Case Study

5

CAPACITY BUILDING NEEDS ASSESSMENT SERIES

Integrated Approach to Food Safety, Plant & Animal Health: National Biosecurity Capacity

Country Report
The Socialist Republic of Viet Nam

CASE STUDY 5

BIOSECURITY COUNTRY SITUATION REPORT: The Socialist Republic of Vietnam

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Acronyms

AANZFTA	ASEAN–Australia–New Zealand Free Trade Area
ADB	Asian Development Bank
AFTA	ASEAN Free Trade Area
AGNS	Food Quality and Standards Service, FAO
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CAC	Codex Alimentarius Commission
CBD	Convention on Biological Diversity
CIDA	Canadian International Development Agency
CPB	Cartagena Protocol on Biosafety
CPM	Commission on Phytosanitary Measures
DAH	Department of Animal Health, MARD
DCP	Department of Crop Production, MARD
FAO	Food and Agriculture Organization of the United Nations
FAVRI	Fruits and Vegetables Research Institute
GAP	Good agricultural practice(s)
GDP	Gross domestic product
GLC	Gas-liquid chromatography
GMO	Genetically modified organism
GMP	Good manufacturing practice
GPP	Gross primary productivity
HACCP	Hazard analysis and critical control point system
HPAI	Highly pathogenic avian influenza
HPLC	High performance liquid chromatography
IHR	International Health Regulations 2005
IPM	Integrated pest management
IPPC	International Plant Protection Convention
ISO	International Organization for Standardization
ISPM	International Standard for Phytosanitary Measures
LMO	Living modified organism
MARD	Ministry of Agriculture and Rural Development
MDG	Millennium Development Goals
MOH	Ministry of Health
MOIT	Ministry of Industry and Trade
MONRE	Ministry of Natural Resources and Environment
MOST	Ministry of Science and Technology
MRL	Maximum residue limit
NAFIQAD	National Agro-Forestry–Fisheries Quality Assurance Department
NCVD	National Centre for Veterinary Diagnosis
NCVH	National Centres for Veterinary Hygiene Inspection
NIN	National Institute of Nutrition, MOH
NPCC	Northern Pesticide Control Centre
NZFSA	New Zealand Food Safety Authority
NZTDS	New Zealand Total Diet Survey
OIE	World Animal Health Organisation (Organisation Internationale des Epizooties)

PAIA	Priority Area for Interdisciplinary Action
PPD	Plant Protection Department, MARD
PPRI	Plant Protection Research Institute
RAHO	Regional Animal Health Offices
SOFRI	Southern Fruit Research Institute
SPS	Sanitary and phytosanitary measures
STAMEQ	Directorate for Standards and Quality
STDF	Standards and Trade Development Facility
SubDAHs	Provincial government animal health departments
TBT	Technical barriers to trade
TCVNs	National standards
VEGETEXCO	Vietnam National Vegetable, Fruit and Agricultural Product Corporation
VEPA	Vietnam Environment Protection Agency
VFA	Vietnam Food Administration, MOH
VietGAP	Good agricultural practices for production of safe fresh fruit and vegetables in Vietnam
VILAS	National Laboratory Accreditation Scheme
WB	World Bank
WHO	World Health Organization
WTO	World Trade Organization

Glossary

Agricultural compound. Any substance intended for preventing, destroying, attracting, repelling, or controlling any pest (including unwanted species of plants or animals) during the production, storage, transportation, distribution and processing of food, agricultural commodity, or animal feed. The term includes **pesticides** and veterinary medicines. It includes substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transportation.

Agricultural compound residue. Any specified substance in food, agricultural commodity or animal feed resulting from the use of an **agricultural compound** (from known, unknown or unavoidable sources).

Animal. For the purpose of this report includes mammals, birds, fish and bees.

Biodiversity. The variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Biological resources. Includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.

Biosafety. The safe use for human, animal and plant health, and the environment, of new biotechnologies.

Biosecurity. A strategic and integrated approach that encompasses the policy and regulatory frameworks for analysing and managing relevant risks to human, animal and plant life and health, and associated risks to the environment.

Biotechnology. Any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.

Competent authority. The official authority charged by the government with sector control of **biosecurity**, including setting and enforcing of regulatory requirements.

Control measure. Any action or activity that can be used to prevent or eliminate a hazard or reduce it to an acceptable level.

Export. Intentional transboundary movement from one Party to another Party.

Food hygiene and safety. The necessary conditions and measures to ensure that food shall not cause harm to human health and lives (Ordinance on Food Hygiene and Safety No. 12/2003/PL-UBTVQH11).

Gas-liquid chromatography (GLC or GC). An instrumental method of separating and analysing the chemical components of a mixture of volatile compounds as a result of differences in their distribution between gas and liquid phases (ACIAR Monograph 117, 2005).

Genetically modified organism (GMO). Any organism that possesses a novel combination of genetic material obtained through the use of modern **biotechnology** and that does not occur naturally by mating and/or natural recombination; includes both non-living and living modified organisms.

Good agricultural practice(s) (GAP). Practices of primary production that improve on conventional production and handling methods to ensure product safety, reducing the negative impact of production systems on the environment, fauna, flora and workers' safety.

High performance liquid chromatography (HPLC). An instrumental process of analysis similar to **GLC** but using redistribution of an analyte between a liquid and a solid to allow its analysis by a suitable detector (ACIAR Monograph 117, 2005).

Import. Intentional transboundary movement into one Party from another Party.

Invasive alien species. A species outside its natural past or present distribution whose introduction and/or spread threatens biodiversity.

Maximum residue limit (MRL). The maximum concentration of an **agricultural compound residue** legally permitted (or recognized as acceptable) in or on a food, agricultural commodity or animal feed.

Monitoring. Periodic collection and analysis of data on hazards at relevant steps throughout the exposure pathway.

Official control. The active enforcement of mandatory phytosanitary or sanitary regulations and the application of mandatory **control measures** with the objective of eradication or containment of pests or diseases (based on FAO ISPM 5, 2007).

Pest. Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants and plant products (FAO ISPM 5, 2007).

Pesticide(s). Those products that contain chemicals, plants, animals, micro-organisms or other active ingredients used for the prevention and management of injurious pests (Ordinance on Plant Protection and Quarantine 36/2001/PL-UBTVQH10).

Risk-based. Decisions and actions in **biosecurity** control programmes that are based on specific knowledge of risks to health or life.

Spread. Expansion of the geographical distribution of a pest within an area (FAO ISPM 5, 2007).

Surveillance. Active and ongoing collection, analysis and dissemination of data on risks to life and health.

Zoonoses. Infectious diseases that can be transmitted naturally between wild or domestic animals and humans.

1 Introduction

1.1 Background

Biosecurity is a strategic and integrated approach that encompasses the policy and regulatory frameworks (including instruments and activities) to analyse and manage risks in the sectors of food safety, animal life and health, and plant life and health, including associated environmental risks (*FAO Biosecurity Toolkit* 2007). Biosecurity covers the introduction of plant pests, animal pests and diseases, and zoonoses, the introduction and release of genetically modified organisms (GMOs) and their products, and the introduction and management of invasive alien species and genotypes. Biosecurity is a holistic concept of direct relevance to the sustainability of agriculture, food safety and the protection of the environment, including biodiversity.

FAO's concept of biosecurity facilitates strengthening control of the primary production aspects through improved animal and plant health and is foundational to a food chain approach to food safety and quality. FAO is the only UN agency whose mandate clearly includes all the previously mentioned areas covered by biosecurity. Since the inception in 2002 of FAO's interdepartmental working group on biosecurity, also known as the FAO Biosecurity PAIA (Priority Area for Interdisciplinary Action), the group continues to work to promote, develop and reinforce the concept, policy and regulatory frameworks for food, agriculture, fisheries and forestry, including support for national implementation of a biosecurity approach.

Many developing countries would potentially benefit from implementing the biosecurity approach. However, external support is essential to build capacity to effect such improvements. Strengthening overall biosecurity in a country enables that country to improve domestic food safety and animal and plant health, which in turn can improve domestic food security through increased access to safe food. Another very important aspect of improved biosecurity is that it enables countries to participate in an increasingly standards-driven international food and agricultural trading market, which is one of the necessary means to alleviate poverty in developing countries. Accordingly, the described activities address many of the Millennium Development Goals (MDG).

Within the work of the Biosecurity PAIA, AGNS/FAO has developed the *FAO Biosecurity Toolkit*, which comprises three parts: Part 1 – Biosecurity Principles and Components; Part 2 – Guide to Assess Biosecurity Capacity; and Part 3 – An Overview and Framework Manual for Biosecurity Risk Analysis. Specifically, Part 2 was designed to assist countries in identifying their biosecurity capacity needs and adopting an integrated approach to biosecurity. It is however recognized that circumstances and needs differ substantially between countries and there is no universal model for biosecurity or capacity development.

AGNS/FAO has implemented a series of regional workshops on biosecurity. Following the workshops, various participants have expressed interest in promoting an integrated approach to food safety and animal and plant health in their own countries. Other countries have identified a need to focus on cross-cutting biosecurity capacity needs. One specific cross-cutting issue, food safety of fresh produce and pesticide residue management, is of particular concern to some. Consequently, the Biosecurity PAIA is supporting a "Project to monitor

pesticide residues in fresh produce in Vietnam". The implementation of this project is outlined in a Letter of Agreement between FAO and the Fruits and Vegetables Research Institute (FAVRI) of the Ministry of Agriculture and Rural Development (MARD) in Vietnam. One of the project activities included in the Letter of Agreement (PR40698) is a "Biosecurity needs assessment mission" resulting in:

i. a national biosecurity situation report;
ii. a proposed national biosecurity action plan;
iii. a national roadmap to improve the biosecurity situation.

The outputs of this, the "Biosecurity needs assessment mission", are described in this report.

1.2 Scope and objectives of the assessment

The scope of this assessment of the Vietnamese biosecurity system includes an overview of the policy framework, legislation, organizational arrangements, communications (including stakeholder information, education and communications), inspection, verification and enforcement, quarantine and certification, diagnostic services (analytical laboratories), emergency preparedness and response, risk analysis, monitoring and surveillance. The more detailed assessment focuses on matters pertinent to the specified cross-cutting issue, food safety of fresh produce and pesticide residue management, and documents Steps 3, 4, 5, 6 and 7 as set out in Part 2 – Guide to Assess Biosecurity Capacity of the *FAO Biosecurity Toolkit*.

The objective of the assessment is to: (i) prepare a description of the current state of the Vietnamese biosecurity system, and (ii) prepare a national biosecurity action plan (hereinafter referred to as "Action Plan") with particular focus on the cross-cutting issue, food safety of fresh produce and pesticide residue management, using the assessment as a baseline for capacity building that addresses the identified gaps, needs and priorities. This Action Plan has been prepared with a view to informing: (i) the implementation of the remainder of this Biosecurity PAIA-supported "project to monitor pesticide residues in fresh produce in Vietnam", and (ii) the revision of an STDF grant application "Strengthening Vietnamese SPS Capacities for Trade – Improving safety and quality of fresh vegetables through the value-chain approach".

1.3 Assessment Methods

The Biosecurity Needs Assessment Mission was undertaken by an international consultant, Dr Ruth Frampton, from 4–14 March 2009 with reference to the *FAO Biosecurity Toolkit*.

In following the steps suggested in Part 2 of the *FAO Biosecurity Toolkit* with the Mission beginning at Step 3, the assessment process can be described step-by-step as follows:

Step 3: A profile of the biosecurity context for Vietnam was developed using interview sessions as well as accessing pertinent documentation (such as ordinances, decrees and decisions). Direct interviews of stakeholders in the biosecurity system – including government officials involved in development of food safety-related policy, standards and regulations, and field enforcement activities – as well as reports available from various field projects, Vietnamese government websites and data from other websites (e.g. www.who.int) were used to access relevant information presented in this report.

A list of persons interviewed (whether in a group or individually) and their affiliations is presented in Appendix 1.

Step 4: Like Step 3, the existing biosecurity capacity and performance were assessed through the compilation of data, views and insights gained during the direct interviews with stakeholders. The list of persons interviewed (whether in a group or individually) and their affiliations is presented in Appendix 1, as are lists of laboratories and domestic markets visited. Matters of general and specific discussion covered in most interviews are given in Appendix 2. Although based on the list of broad questions provided in Table 2.3 (page 33) of the toolkit, these questions were formulated for the relatively brief stakeholder interviews (1-2 hours) conducted during the Biosecurity Needs Assessment Mission to Vietnam.

Step 5: Notably, the desired future situation of biosecurity was broadly defined in various strategy-related documents e.g. Decision by the Prime Minister (No. 35/2001/QD-TTg) Approving the Strategy for Protection and Care of the People's Health in the 2001–2010 Period. The cooperation of stakeholders during the interviews provided some insights into "Future Goals".

Step 6: Subsequent analysis of the "Current Situation" and "Future Goals" (as defined through Steps 4 and 5) allowed the capacity needed to reach the desired future situation to be identified and documented in this report under the heading "Needs/Gaps".

Step 7: Options to address the identified capacity needs were subsequently generated and as a result the national action plan was developed and documented in section 6 of this report. It should be noted that this Action Plan has been prepared with a view to informing the implementation of the remainder of this Biosecurity PAIA-supported "Project to monitor pesticide residues in fresh produce in Vietnam", and revision of an STDF grant application "Strengthening Vietnamese SPS Capacities for Trade – Improving safety and quality of fresh vegetables through the value-chain approach".

Note: The relatively short duration of the Biosecurity Needs Assessment Mission did not allow the necessary time to verify independently the accuracy of the information provided by those interviewed, and accordingly there can be no guarantee as to the accuracy or sufficiency of the information obtained. On occasion the information provided was not adequate, and although further information was sought, there is no certainty that all pertinent information has been supplied and taken into consideration in the preparation of this report. Similarly, appropriate officials were not always available for interview and, ideally, two or three producers, a representative pesticide vendor, an independent exporter, health network workers from commune health stations or district health centres and representatives from consumer groups (such as the Hanoi Association of Women Consumers) could have been included on the list of interviewees.

2 Country profile

2.1 Factors influencing biosecurity

As emphasised in the *FAO Biosecurity Toolkit* (Step 3: Profile the biosecurity context at the country level, pages 31–32), biosecurity issues, opportunities and challenges differ across countries and are influenced by such factors as geography, environment, climate, economic system, trade patterns, borders, etc. These factors provide the context that shapes biosecurity goals and activities for a country. Accordingly, every effort must be made to understand the context. For the Socialist Republic of Vietnam the context, with particular emphasis on food safety and plant health, has been summarized and documented as part of this Country Situation Report.

2.1.1 Geography

The Socialist Republic of Vietnam, located in Southeast Asia with a total area of 329 560 square kilometres, is bordered by the Gulf of Tonkin and South China Sea in the east and the Gulf of Thailand in the west, alongside the People's Republic of China to the north and the Lao People's Democratic Republic (Lao PDR) and Kingdom of Cambodia in the west. (For comparison and with reference to *The World Factbook* [www.cia.gov], China has a total area of some 9 596 960 square kilometres, Laos 236 800 square kilometres and Cambodia 181 040 square kilometres.) Vietnam's land boundaries extend for 4 639 kilometres (km), 1 281 km with China, 2 130 km with Laos and 1 228 km with Cambodia.

The country is shaped like an elongated "S" with three main regions: north, central and south. The *north* is characterized by mountainous areas in the far north and west, then plains and the Red River Delta; the *central* area by high plateaus referred to as the central highlands; and the *south* by the low, flat delta of the Mekong River. The climate is described as tropical in the south and monsoonal in the north with a hot, rainy season from May to September and a warm, dry season from October to March.

The total estimated population has exceeded 86 million, with 72.6 percent living in rural areas. More than 23 million people, however, make up the urban population in Vietnam. The preliminary 2007 land use statistics (www.gso.gov.vn) show that 74.6 percent of the total area of Vietnam is described as agricultural land, 10.0 percent non-agricultural land and 15.4 percent unused land. The 74.6 percent "agricultural land" is further delineated into agricultural production land (28.5 percent), water surface land for fishing (2.2 percent) and forestry land (43.8 percent). Furthermore, almost half of the 145 142 square kilometres of forestry land is classified as "protective forest" (67 663 square kilometres) with 56 725 square kilometres of "productive forest" and 20 755 square kilometres "special use forest" accounting for the rest.

Vietnam can be divided broadly into seven "production" or ecological regions (Northern Uplands, Red River Delta, North Central Coast, South Central Coast, Central Highlands, South East and Mekong River Delta), but administratively it is divided into 58 provinces and five centrally controlled municipalities.

2.1.2 Natural resources

A generally accepted definition of natural resources is "resources (actual and potential) supplied by nature". Natural resources, therefore, include **biological resources**.

Vietnam has considerable biological resources. In its entirety, it forms part of the Indo-Burma (biodiversity) hotspot, which encompasses 2 373 000 square kilometres of tropical Asia east of the Ganges-Brahmaputra lowlands and includes the Lower Mekong catchment (www.biodiversityhotspots.org). A wide diversity of ecosystems is represented in this hotspot, including mixed wet evergreen, dry evergreen, deciduous and montane forests as well as patches of shrubland and woodland on karst limestone outcrops. In addition, a wide variety of distinctive, localized vegetation formations occur in Indo-Burma, including lowland floodplain swamps, mangroves and seasonally inundated grasslands. The patterns of biological diversity in Indo-Burma, including many localized centres of endemism, have resulted from the interaction of topography, past climate changes, soil characteristics and the patterns of seasonal rainfall in the hotspot. Vietnam in particular is considered one of the world's ten most biologically diverse countries, with 10 percent of the world's mammal, bird and fish species (www.iucn.org.vn). Unfortunately 408 species from Vietnam are defined as threatened species in the 2008 Red List: 54 mammals, 39 birds, 27 reptiles, 17 amphibians, 33 fishes, 91 other invertebrates and 147 plants (www.iucn.org).

From a more economic perspective, phosphates, coal, manganese, bauxite, chromate, offshore oil and gas deposits, forests and hydropower feature in the list of Vietnam's natural resources in *The World Factbook*. FAO (2007) lists coal, crude oil, zinc, copper, silver, gold, manganese and iron as Vietnam's noteworthy natural resources.

2.1.3 Regional and international influences

From a biosecurity perspective there are a number of regional and international influences of particular relevance. Vietnam is a member of the Association of Southeast Asian Nations (ASEAN) founded in 1967, a member economy of the Asia-Pacific Economic Cooperation (APEC) and, following a decade long negotiation process, joined the World Trade Organization (WTO) in January 2007. Vietnam is a participant in a number of free trade[1] arrangements/agreements such as the ASEAN Free Trade Area (AFTA), US-Vietnam Bilateral Trade Agreement and most recently, the ASEAN–Australia–New Zealand Free Trade Area (AANZFTA).

Furthermore, Vietnam is a member of several international standard-setting bodies, including:

- the Codex Alimentarius Commission (CAC);
- the World Organisation for Animal Health (OIE);
- the Commission on Phytosanitary Measures (CPM) (under the International Plant Protection Convention, IPPC).

[1] As stated in the SPS Agreement, "Sanitary and phytosanitary measures, by their very nature, may result in restrictions on trade. All governments accept the fact that some trade restrictions may be necessary to ensure food safety and animal and plant health protection."

In addition, Vietnam has other international obligations, for example:

- as a member of the World Health Organization (WHO), the International Health Regulations 2005 (IHR);
- as a member of WTO, the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and Agreement on Technical Barriers to Trade (TBT Agreement);
- the Cartagena Protocol on Biosafety (CPB) as a party to the Convention on Biological Diversity (CBD).

2.1.4 Economy

Measured by employment, FAO (2007)[2] describes Vietnam as an agrarian society with around 64.7 percent of the labour force working in agriculture. Vietnam's main agricultural products are rice, coffee, rubber, cotton, tea, pepper, soybeans, cashew nuts, sugar cane, peanuts, bananas, poultry, fish, seafood and pig meat.

Since the introduction of Vietnam's "Doi Moi" (renovation) policy in 1986, Vietnam has become one of the fastest growing economies in the world, achieving around 8 percent annual GDP growth from 1990 to 1997 and around 7 percent from 2000. From 1995 to 2005, agricultural production doubled, transforming Vietnam from a net food importer to one of the world's largest exporters of rice and of commodities such as coffee, tea, rubber, pepper and fisheries products (FAO, 2007). However, agriculture's share of economic output has declined, falling from 38.7 percent in 1990 to 20.3 percent in 2007 as production in other sectors of the economy increased (Table 1).

Table 1. Vietnam's GDP composition by sector.*

Year	% of Gross Domestic Product by Sector*		
	Agriculture, Forestry, Fishing	**Industry and Construction**	**Service**
1990	38.74	22.67	38.59
1997	25.77	32.08	42.15
2007	20.30	41.58	38.12

Source: www.gso.gov.vn accessed 12 March 2009

2.1.5 Trade

As the country's economy has grown, Vietnam's membership of AFTA and WTO and the entry into force in late 2001 of the United States–Vietnam Bilateral Trade Agreement have led to considerable change in Vietnam's trade and economic regime. In the process of becoming the 150th member of WTO in 2007, Vietnamese authorities have maintained their commitment to economic liberalization and integration into the world trade system.

The country's main export commodities include crude oil, marine products, rice, coffee, rubber, tea, garments and shoes. It remains a significant exporter of agrofood products with

[2] FAO. *Selected indicators of food and agricultural development in the Asia-Pacific region 1996–2006*. RAP Publication 2007/15.

milled paddy rice being the major agricultural export followed by coffee, natural rubber, cashew nuts, pepper and tea. From 1995 to 2005, agricultural exports increased 18.2 percent annually. Over the same period, however, agricultural imports grew at an annual rate of 11.3 percent. The main agricultural imports include soybean cake, cotton lint, cigarettes and wheat. According to the *World Factbook*, Vietnam's import partners include China (19.9 percent), Singapore (12.1 percent), Taiwan (11 percent), Japan (9.9 percent), South Korea (8.5 percent) and Thailand (6 percent), while its export partners include the United States (20.8 percent), Japan (12.5 percent), Australia (7.3 percent), China (6.9 percent) and Singapore (4.5 percent).

2.2 Trends in production, processing and distribution, including import and export of food and agricultural products, relevant for biosecurity

Agricultural "renovation" has been considered the cornerstone of Vietnam's overall economic reform. As noted in section 2.1. 4, agricultural production is increasing, doubling from 1995 to 2005 and transforming Vietnam from a net food importer to the second largest rice exporter in the world. Exports of other important agricultural commodities, including tea, rubber, pepper and fisheries products, are also increasing.

Table 2 shows the total production of fruits and vegetables in Vietnam as well as its share in the world, and also demonstrates the trend of increasing production. The Vietnamese vegetable sector is growing rapidly in terms of both area of production and yield (Table 3, reproduced from STDF grant application "Strengthening Vietnamese SPS Capacities for Trade – Improving safety and quality of fresh vegetables through the value-chain approach" [18 August 2008]).

Table 2. Production of fruits and vegetables in Vietnam and its share in the world.*

Year	1979–1981	1989–1991	1999–2001	2003	2004
Production (1 000 tonnes)	4 993	6 509	10 923	12 726	13 254
Share in world (%)	0.79	0.80	0.90	0.95	0.96

*Source: FAOSTAT-Agriculture Table B.3 (www.fao.org accessed 23 March 2009)

Given the achievements of the agroforestry sector during the past two decades, pressure will remain on the sector to provide for the increase in demand for agricultural products, such as vegetables and meats, and food staples from the growing domestic population, and to satisfy export market demands. For example, an increase in the demand for vegetables and fruits in the world has been forecast, with the consumption demand increasing at a faster rate than the production growth rate. Vietnam has already recognized the export potential for agroproducts, including vegetables and fruits, tea and wood products. Consequently, as well as setting specific objectives for increasing production and/or productivity in the agroforestry sector (including seed plants, maize, tea, cashew nuts, sugar cane, fruit trees, vegetables, pigs, beef cows, dairy cows, poultry, production forest plantations), considerable emphasis has been placed on improving the quality and competitiveness of agroforestry products in international markets through investment in upgrading production chains and processing technology (http://xttmnew.agrovietgov.vn). Two of the Development Directions stated in Part Two of

The 5-Year Plan for the Agricultural and Rural Development Sector, Period 2006–2010 [English] are:
"– As for fruit trees, in the coming years, the cultivation of fruit trees that have advantages in the market will be exported, and will be concentrated mainly in the raw material regions serving processing enterprises. Varieties of longan and litchi with various harvest times and high quality will be used. It is planned that by 2010 there will be 1 million hectares of fruit trees cultivation.
" – As for vegetables, it is planned that investment in developing of vegetable-specialized regions will be concentrated on introducing clean technologies, high quality vegetables, and ensuing food hygiene security."

Table 3. Production of vegetables in Vietnam, 2001–2005.
[*Source:* Department of Crop Production (DCP), MARD, 2008]

Crop	Year	2001	2002	2003	2004	2005
Tomato	Area (ha)	11 492	18 868	21 628	20 648	23 566
	Production (ton)	179 755	132 178	354 846	357 210	466 124
Cucumber	Area (ha)	10 208	11 819	18 409	19 874	26 648
	Production (ton)	199 460	199 936	296 710	335 473	485 244
Legumes	Area (ha)	5 742	5 502.2	1 769	7 681	18 861
	Production (ton)	36 064	39 541	9 471	52 760	158 435
Brassica crops*	Area (ha)	21 486	22 118	24 457	26 184	31 508
	Production (ton)	383 740	476 200	486 000	592 805	607 470
Onion, Garlic	Area (ha)	14 241	13 547	15 368	14 678	36 679
	Production (ton)	211 621	210 926	250 652	232 500	433 234
Watermelon	Area (ha)	12 180	14 670	16 530	18 140	20 408
	Production (ton)	194 880	242 050	281 000	322 890	330 966

**Brassica* crops include cabbage, Chinese cabbage, green mustard and cauliflower.

However, despite ambitious targets, real GDP growth of Vietnam's export-oriented economy is expected to fall by between 4 percent and 5 percent this year; it is bound to suffer from lower exports and decreased foreign investment as a result of the sharp decline in global growth associated with the global financial crisis. Furthermore, with increased trade liberalization and growing demand in the domestic market, there is likely to be an ongoing increase of agrofood imports, especially from Thailand and China. Imports, particularly of agrofoods, pesticides and fertilizers, present a variety of biosecurity threats.

In addition, reports of excessive residues of agricultural compounds on domestic fruits and vegetables (Table 4, reproduced from STDF grant application "Strengthening Vietnamese SPS Capacities for Trade – Improving safety and quality of fresh vegetables through the

value-chain approach" [18 August 2008]), and difficulties in achieving satisfactory pest control in rice (e.g. *Nilaparvata lugens*, brown plant hopper; *Magnaporthe grisea*, blast; *Xanthomonas oryzae* pv. *oryzae*, bacterial leaf blight), various industrial crops, as well as fruits and vegetables (e.g. *Plutella xylostella*, diamondback moth; *Spodoptera litura*, tobacco cutworm on crucifers) highlight domestic biosecurity issues requiring further attention. These matters have resulted in research into integrated pest management (IPM) and the promotion of good agricultural practices (GAP) in Vietnam. Development of "Good Agricultural Practices for Production of Safe Fresh Fruit and Vegetables in Vietnam (VietGAP)" (promulgated with Decision No. 379/QD-BNN-KHCN dated 28 January 2008) and various research programmes/projects are the subject of continuing donor investment. Clearly, appropriate plant protection and food safety systems are important considerations in the further development of Vietnam's biosecurity and continued economic growth.

Table 4. Survey on vegetables and level of contamination.

[*Source:* Department of Science and Technology (DOST), MARD, 2008]

Vegetables	Year	Number of samples	Percentage of samples (%)		
			Not contaminated	Contaminated	Contaminated above MRLs
Green mustard	2000	279	41.2	54.4	4.3
	2001	264	54.1	41.7	4.2
	2003	102	61.8	25.5	12.7
	2004	72	29.2	63.9	6.9
	2005	108	76.9	13.0	10.2
Cabbages	2002	60	46.7	46.7	6.6
Beans	2001	132	29.6	51.5	18.9
	2003	102	42.1	30.4	27.5
	2004	72	51.4	37.5	11.1
Cucumber	2003	60	55.0	35.0	10.0
	2004	75	69.3	26.7	4.0
Tomatoes	2004	105	58.1	39.0	2.9
Kangkong (water convolvulus)	2001	264	62.5	31.4	6.1
	2003	153	62.7	28.8	8.5
	2004	72	65.3	31.9	2.8
	2005	108	81.5	11.1	7.4

2.3 Pathways for the introduction of biosecurity hazards, disease emergence and spread

The term "biosecurity" as promoted by FAO is not well recognized in Vietnam. Certainly "biosecurity" is not seen as covering food safety, zoonoses, the introduction of animal and plant diseases and pests, the introduction and release of living modified organisms (LMOs), genetically modified organisms (GMOs) and their products, and the introduction and management of invasive alien species as well as the official control of significant diseases and pests. However, the examination of information obtained through a number of websites (e.g. www.who.int, www.oie.int) and/or relayed in the course of discussions with ministry staff (Appendix 1) revealed a number of "high profile" biosecurity threats/hazards.

The new or ongoing outbreaks of highly pathogenic avian influenza (HPAI), the H5N1 strain (http://www.who.int/csr/disease/avian_influenza/country/cases_table_2009_03_23a/en/index.html) in poultry (reported to WHO as recently as 22 February 2009 in Bac Lieu, Khanh Hoa Ninh Binh and Quang Ninh provinces) and confirmed human cases (the 108th and 109th cases reported from Ninh Binh province as recently as 11 and 18 February 2009) in Vietnam constitute such a threat. The cumulative number of confirmed human cases of HPAI reported to WHO in Vietnam is 109 with 54 deaths. In this regard, Vietnam is second only to Indonesia (141 reported cases with 115 deaths) although HPAI (H5N1) has been recorded in each of Vietnam's neighbours. Cambodia, China and Laos PDR have reported it in humans and/or birds as recently as December 2008, February 2009 and January 2009.

Ongoing imports of agrofoods present an obvious pathway for the introduction of animal and plant diseases and pests, as does Vietnam's ability to attract tourists who will inevitably increase the risk of introducing, albeit accidentally, diseases and pests.

Notably, many of the threats identified relate to the recurrence/outbreaks of endemic diseases, for example foot-and-mouth disease, and zoonoses such as rabies and HPAI. A summary of some of the biosecurity threats/hazards across different sectors is provided in Table 5.

Table 5. Biosecurity hazards/threats identified.

Biosecurity threat/hazard	Identification source
Pesticide levels in/on food (human health)	FAO; Ministry of Health (MOH) (Vietnam Food Administration [VFA], National Institute of Nutrition [NIN]); Ministry of Agriculture and Rural Development (MARD) (Department of Animal Health [DAH], Fruits and Vegetables Research Institute [FAVRI], National Agro-Forestry-Fisheries Quality Assurance Department [NAFIQAD], Plant Protection Department [PPD], Plant Protection Research Institute [PPRI])
Illegal use of pesticides	NIN, MOH; PPD, MARD
Microbiological contamination (*Salmonella* and *E. coli*) of animal products	DAH, MARD
Malaria (human health)/*Anopheles* mosquito vectors	World Health Organization (WHO)
Dengue and Japanese encephalitis (human health)/*Aedes aegypti* and *Culex* mosquito vectors, respectively	MOH
Avian influenza (animal and human health)	MARD (Department of Animal Health [DAH]), World Animal Health Organisation (OIE); WHO
Rabies (animal and human health)	OIE; WHO
Foot-and-mouth disease (animal health)	MARD (DAH); OIE
Porcine reproductive/respiratory syndrome (animal health)	MARD (DAH)
Bactrocera species (Diptera: Tephritidae) (plant health – fruits)	MARD (Plant Protection Department [PPD])
28 “very important” pests, as well as a further 29 “important” (plant health – vegetables, some with human health implications associated with pesticide use)	MARD (PPRI)

Note: While this report/Biosecurity Needs Assessment Mission is to: (i) prepare a description of the current state of the Vietnamese biosecurity system, and (ii) prepare a national biosecurity action plan with particular focus on the cross-cutting issue, food safety of fresh produce and pesticide residue management, it is clearly *not* the intention to undertake more detailed risk profiling (as described in the *FAO Biosecurity Toolkit Part 3*). However, it seems apparent from stakeholder discussions/interviews that ranking and prioritization of biosecurity issues for risk management (across the sectors) is not occurring currently.

In addition to Table 5, Table 6 contains additional information pertaining to the hazards/threats identified by Nguyen Truong Thanh of the Plant Protection Research Institute (PPRI, MARD) for different vegetable types.

Table 6. Main pests (very important or important) of vegetables in Vietnam.

Crop	Common name(s)	Scientific name
Crucifers	Diamondback moth	*Plutella xylostella*
	Striped flea beetle	*Phyllotreta striolata*
	Tobacco cutworm or Common cutworm	*Spodoptera litura*
	Cabbage aphid	*Brevicoryne brassicae*
	Green peach aphid	*Myzus persicae*
	Cabbage worm	*Pieris rapae*
	Black cutworm or Greasy cutworm	*Agrotis ipsilon*
	Downy mildew	*Peronospora brassicae*
	Stem rot	*Sclerotinia sclerotiorum*
	Soft rot	*Erwinia carotovora*
	Early blight	*Alternaria brassicae*
Cucurbits	Thrips	*Thrips palmi*
	Melon fly	*Bactrocera cucurbitae*
	Green leafhopper	*Empoasca biguttula*
	Leafminer	*Liriomyza* spp.
	Cucurbit beetle	*Aulacophora* spp.
	Red mite	*Tetranychus cinnabarinus*
	Powdery mildew	*Erysiphe* spp.
	Cucumber downy mildew	*Pseudoperonospora cubensis*
	Basal stem rot	*Erwinia carotovora*
	Bacterial wilt	*Pseudomonas* spp.
	Cucumber mosaic virus	Cucumber mosaic virus
Legumes	Bean podborer	*Maruca testulalis*
	Vegetable leafminer	*Liriomyza sativae*
	Red mite	*Tetranychus* spp.
	Cowpea aphid	*Aphis craccivora*
	Cotton bollworm or Tomato fruitworm	*Helicoverpa armigera*
	Tobacco cutworm or Common cutworm	*Spodoptera litura*

	Rust	*Puccinia arachidis*
	Damping off /Soft rot	*Pythium* spp., *Fusarium* spp.
	Downy mildew	*Peronospora manshurica*
Onion	Beet armyworm	*Spodoptera exigua*
	Onion thrips	*Thrips tabaci*
	Whitefly	*Bemisia tabaci*
	Onion fly	*Delia antique*
	Green onion leafminer	*Liriomyza chinensis*
	Leaf spot	*Alternaria brassicae*
	Leaf blight	*Stemphylium botryosum*
	Soft rot	*Erwinia carotovora*
	Anthracnose	*Colletotrichum circinans*
Solanaceous crops	Leafminer	*Liriomyza sativae*
	Whitefly	*Bemisia tabaci*
	Tomato fruitworm or Cotton bollworm	*Helicoverpa armigera*
	Eggplant fruit borer	*Leucinodes orbonalis*
	Common cutworm or Tobacco cutworm	*Spodoptera litura*
	Potato aphid	*Aphis fabae*
	Greasy cutworm or Black cutworm	*Agrotis ipsilon*
	Root-knot nematode	*Meloidogyne* spp.
	Late blight	*Phytophthora infestans*
	Bacterial wilt	*Pseudomonas solanacearum*
	Powdery scab	*Spongospora subterranea*
	Tomato yellow leaf curl virus	Tomato yellow leaf curl virus (Vector: *Bemisia tabaci*)
	Anthracnose	*Colletotrichum capsici*
	Yellows wilt	*Fusarium oxysporum*
	Early blight	*Alternaria solani*
	Damping off	*Pythium* spp., *Fusarium* spp.
	Soft rot	*Erwinia* spp.

Pesticide use has been the most common means for management of pests and diseases (VEGSYS Project Report Series, www.vegsys.nl) in Vietnam. However, Governmental control on pesticide usage is limited and although consumer awareness of food safety matters is apparently growing, many smallholder farmers are reportedly caught in a cycle of ever-higher chemical input use with lower productivity and profitability. Furthermore, recent newspaper reports highlight MARD's concerns about Vietnamese farmers' use of illegal

pesticides (i.e. pesticides not appearing on the published list of pesticides approved for use in Vietnam) given that “up to 80 percent of pesticides in the local market are imported illegally via the Vietnam–China border”.

2.4 Cultural perceptions and practices

Historically, Vietnam has been an agricultural civilization based on wet rice cultivation. Despite the decline in agriculture’s share of economic output (Table 1, section 2.1.4), Vietnam remains an agrarian society with around 64.7 percent of the labour force working in agriculture. In general, however, farming systems in Vietnam are small sized, with rice production making up a major part of all crop production. Nevertheless, vegetable production contributes an important share of smallholder farmers’ incomes with 28 percent of household income on average obtained through vegetable production (VEGSYS PR31) – most farmers are self-supporting, and cultivate vegetables out of historical tradition. Overall, agricultural production in Vietnam is still focused on supply to the domestic market. Importantly, whether living in rural or more urban areas, women tend to be responsible for procurement of food for the household, with fresh fruits and vegetables being obtained daily.

Vietnamese cuisine is renowned for its use of fish sauce, soy sauce, rice, fresh herbs, fruits and vegetables. A diverse range of herbs, including lemongrass, mint, long coriander and basil leaves is used. Throughout Vietnam, there is an emphasis on serving fresh vegetables and/or fresh herbs as important side dishes along with dipping sauce. The most common meats used in Vietnamese cooking are pork, chicken, shrimp, cockles and various kinds of fish, while beef is used less commonly except for *pho* (a beef noodle soup with a rich, clear broth achieved from a long boiling of meat and different herbs, typically served in bowls with spring onion and slices of semi-cooked beef).

3 Biosecurity capacity assessment

Section 3 of this report documents the application of *Step 4: Assess existing biosecurity capacity and performance* (pages 32–34) of the *FAO Biosecurity Toolkit*. The analysis is applied first at the systems level, detailing the existing **policy framework**, **legal and regulatory framework**, **organizational arrangements** and **communication**, followed by an examination of the **sectors of biosecurity/risk analysis functions** at the organization level, with particular attention to the cross-cutting issue of "food safety of fresh produce and pesticide residue management".

3.1 Policy framework

Vietnam's policy framework appears very different to those of some other countries. It is in marked contrast to those of countries like Bhutan and New Zealand, which both have discrete overarching documents outlining their integrated approach to biosecurity (more or less aligned to FAO's definition of "biosecurity"). Specifically, the *Biosecurity Policy for the Kingdom of Bhutan*, developed in late 2007, focuses on establishing linkages between previously approved policies relating to the environment, agriculture and food, health and trade, and mandating the Bhutan Agriculture and Food Regulatory Authority (BAFRA) as the **competent authority**. Similarly, *Tiakina Aotearoa – Protect New Zealand: The Biosecurity Strategy for New Zealand*, published in August 2003, set out a new "whole of system" direction for New Zealand's biosecurity by way of an "improvement plan" to deal with ongoing pressures on the system. Vietnam's policy and regulatory frameworks "for analyzing and managing relevant risks to human, animal and plant life and health, and associated risks to the environment" make no reference to the term "biosecurity" and tend to be sector-based. Policies, plans and organizational arrangements in support of Vietnam's (i) human life and health (including food safety), (ii) animal life and health (including fish), (iii) plant life and health (including forests), and (iv) environmental protection are formalized in an extensive series of government/official/legal documents ranging from laws, ordinances, decrees and directives, to national action plans and decisions.

3.2 Legal and regulatory framework

Although by no means exhaustive and with greater emphasis on the cross-cutting issue, food safety of fresh produce and pesticide residue management, the following government/official/legal documents form part of the legal and regulatory framework for Vietnam's sector-based biosecurity system (*English version accessed and viewed):

Plant life and health (including forests)

- *Ordinance on Plant Protection and Quarantine in 2001 (No: 36/2001/PL-UBTVQH10)
- Decree No: 58/2002/ND-CP of June 3 2002 of the Government, issued together with *Regulation on Plant Quarantine [replaced by Decree 02/2007/ND-CP], Regulation on Plant Protection and Regulation on Management of Pesticides
- Decree No: 86/2003/ND-CP dated July 18 2003 of the Government defining function, tasks, authorities and organizational structure of MARD

- *Decision No: 88/2003/QD-BNN dated September 4 2003 of Minister of Ministry of Agriculture and Rural Development specifying the functions, responsibilities, authorities and apparatus organization of Plant Protection Department
- MARD *List of Pesticides Permitted to Use in Viet Nam – 2007, promulgated together with Decision No: 23/2007/QD-BNN of March 28 2007 of the Ministry of Agriculture and Rural Development
- MARD *Circular No. 88/2007/TT-BNN of November 1 2007 Guiding domestic plant quarantine (Official Gazette)
- *Law on Forest Protection and Quarantine in 2001
- *Decision No: 92/2003/QD-BNN dated September 4 2003 of Minister of Ministry of Agriculture and Rural Development specifying the functions, responsibilities, authorities and apparatus organization of Forest Protection Department

Animal life and health (including fish)

- [Decree dated January 2008 related to the Forest Protection Department of MARD]
- [Veterinary Ordinance dated 1993, revised as the Animal Health Ordinance 2004]
- *Decision No: 89/2003/QD-BNN dated September 4 2003 of Minister of Ministry of Agriculture and Rural Development specifying the functions, responsibilities, authorities and apparatus organization of Veterinary Department [=Department of Animal Health]

Human life and health (including food safety)

- *Ordinance on Food Hygiene and Safety in 2003 (No. 12/2003/PL-UBTVQH11) [to be replaced by a proposed new Food Safety Law in preparation] and guiding *Decree No. 163/2004/ND-CP of September 7 2004 detailing the implementation of articles of the Government
- *Decision by the Prime Minister (No. 21/2001/QD-TTg) Approving the National Strategy on Nutrition for the period 2001–2010 (dated 22 February 2001)
- *Decision by the Prime Minister (No. 35/2001/QD-TTg) Approving the strategy for protection and care of the people's health in the 2001–2010 period (dated 19 March 2001)
- *Decision by the Prime Minister (No. 190/2001/QD-TTg) Approving the national target programmes to prevent and combat some social diseases, dangerous epidemics and HIV/AIDS in the 2001–2005 period (dated 13 December 2001)
- *Resolution of the Political Bureau (No. 46 NQ/TW) on the protection, care and promotion of people's health in the new situation (dated 23 February 2005)
- Decision by the Prime Minister (No. 43/2006/QD-TTg) approving the National Action Plan for food safety and hygiene until 2010 [as referred to in a presentation by Nguyen Nhu Tiep, NAFIQAD]
- Directive (No. 06/2007/CT-TTg) on the application of urgent measures to ensure food hygiene and safety [as referred to in a presentation by Nguyen Nhu Tiep, NAFIQAD]
- Decision by the Prime Minister (No. 48/2005/QD-TTg) establishing the Inter-Branch Steering Committee for Food Hygiene and Safety [as referred to in a presentation by Nguyen Nhu Tiep, NAFIQAD]

Environmental Protection

- *Law on Environmental Protection in 1993
- *Government Decree (No. 175/CP) on providing Guidance for the Implementation of the Law on Environmental Protection (dated 18 October 1994)

- *Decision by the Prime Minister (No. 845/TTg) Approving the Biodiversity Action Plan for Vietnam (dated 22 December 1995)

Across these different documents, a legal framework and regulatory framework emerges for the different "biosecurity" sectors in Vietnam. However, the responsibilities of some ministries are not immediately clear and some areas of activity appear to be duplicated.

3.3 Organizational arrangements

In Vietnam the responsibilities for biosecurity rest with a number of different ministries, with different departments or sections within these ministries inevitably involved. On food safety matters alone at least four ministries, namely the Ministry of Agriculture and Rural Development (MARD), Ministry of Health (MOH), Ministry of Industry and Trade (MOIT), Ministry of Science and Technology (MOST) are involved actively.

On www.spsvietnam.gov.vn the competent authorities for food safety control are specified as:

(i) Vietnam Food Administration, Ministry of Health;
(ii) Directorate for Standards and Quality, Ministry of Science and Technology;
(iii) Department of Multilateral Trade Policy, Ministry of Industry and Trade.

However, the Ordinance on Food Hygiene and Safety (No. 12/2003/PL-UBTVQH11) clearly states that "The Health Ministry shall be accountable to the Government for performing the State management over food hygiene and safety" (Article 43). This indicates that MOH is the lead agency (fitting the definition of **competent authority** for food safety) yet Chapter III, Section 1 of the guiding Decree No. 163/2004/ND-CP sets out state management responsibilities for food hygiene and safety of The Health Ministry, The Agriculture and Rural Development Ministry, The Fisheries Ministry, The Industry Ministry, The Trade Ministry, The Science and Technology Ministry, The Culture and Information Ministry, and The Finance Ministry in Articles 21–28. Notwithstanding some changes in the organizational structures of some of the ministries, the following excerpts (together with selected text highlighted) from Decree No. 163/2004/ND-CP describe some of the key food-safety responsibilities and emphasize the different roles the ministries hold:

> Section 1. STATE MANAGEMENT RESPONSIBILITIES FOR FOOD HYGIENE AND SAFETY
>
> ***Article 21.-*** The Health Ministry
>
> 1. To **formulate and promulgate** according to its competence or submit to the Government for promulgation **legal documents, strategies and policies on food hygiene and safety**; **coordinate with the concerned ministries and branches in formulating, promulgating and certifying** food which satisfies or complies with the hygiene and safety standards applicable to **domestically consumed food**;
>
> 2. To **assume the prime responsibility for, and coordinate** with the concerned ministries and branches in, performing the State management over food hygiene and safety with regard **to food circulated on the market and imported food**; organize the control of micro-organism pollution and **chemical surpluses** in food (including food additives as well);

3. To **assume the prime responsibility for, and coordinate** with the concerned ministries and branches **in, examining and inspecting** food hygiene and safety;

4. To **assume the prime responsibility for, and coordinate** with the concerned ministries and branches in, **organizing scientific and technological researches, professional training** and international cooperation in the domain of food hygiene and safety; **organize the information work, propagation and dissemination** of food hygiene and safety knowledge and legislation.

Article 22.- The Agriculture and Rural Development Ministry

1. To **perform the State management** over food hygiene and safety according to **its assigned functions and tasks** with regard to food products **throughout the production process from rearing, cultivation, exploitation, gathering, harvest, production, processing, slaughtering, preservation and transport till the time agricultural food products are put into circulation** on the **domestic market or exported**; to **manage the veterinary hygiene of imported food of animal origin**;

2. To **assume the prime responsibility for, and coordinate with the Health Ministry** in, **formulating and promulgating documents** guiding the management of food hygiene and safety prescribed in Clause 1 of this Article. ….

Article 24.- The Industry Ministry

1. To **perform the State management** over food hygiene and safety with regard to food products **throughout the production process at the establishments under its management** according to **its assigned functions and tasks till the time food products are put into circulation on the domestic market or exported**; ….

Article 26.- The Science and Technology Ministry

1. To **assume the prime responsibility for, and coordinate with the Health Ministry as well as concerned ministries** and branches **in, formulating Vietnamese standards for food**, the **process for recognition and certification of qualified food production and trading establishments**. ….

As summarized in the Stakeholder Analysis documented in section 3.6 below, the food safety responsibilities of MARD, MOH, MOIT and MOST potentially include one or more, if not all, of the following:

- formulation of policies and legislation (MOH);
- implementation and enforcement of legislation (MARD, MOH, MOIT);
- regulatory activities (including provision of scientific advice, risk profiling, setting regulatory standards, quarantine, certification, diagnostic and/or laboratory testing services, emergency response, information exchange, monitoring and surveillance) (MARD, MOH, MOIT, MOST);
- coordination and participation in the work of international and/or regional organizations (MARD, MOH, MOST).

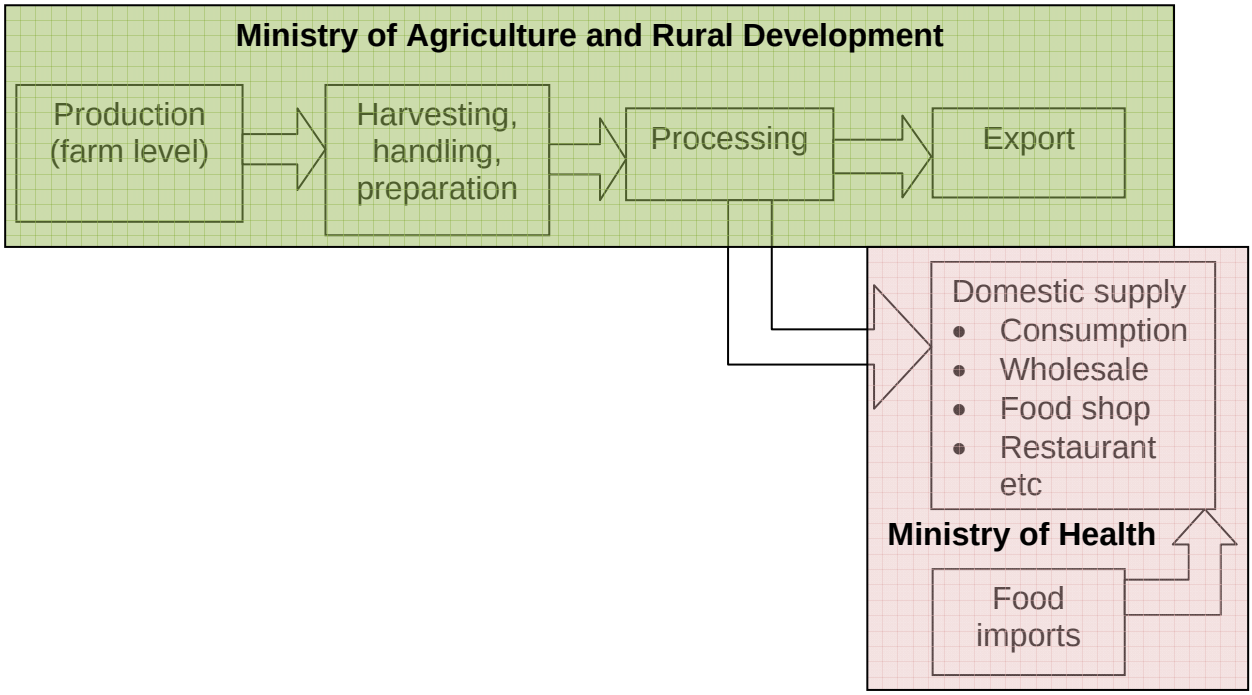
As foreshadowed in Decree No. 163/2004/ND-CP (refer to excerpts above), coordination with concerned ministries and branches on matters related to food hygiene and safety is a necessary part of the state management of food hygiene and safety in Vietnam.

On balance, at present it appears that MOH and MARD, especially given the establishment of the National Agro-Forestry-Fisheries Quality Assurance Department (NAFIQAD[3]) within MARD, are the ministries primarily involved operationally in food safety. The delineation between their areas of responsibility is shown in Figure 1.

Relevant to the cross-cutting issue of "food safety of fresh produce and pesticide residue management", the Plant Protection Department (PPD) within MARD has the important function of state management and inspection of plant protection and quarantine, and plant protection substances in Vietnam (Decision No: 88/2003/QD-BNN). With regard to plant protection, PPD is required to undertake the "state management over the investigation, discovery, estimation, projection and steering for implementing prevention of organism[s] harmful to main plant resources", while with regard to plant protection substances, PPD is required to:

- "Manage the registration of plant protection substances;
- Manage the analysis and test new plant protection substances;
- Submit MARD Minister to publicize list of plant protection substances allowed to be used, substances restricted to be used and those banned for use in Vietnam; allocate quota for importing substances restricted for use;" …
- "Manage the use of plant protection substances in line with legal regulations" …

Figure 1. Diagram representing a value chain indicating the areas of responsibility covered by MOH and MARD.
[based on discussion with Nguyen NhuTiep (NAFIQAD)]



[3] Formerly the National Fisheries Quality Assurance and Veterinary Directorate (NAFIQAVED) within the Ministry of Fisheries

3.4 Communication

International communications
With regard to international communications and reporting channels, information flows seem to be well established – the Chief Veterinary Officer in the Department of Animal Health serves as the contact point for the World Organisation for Animal Health (OIE); Deputy Director General, Mr Dam Quoc Tru, of the Plant Protection Department, is the contact point for the Commission on Phytosanitary Measures (CPM) (under the International Plant Protection Convention, IPPC); Dr Vu Ngoc Quynh, Director of the Vietnam Codex Office, is the contact point for the Codex Alimentarius Commission (CAC); and the Vietnam Sanitary and Phytosanitary Notification Authority and Enquiry Point within MARD's International Cooperation Department is the national contact for World Trade Organization (WTO) matters related to the Agreement on the Application of Sanitary and Phytosanitary Measures.

Cooperation/coordination between ministries
Vietnamese ministries, such as MARD and MOH, with wide-ranging biosecurity responsibilities, are well aware of the need to coordinate with other concerned ministries on biosecurity-related issues/matters. In recent years in Vietnam, with new and ongoing outbreaks of highly pathogenic avian influenza in poultry, as well as confirmed human cases (including deaths), closer cooperation between animal health and public health officials at district, regional and central (national) government levels has developed. For example, DAH established the Steering Committee for Highly Pathogenic Avian Influenza on which public health officials sit. Furthermore, the HPAI crisis has ensured the effectiveness of animal disease reporting (and diagnostic) systems (including a "hotline") originally put in place for emergencies such as outbreaks of foot-and-mouth disease. However, considerable investment in coordinated HPAI-associated public awareness and communication programmes was required, with outbreaks now announced on television and in newspapers as a matter of course.

As noted by DAH officials in Vietnam with reference to HPAI, a very high profile, cross-cutting issue related to animal and human health, coordination and communication between responsible ministries/departments is inevitably a priority in emergency situations. Unfortunately, on another cross-cutting matter, that of food safety of fresh produce and pesticide residue management in Vietnam – the focus of this assessment – coordination amongst the responsible ministries appears less than effective, particularly in regard to monitoring and surveillance efforts. Moreover, awareness in farmers and growers through to consumers is not sufficient and the Government, as reflected in various MOH and MARD interviews, remains concerned.

Ministry websites
Notably, most Vietnamese ministries and many of their departments have websites that amongst other matters provide access to legal documents pertaining to their responsibilities. The Directorate for Standards and Quality (STAMEQ) within the Ministry of Science and Technology (MOST) utilizes its website, www.tcvn.gov.vn as a means to disseminate National Standards (TCVNs), of which 25 percent are harmonized with international standards. STAMEQ has overseen the adoption as TCVNs of a significant number of Codex standards relating to food hygiene and 12 International Standards for Phytosanitary Measures (ISPMs). Such TCVNs are given a national standard number but make reference to the international standard reference too (e.g. TCVN 6299:1997 [CAC/GL 12-1991] is the

Vietnam Standard related to mixed fruit juice; TCVN 7515:2005 [ISPM No 4] is the Vietnam Standard related to Requirements for the Establishment of Pest Free Areas).

3.5 Core biosecurity-related activities

Core biosecurity-related activities or functions include: risk profiling and priority setting, assessing and responding to biosecurity needs, standard setting and implementation, quarantine, verification and enforcement, emergency preparedness and response, and **monitoring** and **surveillance**. Information obtained from a number of websites of Vietnam's government ministries/departments (e.g. www.mard.gov.vn, www.spsvietnam.gov.vn) and in the course of discussions with ministry staff confirms that most biosecurity-related activity, i.e. at the operational level, is being undertaken by the MARD and MOH. The Stakeholder Analysis set out in section 3.6 provides a detailed summary. However, in focusing on the cross-cutting issue, food safety of fresh produce and pesticide residue management, the following commentary highlights the ineffective coordination of some regulatory activities currently, notably monitoring and surveillance efforts.

Diagnostic and/or laboratory testing services
Laboratories providing diagnostic and other analytical or testing services seem to abound.

Under MARD:

- The Department of Animal Health includes the National Centre for Veterinary Diagnosis (NCVD), and two National Centres for Veterinary Hygiene Inspection (NCVH), which are associated with slaughterhouse inspection and export certification of animal products.
- The Plant Protection Department includes four Regional Plant Protection Centres, two Pesticide Control Centres – the Northern Pesticide Control Centre (NPCC)* and the Southern Pesticide Control Centre, nine Regional Plant Quarantine subdepartments and the Regional Plant Quarantine Diagnosis Centre.
- There are eight VietGAP-certifying laboratories, including a laboratory attached to (i) the Department of Fruit and Vegetable Quality Control in the Fruits and Vegetables Research Institute (FAVRI)*, and (ii) the Pesticide, Weed Science and Environment Department in the Plant Protection Research Institute (PPRI)*.
- The Pest Diagnosis and Identification Department, PPRI.
- NAFIQAD can access a significant laboratory capacity (Ministry [MARD and MOH], private and provincial laboratories that are accredited under the National Laboratory Accreditation Scheme [VILAS] can be authorized for food testing (including food safety criteria]) for enforcement and export certification purposes.

Under the Vietnam Food Administration (MOH):

- The National Institute of Nutrition* includes a laboratory attached to the Food Science and Safety Department (which has been deemed to be the central or national laboratory, located in Hanoi).
- Three regional testing laboratories are located in Daclak, Khanh Hoa and Ho Chi Minh City (Taynguyen Hygiene and Epidemiology Institute, Pasteur Institute and Ho Chi Minh City Hygiene and Public Health Institute).
- Three Quatest laboratories are located in Hanoi, Danang and Ho Chi Minh City (which are involved in testing imported products).

- Provincial laboratories – apparently one in each of the 63 'provinces' (58 provinces and 5 municipalities) – are involved mostly in nutritional testing of foods and microbiological testing.

Four laboratories (marked with an asterisk above) that are involved in some pesticide residue testing were visited (Appendix 1) – those at NIN, NPCC (PPD), FAVRI and PPRI. Details obtained relating to the capacity of each are given in Table 7.

Table 7. Laboratory capacity of four laboratories involved in pesticide residue (PR) testing.

	NIN	NPCC	FAVRI	PPRI
Focus of pesticide-related laboratory work	Investigation of food contaminants	Pesticide formulation quality control, pesticide residue testing, and bio-efficacy testing of pesticides	VietGAP certification/ compliance testing which includes pesticide residue criteria	VietGAP certification/ compliance testing which includes pesticide residue criteria
Human resources (No. of staff)	Micro. analysis: 4 Chemical analysis: 8 but only 4 in PR testing	Formulation quality control laboratory: 8 Pesticide residue laboratory: 8	15 in total: 10 scientists (2 chemistry M.Sc., 8 plant protection M.Sc.) and 5 others involved in sample collection and preparation	**
Accreditation to ISO17025 by STAMEQ/ Authorized by MARD to issue VietGAP cert.	Accredited	Accredited (as is SPCC)	Authorized	Authorized (preparing for accreditation this year)
Equipment (and number if available)	1 GC-MS 2 HPLC	Formulation, quality control, laboratory GC-MS (various detectors), HPLC Pesticide residue laboratory: GC-MS (various detectors), LC-MS	1 GC-MS (GCMS-P20105) 1 Ion chromato-graph (76 Compact IC) UV-visible spectrophotometer (UV-1650PC)	1 GC (3 detectors) 1 HPLC
Notable limitations and/or equipment need identified	A second GC-MS	**	HPLC (together with staff training) (Detector for GC-MS to bepurchased with ADB support)	Capacity limited to about 500 fruit/veg. samples and 500 soilsamples per year GC-MS may be purchased with ADB support
Nature of any PR monitoring/ surveillance work	As required by VFA – recent survey of fruits imported from China for pesticide residues	Pesticide residue laboratory: Customer and monitoring samples total 4 000 per year	**	**

**=Information was not readily available

Monitoring and surveillance

Biosecurity-related monitoring and surveillance activities are extensive. Testing for pesticide residues on fresh fruits and vegetables is initiated by both MOH and MARD. However, with regard to pesticide residues, the Vietnam Food Administration (VFA, MOH) does not undertake any regular testing currently. Rather, testing of a relatively small number of samples taken from one location/area is undertaken each year – the exact number of samples depends on the annual budget allocation. To access appropriate laboratory capacity, VFA coordinates with the central laboratory (NIN) and/or three regional laboratories (Taynguyen Hygiene and Epidemiology Institute, Pasteur Institute and Ho Chi Minh City Hygiene and Public Health Institute) independently on a project/programme basis. Pesticide residue testing is focused mainly on fresh fruits and vegetables. Vegetables may also be included in testing for heavy metals. If the results of testing are positive from the location sampled, then monitoring will be undertaken in the same area in the following year; if the results are negative, attention will be given to another location. Recent pesticide residue testing undertaken by NIN involved a survey of fruits imported from China. In addition, for the last four years VFA has funded residue monitoring of fruits and vegetables collected from wholesale markets in Hanoi and Ho Chi Minh City. Almost invariably information on the origin of any of the fruits or vegetables sourced from these markets is not available (i.e. no traceability). Follow-up actions related to any samples in which detected residues were found to exceed the maximum residue limit(s) (MRL) are therefore not possible. Summary results [English] of these surveys were not readily accessible.

In fulfilling their role in controlling "pesticide residues on agricultural products", the two Pesticide Control Centres affiliated to the Plant Protection Department (PPD) of MARD are, however, actively involved in pesticide residue surveillance. Apparently, every month 10 samples (including two or three different types of fruits and/or vegetables selected by season) are collected by laboratory staff from supermarkets and markets and assessed with regard to 14 criteria. The laboratory results are submitted to PPD and any official actions taken in response to non-compliances are initiated by PPD. Ideally, the relevant supermarket or market is informed about fruits/vegetables found to have residues exceeding the MRL(s) (specified in the relevant Vietnam Standard (TCVN) and/or based on Codex standards) to follow up with the supplier. In reality, as mentioned above, often the fruits/vegetables cannot be traced back to the producer.

In addition, and as referred to in Table 7, pesticide residue testing is also undertaken by FAVRI and PPRI, as well as six other laboratories (for MARD), associated with VietGAP certification/compliance checking. With regard to VietGAP, in combination with field monitoring (checking records), the fruits/vegetables are sampled at harvest and assessed in the laboratory under three main criteria: (1) physiological/chemical criteria; (2) residue and toxicity criteria; (3) mechanical criteria.

Sharing of results of pesticide residue analyses on fruits and vegetables between laboratories was not evident and there appears to be no coordination/cooperation between testing laboratories to identify particular "problem" crops or "pesticide types". Similarly, there appears to be no liaison between pesticide residue testing laboratories and pest and disease diagnostic laboratories and/or pest control advisors (including PPSD staff and pesticide vendors) to follow up and better understand the nature of specific pest or pest control problems being experienced by producers (potentially resulting in fruit and vegetables with excessive pesticide residues).

3.6 Stakeholder Analysis

A Stakeholder Analysis, undertaken following Annex 7 of the *FAO Biosecurity Toolkit*, is set out in the Table 8, below. It provides a useful summary of much of the information elaborated in sections 3.1–3.5 above. It is very obvious from the analysis that Vietnam's government ministries dominate the biosecurity stakeholders currently.

Table 8. Task – Ministry/Department/Group responsible where determined during the mission.

Formulation of policies and legislation addressing [specific legislation involved]:
Public health – Ministry of Health [Pursuant to the Law on Protection of the People's Health (1989), Decision by the Prime Minister Approving the Strategy for Protection and Care of People's Health in the 2001–2010 Period (2001) AND Border Medical Quarantine Regulation]
Food safety – Vietnam Food Administration (VFA), Ministry of Health [Ordinance on the Hygiene and Safety of Foods (2003), which refers to the Ordinance on the Quality of Goods (1999) for which the Ministry of Science and Technology (MOST) has overall responsibility], AND National Agro-Forestry–Fisheries Quality Assurance Department (NAFIQAD), Department of Animal Health (DAH) and Plant Protection Department (PPD) of the Ministry of Agriculture and Rural Development (MARD)
Animal health including regulation of veterinary medicines – DAH, MARD [Ordinance on Veterinary Services]
Plant health/forestry including pesticide regulation – PPD, MARD [Ordinance on Plant Protection and Quarantine]; Forestry Protection Department, MARD (as distinct from the Forestry Department, MARD)
Biosafety/biotechnology – MOST
Environment – Forestry Protection Department, MARD [Forest Protection and Development Law] AND Vietnam Environment Protection Agency (VEPA), Ministry of Natural Resources and Environment (MONRE) [Pursuant to the Law on Environmental Protection, The Biodiversity Action Plan for Vietnam, The National Strategy for Environmental Protection: 2001–2010]; AND MOST
Fisheries – NAFIQAD, MARD
Invasive alien species – DAH and PPD, MARD; MONRE
Implementation and enforcement of legislation addressing:
Public health – MOH
Food safety – VFA, MOH; NAFIQAD, MARD; MOST; Department of Science and Technology, Ministry of Industry and Trade (MOIT)
Animal health – DAH and NAFIQAD, MARD
Plant health/forestry – PPD and Forest Protection Department, MARD
Fisheries – DAH and NAFIQAD (MARD)
Invasive alien species – DAH, Forest Protection Department and PPD, MARD

Regulatory activities including:

Provision of scientific advice – DAH, Forest Protection Department, NAFIQAD, PPD, Research institutes including Fruits and Vegetables Research Institute (FAVRI), Plant Protection Research Institute (PPRI), Southern Fruit Research Institute (SOFRI), MARD; National Institute of Nutrition (NIN) and VFA, MOH

Risk profiling and ranking – DAH and PPD, MARD

Setting of hazard-based and risk-based regulatory standards – Directorate for Standards and Quality (STAMEQ), MOST; PPD, MARD; VFA, MOH

Inspection, verification and enforcement – DAH, Forest Protection Department, NAFIQAD and PPD [including the provincial subdepartment staff, PPSD has ~3 000 staff of which ~700 are dedicated inspection staff], MARD; Department of Science and Technology, MOIT; Vietnam Customs, Ministry of Finance

Quarantine – DAH, MARD; PPD, MARD together with two Post Entry Quarantine Centres

Certification – Bureau of Accreditation, STAMEQ, MOST [laboratory accreditation to ISO standards]; DAH, NAFIQAD and PPD, MARD [export certification]; Department of Science and Technology, MOIT [GMP or GPP certification]; FAVRI, PPRI and six other laboratories [VietGAP certification/compliance]

Diagnostic and/or Laboratory Testing Services – PPD, MARD together with four Regional Plant Protection Centres, two Pesticide Control Centres, nine Regional Plant Quarantine Subdepartments, the Regional Plant Quarantine Diagnosis Centres; FAVRI, PPRI and six other laboratories; DAH, MARD together with National Centre for Veterinary Diagnosis and National Reference Laboratory for Avian Influenza, two National Centres for Veterinary Hygiene Inspection, National Institute for Veterinary Research; NAFIQAD, MARD; National Institute of Nutrition (NIN), Taynguyen Hygiene and Epidemiology Institute, Pasteur Institute and Ho Chi Minh City Hygiene and Public Health Institute and three Quatest laboratories, MOH

Emergency preparedness and response – DAH, Forest Protection Department and PPD, MARD (together with regional, provincial and district staff, also para-vet teams and police, as necessary); Steering Committee on Highly Pathogenic Avian Influenza (animal health and public health officials); MOH together with provincial, district and station staff

Information exchange and risk communication – DAH and PPD, MARD; STAMEQ, MOST; Department of Science and Technology, MOIT; MOH

Monitoring and surveillance – DAH, MARD in combination with seven Regional Animal Health Offices (RAHO) and provincial government animal health departments (SubDAHs); PPD, MARD together with four Regional Plant Protection Centres, two Pesticide Control Centres, nine Regional Plant Quarantine Subdepartments and provincial subdepartment staff (PPSD); NIN, MOH; Department of Science and Technology, MOIT

Competent body/third party activities including:

Inspection –Vietnam National Vegetable and Fruit Corporation (VEGETEXCO)

Verification – N/A

Certification and/or trade permits – Independent certifying bodies

Diagnostic and/or laboratory testing services – Independent laboratories; pesticide vendors

Emergency preparedness and response – N/A

Monitoring – N/A

Coordination and participation in the work of international and/or regional organizations and bodies related to biosecurity: *CAC* – STAMEQ, MOST; NIN and VFA, MOH *FAO* – Multilateral Cooperation Division, International Cooperation Department, MARD *WHO* – MOH *OIE* – DAH, MARD *WTO* – Vietnam SPS Notification Authority & Enquiry Point, International Cooperation Department, MARD *CPM/IPPC* – PPD, MARD
Implementation and oversight of relevant international agreements, conventions and codes of practice: *Codex Alimentarius* – STAMEQ, MOST; VFA, MOH *SPS Agreement* – Vietnam SPS Notification Authority & Enquiry Point, International Cooperation Department, MARD *CBD* – MOST *IPPC, ISPMs, OIE and other international standards* – DAH and PPD, MARD; STAMEQ, MOST *IHR* – MOH
Major finance and budgetary decisions related to food and agriculture Government of the Socialist Republic of Vietnam (presumably on advice from MARD, MOH and Ministry of Finance)
Formulation of national development plans, strategies, etc. MARD; MOH
Export promotion and development VEGETEXCO

3.7 SWOT Analysis

SWOT Analysis is a well known strategic planning tool identifying **s**trengths and **w**eaknesses, **o**pportunities and **t**hreats of the system, organization/agency or process under examination. The following SWOT Analysis, concentrating on the food safety of Vietnam's fresh produce, was supported by information obtained through stakeholder interviews conducted from 5 to 14 March 2009.

Table 9. SWOT analysis.

	Positive	Negative
Internal	**Strengths** • Established requirement of Government and/or ministries for ministries to develop annual and five-year plans • MOH deemed to be accountable to Government for the State management of food safety and hygiene • National standards body and standard-setting process well established • Extensive scientific and technological capacity • High-level/diplomatic participation on biosecurity matters including food safety, animal and plant health at regional (e.g. ASEAN) and international level • Existing capacity for monitoring agricultural compounds, including pesticide residues • Communication and public awareness programmes developed by public/animal health officials in association with the ongoing occurrence of HPAI available as a model for dealing with other biosecurity-related cross-cutting issues • Diverse soil and subtropical–tropical conditions allow production of fruits and vegetables year round	**Weaknesses** • Small-sized agricultural production units • Biosecurity concept not recognized in Vietnam • Lack of coordination/information sharing between and within stakeholder ministries/ departments; responsibilities not clear • Legal and regulatory system difficult to negotiate • Somewhat process-driven, rather than risk-based approach to the cross-cutting biosecurity issue of “food safety of fresh produce and pesticide residue management” • Diagnostic and/or laboratory analytical services not coordinated • No system for monitoring dietary exposure to chemical residues, contaminants and nutrient elements • Limited domestic consumer demand for “safe” food • Low level of fruit and vegetable production using VietGAP procedures • Pesticide use constitutes the main pest control tool • Budgetary constraints within ministries

External	Opportunities	Threats
	• WTO membership and the improved opportunities for international trade • Membership of CAC, CPM and OIE especially in the development and/or revision of international standards/ guidelines/codes • Membership of ASEAN, APEC, APPPC and other regional bodies • Increased attention to biosecurity risks at the regional level as a result of ongoing outbreaks of HPAI • Seasonal production of fruits and vegetables in trading-partner countries • Ongoing potential for donor financing for biosecurity (including food safety)	• Sharp decline in global growth and decreased foreign investment • Growing demand in domestic markets for imported agrofoods • Differing priority placed on biosecurity matters in some neighbouring countries • Illegal importation of high-risk products • Strict SPS requirements (increasing the cost of production) placed on Vietnam's exports by some trading partners

4 The envisioned future national biosecurity situation

Section 4 of this report essentially completes *Step 5: Describe the desired future situation (goals and objectives) of biosecurity* of the seven-step process to assess capacity needs recommended in the *FAO Biosecurity Toolkit*. However, given that the focus of this report is on a biosecurity-related cross-cutting issue (i.e. "food safety of fresh produce and pesticide residue management") rather than "biosecurity" in its entirety, description of the desired future situation in Vietnam has centred on the relevant biosecurity sectors of "food safety" and "plant health".

4.1 Desired future situation of food safety and plant health in Vietnam

Fortuitously, in recent years Vietnam's Government has required ministries and certain departments within them (described as affiliated agencies) to prepare "strategies, development plans, policies, and annual and five-year plans" (e.g. as stipulated in Decision No. 88/2003/QD-BNN for the Plant Protection Department, MARD). Accordingly, the desired future situation for Vietnam is already described in documents such as *The 5-Year Plan for the Agricultural and Rural Development Sector, Period 2006–2010* (www.mard.gov.vn [English]). In particular, Part Two sets out objectives and directions for agricultural and rural development in the five-year period, 2006–2010:

> "The overall and long-term objective of the agricultural and rural sector in this period is to build up a[n] agriculture and forestry production that has a large scale of production, modern, efficient and sustainable, and that have a high productivity, high quality and competitive, based on the application of advanced science and technology achievements so that they are able to meet the domestic and export demand."

The plan goes further, with Part Three dedicated to *Some Major Solutions* to be intensively pursued and annexes providing additional details. Annex 3 lists specific programmes to be implemented under the plan and includes the main activities and responsible agency/ies for

each. Of the 16 “Ministerial level programs”, the “Plant protection improvement” programme is the responsibility of the Plant Protection Department and aims to “improve efficiency and effectiveness of pest control in crops and limit adverse impacts of agricultural chemicals”.

Similarly, the Decision by the Prime Minister (No. 35/2001/QD-TTg) *Approving the strategy for protection and care of the people’s health in the 2001–2010 period* served to define the desired future situation with regard to the health of the Vietnamese people. In outlining the principal contents of the strategy, Decision No. 35/2001/QDD-TTg stipulates both general and specific objectives, as well as major solutions, such as:

- “To enhance the capacity of the preventive health system … To develop the network of food safety, hygiene and quality control.” (under the heading *b. Organizational strengthening*).
- “To raise awareness of health and environment-related issues at enterprises. To give priority to supervising and treating wastes which cause environmental pollution and badly affect human health such as hospital wastes, plant protection chemicals, etc.” (under the heading *f. Promotion of the prophylactic medicine and health improvement work*).
- “To enhance the management of food quality, hygiene and safety. To study and actively monitor the situation of foodstuff contamination so as to prevent poisoning and diseases caused by food and drinks. To develop the contingent of food hygiene and safety inspectors and supervisors at all levels.” (also under the heading *f. Promotion of the prophylactic medicine and health improvement work*).

5 Identification of capacity building needs related to Vietnam’s food safety and plant health

Having summarized the current situation in Vietnam associated with particular aspects of its biosecurity in Section 3 (Step 4) AND then set out the desired future situation regarding food safety and plant health in Section 4 (Step 5), the next step (Step 6) in the process is to identify the capacity needed to reach the desired future situation. As with the SWOT Analysis, Step 6 has been completed using information obtained through the stakeholder interviews held in March 2009. The result is set out in the following box. For the purposes of enunciating “Future Goals”, information from stakeholder interviews supplemented the information presented in Section 4. Similarly, ideas put forward by interviewees have been drawn on to identify the “Needs/Gaps”. The particular future goals shown in square brackets are those formulated solely in the preparation of this report.

Table 10. Current situation, future goal and needs/gaps.

Current situation	Future goals	Needs/Gaps
Policy framework		
Process-focused rather than risk-based approach to the cross-cutting biosecurity issue of “food safety of fresh produce and pesticide residue management”	[An agreed risk-based approach to “food safety of fresh produce and pesticide residue management”]	Failure to build on existing research outcomes or results from current activities to further the information base for a risk-based approach to pesticide residues on
Ministries’ annual and 5-year	“Focus on control of highly risky parts [of the food safety system]”	

plans/strategies cover the period through to 2010		fresh produce Develop appropriate policies enabling the establishment of a risk-based system for food safety and hygiene
Legal and regulatory matters Legal and regulatory framework difficult to negotiate New Food Act in preparation No practical mechanisms/ processes in place to adequately monitor, test and verify compliance with VietGAP and ensure traceability of fruits and vegetables Vietnam standards based on Codex MRLs, which are often determined on temperate crops	Food safety legislation in place (replacing the Ordinance on Food Hygiene and Safety) that is aligned with international requirements under the SPS Agreement and Codex Alimentarius MRLs determined for Vietnam based on total dietary intake in Vietnam	Complete preparation of a Food Safety Act Food Safety Act approved by the National Assembly In accordance with the Act, preparation of regulations that are practical and enable effective and cost-efficient management of food safety and traceability of fresh fruits and vegetables
Organizational arrangements Under the Ordinance on Food Hygiene and Safety, MOH accountable for the State management of food safety and hygiene Well established network of health workers (including those in commune health stations, district health centres, provincial health services/centres/authorities) implementing MOH's "Protein-Energy Malnutrition Program" MOH, MARD (including various departments such as DAH, PPD, NAFIQAD, International Cooperation Department, FAVRI, PPRI and six other laboratories), MOIT and MOST (as in STAMEQ) are involved directly in State management of Vietnam's food safety system PPD responsible for the State management of plant protection and quarantine, and plant protection substances (i.e. pesticides)	Roles and responsibilities of stakeholders involved in food safety are clearly defined and understood "To develop the network of food safety, hygiene and quality control"	Memoranda/Letters of Understanding between MOH (VFA) and the other involved Ministries to formalize coordination arrangements (including funding and budgetary matters) so as to enable a more risk-based approach and unnecessary duplication of activities is avoided Utilize appropriate established networks where possible to strengthen the food safety-related networks involving local, district, provincial and central stakeholders

Lack of clarity in the roles and responsibilities of the Ministries/Departments involved in State management of Vietnam's food safety system		
Communication Limited domestic consumer demand for "safe" food Ongoing participation in biosecurity-related international organizations (e.g. FAO, WTO, WHO, CAC, CPM, OIE) and cooperation with trading partner countries No significant reports of non-compliance with food safety requirements/standards of importing countries on exported fruits and vegetables Differing priority placed on biosecurity matters in some neighbouring countries Reports of illegal importation of pesticides from China Good but relatively uncoordinated support from donor groups Well developed communication and public awareness programmes related to the cross-cutting (animal health/human health) issue of HPAI Lack of information sharing between laboratories accredited or authorized to undertake testing for agricultural compounds Lack of information sharing between plant pest and disease diagnostic laboratories and laboratories accredited or authorized to undertake testing for agricultural compounds Varying recommendations on pest control provided to fruit and vegetable producers Slow response to the promotion of VietGAP for	"Strengthening cooperation with international organizations and other countries in order to expand markets of agricultural and forestry products, making use of available scientific and technical advances and advanced management skills world-wide, and seeking more investment funds for agricultural and rural development" "Improved efficiency and effectiveness of pest control in crops while limiting adverse impacts of agricultural chemicals" Domestic consumers able to procure "safe" fresh fruits and vegetables with confidence that the fresh produce is indeed safe By 2010, 30% of vegetable producers applying VietGAP procedures; by 2015, 100% of vegetable producers applying VietGAP procedures	Well coordinated technical and funding contributions from international aid and development agencies such as FAO, WB, ADB, CIDA, MALICA Consortium, etc. Build on the public health/animal health HPAI communication and public awareness arrangements as a model Utilize the established network of health workers involved in implementing MOH's "Protein-Energy Malnutrition Program" to highlight food safety issues and disseminate related information Develop awareness raising programmes and communication strategies, targeting fresh produce (i) producers, (ii) markets, wholesalers, retailers, restaurants and hotels, and (iii) consumers, on "food safety of fresh produce" and VietGAP Advertise/publish notifications of VietGAP-compliant producers AND sellers of fresh produce Regular review and compilation of pesticide residue testing results from ALL laboratories undertaking residue testing on fresh produce – highlighting particular (i) crops with detectable residues and residues exceeding Vietnam standards, and (ii) pesticides with residues exceeding Vietnam

the production of safe fresh fruit and vegetables (present estimates of VietGAP application ranged from 6to 10% of vegetable producers)		standards Reports containing the compiled results from residue testing laboratories routinely forwarded to pest and disease diagnostic laboratories and/or pest control advisors to better understand the seasonal nature of specific pest or pest control problems being experienced by producers (and, in time, ascertain evidence of pesticide resistance) Plant protection researchers informed of recurring pest control issues and/or evidence of pesticide resistance in any cooperative, district and/or province
Inspection, verification and enforcement Role of Vietnam customs and the police in dealing with the illegal importation of pesticides lacks clarity Shortage of facilities for the storage and safe disposal of obsolete and/or confiscated (illegal) pesticides Results of pesticide residues exceeding MRLs on fruits and vegetables (can be) rarely followed up	Appropriate assistance from Vietnam customs and the police as required by MARD inspection staff to better manage pesticide imports Appropriate storage and safe disposal of obsolete and/or confiscated (illegal) pesticides "To develop the network of food safety, hygiene and quality control" "To enhance the management of food quality, hygiene and safety" and "To develop the contingent of food hygiene and safety inspectors and supervisors at all levels"	Increased cooperation between Vietnam customs, police and PPD inspection staff to ensure appropriate border control of pesticide imports Additional facilities to store and safely dispose of obsolete and/or confiscated pesticides Enhance the capacity to inspect, verify and enforce legislation related to (i) pesticides and their use on fruits and vegetables, (ii) pesticide-residue management on fresh produce, as well as (iii) the application of VietGAP procedures in the production of fruits and vegetables
Quarantine and certification MARD certification (issued by FAVRI and PPRI and six other laboratories) for VietGAP production not well recognized by fruit and vegetable wholesalers/sellers	Domestic consumers able to procure "safe" fresh fruits and vegetables with confidence that the fresh produce is indeed safe	Fruits and vegetables produced using VietGAP procedures not recognized by buyers Fruits and vegetables produced using VietGAP not segregated/labelled/

		branded by producers/sellers
Diagnostic/testing services MOH and MARD (as in PPD, FAVRI, PPRI and other research institutes) have laboratories undertaking pesticide residue testing currently Only two of the MOH laboratories (NIN, Ho Chi Minh City H&P Institute) and the two PPD Pesticide Control Centre laboratories accredited by the Bureau of Accreditation Limited capacity amongst pesticide residue testing laboratories to increase the number of samples tested currently or anticipated with the expected increase in the numbers of vegetable growers applying VietGAP procedures Lack of coordination between laboratories accredited or authorized to undertake testing for agricultural compounds Lack of information sharing between plant pest and disease diagnostic laboratories and laboratories accredited or authorized to undertake testing for agricultural compounds	MOH and MARD able to access appropriate accredited testing services "to study and actively monitor the situation of foodstuff contamination" "Improved efficiency and effectiveness of pest control in crops while limiting adverse impacts of agricultural chemicals"	Enhance the laboratory capacity to undertake appropriate testing of fruits and vegetables for pesticide residues for the purposes of (i) VietGAP certification and monitoring (compliance checking), (ii) verification of compliance with Vietnamese standards and/or importing country requirements, as necessary, (iii) implementing an ongoing Food Residue Surveillance Programme including fresh fruits and vegetables, and (iv) implementing a Total Diet Survey Enhance the capacity to (i) accurately diagnose pest and pesticide resistance problems in fruit and vegetable crops, (ii) provide pest control advice appropriate to the area and adhering to IPM principles and VietGAP procedures
Emergency preparedness and response – An area of activity not immediately relevant to the issue of food safety of fresh produce and pesticide residue management		
Risk analysis Extensive scientific and technological capability in Vietnam available to undertake assessment of the risk of pesticide residues to Vietnamese people, undertake investigation of possible pesticide resistance and develop appropriate	MOH and MARD able to access experienced scientists "to study [~~and actively monitor~~] the situation of foodstuff contamination" "Improved efficiency and effectiveness of pest control in crops while limiting	Capacity to conduct risk analyses to assess hazards/threats to food safety Investigation of possible pesticide resistance in pest populations Development of pesticide resistance management

pesticide resistance management programmes	adverse impacts of agricultural chemicals"	programmes
Monitoring and surveillance No monitoring for the development of pesticide resistance in pest populations No clear system to verify the effectiveness of regulatory measures on the use of agricultural compounds and resulting residues No system for monitoring dietary exposure to chemical residues, contaminants and nutrient elements	"Improved efficiency and effectiveness of pest control in crops while limiting adverse impacts of agricultural chemicals" MOH and MARD with sufficient capacity "to [~~study and~~] actively monitor the situation of foodstuff contamination so as to prevent poisoning and diseases caused by food and drinks." "To enhance the management of food quality, hygiene and safety"	Monitoring pesticide usage, and pesticide resistance in pests, of fresh fruits and vegetables A(n ongoing) Food Residue Surveillance Programme including fresh fruits and vegetables A Total Diet Survey and assessment of the dietary intake of pesticide residues in Vietnam

6 National Action Plan to address the capacity building needs of Vietnam's food safety system (with particular reference to fresh fruit and vegetables)

The tables below constitute a proposed Action Plan for strengthening the capacity of Vietnam's food safety system over the next five years, with particular reference to fresh fruit and vegetables. The preparation of the Action Plan completes Step 7 and concludes the process to assess the country's capacity needs as set out in Part 2 of the *FAO Biosecurity Toolkit*. The Action Plan attempts to provide specific guidance in addressing the cross-sectoral (i.e. human health/plant health) issue of "food safety in fresh produce and pesticide residue management", albeit in the recommended "biosecurity" format.

Please note in the Plan that priority has been allocated on a scale of 1–5, and those actions with a score of 1 constitute the highest priority actions. In addition, some suggested actions follow on from others – consequently, not all actions can be pursued simultaneously and not all can begin in Year 1. However, an action beginning in Year 2 is not necessarily a lower priority. Also, once begun, some activities are ongoing, e.g. by definition, the Food Residue **Surveillance** Programme (in the **Monitoring and surveillance table)**.

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
Policy framework Process-focused rather than risk-based approach to the cross-cutting biosecurity issue of "food safety of fresh produce and pesticide residue management" Ministries' annual and 5-year plans/strategies cover the period through to 2010	[An agreed risk-based approach to "food safety of fresh produce and pesticide residue management"] "Focus on control of highly risky parts [of the food safety system]"	Build on existing research outcomes or results from current activities to further the information base for a risk-based approach to pesticide residues on fresh produce Develop appropriate policies enabling the establishment of a risk-based system for food safety and hygiene	Undertake a baseline study, utilizing recent results of laboratory testing and including an objective (quantitative, if possible) evaluation of the relative risks to human health in Vietnam of fresh produce (cf. other plant, animal, seafood products) contaminated with agricultural compound residues, other contaminants (microbiological or aflatoxins) and nutrient elements (refer to **Risk analysis** below)	MOH (including VFA, NIN and other labora-tories), in collaboration with MARD (including DAH, NAFIQAD, PPD (NPCC), FAVRI, PPRI)	Internal ministries resources	X					1
			In ministries' preparation of strategies or 5-Year Plans for 2011 onwards, incorporate specific goals and objectives relating to	MOH MARD	Internal Ministries resources		X				2

			any relevant identified (from the above-mentioned study) high risk parts of Vietnam's food safety system								

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
Legal and regulatory matters											
Legal and regulatory framework difficult to negotiate New Food Act in preparation No practical mechanisms/ processes in place to adequately monitor, test and verify compliance with VietGAP and ensure traceability of fruits and vegetables Vietnam standards based on Codex MRLs, which are often determined on temperate crops	Food safety legislation in place (replacing the Ordinance on Food Hygiene and Safety, which was approved by Standing Committee of the National Assembly) that is aligned with international requirements under the SPS Agreement and Codex Alimentarius MRLs determined for Vietnam based on total dietary intake in Vietnam	Complete preparation of a Food Safety Act Food Safety Act approved by the National Assembly In accordance with the Act, preparation of regulations and Vietnam standards that are practical and enable effective and cost-efficient management of food safety and traceability of fresh fruits and vegetables	Drafting of the Food Safety Act completed Approval of the Food Safety Act by the National Assembly Pursuant to the 'new' Act, draft any necessary regulations (e.g. MRLs) to complete the necessary legislation aligning with international requirements under the SPS Agreement and Codex Alimentarius As appropriate, expedite the adop-tion of Codex standards as Vietnam standards	MOH (VFA) with co-operation from MARD, MOIT and MOST National Assembly MOH, as the Ministry responsible for Act STAMEQ through Technical Committees, as at present	Apparently technical, legal and/or financial support has already been given	X X		 X X			1 1 2 Ongoing

Current Situation	Future Goals	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
Organizational arrangements Under the Ordinance on Food Hygiene and Safety, MOH accountable for the State management of food safety and hygiene Well established network of health workers (including those in commune health stations, district health centres, provincial health services/ centres/authorities) implementing MOH's "Protein-Energy Malnutrition Program" MOH, MARD (including various departments such as DAH, PPD, NAFIQAD, International	Roles and response-bilities of stakeholders involved in food safety are clearly defined and understood "To develop the network of food safety, hygiene and quality control"	Memoranda/Letters of Understanding between the MOH (VFA) and other involved ministries to formalize coordination arrangements to enable a more risk-based approach Utilize appropriate established networks where possible to strengthen the food safety-related networks involving local, district, provincial and central stakeholders	Memoranda/Letters of Understanding between the MOH (VFA) and other involved ministries (as stipulated in the Act) may assist in formalizing coordination arrangements (including funding and budgetary matters, and the role of the Inter-Ministerial Steering Board for Food Hygiene and Safety) so as to enable a more risk-based approach and unnecessary duplication of activities is avoided Review the role of the Inter-Ministerial Steering Board for Food Hygiene and	MOH (VFA) MOH (VFA)		X 	 X				1 2

Current Situation	Future Goals	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
Cooperation Department, FAVRI, PPRI and six other laboratories), MOIT and MOST (as in STAMEQ) are involved in State management of Vietnam's food safety system PPD responsible for the State management of plant protection and quarantine, and plant protection substances (i.e. pesticides) Lack of clarity in the roles and responsibilities of the ministries/ departments involved in State management of Vietnam's food safety system			Safety (established under Decision 48/2005/QD-TTg) as a means to further strengthen ministries' cooperation in State management of food safety								

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
Communication											
Limited domestic consumer demand for "safe" food Ongoing involvement with biosecurity-related international agencies (e.g. FAO, WTO, WHO, CAC, CPM, OIE) No significant reports of non-compliance with food safety requirements/ standards of importing countries on exported fruits and vegetables Differing priority placed on biosecurity matters in some neighbouring countries Reports of illegal importation of pesticides from	"Strengthening cooperation with international organizations and other countries in order to expand markets of agricultural and forestry products, making use of available scientific and technical advances and advanced management skills world-wide, and seeking more investment funds for agricultural and rural development" "Improved efficiency and effectiveness of pest control in crops while limiting adverse impacts of agricultural	Well coordinated technical and funding contributions from international aid and development agencies such as FAO, WB, ADB, CIDA, MALICA Consortium, etc. Build on the public health/animal health communication and public awareness arrangements for HPAI as a model Utilize the established network of health workers involved in implementing MOH's "Protein-Energy Malnutrition Program" to highlight food safety issues and disseminate related information Develop awareness raising programmes	Regular updates (at least twice a year) distributed to donor agencies and involved Vietnamese institutes/ministries on progress with current food safety-related projects/ programmes and upcoming opportunities, to ensure that projects are complementary and build on any relevant earlier work (submitted by project leaders) Conduct a survey of fresh fruit and vegetable growers/ producers (including those applying IPM and/or VietGAP procedures and those not) to ascertain: (i) the problems, perceived and/or real costs/benefits of	FAO Vietnam Office in cooperation with Technical Project/ Programme leaders of the MARD-ADB TA 4927; WB; CIDA-MARD (NAFIQAD); MALICA Consortium IPSARD (RUDEC)	FAO FAO	X X					1 1

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
China Good but relatively uncoordinated support from donor groups Well developed communication and public awareness programmes related to the cross-cutting (animal health/human health) issue of HPAI Lack of information sharing between laboratories accredited or authorized to undertake testing for agricultural compounds Lack of information sharing between plant pest and disease diagnostic laboratories and laboratories accredited or	chemicals" Domestic consumers able to procure "safe" fresh fruits and vegetables with confidence that the fresh produce is indeed safe By 2010, 30% of vegetable producers applying VietGAP procedures; by 2015, 100% of vegetable producers applying VietGAP procedures	and communication strategies, targeting fresh produce (i) producers, (ii) markets, wholesalers, retailers, restaurants and hotels, and (iii) consumers, on "food safety of fresh produce" and VietGAP Advertise/publish notifications of VietGAP-compliant producers AND sellers of fresh produce Regular review and compilation of pesticide residue testing results from ALL laboratories undertaking residue testing on fresh produce – highlighting particular (i) crops with detectable residues and residues exceeding	VietGAP and IPM Drawing on ministries' experience with HPAI as appropriate, and the survey referred to above, develop a comprehensive , national Communication Plan for raising awareness of identified rural and urban target groups on "food safety of fresh produce" and "VietGAP" using appropriate media Implement (including monitoring the impact of the Plan) the aforementioned Communication Plan targeting: (i) producers, (ii) sellers and (iii) consumers (especially rural women in parallel with the Protein-Energy Malnutrition Program),	MOH (VFA)/ MARD (PPD and NAFIQAD) facilitated by internal ministry and/or Vietnamese external media or public relations experts MOH (VFA)/ MARD (PPD and NAFIQAD), making use of established arrangements such as MOH's network of health workers, as appropriate		X X	X			1 1

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
authorized to undertake testing for agricultural compounds Varying recommendations on pest control provided to fruit and vegetable producers Slow response to the promotion of VietGAP for the production of safe fresh fruit and vegetables (Present estimates of VietGAP application ranged from 6 to 10% of vegetable producers)		Vietnam standards, and (ii) pesticides with residues exceeding Vietnam standards Reports containing the compiled results from residue testing laboratories routinely forwarded to pest and disease diagnostic laboratories and/or pest control advisors to facilitate better understanding of the seasonal nature of specific pest or pest control problems being experienced by producers (and in time, ascertain evidence of pesticide resistance) Plant protection researchers informed of recurring pest control issues and/or evidence of	simultaneously Advertise/publish formal notifications of <u>VietGAP-compliant</u> producers AND sellers of fresh produce (refer **Quarantine and certification** below) in addition to the supposed advertising related to significant non-compliances Compilation (by the primary laboratory involved in regular testing) of residue testing results from fruits and vegetables from all laboratories Identify opportunities for improvements in data sharing (e.g. compiled results of residue testing; scoping and progress reports of externally-funded projects)	MARD with its usual formal 'notification' channels and/or as advised in the Comms Plan NPCC (PPD, MARD) to compile results received from NIN, other MOH-affiliated labs, FAVRI, PPRI etc MOH (VFA)/ MARD	FAO initially	X X	X X X	X X	X 	X 	2 1 2

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
		pesticide resistance in any cooperative, district and/or province	between involved ministries/ departments/ subdepartments, and where necessary, establish appropriate communication systems (e.g. departmental websites, electronic circulation of newsletters or reports) for this purpose								

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
Inspection, verification and enforcement											
Role of Vietnam customs and the police in dealing with the illegal importation of pesticides lacks clarity	Appropriate assistance from Vietnam customs and the police as required by MARD inspection staff to better manage pesticide imports	Increase cooperation between Vietnam customs, police and PPD inspection staff to ensure appropriate border control of pesticide imports	Develop Terms of Reference for an Inter-Ministerial Steering Group comprising MARD (PPD/PPSD), Ministry of Finance (Vietnam Customs, Police and MOIT (Market Control & Management Dept) representatives	MARD			X				3
Shortage of facilities for the storage and safe disposal of obsolete and/or confiscated (illegal) pesticides	Appropriate storage and safe disposal of obsolete and/or confiscated (illegal) pesticides	Additional facilities to store and safely dispose of obsolete and/or confiscated pesticides	Establish the Inter-Ministerial Steering Group (refer to above) to facilitate a joint approach (including training) to managing the issue of illegal pesticide imports	MARD (PPD)			X				3
Results of pesticide residues exceeding MRLs on fruits and vegetables rarely followed up	"To develop the network of food safety, hygiene and quality control" "To enhance the management of food quality, hygiene and safety" and "To develop the contingent of food	Enhance the capacity to inspect, verify and enforce legislation related to: (i) pesticides and their use on fruits and vegetables, (ii) pesticide-residue management on fresh produce, as well as (iii) the application of VietGAP	Independent review of current arrangements and capacity for storage and disposal of obsolete and	MARD (PPD)/ MONRE	Consultant		2				2

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
	hygiene and safety inspectors and supervisors at all levels”	procedures in the production of fruits and vegetables	confiscated pesticides in Vietnam and advise on their appropriateness in terms of demand (size, location) and safety								
			Upgrade laboratory facilities for pesticide residue testing, including (i) GC-MS (NIN), (ii) GC-MS (PPRI), and (iii) another detector for the GC-MS and a HPLC (FAVRI)	MOH/MARD	ADB funds directed by MARD, as in NAFIQAD to FAVRI and PPRI	X					1
			Develop (further) training programmes to upskill laboratory staff in the use of newly acquired equipment and associated testing techniques AND assist additional laboratories to gain accreditation [may be a combination of in-country training/guidance	MOH/MARD	FAO; ISO-accredited testing laborator-ies e.g. Hill Labora-tories in New Zealand	X					1

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
			and out-of-country laboratory placement]								
			Confirmation of exact details (and contribution) of the MARD-ADB Project TA 4927 (2009–2013) with particular regard to the "Development of production, primary processing and marketing of safe and high quality vegetables, fruit and tea" output and project component 1 and 2 activities (e.g. Strengthen capacity of state agencies and certification bodies)	MARD (NAFIQAD) to confirm with FAO		X					1
			Confirmation of exact details (and contribution) of the 5-year MARD (NAFIQAD)/CIDA Food Agricultural Products Quality Development Control Project	MARD (NAFIQAD) to confirm with FAO (refer below)		X					1

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
			especially Component 2 which includes: Capacity building of laboratories that control food safety; Establishment of a surveillance system; and Improvement & implementation of conformity assessment (audit) system and inspection (refer to **Monitoring and surveillance** below)								

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
Quarantine and certification MARD certification (issued by FAVRI and PPRI and six other laboratories) for VietGAP production not well recognized by fruit and vegetable wholesalers/ sellers	Domestic consumers able to procure "safe" fresh fruits and vegetables with confidence that the fresh produce is indeed safe [also refer to **Communication** above]	Fruits and vegetables produced using VietGAP procedures not recognized by buyers Fruits and vegetables produced using VietGAP not segregated/labelled/ branded by producers/sellers	[Advertise/publish formal notifications of VietGAP-compliant producers AND sellers of fresh produce (refer **Communication** above) in addition to the supposed advertising related to significant non-compliances] Confirmation of exact details (and contribution) of the MALICA Superchain Project which includes activities related to product promotion, training sessions in GAP, organization of quality certification, assessment of the efficiency of different forms of vertical integration	[MARD with its usual formal "notification" channels and/or as advised in the Comms Plan (refer to **Communica-tion** above)] FAO to liaise with the MALICA Consortium [suggested a Critical Analysis of VietGAP and its suitability for grassroots production conditions of Vietnamese farmers] in regard to the STDF		X				1

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
			in the Ha Tay safe vegetable chain	Proposal							

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
Diagnostic services MOH and MARD (as in PPD, FAVRI, PPRI and other research institutes) have laboratories undertaking pesticide residue testing currently Only two of the MOH laboratories (NIN, Ho Chi Minh City H&P Institute) and the two PPD Pesticide Control Centre laboratories accredited by the Bureau of Accreditation Limited capacity amongst pesticide residue testing laboratories to increase the number of samples tested currently or anticipated with the expected increase in the numbers of	MOH and MARD able to access appropriate accredited testing services "to study and actively monitor the situation of foodstuff contamination" "Improved efficiency and effectiveness of pest control in crops while limiting adverse impacts of agricultural chemicals"	Enhance the laboratory capacity to undertake appropriate testing of fruits and vegetables for pesticide residues for the purposes of: (i) VietGAP certification and monitoring (compliance checking), (ii) verification of compliance with Vietnamese standards and/or importing country requirements, as necessary, (iii) implementing an ongoing Food Residue Surveillance Programme including fresh fruits and vegetables, and (iv) implementing a	[Upgrade laboratory facilities for pesticide residue testing, including (i) GC-MS (NIN), (ii) GC-MS (PPRI), and (iii) another detector for the GC-MS and a HPLC (FAVRI)] [Develop (further) training programmes to upskill laboratory staff in the use of newly acquired equipment and associated testing techniques AND assist additional laboratories to gain accreditation [may be a combination of in-country training/guidance and out-of-country laboratory placement] (refer to **Inspection, verification and enforcement**	[MOH/MARD] [MOH/MARD]	[ADB funds directed by MARD, as in NAFIQAD to FAVRI and PPRI] [FAO; ISO-accredited testing laboratories e.g. Hill Laboratories in New Zealand]					

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
vegetable growers applying VietGAP procedures Lack of coordination between laboratories accredited or authorized to undertake testing for agricultural compounds Lack of information sharing between plant pest and disease diagnostic laboratories and laboratories accredited or authorized to undertake testing for agricultural compounds		Total Diet Survey Enhance the capacity to: (i) accurately diagnose pest and pesticide resistance problems in fruit and vegetable crops, (ii) provide pest control advice appropriate to the area and adhering to IPM principles and VietGAP procedures	above)]								

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
Risk analysis Extensive scientific and technological capability in Vietnam available to undertake assessment of the risk of pesticide residues to Vietnamese people, undertake investigation of possible pesticide resistance and develop appropriate pesticide resistance management programmes	MOH and MARD able to access experienced scientists "to study [~~and actively monitor~~] the situation of foodstuff contamination" "Improved efficiency and effectiveness of pest control in crops while limiting adverse impacts of agricultural chemicals"	Capacity to conduct risk analyses to assess hazards/threats to food safety Investigation of possible pesticide resistance in pest populations Development of pesticide resistance management programmes	[Undertake a baseline study, utilizing recent results of laboratory testing and including an objective (quantitative, if possible) evaluation of the relative risks to human health in Vietnam of fresh produce (cf. other plant, animal, seafood products) contaminated with agricultural compound residues, other contaminants (microbiological or aflatoxins) and nutrient elements (refer to **Policy framework** above)]	[MOH (VFA)]						
			Research (field and laboratory studies, as necessary) any reports of likely	MARD (PPRI)	Technical/ funding support from the		X	X	X	X	2

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
			pesticide resistance in pest populations (refer to **Monitoring and surveillance** below) Where pesticide resistance confirmed, develop pesticide resistance management plans and facilitate training growers and pest control advisors (whether PPSD or pesticide sellers) in their application	MARD (PPRI)/ Agricultural training institutions e.g. Hanoi University of Agriculture	likes of ACIAR initially Technical/ funding support from the likes of ACIAR		X	X	X	X	2

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
Monitoring and surveillance No monitoring for the development of pesticide resistance in pest populations No clear system to verify the effectiveness of regulatory measures on the use of agricultural compounds and resulting residues No system for monitoring dietary exposure to chemical residues, contaminants and nutrient elements	"Improved efficiency and effectiveness of pest control in crops while limiting adverse impacts of agricultural chemicals" MOH and MARD with sufficient capacity "to [~~study and~~] actively monitor the situation of foodstuff contamination so as to prevent poisoning and diseases caused by food and drinks." "To enhance the management of food quality, hygiene and safety"	Monitoring pesticide usage, and pesticide resistance in pests, of fresh fruits and vegetables A(n ongoing) Food Residue Surveillance Programme including fresh fruits and vegetables A Total Diet Survey and assessment of dietary intake of pesticide residues in Vietnam	[Confirmation of exact details (and contribution) of the 5-year MARD (NAFIQAD)/CIDA Food Agricultural Products Quality Development Control Project especially Component 2 which includes: Capacity building of laboratories that control food safety; Establishment of a surveillance system; and Improvement & implementation of conformity assess-ment (audit) system and inspection (refer to **Inspection, verification and enforcement** above)] Design and implement	[MARD (NAFIQAD) to confirm with FAO (refer above)] MOH (VFA)	FAO initially	X	X	X	X	X	1

Current Situation	Future Goal	Capacity Building Needs	Suggested Actions for Follow-up	Suggested Responsibilities	Possible Technical/ Financial Support	Year					Priority
						1	2	3	4	5	
			a(n ongoing) Food Residue Surveillance Programme including fresh fruits and vegetables								
			Design and implement a Total Diet Survey (to be repeated at 3–4 year intervals) in order to assess the dietary intake of pesticide residues in Vietnam	MOH (VFA)	WHO		X			X	2
			[Research (field and laboratory studies, as necessary) any reports of likely pesticide resistance in pest populations (so that where pesticide resistance is confirmed, pesticide resistance management plans can be implemented) (refer to **Risk analysis** above)]	[MARD (PPRI)]	[Technical/ funding support from the likes of ACIAR initially]						

7 Recommendations regarding increasing the capacity of Vietnam's food safety system (with particular reference to fresh fruit and vegetables)

In summary, implementation of the Action Plan as proposed in section 6 together with the contributions of international aid and development agencies will, in all probability, result in a considerable increase in the capacity and performance of Vietnam's food safety system. For Vietnam to reap the longer term benefits from recent (and ongoing) investment by the likes of the Asian Development Bank (ADB) (~US$75 million) and the Canadian International Development Agency (CIDA) (~CND$17 million), which include project components with direct outputs of enhancing food safety in domestically produced fruits and vegetables, the need for appropriate coordination between these projects and the large ministerial programmes cannot be overemphasized. Similarly, assuming the FAO/FAVRI STDF Grant Application "Improving safety and quality of fresh vegetables through the value-chain approach" is favourably reviewed, care should be taken to make certain proposed activities complement the ADB and CIDA Project activities.

Despite the apparently large sums of money involved, inevitably there will not be enough to provide an *ideal* system ensuring the food safety of fresh fruits and vegetables for the 86 million Vietnamese living in variably urban, but mostly rural, situations in Vietnam's 63 "provinces". The system should, however, ensure that matters constituting the highest risks receive priority – that is, a risk-based system incorporating appropriate monitoring and surveillance should be used. Simply put, the Vietnam Food Administration (VFA) under the Ministry of Health – the Ministry "accountable to the Government for performing the State management over food hygiene and safety" – does not oversee any regular residue testing of domestically produced fresh fruits and vegetables currently. The National Institute of Nutrition (NIN) does though, from time to time, carry out targeted surveys of particular foods including fruits and vegetables for VFA. The Ministry of Agriculture and Rural Development (MARD) is, however, involved in some regular residue testing of fruits and vegetables collected from markets by the Plant Protection Department's (PPD) two Pesticide Control Centres. Also, other laboratories such as the Fruits and Vegetables Research Institute (FAVRI) and Plant Protection Research Institute (PPRI), under the umbrella of MARD, undertake residue testing of various vegetables in their provision of VietGAP certification/compliance testing services.

While these efforts in and around Hanoi demonstrate an existing capacity for carrying out residue testing of fruits and vegetables, neither singly or collectively do these testing efforts constitute surveillance to verify the effectiveness of **control measures** on the use of pesticides and resulting residues. Similarly, to date in Vietnam there has been no monitoring of dietary exposure to chemical residues, contaminants and nutrient elements. Consequently, recommended actions noted in the proposed national Action Plan (section 6) to increase the capacity of Vietnam's food safety system under **Monitoring and surveillance** include:

- Design and implement a Food Residue Surveillance Programme for Vietnam including fresh fruits and vegetables;
- Design and implement a Total Diet Survey to assess the dietary intake of pesticide residues in Vietnam.

These suggested actions are based on current food residue programmes in New Zealand put in place by the New Zealand Food Safety Authority (NZFSA). Recent NZFSA reports concerning the New Zealand Food Residue Surveillance Programme and New Zealand Total Diet Survey (NZTDS) are available at:

- http://www.nzfsa.govt.nz/science/research-projects/food-residues-surveillance-programme/results/2006/FRSP0506-plant-based-foods-rpt-June07.pdf
- http://www.nzfsa.govt.nz/science/research-projects/total-diet-survey/reports/full-final-report/8438-nzfsa-front.pdf

Together with the World Health Organization's (WHO) publication *Guidelines for predicting dietary intake of pesticide residues*, such reports may be useful to the Vietnam Food Administration (as the competent authority for food safety in Vietnam) in guiding the design of a surveillance programme for residues in/on foods in Vietnam.

With FAO Biosecurity PAIA support for a project to monitor pesticide residues on fresh produce in Vietnam, it appears appropriate that FAO's arrangement with FAVRI (under the Letter of Agreement for the Provision of funds from the Food and Agriculture Organization of the United Nations to the Fruits and Vegetables Research Institute) be utilized to 'kick-start' the suggested (ongoing) Food Residue Surveillance Programme for Vietnam this year (2009) – focusing on fresh produce from the municipalities of Hanoi and Ho Chi Minh City. While responsibility for the design of a Food Residue Surveillance Programme for Vietnam should remain with the VFA, implementation will require the participation of all the aforementioned testing laboratories (e.g. NIN, PPD's Northern Pesticide Control Centre, FAVRI, PPRI in Hanoi, and their equivalents in Ho Chi Minh City). Further consideration should thus be given to formalizing coordination arrangements (for collecting fresh produce samples, standardized approaches to the residue testing and recording of results) and how the 2009 surveillance contributes to the ongoing Food Residue Surveillance Programme.

Appendices

Appendix 1

Persons met/interviewed (Biosecurity Needs Assessment Mission)

Food and Agriculture Organization of the United Nations – Vietnam

(Mr) Vu Ngoc Tien, Assistant FAO Representative (Programme)
(Ms) Hoang Thi Thanh Thuy, National Program Manager
(Ms) Maria Cristina Bentivoglio, Junior Program Officer (UN Fellow)

Hanoi University of Agriculture

Associate Professor (Mr) Nguyen Tat Canh, Director, Research Affairs and International Cooperation Department
Dr (Mr) Nguyen Quoc Vong, Director, Centre for International Development [Adjunct Professor, School of Applied Sciences, RMIT University, Melbourne, Australia]

Ministry of Agriculture and Rural Development (MARD)

Department of Animal Health (DAH)
(Ms) Bui Thu Cuc, Vice Chief of Planning Division

Forestry Department
(Mr) Pham Duc Tuan, Deputy Director

Forestry Protection Department
[General overview provided in the absence of Directors at short notice]

Fruits and Vegetables Research Institute (FAVRI)
Dr (Mr) Trinh Khac Quang, Director FAVRI
Associate Professor (Mr) Tran Khac Thi, Deputy Director FAVRI
(Mr) Nguyen Dinh Hung, Deputy Head, Department of Science and International Cooperation
(Mrs) Le Thi Ha, Researcher, Department of Science and International Cooperation
Dr (Mr) Do Dinh Ca, Head of Department of Fruit and Vegetable Quality Control
(Mrs) Vu Thi Hien, Deputy Head of Department of Fruit and Vegetable Quality Control
(Ms) Le Thi Lieu, Researcher, Department of Fruit and Vegetable Quality Control

National Agro-Forestry-Fisheries Quality Assurance Department (NAFIQAD)
Dr (Mr) Nguyen Nhu Tiep. Deputy Director General

Plant Protection Department
(Mr) Vuong Truong Giang, Deputy Director, Head of Pesticide Formulation and Residue Division, Northern Pesticide Control Centre (NPCC) – Vietnam
(Mr) Do Hong Khanh, Inspection Division
(Mr) Pham Quang Huy
(Mrs) Lai Lan Huong
(Mrs) Luong Thi Hai Yen

Plant Protection Research Institute (PPRI)
(Ms) Pham Thi Vuong, Deputy Director PPRI
Dr (Mr) Nguyen Truong Thanh, Head of Pesticide, Weed Science and Environment Department
Dr (Mrs) Nguyen Thi Nhung, Deputy Head of Pesticide, Weed Science and Environment Department

Vietnam Sanitary and Phytosanitary Notification Authority and Enquiry Point, International Cooperation Department
(Mr) Vu Van Minh, Deputy Director

MALICA Research Consortium
Dr (Ms) Paule Moustier, Agricultural Economist, CIRAD-Centre de Coopération Internationale en Recherche Agronomique pour le Développement

Ministry of Health (MOH)

Vietnam Food Administration (VFA)
(Mr) Do Huu Tuan, Deputy Head of Division, Food Safety Standards and Testing Management

National Institute of Nutrition (NIN)
Dr (Ms) Le Thi Hop, Associate Professor, Director NIN
Dr (Ms) Ha Thi Anh Dao, Associate Professor, Head of Food Science and Safety Department
(Mr) Le Hong Dung, Researcher, Deputy Head of Food Science and Safety Department

Ministry of Industry and Trade (MOIT)

Department of Science and Technology
Dr (Mr) Nguyen Phu Cuong, Deputy Director General
Dr (Mr) Nguyen Quang Thao, Senior Expert

Ministry of Science and Technology (MOST)

Directorate for Standards and Quality (STAMEQ)
(Mr) Tran Van Hoc, Director, Standards Department
(Ms) Nguyen Thi Lan, Senior Officer, Standards Department

Rural Development Center (RUDEC), Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD)

(Mr) Trong Binh Vu, Director, RUDEC

Vietnam National Vegetable and Fruit Corporation (VEGETEXCO)

(Mr) Nguyen Van Thanh, General Director
(Mr) Vu Tien Long, Director Quality Control Centre

Pesticide Residue-Testing Laboratories visited (Biosecurity Needs Assessment Mission)

Fruits and Vegetables Research Institute (FAVRI), MARD
Dr (Mr) Do Dinh Ca, Head of Department of Fruit and Vegetable Quality Control
(Mrs) Vu Thi Hien, Deputy Head of Department of Fruit and Vegetable Quality Control

National Institute of Nutrition (NIN), MOH
Dr (Ms) Ha Thi Anh Dao, Associate Professor, Head of Food Science and Safety Department
(Mr) Le Hong Dung, Researcher, Deputy Head of Food Science and Safety Department

Plant Protection Department (PPD), MARD
(Mr) Vuong Truong Giang, Deputy Director, Head of Pesticide Formulation and Residue Division, Northern Pesticide Control Centre (NPCC) – Vietnam

Plant Protection Research Institute (PPRI), MARD
Dr (Mr) Nguyen Truong Thanh, Head of Pesticide, Weed Science and Environment Department
Dr (Mrs) Nguyen Thi Nhung, Deputy Head of Pesticide, Weed Science and Environment Department

Markets and supermarket visited (Biosecurity Needs Assessment Mission)

METRO Cash & Carry
Hoang Mai District
Hanoi City

Note: The METRO Cash & Carry Hoang Mai wholesale centre, opened in September 2007, is the eighth in Vietnam (the second in Hanoi, the first opened in July 2003) established by the German international retail and trading concern, Metro Group. Business customers, including traders (such as small grocers, second level wholesalers and independent retailers), hotels and restaurants, caterers, and institutions such as schools and hospitals form the main target groups The wholesale centre supposedly offers about 15 000 high quality food and non-food products with about 90 percent of food items supplied by local producers.

Maidong Market
Maidong Street
Hanoi

Note: Vendors operating in this market were selling food items such as fruits and vegetables, meat, fish, or cereals (including different types of rice), or non-food items such as clothing or crockery.

HOM Market
Hue Street
Hanoi

Note: Like Maidong Market, vendors operating in this market were selling food items such as fruits and vegetables, meat, fish, or cereals (including different types of rice), or non-food items such as clothing or crockery. Notably, there was one stand

displaying several “official” certificates and selling only “safe” fruits and vegetables. Apparently, these fruits and vegetables cost about 1.5 times more than fruits and vegetables at other stands.

Appendix 2

National Approach to Biosecurity in Vietnam: General Discussion Points

1. What is Vietnam's interpretation of "**biosecurity**"?

2. What is the international context for Vietnam's biosecurity? What are Vietnam's commitments to international agreements/organizations?

3. Is there legislation relevant to biosecurity?

4. Who is responsible for this legislation? Are there particular agencies that can be identified as the **competent authorities** for Vietnam's biosecurity sectors?

5. Who else/What other agencies are involved?

6. Are there any other aspects that ensure an integrated and coordinated biosecurity system for Vietnam?

- free trade agreements
- mandate for competent authority or authorities
- general objectives

Broad questions to be covered during interviews[4]

Taking account of the definition of "biosecurity" (meaning a strategic and integrated approach that encompasses the policy and regulatory frameworks for analysing and managing relevant risks to human, animal and plant life and health, and associated risks to the environment) AND the required focus on the cross-cutting issue, food safety of fresh produce and pesticide residue management:

1. What is Vietnam's interpretation/usage of "biosecurity"?
2. What biosecurity-related responsibilities does the Ministry/Department have?
3. What legislation mandates these or relates to these responsibilities?
4. What biosecurity-related activities does it undertake?
5. What resources does it have for these – human and funding?
6. In regard to its biosecurity-related activities, what data are collected?
7. Who else is responsible for/involved in the *human* OR *animal* OR *plant* health aspects of biosecurity?
8. What *human* OR *animal* OR *plant* health risks constitute the biggest threats?
9. Are there preparations for the occurrence of these pests or diseases or toxins?
10. Who is involved? What are their responsibilities?
11. What are their qualifications? What training has been undertaken?
12. What diagnostic facilities are required? Are these present in Vietnam?
13. Are there written standards or procedures relating to the responsibilities/activities referred to above?

[4] Depending on the role of the person/group being "interviewed" and whether involved in managing risks to human, animal or plant life and health.