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Food Safety and Environmental Requirements
in Export Markets -
Friend or Foe
for Producers of Fruit and Vegetables in
Asian Developing Countries?



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Foreword

This book draws on recent UNCTAD research to analyse the new breed of food-safety and environmental requirements for horticultural exports in key markets. It assesses their impact on producers in six developing countries in Asia and outlines some pro-active adjustment strategies that could help maximize the benefits resulting from the new requirements while also minimizing the adjustment costs.

The production and export of fresh fruit and vegetables from developing countries offers a number of opportunities for economic and social development gains. The volume of global fresh fruit and vegetables trade has grown more than that of any other major category of agricultural products, and many developing countries are striving to expand their market shares. However, this is far from easy, because of the perishable nature of the produce and the capital- and skills-intensive nature of production. What is more, new requirements for accessing the global supply chains of large retailers often entail a transition to high-precision production methods.

When these requirements take local conditions and capacities into account, compliance with them can offer benefits, such as better management of agro-chemicals, enhanced occupational health and better food quality at the national level. But the new requirements also pose critical challenges for production and quality management and are particularly challenging for small farmers in developing countries, who often lack the skills and financial resources necessary to meet stringent standards and regulations.

The book uses case studies from Bangladesh, Cambodia, China, Philippines, Thailand and Viet Nam to explore such questions as: to what extent can small farmers profit from enhanced export opportunities, and how can their exports contribute to pro-poor development strategies? What should developing-country Governments do to support smallholder participation in global horticultural trade, and how can the donor community play a supportive role?

The book also addresses the relationship between regulatory and voluntary requirements in key horticultural markets, including the “transnationalization” of voluntary standards. It investigates the role played by private-sector standards in implementing regulatory requirements in export markets, and the use of public funds in meeting private supply-chain safety and quality requirements.

Ensuring that the new requirements do not prevent the poorest countries and smallest producers from successfully participating in international horticultural trade will require concerted action on the part of governments, businesses, standard-setting organizations and producers. It is therefore urgent to build a constructive dialogue among all affected stakeholders for the exchange of information and national experiences. This book is a timely contribution towards that goal.



Supachai Panitchpakdi
Secretary-General of UNCTAD

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Abbreviations

ACFS	National Bureau of Agricultural Commodity and Food Standards (Thailand)
ASEAN	Association of Southeast Asian Nations
BRAC	Bangladesh Rural Advancement Committee
CTF	Consultative Task Force
DFID	Department for International Development (United Kingdom)
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDA	Food and Drug Administration (United States)
FFV	fresh fruit and vegetables
GAP	good agricultural practices
GMO	genetically modified organism
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HACCP	hazard analysis and critical control points
IFPRI	International Food Policy Research Institute
IPM	integrated pest management
LDC	least developed country
MRL	maximum residue level
NGO	non-governmental organization
NFCS	national food control system
ppm	parts per million
R&D	research and development
S&D	special and differential (treatment)
SME	small and medium-sized enterprise
SMTQ	standards, metrology, testing and quality
SPS	sanitary and phytosanitary (also WTO SPS Agreement)
TBT	technical barrier to trade (also WTO TBT Agreement)
UNDP	United Nations Development Programme
WTO	World Trade Organization

Background and Structure of this Report

A number of studies (e.g. Lumpkin, Weinberger and Moore, 2005) indicate that horticulture provides many developing countries with opportunities for export diversification, poverty alleviation and rural employment (especially for women). Fruit and vegetables also play an important role in nutrition and human health. However, studies also point to the need to address some inherent risks of enhanced horticultural exports, such as health and environmental impacts (which may result from large-scale use of pesticides and water that are often associated with commercial production of horticultural crops), and other issues such as the implications for food security and the possible marginalization of smallholders.

Consumer demand in developed countries for year-round availability of foods and their greater diversity, as well as health considerations, have resulted in growing markets for off-season produce, exotic fruit and vegetables, and organic produce. A number of developing countries have taken advantage of these developments to increase their exports of fresh fruit and vegetables (FFV). In addition, the rise in processed food exports from developing countries has exceeded that from developed countries.

Diversification into horticultural production is attractive for many poor farmers in developing countries, as it can earn them higher incomes than other agricultural produce. Also, it can create employment, since it is generally more labour-intensive (Lumpkin, Weinberger and Moore, 2005), and it can contribute to rural growth and development.¹ The creation of new export-oriented FFV farms and processing firms may also boost employment and export opportunities, provided they do not displace smallholder production.

However, FFV are generally much more costly to produce per hectare than traditional crops, requiring most growers to seek credit to finance their production. Yet most small farmers in developing countries lack access to such credit. Thus their higher production costs, market volatility and perishability (which restricts the ability to store them to cope with price fluctuations) pose a greater risk to income as compared to other agricultural products. In addition, horticulture, particularly in hot, wet tropical environments is severely constrained by post-harvest losses, which reduce profits of farmers and processors.²

Some developments in world trade in horticultural products also raise concerns. The requirement to meet government regulations and private sector standards poses an enormous challenge to developing countries, in particular to their small producers. Fruit and vegetables belong to the class of food items most frequently affected by sanitary and phytosanitary (SPS) measures. Over 30 per cent of the specific trade concerns brought to the attention of the SPS Committee of the World Trade Organization (WTO) by WTO members during the period 2001-2005 referred to SPS measures as affecting trade in fruit and vegetables. Their

1 Lumpkin, Weinberger and Moore (2005) argue that fruit and vegetable producers usually integrate better into the marketplace than producers of staple crops, and that they therefore contribute to commercialization of the rural economy, which in turn promotes development. They cite a study (Weinberger and Genova, 2005) on Bangladesh, for instance, where farmers sell, on average, 96 per cent of their vegetables, but only 19 per cent of their cereal output.

2 Reducing post-harvest losses would make diversification into vegetable production less risky and more attractive for small-scale farmers. However, this requires the coordination of multiple factors, each of which entails complicated and often costly options. For example handling, packing, storage and transport can require costly equipment and extensive research into aspects such as controlled atmosphere for storage and quality assessment (Lumpkin, Weinberger and Moore, 2005).

effects on Asian developing countries (e.g. Japanese imports of frozen vegetables from China and okra from the Philippines), analysed in Part II of this publication, have already caused considerable trade friction.

The participation of small-scale producers in the global fruit and vegetable trade is affected by increasingly stringent food quality and safety requirements, for example, with regard to allowable pesticides and their maximum residue levels (MRLs) in the European Union (EU) and Japan. New legislation, such as the EU's Plant Protection Directive, (91/414/EEC) and recent amendments to Japan's Food Sanitation Law will result in lower (i.e. more stringent) MRLs and reduce the number of active substances that can be used in pesticides applied on crops exported to those markets. This may affect exports of tropical and other fruit and vegetables from developing countries, in particular those that are not part of the small group of bulk FFV. The growing use of traceability requirements also poses a challenge to producers and exporters in developing countries.

In addition to government regulations, private sector standards are playing an increasingly important role in the marketplace. Supermarkets are exerting a growing influence on the structure of the agro-food system and also directly or indirectly dictate the conditions under which small farms and firms can sell agro-food products. Quality and reliability demands of supermarkets often act as barriers to participation in the trade chain by small-scale producers and exporters. Evidence in this regard is hard to come by, but anecdotal information suggests that small-scale producers and processing firms run a very high risk of being pushed out of markets (Weinberger and Lumpkin, 2005; Vander Stichele, van der Wal and Oldenziel, 2006; Dolan and Humphrey, 2000; Jaffee, 2003a).

On the other hand, stricter environmental and health requirements that reflect national development priorities and conditions can also bring benefits to developing countries through the provision of safe and healthy foods and reduced environmental impacts. An important characteristic of many new standards and regulations is that although they are justified as a means of assuring consumers that the food they eat is safe, many requirements specifically necessitate environmentally beneficial practices to achieve this food safety goal (Nagel and Glassheim, 2005:8-9).³ Local regulations, standards and good agricultural practices (GAP) can assist developing countries in promoting safe and sustainable production systems and in supplying products for domestic, regional and international markets that meet the quality, safety and environmental standards of those markets.

This report examines the experiences of six Asian developing countries – Bangladesh, Cambodia, China, the Philippines, Thailand and Viet Nam – in addressing quality, health and environmental requirements in fruit and vegetable production and exports. Together, these countries account for almost 40 per cent of world production of fruit and vegetables.

China is the world's largest producer of fruit and vegetables, accounting for 36.5 per cent of world production in 2003. The Philippines, Thailand and Viet Nam are also among the world's 20 leading producers. Their share in world trade, however, is much lower, because a large share of production is consumed domestically. In 2004, these countries accounted for around 8.3 per cent of world exports, including intra-EU trade (COMTRADE). Japan is an important market for countries like China and the Philippines. In fact, more than half

³ EurepGAP, for instance, refers to itself as "The Global Partnership for Safe and Sustainable Agriculture".

of Japan's vegetable imports (in value terms) originate in China and more than a quarter of its fruit imports come from the Philippines (mainly bananas). However, the share of Asian developing countries in FFV imports of the EU and the United States is small, as much of their exports are regional. Bangladesh and Cambodia, two least developed countries (LDCs), have a small trade deficit in fruit and vegetables.

This report draws on country case studies and presentations made at national and regional workshops within the framework of the UNCTAD/FIELD project, Building Capacity for Improved Policy Making and Negotiation on Key Trade and Environment Issues, funded by the United Kingdom's Department for International Development (DFID) and complemented by research by the editors. It also draws on work carried out in some of the countries analysed in this report by UNCTAD's Consultative Task Force (CTF) on Environmental Requirements and Market Access for Developing Countries, under one of its sector-focused activities: Reflecting National Circumstances and Development Priorities in National Codes on Good Agricultural Practice that can be Benchmarked to EurepGAP. In addition, it refers to recent studies by other institutions (e.g. the Center for Research on Multinational Corporations in the Netherlands, the German bilateral aid agency, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), the South Centre, the United Nations Economic and Social Commission for Western Asia (ESCWA), the United States Agency for International Development (USAID) and the World Bank).

Parts I and III of this report provide a conceptual and empirical framework for the country case studies and draw lessons from them as well as other studies. They focus on:

- Relevant trends in trade in FFV;
- Trends in food safety and environmental requirements that could have a potential impact on market access and competitiveness for horticultural products from developing countries, including both public and private sector requirements;
- Regulatory and standard-setting processes; and
- Some implications for developing-country exporters and possible ways to address their concerns.

With regard to exporting countries, Part II of this report examines national experiences of selected Asian developing countries with food safety and environmental requirements in international markets, based on reports prepared for UNCTAD by national consultants or research teams in the Asian countries concerned.⁴ These reports focused mainly on:

- The level of awareness on market access/entry issues among producers/exporters, governments and other stakeholders;
- The effectiveness of information management;
- Current adjustment approaches; and
- Elements of a proactive approach and the need for institutional capacity building.

4 Information for these reports was collected through a series of questionnaire-based interviews with stakeholders at various levels, including government ministries, trade associations and export firms, farmers and NGOs. High Commissions and Embassies in key horticultural export markets were also consulted, as were secondary information sources, and discussions at conferences and seminars also provided useful information. The results of these studies and of other activities referred to in this report provided important inputs to the discussions at the Annual 2006 Session of UNCTAD's CTF and the Wrap-up Workshop of the UNCTAD project, Building Capacity for Improved Policy Making and Negotiation on Key Trade and Environment Issues, held in Geneva on 3-4 July 2006. See Report of the Workshop at: http://www.unctad.org/trade_env/meeting.asp?MeetingID=175

By addressing these issues with respect to a specific sector this report aims to provide inputs to the work of UNCTAD's CTF and that of the WTO Committee on Trade and Environment (CTE), in particular concerning:

- The possible implications of government and private sector environmental and health-related requirements for developing countries' exports;
- Communication and consultative processes between legislators and standard-setters in developed countries and exporters in developing countries;
- The exchange of national experiences on adjustment policies in different developing countries; and
- Lessons learned through technical assistance/capacity-building programmes.

A key issue discussed in this report is the role of GAP codes in assisting developing countries to promote the sustainable production of fruit and vegetables that are safe for consumption and meet sanitary, environmental and social requirements both in domestic and international markets. In this context, the report also makes some reference to the preliminary results of exploratory work on options for benchmarking national GAP codes in Asian developing countries to internationally accepted standards, such as EurepGAP (an issue currently being examined as a CTF project activity).

This report focuses largely on FFV and products involving only a minor level of processing (i.e. Harmonized System (HS) Chapters 7 and 8).⁵ It largely excludes processed fruit and vegetables, which are subject to other requirements. Although horticulture includes cut flowers and ornamental foliage (activities also covered in some of the country case studies), these product groups have been excluded from this report because they account for a very small share of the trade values for most of the countries analysed (Thailand could be considered an exception as flowers and ornamental foliage, i.e. HS Chapter 6, represented 10 per cent of its horticultural exports, in value terms, in 2003). The report does not deal with organic regulations and standards, as these have been extensively addressed in other UNCTAD publications (e.g. *UNCTAD Trade and Environment Review 2006*).

The report is divided into three parts. Part I (sections I to IV) analyses key characteristics and trends in world trade in fruit and vegetables. Section I examines trade flows, while section II provides a brief overview and analysis of food safety and environmental requirements in key developed-country markets, in particular the EU, Japan and the United States. The analysis looks at both government regulations and private sector requirements, in particular EurepGAP, and the relationship between them. Section III examines possible implications for developing countries and chapter IV discusses strategies to cope with hygiene, food safety and environmental requirements in international markets, including how to engage small producers in the supply chain and the role of GAPs. Part II (sections V to X) presents a synthesis of each of the country case studies carried out under the UNCTAD/FIELD project. Part III (section XI) draws some conclusions about the key issues examined in this report, and makes some recommendations for governments, the private sector and multilateral institutions. Finally, the statistical annex provides key data of relevance for the analyses in this report.

⁵ In the statistics presented in this report, FFV comprises HS Chapters 7 and 8 unless indicated otherwise. Trade information is generally based on COMTRADE, except for certain information on EU imports based on the EU Export Helpdesk. Some information presented in the country case studies is based on national statistics, as indicated.

PART I

TRENDS IN TRADE IN HORTICULTURAL PRODUCTS

A. TRADE FLOWS

1. Production

According to the Food and Agriculture Organization of the United Nations (FAO), world production of fruit and vegetables was 1.3 billion tons in 2003 (table 1). China was the largest producer, followed by India, the EU-15, the United States and Brazil. In China in particular, fruit and vegetable production has experienced formidable growth, from an average annual production of 67.5 million tons in 1979-1981 to 483.1 million tons in 2003, or 36.5 per cent of world production in 2003, up from 10.7 per cent in 1979-1981. The six Asian developing countries covered in this publication jointly accounted for almost 40 per cent of world FFV production (see also statistical annex, table A.1).

Table 1. Production of fruit and vegetables of leading producers, and share in world production, 1979-2003

	Production (thousand tons)					Share in world production (%)				
	1979-1981	1989-1991	1999-2001	2002	2003	1979-1981	1989-1991	1999-2001	2002	2003
World	629 169	812 602	1 206 745	1 293 490	1 322 454	100.00	100.00	100.00	100.00	100.00
China	67 472	150 198	387 902	461 213	483 103	10.72	18.48	32.14	35.66	36.53
India	56 532	76 109	118 804	125 212	127 802	8.99	9.37	9.84	9.68	9.66
EU-15	104 888	105 239	115 380	109 411	110 245	16.67	12.96	9.56	8.46	8.34
United States	51 868	56 348	68 131	68 516	66 169	8.24	6.93	5.65	5.30	5.00
Brazil	22 940	36 077	42 866	43 749	42 041	3.65	4.44	3.55	3.38	3.18

Source: FAO Statistical Yearbook 2004

Worldwide production of FFV has grown faster than that of cereal crops, although from a much lower base. Between 1960 and 2000, the area under horticultural crops worldwide more than doubled. In China, it has increased more than fivefold over the past 25 years, to about 20 per cent of the arable land area. The per capita consumption of FFV in China increased from 150 grams per day in 1969-1971 to 780 grams per day in 2000-2002 (annex table A.2). FAO data for Viet Nam also indicate an important increase in domestic consumption of FFV over the past 20 years.

2. International trade

Based on COMTRADE data for HS chapters 7 (vegetables) and 8 (fruit and nuts), world trade (including intra-EU trade) in FFV is estimated to have been \$78.2 billion in 2004;⁶ excluding intra-EU-15 trade, it is estimated to have been \$54.5 billion (table 3). COMTRADE data for HS chapter 20 (preparations of vegetables, fruit and nuts) indicate that world trade (imports) in processed products was \$27.7 billion in 2004, or \$17.7 billion if intra-EU trade is excluded.

The total volume of trade in fruit and vegetables increased fivefold between 1961 and 2001, from 24 million tons to 125 million tons (FAOSTAT data, 2004) – a faster growth than any other group of agricultural products (Vander Stichele, van der Wal and Oldenziel, 2006: 11).

⁶ This includes only countries for which data are available in COMTRADE.

World trade in FFV has also grown at a faster rate than production/consumption for a number of reasons. On the demand side, consumers are seeking a greater variety of fresh vegetables on a year-round basis. On the supply side, growers have responded to trends in consumption by offering different varieties and products. Moreover, new technologies in production, post-harvest handling, storage, transport and distribution have made it possible to lower costs, extend shelf-life, maintain quality, reduce transit time and ship over longer distances. Even so, it should be borne in mind that only a small proportion of total FFV production (some 5 per cent in recent years) is being internationally traded.

COMTRADE data reveal that the EU-15 (including intra-EU trade), the United States, Mexico, China, Turkey and Chile (in this order) are the world's largest FFV exporters (statistical annex, table A.3).

3. Developing-country exports

The participation of developing countries in world trade is much lower than their participation in world production, as the main producers (China, India and Brazil) have huge domestic markets.⁷ Although China is the world's largest producer, only a relatively small proportion of its production is exported (approximately 3 per cent in 2003), but its exports are increasing rapidly. In a number of developing countries, FFV exports (HS Chapters 7 and 8) have grown more rapidly than overall agricultural exports (HS Chapters 1 to 24). In China, they accounted for 15.6 per cent of the value of all of its agricultural exports in 2005, up from 13.2 per cent in 2000 (table A.4).

Globally, the importance of horticultural products in developing countries' total agricultural exports has increased significantly.⁸ In 1980-81, they accounted for 14.7 per cent of their food trade (in value terms), compared to 39.2 per cent for traditional tropical foods and beverages (such as coffee, cocoa, tea, sugar and spices). By 2000-01 horticulture's share of developing-country agricultural trade had risen to 21.5 per cent, while the share of traditional tropical products had fallen to 18.9 per cent. Within the horticultural products category, non-traditional exports such as sweet corn, fresh mushrooms, mangoes and single-strength orange juice have been growing much more rapidly than exports of traditional products or certain FFV preparations such as concentrated orange juice and canned pineapples (Humphrey, 2005).

Taking all developing countries together, in the fruit and nuts category, the main exports are: bananas, grapes citrus fruit, apples and pears, pistachios, other nuts (such as walnuts and hazelnuts), pineapples, avocados, melons and papayas. The main vegetables exported are tomatoes, onions, garlic, beans, manioc, asparagus and "other vegetables".

The principal FFV exporters among the developing countries are, in descending order, Mexico, China, Turkey, Chile, Ecuador, the Islamic Republic of Iran (largely pistachios), South Africa, Costa Rica, India, Argentina, Thailand, Morocco, the Philippines, Brazil and Colombia (annex table A.3). Together, these 15 countries accounted for about 87 per cent of all developing countries' FFV exports in 2003 (the eight largest exporters accounted for two thirds of the value of all developing- country FFV exports).

⁷ Some of the major Latin American exporters (Chile, Costa Rica and Ecuador) largely produce for export markets.

⁸ For a detailed analysis of their exports of tropical FFV, see Pay, 2005.

In the case of vegetables there is a high level of concentration, with only two countries (Mexico and China) accounting for almost 60 per cent of the value of developing country exports in 2003. The eight largest developing-country vegetable exporters (Mexico, China, Turkey, Thailand, India, Morocco, Argentina and Peru) accounted for 82 per cent of the total value of developing-country exports. However, at least three other developing countries for which data are available in COMTRADE (Kenya, Jordan and Syria) registered exports valued at over \$100 million.

In the case of fruit, exports are less concentrated, with the eight largest countries (Chile, Costa Rica, the Islamic Republic of Iran, the South Africa, Mexico, Ecuador, Turkey and China) accounting for 64 per cent of the total value of developing-country fruit exports. Some 20 developing countries for which data are available in COMTRADE registered exports of over \$100 million. No data are available in COMTRADE on exports from Viet Nam, but data on imports of other countries suggest that Viet Nam is a relatively important exporter of fruit and nuts, especially cashew nuts (around \$400 million per year in 2003-2004).

Total FFV exports of the countries analysed in this report amounted to \$6.1 billion in 2004-05 (COMTRADE). Of this total, 45 per cent went to the EU-15, Japan and the United States. For the six selected Asian developing countries as a group, Japan was the most important developed-country destination (25.3 per cent in value terms), followed by the EU-15, which imported 11.6 per cent (table 2a). The EU-15 was the most important developed-country market for both Bangladesh and Cambodia, whereas the United States is the largest developed-country market for Viet Nam (imports consist largely of coconuts and other nuts).

However, the markets of developing countries in the region are of similar importance (table 2b). Around 40 per cent (in value) of total FFV exports from the six selected countries goes to members of the Association of Southeast Asian Nations (ASEAN), China, Hong Kong (China), Taiwan Province of China and the Republic of Korea. The combined exports to these markets and to Japan represent at least 60 per cent the total FFV exports of the six Asian developing countries in value terms. Other relatively important markets include South Asia (in particular India and Pakistan) and West Asia (in particular the United Arab Emirates and Saudi Arabia). West Asia is the most important market for Bangladesh (Part II, section V).

The structure of exports of the Asian developing countries by country of destination has implications for the analysis presented throughout this report, of the relationship between food safety requirements in export markets and market access. Their major FFV exports are frozen vegetables, “other vegetables”, cashew nuts and other nuts, garlic, bananas, beans, apples, manioc (cassava), mushrooms, apples, frozen fruit, dried fruit, coconuts, pears, citrus fruit (in particular mandarins), mangoes and pineapples. In most of these, China is the largest exporter. The Philippines is the major exporter of bananas Thailand of manioc and Viet Nam of cashew nuts (see annex table A.5 for details).

4. Key developed-country markets

The EU-15 is the world’s largest importer of FFV, even if intra-EU trade is excluded (table 3). Its total imports from outside the EU-15 amounted to \$18.4 billion in 2004, representing 33.8 per cent of total world imports.

Table 2a. Selected Asian developing countries: exports of fruit and vegetables to key developed- country markets, by value (\$ thousand) and by share of each market in total exports (per cent), most recent data available (2004 or 2005)

	Year	Total of EU-15, Japan and the United States									
		World		EU-15		Japan		United States		Total	
		Value	Share	Value	Share	Value	Share	Value	Share	Value	Share
Bangladesh	2004	14 609	100	4 728	32.4	40	0.3	13	0.1	4 781	32.7
Cambodia	2004	1 062	100	535	50.4	3	0.3	201	18.9	739	69.6
China	2005	4 119 470	100	479 901	11.6	1 173 317	28.5	271 497	6.6	1 924 715	46.7
Philippines	2005	606 282	100	47 536	7.8	248 532	41.0	38 753	6.4	334 821	55.2
Thailand	2005	830 676	100	84 233	10.1	103 498	12.5	30 100	3.6	217 831	26.2
Viet Nam	2004	535 588	100	91 270	17.0	20 605	3.8	179 651	33.5	291 526	54.4
Total		6 107 687	100	622 487	11.6	1 545 995	25.3	520 215	25.3	2 774 413	45.4

Source: COMTRADE

Note: Since no export data are available for Viet Nam in COMTRADE, figures for Viet Nam are estimates based on import data of trading partners.

Table 2b. Selected Asian developing countries: exports of fruit and vegetables to key developing- country markets, by value (\$ thousand) and share of each market in total exports (per cent), most recent data available (2004 or 2005)

	Year	World						Key developing-country markets					
		World		ASEAN, China, Hong Kong (China) and Taiwan Province of China		South Asia		West Asia		Total			
		Value	Share	Value	Share	Value	Share	Value	Share	Value	Share		
Bangladesh	2004	14 609	100.0	629	4.3	522	3.6	8 606	58.9	9 757	66.8		
Cambodia	2004	1 062	100.0	320	30.1	0	0.0	0	0.0	320	30.1		
China	2005	4 119 470	100.0	1 320 984	32.1	128 074	3.1	71 102	1.7	1 520 160	36.9		
Philippines	2005	606 282	100.0	150 427	24.8	420	0.1	34 896	5.8	185 743	30.6		
Thailand	2005	830 676	100.0	556 325	67.0	14 420	1.7	12 251	1.5	582 996	70.2		
Viet Nam	2004	535 588	100.0	150 212	28.0	450	0.1	472	0.1	151 134	28.2		
Total		6 107 687	100.0	2 178 897	35.7	143 886	2.4	127 327	2.1	2 450 110	40.1		

Source: COMTRADE

Note: Since no export data are available for Viet Nam in COMTRADE, figures for Viet Nam are estimates based on import data of trading partners.

Table 3. Key import markets for fruit and vegetables, 2004

	(\$ billion)	(Per cent)
World ^a	54.5	100.0
EU-15 ^a	18.4	33.8
United States	10.5	19.2
Japan	4.3	7.8
Subtotal	33.2	60.8
Rest of the world	21.4	39.2

Source: COMTRADE

^a Excluding intra-EU trade

World imports of FFV (excluding intra-EU trade) from the six Asian developing countries analysed in this study amounted to \$6.5 billion, or 11.9 per cent of total world imports of FFV in 2004 (table 3). International trade in FFV has a strong regional bias. For example, the United States imports FFV largely from Latin America (about 65 per cent of its fresh vegetables come from Mexico), while Japan imports mainly from Asian developing countries. The six Asian developing countries participating in the UNCTAD/FIELD project accounted for 46.1 per cent of Japan's FFV imports (in value terms) in 2004. While the value of Japan's total imports of FFV is much lower than that of the EU-15 and the United States, it is the most important developed-country market for Asian developing countries, representing 30.3 per cent of world imports from the countries analysed in Part II of this report. The EU-15 imported less than \$1 billion from these six countries, which represents only 5 per cent of extra-EU-15 imports and only 14.9 per cent (in value terms) of world FFV imports from the six countries.

Table 4. Key markets for fruit and vegetables, from the world and from selected developing countries, 2004

Market	(\$ million)		Share of imports coming from the six selected Asian developing countries (%)	Structure of world imports from the six selected Asian developing countries, by market (%)
	From the world	From six selected Asian developing countries		
World ^a	54 536.9	6 498.7	11.9	100.0
EU-15 ^a	18 412.0	965.7	5.2	14.9
United States	10 495.1	541.8	5.2	8.3
Japan	4 271.0	1 967.8	46.1	30.3
Subtotal	33 178.1	3 475.3	10.5	53.5
Rest of the world	21 358.8	3 023.4	14.2	46.5

Source: COMTRADE

^a EU-15, excluding intra-EU trade

4.1 Japan

Japan has high and stable levels of consumption of fruit and vegetables (Wu Huang et al., 2004). However, consumption levels may decrease, as Japan's population growth has slowed down to near zero and may even start to decline before 2010. The value of its FFV imports in 2004 was \$4.3 billion (\$1.9 billion of fruit and \$2.3 billion of vegetables) (table 5). Its main fruit imports are bananas, citrus fruit (grapefruit, lemons and oranges), kiwis, nuts

(e.g. almonds, chestnuts and walnuts) and cherries. China is the largest source of Japan's vegetable imports (55.8 per cent in value terms in 2004), while the Philippines (together with the United States) is one of the major suppliers of its fruit, with a 25 per cent share (by value) of Japanese imports in 2004.

Table 5. Japan: Imports of fruit and vegetables, 2000-2005

	2000	2001	2002	2003	2004	2005
From the world (\$ billion)						
Fruit and vegetables	4.2	3.9	3.7	3.9	4.3	4.2
Vegetables (HS07)	2.0	2.0	1.7	1.8	1.9	1.9
Fruit and nuts (HS08)	2.2	2.0	2.0	2.1	2.3	2.3
From selected Asian developing countries (\$ million)						
Bangladesh	-	-	-	-	-	-
Cambodia	-	-	-	-	-	-
China	1284.3	1281.7	1070.1	1106.0	1232.6	1244.9
Philippines	481.2	430.0	507.4	531.3	616.1	638.7
Thailand	70.6	68.1	73.2	79.5	98.6	95.4
Viet Nam	10.0	12.9	14.3	14.5	20.6	22.9
Total	1846.1	1792.8	1664.9	1731.2	1967.8	2001.9

Source: COMTRADE, figures do not necessarily add up due to rounding.

Table 6. EU-15: imports of fruit and vegetables, 2000-2005 (\$ billion)

	2000	2001	2002	2003	2004	2005
Total imports						
Fruit and vegetables	26.0	27.7	29.9	37.2	42.6	43.8
Vegetables (HS07)	10.4	11.3	12.2	14.6	16.8	16.7
Fruit and nuts (HS08)	15.6	16.4	17.7	22.6	25.8	27.0
Intra-EU15 imports						
Fruit and vegetables	14.9	15.9	17.4	21.8	24.2	24.0
Vegetables	7.9	8.6	9.4	11.4	12.8	12.7
Fruit and nuts	7.0	7.3	8.0	10.3	11.4	11.3
EU15 imports from outside the EU						
Fruit and vegetables	11.1	11.8	12.4	15.4	18.4	19.8
Vegetables	2.5	2.7	2.8	3.1	4.0	4.0
Fruit and nuts	8.6	9.1	9.7	12.3	14.4	15.7

Source: COMTRADE, figures do not necessarily add up due to rounding.

4.2 The European Union (EU-15)

The EU market has been growing slowly for the past two decades. Between 1992 and 2002 production of vegetables in the EU increased by only 1.3 per cent (in volume terms), while that of fruit was stable. Consumption of FFV in the EU has tended to stabilize in terms of volume, but in value terms it is still growing due to increased demand for value-added (pre-packed, ready-to-cook) products and off-season products to satisfy year-round consumption of typically seasonal products (Labaste, 2005). EU imports of FFV are growing faster than EU production. In 2004, such imports amounted to a total of \$18.4 billion (\$4.4 billion worth of vegetables and \$14.4 billion of fruit, or 21.8 per cent and 78.2 per cent, respectively, of total EU-15 imports). The share of imports in total consumption is larger for fruit than for vegetables, due to the importance of bulk products such as bananas and citrus fruit, and off-season apples and pears. Among developing regions,

Latin America is the largest supplier of FFV (largely fruit), followed by Africa.⁹

The value of extra-EU-15 imports in the period 2000-2004 showed a larger increase (65.8 per cent) than intra-EU-15 imports (62.4 per cent), but the difference is small. This is due to the fruit sector, which showed a 67.4 per cent increase in extra-EU imports, compared to a 62.9 per cent increase in intra-EU imports. With regard to vegetables, extra-EU imports showed somewhat slower growth (60 per cent) than intra-EU imports (62.0 per cent).

The leading suppliers of fresh fruit from developing countries to EU markets are, in descending order of importance, South Africa, Costa Rica, Ecuador, Chile and Colombia (2005 imports, in value terms). Other important suppliers include Argentina, Brazil, India, Côte d'Ivoire and Panama. Morocco is the leading fresh vegetable exporter to the EU from amongst developing countries and other major suppliers in decreasing order of importance are China, Egypt, Kenya, Turkey, Peru, Argentina, Thailand and India (according to estimates derived from data provided by the European Commission's Export Helpdesk for Developing Countries).¹⁰

Table 7 shows EU-15 imports of fruit and vegetables from the Asian developing countries analysed in this report.

Table 7. EU-15: Imports of fruit and vegetables from selected Asian countries, 2000-2005

	2000	2001	2002	2003	2004	2005
From the world, outside the EU-15 (\$ billion)						
Fruit and vegetables	11.1	11.8	12.4	15.4	18.4	19.8
From selected Asian developing countries (\$ million)						
Bangladesh	7.6	7.8	7.6	11.4	12.7	13.1
Cambodia	-	-	-	1.1	2.0	-
China	276.7	284.3	332.7	407.6	514.4	609.9
Philippines	16.8	15.2	24.1	30.4	32.0	40.2
Thailand	323.5	260.3	172.6	210.6	213.4	122.6
Viet Nam	36.1	44.9	50.3	77.2	91.3	121.1
Total	660.7	612.6	587.3	738.3	865.8	907.0

Source: COMTRADE, figures do not necessarily add up due to rounding.

4.3 The United States

In the United States, fruit and vegetables as a group was the category with the largest per capita food consumption (by weight), but total consumption (in terms of weight) has risen very slowly and inconsistently. Fruit and vegetable consumption in 2001 was only 1.8 per cent higher than in 1992, and that of fruit actually fell slightly during this period (Lamb, Velez and Barclay, 2005). However, imports of fruit and vegetables as a share of total domestic consumption have increased significantly: for fruit, the share (by weight) increased from 14.1 per cent in 1981-1985 to 20.3 per cent in 1997-2000 and that of vegetables from 4.7 per cent to 8.8 per cent. The United States showed a negative trade balance of \$3 billion in 2004, largely in vegetables. The value of United States imports of FFV amounted to \$11.4 billion in 2005 (\$4.7 billion of vegetables and \$6.7 billion of fruit), up from \$7.7 billion in 2000 (table 8).

9 With regard to EU-25 imports from developing countries, in 2005 only 15 per cent (in value terms) came from Asia, whereas Latin American and Caribbean countries accounted for 52 per cent and Africa for 32 per cent (UNCTAD, 2006a, table A.7)

10 For more information on the Export Helpdesk, see Vareille, 2006.

Among the Asian developing countries analysed in this report, China (\$312.9 million in 2005) and Viet Nam (\$160.9 in 2005) are the largest suppliers of FFV to the US market. It should be noted, however, that imports from Viet Nam almost entirely consist of nuts (principally coconuts). Excluding nuts, US imports from Viet Nam are only about \$1.1 million. Imports from Bangladesh and Cambodia are negligible.

Table 8. United States: Imports of fruit and vegetables from the world and from selected Asian developing countries, 2000-2005

	2000	2001	2002	2003	2004	2005
From the world (\$ billion)						
Fruit and vegetables	7.7	7.9	8.5	9.5	10.5	11.4
Vegetables (HS07)	3.0	3.3	3.0	4.0	4.5	4.7
Fruit and nuts (HS08)	4.7	4.7	5.5	5.5	6.0	6.7
From selected Asian developing countries (\$ million)						
Bangladesh	-	-	-	0.1	0.2	0.5
Cambodia	-	-	-	0.2	0.3	0.3
China	91.5	106.7	157.1	183.1	267.5	312.9
Philippines	47.9	37.7	45.5	51.6	52.8	62.3
Thailand	28.5	29.2	30.1	34.5	41.3	41.1
Viet Nam	53.6	51.0	74.9	104.5	179.7	160.9
Total	221.6	224.6	307.7	373.9	541.8	578.1

Source: COMTRADE, figures do not necessarily add up due to rounding.

B. FOOD SAFETY AND ENVIRONMENTAL REQUIREMENTS

1. Terminology

It is useful to distinguish between two kinds of food safety and environmental requirements. Mandatory requirements formulated by national or local governments are here referred to as ‘regulations’, while voluntary requirements formulated by the private sector, NGOs or other organizations are referred to as ‘standards’. The latter category includes those voluntary requirements drawn up by National Standards Organizations and international bodies.

2. Trends

Developing countries’ exports of fruit and vegetables face multiple requirements in international as well as national markets. A number of factors have contributed to increasingly stringent food safety regulations and standards imposed by governments and the private sector, in particular:

- Recent food scares and scandals in developed countries;
- Demographic developments in developed countries (i.e. ageing of population, which gives rise to be more risk-averse and quality-conscious consumer behaviour);
- Risk minimization efforts by retailers; and
- More sophisticated detection and testing methods.

Food safety standards and regulations tend to cover multiple aspects. Apart from food safety, they cover issues such as plant and animal health, product quality, environmental protection and social welfare. Box 1 lists some issues related to non-animal food products that may be relevant for fresh and prepared fruit and vegetables.

Box 1. Pillars of food safety standards and regulations

Issue	Details
Food safety	MRLs Heavy metals Food additives Hygiene requirements Traceability Hazard analysis and critical control points (HACCP)
Plant health	Surveillance Plant quarantine Pest risk assessment Sanitation
Product quality	Grading Freshness Product composition Product cleanliness Labelling requirements Control of nutritional claims
Environment	Control of water and environmental contamination Recycling requirements Organic production requirements Protection of biodiversity Protection of endangered species
Social	Labour standards Fair trade standards Corporate social responsibility

Source: Adapted from Jaffee, 2005: 8

There are a number of important trends that characterize both governmental and private sector food safety, environmental and health requirements (reviewed in detail in UNCTAD, 2006a). They concern:

- Stronger emphasis on public health and consumer welfare in decisions by regulatory agencies, which leads to a focus on the entire food supply chain and on identifying where hazards can be controlled most effectively. This approach is referred to as “farm to table” or “farm to fork” analysis;
- Increasing stringency, complexity and multi-dimensionality (on the latter, see box 1);
- Growing importance of requirements transmitted to producers and exporters in developing countries through the supply chain;
- Growing importance of private sector standards and codes in the marketplace;
- An enhanced relationship between mandatory and voluntary requirements;
- Greater reliance on traceability and related certification; and
- Greater regulatory responsibility for the exporting country.

The rest of this section reviews key elements of government regulations and private sector standards as well as the relationship between them. Certain specific regulations and private-sector standards are analysed in some detail, though this section does not seek to present a full description of government regulations and private sector standards in each of the major markets. Section III then analyses possible trade and development implications for developing countries. Finally, Section IV examines possible adjustment strategies that can help developing countries cope with public and private sector requirements and, where possible, turn challenges into opportunities.

3. Government regulations

Government regulations applied to imports of FFV largely focus on plant protection, food safety, labelling and marketing requirements. Important changes are taking place, particularly in the area of food safety. This section focuses on several recent developments in the area of phytosanitary measures, food safety and pesticides, along with a brief description of marketing requirements.

3.1 Phytosanitary measures

Governments of almost all countries apply phytosanitary measures to prevent the introduction and spread of pests of plants and plant products that are new or not widely spread within their country. Certain countries, such as Japan and the United States apply restrictions on imports based on the country of origin. The United States applies a system of individual country listings of FFV approved for entry (see below). With the exception of a few products that may be imported from all countries, no other FFV can be imported. In Japan, the Plant Protection Law prohibits imports of certain plants or plant products from specific regions or countries, although imports may still be allowed under prescribed conditions of quarantine and after completion of specified procedures (see below). In the EU, however, FFV may, in principle, be imported without any restrictions regarding the country of origin.

In *Japan*, the Plant Protection Law distinguishes between plants and plant products which are: (a) banned indefinitely; and (b) subject to plant health inspection (all FFV which are not banned) or do not require plant health inspection (such as tea). Imports of a relatively

large number of FFV are banned from all countries examined in this report (i.e. Bangladesh, Cambodia, China, the Philippines, Thailand and Viet Nam). Examples are: avocados, papayas, mangoes, and various minor tropical fruit, including carambola, rambutan, longans, lychees, passion fruit, guavas, breadfruit, jackfruit and cherimoya (Pay, 2005:34, table 11). Imports of some vegetables are also banned from most countries, because of disease-related restrictions. Fresh cucumbers, eggplants, potatoes, and other vegetables are not imported in large quantities because of phytosanitary restrictions (Dyck and Ito, 2004).

However, 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 (Jonker, Ito and Fujishima, 2004). For example, mangoes from certain tropical areas that are disallowed under the Plant Protection Law may still enter Japan after receiving fumigation treatment (with chemicals) or “vapour heat treatment” (with steam) in the exporting country. Specific import conditions have also been agreed upon for lychees from China and mangoes from Thailand (Pay, 2005:34). According to Pay (2005:34), none of the bilateral phytosanitary quarantine conditions which Japan has negotiated to date have been notified to the WTO SPS Committee (nor are these conditions available from the Ministry of Agriculture’s website).

In the *EU*, plant health legislation is governed by Council Directive 2000/29/EC on Protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community, published in 2000. The Directive lists all harmful organisms, plants and plant products whose introduction into the EU is prohibited, and provides for restrictions on the introduction of certain plants and plant products into the EU. Certain fruits and vegetables, including cherimoyas, mangoes, passion fruit and guavas, must be accompanied by a phytosanitary certificate and are subject to plant health inspections upon arrival in the EU. Whereas in the United States no fruit or vegetable variety can be imported unless a Plant Risk Assessment has demonstrated that the importation does not represent an unacceptable risk to plant health in that country, no plant health risk analysis is required to import fruit and vegetables into the EU. Restrictive measures in the EU are implemented only in cases where a specific problem has been detected (Pay, 2005:30).

In the *United States*, plant products (including FFV) are regulated by the Plant Protection Act (PPA), which became law in June 2000 following 17 years of preparation. The United States Department of Agriculture’s Plant Health Inspection Service (APHIS) has the authority to prohibit or restrict the importation of plants and plant products into the country.

A relatively small numbers of FFV, such as coconut, peeled garlic cloves and mushrooms, can be imported into the United States from “all countries”. All other FFV can be imported only if they have been included in the list of approved FFV for the individual exporting country. Since there are no FFV from Bangladesh, Cambodia and Viet Nam approved for entry, the only FFV that may be imported from these countries are those that can be imported from “all countries” and the few FFV not covered by USDA regulations.

A (relatively small) number of other fruit and vegetables may be imported from China, the Philippines and Thailand. Examples are cassava, lychees and longan from China, avocados and pineapples from the Philippines (if imported through selected ports in the United States) and durian from the Philippines and Thailand. Some of these products may be imported only from certain parts of the exporting country (such as mangoes from the Philippines which

may be imported only from Guimaras Island). Certain inspection and treatment requirements apply to some products, such as inspection requirements for lychees and pears from China (see section on China in Part II of this report) and treatment requirements for mangoes from the Philippines (which must have received vapour heat treatment at an APHIS-approved facility in the Philippines).

3.2 Food safety regulations

Some key trends in government food safety regulations have been mentioned above. These include the adoption of an integrated approach to food safety, based on the “farm to table” or “farm to fork” approach to all stages of the food supply chain; traceability requirements; increased science-based risk assessment procedures carried out by independent advisory bodies along with the application, under certain conditions, of precautionary measures in case of unacceptable risk; greater responsibility for food safety given to private food operators and greater regulatory responsibility of exporting countries.

In *Japan*, food safety issues fall within the competence of the Ministry of Health, Labour and Welfare. The basic principles of Japan’s food safety policy are set out in the Food Safety Basic Law, which became effective in July 2003. It aims to ensure food safety “from farm to table”, and clarifies the responsibilities of national and local governments, food operators and consumers. The law stipulates that food business operators have primary responsibility for assuring food safety, and includes Supplementary Resolutions that call for the promotion of traceability by the government. Though these resolutions are non-binding, Pay (2005:35) suggests that they may well presage the direction of future legislation.

With regard to the *EU*, the White Paper on Food Safety (Commission of the European Communities, 2000) sets out a legislative action plan for a new, proactive food policy. Key elements in the new approach are the creation of a framework regulation, the establishment of an independent body to provide scientific advice to legislators, the development of specific food and feed safety legislation (including a major overhaul of the existing legislation on hygiene) and the creation of a framework for harmonized food controls. The “farm to fork” approach covers all sectors of the food and feed chain, with traceability as a basic requirement.

In January 2002, the EU adopted the framework regulation EC/178/2002, which laid down the general principles and requirements of EU food law. It also established the European Food Safety Authority and set procedures in matters of food safety. The regulation took account of the “precautionary principle” and set out general provisions for imposing traceability of food and feed, applicable from 1 January 2005. Prior to that, traceability had been required only for products of animal origin. The regulation established the legal basis for all feed and food controls, including import controls, as of 1 January 2006.

Articles 11 and 18 are key articles for imports from third countries. Article 11 stipulates that “food and feed imported into the Community for placing on the market within the Community shall comply with the relevant requirements of food law or conditions recognized by the Community to be at least equivalent thereto or, where a specific agreement exists between the Community and the exporting country, with requirements contained therein”.

Article 18, on traceability, stipulates that traceability shall be established at all stages of production, processing and distribution of food and any other substance intended to be

incorporated into food products. In a guidance document, the Commission explained that the traceability provisions of Regulation EC/178/2002 do not have an extra-territorial effect outside the EU. It also stipulated that the importer would be responsible for compliance with article 18 and that “since the EU importer shall be able to identify from whom the product was exported in the third country, the requirement of Article 18 and its objective is deemed to be satisfied.” The guidance document recognized, however, that “it is common practice among some EU food business operators to request trading partners to meet the traceability requirements and even beyond the ‘one step back-one step forward’ principle. However, it should be noted that such requests are part of the food business’s contractual arrangements and not of requirements established by the Regulation.”

In April 2004, the Commission of the European Communities announced the adoption by the EU Council of a series of key regulations for EU food safety policy (Jaffee, 2003a). These included:

- Regulation (EC) No 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure verification of compliance with feed and food law;
- A package of five hygiene regulations which consolidates previous hygiene regulations; and
- A regulation on feed hygiene.

The first two elements are relevant to this study and are described below.

The “hygiene package” aims to merge, harmonize and simplify very detailed and complex hygiene requirements currently scattered over 17 directives. The overall aim is to create a single hygiene regime covering food and food operators in all sectors, together with effective instruments to manage food safety and any possible food crises throughout the food chain. Food producers will bear primary responsibility for the safety of food through the use of a hazard analysis and critical control points (HACCP) system. Certain food establishments will need to be registered or approved by the competent authorities. Such authorities should have control systems in place for verification of compliance with food laws in general and with food hygiene in particular.

The most relevant regulation for this report is the European Parliament and Council Regulation 852/2004 relating to the hygiene of foodstuffs, which entered into force on 1 January 2006. It deals with issues such as general requirements for primary production, technical requirements, HACCP for food handling and processing, registration/approval of food businesses and national guidelines for good practice. Detailed measures specified under this regulation resemble a combination of private sector standards, such as EurepGAP and the British Retail Consortium Technical Standard, but they are mandatory – not voluntary – requirements (Graffham, 2005).

Food safety legislation shifts part of the responsibility for controlling food safety to the authorities of the exporting country as a condition of entry into developed-country markets (Caswell, 2003). In the EU, under Regulation (EC) No 882/2004 on official controls performed to ensure the verification of compliance with feed and food law, developing countries exporting FFV and other food products to the EU will need to provide information on the general organization and management of their national food control system (NFCS), including assurance of compliance or equivalence with the requirements of Community legislation.

FFV imported into the *United States* must comply with the health and safety requirements established under the Federal Food, Drug and Cosmetics Act of 1938 by the Center for Food Safety and Applied Nutrition (CFSAN) of the Food and Drug Administration. CFSAN's main responsibilities are to ensure the safety of food additives and biotechnology foods, address health risks associated with food borne chemical and biological contaminants, and ensure the proper labelling of foods (Pay, 2005).

As public authorities' concern over food safety and health has increased, requirements imposed upon both domestic and imported foodstuffs have been strengthened. Pay (2005) describes a number of initiatives, which are summarized here. In 1997, at the request of President Bill Clinton, a report entitled *Food Safety from Farm to Table: A National Food Safety Initiative* was prepared by the Department of Health and Human Services, the USDA and the EPA. It outlined recommendations to improve the safety of food consumed in the United States. In the same year, the President launched both the National Food Safety Initiative, a multi-agency effort intended to strengthen and improve food safety practices and policies, and the Produce and Import Safety Initiative, which aimed at upgrading domestic food safety standards and strengthening food safety systems in foreign countries. The former initiative included increased funding for FDA inspections and new risk control systems (e.g. HACCP), while the latter responded to a number of highly publicized outbreaks of food borne diseases linked to imported fruits and vegetables.

President Clinton followed this in 1998 by instructing Congress to pass food safety legislation giving the FDA greater authority over imported foods. This legislation was designed to ensure that the FDA halts imports of food products from foreign countries whose food safety systems do not provide the level of protection required for domestic United States products. Ways were also sought to improve the monitoring of agricultural and manufacturing practices abroad, and to assist foreign countries in improving these practices where necessary (Pay, 2005).

3.3 Adoption of the HACCP approach to assuring safety

Developed countries are increasingly requiring adoption of the hazard analysis and critical control point (HACCP) approach to assuring food safety. In the EU, the use of HACCP has become mandatory for all food categories (of both animal and non-animal origin). Regulation (EC) 853/2004 sets detailed HACCP-based requirements, but the use of HACCP is not mandatory in the case of primary production, which covers most of FFV. However, the use of HACCP is mandatory in packinghouses in the case of semi-processed and processed fruit and vegetables and products that are pre-packed in the exporting country (Chia-Hui Lee, 2006). Similarly, while many actors in the United States fruit and vegetables industry have voluntarily developed their own HACCP plans, thus far such plans have not been required by the Food and Drug Administration (FDA) for fresh fruit and vegetables, nor are they commonly requested by buyers.

3.4 Developments in pesticides regulations

In *Japan*, the amendment of the Food Sanitation Law (implemented since May 2006) will lead to significant changes in the way residues of plant protection products are regulated. Japan is also adopting a system featuring a "positive list" with MRLs for specific pesticides. If a residue exceeds the maximum limit, or if a product contains a residue of a pesticide for which there is no specified MRL, the product cannot be imported into Japan. In May

2005, the Ministry of Health, Labour and Welfare notified the final draft of thousands of new provisional MRLs for over 700 pesticides to the WTO. In November 2005, it announced a 6-month transition period before the new MRLs would be implemented. The legislation calls for a transition period, which the Ministry indicated would probably cover all of 2006. During the transition period, the previous informal system for handling pesticides that are not in the “positive list” will continue. New MRLs are likely to be stricter.

In the *EU*, Council Directive 91/414/EEC of 15 July 1991, concerning the placing of plant protection products on the market, sets out a Community-wide harmonized framework for authorization, use and control of plant protection products. A basic principle of the Directive is the development of a positive list of active substances in plant protection products that are acceptable for the environment, human and animal health. These substances are to be listed in the Annex to the Directive.

The harmonization process has two elements: (a) the review of active substances and (b) setting of harmonized EU-wide MRLs for crop/chemical combinations of substances included in the Annex.

With regard to the review of active substances, an ambitious process is under way which will require each applicant (e.g. a chemical company) to prove that a substance can be used safely in terms of human health, the environment, eco-toxicology and residues in the food chain, based on scientific assessments set out in the Directive. The review programme covers 834 active substances that had been approved for use in crop protection products within the EU prior to July 1993 (the “existing” active substances) and which would have to be reviewed by 2008, as well as new active substances. Progress has been slow (Commission of the European Communities, 2001). Community evaluations are very comprehensive and detailed. The data requirements for pesticides greatly exceed those required for any other class of substance including pharmaceuticals, food additives and commodity chemicals. A typical dossier contains about 50,000 pages and takes about four-and-a-half years to prepare. One reason is that all uses of all existing substances need to be assessed. The establishment of harmonized EU-wide MRLs for every crop/chemical combination within the framework of a series of EC directives is also a very ambitious process.

Currently, there are (a) substances that have been included in the annex after review; (b) substances that have been excluded from the annex; and (c) substances which have not yet been evaluated. Substances falling under (b) have to be withdrawn from the EU market. MRLs for prohibited substances and for products for which no specific MRL is established will be set by default at 0.01 mg/kg. Where an MRL or approval for use of an active substance for crops grown in Europe does not exist, applications for MRLs for imported produce grown outside the EU may result in the granting of “import tolerances” for those specific crop/chemical combinations.

In the *United States*, a pesticide cannot be legally used if it has not been registered with the United States Environmental Protection Agency (EPA). Pesticides applied to produce must have been registered for use on that particular crop. However, pesticide registration may be long and expensive (Lamb, Velez and Barclay, 2005). A process of re-registration for older agrochemicals was instituted more than a decade ago under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). In this process, many uses of well-known agrochemicals for minor crops (which would include several categories of FFV) would have been lost. While

a more streamlined and less expensive minor use (Integrated Research Project Nr. 4 or IR-4 Program) registration process was later established, many agrochemicals viewed as crucial for imported specialty products, in particular, still have not been re-registered for those uses. Recognizing the problems, especially with minor uses, in 2003 Congress passed the Pesticide Registration Improvement Act (PRIA), which became effective on 23 March 2004. Its goal is to create a more predictable evaluation process for affected pesticide decisions (Lamb, Velez and Barclay, 2005). Changes in registration could have led to problems of pesticide-related detention or rejection for some of the products of export interest to China and South-east Asian developing countries.

4. Marketing requirements

In *Japan*, FFV imports must be labelled and packaged in accordance with requirements established under both the Food Sanitation Law and the Standardized Quality Labeling System of the Japan Agricultural Standards Law.

Japan's Package Recycling Law requires private industry to pay for the recycling of paper and plastic packaging. For imported products, part of the recycling cost will be borne by importers, and Japanese importers may begin to take recycling costs into account when choosing the goods they import (USDA, 2006a).

Imports of FFV into the *EU* are checked for compliance with EU-harmonized marketing regulations. These requirements apply at all marketing stages and include criteria such as quality, size, labelling, packaging and presentation. (Information on EU marketing requirements established for specific fruit and vegetables can be found at: <http://www.useu.be/agri/Fruit-Veg.html>.) Detailed information can also be found through the Export Helpdesk (<http://export-help.cec.eu.int>).

In the *United States*, government regulations for grades of FFV, which are issued by the Fresh Products Branch of the USDA's Agricultural Marketing Service, provide the foundation for domestic commerce in many fresh produce items, including many but not all imports.

The Perishable Agricultural Commodities Act (PACA), as amended, also provides process requirements with respect to quality and condition. Administered by the USDA, PACA fosters good trading practices in the marketing of fresh and frozen fruit and vegetables in inter-state and foreign commerce.

5. Private sector requirements

In addition to government regulations, private-sector standards are playing an increasingly important role in the marketplace. Many supermarket chains have formulated their own standards, either as individual chains or on an industry-wide basis (e.g. by the European supermarket industry). In order to supply goods to developed-country retailers, producers and exporters now have to comply with a range of private protocols based on a combination of international and national regulations (e.g. for pesticides), food safety standards, logistical requirements and process documentation. These protocols apply to all suppliers, regardless of their origin or that of their product.

Private standards can be broken down into two categories: collective standards (e.g. EurepGAP) and retailers' specific standards (e.g. Tesco's Nature's Choice). Standards can

be either pre-farm gate or post-farm gate (box 2).¹¹ For example, EurepGAP is a collective standard at the pre-farm-gate level developed by a coalition of retailers. Also of note is the Global Food Safety Initiative.

Box 2. Selected private sector standards and codes in the marketplace

	Pre-farm gate	Post-farm gate	
		Food processing	Retail outlets and supermarkets
Collective standards	SQF 1000	SQF 2000	SQF 3000
	EurepGAP	BRC Global Standard	
		Dutch HACCP	
		International Food Standard	
Retailer-specific standards	Tesco (Nature’s Choice)		
	Marks & Spencer (Field-to-Fork)		
	Auchan (Filière Agriculture Raisonnée)		
	Carrefour (Filière Qualité)		

Source: Adapted from Chia-Hui Lee, 2006 and Henson, 2006

The following are some of the most important standards affecting horticultural exports to the EU and the US:

- EurepGAP is a pre-farm-gate standard that covers the agricultural production process of the certified product, from pre-planting to harvest. The EurepGAP certification scheme is considered a supply-chain partnership of retailers, produce suppliers/growers and associate members from the agricultural input and service sectors (for more information see: www.eurep.org).
- BRC (British Retail Consortium): BRC developed Food Technical Standards to be used to evaluate manufacturers of retailers’ own-brand food products. It is a post-farm-gate standard.
- Nature’s Choice of Tesco (United Kingdom): Established by the supermarket chain, Tesco, this identifies key principles and practices for Tesco’s producers and suppliers of FFV in order to ensure that the production and produce handling systems are sustainable and environmentally responsible.¹²
- The Assured Produce scheme (United Kingdom): Founded by the country’s National Farmers’ Union in conjunction with seven multiple retailers, this initiative seeks to assure consumers that fresh produce is grown in an environmentally sensitive manner, in particular using reduced amounts of pesticides. The scheme currently covers 45 crops, for which it has developed specific protocols.
- Safe Quality Food 2000 (SQF 2000): Administered by the Food Marketing Institute (United States), it is recognized by the Global Food Safety Initiative, a retailer-driven initiative founded by the Food Business Forum. It provides a Code that specifies food safety and quality system requirements to be used for all sectors of the food

¹¹ As the product nature, production conditions and consumer requirements differ very much between the main stages of the production process, standards have been developed for each major stage, i.e. pre-farm gate, food processing and retailing.

¹² According to a senior official of Tesco, the company increasingly confines the use of the Nature’s Choice standard to the United Kingdom market. In markets outside that country, Tesco applies the EurepGAP requirements (Babbs, 2005).

industry. The objective is to supply food that is safe and meets quality and legislative requirements. The standard applies the concepts and principles of HACCP, good manufacturing practice (GMP), good hygiene practice (GHP) and GAP. It is used mainly by United States and Australian retailers. SQF 1000 is the standard for pre-farm gate and SQF 3000 for retail outlet levels.

In China and Japan, the situation with regard to private standards is somewhat different. Although there is currently little evidence of additional food safety and environmental requirements being imposed by Chinese retailers, three developments may result in private standards playing a more significant role in the future. First, the Chinese retail market is undergoing rapid modernization. The growth of retail models such as hypermarkets and chain stores, and the expansion of international retail corporations into the Chinese market may result in increasing demand for quality assurance and centralized supply management of imports. However, market reports suggest¹³ that in many cases the Chinese business environment is not conducive to the tightly controlled supplier relationships used by international retailers in other contexts, in which case stringent requirements would be far more difficult to enforce. Second, there are two top-down initiatives of the Ministry of Agriculture to implement good agricultural practices: pollution-free – also translated as “no harm” or “safe” – and green food standards. The pollution-free standard, introduced in 2002, requires that all products comply with MRLs for agricultural chemicals. The green food program was initiated in the 1990s with emphasis on improving safety and quality of exports, although most green food is now sold in the domestic market. The green food program is slightly more stringent than the pollution-free program. Third, the Chinese government adopted a law in 2006 that establishes a national framework for building a system that ensures the safety and monitoring of agricultural products.¹⁴

Since 2003, the Chinese Government has been developing a national GAP. After initial study by a multi-agency expert team, it was felt that ChinaGAP should be based on EurepGAP. The first draft ChinaGAP General Regulation was published in July 2005 and various ministries and the local governments of six major agricultural provinces have commented on the draft. Based on the feedback, the ChinaGAP General Regulations and Critical Control Points are being revised and the final edition was planned to be published before the end of 2006. The structure of the General Regulation was somewhat changed, but the content is very similar to the EurepGAP General Regulation. ChinaGAP envisages a two-step approach: a base level certificate, which assures product safety for the national market, and a premium level that is absolutely compatible with EurepGAP requirements and is destined for exports. The current plan of implementation of ChinaGAP foresees the following steps: first, setting up a communication and coordination mechanism among various agencies to assure coherence in ChinaGAP certification; second, holding trials in 7 provinces before extending the system nation-wide; third, the Government will consider and provide policy support for quality management and control; fourth, strengthening cooperation with EurepGAP and other relevant international organizations (Yang, 2005). It is likely that the development and implementation of ChinaGAP will contribute to greater market awareness of GAP standards within China. This may further encourage retailers

13 On international chains' continued reliance on local distributors for import supplies, see for example USDA (2006b: 6) and 'Wal-Mart to snap up community chain stores in China', available at: http://english.china.com/zh_cn/business/news/11021613/20061019/13684815.html

14 For more information see Calvin et.al. (2006: 17-21).

to set compliance with GAP standards as a condition for their suppliers, including those from overseas.

In Japan, although retailers do sometimes send inspectors overseas to ensure that production meets quality and safety standards, most retailers have so far relied upon stringent government regulation and testing rather than imposing their own standards (JETO 2005). This is partly due to the fact that the share of large retailers in total Japanese food sales is very low. Whereas in all Western European countries (with the exception of Italy and Greece) the top five supermarkets account for between 40 - 70 per cent of retail food sales (Henson, 2006:7), in Japan the top five retailers only account for 7 per cent of Japanese food sales (Enomoto, 2006). The situation of quality and food standards is however likely to change as retailers respond to consumer concerns, look for new tools of supply chain management, and reduce liability costs. For example, Aeon Group is one of Japan's largest retailers and has recently become a EurepGAP member. It is likely that Aeon Group and other large retailers will move towards requiring compliance with EurepGAP or JGAP (a private-sector standard currently undergoing the benchmarking process with EurepGAP).¹⁵

5.1 EurepGAP

With regard to private-sector standards, considerable attention is given in this publication to the EurepGAP protocol, largely because most of the information and analysis available is drawn from the preliminary results of country case studies carried out as part of a separate, but related, UNCTAD project (see Annex to Chapter III). The EurepGAP standard may have increasingly important implications for many Asian FFV exporters (even though the share of FFV exports going to the EU is relatively small), because its impact is not limited to exports destined for the European market. Both Japan and China, the current principal export destinations for Asian FFV, are developing national GAP systems that are modelled on the EurepGAP standard.

EurepGAP is a global scheme for good agricultural practices (GAP) at the farm level. It provides a framework that defines essential generic elements for developing and implementing best practices in the production of fruit and vegetables. EurepGAP also has several other normative codes on GAP, including for flowers and ornamentals, integrated farm assurance (i.e. livestock management), integrated aquaculture assurance and green coffee. Moreover, the standard provides guidelines for continuous improvement and development.

The EurepGAP standard was developed by EUREP, an association of European fresh produce retailers and importers. It principally concerns pesticides, chemical use and application, and the environmental impact of farming systems. EurepGAP has been created not only in response to the increasing stringency of mandatory regulations, such as EC regulations on MRLs for pesticides, but also as a response to pressures from NGOs and consumer groups over issues such as environmental impacts.

The standard is particularly challenging for small farmers in developing countries. First, it depends upon paper-based systems for monitoring both processes and product flows. Second, there are economies of scale in the adoption of such systems, particularly with regard to the cost of certification, initial investment in equipment and training requirements. Thus

¹⁵ Personal communication with Reiko Enomoto of Japan Good Agricultural Initiative (JGAI) Association.

EurepGAP tends to increase the obstacles to small-scale producer participation in export markets. For small farmers, the challenges of compliance mean that their access to export markets becomes increasingly dependent upon working with large farmers or processors/exporters.

Whereas the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) includes an obligation to apply the principles of “equivalency” and mutual recognition to public regulations, there is no such obligation for private standards. Nevertheless, EUREP is seeking to provide for flexible application of its principles to suit specific national conditions, and the standard allows for regional interpretation guidelines that are worked out by national technical working groups. Furthermore, the EurepGAP standard allows the benchmarking of national GAP systems.¹⁶ Garbutt and Coetzer point out, however, that “in order for a national standard to be formally recognized it must comply with *all* Control Points and Compliance Criteria (CPCC) as set out in the relevant EurepGAP standard” and that this is a rather “strict interpretation of equivalence” (Garbutt and Coetzer, 2005).

Some developing countries are making use of this opportunity: ChileGAP and Mexico Supreme-Quality GAP have already been recognised by FoodPLUS as equivalent to the EurepGAP standard for Fruit and Vegetables, and the Fresh Produce Exporters Association of Kenya (FPEAK) has formally submitted an application for benchmarking of Kenya GAP. In addition, other schemes are being developed (such as ChinaGAP or MalaysiaGAP) that may be benchmarked in the future.

According to the EurepGAP database¹⁷, by 31 December 2006 there were very few EurepGAP certified producers in the Asian countries analysed in this paper: 246 in China, 287 in Thailand, 11 in Viet Nam and none in the other countries (out of a total of 57,937 certified producers worldwide).¹⁸ This number was very small compared to that of certified producers in South and Central America.¹⁹ According to data for 2004, the certified area was also small: 199 ha in China and 376 ha in Thailand (out of a total of 724,247 ha worldwide).²⁰

6. Relationship between government regulations and private-sector standards

The relationship between these two types of requirements is rarely explicit and largely unexamined. However, the regulatory and standard-setting activities of governments and the private sector are mutually supportive in important respects. Each focuses on a separate aspect of risk management. Government regulations aim at *outcomes*: the characteristics of the finished product are specified, and producers and exporters are responsible for ensuring, by whatever means, that these requirements are met. Private sector standards, by contrast, focus on *processes*: requirements are set for the entire system of production and supply, with specific instructions on production methodologies and testing procedures (Chia-Hui Lee, 2006). This separation of objectives brings benefits to both government legislators and private sector standard setters, to the extent that the relationship between the two could be characterized as a “tacit alliance”.

16 For more information, see Garbutt and Coetzer, 2005.

17 EurepGAP, 2007 and FoodPLUS, personal communication.

18 Data for China, Thailand and worldwide growers correct as of 31 December 2006, and for Viet Nam as of 28 December 2006. These figures do not include approximately 10,000 benchmarked schemes.

19 The number of certified producers among countries is only comparable if data are weighted according to the export volume.

20 See EurepGAP certified area nearly doubled in first half of 2004, at: http://www.eurep.org/documents/infoletter/EUREPGAP_certification_status_half_2004.pdf.

Several authors (Graffham, Jaffee, Vander Stichele) argue that for governments, the benefits of this alliance primarily concern enforcement. Private sector standards are typically at least as stringent and broad in scope as mandatory regulations. Thus, if exporters meet the former, they are almost certain to be in compliance with the latter. The detailed monitoring and certification required by private sector standards could therefore benefit governments by shifting the burden of monitoring and testing from governments to producers and exporters. Rather than spending large amounts of money on extensive and costly testing of imports, governments can rely on the certification and assurance processes laid down by private sector bodies. In addition, private standards free governments from any need to interfere with overseas production processes. If an importing government sought to ensure high levels of compliance with its regulations through the detailed policing of production and supply methods, it would be accused of illegitimate extra-territorial interference. The process-oriented approach of private sector standards obviates any need for such supervision, and thus makes it possible for governments to conduct limited, inexpensive testing of import samples at the point of entry.

The dynamic between public and private requirements is further complicated by the influence that existing private standards have on government regulations. Government regulations that take account of existing private requirements (such as Chile, China, Mexico, and Malaysia in regards to the EurepGAP standard) may be seen as legitimizing them through supportive measures, direct reference or involvement in their development. However, governments may argue that this is necessary in order to “level the playing field” and thus ensure fair competition among businesses, or to provide a single comprehensive set of requirements and thus reduce the consumer confusion that often results from the coexistence of multiple private standards.

Standard setters in the private sector also benefit from this tacit alliance. As discussed in section III below, private standards shift risk-management costs from the standard-setting bodies, such as retailers, onto producers and exporters. Retailers generally argue that governments (through food safety and due diligence legislation) oblige them to respond in such a way. The costs are particularly hard to bear for small producers, who may therefore be forced out of the market, leading to a weakened capacity for poverty alleviation through export growth. In order to mitigate the impact of this development and help small producers in developing countries to comply with private standards, developed countries and international organizations are providing technical assistance. These projects seek to help developing countries’ exports meet private sector requirements through various measures that aim at building institutional, financial and technological capacities among their producers and exporters. Thus the high costs of compliance and compliance demonstration is borne by producers and, to some extent, by developed-country taxpayers. A few developing-country governments have recently also started providing some financial support for such certification.²¹

Undoubtedly such assistance meets certain genuine needs and is often beneficial to those receiving it. However, it may also have the effect of legitimizing and further strengthening the dominant position of globally active retailers. It is also important to note that some private standard setters are providing their suppliers with technical assistance in order to help them achieve compliance. Such efforts should be encouraged; in particular, the importance

21 In July 2005, the Government of Pakistan announced its fiscal policy for 2005-2006, which allows a 50 per cent subsidy on cost of EurepGAP certification, in addition to various other certificates, such as ISO 14000 and HACCP (Thiagarajan, Busch and Frahm, 2005:8).

of extending assistance to small-scale producers rather than a few large-scale, favoured suppliers ought to be emphasized.²²

A more optimistic view would be that private sector standards assist producers in complying with government regulations. Private standards are helpful because they set out specific measures that ensure compliance with mandatory regulations and provide verifiable means of demonstrating this compliance. Such standards can therefore function as a kind of “toolbox” for producers to use in complying with mandatory regulations. In addition, collective private standards can help reduce costs that arise when producers have to obtain multiple certifications to satisfy the different requirements of different retailers.²³ However, this toolbox can be extremely costly to use, in part because it generally aims higher and is wider in scope than government regulations alone. Therefore the incorporation of private sector standards into the government regulations of exporting countries (for example, in the design of national GAP codes) will push these costs onto producers who might not be able to bear them.²⁴

Private sector standards are not directly addressed by the WTO’s TBT and SPS Agreements: Article 13 of the SPS Agreement merely states that member governments “shall take such reasonable measures as may be available to them to ensure that non-governmental entities within their territories... comply with the relevant provisions of this agreement”. In June 2005, a number of developing countries argued in the SPS Committee that the EC had responsibility for ensuring that private standards such as EurepGAP were not unduly trade restrictive. The EC countered that it was not responsible unless the private sector organizations involved claimed that their standards were EC standards, and that enquiries should therefore be directed to private firms. The EC later reported that it had made the private standard-setting bodies aware of the concerns of developing countries and had asked them to take these concerns into account.

A first formal discussion of the SPS Committee on private standards took place at the end of February 2007.²⁵ Hopes for disciplining private standards through the WTO should however not be too high. By their very nature, private standards such as EurepGAP do not discriminate against imported products, i.e. they do not violate the national treatment and multi-favoured nation principles. Conversely, they might have some problems regarding transparency and equivalence issues.

The dim prospects for disciplining private standards through the WTO, combined with the de facto (commercial) mandatory nature of many private standards, necessitates a proactive approach on the part of developing countries. This should include pressing for greater assistance from private standard setters and developed-country governments in upgrading the capacities of their exporters to meet requirements, and improvements in transparency and consultations in both types of standard setting.²⁶

22 For more information see: Jensen, 2005: 27.

23 The EurepGAP standard, for instance, has harmonized purchasing requirements of individual retailers; it also ensures that mandatory requirements can be met at the regional levels as well as that of individual EU member countries.

24 On this subject, see the discussion of CTF activities on GAP codes in Part I, section IV of this report.

25 For further detail see: WTO (2007).

26 For more information, see UNCTAD, 2006b, chapter 1.

C. POSSIBLE IMPLICATIONS FOR TRADE AND DEVELOPMENT

Developing countries suffer from considerable constraints in meeting quality standards, SPS measures and private sector requirements due to weak institutions, lack of infrastructure, high compliance costs, lack of information and other factors.²⁷ Indeed, the new mandatory and voluntary requirements serve to reinforce other strengths and weaknesses at production unit and supply chain levels, in terms of technical or transport infrastructure (Jaffee, 2003b). While large producers and exporters of key commodities may be able to stay informed about new developments and meet new market requirements, small producers face particular problems. Compliance with new requirements may secure new or continued access to the supply chain and export markets. However, producers are seldom compensated through higher prices for the increased costs they incur from new management, production and certification processes.

1. Government regulations

Trends in government regulations in developed countries set out in the previous section may have important implications for developing countries. For example phytosanitary restrictions based on country of origin may create significant obstacles to exports from developing countries, in particular LDCs such as Bangladesh and Cambodia.

With regard to the United States, a study carried out for the World Bank argues that although the permit application process is simple and straightforward, achieving initial admissibility for a new product from a foreign country can be extremely time-consuming and sometimes costly (Lamb, Velez and Barclay, 2005). According to the same study, the USDA admits that the process of risk assessment, appraisal, initial determination, preparation of a proposed rule change, publication in the Federal Register, receipt and analysis of comments, and publication of the final rule requires at least 18 months, even when everything is in order and the risk is deemed acceptable. This results in thousands of permit requests in the queue and some applicants have reported waiting up to five years. Another study argues that the compilation of scientific data concerning the prevalence of pests and the effectiveness of risk mitigation measures necessary to carry out a pest risk assessment (PRA) may prove highly burdensome for developing countries with limited financial, technical and human resources. This may prevent certain developing countries from applying for a PRA, or significantly delay the finalization of a PRA (Pay, 2005:27).

Whatever the reason may be, United States imports of FFV from the six Asian developing countries analysed in this report are very low (\$541.8 million in 2004) and consist largely of coconuts and other nuts, dried fruit and vegetables and garlic. Imports from Bangladesh and Cambodia are negligible, whereas imports from Viet Nam consist almost exclusively of coconuts and other nuts (which may be imported from all countries).

²⁷ A recent World Bank report (Jaffee, 2005) lists the following management deficiencies:

- Weak regulatory systems related to the import, production and sale of pesticides
 - Lack of capacity to undertake pest-risk analyses
 - Weak controls related to plant pests and diseases at borders
 - Low capacity to implement quarantine measures and enforce pest-free areas
 - Limited farmer knowledge of alternative pest management approaches and appropriate use of pesticides
 - Limited application of HACCP principles by fresh vegetable packers/exporters (especially SMEs)
 - Limited or lack of systems for fresh produce traceability (especially among smallholders).
-

In Japan, the application of phytosanitary measures is very strict, requiring expensive protocols that farms in foreign regions, where a disease is known to exist, must follow in order to export to Japan. The protocols include onsite inspection by Japan's authorities. Paying for the required changes in farm practice and inspections adds considerably to the cost of imported fruit in Japan. In addition, procedures agreed to for one variety of a fruit or vegetable may not be recognized for other varieties, implying that separate testing and application procedures must be developed for each variety, adding to costs and delaying the beginning of trade in a given variety, sometimes for several years (Dyck and Ito, 2004).

Whether or not they can be attributed, at least in part, to stringent phytosanitary measures, COMTRADE data for Japan for 2003 and 2004 do not record any imports of FFV from Bangladesh or Cambodia, and imports from Viet Nam are very small.

With regard to sanitary measures, developments concerning pesticides regulations in the EU, Japan and the United States suggest that government regulations may de facto discriminate against developing countries. For example, since most fruit and vegetables exported by developing countries constitute so-called minor crops (that in many cases are not produced in the importing country), in the development of new regulations insufficient attention tends to be given to the implications for tropical producers. Developing countries can no longer use certain active substances in plant protection products that leave traces in crops exported to developed-country markets. In addition, they may face tougher MRLs for authorized substances. Since residual pesticides found in Chinese vegetables became a major problem in early 2002, more stringent measures were taken for both monitoring and inspection of such imports.-

With regard to Directive 91/414/EEC, Jaffee argues that given the high costs of preparing dossiers and financing the review process itself, major agrochemical companies have felt forced to re-examine their existing and prospective product portfolios and to only selectively defend existing active substances in accordance with commercial criteria. Therefore they are likely to have focused their efforts on active substances that have large markets and are used for major crops.²⁸ In the same vein, others have argued that in developing acceptable agrochemicals, manufacturers are unlikely to pay sufficient attention to the treatment of many kinds of fruit and vegetables, such as pineapples, mangoes, avocados and sweet potatoes, as their potential return on investment for trial work is insignificant (Hirst, 2001). The growers and the countries themselves generally do not have a mechanism for coordinating funding and commissioning the necessary trial work. As a result, MRLs for certain products may be set, by default, at the limit of determination (LOD), in the EU, for instance, at 0.01mg/kg. Pay concludes that growers in developing countries are likely to be forced to use a limited range of higher cost plant protection products owing to insufficient availability of alternative treatments (Pay, 2005: 33).

The issue has recently received considerable attention, for example in the context of exports of tropical fruit and vegetables exported to the EU market from ACP (African, Caribbean and Pacific) countries. Important work is being carried out, for example in the context of

²⁸ Producers in developing countries mostly use generic versions of agrochemicals for which the patents expired. This means that the original producers of those chemicals have little incentive to incur costs in collecting scientific data to get the chemical registered under Directive 91/414/EEC.

the COLEACP Pesticides Initiative Programme (PIP).²⁹ The PIP has been set up by the EU at the request of the ACP group of States, and is implemented by COLEACP. It has two overriding objectives: (a) to enable ACP companies to comply with European food safety and traceability requirements; and (b) to consolidate the position of small-scale producers in the ACP horticultural export sector. The programme aims to support participating enterprises, bringing them up to date on European legislative developments and helping them deal with practical matters, such as adaptation of their methods and the securing of the human and financial resources necessary to implement them.

With regard to the Japanese market, although much less information is available about the implications of the amendments to Japan's Food Sanitation Law, it also follows a "positive list" approach and may therefore have similar implications. Stringent MRLs undoubtedly also provide incentives for efficient application of pesticides, leading, beyond enhanced product quality, to cost savings and higher occupational safety.³⁰

Another development in food safety regulations is the greater responsibility given to the authorities in the exporting country to control food safety. For example, in accordance with Regulation (EC) No 882/2004, developing countries exporting FFV (and other food products) to the EU will need to provide information on the general organization and management of their national food control system (NFCS) and assurance of compliance or equivalence with the requirements of Community legislation.

This may place a burden on many developing countries, for example smaller countries and new entrants to global markets that have not previously been obliged to develop EU-compliant food safety systems. Low initial export volumes may weaken the case for developing such systems (Humphrey, 2005). It should be noted, however, that Article 50 of the regulation seeks to ensure that developing countries are able to comply through technical cooperation and consideration of a possible phased introduction of the requirements.

Some have expressed concern that Regulation (EC) No 882/2004 may also place new burdens on export industries in countries with weak NFCS by limiting their options to operate their own systems to satisfy buyers in the EU. However, whereas for foods of animal origin, the Commission establishes a positive list of countries and establishments that are allowed to export to the EU, for foods of non-animal origin, such as FFV, a positive list of countries and establishments is not required. Private business operators can decide if they want to source from certain third countries or establishments (based on the reports that the Commission receives and that are also available to the private sector).

Finally, exports may face market access problems for a number of other reasons, including with regard to product quality. In the case of the United States, the monthly import refusal reports issued by the Food and Drug Administration (FDA) give some indication of the problems that exporters face in meeting the requirements of the Federal Food, Drug, and Cosmetic Act. An examination of data for the fruit and vegetable industry groups shows a relatively high number of refusals of consignments from China, Thailand and Viet Nam.

²⁹ COLEACP is an inter-professional association of exporters, importers and other stakeholders in EU-ACP horticultural trade (<http://www.coleacp.org/>).

³⁰ According to an ESCAP study, inadequate information with regard to pesticide use led farmers in Lebanon to apply seven times more pesticides than the optimal requirement for greenhouse tomatoes production (ESCAP, 2005: 44).

2. Private sector requirements

Private sector standards are becoming increasingly significant for developing-country exports for two main reasons. First, they tend to be more stringent, more rigorously enforced and wider in scope than government regulations. Second, they are key to new or continued access to global supply chains. At the same time, there is concern that such requirements are not governed by any form of multilateral discipline, for example with regard to notification and consultations with potentially affected trading partners. One of the main reasons for the creation of the UNCTAD CTF is to provide a forum where key private sector standards can be discussed among a variety of stakeholders.

Private sector standards stipulate a range of quality, safety, logistical, environmental and (sometimes) social standards with which suppliers have to comply. Compliance has to be verifiable using testing, traceability and certification methodologies specified by the standard setter. This often requires suppliers to spend significant amounts of time and resources on implementing complex quality assurance systems and associated testing and certification methods. As a result, new requirements in the horticultural sector, and private sector standards in particular, tend to reinforce the existing strengths and weaknesses of competing producers and suppliers. Producers who rely on traditional modes of production, and who have little technical or financial capacity to comply with complex requirements, may therefore be marginalized or pushed out of the market.³¹ This applies both to countries (especially LDCs) and producers (especially smallholders).³²

Compliance with private sector standards is becoming an increasingly important requirement for participating in value chains. The oligopsonic nature of the FFV market means that it is extremely important to meet private-sector standards because, as there are only few buyers, producers have no other option but to comply. Between 1989 and 2004, the market share of the top 10 retailers in Western Europe approximately doubled, from less than 20 per cent to nearly 40 per cent. In the United States, the top four grocery retailers have 19.5 per cent of the retail market (Vander Stichele, van der Wal and Oldenziel, 2006: p. 48). As can be seen from figure 1, it is estimated that only around 110 buying desks of large retailers are responsible for about 85 per cent of total retail food sales in Western Europe, which gives them significant leverage over producers and suppliers (Fox and Vorley, 2004: 22). Furthermore, developing-country producers face a fundamental shift in the nature of supply relationships. Producers are increasingly unable to sell their products to wholesalers, as mergers and acquisitions bring the different functions of exporter, importer, wholesale trader and distributor under individual company control. Producers can still sell to traditional wholesalers or specialist discounters that look for on-the-spot deals from the cheapest available source, but the prices offered are likely to be significantly lower (Fox and Vorley, 2004: 34 and 40).

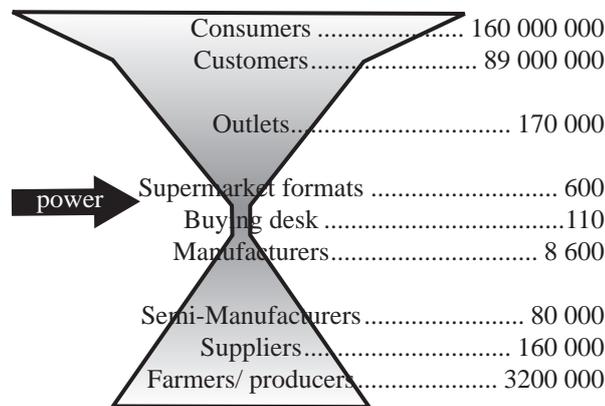
31 In Kenya, for example, smallholder participation in FFV export chains has rapidly declined over the years: smallholder production for horticultural exports fell from approximately 75 per cent in 1992 to about 18 per cent by 1998. One large company, Homegrown, is dominating exports (Dolan & Humphrey, 2000; and Vander Stichele, van der Wal and Oldenziel, 2006: chapter 2).

32 However, exports of tropical fruit and vegetables were already concentrated in a limited number of lower middle-income and upper middle-income countries before the recent rise in food safety and quality requirements in developed countries. LDCs have always been virtually excluded from international trade in tropical FFV (Pay, 2005: 46).

Producers are therefore forced to try and forge a direct relationship with a retailer or retail group. Successfully securing a supply contract will cut out middlemen from the supply chain and bring direct access to lucrative export markets, but this form of supply relationship also carries risks. Producers who fail to comply with the retailer's standards face being struck off that retailer's shortlist of preferential suppliers; they must therefore invest heavily in meeting those standards. As a result, suppliers may become strongly dependent on the standard setter: producers may become locked in to a supply chain through sunk costs of compliance and a lack of alternative buyers. In this way, private sector requirements can serve to increase retailers' control over the supply chain without incurring the expense or risks of ownership. Against this background, a number of authors (e.g. Thiagarajan, Busch and Frahm 2005: 3; and Humphrey, 2005: 38 and 48) suspect that many food safety standards seem to be born out of retailer strategies aimed at increasing market shares, relative to conventional wholesale markets, and reducing costs and prices.

Figure 1. The power of retailers through the supply chain bottleneck in Western Europe

(figures represent absolute numbers of producers, manufacturers, buyers, outlets and consumers)



Source: Grievink Cap Gemini, 2003.

With regard to the employment implications of increasingly stringent food safety regulations and private sector standards, a number of studies are available on the experiences of some African countries. Such experiences are mixed. In Senegal, for example, where extensive production has not replaced smallholder production, but simply filled an export niche, it can create employment in rural areas where jobs might be scarce. Conversely, if extensive export production replaces smallholder activities, as in Kenya for most of the key FFV exports, this is likely to lead to job losses, with undesirable side-effects such as problems relating to food security and rifts in the social fabric (Vander Stichele, van der Wal and Oldenzel, 2006:33 and chapter 3). However, McCulloch and Ota (2002) suggest that despite the obvious loss to smallholders, it quite likely that the country on the whole has gained, as the losses to smallholders have been offset by industry-wide growth in general and employment creation in large farms and processing facilities.

Henson (2006: 29) argues that “the trend towards collective private standards and the harmonization and mutual recognition of standards across global markets suggests that these might act to facilitate trade. Indeed, there is evidence that the tendency and speed towards harmonization of

private food safety and quality standards far exceeds similar efforts in public spheres”.³³

2.1 Value chain governance and industry concentration

The search for improved quality and reliability of supply tends to create certain governance structures in the private sector along the supply or value chain. Private sector requirements function as value chain governance tools: by specifying, communicating and enforcing compliance with key product and process parameters along the value chain, large buyers and retailers can benefit from control without ownership. Specific requirements on food safety, quality, and environmental or social issues substitute, to some extent, for direct monitoring and ownership by buyers. These requirements transfer the direct costs of monitoring and control from the buyers to the suppliers, who have to bear the costs of certification yet are rarely compensated through higher prices.³⁴

Buyers are further extending their control over the value chain by narrowing their supply channels to a few large-scale, trusted suppliers. Buyers that cut their number of suppliers can benefit from substantial savings in coordination costs and quality assurance. By forming a preferential arrangement with a single large-scale supplier, the retailer can, for example, gain computerized supply information and logistics management, and can more easily implement its own standards and requirements. Cutting the number of suppliers in this way may mean that retailers are better able to insist on improved environmental and social outcomes, but it also disadvantages smallholders in the competition for supply contracts. The search for improved quality and reliability of supply therefore tends to lead to value chain concentration and outsourcing. In fact, lead retailers are outsourcing much of the work relating to value chain organization and management.

Small-scale horticulture producers therefore face a combination of rising compliance costs from both government regulations and private standards, tightened control over the supply chain by private standard setters and a shift towards supply contracts with a small number of large-scale producers and with retailers. These trends could result in a significant degree of industry concentration. Producers who lack the capacity to make the transition from traditional to high precision production and quality assurance methods are likely to be particularly vulnerable. This has significant development implications, as those in greatest need of the increased incomes offered by horticultural exports, such as smallholder farmers in LDCs and elsewhere, are the most likely to be squeezed out of the market by the effects of new requirements. One impact of quality, safety and other requirements in the horticultural sector may therefore be a weakening of the link between a successful export sector and poverty reduction.

33 But Henson also contends that “while it is not clear *a priori* that a single private food safety and/or quality standard is the optimum, for example given that firms wish to differentiate their products and/or otherwise to supply to different standards, there is an inevitable trade-off between economies of scale and the need to reduce transaction costs, and the ability to cater to consumer demands for variety along a range of food safety and quality dimensions. More generally, the proliferation of private standards acts to reduce network economies and can enhance transaction costs on the part of both supply chain buyers and sellers. Thus, while the general tendency is likely to be the dominance of a small number of collective private food safety and/or quality standards that span international rather than national markets, it is not evident that a single standard will necessarily emerge. Indeed, as fast as collective private standards are evolving, leading food retailers are introducing their own proprietary standards in particular spheres of food safety and/or quality to retain scope for product differentiation” (Henson, 2006: 17).

34 For more information, see Humphrey, 2005: 22-25.

In this context, the food-safety, health and environmental requirements of large supermarkets should not be seen in isolation from other measures of effective supply-chain governance. These measures are not discussed in this monograph, but it should be noted that they significantly compound the difficult situation of small producers in supply chains and enhance industry concentration and vertical integration. FFV suppliers face the following requirements beyond quality standards:

- Ability to supply large volumes;
- Timely delivery of required quantity and quality; and
- Year-round supplies.

Other instruments of buyer power include:

- Listing fees;
- Paying for advertisements and sales actions with lower price;
- Rebates;
- Minus margins;
- Business conducted without contracts so that buyers can decide at the last minute whether to buy produce or not; and
- Late payment on provided produce (Vander Stichele, van der Wal and Oldenziel, 2006: 60-61).

2.2 Compliance costs

The costs of complying with both public regulations and private sector standards are significant at both the macroeconomic and firm level. Costs may involve either a one-off investment or a recurrent expense, and may be tangible or intangible (box 3).

Box 3. Costs of compliance with stringent food safety requirements

	Tangible costs	Intangible costs
Investment costs	Upgrading of laboratory infrastructure; Investments in farm-level facilities to comply with new requirements; Upgrading of processing facilities.	Reduced investment in new product development; Reduced investment in domestic food safety controls.
Recurrent costs	Costs of collection and analysis of laboratory tests; Additional procurement costs for buying “certified” raw materials; Additional overhead costs for implementing traceability, documentation of agrochemical use and HACCP.	Reduced flexibility in production processes; Fewer resources available for domestic food safety controls.

Source: Jaffee, 2005: 70.

Macroeconomic costs include training, development of legislation, physical infrastructure, testing and monitoring as well as quality control systems/infrastructure. Firm-level costs are incurred for changes in producing systems, infrastructure, training, quality management systems, consultancy services, alternative agrochemicals and certification costs.³⁵

Data on average costs of compliance have to be interpreted with extreme care since they vary tremendously among producers, sectors and requirements. Examining several different

³⁵ For more information, see UNCTAD, 2005.

requirements, Jaffee (2003b and 2005) estimates capital costs to be in the range of 0.5–5 per cent of the multi-year free-on-board (FOB) value, and recurrent costs to be 1–3 per cent of farmers’ annual sales. In the examples given by Jaffee, these costs are approximately the equivalent of exporters’ total net profits and represent some 60 per cent of the estimated profits of smallholder farmers. Graffham and Vorley estimate compliance costs in the order of 5 – 200 per cent of profit of smallholders (see table 9). Such high costs underline the importance of finding ways to reduce them, while enabling producers to simultaneously capitalize on the benefits and catalytic effects of new standards.

These costs are likely to result in a consolidation of the supply chain, as regions and producers with limited capacities in terms of finance, technology, logistics and infrastructure will find it difficult, if not impossible, to upgrade their production and supply systems to meet the new requirements. Smallholders in LDCs and elsewhere are particularly vulnerable to being pushed out of the market. This has significant implications for the link between horticultural exports and poverty reduction.

Table 9. Cost of compliance as percentage of annual profit margin of small-scale producers in Sub-Saharan Africa

Area (ha)	Support from donor subsidized marketing organizations		No support from marketing organizations	
	Capital cost (%)	Recurring cost (%)	Capital cost (%)	Recurring cost (%)
2.0-6.0	2-5	0.4-1	8-23	3-8
1.0-1.8	5-8	1-2	26-41	9-14
0.3-0.8	12-33	3-8	58-160	19-53

Source: Graffham and Vorley (2005)

D. ADJUSTMENT APPROACHES

Proactive adjustment involves a number of conceptual and strategic approaches, such as:

- A realistic analysis of the competitive position of specific crops, and related strengths and weaknesses;
- Building supply capacities to meet external requirements (e.g. infrastructure, institutions, including national or subregional standards, metrology, testing, and quality assurance (SMTQ) systems, awareness-raising and the development of management skills), taking into account the possibility that standards may turn out to be “moving targets”.
- Developing a blend of possible adjustment approaches, such as the promotion of national GAP programmes and EurepGAP certification (either directly or through benchmarking).
- Fully exploiting the potential of conventional (wholesale) markets overseas, but also domestic and regional markets.
- In some cases, exploring alternative markets, such as local and regional markets or niche markets for organic produce.
- Specific support and flanking measures for smallholders and their cooperatives. This may also reduce the communication costs of engaging smallholders in the supply chain (see below).
- Donor support for the design and implementation of the selected adjustment strategies.

1. Incorporating smallholders in the value chain

A key concern is how to address the risk of many smallgrowers being excluded from the value chain. Humphrey (2005) observes that the main issue is not whether small farmers can be integrated into marketing channels by meeting the challenges of public and private requirements, but how this can be done in a cost-effective manner. Outgrower schemes, for example, can address the MRL problem through buyers taking direct responsibility for critical standards- and regulations-related processes, such as pesticide spraying. But coordination costs involved in ensuring continuous compliance with process requirements may be high, depending on the buyer’s assessment of the level of supplier competence to perform the tasks required. As noted above, there may be an underlying tendency to source from large-scale growers that are easier to coordinate.

Producer associations offer another approach; they can link together a large number of small farmers with organizations or companies that have expertise in areas such as marketing, packaging and transportation. Such linking and partnering could be useful as a way of pooling expertise and taking advantage of economies of scale to meet logistical, testing and certification requirements. Producer associations could also build brand recognition and trusted relationships with large retailers, thus preventing them from being squeezed out of supply chains as industry structures become more concentrated. Last but not least, producer associations have a better credit standing and can therefore get easier access to bank financing for investment or commercial transactions.

However, setting up and maintaining this model is costly in terms of time and financial and human resources – resources which are not available to most smallholders in developing countries (Vander Stichele, van der Wal and Oldenziel, 2006: 29). As previously noted, the

prevailing trend in many developing countries is not towards such collaborative associations, but towards backward integration and large private corporations. Producer associations face the challenges of large initial set-up costs, and, thereafter, of competition from large corporate rivals for supply contracts and market share, which necessitates external support.

Garbutt and Coetzer (2005: 32) suggest that market mechanisms alone are unlikely to be sufficient to bear all the one-off costs of training and capital investment that are required to bring smallholders into high-value chains. A key concern in many developing countries is the lack of underpinning support for implementation of GAP, because of the erosion of official agricultural extension services.

The following additional efforts are therefore needed to incorporate smallholders into value chains:

- Development partners can play a crucial role in providing technical assistance. However, their support is often not well coordinated and not part of a holistic approach (for example for the development of local and regional markets or national GAP programmes). Several studies point to the fact that there is a risk that trade-related technical assistance to smallholder groups and similar attempts to link small farmers to supply chains will serve as a subsidy to offset permanently higher adjustment costs (in particular for monitoring). In such cases, the smallholder-based sourcing systems will break down as soon as the donors discontinue their support (Jensen, 2004: 27);
 - NGOs working in the area of agricultural and rural development can play a key role in enhancing the awareness and competence of small farmers. In Bangladesh, for example, the Bangladesh Rural Advancement Committee (BRAC) has been promoting horticultural production through the outgrower system (discussed in Part II, section V). In general, farmers in this programme are literate and properly trained, and every contract farmer is capable of maintaining proper documentation under its guidance. Normally, BRAC also supplies production inputs to the farmers, which facilitates monitoring of MRLs and traceability. BRAC obtained EurepGAP certification in November 2004;
 - Retailers can assist smallholders to secure a place in the supply chain through the provision of technical assistance specifically geared to their needs. For example, extensive farm assistance and supervision programmes implemented by European supermarkets have helped small farmers in Madagascar to meet complex requirements, resulting in improved income stability and better resource management (Minten, Randrianarison and Swinnen, 2005). Multinational companies have a base of in-house expertise in quality and safety management, for example, which can provide valuable assistance to local suppliers. By devoting resources to building the capacity of their suppliers, buyers can better ensure that the products they sell meet their own standards;
 - Donors (whether governments, NGOs, multilateral institutions or companies) can provide training, information and infrastructure specifically geared to smallholder needs, such as refrigerated storage and transport facilities that could be shared by smallholder associations or cooperatives; and
 - Small producers in developing countries may be integrated into value chains and export markets through affordable certification. Garbutt and Coetzer (2005) point out that EurepGAP has responded to these challenges by evaluating mechanisms for involving smallholders in certification systems, notably its group certification option. In addition, national GAP codes which reflect national circumstances and development priorities can be benchmarked to EurepGAP.
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The policy options outlined above are mainly confined to an approach that regards smallholders as part of internationally operating supply chains. Such policies should however be integrated within a multi-pronged strategy that promotes sustainable smallholder production in combination with achieving higher food safety. These strategies would also include the promotion of organic production and exports from small farmers, as well as providing support to revitalizing conventional wholesale domestic and regional markets whose prospects have often been overshadowed by the fast growing and more fashionable supermarkets.

2. Good agricultural practices (GAP)

World agriculture in the twenty-first century faces three main challenges (He, 2005):

- (a) To improve food security, rural livelihoods and income;
- (b) To satisfy the increasing and diversified demands for safe food and other products;
and
- (c) To conserve and protect natural resources.

GAPs have the potential to help producers meet these challenges. The FAO defines four pillars of GAP that apply to all scales of farming:

- (a) Efficient production of sufficient, safe and high quality food and non-food products;
- (b) Sustainable use of natural resources;
- (c) Viability of farming enterprises and contribution to sustainable livelihoods; and
- (d) Responsiveness to the cultural and social demands of society.

GAPs are a prerequisite for a food chain approach to food safety and quality, which also includes good hygiene practices (GHPs) and HACCP. In many parts of the world various stakeholders promote and use good agricultural practices to address diverse needs. Governments, international agencies and NGOs promote the use of sustainable agricultural methods, such as IPM, integrated nutrient management or conservation agriculture, to help mitigate environmental and societal risks in a range of farming systems and contribute to food security and sustainable livelihoods.

In the context of this report the key interest in GAPs derives from its potential to assist farmers and exporters of fruit and vegetables in developing countries in meeting various regulatory and private sector requirements in domestic and international markets.

FAO's experience³⁶ indicates that the implementation of GAP requires particular attention to the following:

- (a) Ensuring that the interests of smaller scale producers and domestic markets in developing countries are taken into account when defining GAP programmes, and that adequate attention is given to low-cost technologies and training;
- (b) Making sure that the growing number of public and private GAP initiatives for good agricultural practices does not burden farmers and governments with multiple codes and regulations;
- (c) Supporting the development of GAP codes and guidelines that foster real environmental and social benefits, as these dimensions are sometimes superficially addressed in GAP; and

³⁶ Personal communication with Anne Sophie Poisot and Pilar Santacoloma of the FAO secretariat.

- (d) Better coordination of government services (food safety, research institutes, extension services) in implementing GAP, in order to ensure that all dimensions are appropriately addressed.

These findings are confirmed by recent UNCTAD country case studies on challenges and opportunities arising from the EurepGAP standard for Malaysia, the Philippines, Thailand and Viet Nam in Asia, and Argentina, Brazil and Costa Rica in Latin America (see annex).

ANNEX

CTF PROJECT ON GAP CODES

Part of this publication draws on the preliminary results of work carried out under the CTF project, Reflecting National Circumstances and Development Priorities in National Codes on Good Agricultural Practice that can be Benchmarked to EurepGAP.

The country case studies on food quality requirements and market access for horticultural products in Asian developing countries discussed in this publication, along with similar studies carried out in Central America and Spanish-speaking Caribbean countries,³⁷ have made useful contributions to the activities of the CTF. The following outputs have been particularly relevant:

- A study of FoodPlus GmbH on the strategic concept of EurepGAP benchmarking and specific procedural requirements of the benchmarking process (see Garbutt and Coetzer, 2005);
- Case studies in four Asian developing countries (Malaysia, the Philippines, Thailand and Viet Nam) as well as three countries in Latin America (Argentina, Brazil and Costa Rica) and Africa (Ghana, Kenya and Uganda), which have attempted to review options for shaping national GAPs and related policies that duly reflect national conditions and development priorities;³⁸ and
- Discussions at national (Bangkok, November 2005) and subregional stakeholder workshops in South-East Asia (Manila, November 2005) and Latin America (Rio de Janeiro, December 2005) on challenges and opportunities arising from the EurepGAP standard (see http://www.unctad.org/trade_env/projectCTF.asp).

A preliminary assessment of the Asian project component shows several approaches to creating national GAPs and EurepGAP benchmarking:

- Several countries are engaged in a two-step process:
 - (i) Developing national GAP codes under government direction that aim at effectively implementing national food safety requirements;
 - (ii) Developing more stringent GAP codes at national and regional levels through public-private partnerships (ultimately aimed at being benchmarked to EurepGAP) that will facilitate access to export markets.

Malaysia and Thailand in particular have made considerable progress in this respect, and China signed a cooperation agreement with FoodPlus GmbH to obtain assistance in developing a national GAP code benchmarked to EurepGAP (top-down approach);

- As the characteristics of FFV production and trade differ among countries covered by the project in Asia, Latin America and Africa, GAP strategies are also likely to differ. Table 10 shows that whereas around 48 per cent of the FFV from the three countries in Latin America go to the markets of the EU-15, exports from the four Asian countries are largely intraregional – destined for Japan and other Asian developing countries – with only 11 per cent (in value terms) going to the market of the EU-15. In the case of Malaysia, three quarters of FFV exports (in value terms) go to other ASEAN markets, notably Indonesia and Singapore;
- Asian developing countries seem to have more time for the gradual development

37 For more information, see Vossenaar and Murillo, 2006.

38 The draft versions of these country case studies are accessible at the CTF website at: http://www.unctad.org/trade_env/projectCTF.asp

of national GAPs that would reflect their specific circumstances and development priorities. Therefore, in the Asian context, it seems logical for countries to adopt a step-by-step approach to attaining two of the key objectives of GAP programmes: (a) encouraging effective implementation of national food safety regulations; and (b) facilitating access to export markets. Such an approach could start with a scheme focusing on national food safety with major government involvement, which could then be used as a basis for the development of local, regional or even national “premium” GAPs that would mainly aim at facilitating access to key export markets. The experience of Thailand (Sardsud, 2005) is presented in Part II of this report;

- In the Latin American context, it would appear more urgent to promote GAP implementation with a view to facilitating access to export markets (rather than attempting a two-step process or two-layer design of a national and export quality assurance system as in Asia). Indeed in this region, EurepGAP certification is driven primarily by large exporters. In Costa Rica and Argentina, for example, large producers have directly sought EurepGAP certification;
- Brazil, which has a huge domestic market, has not opted for a step-wise approach, but has right away introduced an ambitious “integrated fruit production” (IFP) standard (in several respects more stringent than EurepGAP) that is supposed to apply to production for the national and international market simultaneously. It has been developed mainly in a top-down way by a range of government institutions and research centres, but with relatively little stakeholder input and engagement of producers. For the time being, the IFP standard is not yet widely recognized either at the national or international level. Unlike EurepGAP, IFP is a crop-specific rather than a generic standard, requiring multiple certifications for multi-crop producers, which is a costly exercise. Most producers seem yet to be convinced of the merits of IFP certification in enhancing competitiveness in international markets, and many of them opt instead for direct certification against EurepGAP; and
- Mutual acceptance and recognition of national GAP codes among developing countries in the same region may be an important issue, in particular for Asian developing countries because of the relative importance of regional South-South trade (see tables 2 and 9). Some have argued that benchmarking national GAP codes to EurepGAP could facilitate mutual acceptance of national GAP codes among Asian developing countries. In other developing regions, regional trade represents only a small portion of FFV exports. For example, in 2004 only 6.7 per cent of FFV exports from Latin America, in value terms, went to other countries in the region.

The regional workshops conducted in the context of the CTF project also highlighted the following issues and problems, including elements that differ from region to region:

- There is lack of a coherent and well-coordinated approach to developing national GAPs. Generally, a patchwork approach prevails consisting of many, generally uncoordinated, top-down government initiatives, bottom-up private-sector-driven or donor-driven GAP initiatives. A number of these are unsustainable or already faltering;
 - There may be differing views – and at times confusion - regarding the principal GAP objectives. In many cases it is not clear whether national GAPs are aimed at: (a) encouraging effective implementation of national food safety regulations; and/or (b) facilitating access to export markets. In countries which have not yet developed a national GAP scheme, it seems logical to adopt a step-wise process to achieving these two objectives, starting with a scheme focusing on national food safety with
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major government involvement, and then using this as the basis for developing local, regional or even national “premium” GAPs aimed mainly at facilitating access to key export markets. This approach seems particularly relevant in the context of Asian developing countries;

- The interpretation guidelines of EurepGAP, “customizing” the application of EurepGAP codes to allow for specific country conditions, have been rarely used in developing countries so far (with the exception of Kenya);
 - Discussions on GAP at national level lack a conceptual phase involving all key stakeholders. Once appropriate concepts for national GAPs have been developed, effective forms of public-private dialogue and partnerships need to be set up; and
 - Whatever approach is ultimately adopted, it is important that it assures predictability, transparency and consistency in the further development and application of the rules of the game for developing-country producers and foreign investors.
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Table 10. Selected developing countries' exports of FFV to key developed-country markets, 2004-2005

Exporter	Year	(\$ thousand)						Structure (per cent)							
		World	EU-15	United States	Japan	Rest of the world	World	EU-15	United States	Japan	Rest of the world				
All selected countries^a		5 122 891	1 745 580	1 050 011	3 819 555	1 945 345	100	34.1	20.5	7.5	38.0				
South-East Asia		2 149 378	2 32 072	249 591	373 011	1 294 704	100	10.8	11.6	17.4	60.2				
Malaysia	2004	176 832	9 033	1 087	376	166 336	100	5.1	0.6	0.2	94.1				
Philippines	2005	606 282	47 536	38 753	248 532	271 461	100	7.8	6.4	41.0	44.8				
Thailand	2005	830 676	84 233	30 100	103 498	612 485	100	10.1	3.6	12.5	73.8				
Viet Nam ^b	2005	535 588	91 279	179 651	20 605	244 062	100	17.1	33.5	3.8	45.6				
Latin America		2 704 004	1 308 907	790 317	4 738	600 042	100	48.4	29.2	0.2	22.2				
Argentina	2005	1 023 596	462 873	74 360	1 187	485 176	100	45.2	7.3	0.1	47.4				
Brazil	2005	692 423	415 080	184 558	3 508	89 277	100	59.9	26.7	0.5	12.9				
Costa Rica	2004	987 985	430 954	531 399	43	25 889	100	43.6	53.8	..	2.6				
Africa		269 361	204601	10 103	4 206	50 559	100	75.9	3.7	1.6	18.8				
Ghana	2004	52 975	35 573	1 402	5	15 995	100	67.2	2.6	..	30.2				
Kenya	2004	204 455	166 496	8 692	4 198	25 069	100	81.4	4.3	2.1	12.3				
Uganda	2005	12 079	2 532	9	3	9 535	100	21.0	0.6	0.2	78.9				

Source: WITS based on COMTRADE

^a Developing countries participating in the CTF project, Reflecting National Circumstances and Development Priorities in National Codes on Good Agricultural Practice that can be benchmarked to EurepGAP.

^b Estimated on the basis of import data of other countries.

PART II

ADJUSTMENT STRATEGIES IN DEVELOPING COUNTRIES

Part II provides a synthesis of country case studies (Bangladesh, Cambodia, China, the Philippines, Thailand and Viet Nam) carried out by national consultants or research institutes in six Asian developing countries in 2004. The full studies are available on the UNCTAD website at: http://www.unctad.org/trade_env/projectDFIDII.asp

E. BANGLADESH

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National Case Study on Environmental Requirements, Market Access/Entry and Export Competitiveness in the Horticulture Sector in Bangladesh

1. Introduction

In Bangladesh, fruit and vegetables are usually considered to be protective foods (i.e. foods that supply a natural defense against early ill-health and mortality) and high-value crops, and there is growing interest in increasing their production. However, at present they are cultivated on a very small area. Most of these crops are seasonal, with only a few produced throughout the year.

Horticultural exports remain very limited, and are directed mainly to ethnic markets in the United Kingdom and countries in the Middle East.³⁹ Marketing channels are largely controlled by middlemen and direct linkages between producers and exporters are very weak. Ethnic markets traditionally have not been very demanding in terms of quality, health and environmental requirements, but retailers and importers operating in these markets are beginning to ask for better quality products and packaging.

Bangladesh is not well prepared to address the new requirements in international markets. Existing mechanisms for gathering, processing and disseminating information are not working properly and there is hardly any coordination, follow-up and monitoring. By and large, stakeholders are mostly unaware, uninformed and unconcerned. However, some private foundations and NGOs are raising awareness among producers of quality requirements and providing them with training. They are also exploring non-traditional markets.

Bangladesh has good potential to develop its exports of horticultural produce, owing to its favourable soil and climate conditions and abundant supply of inexpensive labour, but multifaceted and comprehensive capacity building is needed to create awareness among stakeholders about quality and food safety issues and train them in meeting the corresponding requirements.

2. The agricultural sector in Bangladesh

Despite the gradual increase in the contributions of industry and services to GDP, agriculture still remains a key sector of the Bangladeshi economy, accounting for 22 per cent of GDP in 2002 and absorbing more than 60 per cent of the workforce. The agricultural sector has performed relatively well over the past decade due to increased productivity, some diversification into value-added products such as fruit, vegetables, poultry, dairy and fish, and near self-sufficiency in rice, the main cereal crop for the population. This has been achieved in spite of a large population (currently more than 130 million), scarcity of cultivable land (an average of 0.6 ha per household), very high population density and the regular occurrence of natural disasters (in particular floods). A large segment of the population (34 per cent) is still living below the poverty line, with most of the poor concentrated in the rural areas.

³⁹ Ethnic markets comprise consumers of a certain ethnic origin in a foreign country that tend to consume well-known food coming from their home countries.



Bangladesh's agricultural sector is in the process of transformation from subsistence farming to commercial farming, helped by considerable improvements over the last two decades in the road, communication and electricity infrastructure. Since the late 1980s, the Government has embarked upon a set of reforms for moving the economy towards a more market-oriented system. The National Agricultural Policy (NAP) of 1999 supports enhanced private sector participation in different sectors, such as seeds, fertilizers, agro-machinery and agribusiness.

The Interim Poverty Reduction Strategy Paper (I-PRSP) of 2002 also recognizes the private sector as the engine of economic growth. It views the rapid growth of agriculture as critical to poverty reduction, and access to modern inputs important for facilitating the development of agro-processing and agribusiness to help meet increasing demand for agricultural products.

3. Present status of horticultural crops

Fruit and vegetables are usually considered protective foods and high-value crops, and there is therefore a push for increasing their cultivation. The horticultural sector in Bangladesh has good potential that has not been fully exploited. Of the total of 14.2 million hectares of arable land in the country, only 6.7 per cent is used for horticultural crops (only 3.2 per cent if potatoes and spices are excluded).

Horticultural crops are grown for three specific purposes:

- Subsistence production in the homestead, the most important horticultural production unit in Bangladesh. Women play the major role in managing this form of production.
- Commercial production.
- Seed production. This used to be the exclusive domain of public sector agencies, but recently, private entrepreneurs have also become involved.

More than 60 different types of vegetables of indigenous and exotic origin are grown in Bangladesh. At present, the total area under vegetable cultivation is about 253,000 ha, of which 60 per cent is cultivated during the winter.

Both vegetable and fruit crops are seasonal. Vegetables are categorized as summer/rainy season vegetables (cultivated during the monsoon season from May to October), winter season vegetables (from November to April) and all-season vegetables. This can pose a problem, as many buyers require a regular supply throughout the year; but it is also an advantage, given that many fresh products are exported to the United Kingdom during that country's winter (when it is too cold to grow them locally) and others are routed to the Middle East during the summer there (when it is too hot to produce locally).

4. Existing export patterns

Bangladesh exports mainly fresh vegetables, and these exports grew rapidly in the period from 1992/93 to 1997/98, although from a small base. Exports reached \$32.5 million in 1997/98, but fell sharply after the long and devastating flood of October 1998. The value of vegetable exports now seems to have stabilized at around \$14 million–\$20 million per annum, a low level compared to the sector's potential. The principal export item is "other vegetables, fresh or chilled" (HS 070990), with an export value of \$13.1 million in 2003 and



\$5.1 million in 2004. Another relatively important item is globe artichokes (\$6.3 million in 2004). Exports of fruit and flowers remain very small.

The most important single export destination for fruit and vegetables from Bangladesh is the United Kingdom, which accounted for 28 per cent of the value of total FFV exports in 2002-2004. However, exports to the Middle Eastern region as a whole are greater than exports to the EU, as exports to European countries other than the UK are very limited. The principle markets in the Middle East are Saudi Arabia, the United Arab Emirates (UAE), Kuwait, Qatar, Bahrain and Oman (table 11). Exports target mainly the overseas ethnic markets. The Bangladesh Fruits, Vegetables and Allied Products Exporters' Association represents exporters of this sector. The Association has successfully lobbied the national airline for allocation of cargo space, but has made little organized effort to improve the quality of fresh produce.

Table 11. Bangladesh: exports of fruit and vegetables, 2003-2004 (\$ million)

Main export markets	2003	2004
World	13.7	14.6
Middle East	8.8	8.6
- Bahrain	0.8	1.0
- Kuwait	1.7	1.1
- Oman	0.2	0.6
- Saudi Arabia	3.0	2.5
- Qatar	0.8	1.4
- United Arab Emirates	1.8	1.9
European Union	4.3	4.7
- United Kingdom	4.0	4.2

Source: COMTRADE

A major feature of the production system is the almost total absence of any direct linkage between the exporters and the producers. Most of the export products are procured through middlemen. In general, orders from foreign buyers are passed on to middlemen who then procure the products from farmers and arrange for their transportation (by bus or truck) to Dhaka for re-grading and packaging shortly before shipment abroad. There are some exceptions where production is done by contract farmers, who deliver the produce to the exporter's packinghouse nearby where it is pre-cooled, sorted, graded, packed and transported to the airport for export. Efforts are made to maintain proper quality throughout the whole chain.

5. Existing environmental and health-related requirements in major export markets

5.1 European Union

As mentioned earlier, the United Kingdom is the leading export market within the EU for Bangladeshi fruit and vegetables. The following requirements have to be met in order to enter that market. (The main EU requirements for fruit and vegetables are outlined in chapter II above).



Plant health requirements: phytosanitary certificates

Some plants and plant produce are prohibited from entering the United Kingdom; others must be accompanied by a phytosanitary/plant health certificate issued by the plant health authority of the exporting country. This certificate is essentially a statement that the plants or plant produce have been officially inspected in the country of origin (or country of shipment), and that they comply with the EU and United Kingdom regulatory requirements for entering into the United Kingdom market, including being free from quarantine pests and diseases and substantially free from other organisms. Plant and plant materials imported from non-EU countries under phytosanitary certificates are inspected by the Plant Health and Seeds Inspectorate on or shortly after arrival in the United Kingdom, in order to confirm that they satisfy plant health requirement. For other plant and plant produce, a phytosanitary certificate is not legally mandated, and is generally not needed for commercial purposes. In Bangladesh, phytosanitary certificates are issued by the Plant Protection Wing of the Department of Agricultural Extension within the Ministry of Agriculture for all horticultural crops exported from the country.

Standards and regulations: certificate of conformity

Fruit and vegetables that are subject to EU marketing must obtain a recognized certificate of conformity before release for free circulation in the United Kingdom. The Horticultural Marketing Inspectorate (HMI) of the Department of Environment, Food and Rural Affairs (DEFRA) normally issues this certificate, following notification by the importer or importer's agent. Where the exporting country has met conditions laid down by the EU and is granted "approved status", the certificate can be issued by the exporting country as well. At present, nine exporting countries are approved to issue such certificates, but not Bangladesh. Most of the fresh produce exported from Bangladesh to the United Kingdom is not yet legally required to obtain a conformity certificate, although such certificates seem somewhat beneficial for commercial purposes.

Food Safety

In the United Kingdom, imported food is subject to general safety legislation, which is the responsibility of the Food Standards Agency (FSA). That agency is also responsible for food labelling regulations, which apply to processed fruit and vegetables, but not to fresh produce. As mentioned in section II above, recent EU regulations on SPS measures require fresh products coming from abroad to comply with stricter MRL and traceability norms for accessing the EU markets. Regulations came into force from 1 January 2005 and 1 January 2006 respectively. Most exporters in Bangladesh appear to be completely unaware of these requirements and are ill-prepared to meet them, except for the Bangladesh Rural Advancement Committee (BRAC, see below).

EurepGAP

As exports from Bangladesh are often bought by specialist food retailers serving South Asian communities overseas, EurepGAP has so far not posed a major problem for Bangladeshi exporters. However, if export growth is to continue, EurepGAP requirements may pose a significant challenge for Bangladesh in the years ahead. The country's preparedness for complying with this voluntary standard is therefore becoming increasingly important.



5.2 The Middle East

In the Middle East, Saudi Arabia is the largest export market for Bangladeshi horticultural produce, presently contributing more than 20 per cent of the total export earnings of the sector. Fruit and vegetables exported to that country are required to have a mandatory plant health certificate (phytosanitary certificate). This certifies that such exports are free from pests, insects and other horticultural diseases, and that they have not been exposed to ionizing radiation. The certificate can be issued by the appropriate government department of the exporting country.

General import requirements also include tolerance levels and the use of good packaging materials. But these are not yet strictly enforced, nor are there any prospects of stringent standards and regulations being implemented in the near future.

Bahrain, Kuwait, Oman, Qatar and the United Arab Emirates are also relatively important export markets for Bangladeshi horticultural produce. SPS requirements in these countries are similar to those of Saudi Arabia; hence all shipments of fresh fruit and vegetables to these markets must also be accompanied by a phytosanitary certificate issued by a government agency.

6. Structure of horticultural production

As indicated above, the share of horticulture in the Bangladesh agricultural sector as a whole is very small, representing only 3.2 per cent of the total area under crops. Since the gradual change from subsistence farming to commercial farming is only recent, there has not yet been any noticeable change in the structure of horticultural production. Currently, only 0.3 per cent of the total production of fruit and vegetables (in volume terms) is exported. Yet great potential exists for both expansion and production of these commodities, because they have come to be recognized as high-value crops compared to cereal crops that occupy about 82 per cent of the total cropped area (of which 76 per cent is devoted to rice cultivation alone). A slow shift has started to take place, and this is likely to speed up if marketing can be properly organized, both within and outside the country. That will, however, need increased market access opportunities, together with adequate infrastructural facilities, particularly more air cargo space, since that is the only means for external transportation of fresh produce.

7. FFV export development

7.1 Organization of exports: Bangladesh Fruits, Vegetables and Allied Products Exporters' Association (BFVAPEA)

Fresh fruit and vegetables are exported mainly by members of the Bangladesh Fruits, Vegetables and Allied Products Exporters' Association. The Association has a total of 252 members (2001), about 25 of whom are reportedly active exporters, responsible for more than 90 per cent of the total fruit and vegetable exports. Some of them are understood to be operating under two or more names for various business reasons, the main one being to increase their chances of obtaining air cargo space (which is allotted to active exporters by lottery).

Most of the exporters are small and medium-sized enterprises (SMEs) that normally export



to their friends and relatives in various marketplaces. This represents the lowest segment of the market, usually known as the ethnic market, where buyers/customers are mostly either Bangladeshis or other South Asians. They are generally less quality conscious, being more eager to consume produce from their country/region of origin. Because of this, the exporters generally remain satisfied with their traditional ways of collecting the produce for export. They normally procure it through middlemen who take orders from various exporters, go to the producing areas to collect the produce from farmers/local markets and arrange to deliver it to the exporters on the day of shipment. The exporters then arrange sorting, grading and packaging for shipment in their traditional ways. The cool chain is not properly used and no standards are observed with regard to post-harvest handling practices and packaging. As a result, post-harvest handling losses are enormous, sometimes more than 30 per cent.

Exporters have only a moderate awareness of health and safety requirements of the mainstream markets and they normally do not bother to implement them. This is because they are not in a position even to fill the orders of their overseas ethnic market buyers under the present methods of delivery due to the acute shortage of air cargo capacity. Recently, however, some of the ethnic market buyers have started insisting on quality improvement and packaging, which has led to some, albeit limited, changes in packaging and quality management. At least one exporter belonging to the Association and exporting to Canada and the United Kingdom partially uses the cool chain, and some exporters, supported by the Hortex Foundation, have started using improved packaging cartons to satisfy the requirements of their buyers.

7.2 Organization of production: farmers' level

Horticultural export crops are generally produced by outgrowers, who have little or no direct links with the exporters. Most of these outgrowers are small and marginal farmers. According to the 1996 Agricultural Census, out of more than 11.8 million farms, about 50 per cent were of less than 1 acre and 80 per cent of less than 2.5 acres (2.47 acres = 1 ha), and the farmers are mostly illiterate. Given the fragmentation of land due to population pressure, and legislation concerning inheritance, there is a trend towards smaller farms.

Because links between the exporters and outgrowers are extremely weak, and because the exporters do not usually supply fresh produce to the mainstream importers/buyers, there is little or no pressure to grow horticultural crops to meet the quality requirements of European countries. Neither is there any organizational arrangement in place to bring together outgrowers, exporters and buyers to raise awareness and understanding of such requirements. Hence, the small outgrowers/producers are hardly, if at all, aware of the strict quality requirements of the export markets.

7.3 Initiating change: the Hortex Foundation

It is against this background that the Horticulture Export Development Foundation (known as the Hortex Foundation) was established as a private sector, non-profit horticultural development and promotional agency. The Foundation, which started functioning in June 1996, has implemented two projects funded by the International Development Association (IDA) for the production and management development of high-value, quality horticultural produce for export to high-price, sophisticated mainstream markets in Europe and elsewhere.



The Foundation has been organizing export production through a system of contract farming involving the Bangladesh Rural Advancement Committee (BRAC), a non-governmental organization (NGO) (described below). It has been providing extensive support and assistance, including training of farmers and their field staff, supply of seeds and other production inputs, creating awareness of market requirements, assistance in introducing quality measures that conform with EurepGAP and other standards, training on post-harvest crop management, assistance in setting up a packinghouse in the production area with pre-cooling and cooling facilities, the development of high-quality packaging materials in accordance with the requirements of international markets, and arranging for the transportation of export products to the airport. This assistance has been provided following the identification of mainstream market outlets in Belgium, France, the Netherlands and the United Kingdom, and an assessment of technical requirements.

Hortex has also been organizing workshops to make exporters and producers aware of various quality requirements and regulations, including voluntary standards such as EurepGAP.

7.4 Exporting quality produce: Bangladesh Rural Advancement Committee (BRAC)

The Bangladesh Rural Advancement Committee (BRAC) is the largest NGO in the country. It has engaged in business activities, such as handicrafts, handlooms, dairy production, agricultural production (including horticulture), tea production, university education and banking. Almost all these activities have direct backward and forward linkages with social and rural development. In horticulture, Hortex involved BRAC for the first time in 1997 to organize contract farming for the production of quality French beans for export to mainstream international markets.

Initially, BRAC was conceived of as a producer organization only. Efforts were made to engage private firms to export its products under a contractual agreement, but this did not work out. Finally, in 1997/98, BRAC started to export for the first time to non-conventional, West European markets other than the traditional ethnic markets, where customers are by and large of Bangladeshi origin. Exports began with French beans, a new crop for Bangladesh, and then expanded to other high-value Asian crops such as green chillies, bitter gourds, yard-long beans and okra. Fruit, especially baby pineapples (honey queen variety), were exported to the United Kingdom market and cut flowers (tube-roses) to the Netherlands. With support and technical assistance from the Hortex Foundation, BRAC succeeded in exporting more than 1,300 tons of quality fruit and vegetables) between July 1997 and March 2003. During the same period, three private firms exported 1 ton of tube-roses and 1,000 ornamental plants to the Netherlands.

BRAC has developed a wide rural network as well as a large clientele group of small and marginal farmers. It has managed to organize the farmers to engage in quality production. Hortex has supported BRAC in developing a packinghouse with an appropriate cold storage facility, and it has trained BRAC field staff and contract farmers in production technology, harvesting, post-harvest management, packaging and transportation. Hortex also proposed the necessary organizational structure for this new activity, and accordingly the appropriate technical manpower and logistics were put in place in the production centre and for marketing by BRAC.

Thus, like other sectors, the successful journey of BRAC started in the horticultural export sector, initially as a producer organization and subsequently as a producer-cum-marketing



organization. Today, BRAC is the only organization in Bangladesh which is organizing quality horticultural production through outgrowers. It obtained EurepGAP certification in November 2004. It had already been exporting EurepGAP-compliant fresh produce to the mainstream horticultural markets in Europe, the Middle East and South East Asia from the very beginning. It started with one crop and four markets, but has now diversified into more than 20 crops and 15 markets in various regions. Presently its exports amount to about \$1 million a year, which is about 10 per cent of the total annual national horticultural exports of Bangladesh.

BRAC's farmers are, in general, literate and properly trained under its social and education development programme, and every contract farmer of BRAC is capable of maintaining proper documentation under its guidance. Normally, BRAC also supplies production inputs to the farmers, the prices of which are subsequently adjusted against payment on delivery of crops. This facilitates easy monitoring of MRL and traceability. No other companies or producers are presently following this practice.

8. Development of supermarkets

Supermarket development started in the early 1990s. The success of pioneers attracted new investors, and to date there are about 30 supermarket stores operating in the country, of which 22 are located in Dhaka. Although the market share of supermarket chains is still very low – not even 1 per cent of the retail sector – they have some impact on quality production of horticultural crops and consequently the farmers are being increasingly exposed to such requirements. Sustainable farming practices such as integrated pest management (IPM) are becoming more popular. However, due to lack of opportunities for product differentiation and inadequate post-harvest handling practices, the farmers are not yet receiving the expected benefits.

9. Existing mechanisms for information management

A number of public sector agencies and organizations are involved in some activities related to information collection and dissemination, but coordination is poor, and often they do not reach the core target groups and stakeholders.

9.1 National Enquiry Point

The WTO cell in the Ministry of Commerce is the National Enquiry Point. This cell is officially responsible for, among others, the gathering, processing and dissemination of information regarding new standards and regulations under the WTO SPS and TBT Agreements. A National Advisory Committee advises the Ministry on all WTO-related matters and assists the Government in formulating an appropriate strategy and policy. It is assisted by five working groups, including on agriculture, SPS requirements and other related matters. This working group is located in the Ministry of Agriculture and is headed by a joint secretary.

9.2 Department of Agricultural Extension (DAE)

The DAE is the largest extension service provider under the Ministry of Agriculture, with a wide network of field offices across the country. Its mission is to “provide efficient and effective need-based extension services to all categories of farmers to enable them to optimize



the use of their resources in order to promote sustainable agriculture and socio-economic development". To implement its mission effectively, the DAE has adopted a new extension policy that emphasizes food security, crop diversification, soil fertility and environmental protection. It also has a gender dimension in the context of its pro-poor service activities.

The Department's supervisors cover the entire country to provide extension services at the farm level. They are also responsible for field application of the research output for better cultivation and better distribution of produce. The Department is presently implementing a number of projects funded by the Government of Bangladesh and/or donors for horticultural development in Bangladesh, including IPM projects.

Although the DAE is not working specifically on export-oriented production programmes, its work directly or indirectly benefits export production of horticultural crops, as it has a unique network to reach farmers and make them aware of the developments taking place in markets, both local and international. The field offices of DAE could be a good means of disseminating information to field-level stakeholders on various environmental and health issues and their implications for export production, provided they are properly organized, trained and motivated. Unfortunately, such opportunities are scarcely used.

9.3 The Plant Protection Wing of DAE

The Plant Protection Wing of the DAE is directly involved in implementation of plant health regulations through issuance of phytosanitary and quarantine certificates. It is therefore working more as a regulatory body than as an extension body. As such, information dissemination and follow-up are not generally considered its main functions, although it belongs to the national extension agency and training is one of its areas of activity. The Wing consists of five sections: the Plant Quarantine Section, the Pesticide Administration and Quality Control Section, the Operation (Aerial and Forecasting) Section, the Surveillance and Forecasting Section and the Integrated Pest Management Section.

Before export, products are tested and phytosanitary certificates issued. The procedure for issuing phytosanitary certificates for fruit and vegetables is as follows. The exporters notify the Plant Protection Wing in writing in a prescribed form accompanied by evidence of payment of the required fee at a bank, at least 24 hours before shipment. The inspection team or inspector then visits the packinghouse of the exporter, inspects the export consignment and issues the certificate. This inspection is more or less a visual observation and does not usually involve a laboratory or chemical test. In any case, the Wing lacks modern laboratory and testing facilities. Bangladesh is a signatory to the International Plant Protection Convention (IPPC). It is also a member of the Asia and Pacific Plant Protection Commission, with an express commitment to formulate rules and regulations appropriate for plant protection and quarantine measures. Accordingly, plant quarantine legislation has been formulated for the country and this Wing of the DAE is not only the custodian and implementation agency of this law, it is also responsible for updating the law through re-enactment.

Annually, an average of 150,000 tons of plants and plant products are imported into Bangladesh, for which plant quarantine inspection is needed. This is provided through quarantine check-posts of this Wing set up at 15 different entry/exit points to and from the country.



9.4 Bangladesh Agricultural Research Institute (BARI)

The Bangladesh Agricultural Research Institute (BARI), a large research institute under the Ministry of Agriculture, has a Horticulture Research Centre, which is specifically responsible for the development of improved varieties of various types of fruits, vegetables and flowers and for their better marketing. Although BARI does not have any direct role in implementation of environmental and quality requirements imposed by export markets, it is directly or indirectly contributing towards improving quality management of horticultural produce, for example through seminars and training programmes on production technology, post-harvest handling and quality control.

9.5 Bangladesh Agricultural Development Corporation (BADC)

Bangladesh Agricultural Development Corporation used to be one of the largest corporations under the Ministry of Agriculture, responsible for irrigation, fertilizers and seeds. However, it has been downsized in the context of the privatization process and its activities greatly reduced. It is nevertheless doing good work through the Horticulture Development Project. Under this project, it has set up nine horticulture centres across the country and has been trying to develop quality horticultural produce, particularly fruit and vegetables for increased supply to both the internal and external markets. It is also organizing various types of training programmes, including farmers' training in improved production and marketing practices. BADC has created cold storage and packinghouse facilities at the country's main international airport in Dhaka to assist exporters in pre-shipment packaging and storage of export produce.

9.6 Bangladesh Standards and Testing Institution (BSTI)

The organization directly responsible for setting national standards-related regulations and harmonizing them with international requirements is the Bangladesh Standards and Testing Institution. It is under the Ministry of Industry, and works as the National Focal Point in standard setting and harmonizing. As the contact point on Codex Alimentarius Food Standards, BSTI regularly receives Codex standards and documents information on technical laboratory tests, which can be consulted by experts engaged in the preparation of food standards and regulations and implementation of the food control programme. BSTI has so far formulated 18,050 national requirements, including over 300 for food and horticultural products and services; it has also adapted about 170 international requirements following ISO 9000, ISO 14000 and HACCP principles. However, BSTI requirements are not at par with international requirements and the harmonization process is very slow. It does not have adequate laboratory facilities and implementation mechanisms to enforce quality criteria, particularly in the horticulture sector, and its work relating to fresh produce is practically negligible.

9.7 The Export Promotion Bureau (EPB)

The Bangladesh Export Promotion Bureau is the National Focal Point for the promotion of exports, including of horticultural produce. The Bureau works as the main executive arm of the Ministry of Commerce in export promotion and development. However, it lacks the technical expertise and trained staff for providing stakeholders in the field with the necessary training on export markets.



9.8 Bangladesh Foreign Trade Institute (BFTI)

The BFTI acts as a think-tank for the Government and the private sector on foreign trade. It also provides training, including on SPS and other related matters, using the “train-the-trainer” approach; the Institute does not directly engage in awareness-raising and market orientation.

10. Current adjustment approaches

At policy level, the relevant ministries are responsible for keeping themselves informed of changes in standards and regulations in external markets and for initiating adjustment policies where necessary. However, hardly any impact analysis is undertaken of the standards and regulations of external markets, and consequently little adjustment, if any, is taking place.

Some efforts are being made to introduce IPM as an effective, safe, sustainable and economical crop production system, and to discourage the application of harmful pesticides. Various donor agencies, particularly the United Nations Development Programme (UNDP), FAO and the Danish International Development Agency (DANIDA) are supporting this programme through the DAE, BARI and various NGOs, and general awareness is being created among the farmers. However, the programme’s coverage is still very limited, with little perceptible impact on exports so far.

11. Elements of a proactive approach to a national adjustment policy

Bangladesh, like other LDCs, is particularly vulnerable to the possible effects of health and environmental requirements on market access and competitiveness. The particular problems faced by LDCs render it difficult for growers and exporters to adopt a proactive approach. It is therefore essential to enhance awareness and understanding of the possible implications of quality, food safety and environmental requirements for the horticultural sector in Bangladesh, and to carry out an assessment of the compliance costs and the costs and benefits of a proactive adjustment strategy for the sector, including its impact on competitiveness. Such an assessment should also examine the implications of key private sector standards and supply chain management on smallgrowers, and the opportunities for properly managed private sector cooperation and public-private partnerships.

12. Capacity building

In Bangladesh, there is a lack of awareness of the emerging situation in the export markets of horticultural produce and an inadequate infrastructure to address this situation. Coordination and cooperation in making adjustments and in institutionalization of relevant activities are also lacking. The adjustment policies are generally reactive rather than proactive in nature (i.e. action is taken only after new requirements have been put in place). The need to promote proactive adjustment strategies should therefore be taken into account when designing and implementing capacity-building activities. For this, Bangladesh needs assistance with capacity building in many areas to adequately address the emerging situation in the export markets for horticultural produce. Such assistance needs to focus on: (a) awareness and recognition; (b) physical infrastructure; (c) human resource development and training; and (d) building and strengthening institutions. The target population for such capacity-building activities



should include government institutions, private organizations, chambers of commerce and producers' associations, as well as civil society.

13. Conclusions and recommendations

To meet stringent sanitary and health requirements, ensure the supply of clean and safe food from farm to table, and enhance market access and export competitiveness, the following recommendations are presented:

- Conduct an assessment of the impact of non-compliance with stringent environmental and health standards and regulations, both mandatory and voluntary;
- Undertake a study of the adjustment costs incurred to comply with EurepGAP and other food safety requirements, taking into account Bangladesh's peculiar agro-production structure;
- Raise awareness and recognition among all the stakeholders of the problems created by the traditional approach to producing fresh fruit and vegetables with a view to promoting the broad implementation of food safety requirements, including the provision of training to organizations of small farmers;
- Put in place the needed physical infrastructure, particularly packinghouses, cooling chains, laboratory services and quality management, to strengthen the ability to respond effectively to buyers' health and environmental concerns;
- Invest in human resource development and training;
- Strengthen the institutional capacity to implement the measures recommended here to help ensure proper monitoring and follow-up. Institutional capacity building should involve the government machinery, the private sector and NGOs, and should promote coordination among different stakeholders; and
- Since Bangladesh does not have the capacity to carry out huge capacity-building activities without donor assistance, well-coordinated donor support is needed in the form of both financial and technical assistance.



F. CAMBODIA

DAO Cambodochine.

Environmental Requirements, Market Access/Entry and Export Competitiveness in the Horticulture Sector in Cambodia

Agriculture plays a major role in Cambodia's economy. The sector contributed 37 per cent to GDP and employed 69 per cent of the labour force in 2002 (UNCTAD, 2004).⁴⁰ However, whereas Cambodia's GDP grew at 5.3 per cent per annum between 1995 and 2004,⁴¹ over the same period agricultural growth was slow.⁴² In recent years, economic growth has been driven largely by expansion in tourism and in the garments sector.⁴³ In 2005, agriculture recovered somewhat,⁴⁴ contributing significantly to Cambodia's 7 per cent GDP growth.⁴⁵

Cambodia's total population reached 13.8 million in 2002; its average annual rate of growth has been steadily declining, to reach 2.5 per cent in the period 2000-2002 compared with 3 per cent during the period 1990-2000 and 4.1 per cent in 1980-1990. Every year more than 200,000 young people reach employment age, mainly in the rural areas. Between 40 and 45 per cent of the population lives below the poverty line, and around 85 per cent of the poor live in rural areas, many eking a living on subsistence farms.

Most of the agricultural land in Cambodia is used for the production of cereals (91.4 per cent), while the remainder is used for oilseeds, fruit and vegetables. There are several impediments to agricultural growth and land cultivation, in particular the limited size of arable land and lack of property rights. The area under cultivation has not increased since 1996, and the absence of a clear land registration system has weakened incentives to improve land productivity through irrigation and improved seeds.⁴⁶

1. The horticultural sector in Cambodia

The production of fruit and vegetables is second only to rice and maize in terms of cultivated area and tonnage. According to statistics of the Ministry of Agriculture, Forestry and Fisheries, the area under fruit production during 2002-2003 was approximately 200,000 hectares, and that under vegetable production was 62,538 hectares with a yield of approximately

40 In 1990, agriculture's contribution to GDP was 56 per cent and it employed 74 per cent of the labour force.

41 UNCTAD Handbook of Statistics 2005, table 7.1

42 Indeed, whereas real GDP grew by 5.4 between 2000 and 2002, during the same period total agricultural production fell by 3.1 per cent. (UNCTAD, 2004, Statistical Annex, tables 2 and 3)

43 Clothing exports have been fostered by the United States-Cambodia Bilateral Textile Agreement signed in 1999, which provides Cambodia a guaranteed quota of textile exports to the United States. However, there has been concern that as a result of the ending of the WTO Agreement on Textiles and Clothing in January 2005 Cambodia's textile producers will face tough competition from lower-cost producers in countries such as China. In 2005, garment exports, nevertheless, increased by 10.6 per cent, to \$ 2.2 billion, of which 71 per cent were shipped to the United States and 23 per cent to EU markets, both of which had effectively restricted garment imports from China in mid-2005 (World Bank, *East Asia Update, Solid Growth New Challenges*, Cambodia Overview, March 2006).

44 The large increase in agricultural production was due to favourable weather conditions and efforts to raise productivity (Statement by IMF Staff Mission to Cambodia, Press Release No. 06/96, May 11, 2006: available at: <http://www.imf.org/external/np/sec/pr/2006/pr0696.htm>).

45 World Bank, *East Asia Update, Solid Growth New Challenges*, Cambodia Overview, March 2006.

46 IMF, Cambodia, Concluding Statement for the 2004 Article IV Consultation Discussions July 15, 2004; available at: <http://www.imf.org/external/np/ms/2004/071504.htm>.



545,820 tons (including sweet potatoes). Despite the wide range of vegetables available, their per capita consumption in Cambodia is one of the lowest in the world and lower than in neighbouring countries such as the Lao People's Democratic Republic and Viet Nam. Data of the FAO indicate that annual per capita consumption of fruit and vegetables has actually fallen continuously, from 249 grams/person/day in 1969-1971 to 150 grams/person/day in 2000-2002 (annex table 2).

The following are some of the major constraints facing the sector:

- Market opportunities are limited to those producing areas that have good road access to the main urban markets in Cambodia and to export markets in Thailand and Viet Nam;
- The more developed horticultural sectors in Thailand and Viet Nam present fierce competition (through legal and illegal imports);
- A lack of storage capacity contributes to huge price swings between the post- and pre-harvest season;
- Imports are very erratic, and supplies fluctuate rapidly and drastically along with prices; and
- There is a general lack of good quality inputs and information on seeds and crop protection products due to weak institutions and R&D facilities.

Although significant improvements to the infrastructure have been made over the years, especially in the provinces around the capital, Phnom Penh, rural infrastructure is still very poor in the remote provinces, particularly in the northwest. Hence the basic infrastructure necessary for delivering sanitary and quality diverse produce throughout the year simply does not exist. For example, luxury hotels in Siem Reap (a provincial capital which is a gateway to the temples of Angkor) import almost all the fruit and vegetables they need mainly because of the lack of sanitary and quality standards and regulations and consistency of domestic supply.

The concentration of production areas near major urban markets has a major influence on the type of transportation used for fruit and vegetables. In the five provinces surrounding Phnom Penh, motorbikes and *remoak-motors*⁴⁷ are used to transport approximately 75 per cent of the locally grown fruit and vegetables to market. However, this mode of transport – albeit advantageous and economical for small farmers – results in deterioration of quality by the time the products reach their selling point. Brief field observation of many loads of leafy and other green vegetables arriving in the marketplace by motorbike or *remoak-motor* revealed varying degrees of physical deterioration, resulting in greater wastage and lower value. In contrast, virtually all shipments of imported fruit and vegetables arrived via trucks and/ or cars.

Overall, vegetable production is highly seasonal. Cambodia has a tropical monsoon climate with two seasons: the rainy season from May to October and the dry season from November to April. In the early dry season (mid-October to December), the main vegetables are cabbage, celery cabbage, onion, leaf lettuce, tomato and giant white radish. Starting in March/April, when the weather becomes very hot throughout the country, only a few vegetables and fruit (largely beans and watermelons) are grown due to lack of water and inadequate infrastructure for irrigation. At the start of the wet season (May-July), farmers plant cucumber squash,

⁴⁷ A *remoak* is a two-wheeled trailer pulled either by motorbike or bicycle.



shallots, gourds, beans, mustard cabbages, Chinese kale, water convolvulus and hot peppers. From August to October (the late rainy season), there is no large-scale planting of fruit and vegetables, although short-duration crops are grown to take advantage of the abundant supply of rainwater.

Fruit production and supply are even more dependent on the seasons. For instance, there tends to be an oversupply of mangoes from mid-April to June. However, the supply of domestic fruits such as papayas and bananas is constant throughout the year with little reliance on imports.

Little pertinent information is available on fruit production techniques in Cambodia. In terms of scale of operations, there are three main systems of cultivation:

- Mixed farming systems, the predominant crop being rice, along with the harvesting of small quantities of fruit from a few household trees for sale in the market when opportunities arise;
- Plantation crops such as oranges, pineapples, mangoes, and papayas are grown by specialist farmers on areas of between 0.5 and 2 hectares; and
- Large corporate-type fruit farms (covering 2 hectares to more than 1,000 hectares), which operate as a company, are run by experienced and seasonal farmers, and employ large numbers of labourers for activities such as cultivation and harvesting. Several of the plantations established under the land concession system are beginning to bear fruit.

The potential for the country to increase output and productivity in agriculture and horticultural production may be much larger than current official figures appear to indicate. For instance, the utilization rate of concession land in large-scale, agro-enterprises is extremely low. Small and medium-sized enterprises and individual farmers appear to account for the largest share of production and to contribute the most to employment and income generation for rural households, as well as to fair and equitable distribution of benefits amongst the rural poor. However, constraints and impediments such as lack of access to resources for technology sourcing, the limited size of land and lack of title/property rights, adequate and modern irrigation infrastructure, crop diversification and seed development, as well as poor market access and market information and high rent-seeking discourage these farmers/producers from taking advantage of this potential.

2. Trade

Cambodia is a net importer of fruit and vegetables, as it does not produce sufficient quantities, at least not within easy reach of the domestic market, on a year-round basis. Imports from areas of Thailand and Viet Nam that have easy access to Cambodia's main markets make up the deficit, especially where there is a substantial price disparity during the off-season. Cambodia also exports some products to Thailand and Viet Nam (e.g. dry chillies throughout the year).

Official exports are very small, both in volume and value terms. Data from COMTRADE show exports of fresh fruit and vegetables amounted to only \$1.8 million in 2003 and \$1.1 million in 2004. The main export products are garlic (to the EU), cashew nuts (shelled to the United States and unshelled to Viet Nam), mushrooms (to China) and beans (to Viet Nam).



Cambodia exports very little to the Japanese market; indeed, COMTRADE data on Japan's imports do not register any imports from Cambodia.

Cambodia imported fruit and vegetables worth \$3 million annually in 2001-2004, mostly from China and Thailand. The main products were fruit, in particular apples and pears from China and New Zealand, grapes from the United States and other countries, and "other fruit" (HS 081340) from Thailand.

3. Coping with market requirements

The major barriers to the development of exports of fruit and vegetables from Cambodia are insufficient and irregular supply for export and relatively low quality of supplies. Most vegetable products are highly perishable and increasingly face strict requirements for consistency of quality and regularity of supply. Post-harvest handling and processing as well as transport logistics present a considerable challenge for Cambodian suppliers, particularly the small producers.

Larger enterprises that have access to capital and imported, standardized technologies thus have higher capacity and efficiency of production, and can cope more easily with the sanitary and environmental requirements of the export markets. This, however, requires capital investment, modern management capability and a steady supply of raw materials. Therefore, contract farming schemes, in which a large company (buyer) takes smallholder growers/producers (sellers) under contract to supply raw materials, is a pressing need for the horticultural sector in Cambodia. Under such a scheme, the buyer provides the seller with seeds, crop protection products and farming extension services, and then buys the produce, pre- and/or post-harvest, at a set price. The advantages for all parties to this scheme are: a) the company gets a predictable supply of produce of known quality, quantity and traceability; and b) the farmer/grower benefits from quality planting material, a ready market and reduced risk of price volatility. Such a scheme has already been tested and employed, for example by British American Tobacco (Cambodia) Limited with tobacco farmers.⁴⁸ It now needs to be tested and extended to other cash crops in Cambodia.

For farmers in the rural and backwater areas of Cambodia, growing concern about food safety and environmental requirements places tremendous pressure and a huge premium on knowledge of how to farm with minimum amounts of pesticides or without them, or with proper methods of pesticide application. However, relatively few pesticides or chemical fertilizers are currently being used in fruit growing in Cambodia, partly due to a low resort to monoculture type of planting, and partly because farmers lack the resources and equipment to adequately apply pesticides. By default, therefore, Cambodian fruit are largely perceived as pesticide-free and natural. Hence, the country may have a competitive edge in supplying regional and international high-end market segments with organically grown and GMO-free produce.

4. Adjustment policies

Coping with these demanding conditions requires a system of standards, metrology, testing and quality (SMTQ). However, Cambodia suffers from a significant lack of institutional,

⁴⁸ Since commencing operations British American Tobacco (Cambodia) Limited has actively assisted over 800 tobacco farmers in Kampong Cham to grow quality tobacco through the introduction of modern agronomic practices and techniques.



technical and human capacity related to SMTQ infrastructure, and inadequate enforcement and support systems.⁴⁹

The Ministry of Agriculture, Forestry and Fisheries (MAFF) has been promoting agricultural diversification, including through agribusiness and horticulture development. Its objectives, as stated in the 2002 MAFF National Conference Proceedings for 2002-2003, are to:

- Formulate agricultural policies, strategic plans, action plans and development programmes;
- Promote the production of several kinds of agricultural products of quality in order to improve food security and food safety at community and household level and for export;
- Promote research on growing techniques, IPM, seed selection, fertilizer application and irrigation for all kinds of crops;
- Continue market research and strengthen the existing system for agricultural marketing information;
- Strengthen implementation of donor-funded projects; and
- Continue to cooperate with international institutions and NGOs to attract funding and technical support for development of the agricultural sector.

5. Food safety legislation and policies

The most important legislation concerning food safety in Cambodia is the Law on the Management of Quality and Safety of Products and Services, which was approved in June 2000. In addition, a number of sub-decrees have been endorsed since 1997.

The Cambodia Import-Export and Fraud Repression Department (CamControl) of the Ministry of Commerce (MoC) controls the safety and quality of food and food products imported into Cambodia.⁵⁰ CamControl may also control the quality of products at the request of exporters or importers when they need to provide export or import documentation to meet the requirements of third parties. The Ministry of Health (MoH), through its Department of Drugs and Food, is responsible for controlling the safety and management of food.⁵¹ The MoC and the Ministry of Industry, Mines and Energy (MIME) are responsible for quality control in manufacturing industries, including food industries. The Ministry of Agriculture, Forestry and Fisheries plays a key role in managing the safety and quality of agricultural products as they enter the food supply chain.

6. Strengthening capacities

Cambodia applied to join the WTO in late 1994 and its membership was approved on 11 September 2003.⁵² As part of its accession, Cambodia agreed to accept obligations under WTO agreements. For example, it is to gradually implement the SPS Agreement, with

⁴⁹ Cambodia has insufficient technical capacity to efficiently manage SPS standards, food safety and environmental requirements. Essential facilities such as laboratories are not adequately staffed, scientific equipment for the required tests is obsolete, and there is no systematic collection and recording of information.

⁵⁰ Sub-decree No. 54 on the Organization and Functioning of the Ministry of Commerce (22 September 1997).

⁵¹ Sub-decree No. 67 of 22 October 1997.

⁵² Cambodia is the first LDC to accede to the WTO through the full working party negotiation process.



full implementation by 1 January 2008. The National Codex Committee (NCC), with its secretariat located at the CamControl office, will serve as Cambodia's SPS Enquiry Point. The Department of Industrial Standards of Cambodia (ISC) will serve as Cambodia's Enquiry Point concerning technical barriers to trade (TBT).

Technical assistance and capacity-building projects have played an important role in supporting Cambodia in its accession to the WTO and in strengthening its institutions. For instance, the Agriculture Sector Development Program (ASDP) includes a component on strengthening MAFF's ability to support WTO accession and agro-industry development. This includes support to the development of a system of food safety requirements, in particular the preparation and adoption of technical regulations and guidelines related to food safety and the creation of a national institutional mechanism for implementation. Specific measures include the strengthening of the NCC, its secretariat and the National Codex Technical Working Group (TWG), and the development of implementing regulations for the Law on the Management of Quality and Safety of Products and Services of June 2000. It also includes capacity building for key CamControl, NCC and TWG personnel for effective implementation of the food safety and food quality regulations, and for improvement of the operations of the chemical and microbiological food analysis laboratory at the MoC.

7. Recommendations

A number of recommendations made in the study are summarized below.

- (a) Improve the supply and range of quality vegetable seeds and fruit planting materials available to farmers at an affordable price;
 - Introduce a certification scheme for vegetable seeds under the proposed National Seed Policy of Cambodia, also taking into account the introduction of new fruit planting materials.
 - Promote public-private partnerships between private seed companies and the Government for efficient management of quality seeds.
- (b) Improve the supply and quality of other inputs such as tools and equipment, chemical fertilizers and pesticides, organic fertilizers and pesticides, and other inputs;
 - Effectively implement the sub-decree on Agricultural Materials Standards by developing guidelines and mechanisms for enforcement and by raising awareness.
- (c) Actively promote IPM in fruit and vegetable production countrywide;
 - Build on the new FAO Inter-Country Project on Vegetable IPM by addressing issues of pest management in all provinces where fruit and vegetables are grown. Under this project, which was started in late 2002, groups of farmers in four provinces are being trained in the identification of pests and diseases, options for control and reduction of risks, and the hazards of pesticides in vegetables.
- (d) Build/improve irrigation infrastructure and drainage systems;
- (e) Strengthen post-harvest conditions (e.g. handling techniques, silos, cool chain/storage, processing facilities);
- (f) Create a quality assurance (QA) system for fresh produce;
 - Explore a simple QA system based on GAPs for specific categories of fruit and vegetables, particularly for export.
- (g) Promote and strengthen research and extension support services for fruit and vegetables, and support specialized research and extension teams operating through MAFF in partnership with the private sector to support fruit and vegetable farmers; and



- Create a horticulture subcommittee under the National Research and Development Committee (NRDC) to support NRDC in formulating a national R&D plan for the fruit and vegetable industry.
- (h) Promote education and training in horticulture in public and private colleges and universities.



G. CHINA

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Environmental and Health Requirements, Market Access/Entry and Export Competitiveness in the Horticulture Sector in China.

1. Introduction

The Chinese horticultural sector has a promising future, with good opportunities to further increase its share in international markets based on its natural resources, its ample rural labour force and low production costs. But there are still many challenges that need to be addressed, such as: (a) the increasing number and stringency of environmental and health requirements in importing countries and regions and related trade protectionism; (b) the difficulties faced by Chinese producers, most of whom are SMEs, to meet the technical requirements in international markets; and (c) the shortcomings in Chinese legislation and standards, as well as the lack of an effective system to inform producers about emerging requirements in export markets and explain the adjustments needed to comply with them. In order to overcome these difficulties, the Chinese Government will need to: (a) encourage the development of “green food”⁵³ and organic food; (b) further improve the system of domestic regulations and standards and participate more effectively in the development of relevant international requirements; (c) actively promote horticultural production in accordance with appropriate requirements; (d) establish a national system for the dissemination of information on relevant developments in international trade in horticultural products; (e) strengthen education and increase awareness of the need to protect the environment; (f) make full use of policies and programmes aimed at strengthening production and export capacities; and (g) adequately address the environmental and food safety requirements of the markets of developed countries.

2. Chinese horticultural production and exports

Horticultural production has increased rapidly since the launch of the Chinese economic reforms and liberalization policies in 1978, especially since the mid-1980s. Today, horticulture has become one of the key activities in its agricultural sector. According to the FAO, the volume of China’s horticultural production amounted to 483 million tons in 2003 (statistical annex, table A1), making it the world’s largest producer, ahead of Brazil, the EU, India and the United States. China’s share in world production increased from 10.7 per cent in 1979-1981 to 36.5 per cent in 2003.

In 2000, the cultivated area under fruit and vegetable production amounted to 14.7 million hectares and 8.7 million hectares respectively, with a production of 440 million tons and 220 million tons respectively.⁵⁴ Only a relatively small proportion of the produce is exported. For example, in 2003, only 3 per cent of fruit were exported. However, China’s share in world

53 The “green food” concept was developed in 1990 with a view to promoting the production of high quality, safe, nutritious and unpolluted food. It was developed in part in response to increasingly stringent standards set in key export markets. The green food project is regulated by the China Green Food Development Center (CGFDC). Green food has to meet a number of requirements related to, among other things, pesticide residues, fertilizer use, food hygiene, packaging and environmental production standards set by the Ministry of Agriculture.

54 *People’s Daily*, China becomes world’s top fruit, vegetable producer, 12 October 2001. http://english.people.com.cn/english/200110/12/eng20011012_82089.html



trade in these products is increasing rapidly, giving it a large trade surplus in FFV in 2004, amounting to \$2.5 billion. The value of FFV exports reached \$3.5 billion that year, a 17.8 per cent increase over 2003 (table 12). Vegetables represented 73.5 per cent of this total and fruit 26.5 per cent.

Table 12. China: exports of fruit and vegetables, 1999-2004 (\$ million)

	1999	2000	2001	2002	2003	2004
Total	1 943.8	1 961.6	2 180.7	2 437.7	2 931.3	3 453.7
Vegetables (HS07)	1 518.8	1 544.4	1 745.9	1 883.2	2 179.6	2 537.3
Fruit and nuts (HS08)	425.0	417.1	434.9	554.6	751.8	916.4

Source: COMTRADE

The value of fruit exports amounted to \$2.5 billion in 2004 (a 16.4 per cent increase over 2003). The main fruits exported include apples, pears and mandarins. The value of vegetable exports amounted to \$916 million in 2004 (a 21.9 per cent increase over 2003), the main vegetables being garlic, mushrooms, beans and shallots.

3. Markets⁵⁵

The leading markets for China's fruit and vegetable exports are Japan (33 per cent in 2004 in value terms), the EU-15 (10 per cent), and the United States (6.7 per cent), followed by the Republic of Korea, Hong Kong (SAR, China), Indonesia, Malaysia and the Russian Federation (table 13). In 2004, the Association of Southeast Asian Nations (ASEAN) accounted for 15.5 per cent (in value terms) of China's fruit and vegetable exports (25 per cent of fruit and 12 per cent of vegetables). The regional market is thus an important one.

Table 13. Main markets for China's fruit and vegetable exports, 2004

	Exports of fruit and vegetables (\$ millions)			Share in total exports of fruit and vegetables (%)
	Vegetables	Fruit	Fruit and vegetables	
World	2 637.3	916.4	3 453.7	100.0
Japan	989.3	154.2	1143.5	33.1
EU-15	345.0	234.0	111.0	10.0
United States	170.0	62.2	232.0	6.7
Republic of Korea	196.0	25.4	221.4	6.4
Hong Kong (China)	138.4	49.7	188.1	5.4
Indonesia	98.3	70.5	168.7	4.9
Malaysia	105.8	50.7	156.6	4.5
Russian Federation	68.2	65.8	134.0	3.9
ASEAN	307.2	227.9	535.1	15.5

Source: COMTRADE

Japan's vegetable imports from China amounted to over \$1 billion in 2004. The principal vegetables were "other" frozen (HS 071080) and "other" dried vegetables and mushrooms. However, Japan's fruit imports from China were worth only \$148 million. The EU-15 imported fruit and vegetables from China worth \$406 million in 2003 and \$511 million in

⁵⁵ Part of the information provided in this section has been updated for 2005 in relevant tables in Part I and in the statistical annex.



2004. The main fruits were apples, strawberries and “other nuts” (HS 080290), and the main vegetables were beans, mushrooms and “other” frozen vegetables (HS 071080). The United States imported fruit and vegetables from China in the amount of \$266 million in 2004. The two leading fruit items were “other nuts” (HS 080290) and dried fruit (HS 081340). Garlic, “other” frozen vegetables and “other” dried vegetables were the major vegetable imports. ASEAN imports of fruit and vegetables from China amounted to \$500 million in 2003, representing 36 per cent of ASEAN’s total imports from the world (including intra-ASEAN trade). The largest importers of Chinese fruit and vegetables were Malaysia, Indonesia and Singapore.

4. Environmental and health-related requirements for fruit and vegetables

Chapter II has outlined the key environmental and health-related requirements in the EU, Japan and the United States.

For vegetables, the main requirements concern residue limits of pesticides. A comparison of international requirements (Codex Alimentarius), EU requirements and national requirements applied in China and Japan to specific vegetables, in particular garlic, spinach, potatoes and shallots, reveals the following:

- Developed-country requirements cover more substances. For garlic, for example, the EU regulation covers residue levels for 111 substances.⁵⁶ Japan’s regulation covers 61 items, whereas China’s covers only 37. In the case of mushrooms, there are 111 controlled substances in the EU, 47 in Japan, but only 36 in China;
- Developed countries establish stricter limits. For example, in the case of garlic, the EU regulation sets residue levels of 0.05 mg/kg or less for over 150 substances, including residue levels of 0.01 mg/kg for some 23 substances. The limit for cypermethrin in scallion is 0.1mg/kg in Japan and 0.2mg/kg in the EU, while it is only 0.5mg/kg in China (i.e. 5 times the limit in Japan and 2.5 times the limit in the EU). The limit for chlorpyrifor in spinach is 0.01mg/kg in Japan and 1 mg/kg in China (i.e. 100 times more stringent in Japan);
- Requirements change rapidly. For example, in Japan in the past, pesticide residue limits were applied only to fresh vegetables, but not to quick-frozen vegetables. After a large volume of quick-frozen vegetables was imported from China, Japan started to apply the pesticide residue limits for fresh vegetables, including quick-frozen vegetables. Because the production of 1 kg of frozen spinach usually requires 4 kg of fresh spinach, it is argued that applying the same limits per kg to both fresh and frozen is unreasonable and unscientific. In recent years, Japan has extended controls to all frozen vegetables imported from China;
- Inspection of hygiene and food safety is being tightened, along with more frequent spot-checks. The scope of quality inspection of agricultural products is being expanded (e.g. apart from the product itself, the sanitary conditions of the workplace now also need to be inspected, and various kinds of inspection and testing certificates need to be provided. Exporters of dry vegetables to Germany are asked to provide certification that the products are free of genetically modified organisms (GMOs) and contain low chemical residue levels; and
- The inspection and testing of vegetables exported to Japan are becoming much stricter. Japan carries out mandatory strict inspection of a number of vegetables, testing every

⁵⁶ Freshfel Europe, <http://www.freshquality.org/files/Garlic.pdf>



batch of vegetables such as rape, asparagus and cauliflower for residues of various substances. Additional testing is applied to check for residues of 47 pesticides in 18 kinds of quick-frozen vegetables. The detection of controlled substances tends to result in immediate import restrictions. For example, since 2001 Japan has issued restraints on imports of scallions, rush and fresh mushrooms originating in China. In July 2002, the Japanese Ministry of Health, Labour and Welfare issued a guidance notice to control imports of spinach from China (see below). Strict pesticide residue limits on more than 150 substances have been established for various kinds of plant products that are strictly controlled through spot-checks, which may at any time lead to import restraints.

With regard to the United States market, data from the monthly import refusal reports⁵⁷ issued by the United States Food and Drug Administration (FDA) shows a relatively high number of refusals of consignments from China.

On 19 December 2003, the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) suspended indefinitely imports into the United States of Ya pears from China. Inspection of several consignments of the pears found them to be infected with an exotic, post-harvest fungal disease, *Alternaria sp*, which poses a significant risk to the United States apple and pear industry (but it does not affect human health). Collaborative efforts have been carried out between United States and Chinese authorities on a framework for research and future actions that would allow APHIS to make a risk management decision on the resumption of imports of Ya pears into the United States.⁵⁸ A case study carried out for the UNCTAD/FIELD project describes some measures taken at enterprise level to address the problem by improving production techniques, specializing in off-season produce, improving information flows and cooperating with national inspection and quarantine departments to assure the quality of exported fruit.

4.1 Vegetables

In May 2003, Japan's Health Ministry asked Japanese companies voluntarily to restrict spinach imports from China because inspections had detected residues of the pesticide chlorpyrifos. In November 2003, China responded by implementing a new inspection regime. On 17 June 2004, Japan's Ministry lifted the import restrictions on frozen spinach from China.

Some private companies have been proactive. In order to facilitate continued exports of frozen spinach to Japan, exporting companies are implementing strict verification of production

57 https://www.fda.gov/ora/oasis/ora_oasis_ref.html

58 China raised this issue in the WTO's SPS Committee meeting held in March 2005, alleging that the United States had not yet lifted the restriction on Ya pear imports despite collaborative efforts between the two countries. The United States and Chinese authorities have been working to develop conditions that would allow the reopening of the market while providing appropriate plant protection for the United States. After several bilateral discussions, agreement was reached in November 2004 on a work plan stipulating that Chinese scientists would cooperate with United States scientists to develop possible measures to mitigate the fungus. A protocol was agreed in December 2004 to enable a test shipment of Ya pears into the United States for research purposes to evaluate the various mitigation measures. The United States has argued that the collaborative research shows that even with all the mitigation measures in place, the infestation rate still significantly exceeds that specified in the work plan of November 2004. Its collaborative efforts with China are continuing in order to identify measures that could reduce the infestation to an acceptable level so that the market might be reopened.



methods and the application of chemicals. Records of production methods must be kept for two years and of pesticide usage for three years. They must also keep records of quarterly tests of soil and irrigation water quality. Out of some 300 companies in China, around 27 that had implemented strict measures are being allowed to export their products to Japan. In March 2004, the largest exporter successfully passed a comprehensive inspection by Japan's Ministry and by the China Import and Export Commodity Inspection and Quarantine Bureau. The company is developing appropriate production techniques on experimental gardens, has strengthened cooperation with agricultural universities and is creating awareness of the benefits of reduced pesticides use. It also provides seeds and training in production methods that require less pesticide use, and it is enlarging its certified organic production.

4.2 Fruit

There are also stringent requirements concerning treatment with sulphur dioxide (SO₂) for conservation purposes; these differ from country to country. Fumigation with SO₂ a few hours after harvesting is the most commonly used method for preventing browning of lychees. This is sometimes followed by soaking the fruit in an acid bath that restores the red colour after decolourization by the sulphur treatment and results in commercially attractive fruit. However, the use of SO₂ can be harmful or allergenic for consumers sensitive to sulphur, and has been totally eliminated in the United States except for the treatment of table grapes. In France, the legislation permits residues of 10 parts per million (ppm) in lychee pulp and 250 ppm in the shells, but any treatment with SO₂ has to be mentioned on the packaging.⁵⁹

5. Existing mechanisms for information management

China does not have a centralized early-warning or exporter-alert system to inform key producers and exporters about emerging requirements in external markets. However, some initiatives are being considered at the local level. In January 2004, the WTO cell in Shen Zhen set up a technology and early-warning system consisting of a database and the dissemination of information to interested parties by e-mail.

6. Current adjustment approaches by the Chinese Government

A recent study notes that with increasing interaction with world markets, the Chinese Government and traders have recognized SPS problems and are taking actions to improve the production and marketing environment (Dong and Jensen, 2004). Under the National Agricultural Standards Development Plan for 2003-2005, the Government has, among other things, focused on reducing pesticide residue levels and strengthening inspection of chemicals. The Government is creating centres for quality inspection of agricultural products and has increased efforts to educate producers on requirements for products and production methods in international markets.

⁵⁹ It is likely that these levels will be lowered, or that the use of SO₂ may no longer be authorized in the EU. In this context, it is particularly important to find substitutes for fumigation, especially as France is the main destination and consumer country for lychees, accounting for nearly 80 per cent of the European total. Alternatives to sulphur treatment have been studied by different research teams, in particular in Israel and South Africa. The treatments proposed are based on various chemical or thermal techniques. So far, however, none of this research has led to a method that is acceptable or that has been developed commercially (Marie-Noëlle Ducamp-Collin, 2001).



Box 4 provides an example of proactive adjustment by a large private company (with international support)

Box 4. A proactive, private sector approach: the case of the North Andre Company

The North Andre Company is one of the leading producers/exporters of apple juice concentrate in China. The company's internal operations are sophisticated, with proper quality controls (it was certified in 2002 for ISO 9000 and HACCP) during and after processing, but less so for upstream farming and post-harvesting activities. At present, traceability is rudimentary along its supply chain, as for the Chinese apple sector in general, and farm management skills and techniques in China are still poorly developed. Implementing a traceability system for the company's supply chain, however, will be a difficult task, given the small-scale nature of much of China's apple production. An estimated 100,000 or more farmers are involved in supplying fruit to the company through a procurement system involving 25–30 dealers at each of its factories. In 2005, the International Finance Corporation (IFC) agreed to provide a loan of up to \$15 million, primarily to enable the company to meet the expectations of its global food producers with regard to traceability in the food chain. While its customers have not yet required such an undertaking beyond the rudimentary system currently in place, the company is adopting a proactive approach in order to maintain its leadership in the industry. A secondary objective will address poor farming practices relating to waste disposal and farm workers. In addition to improving the lives and working conditions of the rural poor, this will also address potential concerns of global clients of the company about such conditions. While the issue of traceability is expected to affect all emerging markets exporting to the United States and Europe, at present, no such traceability system exists in China. Thus the proposed programme and the lessons to be learned from it could facilitate potential replication by other supply chains in the Chinese horticultural sector.

Source: International Finance Corporation, IFC and North Andre Sign Cooperation Agreement to Promote Good Practice in Supply Chain. Press release, May 15, 2006.⁶⁰

7. EurepGAP

China has taken steps to benchmark its national code of good agricultural practices (ChinaGAP) with EurepGAP. In May 2004, the Certification and Accreditation Administration of the People's Republic of China (CNCA) and EurepGAP/FoodPLUS signed a Memorandum of Understanding (MoU) on technical cooperation. The MoU provides for specific cooperation and technical exchange for certification and accreditation of agricultural products, validation of ChinaGap and full translation of EurepGAP protocols. A National Working Group drawn from a wide range of stakeholders has been established to consider the practicalities of implementation of such a standard (Garbutt and Coetzer, 2005).

8. Recommendations

A number of recommendations are made, as follows:

- Further improve the system of domestic regulations and standards and participate more effectively in the development of relevant international requirements;
- Promote environmental requirements and environmentally preferable production methods;
- Create an “exporter alert” or “early-warning system” to disseminate relevant

⁶⁰ See also, IFC, China: Implementation of Traceability Systems and Good Agricultural Practices for the Apple Sector, at: http://www.cpdf.org/en/about/wd5_53.htm



information on environmental/health-related and other technical requirements of key export markets to interested producers/exporters;

- Promote technological innovation in the horticultural sector; and
- Strengthen government support for the green horticulture industry, in accordance with WTO rules.



H. THE PHILIPPINES

Alex F. Favila.

A National Case Study on Capacity Building: Enhancing the Competitiveness of Horticultural Exports through Compliance with Environmental and Health Standards in International Markets

1. The Philippine horticulture industry

According to FAO data, the Philippines was the world's 15th largest producer of fruit and vegetables in 2003 (16.8 million tons). Although production has steadily increased, the country's share in world production has fallen gradually, from 1.77 per cent in 1979–1981 to 1.27 per cent in 2003.

In terms of value, during the period 1999–2003, horticultural exports from the Philippines accounted for an average of 1.7 per cent of total exports, increasing from 1.45 per cent in 1999 to 1.85 per cent in 2003. Total earnings from horticultural exports (fruit, vegetables and cut flowers) amounted to \$670 million in 2003 (table 14), with fresh and processed fruit representing 95 per cent of this total.

Table 14. Exports of horticultural products, 1999–2003

	Value (\$ million)					Share in total exports in 2003 (%)	Cumulative growth 1999–2003 (%)
	1999	2000	2001	2002	2003		
Total horticulture exports	504.3	584.6	604.4	607.9	670.1	1.85	32.9
Fresh fruit	297.5	354.1	357.2	371.2	403.7	1.11	35.8
Fresh vegetables	21.5	23.7	21.9	23.1	27.2	0.07	28.5
Processed fruit	179.1	201.4	219.8	206.0	231.5	0.64	29.3
Processed vegetables	4.3	3.5	3.6	4.7	5.5	0.02	27.9
Cut flowers/ ornamental plants	2.0	1.8	1.8	2.9	2.3	0.01	15.0

Source: The Philippines Department of Trade and Industry

According to COMTRADE data exports of fresh fruit and vegetables (HS Chapters 7 and 8) in 2003 amounted to \$549.2 million dollars – an increase of 19 per cent over 2000 – and to \$222.2 million in exports of processed fruit and vegetables (HS Chapter 20).⁶¹ The principal fresh fruit exports are bananas, coconuts, mangoes and pineapples. Bananas represented 64 per cent of the value of all products falling under HS Chapters 7 and 8 in 2003. Fruit and vegetable exports were an impressive 23 per cent of all agricultural exports (Chapters 1 to 24) in 2003, or 34 per cent if processed fruit and vegetables are included (table A.4).

Among the developed countries, Japan is the Philippines' major market, absorbing 46.7 per cent (in value) of all its exports of fresh fruit and vegetables (principally bananas, pineapples and guavas) in 2003, followed by the United States (7.8 per cent) and the EU-15 (6.7 per cent). In the latter two markets coconuts were the major export item.

⁶¹ See tables in Part I and in the Statistical Annex for updated information on the Philippines trade in F&V.



2. Information management

The Agricultural and Fisheries Modernization Act (AFMA) of 1998 called for the creation of a National Information Network (NIN), including data on product requirements for fresh and processed agricultural and fishery products “from the Department level down to the regional, provincial and municipal offices”, taking into account existing information networks and systems. The NIN would also be accessible to the private sector.

Certain information on market requirements for key fruits and vegetables is available online, for example on the website of the Department of Agriculture (<http://www.da.gov.ph>).

The Department of Science and Technology – Small Enterprises Technology Upgrading Program (DOST-SETUP) has launched the Horticulture Information Network (HORTINET).⁶² It provides online information on: product profiles for selected fruits (bananas, durians, mangoes, papayas, pineapples and other fruit), vegetables (carrots, potatoes and tomatoes) and ornamentals, markets (production, areas, yields, prices, imports and exports), technology, R&D, and directories with contact information of industry experts. Another source of online information is the Mango Information Network (MIN) (<http://www.min.pcarrd.dost.gov.ph>) of the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD). The Sanitary and Phytosanitary Standards Information System (SPSIS) is the official Web portal on SPS measures of the Department of Agriculture (<http://spsis.da.gov.ph>)

3. Current adjustment approach

The Agricultural and Fisheries Modernization Act (AFMA) of 1998 (Republic Act 8435), which was strengthened in 2004 (RA 9281), provides a blueprint for modernization of the agricultural sector and for rural development. “It defines the need to transform the rural environment into one that is more integrated into national and international markets.” Important elements for the realization of the objectives of AFMA are the “key commodity roadmaps”, which set out the Department of Agriculture (DA’s) course of action for each major commodity, including fruit and vegetables.

Each roadmap analyses a specific commodity. It presents relevant and up-to-date information on current conditions for the development of the commodity, such as supply and demand, prices, trade flows and marketing channels. Based on this analysis, the roadmap recommends and/or implements a set of key strategies. All roadmaps have three major objectives to achieve industry growth: (a) significant reduction of post-harvest losses; (b) enhancement of product quality to achieve higher prices; and (c) enhancement of exports.

Government agencies involved in the food safety system in the Philippines include: the DA, the Department of Health (DOH), Department of Trade and Industry (DTI), DOST, and the Department of Interior and Local Government (DILG).⁶³ The DA is responsible for monitoring and regulating the safety and quality of fresh, primary- and secondary-processed agricultural and fishery products. The DOH is responsible for monitoring and regulating highly processed foods. The DTI provides assistance to local producers, exporters, importers

62 <http://www.hortinet.pcarrd.dost.gov.ph/>. The HORTINET mirror site is: <http://www.hortinet.evis.net.ph>

63 Salvador P. Catelo, Dean, College of Economics and Management University of the Philippines, Los Baños, see: <http://www.pecc.org/food/papers/ThePhilippines.pdf>



and consumers of foods, while the DOST supports research for the improvement of food processing technologies. Finally, the DILG is responsible for food safety implementation in local government units (LGUs).

The Fertilizer and Pesticide Authority (FPA) is responsible for controlling the importation, manufacture, formulation, distribution, sale, transport, storage, labelling, use and disposal of pesticides and fertilizers. For public safety against the potential hazards of pesticide residues on food, the FPA has the mandate to establish a system of MRLs, while the Bureau of Plant Industry (BPI) monitors pesticide residues on crops. BPI also issues the phytosanitary certificate for exports of fresh fruit, vegetables, seeds, nuts and spices.

The Bureau of Food and Drug Administration (BFAD) oversees the control of the manufacture and sale of processed foods (the major concerns being adulteration and mislabelling of food products). It also conducts laboratory analyses of processed products specifically concerning formulation, food additives, contaminants and other microbiological characteristics.

To further assure consumer safety and promote the competitiveness of local products, the AFMA also provided for the creation of the Bureau of Agriculture and Fisheries Product Standards (BAFPS) to ensure the use of product requirements in the production, processing, distribution and marketing of agricultural and fishery products.

4. Elements of a proactive approach and the need for institutional capacity building

The BPI proposes policies to implement and encourage GAPs. In August 2005, the DA issued guidelines for GAP certification of fruit and vegetables.⁶⁴ The Philippine GAP scheme has the advantage that it allows farmers or exporters to use the official mark, Good Agricultural Practice for Fruit and Vegetable Farming, as a quality mark. However, the scheme has not yet had any noticeable impact on concrete public-private partnerships to set up regional GAP schemes or a national scheme that would facilitate access to export markets. The main reasons are: (i) farmers view the guidelines as being too restrictive and costly; (ii) there is inadequate training to effectively enforce the scheme, especially at the smallholder level; and (iii) there has been slow adoption of the scheme due to resistance from the local food processing industry related to HACCP concerns.⁶⁵

5. Recommendations

The following are recommendations in the area of policy integration, information and awareness-raising:

- Effectively coordinate vertical and horizontal integration of policies and actions at national, regional and international levels;
- Increase the transparency of information for all involved. For example, in their SPS and TBT notifications WTO members could provide additional information, such as on the science and risk analyses underlying SPS measures;

⁶⁴ Admin Order No. 25 (02 August 2005), Guidelines on the Certification of Good Agricultural Practices (GAP) for Fruits and Vegetable (FV) Farming. http://www.da.gov.ph/agrilaws/ao_2005/ao_25.pdf

⁶⁵ Presentation by M Leonila, Luis Varca, I. Rey Velasco and Dr Celia Mdina, College of Agriculture, University of the Philippines, at the PhilExport/UNCTAD Subregional Workshop on Potential and Challenges of EurepGAP in Asia, held in Manila, 29-30 November 2005; accessible at: http://www.unctad.org/trade_env/meeting.asp?MeetingID=166



- Make concerted efforts to ensure information flow between policymakers and producers; and
- Create greater awareness of food safety and environmental requirements, especially among small producers.



I. THAILAND

Vicha Sardsud.

*Reflecting National Circumstances and Development Priorities in National Codes on Good Agricultural Practice that can be Benchmarked to EurepGAP*⁶⁶

Food safety is an important issue in Thailand and a priority of the Department of Agriculture. The year 2004 was declared the Year of Food Safety, and in 2005 the National Bureau of Agricultural Commodity and Food Standards (ACFS) published a Road Map of Food Safety. The Department of Agriculture (DOA) has set up a food safety programme that contains strategies on: (a) agricultural inputs and raw materials; (b) production at the farm level; (c) crop protection products (CPP) control; and (d) quality crop production. With regard to CPP control, the DOA encourages farmers to register under the DOA food safety programme for GAP certification.

1. Horticultural production and trade patterns

According to the FAO, Thailand produced 10.8 million tons of fruit and vegetables in 2003, but its share in world production fell from 1.45 per cent in 1979-1981 to 0.81 per cent in 2003. Thailand's exports of fruit and vegetables amounted to \$633.2 million in 2003, with vegetables accounting for 62 per cent of this value, and one product alone – manioc (cassava) – for 40 per cent.⁶⁷

A large share of Thailand's exports goes to Asian markets. Exports to Japan were worth \$80 million, to ASEAN \$45 million and to the EU-15 \$157 million (but less than \$40 million if cassava is excluded). The value of exports to the United States was less than \$24 million.

Fruit exports to Europe are still small. This can be attributed to several factors such as high transportation costs, plant quarantine issues (e.g. some categories of citrus fruit are prohibited from entry into the EU because of plant diseases), low levels of product recognition in EU markets (e.g. mango varieties) and consumer preferences (e.g. low preference for sweet mango varieties from Thailand).

The study examines three products in detail: asparagus, baby corn and mango. Table 15 presents some basic information on these three products

Thailand is the world leader in exports of baby corn, with a share of 80 per cent in world trade. Exports are mainly canned products (85 per cent) for the United States market. The rest is exported as fresh, chilled and frozen baby corn, largely to Japan and the United Kingdom. Fresh baby corn exports amounted to approximately \$6.1 million in 2004, representing 3.5 per cent of Thailand's total vegetable export value.

⁶⁶ This study is based on work carried out in the context of the CTF project, Reflecting National Circumstances and Development Priorities in National Codes on Good Agricultural Practice that can be benchmarked to EurepGAP. It also draws on presentations made at the ITD/UNCTAD National Stakeholder Workshop on Good Agricultural Practice and Food Safety – Implementing EurepGAP in Thailand, held in Bangkok, 25 and 26 November 2005. Presentations are available on the ITD website: <http://www.itd.chula.ac.th/index.shtml>

⁶⁷ Part of the information provided in this section has been updated for 2004/2005 in relevant tables in Part I and in the statistical annex.



Table 15. Thailand: asparagus, baby corn and mango, number of growers, area, yield and production, 2004

Vegetables/fruit	No. of smallgrowers	Planted area (ha)	Average yield (tons/ha)	Production (tons)
Asparagus	867	445	0.69	308
Baby corn	66 385	31 668	19.44	615 733
Mangoes	234 202	114 156	3.53	403 312

Source: Thailand, Office of Agricultural Extension and Development (Region 6, Chiang Mai), 2005.

Asparagus has emerged as a dynamic product offering small-scale Thai farmers an alternative high-value crop with a relatively high rate of return on investment. Export revenue of fresh asparagus was approximately \$24.6 million in 2004 and represented 14 per cent of Thailand's total vegetable exports. Thailand is among the world's top 10 asparagus exporters, with significant market shares in regional markets, especially in Japan and Taiwan Province of China, but only a small share of exports (1 per cent) go to Europe. Whereas Taiwan Province of China is the major market in volume terms, Japan is the number one destination market in value terms, indicating a higher price per unit in the Japanese market.

Most growers are organized in groups. Packinghouses and producer-exporters working together with grower groups are quite effective in the implementation of GAP. EurepGAP has relatively little impact as most asparagus is exported to regional markets that require only GAP certification issued by the Thai Department of Agriculture (see below).

The value of fresh mango exports has declined, from \$5 million in 2001 to \$4.5 million in 2004 (Department of Export Promotion, 2005). Due to problems related to pests (e.g. fruit flies) and high chemical usage (exceeding MRLs), only a small proportion of total mango production can be exported. Out of a production of 403,000 tons, 11,000 tons were from GAP-certified farms, of which 5,785 tons (1.4 per cent of total production) were exported. Mangoes are mainly destined for Asian markets, of which Japan is the largest market for fresh mangoes. Only a small amount is exported to Europe. The GAP certificate issued by the DOA is important for exporters. There is strong potential to increase mango exports if the quality and pesticide usage could be improved. To comply with food safety requirements, many growers of asparagus, baby corn and mangoes have GAP certification.

2. National experience with the development of “quality systems”

Thailand has developed a national GAP scheme for agricultural crops. The scheme has broad recognition in Japan and China, but is not yet fully recognized internationally. As a result, some large national producers must pay foreign certifying bodies to inspect sample areas in order to receive internationally accepted certification before they can export.

2.1 National GAP

In Thailand, the Government is responsible for the development of GAP codes and GAP control and inspection (Kraokaw, 2005). The Ministry of Agriculture and Co-operatives (MOAC) assigned the Department of Agriculture with the task of setting up a national GAP



programme for agricultural crops.⁶⁸

The Ministry of Agriculture and Co-operatives has authorized the ACFS,⁶⁹ the national regulatory body for food safety established in 2002, to act as an accreditation body to assess the competency of public and private organizations responsible for inspection and certification of agricultural commodity and food production under GAP schemes. The target is to achieve registration of 325,000 farms, with at least 145,000 farms certified during 2004-2008. The programme targets 29 crops in particular, of which 12 are main export crops.

As of July 2005, 432,851 farms had registered for GAP certification, 259,885 had been inspected and 140,351 farms with an area of 200,000 ha had obtained “Q GAP” (see below) for 31 fruit and vegetable crops (Suvanajinda, Surisingh and Somsri, 2005). The DOA food safety programme is accepted in certain Asian markets, including Japan, on a bilateral basis, generally under the “Q mark plus” (i.e. the Q mark plus stipulates requirements for specific crops and destination markets; see box 6 below). In the Japanese market, for instance, there are additional chemical and pest control regulations that need to be met.

The “Q” mark⁷⁰

Farmers who fulfil the requirements of the GAP standard can label their products with the GAP logo. Thailand has only one GAP logo, the Q quality mark, which is a third-party certification system owned by MOAC. It indicates that a product is of high quality and safe for consumers, and that its production process and post-harvest activities (e.g. packinghouses) are in accordance with the requirements of the national or equivalent GAP protocols.⁷¹

In 2005, ACFS established criteria for the GAP production process and its product certification (ACFS 9005-2548) as follows:

- The primary production process at farm level has to comply with the national standard for GAP and should be inspected and certified by authorized certification bodies;
- The production process, including packinghouse facilities, has to conform to hazard analysis and critical control point HACCP requirements and be certified by authorized certification bodies;
- Operators allowed to use the Q mark must observe procedures for taking back products and for complying with traceability requirements;
- Products using the Q mark will have been tested for their essential quality and analysed for toxic residues, contaminating or other dangerous materials; and
- In the case of products that are not yet included in the list of ACFS Agricultural Commodity and Food Standards, other international standards may be used after the approval of the National Committee on Agricultural Commodity and Food Standards (NCACFS).

⁶⁸ National GAP standards have also been developed for livestock and fisheries under the responsibility of the Departments of Livestock and Fisheries respectively.

⁶⁹ The ACFS works under the direction of the National Committee on Agricultural Commodity and Food Standards and also serves as its Secretariat. The main mandates of ACFS are to: (a) develop standards for primary and processed agricultural commodities and food products, including GAP and organic products, and (b) accredit quality management to certifying bodies responsible for inspection and certification of agricultural and food products.

⁷⁰ This section is based on Kraokaw (2005).

⁷¹ Products that carry the Q mark also display a code to assure consumers that products placed on the market can be traced back to the farm.



Benefits

The key added value of the present national GAP scheme is the strong incentive to farmers to effectively implement mandatory food safety requirements that are otherwise poorly enforced. In addition, through its bilateral recognition in some key Asian markets, the national GAP scheme facilitates access to export markets, mostly however in the form of “Q mark plus” requirements. GAP schemes may also bring benefits to stakeholders along the supply chain (i.e. growers, collector-brokers, wholesalers, retailers, exporters and consumers). However, exporters are most likely to benefit to the extent that they can access markets and increase trade volumes. They will also benefit from reduced costs by avoiding the need for several certifications if the national GAP standard is accepted in external markets.

EurepGAP certification is particularly important with regard to baby corn because 46 per cent of such exports (in volume terms) go to the EU. In the case of asparagus, EurepGAP is not directly as important as only 1 per cent of total exports (in volume terms) goes to the EU. However, although EurepGAP certification is not required in the Japanese market, certification may increase credibility and create a competitive edge.

Apart from possible positive effects on exports, GAP creates potential benefits for the environment, health and occupational safety to the extent that it requires reduced use of agrochemicals. Society as a whole can benefit as consumers are assured of safer products as a result of lower chemical and pesticide residues in food.

Obstacles

At the level of growers, the following are among the major challenges to the effective implementation of a national GAP programme:

- *Insufficient awareness about safety, environmental and social impacts of agricultural practices;*
- *Lack of knowledge and low levels of education.* Most growers lack an understanding of why GAP is needed and find it difficult to implement (e.g. with regard to documentation). They resist changing their farming practices. Some workers also lack knowledge of chemicals, use improper chemical agents or improper quantities of chemicals;
- *Poor understanding of GAP requirements.* Due to lack of knowledge and insufficient information about the GAP Programme, some growers and farm workers have problems understanding GAP requirements, which may result in ineffective GAP implementation;
- *Poor record keeping.* Problems with record keeping (e.g. on farm processes and chemical usage) may cause failures in the tracking system;
- *Low motivation/incentives to implement GAP.* Since GAP implementation normally does not lead to price premiums, there tends to be a lack of motivation to implement GAP;
- *Unhygienic practices in production and food processing.* One of the key challenges of GAP in fruit and vegetable production is to overcome problems related to the contamination of food from unhygienic practices during both pre- and post-harvest;
- *No direct links with markets.* Many growers do not have direct links with markets and are not directly exposed to the exigencies of customers concerning food safety. As a result, their farm practices may not strictly conform to GAP requirements;



- *A small number of large export companies.* The number of large producer-exporters who comply with EurepGAP standards and can play a key role in the effective implementation of national GAP programmes (e.g. through their networking with growers) is still small;
- *Insufficient organization of small growers in producer associations.* There are only a small number of effective groups of growers to facilitate the effective implementation of GAP by small growers;
- *Subsidization of pesticides.* The tax structure related to pesticides encourages the use of chemicals compared to other inputs. Since 1991, pesticides have been exempted from import duty, business and municipal taxes; and
- *Shortage of skilled labour.* The shortage of skilled labour is becoming a problem as people migrate away from rural areas, thus prompting a resort to labour-saving practices such as increased consumption of herbicides (Somsri, 2005).

At the level of government agencies, some challenges are:

- *Lack of clarity concerning GAP.* There is poor understanding of the role of a national GAP as a means of effectively achieving national food safety, and of the role of supplementary “premium” GAPs in facilitating access to export markets. Related to this are issues of the shape and sequencing of the national GAP;
- *Insufficient dialogue with stakeholders.* The current national GAP system has been designed and implemented by the Government. At the same time, a regional cluster of GAP programmes in the western part of Thailand (known as the “Western GAP cluster”) exists that was developed in a bottom-up approach. A more intensive stakeholder dialogue is required concerning the coexistence of the two schemes, its implications for the further design of GAP schemes and their ultimate benchmarking to EurepGAP;
- *Insufficient outreach.* Failure to inform and explain the GAP programme to growers may result in its ineffective implementation owing to their lack of understanding of its objectives and concepts; and
- *Lack of coordination in training.* Several government institutions (e.g. DOA and the Department of Export Promotions (DOAE)) as well as universities offer training in GAP, which may create some confusion among producers.

3. Smallholders

The policy of the Thai Government is to promote the production of safe and good quality food (fruit and vegetables), and to increase the competitiveness of Thai products in international markets. GAP recognizes that food production at the farm level and by smallholders should be safe, and outgrowers thus play a key role in GAP implementation. Participation in the programme is voluntary. Smallholders and outgrowers must register to become members and to be eligible for GAP training for specific crops, conducted by the Department of Agriculture. They must implement the GAP code on their farms, follow the guidance provided by crop-specific protocols and ensure that their farm practices meet GAP requirements. GAP implementation tends to be more effective among growers who produce for export markets.

Working groups from the DOAE have been conducting an assessment of production areas to identify the main products in each area and the risks created by improper farming practices. The growers and the community are involved in this project by providing the necessary information. These activities create baseline information on critical points that should be



addressed in the development of a national GAP. Growers are involved in the discussions on GAP arranged by DOA. Some growers have participated in GAP workshops and seminars organized by international organizations such as the FAO, in coordination with the Government. Some networks of smallholders and outgrowers of some crops, such as asparagus, baby corn, okra and chilli, are members of the working group on GAP clusters, for example in the western part of Thailand.

The private sector is also involved in terms of supporting smallholders and outgrowers with financial services and providing some advice. However, the private sector also faces limitations on knowledge transfer due to insufficient manpower. Most small producers have limited financial resources, insufficient knowledge of agricultural practices and production planning, and no direct access to the market. They therefore have to rely on manufacturing exporters for assistance in understanding and implementing GAP. As a result, they become dependent upon those buyers.

There is a need to promote cooperation among growers, for example through the creation of producers' groups. These groups would monitor the farming practices and product quality of their members. Strong growers' groups that can effectively implement GAP could increase their bargaining power vis-à-vis manufacturers and exporters for increasing the farm-gate prices of their products.

The proper functioning of groups of asparagus producers managed by packinghouses and manufacturing exporters in the western region is one example of the mutual benefits that can be gained by all those involved. On the one hand, growers benefit from a guaranteed high price all year round, and on the other, manufacturing exporters are assured of high quality and safe produce with guaranteed supplies. Well-functioning groups can maintain their competitive advantage by ensuring continuous GAP compliance.

Experience with GAP (including EurepGAP) implementation for some crops, such as asparagus and baby corn, appears to indicate difficulties for smallholders and outgrowers in meeting some requirements. Post-harvest sanitation, for example, is difficult to control. The lack of good sanitation for post-harvest handling can lead to physical contamination, such as contamination from soil if harvested crops are laid on the ground instead of being placed in clean storage areas. Calibration of agricultural equipment is also a problem, especially the nozzle of the sprayer, which is difficult to control. Some of these difficulties can be resolved by periodic training, self-monitoring and internal audit among group members.

4. Factors to be considered in a national GAP

According to the Thai study, the main national conditions that need to be addressed in the development of a national GAP are: (a) the lack of a system for tracking of agrochemical use, and (b) the high use of chemicals. With regard to the first factor, even when legally imported chemical agents are registered at the time of importation, there is no further record of their distribution to local shops around the country. Concerning the second factor, high chemical use in some crops reduces the competitiveness of their exports. For example, the DOA reports⁷² that with regard to mangoes, out of 2,310 samples taken in 2004, 10.7 per cent had residues over the MRL limits. As a result, Thai mangoes imported into Japan are quarantined and strictly inspected for residues. Box 5 illustrates how national factors and

⁷² Data taken from <http://www.doa.go.th/onestop/in.html>



development priorities could be woven into a national GAP.

Box 5. Incorporating national factors and development priorities into a national GAP

National factors	Development priorities	How can these development priorities be woven into a national GAP?
Lack of tracking of agrochemical usage	Expand the scope of the GAP to cover not only chemical contamination but also biological and physical contamination	Address the concerns about several kinds of contamination (biological, chemical and physical contamination) related to food safety issues.
High chemical usage	Introduce quality management systems, “from farm to table”	<i>At the farm level:</i> Follow the advice contained in crop-specific protocols and produce crops in accordance with relevant regulations and best practices. <i>At other levels:</i> Emphasize hygienic practices to prevent or minimize contamination hazards
	Enhance existing inspection and certification systems	<i>Inspection:</i> Train inspectors; increase the number of laboratories to provide faster services, or outsource some functions of the laboratory service to the private sector. <i>Certification:</i> Empower the Office of Agricultural Research and Development in each region to approve certification. Outsource certification bodies to the private sector.
	Develop and improve manpower capabilities	<i>Stakeholders: Growers</i> Explain concepts and how to implement GAP, and provide training in hygienic practices and food safety. <i>Stakeholders: Others</i> Explain food safety, and how GAP helps create food-safety and hygienic practices. Provide information and training to government staff: advisers, inspectors and auditors.

The Thai study argues for a gradual adaptive approach to the adoption of a GAP standard (through appropriate application of “must”, “should” and “may” provisions), including through awareness-raising, education and training of growers and advice on specific crops.

The Government could involve other institutions such as universities, research centres and the private sector. For example, the GAP Western Cluster is a success story of strong cooperation among several parties to promote GAP. The cluster was developed by the Kenan Institute in cooperation with Kasetsart University, Kamphaengsaen Campus and stakeholders in the supply chain, such as growers, grower groups, chemical suppliers and exporters, as well as representatives from the National Economic and Social Development Board (NESDB) and ACFS. The cluster aims to produce good quality and “safe” vegetables for both export and domestic markets and increase the competitiveness of the products. The cluster has succeeded in improving GAP and building a high level of commitment among growers for the continual improvement of farming practices (Korpraditsk, 2005).



5. The role of the Government

For developing and implementing a national GAP, the Government could consider the following:

- Formulating and implementing policies, such as those relating to food safety, which aim to improve quality and safety in order to meet customers' requirements and increase the competitiveness of agricultural products exported from Thailand;
- Designing the national GAP standard in a way that meets domestic and international buyers' requirements;
- Providing a framework and guidelines for GAP;
- Clarifying the role and responsibilities for each government agency;
- Clarifying the role of the private sector (laboratories, third-party certification, consultants, training on research, food producer associations) and fostering dialogue with stakeholders;
- Assigning potential parties for the implementation of GAP; and
- Setting up a monitoring system and a follow-up plan.

5.1 Complying with food safety regulations in key export markets

Apart from promoting the Q mark to promote exports, the Government of Thailand has implemented a number of requirements to help prevent Thai products from being denied access to external markets (see box 6 for examples). In a sense, they represent a "Q mark plus" approach.

Box 6. Export requirements for selected foods and vegetables

Product category	Requirements
Fresh durian and longan fruit	Exporters of fresh durian and longan fruit have to register with the DOA. Certification of SO ₂ residues is required for exports to China. China permits imports of durian and mangoes from only eight certified orchards in Thailand.
Twelve kinds of fruit and vegetables exported to Japan, China, Hong Kong (China), Malaysia, Singapore, the United States and the EU.	Products must be certified for pesticide residues. For 29 pesticides, residues are analysed on the basis of the regulations of the importing countries
Twenty-one kinds of vegetables and herbs exported to Japan	Vegetables must be certified pesticide-free and comply with Japanese regulations.
Export of pineapples, longans and lychees to Australia	Products exported to Australia have to come from DOA GAP certified orchards
Eight kinds of vegetables exported to the EU	A certificate is required concerning the analysis of <i>E.coli</i> and <i>Salmonella spp.</i> GAP certification is required All fresh fruit and vegetable exports must be analysed for pesticide residues. Exporters have to meet both Thailand's and the importing country's requirements.

Source: Suvanjintha, Surisingh and Somsri, 2005.

6. Recommendations

The country case study makes the following recommendations:

- Envisage a larger role for the private sector. The Government can play the role of



regulatory body, setting regulations, a code of practices and good monitoring systems. However, the Government should outsource the provision of advisory services on GAP, farm inspection services and certification to the private sector. This will make the certification process faster, more effective and credible;

- There is a need to examine successful cases of collaboration between the public and private sectors in the development of national GAPs by other countries;
- A national GAP should have three components for: (a) biological, (b) chemical, and (c) physical contamination. Currently, chemical contamination seems to be the major focus in the national GAP. In order to bring a national GAP in line with international buyers' requirements there is need for its gradual expansion, from the concern with chemical contamination alone to include also concern for biological and physical contamination;
- There is a need to promote public-private partnerships (PPP) with an international partner to help small producers in implementing GAP and securing food safety. Promoting links between EU buyers and Thai exporters can help to upgrade standards and practices along the supply chain;
- The public sector can finance part of the certification costs to enable small producers to implement EurepGAP; and
- Efforts should be made to ensure that successful national GAP programmes, which may differ from country to country, gain international acceptance, for example through the promotion of equivalence (including through benchmarking against EurepGAP).



J. VIET NAM

*Nguyen Dinh Hung, Hoang Bang and Nguyen Thi Tan Loc.
Case Study on Environmental Requirements, Market Access/Entry and Export
Competitiveness in the Horticulture Sector in Viet Nam⁷³*

1. Vegetable, fruit and flower production in Viet Nam

Viet Nam's diverse soil and climatic conditions are favourable for growing various agricultural crops, especially fruit, vegetables and flowers, on a year-round basis. Horticultural production satisfies domestic demand and some is exported to countries in other parts of Asia, North America and Europe. The share of fruit and vegetables in total exports (around 3.5 per cent in value terms) is the highest among the six countries analysed in this report. Good opportunities exist for further expanding exports.

In Viet Nam, the small-scale production and sale of vegetables, fruits and flowers contribute to the incomes of many rural households. Their accumulated knowledge, customs and experience plays an important role in the country's horticultural production. Horticultural produce generally has more value added than other crops, thus helping producers to increase their income and gradually improve their living standards; it is also more labour-intensive, thereby contributing to employment. In addition, it contributes to the transformation of cropping systems, to improving nutrition and increasing export earnings.⁷⁴

Given the importance of the horticultural sector, the Ministry of Agriculture and Rural Development of Viet Nam has formulated the Programme for the Development of Vegetables, Fruits and Flowers for the period 1999-2010. This programme aims at meeting domestic demand of vegetables (8 million tons) and fruit (6 million tons), and increasing their export value to \$1 billion in 2010. To achieve these objectives, producers and processors engaged in exports of horticultural products must have knowledge of requirements in important export markets, including environmental and health-related requirements.

Viet Nam has good opportunities to increase its horticultural exports because, among other reasons, the FAO estimates that the annual growth of world demand will increase at a higher rate than productivity; whereas consumption is forecast to increase by 3.6 per cent per year, the production of vegetables, fruit and flowers is expected to increase by only 2.8 per cent per year.

Fruit and vegetable processing is a new industry in Viet Nam. Although some processing has been taking place for a long time, the use of modern processing technologies is a recent development. Many private businesses and corporations, including foreign companies, have made investments in this area. The State-owned Vietnam Fruit and Vegetable Export

⁷³ All data was compiled by the author from information provided by the General Statistical Office of Viet Nam, Department of Agriculture and Rural Development.

⁷⁴ A study by the International Food Policy Research Institute (IFPRI, 2002) for the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) and the Bundesministerium für Wirtschaftliche Zusammenarbeit (BMZ) found that the net revenue per hectare from vegetable production is often more than double the typical net revenue per hectare from the production of rice and other staple foods. On the other hand, it points out, vegetable production is significantly more labour-intensive than rice production, and its profitability is subject to problems of market access and price instability.



Company (Vegetexco), has the largest processing capacity (canning and freezing) in the country. It manages 12 canning plants with a combined capacity of 70,000 tons per year, and 5 freezing plants with a capacity of 20,000 tons per year. Apart from Vegetexco, which is centrally managed, there are over 20 provincially managed State enterprises, about half of which are located in Ho Chi Minh City (HCMC) and Dong Nai. Finally, there are about 18 processing plants built by private companies, including wholly foreign-owned facilities with a total processing capacity of between 150,000 and 200,000 tons per year. In addition to these medium- and large-scale processing plants, there are numerous small-scale processing operations, engaged mainly in fruit and vegetable drying for which large-scale equipment is not necessary. Apart from processing by large factories and work places, private processors have significantly contributed to the conservation of fresh fruit and vegetables, such as longan (the fruit of the evergreen tree), lychees, bananas and jackfruit, by drying. These private processors are located close to production areas. By the end of 2003, investments had been made in 12 projects with a capacity to process 53,000 tons per year.

1.1 Vegetables

A study by IFPRI (2002) found that approximately 70 per cent of the poorest rural households are producing vegetables. They produce mainly tuber vegetables, which can be stored but do not have high economic value. Around 59 per cent of the richer households also produce vegetables that are sold immediately after harvesting.

Viet Nam has abundant vegetable varieties: of about 70 varieties, 40 are considered main crops. The area under vegetable cultivation has been continuously increasing throughout the country over the past 10 years. Since 1998, it has increased by 40.3 per cent, to 577.8 million hectares in 2003 (table 17). In 2003, average yields were 11.3 per cent higher than in 1999. A combination of larger areas and higher yields has resulted in a 56.3 per cent increase in total production, from 5.2 million tons in 1998 to 8.1 million tons in 2003.

Table 16. Viet Nam: Area, average yield and production of vegetables, 1998–2003

	1998	1999	2000	2001	2002	2003	Growth rate 1998–2003 (%)
Area (million ha)							
Viet Nam	411.7	459.1	452.9	514.6	560.6	577.8	40.3
North	234.4	240.1	245.5	269.7	281.4	296.3	26.4
South	177.3	219.0	207.4	244.9	279.2	281.5	58.8
Average yield (quintals/ha)							
Viet Nam	127.2	126.2	131.4	131.7	133.5	141.6	11.3
North	121.7	127.2	123.3	128.3	131.3	133.1	9.4
South	134.6	125.0	141.0	135.4	137.5	150.7	12.0
Production (million tons)							
Viet Nam	5 236.9	5 729.2	5 952.1	6 776.6	7 484.8	8 183.8	56.3
North	2 851.8	3 054.5	3 027.9	3 459.7	3 695.1	3 943.4	38.3
South	2 385.1	2 737.7	2 924.2	3 316.9	3 789.7	4 240.4	77.8

Source: General Statistical Office of Viet Nam, various issues (1998-2003), Department of Agriculture and Rural Development.



Apart from the increase in production, Viet Nam is now also growing a larger variety, as well as better and safer vegetables to the benefit of producers, traders and consumers; some specialized production areas have emerged for some main crops, such as cabbages, tomatoes, cucumbers and chillies. Vegetable production has become more market-oriented. Cultivated areas and yields of vegetables with large market potential, such as tomatoes, baby corn and cucumbers, have increased, and exports can be further expanded without affecting domestic consumption.

1.2 Fruit

Fruit production has grown strongly, especially since the launch of the Programme for the Development of Fruits, Vegetables and Flowers for the period 1999-2010. By 2003, the total area under fruit production had increased to 602,252 ha, with a total production of 5.7 million tons – an increase of 68.8 per cent over production in 2000. In the same period, yields increased by 11.7 per cent. The most productive regions are in the south and in the Red River Delta in the north, where fruits such as oranges, grapefruit, pineapples and mangoes are grown.⁷⁵

2. Domestic and foreign markets for Viet Nam's vegetables and fruit

In recent years, the quantity of vegetables produced in Viet Nam has been sufficient to meet domestic demand. In 2003, per capita vegetable production was above the target consumption of 80 kg per capita per year for 2005. This leaves room for exports. However, from May to September production is insufficient, which means that vegetables have to be imported from China to meet the demand in big cities, towns and industrial zones. The customs authority is unable to control all of these imports, as many of them arrive illegally. Thus it is difficult to determine the quantity and origin of vegetables that are not legally imported into Viet Nam through border gates.

Two periods mark the export of fresh and processed vegetables and fruit, which differ in terms of export organization, subsidies, export markets and product quality requirements. Prior to 1990, the principal export markets for fruit and vegetables from Viet Nam were the then Soviet Union and Eastern European countries. Local businesses concentrated mainly on production for domestic consumption and did not worry about seeking export markets. These markets required only medium-level quality. However, after 1991, exports to these markets collapsed resulting in a sharp decline in Viet Nam's total exports of fruit and vegetables, from \$52.3 million in 1991 to \$20.8 million in 1994. During that period, processing businesses experienced major difficulties because exports were not supported and facilitated as before. Exporters had to look for new markets and build and maintain relationships with new types of customers. Exports gradually recovered to levels above those registered in the earlier period, reaching a peak of \$330 million in 2001. However, the value of exports declined again in the period 2001–2003, falling to \$182.6 million in 2003.

⁷⁵ The Mekong Delta is still by far the most important fruit growing area in Viet Nam, but it has been less dynamic than some other regions. The fruit growing area in the Northern Uplands has expanded more quickly, reflecting the growing demand for fruit in Hanoi and by Chinese consumers. The fruit growing area in the southeast has also expanded rapidly. This area has been the centre of dynamic growth of the agro-industry, which produces fresh and processed fruit products for consumers in Ho Chi Minh City and for export.



There are several possible explanations for this recent decline, one being poor quality (due, among other reasons, to poor storage capacities and outdated post-harvest technologies), which render fruit and vegetable products less competitive. In addition, producers and processors have been largely unaware of quality, food safety and environmental requirements, and have not managed to establish links with large and stable customers. It is to be noted, however, that exports to China have accounted for most of the decline in the value of exports.

Viet Nam currently exports fruit and vegetables to some 50 countries, but most of the markets are still at an exploratory stage. The number of market outlets with exports exceeding \$10 million per year is very small: the main markets are China, Taiwan Province of China, Japan and the Republic of Korea (table 18).

Table 17. Viet Nam: Exports of fruit and vegetables by major destinations, 2000-2003

	(\$ million)				Share of each market in exports, 2003 (%)
	2000	2001	2002	2003	
Total	213.1	330.0	218.5	182.6	100.0
China	120.5	142.0	121.5	67.1	36.7
Taiwan, Province of China	20.8	23.3	20.9	21.6	11.8
Japan	11.7	14.5	14.5	16.7	9.2
Republic of Korea	13.7	20.2	7.8	9.7	5.3
Russian Federation	4.7	5.0	8.5	8.3	4.5
United States	2.2	2.0	5.3	8.1	4.4
Singapore	1.2	1.7	3.4	4.5	3.4
Lao People's Democratic Rep.	2.1	1.6	4.4	4.3	2.4
Indonesia	1.4	2.2	1.5	3.9	1.9
France	2.1	2.2	2.8	3.3	1.8
Malaysia	1.4	1.4	1.8	3.0	1.6
Australia	1.4	2.0	2.1	2.7	1.5
Germany	1.8	1.7	1.8	2.6	1.4
United Kingdom	0.9	1.0	1.4	1.8	0.9

Source: General Statistical Office of Viet Nam, various issues (1998-2003), Department of Agriculture and Rural Development. Fruit does not include nuts.

The share of China as a market for Vietnamese fruit and vegetables fell from around 56 per cent in 2000 to 37 per cent in 2003, while the share of exports to ASEAN countries (Indonesia, the Lao People's Democratic Republic, Malaysia and Singapore) increased. The increasing share of exports to countries with stringent requirements, such as Japan and the United States, is encouraging and a challenge for the future.

To achieve the export target of \$1 billion by 2010, the fruit and vegetable industry should consolidate its exports to traditional markets (such as China and the Russian Federation) and strengthen its position in regional markets with high potential (such as Cambodia and the Lao People's Democratic Republic) and in high-income markets (such as Japan, the United States and the EU).

3. Awareness among domestic producers

From the late 1980s, the Government of Viet Nam has promoted integration into the international economy through open and innovative policies. One of the objectives has been



to attract investment, technologies and management knowledge to strengthen industrialization and modernization. Nevertheless, due to the country's particular characteristics, with 70 per cent of the labour force engaged in agriculture, and the fact that agricultural production has increased sufficiently to meet domestic demand, agricultural exports play a key role in the country's development. They now account for 30 per cent of the total export value. Therefore, it is important to create awareness of the opportunities for further increasing export earnings by boosting the production of agricultural commodities, including fruit, vegetables and flowers. This requires producers to have adequate knowledge of quality, food safety and environmental requirements in export markets.

In order to assess producers' awareness of health-related and environmental requirements, the authors of this case study conducted interviews among producers of vegetables, fruit and flowers, mainly in the north of the country. They found that there was reasonable awareness of the health-related and environmental implications of the use of chemicals and pesticides. This could be explained, among other reasons, by the following:

- Analyses had frequently found traces of pesticides above the MRLs, and many farming households had themselves experienced problems as a result of eating unsafe fruit and vegetables. It was clear that for a long time, especially since the 1990s, many producers had not used pesticides properly;
- Training and pilot projects on food safety and IPM had resulted in enhanced awareness; and
- The Government has also played a useful role in disseminating information and providing guidance on safe vegetable production techniques. For example, the Ministry of Science and Technology, in cooperation with provincial departments of agriculture and rural development, has been promoting safe vegetable production processes.

Some progress has been made in certain specialized vegetable and fruit production areas, for example by:

- Properly implementing new growing practices combined with traditional ones; properly planning production in different seasons with a view to avoiding pest occurrence and disease development; picking insects by hand or using natural, herbal substances; and applying intercropping or multi-cropping systems in the field;
- Using new high-yield varieties that are resistant to or tolerant of pests and diseases, and applying the appropriate quantities of nitrogen, phosphorus and potassium fertilizers;
- Using biological inputs for safe vegetable production;
- Applying IPM techniques; and
- Strictly abiding by regulations relating to safe vegetable production.

4. Institutions and information management

The Research Institute of Fruits and Vegetables (RIFAV) – which specializes in the northern part of the country – and the Southern Fruit Research Institute (SOFRI) carry out research.

The Plant Protection Department of the Ministry of Agriculture and Rural Development (MARD) and the National Plant Protection Institute are involved in plant protection activities to minimize the risks of pests and diseases and protect the health of producers and consumers. These institutions control the safety of imported food products and help



ensure that exported products meet the environmental and health-related requirements of the importing countries.

The Horticultural Association of Viet Nam disseminates information and analysis of the important role of horticultural development and relevant developments in the sector. It assists farmers in improving production areas and in selecting technologies and products of good quality for domestic and external markets. In cooperation with the Ministry of Commerce, MARD and other institutions, the association has explored options for increasing exports.

The Fruit Association assists producers in accessing information on new fruit species, and especially information on domestic and foreign markets. Its activities are concentrated in southern Viet Nam, which has large areas devoted to fruit cultivation.

5. Current adjustment approach

The Government of Viet Nam is making some adjustments to health-related and environmental requirements, and thereby seeking to improve access to external markets, in order to promote and guarantee sustained export growth. The adjustment process focuses mainly on the following:

- Applying preventive measures, for example by requiring producers, processors and exporters to apply HACCP principles;
- Limiting the use of chemicals; strengthening regulations concerning the utilization of agricultural chemicals and storage chemicals for fruit and vegetables, and regulating the use of additives in food processing;
- Investing in R&D to identify agricultural chemicals that cause little or no environmental damage but can be effectively used in production as well as in pest and disease management.
- Applying new technologies to production, storage and processing of horticultural products.

6. Domestic standards and regulations for horticultural products

Standardization is considered a very efficient tool for the process of Viet Nam's integration into the world economy, the promotion of fair competition and the protection of domestic markets and consumers' rights. Standardization is essential for the purpose of managing, supervising, inspecting and examining food quality and sanitation. In the preparation requirements for food products in general, and horticultural products in particular, the following need to be taken into account:

- Standards issued by Codex Alimentarius, established through discussions and negotiations among participating countries;
- Requirements in key export markets;
- Local conditions and the development needs of Viet Nam (e.g. standards should take account of conditions for production, storage and processing in Viet Nam); and
- Adjustment approaches in Viet Nam, for example with regard to the production of safe fruit and vegetables, including organic products, the reduction and better control of the use of chemicals, and the reduction or avoidance of adverse environmental impacts.

Certain Vietnamese regulations – TCVNs – established by Viet Nam's national standard



setting organization – have been modified in response to new market requirements. In April 1988, the Ministry of Health approved a list of sanitation regulations for foods and foodstuffs covering a range of areas:

- 21 TCVNs for foodstuff packaging,
- 20 TCVNs for foodstuff additives,
- 105 TCVNs for foodstuffs,
- 155 TCVNs for technical regulations for food products

Only one of these TCVNs is a product requirement for fruit and vegetables; it sets the maximum allowable content levels for heavy metals, maximum levels for the use of micro-organisms, and MRLs for pesticides. All other TCVNs included in the above-mentioned list relate to testing methods.

In addition, the Department of Science and Technology in the Ministry of Agriculture and Rural Development issues regulations for seedlings/planting materials, seeds, technical procedures and testing methods of fruit and vegetables.

7. Good agricultural practices in Viet Nam

As part of UNCTAD’s CTF project on Reflecting National Circumstances and Development Priorities in National Codes on Good Agricultural Practice that can be benchmarked to EurepGAP, a team from Nong Lam University prepared a paper entitled, GAP Implementation in Viet Nam.⁷⁶ This section draws on that paper.

7.1 Safe vegetables

Improper use of agrochemicals has been a serious problem in Viet Nam, in particular since import liberalization was introduced in 1992. In 1995, 354 persons died as a result of food poisoning in the Mekong River Delta in South Viet Nam. There have also been cases of inappropriate application of agrochemicals. In response to public concern, in 1998 MARD issued a Temporary Regulation on Safe Vegetable Production. The regulation sets criteria for safe vegetables and MRLs, based largely on the Codex Alimentarius. “Safe vegetables” are considered safe for consumers and the environment because they comply with MRLs for toxic chemicals and micro-organisms. Knowledge of IPM and technical guidelines for specific products also play an important role in the production of safe vegetables.

The movement for safe vegetable production, a voluntary scheme, has spread since 1999-2000. The Government encourages the production of safe vegetables and assists interested farmers’ organizations to implement it. Certification procedures are carried out by local governmental agencies, based on criteria such as clean soil and water resources, sound technical procedures (i.e. the application of good seeds, appropriate use of organic and inorganic fertilizers, limited use of growth stimulants and pesticides, and appropriate pre-harvest intervals) and satisfactory inspection results (i.e. testing for pesticide residues that need to comply with MRLs). The certification has to be renewed every one or two years, based upon the actual production results, using criteria that may differ from province to province. For example, in Ho Chi Minh City, 95 per cent of the vegetables have to be below the MRLs and 95 per cent

⁷⁶ Phan Thi Giac Tam, Le Thanh Loan, Hoang Thi Tuy and Trinh Thuc Hien, Hoang Thi Tuy, Overview of Production and Trade Patterns of Horticultural Products and the Role of EurepGAP. Nong Lam University, Ho Chi Minh City, November, 2005.



of farmers need to have taken training on safe vegetable production; and in Dalat, the results of laboratory analysis of vegetable samples have to be satisfactory.

The case study found several weaknesses in this certification scheme, such as the small number and frequency of samples for residual analysis, inconsistent results due to quick testing methods applied during inspection, lack of market outlets, high prices and the failure to cover post-harvest activities.

7.2 Implementation of GAP in South Viet Nam

The paper analyses two examples of GAP programmes in South Viet Nam: the Ho Chi Minh City (HCMC) GAP programme and the Tien Giang GAP programme. Government authorities still play an essential role in the first programme, while in the second, the Vietnam Fruit Association (Vinafruit), an association of fruit producers, plays an important role as facilitator of the programme. This could indicate a gradual move from the Government's traditional top-down approach to a more participatory approach involving an increasing role for associations and farmer organizations.

The HCMC GAP programme has been implemented since November 2005 by the Department of Agriculture and Rural Development (DARD), the Department of Science and Technology (DOST), the Department of Trade (DoT), the Department of Health (DoH), and the Bureau of Standard and Quality Measurement (BSQM), in cooperation with both farmers' associations and consumer associations in HCMC, working under the auspices of the municipal board. Their task is to establish criteria and to launch an inspection system under the authority of the DARD, the BSQM, the DOST and the DoH.

The Tien Giang GAP programme was initiated by Vinafruit in March 2005. Vinafruit, the Southern Fruit Tree Study Institute (Tien Giang Province), government agencies and a large number of fruit growers, enterprises and research institutes participate in the GAP Association.

Both programmes are concerned with the role of the market and market requirements, and seek to improve the competitiveness of Vietnamese fruit by strengthening links throughout the supply chain, which involves producers (farmers and farm cooperatives), fruit and vegetable wholesale markets, companies and retail markets. The study argues that whereas the participatory approach aims at involving producers and traders, the involvement of various government agencies in control and certification may pose a problem of coordination, in particular with regard to the HCMC GAP programme.

The Swiss Import Promotion Programme (SIPPO), the Viet Nam Competitiveness Initiative (VNCI) – sponsored by USAID, the Japan International Cooperation Agency (JICA) and GTZ – have supported activities aimed at enhancing awareness and understanding of GAPs and supply chain management in the fruit and vegetable sector with a view to facilitating exports to the markets of developed countries. In October 2005, the Australian Agency for International Development, USAID and the Southern Fruit Research Institute (SOFRI) started the Dragon Fruit GAP Project to help the industry achieve standards that would be acceptable to European retailers and access higher-value export markets. Initial activities (training and demonstration projects) are to be carried out in Binh Thuan Province and cooperation



established with exporters such as Metro Viet Nam and Vegetexco to gain access to the EU and other Western markets. Farmers in other southern provinces will join later.⁷⁷

Some of the projects outlined above have remained isolated initiatives or have run into problems (e.g. the Dragon Fruit project in Binh Thuan Province), the main ones being: (i) little or no support or flanking measures by government institutions or local authorities, in particular technical and financial support or social recognition; (ii) the implementation of EurepGAP requires the cooperation of various actors along the supply chain, but in the Dragon Fruit project, for example, no trust was established between the company investing in EurepGAP certification and suppliers; and (iii) high start-up investment costs have ultimately proved unbearable (Phan Thi Giac Tam et al, 2005).

8. Conclusions and recommendations

In order to help strengthen the position of horticulture in Viet Nam's agricultural sector, and support its development and competitiveness vis-à-vis other countries in the region, in particular China and Thailand, the Government, the business community, donors and international organizations should cooperate in improving the capacities of producers to adequately respond to environmental requirements and improve international competitiveness. The following are some recommendations:⁷⁸

For the Government:

- (1) Strengthen knowledge and awareness of the need to enhance environmental protection and product quality;
- (2) Encourage investment and innovation so that new technologies will contribute to enhancing product quality and international competitiveness;
- (3) Gradually establish and improve national standards and regulations, taking into account requirements in international markets. Develop a comprehensive system of enforceable standards and regulations to assist companies in meeting the requirements of local and international markets;
- (4) Invest in scientific research related to food safety and the use of chemicals in the production, processing and storage of food products;
- (5) Strengthen environmental policies and legislation and make their application more effective by issuing specific regulations, guidelines and documents;
- (6) Support SMEs by providing them with easy access to information and creating incentives to help them overcome obstacles arising from lack of capital and access to technology, so that they can develop their full potential in terms of growth, employment, competitiveness and product value while responding adequately to environmental requirements;
- (7) Create an inter-ministerial working group on a national GAP, to develop a sound conceptual approach and facilitate policy coherence at the central and regional governmental levels;
- (8) Encourage national stakeholder dialogue on the development of a national GAP; and

⁷⁷ Vietnam News Agency, Dragon fruit industry gets international help, October 2005. <http://www.itfnet.org/articles.content.fm?ID=379&Channel=General>

⁷⁸ Some recommendations are based on the UNCTAD National Training Workshop on Environmental Requirements and Market Access for Horticultural Products, Hanoi, 3-4 November 2005 (for more information see: http://www.unctad.org/trade_env/meeting.asp?MeetingID=162).



- (9) Improve international negotiating capacity, and engage the business community in information exchanges and in the design of strategies to enable adjustment to international regulations in the areas of trade and the environment.

For businesses/enterprises:

- (1) Establish long-term trading strategies, taking into account environmental standards and regulations, and carry out cost-benefit analyses;
- (2) Train personnel and enhance the awareness of workers, especially in processing enterprises; greater awareness is more likely to induce workers to abide by regulations. Invest in human resources development and training to help meet strict requirements and to apply production methods that require advanced technologies and innovation;
- (3) Invest in technological innovation in order to apply quality/environmental management systems in conformity with HACCP, ISO 9000 and ISO 14001; and
- (4) Create public-private partnerships on national GAPs.



PART III

CONCLUSIONS AND RECOMMENDATIONS

K. CONCLUSIONS AND RECOMMENDATIONS

1. Lessons learned from the case studies

One of the lessons learned from the analyses presented so far is that there is a strong need to disseminate information on developments in standards and regulations, and to involve key trading partners in consultations concerning new regulations and their revisions. This may enable countries that are moving towards more stringent food safety and environmental requirements to achieve the legitimate objectives of the proposed measures while avoiding unnecessary adverse trade effects on developing countries. The need for capacity building to assist developing countries in their participation in the work of relevant international standard-setting organizations, such as the Codex Alimentarius, and key private sector standard-setting bodies, such as EurepGAP, and in complying with standards and regulations has also been highlighted. Discussions in the SPS Committee on special and differential (S&D) treatment are particularly relevant to the issues raised in this section.

New legislation has sometimes been developed without providing adequate and timely information to potentially affected developing countries. For example, Hirst (2001) describes how the EU Plant Protection Directive was prepared with little understanding of the potential impacts it could have on exports of developing countries. Little if any effective action was taken to inform producers and exporters in developing countries of the possible implications of this legislation. Activities carried out as part of the UNCTAD/FIELD project indicate that Asian developing countries experience difficulties in understanding and assessing the impacts of regulations that could significantly affect their exports, such as Japan's Food Sanitation Law.⁷⁹

As a result, technical assistance has often been provided in a "fire-fighting" fashion. For example, Hirst (2001) notes, "eventually, by early 2000, the [European] Commission became convinced that a real problem did in fact exist. While they were adamant that no concessions could be made as to the timing or substance of the legislation, and no compromise on food safety would be entertained, they asked COLEACP to prepare a proposed action programme, to be funded by the Commission, that would support exporters, in ACP countries in particular, to maintain their competitive supplier status in the EU markets by helping them to comply with the new regulations." Article 50 of the recent Regulation (EC) No 882/2004 on official food and feed controls takes a much more proactive and anticipatory approach and should be fully embraced by exporting developing countries (see Part I above).

The inclusiveness and transparency of the private standard setting process can be at least as problematic as that of public regulations, but without the multilateral guarantees of the SPS and TBT Agreements. The initial EurepGAP protocol, for example, was imposed on developing-country suppliers without any prior consultation or impact assessment (Dijkstra,

⁷⁹ In September 2004, Japan, one of the major markets for Philippine mangoes, lowered the MRL of chlorpyrifos (a toxic substance found in some pesticides) for fresh mangoes from the Philippines, from 0.5 parts per million (ppm) to 0.05ppm. This was perceived to be arbitrary when compared with the MRLs for various other fruit that are directly consumed without peeling: apples (1.0ppm), kiwis (2.0ppm), cherries (1.0ppm), grapes (1.0ppm); and with MRLs of fruit like mangoes that are peeled and scooped before eating: bananas (3.0ppm), and citrus fruit (1.0ppm) (Amores, 2004).

2006).⁸⁰

Given the considerable impact of private sector standards on trade in FFV, and the limitations that WTO members face in dealing with possible unnecessary adverse trade effects of these standards, there is a need for more dialogue between representatives of private sector standard setting organizations, governments and producers/exporters in developing countries. Donors can play an important role in facilitating consultations.

In the WTO context, some progress has recently been made. For example, the recommended procedures for implementation of the transparency provisions of the SPS Agreement have recently been revised, with members now being requested to identify which countries may be particularly affected by measures being notified (G/SPS/7/Rev.2). In practice, however, WTO members tend to indicate that “all countries” may be affected.

The Procedure to Enhance Transparency of Special and Differential Treatment in Favour of Developing Countries (G/SPS/33), adopted by the SPS Committee in October 2004, requires an importing member to consider any requests for special and differential treatment or technical assistance which are made in response to the importing member’s notification of a new or modified SPS measure. The importing member is to subsequently submit a specific addendum to its notification which indicates that special and differential treatment or technical assistance had been requested, the member(s) affected, the concern(s) identified, and if special and differential treatment was provided, and if so, the treatment provided. This procedure is intended to ensure that the importing member consults with any developing-country member that has expressed a concern regarding the potential effect of the proposed new/modified measure on its exports with the aim of finding a means to address its concerns. The notification of solutions is intended to ensure full transparency, especially for other developing- country members. In practice, however, at the time of drafting no notifications had been made.

Individual WTO members have also made efforts to enhance transparency of their requirements. In July 2005, the EC organized a meeting for third countries to provide information and clarifications on the revised EC hygiene and food and feed controls legislation. The Commission has also conducted some Internet consultations. For example, in March 2005 DG Health and Consumer Protection launched an Interactive Policy Making (IPM) online consultation on the revision of the Pesticides Directive 91/414/EEC. The website address⁸¹ provides a single access point on the Internet for open public consultations (generally lasting eight weeks). It also displays the results of previous consultations. In addition to improved stakeholder consultations, the EC has developed a consolidated impact assessment method. A recently-conducted extended impact assessment of Regulation (EC) No 882/2004 for the ACP group of countries not only concluded that these countries may be severely affected by the Regulation, but also estimated the amount of aid that would be required to help them strengthen their basic capacity to meet the new requirements (Dijkstra, 2006).

80 “On the other hand, the EurepGAP example shows that private standards can also evolve more quickly than public standards. The EurepGAP protocol of 2004 for fruit and vegetables is less Eurocentric than the earlier version of 2001. Moreover, EurepGAP allows benchmarking of national GAP protocols of exporting countries against EurepGAP” (Dijkstra, 2006).

81 http://europa.eu.int/yourvoice/consultations/index_en.htm

2. Current options for influencing the development and implementation of standards and regulations

2.1 Government regulations

Asian developing countries have several options to influence the development and implementation of Government regulations: one at the bilateral level, and another at the multilateral level, in particular through the WTO (this section does not address the important issue of effective participation in the development of international standards).

In the EU, the recently adopted Better Regulation Package essentially aims at improving regulations by providing better information about their impacts and by organizing systematic consultations with all stakeholders. The impression is that so far regulatory impact assessments have not paid due attention to possible implications for third countries' trade and development. A provision in recently adopted guidelines seeks to address this problem. Consultation processes are open to all individuals and private or public organizations (including governments) in non-EU countries, including developing countries.

At the multilateral level, the WTO provides the following opportunities for commenting on SPS and TBT measures of trading partners:

- Commenting on WTO notifications;
- Request for explanation/clarification from the WTO Enquiry Point in the importing country;
- Raising the issue at SPS and/or TBT Committee meetings; and
- Requesting formal consultation (dispute settlement).

One concern repeatedly raised during different activities carried out under the UNCTAD/DFID project has been the need for more information on the risk assessment carried out in the importing country as a result of the adoption of certain SPS measures and the establishment of, for example, specific MRLs.

With regard to specific trade concerns raised in SPS Committee meetings, some 30 per cent of the concerns raised by members in the period 2001-2005 referred to SPS measures potentially affecting trade in fruit and vegetables. Table 19 shows that China has raised a few issues concerning measures by Japan and the United States. In addition, Thailand and the Philippines (on behalf of ASEAN) have expressed concerns relating to Australia's SPS measures.

2.2 Private sector standards

The inclusiveness and transparency of the private standard-setting process can be at least as problematic as that of public standards, but without the multilateral guarantees of the SPS and TBT Agreements. Developing countries can nevertheless raise concerns in bilateral consultations and discussions in the WTO SPS and TBT Committees, as was done in the SPS Committee meeting in May 2005.

However, given the large impact of private-sector standards on trade in FFV and the limitations that WTO Members face in dealing with possible unnecessary adverse trade effects of these standards, there is a need to explore alternative ways to influence the development of private-sector standards.

Governments of developed countries, even when they cannot take responsibility for private-sector standards in the WTO context, could engage in discussions with private-sector standard organizations. For example, the Commission of the European Communities has made private standard-setting bodies aware of the concerns raised by some developing country Members at the SPS Committee and had asked them to take these concerns into account. The Commission had also organized an informal seminar on “Private food quality standards and their implications for developing countries” (7 December, 2005) and had been inviting private-sector bodies to participate in certain technical cooperation workshops for developing countries.

Table 18. Specific trade concerns related to fruit and vegetables: Issues raised by selected Asian developing countries in SPS Committee meetings, 2001-2005

Country raising the concern	Issue	Specific trade concern
The Philippines (on behalf of ASEAN)	Australian restrictions on tropical fresh fruit	For some fruit, Australia’s stringent SPS measures are being applied without an accompanying risk assessment, and many Australian measures are more trade restrictive than necessary.
Thailand	Australia’s import restrictions on durian	Continuous requests for additional data on Australia’s risk assessment; stringent sampling requirements, seasonal limitation on shipments, and the requirement that fruit come only from the eastern region of Thailand.
China	Japan’s amendment of the Food Sanitation Law	Entry into force in September 2002 of the amendment of the Food Sanitation Law prohibiting the sale, manufacturing and import of specific food, food additives, apparatus and container/packages when considerable amounts of foods were assumed not to be in conformity with the provisions of the Law. Inappropriate use of emergency notification, which did not allow members to comment before the measure was enforced.
China (supported by the Philippines)	Japan’s amendment protocol on MRLs for pesticides, veterinary drugs and feed additives	The proposed adoption of a single standard limit of 0.1ppm for close to 700 types of pesticides, veterinary drugs and feed additives for which no specific residue limit had been established, which could jeopardize Chinese exports of vegetables to Japan. Japan should provide: the science-based risk assessment that had led to the amendment of the MRLs, a comment period of at least 60 days, an adequate adaptation period, and clarifications on the Japanese detection method for residues. The Philippines requested relevant information from Japan in order to assess the possible implications of this proposed amendment on the Philippines’ exports to Japan.
China	United States restrictions on imports of Ya pears	Continued APHIS suspension on imports of Ya pears from China (on the grounds that new species of the fungus <i>Alternaria sp.</i> had been found in the Chinese pears) despite bilateral cooperation to resolve the problem; China believes it has achieved a result satisfactory to both Chinese and United States specialists.

Donors also play an important role in facilitating dialogue between representatives of private-sector standard-setting organizations in developed countries, governments and producers/exporters in developing countries.

Non-governmental initiatives can also play a potentially important role. For example, the International Social and Environmental Accreditation and Labelling (ISEAL) Alliance (a formal collaboration of leading international standard-setting and conformity assessment organizations focused on social and environmental issues) has developed a Code of Good Practice for Setting Social and Environmental Standards. The code provides a benchmark to assist standard-setting organizations to improve how they develop social and environmental standards.

The private-sector standard-setting themselves should create opportunities for inputs from stakeholders in developing countries. With regard to EurepGAP, advantage should be taken from opportunities to channel inputs from national experts to EurepGAP Technical Standards Committees for Fruit and Vegetables. EurepGAP membership provides producer organizations, exporters and other stakeholders in developing countries with an opportunity to participate and contribute to various working groups. EurepGAP National Technical Working Groups can also play a role in influencing standards development.

Finally, UNCTAD's CTF has been set up, *inter alia* with a view to providing a forum where trade and development implications of key private sector standards can be discussed among a variety of stakeholders.

3. Conclusions

Production of fruit and vegetables provides good opportunities for developing countries to diversify exports, alleviate poverty, promote rural employment and improve human health. A number of developing countries have become important FFV exporters, including of high-value, off-season, exotic and organic fruit and vegetables. In many cases the international donor community is supporting such efforts, in particular through projects to support smallgrowers.

Yet certain developments in FFV trade are a matter of concern, especially the increasingly complex and stringent food safety and environmental requirements in key export markets as a result of a combination of government regulations and private sector requirements. Such requirements include:

- Phytosanitary regulations, in particular in the markets of Japan and the United States, where many FFV can only be imported from specific countries through a system of individual country lists of products approved for entry, and where special inspection and treatment requirements apply to specific products;
- Traceability requirements, including for fruit and vegetables and mandatory use of HACCP principles (for processed fruit and vegetables). While governments cannot directly apply such requirements extra-territorially to producers in third countries, private-sector importers often impose similar requirements to foreign suppliers to ensure that they meet their own obligations, and often they impose more stringent requirements;
- More stringent MRLs for pesticides;
- A reduction in the number of pesticides that can be used on products exported to the EU and Japan as a result of the establishment of "positive lists" for active substances allowed for use in pesticides found in products exported to those markets. This constitutes an implicit incentive to create an inventory of related crop-protection products in exporting developing countries; and
- An implicit incentive to create an institutional structure on food controls that is equivalent to the one in importing countries.

In many cases, regulatory requirements are transmitted to exporters and producers in developing countries through the supply chain. These requirements may be even more stringent, as importers may require higher margins of safety to comply with their legal obligations. Private sector standards, such as EurepGAP and other codes set by retailers play an increasingly important role in international trade in fruit and vegetables.

Concern has been expressed that new trends in international FFV trade may result in the exclusion of smaller countries from exports and of smallgrowers from the supply chain. So far, the only effective mechanisms for involving smallgrowers in supply chain management

requirements such as EurepGAP have been by means of: (a) “backward integration” through exporters; (b) product separation; (c) intensified extension; and (d) close outgrower governance (Jaffee, 2003a: 37-39).

The costs and structural changes associated with compliance with new environmental and food safety requirements can cause significant redistribution of welfare across countries, along supply chains and within societies. According to Jaffee (2005), these distributional impacts can occur as a result of direct changes in product, labour and land markets, or through various secondary effects (e.g. in public health or in local environmental conditions). Jaffee (2004) suggests that the most currently pursued adjustment strategies to the new environmental and food safety requirements:

- Favour large over small industries;
- Favour larger over smaller traders and processors;
- Favour incumbents over new entrants;
- Induce shorter or less geographically dispersed supply chains;
- Lead to capital to displace labour in some functions; and
- Favour more permanent employment over temporary.

This report has examined the experiences of six Asian developing countries (Bangladesh, China, Cambodia, the Philippines, Thailand and Viet Nam) in coping with new requirements and in designing and implementing proactive adjustment policies. Several of these countries are already heavily involved in FFV exports or have ambitious plans for the future. For example, China is the world’s largest producer of fruit and vegetables, and, despite its huge and rapidly increasing domestic consumption, it has become one of the world’s largest FFV exporters. Similarly, Viet Nam, which is now producing sufficient fruit and vegetables for its population, is planning to export \$1 billion of such produce by the year 2010 (i.e. roughly double the 2004 level).

Some of the countries analysed in this report have already experienced obstacles related to SPS measures and/or quality requirements when exporting fruit and vegetables to international markets. For example, as noted, Japan, during a certain period, restricted imports of frozen vegetables (in particular) originating in China and okra from the Philippines. The monthly import refusal reports issued by the United States FDA show a relatively high number of refusals related to quality and other requirements affecting consignments of fruit and vegetables imported from China and Thailand. Similarly, the decline of Vietnamese exports of fruit and vegetables in the period 2001-2003 has been largely attributed to quality problems (interestingly, related to stringent requirements in China, a country where previously requirements had not been very stringent).

The country case studies highlight a number of obstacles to increasing FFV production and exports. With regard to the production of safe and good quality FFV, the following constraints have been highlighted:

At pre-farm-gate level

- The limited size of arable land and/or lack of property rights;
 - Lack of good quality seeds and input materials and of related information, due to weak institutions and R&D facilities;
 - Low levels of education of farmers and high illiteracy rates (which may also adversely affect GAP implementation, see below);
 - Post-harvest losses, reducing profits to farmers and processors. Horticultural crops are often highly perishable, which restricts the possibility of producers to store them to cope with price fluctuations;
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- Unsustainable production methods. Commercial production of horticultural crops is often associated with intensive applications of agricultural chemicals and water, sometimes causing severe environmental impacts. Poor farmers usually lack access to inputs or knowledge concerning safe use of chemicals. Some countries also accord preferential treatment to agrochemicals, either through subsidies or tax exemptions. Such practices should be reviewed; and
- The majority of developed countries have established MRLs for FFV that are more stringent than internationally harmonized levels.⁸²

Problems in implementing GAP:

- Many developing countries lack a coherent and well-coordinated policy approach on developing national GAP programmes. Some uncoordinated top-down government-driven or bottom-up private-sector- or donor-driven GAP initiatives exist, a number of which are unsustainable or already faltering;
- Discussions on GAP at national level generally lack a conceptual underpinning and fail to involve all key stakeholders. Once appropriate concepts have been developed, effective forms of public-private dialogue and appropriate partnerships need to be established;
- There is a lack of incentives for compliance with the EurepGAP standard, such as price premiums and the possibility to use a promotional logo;
- Meeting GAP requirements tends to be more costly for small than for large farmers due to higher initial investment costs and permanently higher monitoring and certification costs. Long-term government and/or donor support are likely to be required to permanently offset these higher costs if smallholders are to become or remain part of global supply chains;⁸³
- Traditional wholesalers and food sellers try to compete with FFV sold to supermarkets and have thus become more demanding towards their suppliers. This improves the overall quality of FFV, but it also exposes small farmers to the risk of losing their traditional markets if they are unable to meet the new requirements; and
- Laboratory costs for pesticides residue analysis usually required by GAP codes are expensive and pose difficulties to small-scale producers.⁸⁴

At post-farm-gate level:

- Poor road conditions to main markets except for peri-urban production. Modes of transportation have a significant impact on the quality of fruit and vegetables reaching the market;
- Lack of market information and, for small producers, often a lack of resources and skills to interpret market information; and
- Uncertainty caused by high price volatility due to wide fluctuations in supply and demand and lack of market information.

Exporters

Among the obstacles facing exporters the following have been highlighted:

⁸² Out of a total of 154 WTO SPS notifications related to tropical fruit and vegetables for the period of 1995 to 2004, no less than 117 concerned diverging MRLs (Pay, 2005: 44).

⁸³ The cost-saving potential from GAP methods (e.g. through efficient agrochemicals management), is also more pronounced for large than for small producers, because the latter usually cannot afford to apply them to any great extent (ESCAP, 2005: 42 – 45).

⁸⁴ Often there are no laboratories accredited to ISO 17025 or an equivalent standard for testing, as required by the EurepGAP control points on crop protection residue analysis and water quality.

- Lack of timely information on food safety and environmental requirements in external markets;
- Poor linkages between producers and exporters; and
- Lack of transport facilities (e.g. limited air cargo capacity for exports from Bangladesh).

Production and exports

Both production and exports are adversely affected by a number of handicaps in terms of poor infrastructure and weak institutions, in particular:

- Lack of administrative, technical and other capacities to comply with new and more stringent requirements;
- Inadequate national extension support and capacity-building support from international donors;
- Insufficient R&D efforts;
- Insufficient or poor public-private dialogue and creation of related public-private partnerships;
- Rising standards, which serve to accentuate underlying supply chain strengths and weaknesses and thus affect differently the competitive position of individual countries and various market participants. This emphasizes the importance of considering the effects of food safety and agricultural health measures within the context of wider capacity constraints and underlying supply chain trends and drivers (Jaffee and Henson, 2004); and
- Insufficient GAP training for farmers, collectors of fruit and vegetables, packing houses and exporters.

Proactive approaches

All countries examined in this report have some legislation in place concerning food safety, and have assigned responsibilities to key ministries, although, as mentioned above, they face many constraints. Donors and intergovernmental organizations play an important role in assisting them in overcoming these constraints. Several countries have also made some progress in developing and implementing GAP protocols, both at national level and for major production regions, and in providing training and other assistance to small producers to implement GAP and IPM.

In general, however, government ministries in the countries analysed have not been very active in collecting and disseminating information and in conducting analyses on emerging food safety and environmental requirements or in assessing their possible implications for exports and competitiveness of fruit and vegetable production. Inter-ministerial coordination and consultations with the private sector have been scarce. The creation of successful public-private partnerships has been the exception rather than the rule.

A recent World Bank report presents the following simple conceptual framework (also used in the case study on Bangladesh) to characterize alternative strategic responses to food safety and environmental requirements.

The case studies provide several examples of the “compliance” approach, which is mostly reactive (i.e. after the standard has been put in place or even after acute market access or competitiveness problems have arisen). An example is the adjustment in China following Japanese restrictions on imports of frozen vegetables. Examples of proactive policies are few (e.g. the Q mark and the Western GAP Cluster in Thailand), but are increasingly considered a necessity.

Box 7. Strategic responses to requirements

	Reactive	Proactive
Exit	Wait for requirements and give up	Anticipate requirements and leave particular markets
Compliance	Wait for requirements and then comply	Anticipate requirements and comply ahead of time
Voice	Complain when requirements are applied	Participate in standard creation or negotiate before requirements are applied

Source: Jaffee, 2005.

In the context of the CTF, some broad proactive approaches have been suggested, which could involve the following strategies and actions to be taken by stakeholders in both importing and exporting countries (box 8). Some of these have also been proposed in the country cases studies.

Box 8. Proactive adjustment strategies to address food safety and environmental requirements

Elements of a proactive strategy	Proposed action
Enhance transparency in standard setting (particularly in developed countries).	<ul style="list-style-type: none"> • Go beyond WTO notification requirements by providing information and analysis on the rationales for food safety and environmental measures, and, where relevant, on risk assessments. • Involve potentially affected exporting countries in pre-standard-setting consultations. • Include a consideration of possible trade implications of proposed measures for developing countries in regulatory impact assessments and revisions of legislation. • Link impact assessment to technical assistance needs in accordance with the SPS Committee decision, G/SPS/7/Rev.2.
Develop national strategies to strengthen capacities to respond to requirements.	<ul style="list-style-type: none"> • Promote multi-stakeholder dialogues on conceptual issues involved in proactive adjustment policies (for example, as discussed in this report in the context of national GAP programmes). • Strengthen the roles of the private sector, NGOs and research institutes in creating/enhancing awareness, training and creating/enhancing links between producers and exporters/importers, paying special attention to smallgrowers and small processing firms.
Seek to strengthen synergies between meeting external requirements and domestic needs.	<ul style="list-style-type: none"> • Develop national standards and regulations to simultaneously address domestic food safety and environmental problems and meet requirements in external markets. • Promote national GAP codes that reflect national development needs and explore possibilities for benchmarking against EurepGAP.
Promote strategic alliances.	<ul style="list-style-type: none"> • Promote linkages between the government, private sector, NGOs and research institutions. • Promote links between large and small companies to assist the latter. • Enhance alliances between small producers to minimize the risk of their marginalization in the supply chain.

4. Recommendations

4.1 Recommendations to national governments in developing countries

- Strengthen regulatory systems relating to the import, production, registration and sale of pesticides, enhance awareness of the implications of pesticides and provide training in pesticide usage.

- Promote an enabling environment. For example, improving market information systems for horticultural crops and securing land tenure and credit markets are essential components of a strategy that seeks to develop horticultural systems (Weinberger and Lumpkin, 2005).
- Promote production technologies, such as IPM and the use of biopesticides, and provide farmers with training and access to information on how to produce and supply safe products for national, regional and international markets.
- Promote national GAP codes taking into account national development needs, and explore options for benchmarking to EurepGAP or similar standards.
- Strengthening national or subregional SMTQ systems (i.e. standards, metrology, testing, and quality assurance), including accreditation and certification systems.
- Promote inter-ministerial coordination and cooperation with the private sector, NGOs and research institutes to analyse trends in food safety and environmental requirements, enhance understanding of their possible implications and discuss possible adjustment strategies. Carry out cost-benefit analyses of adjustment options.
- Analyse the distributional and social implications of the new environmental and food safety requirements, and consider supportive measures in desirable and justifiable cases. Assist small producers in forming production groups, cooperatives or other forms of associations that can successfully integrate into global supply chains.
- In recognition of the complexity of new environmental and food safety requirements and their potential barriers to regional trade, collaborate with neighbouring countries and other countries in the region to share national experiences, and cooperate in certain areas, such as standard setting, accreditation, certification and testing.
- Participate in consultations organized by trading partners on proposed policies and measures that may significantly affect the country's exports.
- Enhance investment in essential physical infrastructure for horticultural production and trade.
- Strengthen or support technical and scientific research and invest in human capital.
- National governments should support training and activities aimed at raising awareness of the impact of agricultural practices on environment, health and safety, as well as the benefits of good agricultural practices. GAP training programmes for farmers, collectors of fruit and vegetables and packing houses should pay adequate attention to farm record-keeping traceability procedures, hygiene in fruit and vegetables handling and post-harvest treatment and packaging.
- To protect small producers, limit buyer power and prevent undesirable levels of industry concentration and vertical integration at national, regional and global levels, both developing and developed country governments need to employ anti-competitive and related policies.⁸⁵

4.2 Recommendations to national governments in developed countries

- Try to identify as early as possible the likely trade, developmental and social implications for developing countries and disseminate information on new environmental and food safety requirements to the main developing-country exporters and their governments.
- Prepare user-friendly manuals explaining the implications of new environmental regulations for developing countries as well as available technical cooperation/capacity-building programmes to assist these countries in meeting new requirements and implementing domestic standards and regulations.
- In stakeholder consultations and regulatory impact assessments, pay greater attention to the trade implications of new environmental regulations and their effects on developing

⁸⁵ For more information see chapters 2 and 6 in Vander Stichele, van der Wal and Oldenziel, 2006.

countries, paying special attention to small producers. Facilitate the participation of significantly affected developing countries in stakeholder consultations.

- Supportive and flanking policies of governments should pay special attention to addressing constraints and offering opportunities for developing countries.

Recommendations to the private sector in developing countries

- Participate proactively in national strategies on standards and regulations and in the development of national GAP programmes.
- Network on information management, including early warning systems on new environmental and food safety requirements.
- With donor assistance, producer associations should seek to defend their options to continue using chemicals of key importance for tropical and minor crops that may be withdrawn as a result of new pesticides legislation, along the lines of ongoing COLEACP support to ACP countries.
- With government and/or donor support, form production groups, cooperatives or other forms of associations of small producers that can successfully integrate into global supply chains.

4.3 Recommendations to multilateral and bilateral institutions

- Help developing countries strengthen their capacities to comply with food safety and environmental requirements in key export markets as an integral part of policy efforts aimed at promoting exports of fruit and vegetables.
 - Support national discussions and exchanges of experiences on concepts and best practices relating to approaches in establishing national GAPs and their eventual benchmarking.
 - Support the strengthening of regulatory systems on the import, production, registration and sale of pesticides and related training in the safe use of pesticides.
 - Given the particular adjustment problems and costs encountered by small producers, the integration of these producers into global supply chains will require appropriate funding support, but this should not perpetuate backwardness.
 - Support R&D on environmentally sound technologies to enhance yields in fruit and vegetable production in developing countries.
 - Help facilitate the process of market development in partnership with the private sector.
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L. THE UNCTAD CONSULTATIVE TASK FORCE

As mentioned earlier, the UNCTAD secretariat has created the UNCTAD Consultative Task Force (CTF) on Environmental Requirements and Market Access for Developing Countries. The CTF draws into intergovernmental discussions voluntary, private-sector requirements, and also addresses the multidimensionality of new requirements in export markets (i.e. the combination of food safety, food quality, environmental, social and animal safety requirements). The UNCTAD secretariat is envisaging project-based activities as a follow-up to the already completed work carried out as part of the DFID-funded project and the ongoing CTF project on Reflecting National Circumstances and Development Priorities in National Codes on Good Agricultural Practices that can be benchmarked to EurepGAP, as discussed in this publication.

These issues were debated at the wrap-up workshop of the DFID-funded UNCTAD project, Building Capacity for Improved Policy Making and Negotiation on Key Trade and Environment Issues, and at the Annual Session of UNCTAD's Consultative Task Force on Environmental Requirements and Market Access for Developing Countries, both held in Geneva on 3 and 4 July 2006.

The workshop put forward suggestions for future CTF activities, which should be underpinned by conceptual and empirical analysis, building on the country studies already completed or in progress. The CTF could play an important role in: (i) gathering information and promoting studies to take stock of initiatives already under way in different developing countries and regions in designing and implementing proactive adjustment strategies to respond to new requirements in international markets, while at the same time promoting the sustainable production of safe food; and (ii) in conceptualizing different options for proactive strategies.

Recommendations focused on three areas:

1. At the global/regional level: dialogues between governments and private sector standard-setting bodies, producer/exporter organizations in developing countries, and other stakeholders on conceptual issues relating to adjustment strategies, including potential benefits or catalytic effects.
 2. At the country and subregional levels, the CTF could play a useful role in promoting further dialogues between governments and private sector standard-setting bodies, producer/exporter organizations, and other stakeholders in developing countries, on conceptual and policy issues relating to the most appropriate approaches to adjustment; these approaches would include the further development of conventional/organic production and capacity building among smallholders with a view to reducing the coordination costs of incorporating smallholders in value chains. This is an important analytical phase that should precede the implementation of strategies. It should involve all relevant stakeholders so that they have a clear sense of ownership that can be sustained in the long run. Good communication and outreach is considered very important in this context.
 3. The CTF could play a key role in assisting interested governments, farmer organizations and other stakeholders in exploring different options for EurepGAP certification and/or technical equivalence. Building on completed and ongoing work, such stakeholder consultations should further clarify the pros and cons of different options, such as direct certification, group certification or benchmarking, in accordance with the specific characteristics of each country.
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Such activities should focus on a small but representative set of interested developing countries (perhaps one or two countries per region) and be carried out under the umbrella of CTF, in cooperation with FoodPlus GmbH, (the not-for-profit secretariat of EurepGAP) and other interested parties. The appropriate international organizations and development partners should be part of these conceptual discussions, and they should then follow up with financial and capacity-building support to help implement the adjustment policies and measures. In addition, CTF could organize a small number of subregional stakeholder dialogues for continuing the exchange of national experiences.

The CTF could assist in providing a better understanding of the gap that often exists between the stringent standards demanded by private sector retailers and the actual capabilities of small farmers in developing countries. The CTF could facilitate moves by retailers to provide capacity-building programs aimed at equipping small farmers with the tools and skills necessary to meet market demands. Any such initiatives should also aim to limit the risk of small producers becoming dependent on external support.

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Statistical Annex

Table A.1. Production of fruit and vegetables and share in world production

	Production (thousand tons)					Share in world production (per cent)				
	1979-1981	1989-1991	1999-2001	2002	2003	1979-1981	1989-1991	1999-2001	2002	2003
World	62 9169	812 602	1 206 745	1 293 490	1 322 454	100	100	100	100	100
Bangladesh	2 369	2 661	3 163	3 298	3 294	0.38	0.33	0.26	0.25	0.25
Cambodia	493	711	702	797	798	0.08	0.09	0.07	0.06	0.06
China	67 472	150 198	387 902	461 213	483 103	10.72	18.48	32.14	35.66	36.53
Philippines	11 115	12 551	15 511	16 573	16 840	1.77	1.54	1.29	1.28	1.27
Thailand	9 101	8 962	10 880	10 661	10 760	1.45	1.10	0.90	0.82	0.81
Viet Nam	4 993	6 510	11 219	12 509	13 371	0.79	0.80	0.93	0.97	1.01
Subtotal	95 543	181 584	429 468	505 052	528 166	15.19	22.35	35.59	39.05	39.93

Source: FAO Statistical Yearbook 2004

Table A.2. Food consumption, fruit and vegetables (grams/person/day)

		1969-1971	1979-1981	1990-1992	1995-1997	2000-2002
Bangladesh	Total	102	69	63	59	60
	Fruit and products	55	38	30	29	27
	Vegetables and prod.	47	31	33	30	33
Cambodia	Total	249	185	178	160	150
	Fruit and products	82	48	62	65	63
	Vegetables and prod.	167	136	116	95	87
China	Total	150	165	332	540	780
	Fruit and products	14	21	50	96	124
	Vegetables and prod.	136	144	282	444	656
Philippines	Total	401	501	449	452	443
	Fruit and products	222	313	270	279	273
	Vegetables and prod.	179	188	179	173	170
Thailand	Total	327	476	354	363	361
	Fruit and products	186	332	247	253	247
	Vegetables and prod.	141	144	107	110	114
Viet Nam	Total	221	231	243	292	356
	Fruit and products	97	114	118	134	140
	Vegetables and prod.	124	117	125	158	216

Source: FAO Statistical Yearbook 2004

Note: food consumption refers to the amount of food available for human consumption as estimated by the FAO Food Balance Sheets. However the actual food consumption may be lower than the quantity shown as food availability, depending on the magnitude of wastage and loss of food in the household (e.g. during storage, in preparation and cooking, as plate-waste or the amount fed to domestic animals and pets that is thrown or given away).

Table A.3. Principal exporters of fruit and vegetables, 2003-2005
(\$ million)

Exporter	Total			Vegetables (HS07)			Fruit and nuts (HS08)		
	2003	2004	2005	2003	2004	2005	2003	2004	2005
Spain ^a	8934.3	9480.7	n/a	3887.8	4172.4	n/a	5046.6	5308.3	n/a
United States	6813.6	7520.1	8809.4	2052.4	2151.3	2421.2	4761.2	5368.8	6388.2
Netherlands	5933.7	6471.6	n/a	4225.6	4336.8	n/a	1708.1	2134.8	n/a
Mexico	3727.1	4235.4	4745.3	2599.4	2996.7	3208.8	1127.7	1238.7	1536.5
Belgium ^a	3724.3	4108.1	4684.3	1682.3	1724.7	1801.1	2042.0	2383.5	2883.2
Italy ^a	3418.0	3502.9	3824.3	958.5	1002.9	1056.2	2459.5	2500.0	2768.1
France ^a	3300.8	3430.4	3603.0	1604.0	1720.7	1812.6	1696.9	1709.7	1790.3
China	2931.4	3453.7	4119.5	2179.6	2537.3	3052.1	751.8	916.4	1067.4
Turkey	1865.3	2388.3	n/a	473.3	485.7	n/a	1392.0	1902.5	n/a
Chile	1770.8	1872.8	n/a	82.4	85.9	n/a	1688.4	1786.8	n/a
Canada	1504.0	1763.9	2057.8	1261.4	1469.8	1713.5	242.6	294.1	344.3
Germany ^a	1199.7	1614.5	1598.0	535.9	696.2	617.1	663.8	918.3	980.8
Ecuador	1182.9	1122.2	n/a	32.5	41.9	n/a	1150.5	1080.2	n/a
Iran, Islamic Rep. of	974.0	n/a	n/a	92.4	n/a	n/a	881.7	n/a	n/a
South Africa	935.0	1221.5	1286.7	43.3	43.7	41.0	891.7	1177.9	1245.7
Costa Rica	912.8	988.0	n/a	60.3	77.4	n/a	852.5	910.6	n/a
India	872.0	1069.8	n/a	324.6	360.7	n/a	547.4	709.0	n/a
Poland	858.2	1065.4	n/a	414.5	528.7	n/a	443.7	536.7	n/a
New Zealand	826.1	1170.2	1075.8	244.4	248.8	252.2	581.7	921.3	823.7
Argentina	716.2	798.3	1023.6	188.6	199.4	240.9	527.6	598.9	782.6
Thailand	637.7	829.2	830.7	399.2	562.4	517.6	238.5	266.8	313.1
Australia	620.7	765.9	797.4	254.1	352.2	324.0	366.6	413.7	473.3
Morocco	577.2	630.1	n/a	256.6	281.6	n/a	320.6	348.4	n/a
Greece ^a	556.4	581.0	693.1	111.4	120.4	121.7	445.1	460.6	571.4
Philippines	549.1	n/a	606.3	30.5	n/a	29.4	518.6	n/a	576.9
Brazil	518.0	606.2	692.4	13.7	14.1	15.6	504.3	592.1	676.8

^a Includes intra-EU trade

Source: COMTRADE

Table A.4. Selected Asian countries, exports of fruit and vegetables and their share in total agricultural exports (\$ million), 2000-2005

	Fresh fruit and vegetables (HS 7 and 8)	Processed fruit and vegetables (HS 20)	All agricultural products (HS 1 to 24)	Total exports	Fresh fruit and vegetables as a percentage of agricultural exports	Fresh fruit and vegetables as a percentage of total exports
World ^a						
2000	48 563.5	21 316.5	473 756.3	7 096 223.5	10.3	0.68
2003	62 680.8	25 292.5	543 849.8	8 366 849.2	11.5	0.75
Bangladesh						
2003	13.8	0.2	362.0	5 809.4	3.8	0.24
2004	14.6	2.2	466.5	5 796.7	3.1	0.25
Cambodia						
2000	0.2	..	13.5	1 389.3	1.4	0.01
2003	1.8	0.4	11.6	2 118.3	15.2	0.08
2004	1.1	..	32.8	2 797.7	3.2	0.09
China						
2000	1 961.6	1 314.6	14 849.2	249 202.5	13.2	0.79
2003	2 931.4	2 168.1	20 641.0	438 227.6	14.2	0.67
2004	3 453.7	2 578.1	22 477.7	593 325.4	15.4	0.58
2005	4 119.5	3 094.3	26 462.9	761 953.4	15.6	0.54
Philippines						
2000	461.3	191.4	1 896.5	38 078.2	24.3	1.21
2003	549.1	222.2	2 244.3	36 231.2	24.5	1.52
2005	606.3	271.6	2 554.6	41 221.3	23.7	1.47
Thailand						
2000	558.6	628.7	10 221.9	68 786.6	5.5	0.81
2003	637.7	920.6	11 677.7	80 330.9	5.5	0.79
2004	829.2	1 014.7	12 828.1	96 247.9	6.5	0.86
2005	830.7	1 115.2	13 237.5	110 110.0	6.3	0.75
Viet Nam						
2000	235.2	35.0	3 429.9	17 967.6	6.9	1.31
2003	430.1	43.0	3 843.6	21 864.9	11.2	1.97
2004	535.6	57.8	4 391.7	27 509.7	12.2	1.95
All selected Asian developing countries						
2000	3 216.9	219.7	30 411.0	375 424.2	10.6	0.86
2003	4 563.9	3 354.5	38 780.2	584 582.3	11.8	0.78
2004	4 834.2	3 652.8	40 196.8	725 677.4	12.0	0.67

^a includes intra-EU trade

Source: WITS/COMTRADE

Note: No export data are available for Viet Nam in COMTRADE. Figures shown for Viet Nam have been estimated based on import data of trading partners

Table A.5. Selected Asian developing countries: examples of key fruit and vegetables exported to the world, 2003 (\$ million)

HS	Description	Exports	Key exporters	
			Largest exporters	Other
0710	Frozen vegetables	349.8	China, Thailand	Viet Nam
071290	“Other vegetables”, mixtures, dried	805.7	China	Thailand, Viet Nam
080121-32,0802	Cashew nuts, other nuts	410.0	Viet Nam, China, Thailand	
070320	Garlic	358.4	China	Philippines
0803	Bananas	347.6	Philippines	China, Viet Nam
071331-33	Beans	333.9	China	Thailand
071410	Manioc	253.8	Thailand	Philippines
070951-52 071230	Mushrooms	244.7	China	Thailand
080810	Apples	209.9	China	
0811	Fruit, frozen	136.7	China, Thailand, Viet Nam	
070990	Other vegetables, fresh or chilled	132.6	China, Thailand, Bangladesh, Philippines	Viet Nam
0813	Fruit, dried	127.1	Thailand, China, Viet Nam	Philippines
071420-90	Sweet potatoes, other tubercles	124.0	Viet Nam, China	
080111-19	Coconuts	113.1	Philippines, Viet Nam	Thailand
080820	Pears and quinces	80.0	China	
0805	Citrus fruit	79.2	China	Thailand
080450	Mangoes	60.0	Philippines, Thailand	Viet Nam, China
080430	Pineapples	43.4	Philippines	Thailand, China
070920	Asparagus	25.5	Thailand, China	

Table A.6. Principal importers of fruit and vegetables, 2003-2004 (\$ million)

	Total		Vegetables (HS 07)		Fruit and nuts (HS 08)	
	2003	2004	2003	2004	2003	2004
World	69 888.4	78 235.0	27 774.4	30 970.8	42 114.0	47 264.2
EU-15	37 245.5	36 901.7	14 642.5	15 262.5	22 602.9	21 639.1
United States	9 486.3	10 495.1	3 994.8	4 480.4	5491.5	6 014.7
Japan	3 866.9	4 271.0	1 762.6	1 937.5	2 104.3	2 333.5
Canada	3 146.8	3 439.8	1 342.5	1 415.0	1 804.3	2 023.8
Russian Federation	1 555.5	2 030.1	421.8	465.6	1 133.7	1 564.6
Hong Kong	1 218.6	1 135.5	219.1	222.5	999.5	913.0
Switzerland	1 106.6	1 188.6	437.4	455.5	669.2	733.2
India	1 031.4	1 061.2	563.8	435.9	467.6	625.3
China	737.7	1 023.7	241.8	404.8	496.0	618.9
Mexico	726.5	736.5	203.4	213.2	523.1	523.3
Poland	710.8	887.0	135.6	194.5	575.3	692.5
Republic of Korea	561.4	734.5	217.6	314.0	343.8	420.5
Norway	531.5	586.0	185.8	198.9	345.6	387.1
Singapore	462.7	460.4	196.9	196.4	265.8	264.0
Taiwan Province of China	414.0	435.7	99.1	101.3	315.0	334.3

^a Includes intra-EU trade

Source: COMTRADE

Table A.7. Seminars and training workshops on food safety and environmental requirements, market access and good agricultural practices in the horticultural sector carried out in Asian countries

Venue, date	Meeting
Bangkok, Thailand 29 September – 1 October, 2004	Subregional Workshop on Environmental Requirements, Market Access/Entry and Export Competitiveness for the Horticultural sector
Dhaka, Bangladesh 4-5 October, 2004	Subregional Workshop on Environmental Requirements, Market Access/Entry and Export Competitiveness in the Horticultural Sector
Phnom Penh, Cambodia, 23-24 November, 2004	National Workshop on Environmental and Health-related Requirements and Market Access for Horticultural Products from Cambodia
Hanoi, Viet Nam 3-4 November, 2005	Training Workshop on Environmental Requirements and Market Access for Horticultural Products
Bangkok, Thailand 25-26 November 2005	UNCTAD/ ITD National Workshop on Good Agricultural Practice and Benchmarking to EurepGAP http://www.itd.chula.ac.th/index.shtml
Manila, the Philippines 29-30 November, 2005	EurepGAP Asia 05: Potential and challenges of EurepGAP in Asia http://www.philexport.ph/EUREPGAP/eurepgap.html