, such as frozen green soybeans, are not handled in wholesale markets; they go directly from foreign producers via trading companies (importers) to retailers or commercial users.

Supermarket chains also import directly the main fruits and vegetables, but not 100 percent of their required amount. The remainder is purchased from trading companies and wholesalers. Fruits and vegetables that are not sold in large amounts are purchased from smaller trading companies that specialize in those specific products.

Key problems encountered and experiences with different countries

The key problems encountered in sanitary, phytosanitary, and other standards relate to the maximum pesticide and antibiotics residue limits, sanitary issues, packing, labeling, and company quality standards.

The two important criteria for the compliance of supplying countries with the standards are: company-specific factors and country-specific factors. The company-specific factors include the size of the company, experiences with sanitation standards, and the culture and training of the staff. Country-specific

factors include the degree to which public authorities already have implemented their own food sanitation regulations, number of inspectors, authorities' understanding of the necessity of meeting sanitation standards, and public sector assistance to producers and exporters.

On the basis of their experiences with the shrimp-supplying countries, the Japanese buyers have confidence in the overall business activities of Indonesian and Thai suppliers. Still, there is room for improvement since infractions concerning antibiotics and other small troubles with commercial standards occur. China and Vietnam have to improve on several requirements before they can reach the position held by Indonesia and Thailand. India has difficulties in its production environment. Japanese companies will continue to buy shell-on shrimp or simply peeled shrimp from Indian suppliers, but no processed shrimp until many things in processing are improved.

Experiences with the countries supplying fruits and vegetables show that China's determination to meet the Japanese sanitation standards and the private standards of Japanese companies has strengthened. China's capacity to respond to the sanitation standards also has improved. China is tackling the problem of pesticide residues as a national project, which efforts get high esteem from the Japanese importers, although there are still large gaps in capacity among individual producers.

Remedial actions and intervention throughout the supply chain

Nearly all Japanese importers (trading companies and retailers) send technical staff to suppliers' factories to supervise production and advise them about improvements. The estimate is that the total cost for a buyer to control safety and quality of foreign supply does not exceed 1 percent of the total sales of shrimp and does not exceed several percent of the total sales of fruits and vegetables.

Japanese retailers select importers and producers carefully to prevent dealing with suppliers that do not comply. Importers do not often reject imported fruits and vegetables, and they rarely change their supplying countries. They consider changing suppliers undesirable, because it is costly for them. In many cases, importers have invested in their foreign suppliers either by training and advising them or by foreign direct investments. For the suppliers from developing countries, noncompliance can be costly because it makes them face price cuts. The Japanese buyers expect the suppliers to produce exactly what they want, but the suppliers in developing countries complain that the Japanese buyers do not pay enough premium for safety and quality products.

With the change of the composition of shrimp imports, the import system also changed. The role of the importer changed to coordinator, and the import is managed substantially by the supermarket chain or by the wholesaler. If an infraction is found against the company standards agreed by the buyer and seller, the problem is solved primarily by negotiation and by lowering the price. However, when a supermarket chain imports the products directly, in the case of noncompliance with the standards described in the contract, rejection is not uncommon.

Most of the Japanese buyers of Nile Perch have longstanding business relations with the suppliers in Kenya, Tanzania, and Uganda. The Japanese buyers have confidence in their suppliers because the latter work according to HACCP and EU standards since their main customers are in Europe.

Often the Japanese buyers of fruits and vegetables visit the exporting country before they import the produce. They investigate the actual conditions of the production and the transportation systems of the particular supplier and the particular country. If they find any problem, the products will not be imported.

Remedial actions by the public sector are in terms of public support to developing countries, financed primarily by the Japanese official development assistance (ODA) fund. The support includes courses on food safety, assistance for building laboratories, and education about inspection procedures.

Recommendations

To assist suppliers to comply with the standards, Japanese private companies provided several suggestions for public sector roles in capacity building. However, many of the suggested actions will require public and private cooperation. The recommendations include, among others, the improvement of traceability in the supply chain, assistance to equip processing facilities with sanitary requirements, education and training to increase awareness and knowledge of food safety, reinforcement of both public and private inspection systems, and improvement of infrastructure.

1 Introduction

Agricultural and fisheries exports are an important source of income for many developing countries. The WTO Agriculture agreement was expected to provide developing countries with opportunities to expand their exports. In practice, it appears that many countries, in particular, the poorest, have major problems in meeting the food safety requirements and other standards in importing countries. Therefore, the Genoa G8 countries and the Doha Declaration ask for more attention to the needs of poor countries to support them in meeting the standards on trade.

The World Bank has started a survey on the Cost of Compliance of meeting standards for trade by the private sectors and governments in exporting developing countries. The focus of the study is on low and middle income countries, but buyers' surveys in importing OECD countries (EU, Japan, and North America) are included. The purposes of the buyer surveys are to gain importer and distributor perspectives on the evolving commercial and regulatory environments for selected foods, and to gain their perspectives on the challenges faced by their developing country suppliers in meeting emerging standards.

The country report on Japan is the result of interviews with buyers, traders, and officials with a focus on the shrimp and horticultural sectors. The Japanese sanitary, phytosanitary, and other standards and the compliance of suppliers from developing countries are analyzed. The report concludes with recommendations to enhance the suppliers' compliance.

Scandals and a major change of attitude

The attitude of Japanese consumers, government officials, producers, processors, and retailers toward food safety has changed greatly in the last few years, following a series of food-related accidents and scandals, which include the outbreak of BSE (mad cow disease); food poisoning; the use of bad ingredients in dairy production; and mislabeling origin of production areas for beef, vegetables, and other food. Numerous scandals occurred, but four incidents greatly affected Japanese consumers' consciousness of food safety and distrust in food manufacturers.

1. In August 2000, the subsidiary of a reputed dairy company caused a massive food poisoning scandal that affected 14,700 people.
2. In September 2001, BSE was detected. After the outbreak, it took a long time before a system was established to assess BSE infection. The general public considered the investigation into the cause of the outbreak insufficient. Dissatisfaction against the Ministry of Agriculture, Forestry and Fisheries (MAFF) spread, and anxiety about BSE grew among the Japanese consumers.
3. In 2002 the Japanese government announced that an agency of MAFF would buy out the domestic beef stored from before the BSE outbreak and incinerate it because MAFF could not check all stored beef for BSE infection. One large and well-known food manufacturer committed fraud: the company made the agency buy an old stock of imported beef.
4. In 2002 several instances of excessive pesticide residues were detected in frozen vegetables (mainly spinach) from China and received great attention from the media.

For years, Japanese government agencies had claimed that the Japanese regulatory system guaranteed the safest food in the world. Most Japanese people believed this claim. However, the food-related accidents and scandals involving reputable Japanese food companies have adversely affected consumer trust in regulatory authorities and undermined public trust in food safety. Food safety has become an increasingly important political issue and a factor in commercial strategies.

Increasing agricultural and food imports

After the Plaza Agreement on September 22, 1985, the appreciation of the Yen advanced rapidly.¹ This strong Yen was one of the important factors that led to an accelerated growth of food imports, as table 1 shows for shrimp, fruit, and vegetables.

Table 1. Volume of imported shrimp, fruit, and vegetables

<i>Year</i>	<i>Volume of imported shrimp (MT)</i>	<i>Volume of imported fruit (1,000 MT)</i>	<i>Volume of imported vegetables (1,000 MT)</i>
1970	57,371 ^a	1,186 ^b	98 ^b
1975	114,251	1,387	230
1980	151,129	1,539	495
1985	193,023	1,904	866
1990	309,130	2,978	1,551
1995	332,427	4,547	2,628
2000	295,992	4,843	3,002
2001	297,007	5,151	3,073

Sources: MOF, MAFF.

Notes:

a These figures include all types of shrimp, also processed shrimp and lobster.

b These figures include fresh produce plus processed products. The volume of the processed products is the weight at the stage of raw material.

Despite high levels of protection, Japan is the world's largest net importer of agricultural and food products. From 1965 to the present, the food self-sufficiency ratio in Japan showed a sharp decrease from 73 percent to 40 percent (on a calorie supply basis). At present, the import ratio is approximately 55 percent of the consumption of fruit and 20 percent of the consumption of vegetables. The domestic production of fruit decreased from 5.7 million tons in 1985 to 3.8 million tons in 2000. The increase of imports has caused the decrease of domestic fruits production because the market of fruits expanded little. Imported vegetables also compete with domestic vegetables. The competition has become severe because of the increase of imports. The domestic production of vegetables decreased from 16.5 million tons in 1985 to 13.7 million tons in 2000. The case of shrimp is different because the domestic catch is not sufficient, and the country has no significant shrimp farming.

The appreciation of the Yen also stimulated Japan's foreign investments related to food production. The majority of the investment is directed toward Asia and North America. Since 1992, the Japanese investment in China especially has increased; as a result, imports of fresh and frozen vegetables from China have increased rapidly.

Japanese agriculture is at a crossroads. For a long time, MAFF has been trying to stop the decreasing self-sufficiency rate, and to further restructure the Japanese agricultural sector—with limited success. At the same time, METI (Ministry of Economy, Trade and Industry) tries to promote trade liberalization. In

¹US\$1 = ¥252 (1984); US\$1 = ¥100 (1995); US\$1 = ¥120 (2003).

principle, Japanese consumers prefer to buy domestic food products, but the much lower prices of imported food products make them attractive. Consumers are more open to imported food products, and Japanese and foreign businesses continue to explore the opportunities for foreign products on the Japanese market.

Selected products

Seven products were selected for this survey: frozen shrimp, processed shrimp and Nile Perch (all fishery products), and mango, pineapple, green soybeans (*edamame*) and green asparagus (all fruit and vegetable products). Fish products and selected horticultural products also were the focus in the parallel EU and US buyers surveys. Shrimp is the largest import group—in both volume and value—in the category of imported fisheries products to Japan. Nile Perch does not meet the large market requirement but was selected for the survey to compare the Japanese context with that of the EU, the major market for Nile Perch. Mango and pineapple both are widely imported from developing countries. Green soybeans and green asparagus are popular products in Japan and also supplied by Thailand, one of the other countries surveyed in the project.

Methodology

A questionnaire (in Japanese) was prepared on the basis of the research questions provided by the PRMTR/ARD team. Interviews with representatives of companies, and public and private organizations were held. Participants were informed in advance about the main research questions. The organizations and the interviewees represent the key players involved in this subject. In some cases, preliminary telephone calls with a company or organization revealed that it was not relevant to visit them. The results from the interviews were analyzed and used as the basis for this report.

In-depth interviews were held with the following companies and organizations, whose identities remain anonymous:

Shrimp and Nile Perch

2 major supermarket chains

2 major general trading companies

1 specialized shrimp trading company

6 fish trading companies

Umbrella organization of cooperative supermarket chains

MAFF, Fisheries Agency, Office of Overseas Fisheries Cooperation, Technical Cooperation Section

Fruits and vegetables

2 major supermarket chains²

Japan-based associate company of an American multinational manufacturer and marketer of (processed) fruits and vegetables

Japanese subsidiary of a US-based fruits and vegetables producing and trading multinational

Umbrella organization of cooperative supermarket chains

Large wholesale company

Japan Fresh Produce Import Facilitation Organization (Nisseikyo)

Marketing and Research Institute for Agriculture Cooperatives Vegetable Supply Stabilization Fund

² These companies are the major players, but other companies were consulted as well. Since they could not add relevant information, in-depth interviews were not held with them.

General

Private frozen food inspection company

Japan External Trade Organisation (JETRO)

Japan International Co-operation Agency (JICA)

MHLW, Department of Food Safety, Office of Quarantine Station Administration

MHLW, Department of Food Sanitation, Pharmaceutical and Medical Safety Bureau

MHLW, Department of Food Sanitation, Standards Division and

MHLW, Minister's Secretariat, International Affairs Division.

2 Import and Market Developments

This chapter describes the import and market development of the products selected. The import data of the products are specified for the main supplying countries and cover last 5 to 10 years. The import market chain is explained, as well as the changes in the distribution route.

Shrimp

Import development

Shrimp is the largest import group - both in volume and in value - in the category of imported fisheries products to Japan. The imports of all types of shrimp in 2002 totaled to 294,046 MT or 320,374 million yen (US\$2.7Billions), which was approximately 19 percent of the total value of imported fisheries products. Japan is the second largest shrimp buyer in the world, after the US. According to the FAO, Japan and the US accounted for 49 percent of the total world import of shrimp in 1999. Table 2 shows the shrimp imports by the major buying countries.

Table 2. Import of shrimp by countries, 1999

<i>Country</i>	<i>Volume (MT)</i>
US	279,912
Japan	247,489
Spain	92,380
France	57,544
Canada	51,667
Denmark	49,096
Italy	36,941
UK	30,570
Belgium	22,918
Hong Kong	19,609

Source: Shrimp Data Book by Ryuken Research Institute 2002.

Before 1963, shrimp imports were restricted by an import quota system, but after the liberalization, imports increased continuously along with the growth of the Japanese economy. In 1994 imports reached the highest level, 319,621 MT. Afterwards, they decreased to 280,000–290,000MT in recent years (appendix 1).

A significant change in the composition of shrimp imports can be noted. Although the total volume of shrimp imports decreased, the volume of imported, frozen, peeled, tail-on shrimp, which are processed in such a way that they are ready for cooking (e.g., for tempura or for fried shrimp, called *fry* in Japanese), almost tripled from 1994 to 2001, reaching a volume of 30,226 MT in 2001. In addition, the imported amount of prepared shrimp with bread crumbs increased substantially from 4,558 MT in 1993 to 27,678 MT in 2002. The increase of ready-to-cook or prepared convenience foods is an international trend, and the amount of prepared shrimp products will continue to grow in the future. The implication is that the safety requirements for raw material and processing in developing countries will be higher.

Frozen natural shrimp and cultured shrimp

The development of the import quantities of cultured and natural shrimp since 1978 is shown in table 3. The share of cultured shrimp rapidly increased from 1982. In 2001, 45.6 percent of all imported frozen shrimp were cultured shrimp.

Table 3. Volume of imported cultured versus natural frozen shrimp (in 1,000 MT)

Year	Cultured shrimp				Natural shrimp				% of cultured (a/(a+b))
	Black Tiger	Taisho	Ecuador Vannamei	Subtotal (a)	Peeled	Red	Shell-on	Subtotal (b)	
1980	-	-	-	-	33.2	4.5	105.6	143.3	0.0
1982	1.3	-	-	1.3	41.4	7.8	100.8	150.1	0.9
1985	13.1	-	-	13.1	43.7	22.1	103.9	169.8	7.2
1990	101.8	30.8	-	132.6	66.7	24.4	59.8	150.9	46.8
1995	128.9	1.4	6.7	136.7	51.4	37.5	67.0	155.9	46.8
2000	94.8	1.4	4.2	100.4	59.0	35.9	51.2	146.2	40.7
2001	106.3	0.9	4.5	111.7	46.8	34.9	51.7	133.3	45.6

Source: Shrimp Data Book by Ryuken Research Institute 2002.

Shrimp from cold water in Argentina, Canada, North Europe, and Russia are called “red shrimp” and are consumed raw (as sushi or sashimi). Approximately 2,000 MT of shrimp is imported from Madagascar and Mozambique. This product is handled by joint venture companies with large Japanese fish traders. These shrimp are frozen and packed on board the shrimp trawlers.

Until the middle of the 1980s, the shrimp imported in Japan consisted mostly of natural shrimp. Culture of Black Tiger shrimp started in Taiwan in 1980 and by 1985 it prevailed in the Southeast Asian countries. However, in 1988, a severe viral disease spread in the shrimp production areas in Taiwan, forcing almost all shrimp farmers to close their businesses. This disease led to a shift of the main production locations of Black Tiger shrimp to countries such as Indonesia, the Philippines, and Thailand.

A similar problem happened in China in the later half of the 1980s. Culture of white shrimp started in China to make up for the decrease of the natural catch of this type of shrimp. However, in 1993, a viral disease also spread in the shrimp ponds and caused much damage to the Chinese shrimp production. Recently, China started the culture of *Vannamei* shrimp, which originates from Ecuador in South America. This type of shrimp has resistance to viral diseases and is easy to culture, but the size is considered too small by many Japanese consumers.

Supplying countries

Japanese imports of frozen shrimp from the top 10 supplying countries is shown in tables 4 and 5. The supplying countries are concentrated in Asia. From 1993 to 2002, the five major supplying countries to Japan have not changed. They are China, India, Indonesia, Thailand, and Vietnam.

The ranking of these five countries has changed over the years, and the most outstanding change is Thailand's position. Thailand was the second largest exporter to Japan until 1995. However, gradually, the Thais have shifted their export to the US. The first reason was that the Japanese buyers have very precise quality requirements, yet the price they were willing to pay was not commensurate. The second reason was a problem with shrimp that smelled moldy (muddy), which will be explained in chapter 5 (“Problems and Experiences with Suppliers”). The problem was solved quickly, but it shifted the focus of Thai exporters on the US market, whose consumers are not so sensitive to this smell.

Table 4. Top 10 of supplying countries of frozen shrimp to Japan, by volume (1000 MT), selected years

Rank	1993		1996		1999		2002	
	Country	Volume	Country	Volume	Country	Volume	Country	Volume
1	Indonesia	60.1	Indonesia	64.1	India	52.8	Indonesia	53.6
2	Thailand	51.5	India	55.5	Indonesia	50.6	Vietnam	41.5
3	India	36.8	Thailand	33.4	Vietnam	30.3	India	34.8
4	China	30.2	Vietnam	28.2	Thailand	19.3	China	19.6
5	Vietnam	28.8	China	16.3	China	13.5	Thailand	19.0
6	Philippines	17.5	Greenland	13.9	Canada	10.6	Canada	9.4
7	Greenland	17.2	Canada	8.9	Greenland	10.4	Russia	9.0
8	Australia	7.2	Philippines	8.7	Philippines	7.9	Argentina	8.8
9	Canada	6.2	Australia	6.6	Russia	5.8	Greenland	8.5
10	Bangladesh	4.4	Iceland	6.5	Australia	5.8	Philippines	8.0
Subtotal		259.9	242.3		206.9		212.2	
Other countries		40.6	46.5		40.4		36.6	
Total		300.5	288.8		247.3		248.8	

Source: Shrimp Data Book, Ryuken Research Institute 2002.

The US overtook Japan as the main importer of Thai frozen shrimp (peeled and shell-on) in 1992. Since then, the US has continuously expanded its imports from Thailand. In 2002 the US imported 115,105 MT compared to Japan's import of 18,987 MT. Table 6 provides a comparison of the frozen shrimp imports of Japan and the US from Thailand and the other major supplying countries.

Table 5. Comparison of Japanese and US frozen shrimp imports from selected supplying countries

Supplying country	Importing country	Unit (MT)	Year				
			1998	1999	2000	2001	2002
Thailand	Japan	(1,000)	17.8	19.3	18.7	20.6	19.0
	US	(1,000)	92.3	114.5	126.4	136.0	115.1
	Total	(1,000)	110.0	133.8	145.1	156.7	134.1
	% of Japan	(%)	16.2	14.4	12.9	13.1	14.2
Indonesia	Japan	(1,000)	53.7	50.6	49.8	55.6	53.6
	US	(1,000)	15.3	16.0	16.8	15.8	17.4
	Total	(1,000)	69.0	66.6	66.6	71.5	71.0
	% of Japan	(%)	77.8	76.0	74.8	77.8	75.5
China	Japan	(1,000)	12.1	13.5	16.5	14.9	19.6
	US	(1,000)	7.0	8.8	18.2	28.0	49.5
	Total	(1,000)	19.1	22.3	34.7	42.9	69.1
	% of Japan	(%)	63.4	60.4	47.6	34.8	28.4
India	Japan	(1,000)	50.4	52.8	50.0	43.0	34.8
	US	(1,000)	20.2	21.8	28.4	32.9	44.2
	Total	(1,000)	70.6	74.6	78.4	75.9	79.0
	% of Japan	(%)	71.4	70.7	63.8	56.7	44.0
Total imported Volume	Japan	(1,000)	238.9	247.3	246.6	245.0	248.8
	US	(1,000)	315.4	331.7	345.1	400.3	429.3
	Total	(1,000)	554.3	579.0	591.7	645.4	678.1
	% of Japan	(%)	43.1	42.7	41.7	38.0	36.7

Source: Shrimp Data Book, Ryuken Research Institute 2002.

The data in tables 4 through 6 do not include processed shrimp. Japanese imports of processed shrimp from Thailand amounted to 14,295 MT in 2002. Thailand still supplies most of the increasing imports of prepared shrimp with bread crumbs. Thai suppliers chose this type of value-added item for the Japanese market instead of raw material shrimp. Japanese buyers are, therefore,

expecting a growing supply of processed shrimp because Thailand is considered to have potential in food processing.

India is a major supplier of frozen shrimp to the Japanese market, but Indian exports to Japan also declined during the last years due to of the same moldy smell. Due to delayed countermeasures by Indian suppliers, this problem still exists and affects trade. As in the case of Thailand, US consumers are not so sensitive to the moldy smell, and some Indian suppliers re-sell to the US the shrimp that are rejected by Japanese buyers.

Vietnam entered the top 10 of Japan's supplying countries for shrimp in 1984, and since 1992, Vietnam has always been among the leading suppliers. Nowadays, Japan imports mainly processed shrimp from Vietnam, such as peeled shrimp, peeled tail-on shrimp, shrimp processed with rice, and shrimp preserved with breadcrumbs. Peeled tail-on shrimp also are processed in China and Indonesia.

In China, the popularity of cultured Vannamei shrimp is growing rapidly. The production of Vannamei shrimp was estimated as 20,000–30,000 MT in 2001. It increased to 80,000 MT in 2002 and to 140,000 MT in 2003. Some Japanese importers bring Black Tiger shrimp from India to China for custom processing.

A remarkable trend is the rapid growth of consumption of shrimp in China. It is estimated that the Chinese consume 60 percent–70 percent of their cultured shrimp production, which is estimated at 200,000 MT per year. The Chinese imports of shrimp also are growing.³ The growing demand can have a great impact on the global shrimp supply and demand.

Market and consumption

Currently, small-scale fishing companies in the coastal areas of Japan produce limited amounts of shrimp for the domestic market. During the 1960s and 1970s, however, offshore trawlers in the East China Sea caught significant quantities of Taisho shrimp (white type). The peak was in the 1960s with 50,000 to 60,000 MT per year. China also was actively involved in this fishing. As a result of over-fishing by both countries, in the latter half of the 1980s, the shrimp almost disappeared. Taisho shrimp is the most useful shrimp for *fry* (large size of 8 to 12 pieces per lb., headless) and for tempura (small size of 21 to 25 pieces per lb). Taisho shrimp were the main source of shrimp consumption in Japan, especially for use in restaurants.

In 1998 the consumption of shrimp, excluding lobster, per capita was estimated at 2,360g,⁴ compared to 1,920g per capita for the US. Japanese consumers are keen consumers of shrimp. Shrimp demand can be divided into two categories according to use: home consumption and consumption outside the home (*gaishoku*), that is, restaurants, hotels, catering industry, canteens, and lunchboxes. In terms of quantity, the ratio of home consumption to consumption outside the home is approximately 30:70.⁵ This ratio shows that the shrimp market in Japan depends much more on the demand of the restaurant and catering industries than of home consumption.

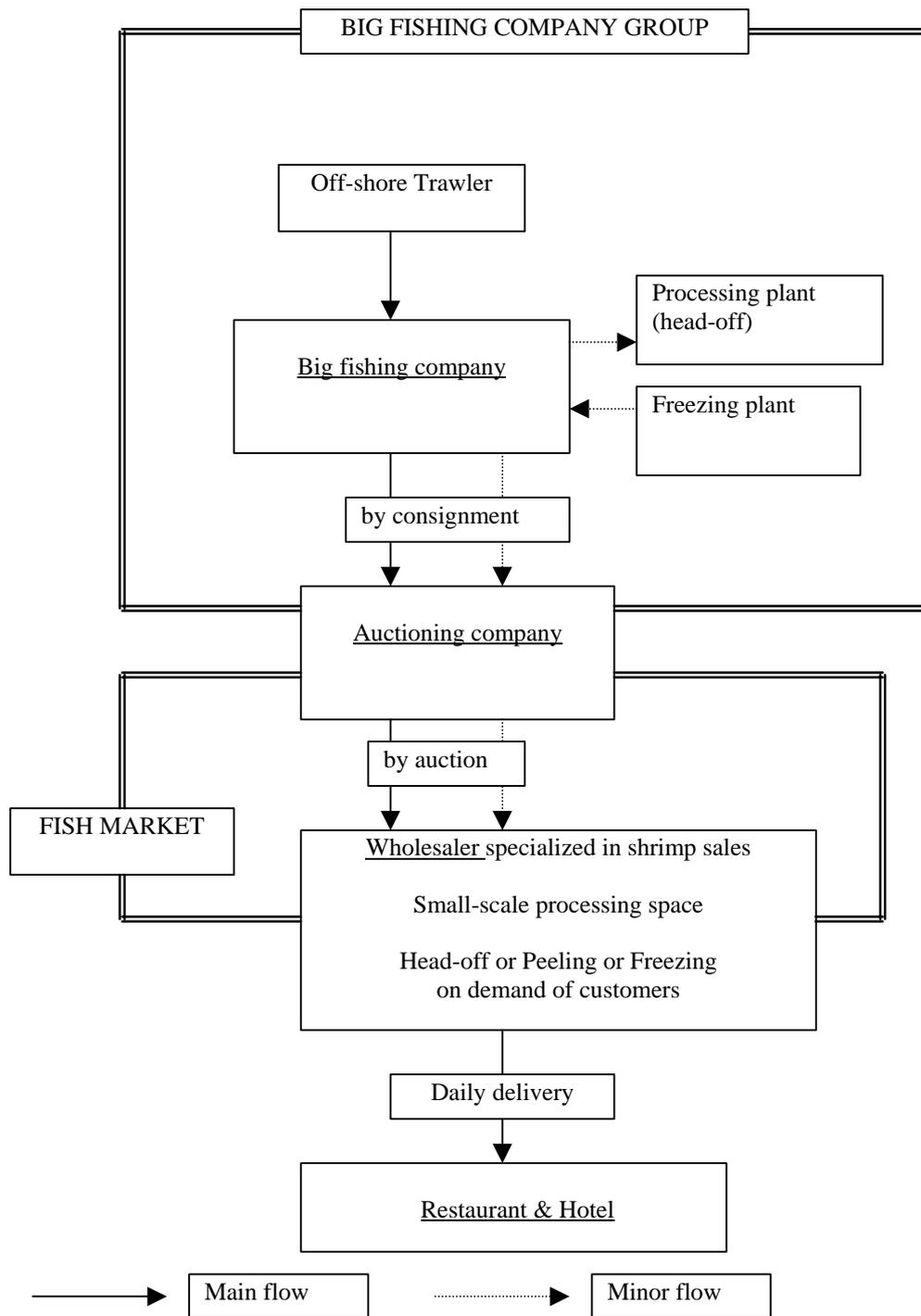
The expenditures for *gaishoku* as a percentage of total food expenditures show a continuous growth (appendix 2). This growth is related to the increase in the number of working women. The expenditure for shrimp as a percentage of total food expenditures shows a decline, which may be caused by economic uncertainty, that is, shrimp are relatively luxurious food products and are considered an expensive ingredient for cooking at home. The peak home consumption was in the period of rapid economic growth from 1985–95, and declined after 1995.

³ From 13,986 MT in 1997 to 64,618 MT in 2002 (an average annual growth of 1.5%) (Chinese Customs).

⁴ Calculated as: [import + domestic production] divided by population.

⁵ Calculated as follows: the consumption of shrimp in 1998 was 2,478g per household consisting of 3.31 persons on average. It means that consumption per capita was 747g, which was approximately 32% of the above-mentioned total per capita consumption in Japan (2,360g).

Figure 1. Distribution route for Taisho shrimp (domestic catch ca. 1960–70)



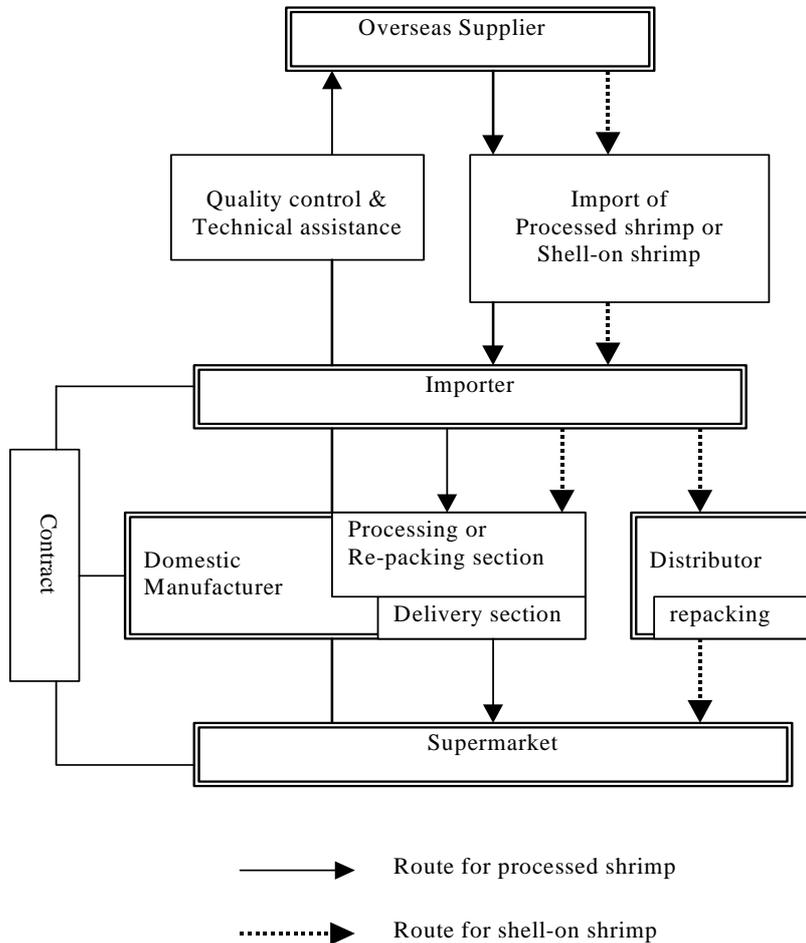
Source: Authors.

Distribution structure

Distribution route approximately 1960–70

Approximately 1960–70, when many Taisho shrimp were caught, the distribution channel of this domestic catch was relatively simple (figure 1).

Figure 2. Current distribution route of imported shrimp for supermarkets



Source: Authors.

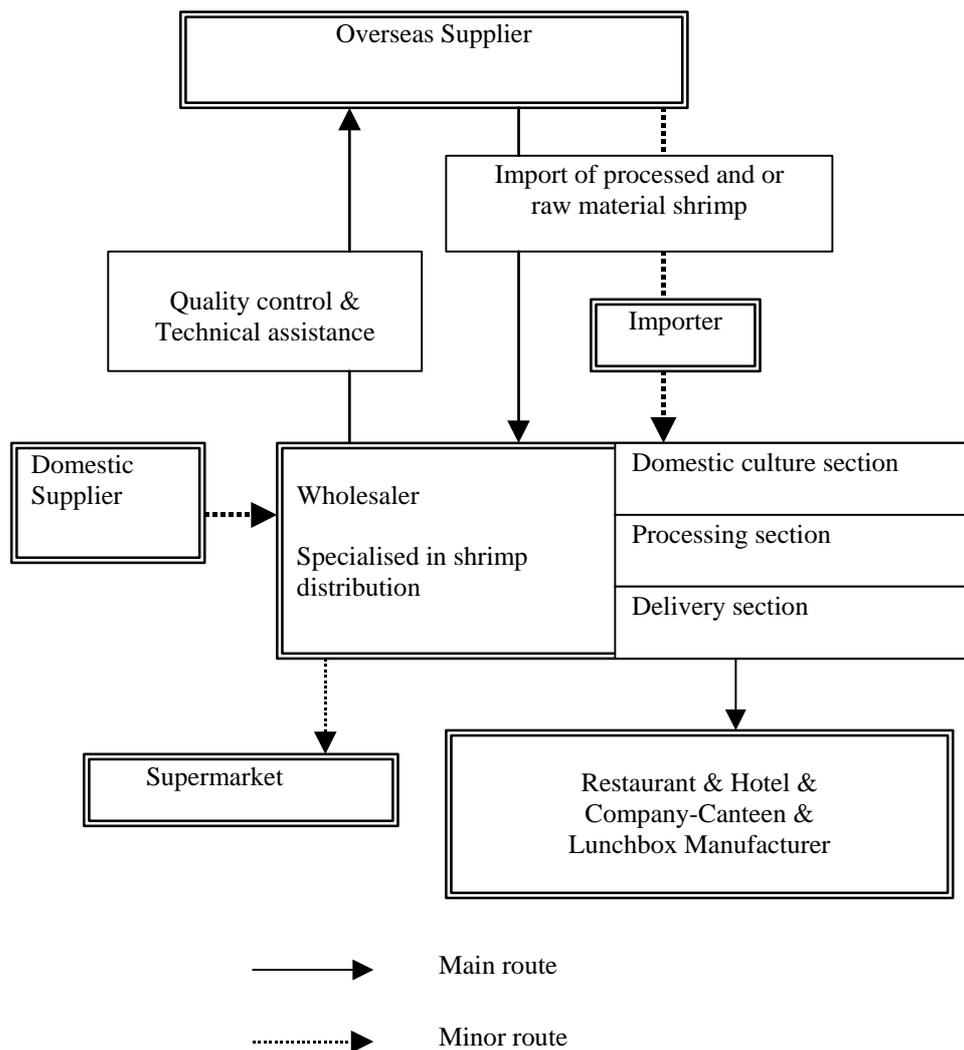
The big fishing companies, such as Maruha, Nippon Suisan, Kyokuyo, and Nichiro, caught Taisho shrimp by off-shore trawling in the East China Sea. They distributed their catch on a consignment basis to fish markets in the cities, which then sold the catch by auction. Almost all of the companies in the fish markets were subsidiaries of the big fishing companies. Wholesalers specialized in shrimp distribution bought the shrimp at the auction place and delivered it to restaurants and hotels daily. In those days, shrimp was handled mostly as a fresh product throughout the entire supply chain. Only if necessary and in case of abundant catch would the fishing companies freeze the shrimp for storing. The wholesalers also, occasionally, froze them so that they could buy the shrimp at a low auction price.

Changes in the distribution structure

Today, the distribution route is more complicated because of the development of the cold chain and the broadening of supply sources. The import of shrimp has taken the place of domestic catch, and it has become relatively easy for a company to trade shrimp. The fish market had been important and effective but was not suitable for imported fish products, because the auction could not always guarantee the import costs. As the imports of fish products expanded, the distribution route outside the fish market developed.

The emergence of supermarket chains also affected the distribution route. They generally purchase large volumes of commodities, and seek direct contact with importers. Alternately, they sometimes import directly by themselves, possibly together with an importer and supplier. Supermarkets need daily delivery and repacking in small packages. These services can be performed by intermediary delivery companies or international trading companies that have this type of subsidiary companies in their groups. Figure 2 shows the typical distribution route of imported shrimp for supermarkets.

Figure 3. Distribution route for the restaurant and catering industry (*gaishoku*)



Source: Authors.

In the case of processed shrimp (peeled tail-on shrimp or prepared shrimp with breadcrumbs), the participants in the supply chain (importer, domestic manufacturer, and supermarket chain) sign a contract, and the supermarket guarantees to purchase all supplies produced under this contract. In turn, the supermarket chain sets the quality standards, including sanitation standards, with which the supplier must comply. The role of the domestic manufacturer is to assist or to control the supplier, so that the supplier complies with these quality requirements. The domestic manufacturer sends

technicians to the supplier's site, and after importation, the shrimp are repacked in suitable packages for the retailer and delivered to the supermarkets, generally on a daily basis. The role of the importer is to coordinate all functions in this distribution route to ensure a sound transaction. However, the supermarket chain and the domestic manufacturer can contact the overseas supplier directly, and, occasionally, import themselves.

For shell-on shrimp, supermarket chains do not have such severe quality control requirements as for processed shrimp, so that technical assistance to the foreign supplier, for example, sending a technician abroad, is not necessary. If processing the shrimp in Japan is required, the processing will be carried out by the domestic manufacturer, and that company will deliver the shrimp to the supermarkets.

Restaurant and Catering Industry

Approximately 70 percent of the imported shrimp go to the restaurant and catering market, and the other 30 percent is sold by supermarkets for home consumption. The demand for peeled tail-on shrimp and prepared shrimp with breadcrumbs is now increasing in the market. Figure 3 shows the distribution route for the restaurant and catering industry. In this supply chain, the wholesaler, which is specialized in shrimp distribution, has the pivotal role. The wholesaler imports mostly shrimp and assists the supplier with quality control and technical aspects, in the case of processed shrimp. The wholesaler delivers the shrimp almost on a daily basis to restaurants, hotels, and other catering companies, using its own trucks. The wholesalers have their own processing factories. Sales of the biggest wholesaler amounts to 100 billion yen (more than US\$800 million), and it sells 80,000 MT of shrimp annually.

Nile Perch

Import development

The import of Nile Perch in Japan started in 1987 with 63 MT from Kenya. A small trading company exported fishnets to Kenya and counter purchased (barter traded) Nile Perch for the nets. Since a large fish trading company began trading Kenyan Nile Perch in 1988, the import has expanded rapidly, but the first imports from Tanzania and Uganda started only in 1994. The imported volume reached almost 6,700 MT in 2002, and the share of each of the three supplying countries was almost equal (table 6).

Table 6. Imports in Japan of frozen Nile Perch fillet by country, 1987–2002

<i>Year</i>	<i>Kenya</i>	<i>Tanzania</i>	<i>Uganda</i>	<i>Total</i>
	<i>Volume (MT)</i>			
1988	707	0	0	707
1990	1,636	0	0	1,636
1994	1,101	280	40	1,422
1995	1,083	2,402	201	3,686
2000	2,126	2,609	2,461	7,196
2002	2,128	2,295	2,247	6,670
Value ^a 2002 (mil yen)	1,007	1,102	1,083	3,191

Source: MOF.

Note:

a. The 2002 end-of-the-year exchange rate: 1US\$ = 119.37Yen; 1,000Yen = 8.377US\$.

Market and distribution structure

The Japanese consumption of Nile Perch is approximately 10 percent of that of Europe, and the Japanese market depends on the developments in the European market. When the EU strengthens its

sanitary import examinations or bans certain supplying countries, exporters seek to supply more to Japan.

Nile Perch is exported to Japan as frozen skin-on fillets instead of the fresh and skinless fillets commonly sent to Europe. The sizes are graded as follows: 500–800g, 800–1,200g, 1,200–1,600g, and 1,600g and up. They are packed and frozen in carton boxes of 6 kg net. In 2002 the import price for the average size fillets was US\$4.5 per kg (maximum), which dropped to US\$3.7 per kg in 2003.

Nearly all Nile Perch sold in Japanese supermarkets is sliced and seasoned with *miso* (salted soy-bean paste) or *sakekasu* (rice grounds, leftover of sake brewing) to remove the unique smell of the fish meat. Therefore, a processing company is needed in the supply chain.

Fruits and vegetables

Import developments

The quantities, values, and CIF prices of imported pineapple and mango are presented in table 7. Imports of fresh pineapples was at its peak in 1986 (almost 145,000 MT), decreased to approximately 85,000 MT in 1998, and rose again, reaching almost 123,000 MT in 2002. The smallest import quantity (1998) during the 16 years corresponds with the high CIF price. For the imports of mango during the period 1992–2002, there was a drop in 1994, and an increase in 1995, corresponding with the increase and decrease of the CIF price.

Table 7. Imports of selected fruits (quantity, value, and CIF price)

	<i>Pineapple, fresh</i>			<i>Mango, fresh</i>		
	<i>Quantity (MT)</i>	<i>Value (mil yen)</i>	<i>CIF price (yen/kg)</i>	<i>Quantity (MT)</i>	<i>Value (mil yen)</i>	<i>CIF price (yen/kg)</i>
1985	128,912	10,626	82	2,609	1,436	550
1986	144,811	10,913	75	3,667	1,423	387
1990	128,250	8,300	65	5,510	2,319	421
1992	127,466	7,208	56	8,059	2,598	322
1994	113,527	5,282	47	7,606	2,330	306
1995	107,940	4,862	45	10,047	2,679	267
1998	84,710	4,970	59	8,877	3,211	362
2000	100,092	5,330	53	9,627	2,940	306
2002	122,871	7,697	53	8,875	3,150	354

Source: Japan Fresh Produce Import Facilitation Association, 2003 (based on MOF).

Note: The 2002 end-of-the-year exchange rate: 1US\$ = 119.37Yen; 1,000Yen = 8.377US\$.

The decline in the CIF prices of pineapples and mangoes seemed significant because of the appreciation of the yen. If all prices were converted to the US dollar, this change would be much smaller.

Table 8. Imports of selected vegetables (quantity, value, and CIF price)

<i>Year</i>	<i>Asparagus, fresh</i>			<i>Green soybean, fresh</i>			<i>Green soybean, frozen</i>		
	<i>Quantity (MT)</i>	<i>Value (mil yen)</i>	<i>CIF price (yen/kg)</i>	<i>Quantity (MT)</i>	<i>Value (mil yen)</i>	<i>CIF price (yen/kg)</i>	<i>Quantity (MT)</i>	<i>Value (mil yen)</i>	<i>CIF price (yen/kg)</i>
1988	11,926	7,187	603	3,535	824	233	36,842	6,489	176
1990	11,607	8,174	704	2,828	996	352	40,071	12,958	323
1993	18,315	9,950	543	5,617	1,402	250	51,249	10,314	201
1995	22,736	11,495	506	4,482	1,025	229	52,608	8,575	163
2000	24,767	11,330	457	2,576	630	244	74,985	12,971	173
2002	19,363	9,816	507	1,834	375	205	69,510	13,659	197

Source: Japan Fresh Produce Import Facilitation Association (2003) and Vegetable Supply Stabilization Fund (2002); both based on MOF.

Note: The 2002 end-of-the-year exchange rate: 1US\$ = 119.37Yen; 1,000Yen = 8.377US\$.

The quantities, values, and CIF prices of the selected vegetables are presented in table 8. The quantity of imported asparagus increased substantially from 1988 and reached its peak in 2000, when the CIF price was lowest. The quantity of imported fresh green soybeans decreased significantly from 5,617 MT in 1993 to 1,834 MT in 2002, even though the CIF price dropped from 250 yen/kg to 205 yen/kg. The import quantity of frozen green soybeans fluctuated over the years, but the trend shows an increase of imports since 1988.

Supplying countries

Fruits

Details about the major supplying countries of fresh mango and fresh pineapple to Japan are shown in tables 9 and 10. In 2002, 63 percent of the import quantity of mango came from the Philippines and almost 25 percent from Mexico. The Philippines has a time and cost advantage over Mexico in transporting mangoes to Japan.

Table 9. Major supplying countries of fresh mango to Japan, 2002 ranking

	<i>Philippines</i>	<i>Mexico</i>	<i>Thailand</i>	<i>Australia</i>	<i>US</i>	<i>Taiwan</i>	<i>Cuba</i>	<i>Total</i>
Volume (MT)								
1990	4,307	1,169	23	-	7	-	-	5,510
1995	7,122	2,538	111	91	163	22	-	10,047
2000	5,618	3,155	194	301	258	101	-	9,627
2002	5,601	2,178	487	330	153	124	2	8,875
Value ^a (mil yen)								
2002	1,714	852	158	280	77	68	1	3,150

Source: MOF.

a The 2002 end-of-the-year exchange rate: 1US\$ = 119.37Yen; 1,000Yen = 8.377US\$.

For fresh pineapples, 98 percent is supplied by the Philippines. Although the import quantity from the US (Hawaii) has doubled from 2001 to 2002, it is still less than 1 percent of the total import quantity.

Table 10. Major supplying countries of fresh pineapple to Japan, 2002 ranking

	<i>Philippines</i>	<i>US</i>	<i>China</i>	<i>Taiwan</i>	<i>Thailand</i>	<i>Malaysia</i>	<i>Ecuador</i>	<i>Total</i>
Volume (MT)								
1998	84,016	12	30	635	17	-	-	84,710
2000	98,378	-	416	832	192	274	-	100,092
2002	120,164	1,138	730	368	270	197	3	122,871
Value ^a (mil yen)								
2002	7,448	81	87	55	20	7	0	7,697

Source: MOF.

a The 2002 end-of-the-year exchange rate: 1US\$ = 119.37Yen; 1,000Yen = 8.377US\$.

Pineapple is brought into Japan only by ship. The number of cartons of pineapples imported in 2002 increased by 6 percent in comparison with 2001.

Vegetables

Details about the major supplying countries of the selected vegetables are shown in tables 11 through 13. Australia was the major supplying country of fresh asparagus in 2002. The Philippines and Thailand were second and third, respectively. The Philippines was the top supplier in 1996 and 1997, the second in 1998, fell to the fourth place in 2000, and regained the number 2 position in 2002. The imports from Thailand showed a speedy rise—it had the fifth place behind the USA and Mexico from 1998 to 2001.

Table 11. Top 6 ranking of major supplying countries of fresh asparagus to Japan, 2002

	<i>Australia</i>	<i>Philippines</i>	<i>Thailand</i>	<i>US</i>	<i>Mexico</i>	<i>N. Zealand</i>	<i>China</i>	<i>Total</i>
Volume (MT)								
1988	1,784	-	100	4,765	3,230	1,606	173	11,926 ^a
1990	2,411	206	1,596	3,989	1,943	1,296	121	11,607
1995	4,536	4,975	1,450	5,682	3,781	1,336	587	22,736
2000	6,086	4,294	1,895	5,454	4,914	1,385	438	24,767
2002	5,692	4,024	3,103	2,797	2,326	1,046	181	19,363
Value ^b (mil yen)								
2002	2,827	1,521	1,825	1,323	1,439	610	56	9,812

Source: Vegetable Supply Stabilization Fund (2002); MOF.

Notes:

a The total includes a relatively small quantity of fresh white asparagus imported mainly from European countries. The imports from Europe are not listed in this table.

b The 2002 end-of-the-year exchange rate: 1US\$ = 119.37Yen; 1,000Yen = 8.377US\$.

The quantity of fresh green soybeans is small in comparison with frozen green soybeans. Taiwan has been the major supplier for the last 5 years, followed by mainland China (table 12). Taiwan supplied 88 percent of the imported quantity in 2002, and China, 11 percent. This share has not changed much in 1998, it was 85 percent and 15 percent, respectively. Since the product is fresh, the transportation distance is important. Therefore, China and Taiwan are the main suppliers because of their proximity to Japan.

Table 12. Ranking of major supplying countries of fresh green soybeans to Japan, 2002

	<i>Taiwan</i>	<i>China</i>	<i>Thailand</i>	<i>Indonesia</i>	<i>Total</i>
Volume (MT)					
1998	2,458	407	-	-	2,884
2000	2,147	363	64	1	2,576
2002	1,619	207	4	4	1,834
Value ^a (mil yen)					
2002	353	19	2	1	375

Source: Vegetable Supply Stabilization Fund (2002); MOF.

a The 2002 end-of-the-year exchange rate: 1US\$ = 119.37Yen; 1,000Yen = 8.377US\$.

China and Taiwan also are the major supplying countries of frozen green soybeans to Japan. The shares of total import quantities were 52 percent for China and 36 percent for Taiwan in 1998, and 50 percent and 34 percent respectively in 2002. Thailand held the third place during those years with 12 percent–13 percent. The imports from Indonesia increased, and were 3 percent in 2002.

Table 13. Ranking of major supplying countries of frozen green soybeans to Japan, 2002

	<i>China</i>	<i>Taiwan</i>	<i>Thailand</i>	<i>Indonesia</i>	<i>US</i>	<i>Vietnam</i>	<i>S Korea</i>	<i>Total</i>
Volume (MT)								
1998	35,157	24,238	7,941	489	43	391	-	68,260
2000	39,793	24,166	8,690	1,980	42	293	-	74,985
2002	34,617	23,588	8,837	2,416	23	19	10	69,510
Value ^a (mil yen)								
2002	6,315	5,159	1,718	458	5	2	3	13,659

Source: Vegetable Supply Stabilization Fund (2002); MOF.

a The 2002 end-of-the-year exchange rate: 1US\$ = 119.37Yen; 1,000Yen = 8.377US\$.

Market and distribution structure

There is not one single distribution route for imported fresh fruits and vegetables. Figure 4 summarizes the different routes schematically. The main route is as follows:

1. Foreign producers
2. Trading companies (importers)
3. Wholesalers
4. Intermediary wholesalers
5. Retailers
6. Consumers.

Processed products, such as frozen green soybeans, are not handled in wholesale markets. The main routes for them are:

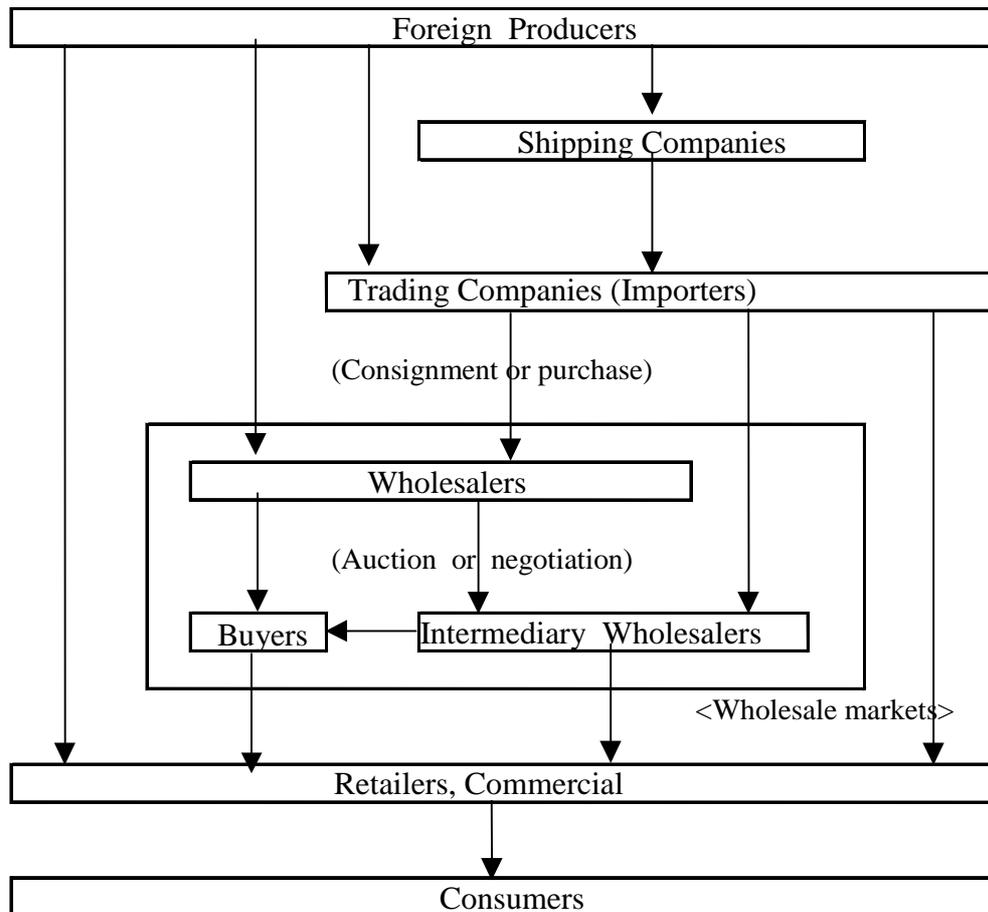
1. Foreign producers
2. Trading companies (importers)
3. Retailers/commercial users.

Or:

1. Foreign producers
2. Trading companies (importers)
3. Food wholesalers (which are not wholesalers in wholesale markets)
4. Retailers/commercial users.

Supermarket chains also import the main fresh fruits and vegetables directly, but not 100 percent of the required amount. The remainder is purchased from trading companies and wholesalers. Fruits and vegetables that are not sold in large amounts are purchased from smaller trading companies that specialize in these specific products. Moreover, fruits and vegetables that are not sold in large amounts often are transported together with voluminous products because of savings on logistics and transport. A very large share of the imported fruits and vegetables in the Japanese market, especially pineapples and bananas, is handled by a relatively small number of big companies.

Figure 4. Distribution channels for imported fresh fruits and vegetables



Source: Authors.

3 Regulations and their Enforcement in Japan

Revision of food safety laws

Political pressures in response to food scandals led to changes in the regulatory system. The discussions focused on the significant overlap of responsibilities of two ministries: MAFF (Ministry of Agriculture, Forestry and Fisheries) and MHLW (Ministry of Health, Labor and Welfare). There was a proposal to combine these two regulatory agencies into one new organization, but this proposal was rejected in the Diet and replaced by another proposal to establish an independent advisory committee under the Prime Minister's Office: the Food Safety Committee. The Food Sanitation Law was amended, and the new Food Safety Basic Law, under which the Food Safety Committee was established, took effect in the summer of 2003. An amendment of the legislation to further harmonize the responsibilities of both ministries is underway, and much attention is given to product information labeling, which generally is considered important to gain consumers' trust.

The result of the revision of the food safety system is that the food safety standards for entry into the Japanese consumer market will become more stringent. On the other hand, the harmonization of MAFF and MHLW regulations may simplify procedures for exporters to Japan.

Applicable laws and regulations

At the time of importation, the most important regulations are those set in the Plant Protection Law (under the jurisdiction of MAFF), and in the Food Sanitation Law (under the jurisdiction of MHLW).⁶ The Plant Protection Law deals with plant quarantine and is applicable to fruits and vegetables only. Food sanitation inspections are applicable to fruits and vegetables, and fishery products, and they apply at the time of sale. All food products distributed and marketed in Japan are subject to the labeling regulations. The main law concerning labeling is the “JAS” (Japanese Agricultural Standard) Law, which explains the details of mandatory and voluntary labeling.

Plant Protection Law

Fruits and vegetables from a certain country or region are either allowed or not allowed to be exported to Japan, so there is no confusion nor uncertainty. This either/or scenario differs from the pesticides requirement, which sets a maximum level of pesticide residue that cannot be exceeded.

Even if the importation of certain plants or plant products is prohibited according to the Plant Protection Law, it may be allowed under prescribed conditions of quarantine and after the completion of specified procedures. For example, mangoes from certain tropical areas disallowed according to the Plant Protection Law, among other fruits and vegetables, receive a fumigation treatment (with chemicals) or a “vapor heat treatment” (with steam) in the exporting country that will enable them to enter Japan.

Fruits and vegetables need to have a phytosanitary certificate issued by the exporting country. Nonetheless, if quarantine pests are found during the import inspection in Japan, the fruits and vegetables have to be treated (disinfected) or discarded, depending on the particular conditions.

⁶ Details on the laws and regulations are found in the various sources listed in the References, specifically those under JASA (Japan Agricultural Standards Association), JETRO (Japan External Trade Organization), JFTC (Japan Fair Trade Commission), MAFF, MHLW, and the USDA's GAIN Reports.

Food Sanitation Law

The amendment of the Food Sanitation Law leads to significant changes in the way residues are regulated. Japan is adopting a system featuring a “positive list” with maximum residue levels (MRLs) for specific pesticides. If the residue exceeds the maximum limit, the product cannot be imported into Japan. If a product contains a pesticide for which there is no specified MRL, the product cannot be imported into Japan. As of 2002, maximum residue limits were established for 229 pesticides on approximately 130 crops. However, approximately 350 pesticides were approved for domestic use under the Agricultural Chemicals Restriction Law. Worldwide, there were approximately 700 pesticides used. When imports contain agricultural chemicals for which residue standards are not established, MHLW looks to domestic use, and Codex and other scientific standards in making case-by-case-determinations on how to handle import shipments. The proposed legislation calls for a transition period, which MHLW said would probably last until 2006. During the transition period, the current informal system for handling pesticides that are not in the “positive list” will continue.

The impact of the Food Sanitation Law will greatly depend on the way it is implemented. The maximum residue levels are likely to be lower, making it more difficult for suppliers to comply. According to an inspection company, increasing the precision of analysis by using more advanced equipment means increasing costs, because the equipment costs more. However, the equipment is not considered very expensive, so zero-tolerance tests are not considered very difficult nor very expensive, although that may depend on the particular pesticide, veterinary drug, and food additive.

Enforcement of regulations and standards in practice

At the time of importation, *three inspections* related to the Food Sanitation Law are conducted:

1. *Document*. Inspecting the results of the inspections conducted by the public organizations of the exporting country. Document inspections are conducted by inspectors dispatched from Japan wherever parties agree the inspection will take place.
2. *Monitoring*. Random sampling inspections conducted by MHLW. The costs are borne by MHLW.
3. *Order*. Inspections conducted by importers based on the order issued by MHLW.

Order inspections are conducted after 3 violation cases have been reported for an import item. The numbers of samples for order inspections are greater than those for monitoring inspections. As the number of violation cases increases, so does the number of samples. Whereas it is allowed for importers to sell imported goods before results of monitoring inspections are known, it is not possible to sell imported goods in the case of order inspections until it is confirmed that there are no violations. Since residual pesticides found in Chinese vegetables became a big problem in the beginning of 2002, more stringent measures were taken for both monitoring and order inspections. For example, the occasions of sampling for both increased. Box 1 illustrates the rapid growth of imports from China and recent problems of food safety compliance.

Under the Plant Protection Law, fresh foods and agricultural produces are subject to visual observation inspections for harmful pests, mold, and other undesired characteristics. These inspections are conducted per import item in the form of sample inspections.

Both food sanitation and quarantine inspections are conducted on each shipment entering the country. However, if the exporting country conducts food sanitation inspections and the government of the exporting country certifies the safety of the products, food sanitation inspection (in Japan)

may require only document inspections. In strict contrast, quarantine inspections are conducted without exception.

In addition to the food sanitation inspections at the port of entry (controlled by MHLW), the Japanese government conducts two other kinds of food sanitation inspections: inspections at wholesale markets (controlled by the health stations of prefectural governments) and inspections on the sales floors of retailers (controlled by the health centers of prefectural governments).

Apart from these inspections conducted by the government, private companies (importers and/or retailers) regularly conduct their own inspections. Staff of big retail chains visit production sites and inspect the farming conditions of the produce they purchase before the import season begins. They do this not only for the goods they import on their own, but also for goods purchased through trading companies. If they purchase goods from unspecified dealers, traceability cannot be established and it is impossible to trace back information to the production sites.

Box 1. Vegetable imports and compliance

The 1990s saw a rush of foreign investments in China. The low production costs (especially of labor¹) and the geographic proximity to Japan attracted Japanese trading companies to establish ties with Chinese producers. The trading companies provided the seeds, spores, and techniques of production and packing; and imported the harvest for Japanese retailers. Another major factor was the improvement in ocean freight services from major Chinese ports to Japan. This influx of foreign investments led to the six-fold increase in the value of imported frozen vegetables from 1990-1992 to 1998-2000.²

The factors important to Japanese consumers are freshness (thus, countries geographically close to Japan have an edge), quality, visual perfection, taste, stability of supply, and low prices³.

The quality of China's products is improving and is "reportedly meeting customer preferences."⁴ However, the vegetable and fruit industry does not, in general, use grade standards (such as for uniform product size and appearance); thus, a number of private firms based their criteria on customer specifications. Moreover, there is no widespread use of modern packing and packaging techniques. The abundant supply of low cost labor deters the adoption of such improvements.⁵

Enforcement of SPS regulations. In 2002 excess levels of pesticides were detected in frozen spinach from China.⁶ Japan's Ministry of Health, Labor and Welfare (MHLW) called on related industries to voluntarily suspend imports of frozen spinach produced in China. The negative impact spread to green soybeans and other Chinese frozen vegetables, and all other imported frozen vegetables as well. The Enforcement Order for the Food Sanitation Law was amended to add frozen vegetables to the list of product subject to ordered inspection. The amended Law also authorized the Japanese government to ban imports from particular countries in case of repeated violations of agricultural chemical residue standards or other standards (promulgated September 2002). This incident spurred the trend to establish a traceability system to assure consumers and to inform them of the source of the produce. Talks between Japanese and Chinese authorities resulted in measures such as the cessation of use of the "offending" agricultural chemical, the institution of export inspections and the issuance of health certificates, and the issuance of export permits only to products of registered farms. Japanese frozen food companies have agreements with the Chinese producers to directly control the type, quantity, and number of applications of agricultural chemicals, and to maintain traceable production records. The suspension was lifted in February 2003, but imports resumed only in the middle of 2004.

¹ Shields and Wu Huang, "China's Fruit and Vegetable Market."

² Wu Huang, S., China Increases Exports of Fresh and Frozen Vegetables to Japan.

³ Ito and Dyck, "Japan's Fruit and Vegetable Market."

⁴ Shields and Wu Huang, "China's Fruit and Vegetable Market."

⁵ Shields and Wu Huang, "China's Fruit and Vegetable Market."

⁶ JETRO Marketing Guidebook for Major Imported Products, Fresh and Frozen Vegetables.

4 Private Sector View on Standards

Relative priority of standards in overall trade relations

Shrimp

All participants in the supply chain have a deep concern for the topic of food safety. All interviewees of trading companies, manufacturers, wholesalers, and retailers ranked “compliance with food safety requirement” and “overall product quality” as the most important factors in their trading relations with suppliers.

All companies apply the safety and other regulatory standards set by the Japanese government for food sanitation. In some cases, supermarket chains have more stringent requirements than the Food Sanitation Law, for example, as in the case of bacteria count. Most of the leading supermarket chains set a maximum bacteria count of fewer than 1,000 per gram for North Sea shrimp, which is consumed raw, instead of the fewer than 100,000 per gram set in the Food Sanitation Law.

Besides the safety standards set by the government, retailers often set their own very detailed, company-specific quality standards. In the case of processed (peeled tail-on) shrimp, for example, the import is funded and ordered by a supermarket chain (figure 2). It is the supermarket chain that sets the standards for quality and food safety, and they are applicable only to this particular contract. Processing by the supplier must be executed strictly in line with the customer's precise requirements regarding, for example, size grading, peeling, cutting of the muscle, stretching the shrimp, and arranging in boxes. Otherwise, the products will be rejected. Rejected products cannot be resold to another supermarket chain, because the specifications among the supermarket chains differ significantly.

Wholesalers determine what the specific private standards of the restaurant and catering industry are. They gather the great variety of specifications of numerous customers (restaurants, hotels, and canteens), then subdivide the imported shrimp into small lots according to the specifications required by the respective customers. The distributor (that is, the wholesaler) is performing the pivotal role in this distribution route (figure 3). The most important factor in this respect is hygiene because food poisoning is a serious accident in the restaurant and catering industry. Therefore, the wholesalers pay great attention to sanitary issues and chemical residues.

Both for home consumption and for the restaurant and catering industry, traceability becomes the standard for both retailers and wholesalers, and in some cases, the costs of the overseas supplier to establish the traceability system can be added to the price (box 2).

Fruits and vegetables

For fruits and vegetables, the relative priority of sanitary and phytosanitary standards and other standards in the overall trade relations for importers (trading companies and retailers) are somewhat different among the products and among the companies. However, in general, the most important points are “overall product quality” and “compliance with food safety requirements.” followed by “price” and “reliability of supply.” “Transport cost” also is considered important. “Phytosanitary regulations” was not mentioned to be a priority issue, because the regulations are clear and do not cause any confusion.

The origin of the product plays a significant role in addition to the factors mentioned above. Most Japanese believe that domestic food is safer than imported food, and imported food from other OECD countries is trusted more than that from developing countries. Chinese products are believed to be the least safe. Increased attention has been given to the safety of imported vegetables from China because they often have pesticide residues above the standards. After providing warnings to the Chinese authorities, Japan has, on several occasions, put a ban on spinach imports.

Box 2. Importance of traceability: Costs included in the price

Japanese consumers have become more concerned about the safety of imported shrimp because consumers have learned from television, newspapers, and magazines that cultured shrimp are fed with synthetic feed, which often is mixed with antibiotics; and that disinfectants also are spread in the ponds to avoid diseases. These consumer concerns have led to traceability becoming a more important issue in the contracts of supermarket chains. The commodity's condition throughout the entire supply chain should be clear. In the case of shrimp, the supply chain means from the culture pond to the supermarket. The supermarket chain selects the suppliers that can provide these records, that is, those suppliers that can establish traceability. The supermarket chain agrees that the costs of the overseas supplier to establish the traceability system can be added to the buying price.

Source: Authors.

Traceability information is becoming the standard for fruits and vegetables, in particular, to enhance consumer confidence. The ban on spinach imports, although it may be justifiable on the basis of frequent violations, is an example of one of the actions of the government to restore public confidence in regulators.

Company strategies and company-specific quality standards*Driving forces*

In Japan, the most important driving force in defining standards was consumers' concern about food safety after the food-related incidents and scandals. These incidents compelled the food processors and producers to face the reality that they no longer can survive unless they put strenuous efforts to secure food safety. Food-handling companies, especially the leading companies with a high profile, increasingly are focusing on how to secure safety and relieve consumers' anxiety. Although the government sets the public regulatory safety standards, these companies have become nervous and have set up stricter measures to protect themselves from food safety incidents.

They are fully aware that if they mishandle the safety matter, they will have to pay the price because they will be forced out of business far more quickly than before by the government, business partners, and consumers—not only because of the liability (box 3), but mainly because of the loss of their reputations. They have learned that the companies affected suffer social ostracism. For instance, a case of mislabeling seriously damages the trust of the company's business partners and consumers, provoking many partners to become angry and cancel contracts. Consumers, too, will easily lose their trust in companies that have deceived them and will not buy these companies' products anymore.

Box 3. Product Liability Law

The Product Liability Law states that the producer or importer is liable in case of a problem with a product, but the retailer is exempt, except if the problem is caused by the retailer. For example, if a food poisoning incident occurs, the manufacturer has a tremendous financial loss. Among other financial setbacks, the products have to be withdrawn from the shelves of numerous retail shops, the products are destroyed and compensation has to be paid to the victims. Besides that, the company will be the target of public criticism, and if the incident is very severe, it will be hard for the company to survive. In comparison to this, the loss for retailers will be limited to not receiving the expected profit of the withdrawn product. The situation is similar for imported products. The importer has to bear the liability for problems with the products, unless the accident is caused by the wholesaler or retailer. Although a retail company may not be liable in case of an incident, it can suffer damage to its reputation.

Source: Authors.

Company-specific quality standards as a differentiation strategy

Food safety has become an important factor in commercial strategies. The attitude of an individual company differs, but the issue undoubtedly is an element of its strategy. The leading companies

usually are aggressively promoting their food safety standards and quality standards as differentiating elements. The sensitivity of consumers offers opportunities because a manufacturer can distinguish its products from its competitors' by meeting certain standards and providing traceability information. In addition, those retailers that have successfully incorporated safety steps into their management systems are enhancing their brand values. It means that safety-conscious retailers and manufacturers can be more successful in their businesses.

In addition to the regulatory food safety standards, Japanese supermarket chains pay attention to HACCP and International Organization for Standardization (ISO) and set their own original and company-specific quality standards. The number of retailers that make their own has been increasing recently. Company quality standards relate mainly to issues including size, uniformity of size, appearance, and freshness. In addition, retailers might set minimum residue levels lower than what the governmental regulations require.

Another factor enhancing retailers' incentives to define their own standards is related to demographics. The average life expectancy of Japanese people is the highest in the world. The over-65 population totals approximately 25 million and accounts for 27 percent of the total population. The senior citizens are much interested in keeping their health. Many of them are wealthy so they prefer to buy food products with a good health image, even if the prices are a little higher. Strict standards can distinguish such a company's products and indicate that they are better for the consumers' health than the competitors' products.

Traceability

For domestic products, in a recent trend, the retailer presents information on the producer's background in the shop, for example, above or near the shelves. Such information appeals to the consumers' demand for traceability. It shows that the products are produced in a safe way and that the producer takes all responsibility for the products. Increasingly, posting background information also is being done for imported food products.

Securing food safety is considered important by almost all companies in the supply chain. Although it was not referred to as "supply-chain management" by the interviewees, controlling and managing the entire supply chain has become an essential means for retail chains to guarantee food safety. The word "traceability" is more often referred to and means, in practice, providing the consumer with information about the origin and background of the product. It is becoming a requirement. In some cases, especially for vegetable products from China, information can be obtained from the internet after typing in a number printed on the package.

Implications for developing countries

The increasing importance of food safety and quality has implications for suppliers in developing countries because Japanese buyers require them to meet the stricter standards. The Japanese buyers expect their suppliers to produce exactly what they want to have. However, the suppliers in developing countries complain that the Japanese buyers do not pay a high enough premium for safe and quality products.

Furthermore, it is not easy for companies from developing countries to become new suppliers supplier to the Japanese buyers, particularly with regard to the quality aspects. The Japanese buyers have high requirements and prefer bigger suppliers with good access to capital and technology.

According to the head office of the Japanese cooperative retail chain, stronger competition among the suppliers leads to safer and higher quality products because producers will make more efforts to meet the demands.

5 Problems and Experiences with Suppliers

The problems with imports and the experiences with the suppliers from developing countries are discussed in this chapter. They will be described separately for the selected products: shrimp, Nile Perch, and fruits and vegetables. The analysis of the experiences of the Japanese private sector with the different supplying countries in complying with standards shows the strengths and weaknesses of the different countries. The final section touches on some factors that explain differences in performance in complying with standards.

Shrimp

Key problems

The infractions of shrimp products against the government sanitary standards from April 2000–April 2003 found in sampling inspections as part of the import procedure are shown in table 14. The frequency of infractions during these 3 years by country of origin is as follows: 9 cases for China, 5 cases for Thailand, 4 for Indonesia, and 1 case each for India, Madagascar, Malaysia, and Vietnam. However, considering the large total of imported shrimp (almost 250,000 MT/year), 22 cases of infractions in 3 years are not many.

Table 14. Infractions against regulatory standards for shrimp, Apr 2000–Apr 2003

<i>Year/month</i>	<i>Commodity</i>	<i>Description of infraction</i>	<i>Origin</i>
2000/Aug	Frozen cultured shrimp	Oxytetracycline ^a	Malaysia
2000/Aug	Frozen food (shrimp) with breadcrumbs	Bacteria count $3.9 \times 10^6/g$	Thailand
2000/Set	Frozen cultured shrimp	Oxytetracycline 0.46	Indonesia
2000/Nov	Frozen cultured shrimp	Oxytetracycline 0.81	Indonesia
2001/Jan	Frozen food (shrimp) with breadcrumbs	Bacteria count $3.5 \times 10^6/g$	Thailand
2001/Feb	Frozen cultured shrimp peeled	Oxolinic-acid 0.06 ppm	Thailand
2001/Apr	Frozen cultured shrimp	Oxytetracycline 0.46 ppm	Indonesia
2001/Jun	Frozen cultured shrimp	Oxolinic-acid	Thailand
2002/Mar	Frozen shrimp	Sulfur Dioxide 0.11 ppm	China
2002/Apr	Fresh bamboo shrimp	Sulfur Dioxide 0.18 ppm	China
2002/May	Frozen cultured shrimp peeled	Oxytetracycline 0.9 ppm	India
2002/Jul	Frozen food (peeled shrimp)	E.coli positive	Vietnam
2002/Jul	Frozen peeled shrimp	Oxytetracycline 0.5 ppm	Indonesia
2002/Aug	Natural alive bamboo shrimp	Oxytetracycline 2.3 ppm	China
2002/Aug	Frozen food (boiled peeled shrimp)	Colon bacillus positive	Thailand
2002/Sept	Cultured alive bamboo shrimp	Oxytetracycline 1.5 ppm	China
2002/Sept	Frozen natural shrimp	Sulfur dioxide 0.11 ppm	China
2002/Nov	Frozen peeled shrimp	Sulfur dioxide 0.10 ppm	China
2002/Dec	Frozen cultured shrimp	Chlortetracycline 0.07 ppm	China
2002/Dec	Frozen cultured shrimp	Chlortetracycline 0.10 ppm	China
2003/Feb	Frozen cultured shrimp	Sulfur dioxide 0.17 ppm	Madagascar
2003/Feb	Dried shrimp	Sulfur dioxide 2.7 ppm	China

Source: MHLW.

Note:

a According to the official regulatory standards, the only antibiotic permitted for cultured shrimp is Oxytetracycline with a maximum residue level of 0.1 ppm. Other antibiotics and disinfectants are not allowed. As to the bacteria count for shrimp that are used fresh, such as Northern red shrimp or living bamboo shrimp, it must be within 100,000/g, and for other shrimp that are consumed after cooking, the maximum level is 3,000,000/g.

Occasional problems are encountered with sanitary standards (for example, antibiotics or the number of bacteria count, as shown in table 14) and foreign objects in shrimp (pieces of metal, metal nails, or hairs), moldy smell, and infraction with company-specific quality standards. Company standards, for example regarding size grading, request exactly 18 pieces per lb., while the general category is 16–20 pieces per lb. Another example is the request to completely exclude shrimp with soft shells or shrimp with black spots.

Experiences with different countries

India

India has a great potential for cultured shrimp production owing to its geographic situation with a wide and flat coastline. It is one of the most important suppliers of shrimp to Japan, but it also has the image of a troublesome country to the Japanese shrimp importers. Moldy smell is the most serious problem of Indian shrimp (box 4). In March 2003, a governmental delegation of the export inspection agency and the marine products export development authority from India came to Japan and discussed the problem of the moldy smell with Japanese buyers. The Indian delegation promised to set up a checking system such as Thailand did, so that improvement is expected in the near future. However, shrimp culturing in India depends greatly on a number of small companies that do not have enough financial resources. They have a short-term view and aim at earning money quickly instead of thinking of future income. Consequently, they neglect cleaning the ponds, and they “overculture” to increase their short-term yield. This causes the moldy smell, and this problem will not be solved easily.

Box 4. Moldy smell

The moldy smell originates from the chemicals Geosmin and 2-Methyl-Iso-Borneol, which are produced by some types of algae that grow in turbid water. It occurs mostly in shrimp from the Bimavaram area of Andhra State, location of the biggest areas of shrimp farming in India. According to biologists, phyto-plankton that cause this smell thrive in water with low salinity (caused by, for example, the flow of fresh water into the culture ponds during the monsoon season) or in super-nutritious water (caused by insufficient cleaning of ponds or by overcrowded culture).

Source: Authors.

US consumers are not so sensitive to this smell, so India may have a choice to increase its exports to the US at the expense of the export to Japan. Other periodic quality problems, besides the moldy smell, are non-freshness, inclusion of foreign materials (metal, plastics), mixture with smaller shrimp, and not enough weight. However, the Japanese importers seem to feel that the real problem is the attitude of the Indian business partners. They sometimes do not actively respond, or they shift the responsibility to someone else when negotiating a solution. On the other hand, an Indian shrimp trader who lives in Tokyo pointed out that Japanese traders should establish stronger personal relationships with Indian suppliers by increasing face-to-face contacts. Thus, the Japanese buyers/importers should inspect the shrimp themselves by visiting the supplier's factory instead of sending an agent to save costs.

China

The main type of shrimp that Japan imports from China is peeled shrimp. Infractions against regulatory standards, such as excessive residues of antibiotics and disinfectants, occur relatively frequently in Chinese shrimp products. Importers point out that the primary problem is the Chinese shrimp culture industry's lack of awareness about food safety issues, which is difficult to resolve. Commercial standards were not met in some cases for the following reasons: the inclusion of foreign materials, poor freshness, and poor packaging materials.

The modern Chinese factories, especially, are well-equipped and keep good sanitary conditions. Most of them work according to HACCP systems. At the same time, many old factories remain active. Some of them even have problems with electricity supply. A characteristic of the Chinese

shrimp industry is that there is much variation in the scale of companies and their performance. The perceived reputation of Chinese shrimp products also differs by importer. Exchange of communication between Japanese buyers and Chinese suppliers takes place relatively frequently, helped by the geographic proximity, and this communication may promote the education of the Chinese shrimp producers.

Both the domestic consumption of shrimp and the importation of shrimp are growing rapidly in China. Domestic production also increased, and due to the vast coastal area of China, the country has a great advantage in shrimp culturing. An increase of Vannamei species is expected.

Indonesia

Notwithstanding Indonesia's aim to increase the export of shrimp to the US market, the Indonesian supply to Japan has remained stable since 1970. There is a good relationship between the two governments, and since Indonesia has a relatively well-developed industrial infrastructure, significant Japanese investments have taken place in the shrimp business. The production of processed shrimp (peeled tail-on Black Tiger) and of preserved shrimp with breadcrumbs has increased.

The reputation of Indonesian shrimp products is comparatively high in Japan. Significant problems have never occurred, except a few incidents in which the residues of antibiotics exceeded the regulatory limits. One large Japanese retail chain that is importing peeled tail-on shrimp directly from Indonesian factories uses only raw material shrimp grown without any antibiotics at all in culture ponds.

Nearly all Japanese buyers are satisfied with the quick response of Indonesian suppliers to solve problems whenever they happen. Furthermore, the Japanese buyers appreciate the food safety control system and the tracking and tracing system, although there are differences in the systems adopted by each supplier.

Importers point out that the sense of hygiene among Indonesian laborers generally is not high, so the compliance with the food safety and quality standards of the production manual depends primarily on the skills of managers and foremen.

Indonesia's recent political instability causes increasing worry among shrimp importers.

Thailand

Japanese companies consider Thailand, like Indonesia, a favorable country. Many Thai joint ventures with Japanese companies have been established there in different sectors, because of the low costs of high-quality laborers.

Thai shrimp are popular in Japan. No notable problems have occurred for many years, except a few incidents of the residues of antibiotics exceeding the regulatory limits. Japanese importers appreciate the careful support of the Thai government to the shrimp industry. During their long trading relationship with Japan, many Thai processors have established quality control systems in their factories. In the Thai components of the supply chain (from culturing to processing), many factories have introduced a HACCP management system, and the suppliers respond well to the recent traceability requirements of Japanese buyers. Furthermore, the inspections by the public sector institutions in Thailand are trustworthy. Buyers occasionally visit factories and exchange information about trade. The related industries of submaterials, such as packing materials, flour, and additives, are well established. These reliable underpinnings enhance the production of highly processed shrimp, such as peeled tail-on or preserved and prepared shrimp.

The only concern of Japanese buyers is the Thais' focus on the US market. From approximately 1995, with the down-turn of the Japanese economy, Thai suppliers started to strengthen their relationships with the US. Although the Japanese buyers have very precise quality requirements, the price they were willing to pay was not always attractive to Thai suppliers. At the same time, a problem occurred in Thailand regarding shrimp that smelled moldy. Thai suppliers reacted quickly to solve this problem with the establishment of systems to check raw materials at the factories. Although the problem was solved quickly, it accelerated their greater trade with the US market because the consumers in the USA are not so sensitive to this smell.

As for processed shrimp, Japanese buyers are expecting a continuous and growing supply, because Thailand has a great potential in food processing.

Vietnam

In the near future, the culture of Vannamei shrimp will spread in Vietnam because of its resistance to viral diseases. Vietnam still has a huge potential for increasing production of cultured shrimp in the Mekong Delta. Japan imports mainly processed shrimp from Vietnam, such as peeled shrimp, peeled tail-on shrimp, shrimp processed with rice, and shrimp preserved with breadcrumbs.

Vietnamese factory workers have a good reputation among Japanese importers as diligent and capable. However, the appraisal of factory management is different due to their limited managerial skills. Minor problems that frequently occur with Vietnamese shrimp products are the inclusion of foreign materials, mixture with smaller shrimp, antibiotics residues, and mislabeling. Still, most of the importers recognize that the supplier's response to a complaint from Japan is always quick. According to a Japanese importer with joint ventures in shrimp factories, the Vietnamese processors are very eager to expand their factory facilities, and they have the Thai suppliers as their example. The expansion of the factories received some financial support from the Vietnamese government. However, it is difficult to find capable factory managers. Thus, it is not unusual that a Japanese supervisor is invited to stay at the factory.

Conclusions

The differing experiences with different supplying countries in complying with food safety and quality standards can be summarized as follows. Japanese buyers have confidence in the overall business activities of Thai and Indonesian suppliers. Still, infractions concerning antibiotics and other small troubles with commercial standards occur, which means there is room for improvement. Vietnam and China must improve several aspects before they can reach a position as leading export countries of shrimp equal to Thailand and Indonesia. The Chinese shrimp export capacity depends much on the emerging domestic consumption. Japanese buyers perceive that India has some difficulties in its production environment. Japanese companies expect to continue to buy shell-on shrimp or simply peeled shrimp from Indian suppliers, but no processed shrimp.

Nile Perch

Key problems

Japanese importers do not have any problems with regard to sanitary conditions and the quality of the products. The key problem is the naming of the fish, which had to be changed after the adjustment of the Japanese labeling regulation. Retailers experienced this marketing problem for the first time in 2002. Japanese consumers are not familiar with this fish that used to be called and labeled in Japan *shiro-suzuki* ("white sea-bass"). The English name "Nile Perch" and the origin (Africa) does not appeal to them. In addition, Japanese consumers prefer sea fish to freshwater fish. Since the appearance and the quality of the Nile Perch flesh is similar to those of sea-bass, which is popular in Japan, it was marketed as white sea-bass. Several years ago, the complaints from consumers against misleading names of fish products increased. In response to that, in 2002 the

Fisheries Agency listed the foreign fish products that had to be referred to by their original names at the point of sale, and Nile Perch was one of them. Many supermarkets stopped selling this fish. The market that remained is, basically, only the restaurant and catering industry, because the new labeling regulation does not apply in that industry.

Japanese importers' key complaint is the price. The strong European market negatively affects sales in Japan. Export prices in the three African supplying countries increased in 2002, and Japanese buyers were obliged to pay these high prices as well. However, many of the Japanese customers did not purchase Nile Perch, because of the price increase. Much unsold stock was carried over to 2003, especially fish of small sizes. Supermarkets and the catering industry have different alternatives for Nile Perch. It easily can be replaced by other white fish if the price is not favorable. Sometimes the situation is difficult for an importing company, because it is caught between the strong European demand and the passive, or sluggish, demand for Nile Perch by Japanese customers.

Japanese buyers are concerned about the future supply and standards of Nile Perch, because of the risks of possible contamination of Lake Victoria (chapter 7) and of the exhaustion of Nile Perch resources by over-fishing.

Experiences with different countries

The experiences of Japanese importers with Kenya, Tanzania, and Uganda in complying with the standards are good, and Japanese buyers are satisfied with the suppliers' production sites, management skills, and quality control activities.

However, another regulation, not related to standards, is affecting sales. From April 2002, a Japanese import tax exemption applies to products from Tanzania and Uganda as a preferential treatment, because they are low income countries. Kenya is excluded from this tax exemption. Thus, imports from Kenya were forecast to decrease in 2003. However, this preferential exemption will not lead to a significant change in the Japanese imports of Nile Perch, because almost all large Lake Victoria suppliers have processing plants in these three countries, and they easily can shift the Kenyan production to the two other countries.

Fruits and vegetables

Key problems

According to all interviewed retailers, the biggest problem is pesticide residues exceeding the maximum residue levels. China, especially, is notorious for pesticide residues in vegetables. Retailers worry about it and are careful. In other cases, it is possible to control it. The Japanese subsidiary of a US-based multinational supplier mentioned that there were no problems with the pineapples, mangoes, and asparagus traded by this company, because they were imported directly from the mother company's farms in the Philippines.

Other problems are foreign objects and harmful insects in the packages of fruits and vegetables. Examples of foreign objects are hairs, pieces of metal, and nails. In some instances, there were insects and hairs in the packaging of bananas (packed by the foreign producer), a nail in matsutake mushrooms from China, and a nail in pineapples. There was the occasional presence of harmful insects stuck to different kinds of fruits and vegetables.

Another issue is the quality of the imported products. Retailers often receive complaints from consumers about rotten fruit. One retailer reported that the packing papers used for wrapping in the exporting country were torn at times. In addition, at the point of sale, retailers must display the name of the country of origin and the additives accurately, which sometimes causes problems.

Experiences with different countries

All interviewees indicated that China recently showed a stronger determination to meet the Japanese regulatory standards and the specific standards of Japanese companies. The Chinese capacity to respond to the food safety standards also has improved. China is tackling the problem of pesticide residues in a national project, which gets high esteem from the Japanese importers. Nevertheless, there are still large gaps in capacities among the different producers.

The Thai, on the other hand, are considered to have a weaker sense of competition, and they are considered to have less intention to increase their exports by meeting the Japanese standards. Besides that, the Thai have a lower capacity to meet the standards. Japanese buyers perceive that pesticides are not so well controlled in Thailand.

The Japanese retailers that deal with the Philippine subsidiary of a US-based multinational consider the capacity of the Filipinos to meet the standards equally high as the Chinese. However, the awareness level of local companies in the Philippines is low.

As one interviewee mentioned, the Indonesians do not have to use much pesticide because they grow vegetables on highlands. That is a big advantage for them in meeting the Japanese food safety standards.

Two other countries that the Japanese importers mentioned in this respect are Chile and South Korea. Chile has raised its capacity owing to foreign capital investments. South Korea is highly capable of gathering information about production and responding to the Japanese standards.

Criteria for complying with standards

The important criteria for supplying countries' compliance with food safety and quality standards can be divided into company-specific factors and country-specific factors. The company-specific factors involve the producers and exporters and include the size of the company, the experience with sanitation standards, and the staff's attitude toward hygienic standards. The larger the company, the more likely that it meets the Japanese standards. Producers and exporters need to have enough capital to purchase inspection equipment. Small producers in developing countries may find it more difficult to find Japanese customers. Besides that, companies that already had their own food sanitation standards can meet Japanese standards more quickly than can others. However, the attitude of the company's management and staff is the most important factor. They need to have a strong will to achieve the goal and to meet the Japanese standards. Many companies in developing countries tend to have the attitude of "evasion" rather than to try their best to comply with the standards. The reason why imports from China increased rapidly is that Chinese producers and exporters made great efforts.

Country-specific factors that are important for compliance with Japanese safety standards include the degree to which the authorities in exporting countries already have implemented their own food sanitation regulations and inspection capacity. Furthermore, nations whose authorities have a better understanding of the necessity of meeting sanitation standards meet the Japanese regulatory standards more quickly. Public sector assistance to producers and exporters also is important; local public authorities could give financial support to buy inspection equipment and could provide training for meeting sanitation standards.

6 Intervention by Buyers and the Cost of Control

Intervention and cost of control: Shrimp

With the change in product types from natural to cultured shrimp and from shell-on to processed and prepared shrimp, the import system also changed. The role of the importer changed to a coordinator, and the import is managed substantially by the supermarket chain or by the wholesaler. The technical requirements of the customer are becoming more precise. To comply with them and to control food safety and sanitation issues, the supplier should have a well-equipped factory, introduce advanced management systems such as HACCP, and comply with the customer's traceability requirements. There are different options for how importers can organize their companies to achieve food safety within their organizations (box 5).

Box 5. Structuring the organization for food safety

The way in which food safety is achieved differs for each company, but almost all well-known fish trading firms have set up taskforce teams for food safety. In one of the leading fish trading companies, which produces fish products under its own brand, the president himself is in charge of food safety issues. He summons a meeting of the team every 10 days to discuss the occurrence of possible problems concerning food safety in the company, so that the company can take quick counter measures before a problem spreads. This company also has strict procedures when it starts importing from a new foreign supplier. Much information about the new supplier is required, and the taskforce must give its approval. The business department also is required to visit the new supplier at least once to check its sanitation and food safety arrangements.

Source: Authors

Shrimp are not always subject to a sampling inspection by MHLW at the time of importation. Often, however, importers themselves carry out private sampling inspections for antibiotics (cultured shrimp) or for bacteria count (shrimp for fresh use). They present the results to MHLW officials as proof of the examination and to their customers as proof of the sanitary status. Supermarkets, in general, have their own inspection manuals and, to avoid doing the importer's inspection again, periodically take samples at the delivery centers. They check for germs and heavy metals, and they keep the samples of every lot for reference. Most of the retailers have quality control departments with their own laboratories, but, occasionally, when the sampling exceeds their own laboratory capacity, they order inspections to be carried out by a specialized inspection company. According to one big supermarket chain, their inspections cost 40 to 50 million yen (US\$335,000 to US\$420,000⁷) per year.

It is common for a buyer to dispatch technicians or company staff to the supplier to check, among other things, the status of production, and quality and sanitary conditions. The kind of actions taken depends on the specific product. For processed and prepared shrimp, the companies involved (importer, Japanese manufacturer, and supermarket chain) sign one contract, and the supermarket chain sets its own standards. The Japanese manufacturer, then sends technicians to the supplier's site to control the standards. For shell-on shrimp, the supermarket chains do not have quality control requirements, and do not provide technical assistance to the foreign supplier. The estimated cost for 1 technician to visit the supplier's site may be 500,000 yen (US\$4,200) for a 1-week visit and approximately 1 million yen (US\$8,400) for a 1-month visit. Almost all importers have overseas branches, and, on demand, they dispatch branch staff to the supplier.

⁷ The exchange rate used in the discussions is the 2002 end-of-the-year rate: 1US\$ = 119.37Yen; 1,000Yen = 8.377US\$.

Wholesalers pay much attention to sanitary issues and chemical residues. They usually carry out private sampling inspections on every import, and all these results are shown to the customers. In addition, traceability is required so the source of a problem can be determined in the case of an infraction.

Although a precise estimate of the cost of control for buyers throughout the chain is not possible, the total costs by the Japanese importers do not exceed 1 percent of total sales of shrimp (box 6).

Box 6. Costs of controlling safety and quality as a share of total sales for shrimp

An imported volume of 1,000 MT of shrimp per year is realistic for an importer. This volume represents a value of 1 billion yen. The costs for visiting and inspecting foreign suppliers is 1 million yen per month (labor costs, hotel costs, and travel costs). It is expected that three months per year will be required for visiting and inspecting the foreign suppliers. Thus, the estimated costs for inspection is 3 million yen per year.

The costs of 3 million yen are 0.3 percent of total sales. Assuming that there will be additional costs, the estimated cost of controlling safety and quality is less than 1 percent of total sales.

Source: Authors.

Infraction and rejection

If an infraction against public food safety standards of the Food Sanitation Law occurs, sales of the particular product is prohibited in Japan. The cargo must be shipped back or discarded. If this infraction is found in the sampling inspection as part of the import procedure, the product is reshipped at the shipper's expense. To deal with these risks, a marine insurance is available.

If a trading company imports the shrimp, and there is an infraction against the company-specific quality standards concluded between buyer and seller, the problem is solved primarily by negotiation and by lowering the price. If it is a supermarket chain that imports the shrimp and the quality standards described in the contract are not met, the products often are rejected. However, these cases are rare because the quality check in the supplier's production facility is always severe. Therefore, rejections due to infractions against the quality standards do not occur so often, and noncompliance with the quality standards is costly because prices will be lowered.

Changing Suppliers

Japanese buyers do not like to change their suppliers because they have invested in their relationships with them. Japanese companies often have invested in the plants (through foreign direct investments). Especially in the case of processed and prepared shrimp, buyers have visited the processing facility before purchasing from that supplier.

Intervention and cost of control: Nile Perch

Most of the Japanese buyers have longstanding business relations with the suppliers of Nile Perch from Kenya, Tanzania, and Uganda. The Japanese buyers have confidence in the suppliers, because the latter work according to HACCP standards and the EU hygiene directive (91/493/EEC). The suppliers have their own laboratories and always present inspection data of the export lots to the buyers. The biggest Japanese importer sends its staff 1 to 2 times per year to Africa to check the production locations in these 3 countries. The costs are estimated at 2–3 million yen (US\$16,800–25,100) annually.

Because Nile Perch is consumed after cooking, the regulations of the Food Sanitation Law do not require a sampling inspection on imports, but only an examination of the documents. However, since Nile Perch is a product from the tropics, all importers carry out private inspections for general bacteria count, Coliform organisms, *Vibrio Parahaemolyticus*, *Salmonella*, and *Staphylococcus*, on

every import. The costs are roughly 500,000 yen (US\$4,200) for each inspection. In these inspections, no major problem has happened so far, except for a few cases of the general bacteria count exceeding 100,000 per gram.

Toward the end of 1998, an item appeared on the internet that a pesticide that paralyzes fish was being used in Uganda. The EU set a temporary import ban on Uganda that was lifted in the first half of 1999. The Japanese importers acted quickly to carry out private inspections on every import of Ugandan Nile Perch to check for this pesticide. All inspections found that no such pesticide was present. Also, the Ugandan authorities issued certificates that there is no residue of such pesticide. The unease was resolved without any big damage to the demand, and Japan did not set an import ban.

Intervention and cost of control: Fruits and vegetables

The interventions for importing fruits and vegetables from developing countries consist of different actions. Often the Japanese buyers visit the exporting country before they begin to import the produce. They investigate the actual conditions of production and the transportation systems of the particular supplier and the particular country. If they find any problem, the products will not be bought.

Several interviewees indicated the costs involved. One retail chain reported that the inspection costs, including travel expenses, amount to 20–30 million yen (US\$168,000–US\$251,000) per year. The total sales amount of the imported vegetables and fruits that this company handled was approximately 3 billion yen (US\$25million) in 2002. Thus, for this retail chain, the inspection costs were at most 1 percent of total sales of fruits and vegetables. The buyers of another big retail chain indicated that they are always inspecting for residual pesticides and harmful insects when they import vegetables and fruits directly. The cost amounts to 30 million yen (US\$251,000) per year. In addition, the costs for these buyers to survey the food safety in the exporting countries is approximately 10 million yen (US\$84,000) per year. A trading company reports that the costs of the inspection for pesticide residues on frozen vegetables is approximately 200,000 yen (US\$1,680) per 1 marine container (approximately 20 tons), that is, US\$0.08 per kilogram. The executives of a Japanese trading company association reported that the cost of their members' own inspections of imported fruits and vegetables amounts to 30–40 million yen (US\$251,000–335,000) per year.

As for tracking and tracing and actual control in the supply chain, it is still not possible to trace imported and domestic produce completely back to the production source, except in a small number of cases.

Producers in developing countries require some time to be able to comply with the specific standards of Japanese buyers. According to the experiences of a company that imports frozen vegetables from China, a two-month education period was needed to make the factory workers understand the Japanese regulatory food safety standards. A longer education period is needed when the producers also have to comply with the original quality requirements of a specific Japanese retailer.

Infraction and rejection

Imports are rejected for not meeting regulatory safety standards, such as an excess of pesticide residues. Another reason for incidental rejections are quality issues, such as damage and deterioration. However, importers (trading companies and retailers) rarely reject imported fruits and vegetables. They have visited the exporting countries and examined the production areas and the quality of the fruits and vegetables before they begin to import. Therefore, problems leading to rejections hardly occur.

When a consignment is rejected because of noncompliance with regulatory standards, the exporters bear the costs for reshipment or abandonment. A frozen vegetables import company reported that the abandonment of frozen vegetables costs 20 yen (US\$0.17) per kg or more. The reshipment costs from 150,000–300,000 yen (US\$1,260–2,510) per container.

The two importers related to US-based multinationals have no experience rejecting imports, because the products are grown in the companies' own farms under their own quality control conditions. The other importers experienced incidental rejections of various products for pesticide residues exceeding the MRLs, such as blueberries, matsutake mushrooms (from China), frozen spinach (from China), frozen edamame (from China, April 2002). Some infractions are detected by the inspection in China before shipping, some by the monitoring inspection in the port of entry. Examples of incidental rejections due to quality issues were string beans and taros from China (1992–94) that were bruised and rotten, and pineapples from Taiwan that were too ripe (they were discarded and the costs covered by insurance).

Changing suppliers

Changing suppliers is costly for importers because they have invested in the production facilities of the supplying countries. Besides, they meet severe competition from other importers if a Japanese importer intends to start buying from a pre-existing production area.

The following are examples of instances in which importers did change their suppliers. In one case, the Japanese retail chain changed its importer (supplier in Japan, not the foreign exporter) because fungicide was detected. Another retail chain changed its source of matsutake mushrooms from China to North and South Korea because nails were found in some of the Chinese mushrooms.

Yet another retail chain decided to import mangoes from Thailand instead of the Philippines in 2000 because a new production area for mango was created in Thailand and the taste was better. A large frozen vegetables importer changed the source of frozen edamame from Taiwan to China due to the sharp increase of production costs in Taiwan. Moreover, the importer could easily find a new freezing factory because the number of factories in China increased. The Japanese subsidiary of a US-based multinational imports bananas, mangoes, pineapples, and asparagus from the farms that the holding company owns in the Philippines, so there is no need to change its suppliers.

Estimation of costs of control

Providing a total and precise estimate of the costs of control for buyers throughout the chain is not possible. Not all interviewees were willing to or could elaborate the costs. In fact, the idea of calculating the total costs of control was new to them. Interviewees gave incidental information and mentioned the costs of certain actions, which were mentioned in sections above. The estimation is that the total cost for a buyer to control safety and quality of foreign supply does not exceed 1 percent of the total sales of shrimp and does not exceed several percent of the total sales of fruits and vegetables.

Support by the public sector in Japan to developing countries

Japan's public support to developing countries is financed primarily by the Japanese Official Development Assistance (ODA) fund. In 2002 MHLW sent an instructor to Thailand to give lectures on food safety in cooperation with the Japan International Cooperation Agency (JICA). The ODA fund financed building a laboratory in Malaysia and training on inspection procedures. Every year, MHLW invites food inspectors from Africa, China, South America, and Vietnam to educate them about the inspection procedures and the handling of laboratory equipment based on good laboratory practice (GLP).

The Japan Frozen Food Inspection Cooperation, a public inspector authorized by MHLW and MAFF, occasionally sends inspection specialists to South Asian countries in connection with JICA projects. For example, in 2002 lectures on HACCP were held in Brunei to teach representatives from the fisheries industry.

JICA has a training center in Yokohama in which people from developing countries are invited to be trained to play an important role in the fisheries and agricultural industries in their countries. The Japanese Agricultural Standards Association is involved in training.

The Fisheries Agency, which is part of MAFF, supports developing countries in this ODA program. The Fisheries Agency assists the South Asian Fisheries Development Center, which has branch offices in the Association of Southeast Asian Nations (ASEAN) countries. They send professional experts to teach about food processing, fishing, biological research of fish resources and aquaculture to people in the ASEAN countries' fishery industry.

Another organization, the Overseas Fishery Cooperation Foundation (OFCF), also supports overseas fisheries industry projects with financing or technical training. The aim, however, is to support Japanese companies that promote projects in developing countries. OFCF support should not be considered as aid but as commercial cooperation.

7 Suggestions to Improve Suppliers' Compliance

The Japanese buyers provided several suggestions to enhance suppliers' compliance with food safety and quality requirements. They are presented below by product groups. The views expressed are presented here without assessment of their merit from a policy perspective.

Shrimp

Education and training

Consciousness about hygiene and food safety is not well developed in several supplying countries, especially in Asia. The lack of this awareness causes many of the trade problems, so heightening the awareness of producers, processors, and exporters is important. In practice, the managers and the foremen of shrimp processing facilities should be more conscious of sanitary issues and of the necessity that factory workers must know more about hygiene and the usage of antibiotics.

According to the Japanese buyers, quick and appropriate action by a government to strengthen education about food safety and hygiene is an important factor of success for the supplying countries. Support by the World Bank and other international donor agencies to education and training in these areas is essential. As a part of its bilateral assistance to developing countries, the Japanese government also tries to provide education and training about hygiene in these countries financed by the ODA fund, but the impacts of this assistance are unclear.

Efforts made in education and training should be sustained. Japanese importers related their experience of giving advice to laborers that was retained only temporarily.

Reinforcement of public inspection systems

The Japanese buyers recommended that the governments of the supplying countries should reinforce the public inspection facilities systems. To realize that, assistance from the World Bank and other international organizations or bilateral donors is needed.

Additional public inspection facilities also are needed in the supplying countries. A Japanese inspection organization provided an estimate to provide a medium-size public sector laboratory for an inspection center in a local port (table 15) This model laboratory is suitable for inspecting almost all food products, including shrimp and fishery products, fruits, vegetables, meat, dairy products, and drinks. Inspections can be carried out for almost all substances and items mentioned in Japan's Food Sanitation Law.⁸

The total costs for the building and equipment amount to approximately US\$770,000, and the yearly operating costs are estimated at approximately US\$210,000. A country would need several of such laboratories for each exporting port. In addition, a training school for the staff of these laboratories is needed. A teacher from abroad will cost approximately US\$125,000 (plus accommodation). According to the experiences of the above-mentioned inspection organization, it takes at least two years to master the entire curriculum for laboratory operations. Therefore, the expenditure will be US\$250,000 for two years per school.

⁸ The laboratory is operated by 10 people: 3 biologists, 5 chemists, and 2 administrators. The model laboratory can examine the following items. Microbiology: standard (aerobic) bacteria plate counts, coliform organisms, food poisoning bacteria (staphylococcus, salmonella, vibrio parahaemolytic), and antibiotics; physics and chemistry: pesticides (phosphorus type, chlorine type, nitrogenous type, pyrethroid type), chemically synthetic antimicrobials, food additives (food-preserving, sweetening, antioxidant), inorganic matter, and heavy metals.

Table 15. Cost estimate for a medium-sized laboratory

	<i>Yen</i>	<i>US\$</i>
Building and instruments		
Total costs of instruments	51,634,000	433,726
Building costs, 100 m ² (yen 400,000 per m ² /US\$3,400 per 100 m ²)	40,000,000	336,000
Subtotal		769,726
Operating costs, per year		
Supplies (such as chemicals), per year	18,000,000	151,200
Labor costs, 10 persons, 1 year (US\$500 per month per person)		60,000
Subtotal		211,200

Source: A Japanese private inspection organization.

Notes:

The costs of instruments and building are based on the prices in Japan. Consequently, the costs of transfer overseas are not included, and the building costs do not include the costs of land.

The exchange rate used was the 2003 first quarter rate: US\$1 = 119.02Yen; 1,000Yen = US\$8.402.

Reinforcement of private inspection facilities

Small-scale inspection laboratories also are required in the private sectors in the supplying countries. The number of inspection laboratories is insufficient, and instruments and materials, such as reagent and medium, are lacking. Some recently built processing plants have these inspection facilities, but, for many other suppliers, it is impossible to build them because of the costs. Most of these suppliers do not have enough funds for investments that do not bring direct profits to them. Therefore, government subsidies are deemed most effective to build more inspection facilities in the factories, for which financial support by the World Bank or other donors could be helpful.

It will not be necessary for the private laboratories to precisely measure the residues of antibiotics or other chemicals, but they should be able to detect their presence. The same can be said about microbiology. For example, if a private sector laboratory detects the presence of certain antibiotics or chemicals, then a public sector laboratory can be used to measure it precisely. Consequently, the required instruments in such private sector laboratories are fewer and the required costs are much less than for a public sector laboratory.

Rehabilitation of old processing facilities

Because quality problems occur more frequently in the products processed in old factories, their reconstruction is strongly required to improve the level of compliance. The system of government subsidies to rebuild shrimp factories to improve sanitary conditions seems to be effective in Thailand and Vietnam, but not in the other countries. Japanese buyers suggest that financial assistance from international donor agencies to these governments could enable them to provide the subsidies to improve the sanitary conditions of these factories.

Nile Perch

With regard to Nile Perch, no major infractions to regulatory and company-specific standards are observed. Japanese buyers have a high confidence in their suppliers in Kenya, Tanzania, and Uganda, who abide by the stringent standards of their EU customers. Japanese importers are anxious about two issues on which they think action is necessary. First, the water of Lake Victoria has already had problems with contamination by sewage, industrial waste water, and algal blooms, the latter causing deoxygenation of the water, which killed the fish (Seafood International 1997). Japanese buyers worry that, in the future, the fish itself will be contaminated with heavy metals and

chemicals. The possible contamination of the water also requires action because it may affect the health condition of the people in the surrounding countries.

Second, since 1997, over-fishing has been observed, and Japanese importers hear from suppliers about the decrease of Nile Perch resources in Lake Victoria. Japanese importers realize that Nile Perch is an important product for Kenya, Tanzania, and Uganda because their national incomes depend much on the exports of this fish. Therefore, a kind of catching control or fishing quota should be set up to protect the resource. Biological research is required to make the right assessment. Enforcement of these measures is considered the responsibility of all three governments. Financial support and technical assistance by the World Bank and other donor agencies will be needed to achieve this.

Fruits and vegetables

Standards and inspection methods

Most developing countries have hardly set any standards for pesticide residues. One buyer suggested that international organizations, such as the World Health Organization (WHO), should consider giving advice to these countries so that they can set their standards. Furthermore, they should be advised to disclose such standards to the public. Another retail chain suggested that international organizations should consider making efforts toward the establishment of international standards and the standardization of inspection methods.

Moreover, the World Bank and other organizations should provide financial support, so that food processing plants in developing countries can obtain qualifications such as HACCP and ISO to enhance their compliance with food sanitation requirements. Support is needed so that the companies in developing countries can practice food safety with low cost.

Setting up public inspection and treatment facilities

Setting up public organizations for the inspection of residual pesticides in developing countries is necessary. Facilities for fumigation, vapor heat, and other treatment against harmful pests also are needed.

Education and training

Support from the World Bank and other organizations is needed for education and training in developing countries. Universities should provide curricula for courses to educate people who can conduct inspections of residual pesticides. Practical short-term training in this field as well as education and training to enhance the technological capacities of public inspection organizations also are necessary,

Personnel exchange between exporting countries and importing countries, and technical instruction are practical ways to educate and train people in developing countries. Donor support to promote this is needed.

Infrastructure and transportation system

One retail chain considers it important to put in place infrastructure (roads and transportation facilities) in developing countries. In Thailand and Vietnam, there are cases in which the fruits and vegetables are grown in accordance with the buyers' standards but cannot be exported because of poor roads and lack of transportation facilities.

Market information

Developing countries need information about their export markets to learn about, among other topics, food safety standards, quality requirements and consumer attitudes. Buyers and governments together could consider providing market information.

8 Conclusions and Recommendations

Importance of food safety

Due to the numerous food-related incidents in the past years and their impact on Japanese consumers' attitude, food safety has become an important factor for governmental policy and company strategies. Traceability has become essential to prove the safety of the food products.

Public and private standards and requirements

Two sets of standards are relevant for suppliers to the Japanese market: (1) standards set by the Japanese government and (2) standards set by Japanese companies.

The Japanese government is responsible for the public sanitary and phytosanitary standards. A significant change is underway in regulating residues of pesticides, veterinary drugs, and food additives. Japan is adopting a system featuring a "positive list" with maximum limits for specific residues. If the residue exceeds the maximum limit, the product cannot be imported into Japan. It is expected that the maximum residue levels (MRLs) will be lowered, making it more difficult for suppliers to comply. If a product contains a chemical for which there is no specified MRL, the product cannot be imported into Japan.

With regard to the standards set by Japanese companies, the key players are the retailers. They have become more influential in the distribution system. Japanese companies tend to follow the regulatory standards set by the Japanese government for food sanitation. However, sometimes, supermarket chains have tighter safety requirements, and many supermarket chains set their own original and retailer-specific quality standards. The company standards relate primarily to issues that include uniformity of size, appearance, and freshness. These standards often differ per retailer.

Tracking and tracing rapidly is becoming a standard requirement for food import. For suppliers in developing countries, this requirement is especially hard to meet, and the price is not always sufficiently attractive for the efforts required.

To control the supply chain, staff of Japanese supermarket chains visit production sites in supplying countries and inspect the growing conditions of the products they purchase before the import season begins. They do this not only for the goods they import directly, but also for goods purchased through trading companies.

Buyers' priority standards and suppliers' compliance

All companies in the supply chain have a deep concern about food safety. "Compliance with food safety requirement" and "overall product quality" were ranked as the most important factors in the business relations of trading companies, manufacturers, wholesalers, and retailers with their suppliers.

Although there are still infractions concerning antibiotics and other small troubles with commercial standards, Thailand and Indonesia are considered the leading export countries of shrimp. China and Vietnam must improve on several requirements before they can reach a similar position. In India, many things still must be improved. As for fruits and vegetables, the position of China is most notable its way of tackling the problem of pesticide residues gets high esteem from Japanese importers. Expectations regarding China are high.

Japanese buyers see the culture of the company's management and staff as the most important company-specific criteria for compliance. The challenge is to have a strong will to achieve the goal and to meet the sanitation standards of developed countries. Many companies in developing countries tend to have the attitude of "evasion" rather than to try their best to meet the standards. The main country-specific factor is the assistance that public organizations provide to producers and exporters. Local public authorities can give financial support to suppliers to buy inspection equipment and provide training for the compliance with sanitation standards.

Recommendations

Japanese private companies provided many suggestions for public sector roles in capacity building to improve the compliance of supplying countries. It is important to note that many of the suggested actions will require public and private cooperation.

The following programs are recommended by the Japanese companies for capacity building:

Supply chain

- Implement tracking and tracing systems and supply chain management

Education and training in supplying countries

- Increase the level of education in general
- Increase awareness and strengthen education on food safety and hygiene
- Educate and train (potential) staff of inspection laboratories
- Make sustained efforts to ensure that education and advice to the suppliers have long-lasting impacts
- Increase management skills of factory foremen

Inspection systems in supplying countries

- Reinforce the inspection systems
- Increase the number of public inspection facilities in supplying countries
- Explain the importance of investing in private testing facilities to the suppliers
- Increase the number of small-scale private sector testing facilities, for example, in processing plants

Processing facilities in supplying countries

- Improve the sanitary conditions of older processing facilities
- Facilitate the obtention of HACCP and ISO qualifications by processing plants

Standards and inspection methods

- Assist developing countries to set standards for pesticide residue levels
- Enhance the adoption of international standards and the standardization of inspection methods and practices

Infrastructure in supplying countries

- Improve the infrastructure and transportation systems

Information on export markets

- Provide supplying countries with information about export markets

Especially for Nile Perch

- Protect existing resources by setting up fishing quotas or controlled catching
- Halt the contamination of Lake Victoria water.

Appendix 1. Imports of Shrimp, 1993-2002

Table A1.1 Volume of shrimp imports, 1993–2002 (MT)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Shrimp and prawns										
Frozen	300,489	302,975	292,910	288,763	267,247	238,906	247,314	246,627	245,047	248,868
- Peeled	81,094	66,907	65,317	66,817	73,892	58,833	69,265	74,449	64,015	n.a.
- Red	41,643	43,566	37,522	38,482	30,791	32,200	34,370	35,856	34,838	n.a.
- Peeled Tail-on	-	10,390	11,379	11,590	18,060	17,884	18,523	24,295	30,226	n.a.
- Shell-on	177,752	182,112	178,692	171,873	144,504	129,989	125,156	112,027	115,969	n.a.
Fry for culture & live	520	452	474	513						
Fry for culture	-	-	-	-	5	2	-	-	1	0
Live	-	-	-	-	377	364	492	600	577	406
Chilled	202	215	261	207	98	86	89	28	99	36
Dried or salted	1,195	1,742	1,515	1,727	2,128	2,349	2,207	2,711	1,704	1,875
Subtotal	302,406	305,384	295,160	291,209	269,855	241,708	250,101	249,967	247,428	251,185
Other shrimp, frozen	579	532	219	190	323	136	175	127	122	302
Other shrimp, live or chilled	1	1	8	27	13	23	98	38	6	3
Other shrimp, dried or salted	31	8	31	27	76	170	243	164	72	184
Subtotal	611	542	258	244	412	328	516	329	200	489
Total	303,017	305,926	295,418	291,453	270,267	242,036	250,617	250,296	247,628	251,674
Processed										
Chilled or frozen, after boiled	5,038	5,998	8,527	8,283	9,619	10,339	10,725	11,788	14,045	13,936
Smoked or salted, after boiled	421	375	477	430	503	377	592	509	515	468
Other shrimp, smoked, salted or dried, after boiled	80	35	111	63	63	14	69	133	92	77
Total	5,539	6,408	9,115	8,776	10,185	10,730	11,386	12,430	14,652	14,481
Prepared										
With rice, frozen after cooked	118	675	352	290	89	50	91	99	160	195
Prepared or preserved, mostly with breadcrumbs after boiled	4,558	6,562	9,538	12,367	12,751	13,984	16,160	20,009	23,980	27,678
Other shrimp, prepared or preserved	11	50	72	93	68	80	101	129	82	18
Total	4,687	7,287	9,962	12,750	12,908	14,114	16,352	20,237	24,222	27,891
Grand total	313,243	319,621	314,495	312,979	293,360	266,880	278,355	282,963	286,502	294,046

Source: Ryuken Research Institute, *Shrimp Data Book 2002*.

Table A1.2 Value of shrimp imports, 1993–2002 (million yen)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Shrimp and prawns										
Frozen	326,013	338,774	330,660	340,073	357,033	336,912	280,645	297,938	276,461	269,580
Fry for culture & alive	2,116	1,719	1,956	2,073	-	-	-	-	-	-
Fry for culture	-	-	-	-	16	13	-	-	-	2
Live	-	-	-	-	1,551	1,344	1,597	1,912	1,764	1,257
Chilled	289	280	401	377	152	188	177	63	180	78
Dried or salted	799	1,246	1,424	2,122	2,795	2,333	1,636	1,948	1,357	1,739
Subtotal	329,217	342,019	334,441	344,645	361,546	340,789	284,055	301,862	279,762	272,656
Other shrimp, frozen	586	541	197	210	311	208	248	188	176	474
Other shrimp, live or chilled	4	4	12	25	12	11	30	15	4	6
Other shrimp, dried or salted	17	4	13	14	71	129	114	79	31	132
Subtotal	607	548	222	249	393	347	391	283	211	612
Total	329,824	342,568	334,663	344,893	361,939	341,136	284,445	302,144	279,973	273,268
Processed										
Chilled or frozen, after boiled	8,100	9,743	14,614	15,555	19,697	22,226	18,191	19,630	22,941	21,152
Smoked or salted, after boiled	558	538	643	653	848	622	900	756	770	688
Other shrimp, smoked, salted, or dried, after boiled	91	25	104	50	45	22	41	81	49	35
Total	8,749	10,306	15,361	16,258	20,590	22,870	19,132	20,467	23,760	21,875
Prepared										
With rice, frozen after cooked	89	339	177	174	57	54	58	66	87	127
Prepared or preserved, mostly with breadcrumbs after boiled	4,854	6,680	9,259	12,919	14,276	16,319	15,332	18,894	22,324	25,082
Other shrimp, prepared or preserved	9	65	82	153	102	115	84	135	109	22
Total	4,952	7,081	9,518	13,246	14,435	16,488	15,474	19,095	22,520	25,231
Grand total	343,525	359,955	359,542	374,397	396,964	380,494	319,051	341,706	326,253	320,374

Source: Ryuken Research Institute, *Shrimp Data Book 2002*.

Appendix 2. Shrimp Consumption and Household Expenditure

	Number of persons/ household	Consumption of shrimp/household (grams)	Yearly expenditure/household (1,000 yen)					% of food expenditure/household		
			All products (A)	All food (B)	Fish products (C)	Shrimp (D)	Gaishoku (E)	Gaishoku (E/B)	Shrimp (D/B)	Fish products (C/B)
1972	3.93		1,152	403	54		44	10.9		13.5
1973	3.91		1,345	459	61		52	11.2		13.2
1974	3.90		1,632	570	78		63	11.1		13.7
1975	3.89		1,896	650	90		74	11.3		13.9
1976	3.84		2,098	714	101		84	11.8		14.1
1977	3.82		2,286	758	109		93	12.3		14.3
1978	3.83		2,421	790	114		104	13.1		14.4
1979	3.83		2,576	816	117		114	14.0		14.3
1980	3.82	2,748	2,767	867	122	6.6	120	13.8	0.76	14.0
1981	3.79	2,750	2,880	894	125	6.9	124	13.9	0.77	13.9
1982	3.78	2,475	3,038	925	130	6.5	134	14.5	0.70	14.1
1983	3.76	2,438	3,114	936	129	6.6	139	14.9	0.70	13.8
1984	3.72	2,498	3,196	948	128	6.8	141	14.9	0.71	13.5
1985	3.71	2,553	3,277	958	130	7.0	144	15.1	0.73	13.6
1986	3.69	2,822	3,317	962	130	7.4	151	15.7	0.77	13.5
1987	3.67	3,035	3,371	954	130	7.6	153	16.1	0.80	13.7
1988	3.63	3,206	3,494	967	129	7.5	160	16.6	0.78	13.3
1989	3.61	3,446	3,592	987	130	7.8	162	16.4	0.80	13.2
1990	3.56	3,340	3,734	1,030	135	7.9	169	16.4	0.77	13.1
1991	3.57	3,344	3,925	1,076	140	8.1	176	16.3	0.76	13.0
1992	3.53	3,478	4,004	1,081	144	8.2	179	16.6	0.76	13.3
1993	3.49	3,560	4,023	1,069	137	7.8	178	16.7	0.73	12.8
1994	3.47	3,484	4,006	1,057	128	7.4	178	16.8	0.70	12.1
1995	3.42	3,326	3,949	1,025	126	6.9	176	17.2	0.68	12.3
1996	3.34	3,077	3,946	1,016	124	6.5	178	17.6	0.64	12.1
1997	3.34	2,738	4,000	1,033	124	6.2	184	17.8	0.60	12.0
1998	3.31	2,478	3,938	1,027	121	5.8	180	17.5	0.56	11.7
1999	3.31	2,474	3,876	1,006	115	5.4	178	17.7	0.54	11.4
2000	3.24	2,383	3,806	972	110	5.1	175	17.9	0.52	11.3
2001	3.22	2,335	3,704	943	106	4.9	167	17.7	0.52	11.2

Source: Ministry of Public Management, Home Affairs, Posts and Telecommunications data.

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