

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Sanitary and Phytosanitary Standards Management

*Action Plan for
Capacity Building*



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Contents

FOREWORD	vii
ACKNOWLEDGMENT	ix
ABBREVIATIONS AND ACRONYMS	xi
EXECUTIVE SUMMARY	xiii
1 Introduction	1
Agriculture in Lao PDR	2
2 SPS Issues in Agricultural Trade	5
Opening of the Market	5
Food Safety and Agricultural Health Issues in Lao PDR	9
Summary	15
3 Capacity for SPS Management	17
Institutional Framework	18
Legislation	21
Surveillance	21
Diagnostic Capacity	24
Emergency Response	28
Risk Analysis	28
Border Inspection	28
Site Inspection and Certification of Exports	29
Building Human Skills	31
Public Awareness	31
Private Sector in Agribusiness	31
Regional Undertaking and Donor Activities	36
Summary	41
4 Recommended Action Plan	43
Guiding Principles for Recommended Action Plan	44
Recommended Actions	45
SPS Problems for Selected Products	55
Recommended Action Plan Detailed	55
Estimated Costs and Funding	56
Concluding Summary	63

APPENDIX

A.1 Lao PDR Agricultural Exports, 1998–2004	65
A.2 Lao PDR Agricultural Imports, 1998–2004	67
B.1 Structure of the Ministry of Agriculture and Forestry	69
B.2 Structure of the Department of Agriculture	70
B.3 Structure of the Department of Livestock and Fisheries	71
B.4. Structure of the Ministry of Health	72
B.5. Structure of the STEA and DISM	73
C. Estimated Costs of Action Plan for Lao PDR SPS Capacity Building	75
D. Cost-Benefit Exercise for the Lao PDR SPS Action Plan	85
E. Glossary	87
F. Persons Interviewed	93
REFERENCES	95
Related Websites	97

Tables

1.1 Agriculture Sector, 1995–2005	2
2.1 Direction of Trade, 1987–2004	6
2.2 Agricultural Exports and Imports, 1998–2004	7
2.3 Sufficiency of Production for Selected Agricultural Products	8
2.4 Selected Food and Water-Borne Diseases, 1997–2005	11
4.1 SPS Problems and Proposed Solutions for Specific Products	56
4.2 Action Plan for SPS Management	57
4.3 Cost Estimate for SPS Capacity Building, 2007–2011 (Summary)	61
C.1 Cost Estimate for SPS Capacity Building, 2007–2011	78
D.1 Cost Benefit Exercise	86

Figure

2.1 Foot and Mouth Disease – Lao PDR (2000–2003)	10
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Boxes

2.1 Ochratoxin A in Food Products	14
2.2 Border Trade Supply Chain	15
3.1 Staffing	20
3.2 SPS Problems of Thailand, Viet Nam, and China	23
3.3 Consequences of Plant Pest Incursion	28
3.4 Private Sector in Agribusiness: Examples of SPS Management	33
3.5 KCFresh: A Successful Case of Contract Farming	35
3.6 Livestock Trading Farms	35



Foreword

In February 2005, a preliminary World Bank mission gathered information on *sanitary and phytosanitary* (SPS) issues affecting the agricultural trade of Lao People's Democratic Republic (PDR), primarily to contribute to the Integrated Framework Diagnostic Trade Integration Study. The report identified products where SPS issues have already been raised or are likely to arise as exports develop. It looked at the policies and institutional arrangements within the public sector, and cooperation between Government agencies and the private sector. It assessed the public and private SPS capacity required both for market access and membership in the World Trade Organization. The report was also a starting point to develop a strategic action plan for managing SPS standards, including priorities for the public and private sector investments.

The first mission was carried out in July 2005 with subsequent missions by consultants for the preparation of the SPS Action Plan. There were consultations with the various ministries, private sector, and donor agencies. In January 2006, the initial draft of the Action Plan was presented at a consultative workshop to stakeholders who included representatives of the various ministries, the private sector, and donor and international agencies. A follow-up workshop held in July 2006 focused on issues of funding and implementation. Both workshops were effectively facilitated by the Ministry of Agriculture and Forestry. The SPS Action Plan, which has been endorsed by the Ministry of Agriculture and Forestry, will be the basis for a SPS component under the World Bank's Trade Facilitation Project. However, it needs to be emphasized that in light of the limited resources available under this project, the Action Plan requires further prioritization and sequencing and that implementation will have to happen in phases once additional funding from other sources becomes available.



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This report was prepared under the leadership of the World Bank's Agriculture and Rural Development Department (ARD). The team that prepared the SPS Action Plan comprised Kees van der Meer (World Bank, ARD), and Laura Ignacio and Don Humpal (consultants). Souphonesa Xayphannha and Luz Rio (consultants) assisted the missions.

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Abbreviations and Acronyms

AADCP	ASEAN Australia Development Cooperation Program
ACIAR	Australian Center for International Agricultural Research
ADB	Asian Development Bank
ASEAN	Association of South East Asian Nations
AFTA	ASEAN Free Trade Area
AusAID	Australia Agency for International Development
CIAT	International Center for Tropical Agriculture
CLMV	Cambodia, Lao PDR, Myanmar, Viet Nam
CODEX	<i>Codex Alimentarius</i> Commission
DOA	Department of Agriculture
DISM	Department of Intellectual Property, Standardization and Metrology
DOL&F	Department of Livestock and Fisheries
EU	European Union
FAO	Food and Agriculture Organization
GAP	Good Agricultural Practice
GDP	Gross Domestic Product
GMP	Good Manufacturing Practice
HACCP	Hazard Analysis and Critical Control Points
IFC	International Finance Corporation
ILRI	International Livestock Research Institute
IPPC	International Plant Protection Convention
ISO	International Organization for Standardization
ISPM	International Standards for Phytosanitary Measures
JICA	Japan International Cooperation Agency
MAF	Ministry of Agriculture and Forestry
MOIC	Ministry of Industry and Commerce
MOH	Ministry of Health
MOJ	Ministry of Justice
NAHC	National Animal Health Center
NORAD	Norwegian Agency for Development Cooperation
NPPO	National Plant Protection Organization
NZAID	New Zealand's International Aid and Development Agency
OIE	World Organization for Animal Health or <i>Office International des Epizooties</i>
OTA	Ochratoxin A
SEAFMD	Sub-Commission for Foot and Mouth Disease in South East Asia
SIDA	Swedish International Development Agency
SPS	Sanitary and phytosanitary
STEA	Science, Technology and Environment Agency

TBT	Technical Barriers to Trade
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WHO	World Health Organization
WTO	World Trade Organization

CURRENCY EQUIVALENTS (As of April 11, 2006)

Currency Unit = Kip

US\$1 = 10,288 Kip



Executive Summary

Many developing countries face difficulties in making optimal benefits from international trade. In February 2005 a Diagnostic Trade Integration Study was started in Lao PDR to analyze constraints in capacity to participate in international trade. As part of this study, constraints were analyzed in the capacity to *manage sanitary and phytosanitary* (SPS) measures.

The SPS study identified products where issues have already been raised or are likely to arise as exports develop. On the basis of this initial study, further work was undertaken to develop a strategic action plan for SPS management capacity building, including priorities for the public and private sector investments.

The objective of this action plan is to provide the Lao PDR Government, donors, and international finance organizations a comprehensive framework for analysis, design, and implementation of capacity-building efforts in SPS measures. The ultimate benefit from improving food safety and SPS management is to enable people in Lao PDR to prosper from growth in international trade, protect human health by improving the safety of the food supply, and sustain growth by protecting livestock and crop production against the introduction of pests and diseases.

AGRICULTURAL EXPORT

Increasing income and the growth of nearby urban centers in neighboring countries are harbingers of the future demand for food and agricultural products that may be supplied by Lao PDR. For 2004, agricultural exports¹ (about US\$42 million) represent about 18 percent of the country's total exports; however, export of food and live animals was only 7 percent (US\$17 million) of total exports. Still, unofficial exports and imports across the border to and from China, Thailand, and Viet Nam are perhaps larger than registered trade.

Exports of agricultural products from Lao PDR have not yet faced a major ban or a suspension, but there are specific concerns for food safety and animal and plant health:

¹Includes food and live animals, beverages and tobacco, animal and vegetable oil, fat and wax, and crude materials (includes wood products).

- **Infectious disease.** The country is dealing with the spreading infectious avian flu and is trying to manage foot and mouth disease, an endemic livestock disease. Avian flu is on the rise in the neighboring Thailand and Viet Nam. Lao PDR is one of seven Southeast Asian countries where foot and mouth disease is endemic.
- **Pest control.** For plants, there is a growing risk of pest incidence from the introduction of new and high-yielding crop varieties and other planting materials from neighboring countries. Consequently, the increased pest incidence may lead to a higher utilization of pesticides with adverse effect on food safety.
- **Outdated legislation.** Existing laws and regulations relevant to food safety and agricultural health need to be adjusted and updated to enable public health and plant and animal health authorities to comply with new trade requirements and to respond effectively to human and agricultural health emergencies. The legislation of Lao PDR relevant to food safety and agricultural health lack provisions on import restrictions, monitoring of the sale and use of agrochemicals, and authority for offices responsible for plant and animal health to implement emergency measures in the case of outbreaks.
- **Food- and water-borne diseases.** Food- and water-borne diseases are major causes of morbidity, according to statistics from the Division of Epidemiology, National Center for Laboratory and Epidemiology in the Ministry of Health. Intestinal parasite infections are increasingly seen as important factors contributing to morbidity in the Lao PDR, especially among school children; but broad-scale public health responses require not only de-worming treatment but improved rural and urban sanitation and broad behavioral changes that will take years of consistent effort to achieve.
- **Organic certification.** Existing exports can be promoted by rationalizing certification requirements and procedures, and establishing certification systems. Unnecessary requirements increase the transaction costs and erode the competitiveness of Lao coffee exporters. Exporters of processed vegetables and fruits to countries requiring organic certification (particularly, the European Union and Japan) would do better if the country had a system for organic certification.
- **Trade regulation.** Impending WTO accession and AFTA inclusion calls for urgency for strengthened SPS management. Trade with the neighboring Cambodia, China, and Thailand (and Viet Nam in the near future) would be regulated by WTO–SPS requirements. Likewise, the expected increase in the flow of goods among AFTA member countries compels Lao PDR to increase its capability to better manage food safety and animal and plant health matters.

RESOURCE CAPACITY BUILDING

With regard to carrying out SPS measures under the WTO–SPS agreement, Lao PDR has limited human skills, technical facilities, and financial resources for managing food safety and agricultural health. There are many areas where the capacity of the country must be strengthened to meet the demands of WTO accession:

- **Institutional responsibility.** The institutional framework requires clarifications in the delineation of responsibilities. The delineation of functions and responsibilities should allow for no gaps in accountability in the entire range of the supply chain. Communication and cooperation within the vertical structure of the government (central office to district level) is vital for the consistent implementation of policies and immediate response, in the case of disease outbreaks or food safety hazards.
- **Good governance.** Effective governance is required in several key areas. In areas of low SPS risks and in situations where governance is poor, there is a risk that expanding SPS controls in border procedures will further increase transaction costs.

- **Legislation.** The legal system is insufficient. The major legislation—food law, veterinary law, and law on plant quarantine (draft or otherwise)—are lacking in provisions for enforcement.
- **Surveillance and data gathering.** There are no active surveillance programs and no comprehensive databases on prevalence of food- and water-borne human health hazards and food contaminations, plant pests and animal diseases, and quality and safety of agricultural inputs. Effective management of plant and animal health requires knowledge of the epidemiology of the diseases and movement of animals, which requires resources and organization.
- **Skills and expertise.** Available human capacity is limited for identification, diagnoses, testing, and inspection of food- and water-borne human health hazards and food contaminations, plant pests and animal diseases. The availability of a knowledgeable staff is small, and the general level of education and training is low. For critical areas in plant protection, the country has no specialists.
- **Facilities.** Available laboratory facilities are also weak and partly deficient. The present facilities are underutilized because of the lack of Government budget allocation for operational budget. No laboratories have international accreditation or are close to receiving it.

PRIVATE SECTOR AND DONOR SUPPORT

In Lao PDR, the private sector, in particular, the joint ventures with foreign companies, is taking the initiative in SPS compliance—adopting Hazard Analysis and Critical Control Points (HACCP) systems and participating in contract farming, among other programs. Foreign investments in particular have the capacity to develop human resource skills, make technology available, and access export markets. Nonetheless, the private sector still needs government assistance with regard to international agreements with trad-

ing partners, and the SPS infrastructure (certification and testing).

There are a number of assistance projects undertaken by donor agencies and regional organizations, like ASEAN. The major projects have regional/multi-country focus that involves sharing of expertise and facilities. These are mostly with regard to plant and animal diseases which have transboundary characteristics. Industrialized countries and donor agencies are mostly assisting the country's transition to a market-oriented economy, but also providing technical assistance in compliance with the SPS and technical barriers to trade (TBT) agreements.

PRINCIPLES OF THE RECOMMENDED ACTION PLAN

The recommendations in the SPS Action Plan are guided by the following principles:

- **Regional cooperation.** Regional cooperation is essential in SPS management capability of Lao PDR. The control of transboundary animal diseases and the monitoring of plant pests and diseases are most efficiently carried out in cooperation with other countries in a regional approach considering the porous borders and similarities in ecosystems with neighboring countries.
- **Prioritization.** Given the country's scant resources, existing and additional efforts for SPS control require prioritization on the basis of qualitative and quantitative assessments of costs, risks, benefits, and opportunities. A critical step forward is to identify and address the bottlenecks that impede improvement of public health and agricultural health management, as well as competitiveness, thereby providing an enabling environment to assist emergence of market economy.
- **Private sector involvement.** Where possible and relevant, the private sector should play a role in SPS management. Increasing SPS capacity may require shared funding and shared implementation by the private

sector. In many cases, the Government can concentrate on core public roles and oversight of self-control measures by the private sector.

- **Technical assistance.** Technical assistance is imperative to build up the necessary framework and/or infrastructure to adopt and enforce safety and quality regulations. Given the limited resources available in the Government and the private sector, coordinating technical assistance for capacity building with donors and international agencies requires careful planning and prioritization.
- **Internal collaboration.** SPS management is a collaborative effort among various government agencies. The scarcity of available resources calls for the coordination and sharing of technical and human resources.
- **Transparency and independence.** Coordination may be essential for managing SPS requirements yet independence and transparency is vital to acquire credibility for certain functions. To avoid conflict of interests, standard-setting and auditing responsibilities should not reside in one agency; offices responsible for inspection and certification should be independent of offices that set quality and safety criteria.
- **Mutual sectoral growth and strengthening.** Plans to increase capacity for SPS management are intertwined and mutually dependent with plans and actions in other sectors—improvement of the investment climate, private sector development, market development and infrastructure. SPS capacity becomes more effective with increased improvements of the relevant basic infrastructure. Usually SPS requirements are not the only obstacles for market access, and therefore SPS improvements may be necessary but not sufficient.

ACTION PLAN FOR SPS CAPACITY BUILDING

Unlike other developing countries with an already functioning—albeit insufficient—SPS system that requires filling in the gaps, Lao's SPS capacity requirements are vast, cutting

across the different sectors of food safety, plant health, and animal health. Among the following recommended actions, the more significant are those that lay the groundwork for the SPS infrastructure—institutional arrangements, legislative review and amendments, acquisition of technical facilities and equipment, creation of databases, and building of human skills.

Setting up coordination unit. A coordination unit will oversee coordination among the different stakeholders and the efficient use of resources, thus, facilitating the implementation of the Action Plan. The unit would consist of an overall SPS coordinator and experts from the various ministries.

Market opportunities and trade requirements. Actions are recommended to establish some baseline for subsequent actions:

- A study of potential/emerging non-traditional agricultural exports, which includes potential markets/buyers SPS requirements, will present the market potential of agricultural products and provide a prioritization criterion for building SPS management capacity.
- A review of SPS requirements of trading partners and transit countries for existing exports and SPS requirements on Lao PDR imports will identify measures that may not be consistent with WTO and AFTA principles and that may be addressed through negotiations or in forums.

Institutional and legislative framework. A sound institutional and legal and regulatory framework requires the following activities:

- A review of existing legislation on food safety, and plant and animal health to check on compliance with SPS agreement will identify significant gaps and weaknesses (mostly on implementation and enforcement).
- A task force of ministries, supported by the Ministry of Justice, should be established for drafting of regulations and by-laws. The priority areas are the delineation of functions and responsibilities among the min-

istries, imposition of import restrictions, stronger governance and effective enforcement in border procedures and monitoring of agrochemicals, and provision of emergency authority in case of outbreaks.

- The role of the different ministries should be clarified. Ministry of Health (MOH) should be responsible for all food (including fresh products) and drinking water at the wholesale, transport, storage, and retail level; and give final responsibility for food safety to the Ministry of Health and not to the Ministry of Agriculture and Forestry (MAF) to avoid potential conflicts of interest. Accordingly, the veterinary controls of the Ministry of Agriculture and Forestry should not go beyond border control, slaughterhouses, and meat processing units.
- Following the clarification of responsibilities, the various sectors—food safety, animal health, and plant health—should prepare respective action plans/work programs for SPS capacity building. The plans should include facilities, human skills, and funding requirements. There ought to be a holistic perspective in the preparation of these individual plans.

Surveillance. Given the animal health status of Lao PDR and neighboring countries (especially with avian flu), an effective monitoring and surveillance network is a priority. The combination of increased border trade and inadequate resources for border inspection calls for greater surveillance in the field and in consumer markets. Thus, the relevant ministries are encouraged to create databases with active surveillance for human health hazards caused by food- and water-borne diseases; animal disease prevalence; specimen-based records of plant pests for key crops and key pests; and production, sale, and use of agrochemicals and veterinary drugs.

Diagnostic capacity. Diagnostic capabilities are vital to human and agricultural health and require the following activities:

- Develop work programs for laboratories, including budget requirements based on

needs assessment. The lack of a work program may lead to a lack of balance between staff and operational budget. This program has to be based on a needs assessment and cannot be done without some evaluation of the country's problems regarding food safety and agricultural health.

- Assess the most cost-effective way for regular calibrating of equipment and standards used in food safety and agricultural health laboratories. A priority for all laboratories is for equipment to have traceable calibration. The solution could be using facilities of a neighboring country or the establishment of a metrology laboratory in Lao PDR.
- Acquire equipment (testing kits) for rapid detection and screening for the provinces and border posts. Government resources cannot afford to have a number of full-scale laboratories for the provinces in the short term nor would it be efficient to have all the tests done in Vientiane.
- Existing laboratory facilities need to be expanded and upgraded, particularly, the microbiological and chemical testing facilities; and to have the primary laboratories accredited according to the International Organization of Standardization (ISO) 17025, *General requirements for the competence of testing and calibration laboratories*.

Emergency response. The Government should be prepared and have in place emergency measures in the case of pest or disease outbreaks.

- The legal framework should provide plant and animal health offices the authority to implement emergency measures (such as plant eradication and animal movement restriction and slaughtering).
- National guidelines outlining responsibilities of ministries and identifying an inter-ministry task force to manage emergency measures will enable the government to adequately respond to outbreaks.
- There ought to be a review of current procedures for disease reporting in terms of incentives and having direct lines of com-

munication. A timely response to an outbreak would only be possible if there are clear and direct lines of communication from the district/provincial level to the central authority.

Risk assessment and economic analysis.

Proper assessment, management, and communication of risk are central components to management of food safety and agricultural health. An independent small core group of risk assessors should be established under the academic sector, in either a university or research institute. The risk assessors would be supported by experts in food safety, plant or animal health. This arrangement is more transparent and cost-efficient than for each field to have its own risk assessment group. Accordingly, the risk management and risk communication functions for food safety and agricultural health should be with the Ministry of Health and Ministry of Agriculture and Forestry, respectively. The capacity for performing economic analysis (e.g., cost-benefit analysis) and understanding basic risk assessment concepts is important in considering the various options available in implementing SPS activities. It should be carried out by the ministries responsible for risk management.

Inspection and certification. Certain inspection and certification procedures can cause greater transaction costs and waste resources. The recommended actions will highlight the deficiencies of old procedures and needs for new procedures:

- A number of tests and procedures performed by government agencies are not required by trading partners. A review of Lao PDR inspection and permit requirements for export and import will identify controls that are not necessary for SPS management in a market economy.
- Guidelines should be developed for the implementation of inspection and certification procedures and communicated to personnel at the district level. These guidelines should be based on rationalized and simplified inspection and certification requirements. Guidelines should likewise

include requirements regarding the qualification of inspectors.

- A review of the Lao PDR border procedures based on international standards would present options for simplification and strengthened governance. It should examine the possibility of either combining SPS border controls in one office, possibly even integrated in the customs office, or integrating some SPS control functions in customs procedures
- Legislative amendments that would strengthen governance on border procedures and provide authority for agricultural health inspectors to search or seize 'risk' goods would lead to a more effective border control.
- Possibilities should be assessed to develop local certification capabilities, especially for organic certification. The cost of certification (from foreign certification bodies) is beyond the means of individual small producers and exporters.

Building human skills. An intrinsic part of the improvement and maintenance of a higher level of SPS capacity is the development of personnel skilled in the areas of food safety, animal, and plant health. Training should be offered at all levels in diagnosis, testing, surveillance, inspection, international negotiation, planning, budgeting, and management.

Information and education. An equally beneficial undertaking, similar to building up SPS skills among government staff, is providing knowledge and information on food safety and hygienic practices to all stakeholders, including government staff, consumers, and producers. Educational campaigns on how to avoid risks should be initiated to promote hygienic agricultural practices to government staff, farmers, food handlers, and consumers. Relevant materials should be translated and disseminated to stakeholders.

Trade consultations. Cooperative efforts with neighboring countries, especially China, Thailand, and Viet Nam, in the field of food safety, and animal and plant health management should be promoted. Lao PDR should

also engage in periodical bilateral consultations with China, Thailand, and Viet Nam.

Development of academic sector. The academic sector should be expanded and upgraded to provide higher levels of education and specialization in animal science, crops science, and food science. Staff should be provided with higher educational and specialized studies abroad. And the university curricula should provide higher levels of specialization in animal science, crop science, and food science.

Private sector issues. The Government should provide assistance either by facilitating market linkages by creating an enabling environment in which the private sector can function or by promoting and empowering private organizations. Government should also take the following steps:

- Promote out-grower schemes for products with high safety and quality requirements to link small-scale farmers and large buyers, through pilot projects;
- Promote business and exporters associations and empower them through frequent consultations on management of food safety, animal health control and plant protection;
- Mandate with proper oversight the coffee exporters association with quality control, pest management, and issuance of phytosanitary certificates; and
- Promote HACCP, initially to plants which process food products for export, and extend HACCP requirements to other processing plants in the long run.

FUNDING THE ACTION PLAN

The main costs for SPS capacity building in the public sector is estimated at US\$7.6 million, including miscellaneous costs (an average of US\$1.5 million per year for 5 years). The cost of support for the private sector is estimated at US\$0.7 million and for the academic sector, US\$1.3 million. For purposes of cost estimation, the recommended actions are divided among three sectors—the public sector, the private sector, and the academic sec-

tor. It is assumed that the funding of these components presents no direct competition of scarce donor resources. No systematic effort has been made yet to explore the funding possibilities of all components.

These costs will be funded by support from donors and international institutions; some parts may have already been provided by ongoing projects. Recommendations for the private sector are assumed to be already undertaken by other donor agencies, notably ADB's Private Sector Development Program or IFC's Mekong Private Sector Development Facility, or possibly under the umbrella of these projects. Similarly, the development and improvement of University curriculum can be achieved through a separate funding in the form of direct support from bilateral donors and twinning projects with other international universities.

Although funding and technical assistance from international agencies are crucial to the establishment of SPS capacity, there is a risk that the absorptive capacity of the government offices with SPS responsibilities may pose a more binding constraint for capacity building if too much funding comes in within too short a period. The SPS Action Plan tries to strike a balance between the speed needed and absorptive capacity.

LONG-TERM COMMITMENT

The establishment and consequent maintenance of a fully functioning SPS system in Lao PDR requires long-term commitment from both the Government and donor agencies. The development and implementation of the action plan will take 3-5 years. Since the available human and financial resources are limited, additional funding is needed and should be selectively applied and well-prioritized. The scope of solutions should include efforts that the private sector could contribute. Sharpening, prioritization, and sequencing of efforts will require additional rounds of consultation and subsequent assessments in the process of implementation. Additional investments will be necessary to upgrade the SPS management system. For the longer term,

new efforts could be funded from savings that may be achieved through increased efficiency, abolition of low-priority activities, and reduction of efforts for tasks with low priority. Since donors provide significant amounts of support in efforts to modernize the food safety and agricultural health system, it is important to involve them in discussions about priorities, in order to promote an optimal effect from donor funding.

With the expanding trade in agricultural products in the region and the forthcoming accession to the WTO, it behooves Lao PDR to adopt a proactive approach and have an effective SPS infrastructure and institutional framework in place. Lao PDR needs to implement SPS measures not merely to comply with WTO and AFTA requirements but to be able to effectively participate in international trade—to access export markets, to comply with international standards, to be able to validate its own SPS measures, and to protect itself from non-tariff barriers by being able to contest the validity of other countries' SPS measures. These initiatives will improve other

countries' perception of the country's capacity and transparency, strengthen its negotiating capacity and capability to deal with pests and diseases because the infrastructures are in place. There is no urgent problem that requires immediate response; but failure or delayed implementation could mean trade losses, revenue forgone, or greater expenditures for compliance.

The water- and food-borne diseases in Lao PDR cause loss of life, and contribute to poverty through the costs of treatment and loss of productive capacity, while poor agricultural health constrains livelihood. Well-targeted efforts to create a viable SPS system will promote public health by enhancing food safety and consequently improving the well-being of the domestic populace; reduce poverty by increasing household income through greater productivity and stronger livelihood through better agricultural health; and enable sustained economic growth by allowing the Lao population to participate in, benefit from and contribute to the imminent growth in the region.



1

Introduction

The more significant factors driving the potential growth in agricultural trade in Lao People's Democratic Republic (PDR) are the growing markets of its neighboring economies, the country's advantageous ecosystem, low labor costs, availability of land, and the capability to supply to organic markets given the country's low usage of pesticides. However, the rising sanitary and phytosanitary (SPS) requirements of importing countries and buyers may pose a hindrance to market access and competitiveness.

As a small country, Lao PDR has limited financial means, technical skills, and infrastructure to comply with these quality and safety requirements. The Government is budget constrained and has limited human resources. Weaknesses in the investment climate for the private sector present other constraints.

A growing concern on the safety of agricultural and food products transported across country borders has led to rising standards in food safety and agricultural health imposed for the protection of the importing country's consumers and agricultural producers. Food safety benefits consumers but may affect producers and/or processors in terms of market access or additional costs. Animal and plant health is of main concern to producers since it affects their productive capacity. Some animal diseases, so-called zoonoses, can be transmitted to humans. Also, some plant pest/disease control measures may contain residues of agrochemicals or other contaminations that are harmful to humans. The SPS measures are thus designed to address the risks on food safety and animal and plant health in an integrated manner.

The SPS measures can restrict market access of food and agricultural products from developing countries, which often have limited financial and technical means and human skills to comply with these quality and safety requirements. Adopting these safety procedures and practices entails costs that eventually might erode the competitive edge developing countries usually have with the low labor cost. At the same time, tightened requirements from buyers offer opportunities for adding value and comparative advantage to those producers who can best meet the new requirements. Consequently, developing countries face challenges in determining priorities in investments to upgrade their capacity for compliance with SPS requirements.

Overall, the SPS Action Plan developed in this report will provide Lao PDR with a strategy for capacity building for managing SPS requirements that may be used as a basis for government policymaking, priority setting, regu-

latory and institutional reforms, and project investment. Although this report is not part of Lao PDR's accession process in the World Trade Organization (WTO), it aims to provide the Government with relevant information about gaps in its capacity that have to be addressed in order to gain optimal benefits from participation in international trade while at the same time protecting human health, animal health, and plant health against potential hazards spread with traded food and agricultural products. The report may also be used by donor agencies to fill gaps in capacity with technical assistance.

The report discusses in Chapter 2 Lao PDR's agricultural trade performance and potentials, and sanitary and phytosanitary issues related to trade. Chapter 3 analyzes food safety and agricultural health, and, in particular, public and private sector capacity in managing SPS requirements. Chapter 4 presents conclusions and recommendations. The recommendations are summarized and presented in an action matrix.

AGRICULTURE IN LAO PDR

Lao PDR enjoys an annual GDP growth rate of about 6 percent. Table 1.1 shows annual GDP growth for all sectors from 1995 to 2005, yet the smaller industry and service sectors have greater average annual growth rates for the period (10 percent and 6 percent, respectively) than agriculture's 4 percent. It is the strong growth in industry that has been driving economic growth since 2001. Still, agriculture has the biggest contribution (about half of the GDP), but it is declining from 54 percent in 1995 to 45 percent in 2005. Much of agriculture's growth comes from crops (59 percent in 2004), followed by livestock and fishery (35 percent) and forestry (6 percent). Yet, agriculture is important to the populace, employing 85 percent of the people, through largely subsistence farming of primarily rice and livestock (Lao Consulting Group, 2005). At present, only 6 percent of total land area is used for agriculture and pasture—3 percent of land is cropped and another 3 percent is grassland or permanent pas-

TABLE 1.1 Agriculture Sector, 1995–2005

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
GDP at market prices (constant 1995 US\$)	1,287	1,374	1,470	1,529	1,640	1,735	1,835	1,944	2,058	2,188	2,321
Annual GDP growth (%)	7	7	7	4	7	6	6	6	6	6	6
Value added (constant 1995 US\$)											
Agriculture	703	719	773	802	862	905	939	976	998	1,032	1,067
Industry	243	285	308	335	363	394	434	478	533	593	648
Services, etc.	307	333	358	374	403	423	446	472	507	541	586
Value added (% of GDP)											
Agriculture	56	53	53	53	54	53	51	50	48	47	45
Industry	19	21	21	22	23	23	24	25	26	28	30
Services, etc.	25	26	26	24	24	25	25	25	25	26	25
Agriculture sectors share, (%)											
Crops	48	48	51	52	53	59	60	59	58	59	n.a.
Livestock and fishery	39	39	38	37	36	35	34	35	35	35	n.a.
Forestry	13	13	11	11	11	6	6	6	7	6	n.a.

Sources: World Bank Statistical Information Management and Analysis; and Bank of Lao PDR Annual Reports (1996, 1999, 2003, 2004) www.bol.gov.la

ture. Rice is grown on over 80 percent of the cultivated land. The other agricultural products include vegetables and fruits (pineapple, bananas, orange); sweet potato; potato; soybean; cotton; tobacco; coffee; cassava; and maize (Bonaglia and Goldstein, 2003).

Lao PDR has 1.2 million cattle and 1.1 million buffalo. In terms of large ruminant density, Lao PDR has 37 animals per 100 people; in comparison, Thailand has 13 animals per 100 people (ILRI, 2002). Pig population is about 1.65 million (FAOSTAT, 2004). Live-

stock is important in the smallholder farming systems of the country. Cattle and buffalo provide assistance in rice production through the plowing of fields and transporting rice and organic fertilizer. Smallholders own 95 percent of the country's livestock. Pigs, poultry, and goats generate household cash income. In the poorest rural areas, 50 percent of the annual cash income comes from the sales of cattle, buffalo, pigs, and chickens, thus providing a link between the development of the livestock sector and poverty reduction (FAO, 2004).



2

SPS Issues in Agricultural Trade

Since the implementation of the New Economic Mechanism in 1989, the Government of Lao PDR has been making changes transforming the centrally planned economy to a market economy (ADB, 2004a). As such, economic relations with foreign countries have been growing with the opening up of the country to trade.

OPENING OF THE MARKET

Upon becoming an ASEAN member country in July 1997, Lao PDR agreed to the establishment of the ASEAN Free Trade Area (AFTA) and consequently to implementation of the agreement on a Common Effective Preferential Tariff. Under the agreement, import tariffs from ASEAN member countries will be reduced to a range of 0–5 percent and non-tariff barriers will be eliminated. The original ASEAN countries (Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, and Thailand) have reduced their rates to the 0–5 percent range applicable to all imports except unprocessed agricultural products and other items excluded on the grounds of moral, health, or public safety. A longer phase-in period is given to the new member countries (Cambodia, Lao PDR, Myanmar, and Viet Nam). Lao PDR has lagged behind the agreed 2004 and 2005 schedule (Fane and Nouansavanh, 2005). One of the AFTA commitments is to reduce tariff on coffee to 3 percent by 2006. However, a number of imports are excluded from the AFTA commitments—live bovine animals, non-alcoholic beverages, cane and beet sugar, cigars, breads, and milk and cream (ITS&CFA, 2004). Through ASEAN, Lao PDR has a commercial and economic cooperation agreement with the European Union (EU).

Lao PDR is one of the member countries of the Ayeyawadi—Chao Phraya—Mekong Economic Cooperation Strategy (ACMECS)² along with Cambodia, Myanmar, Thailand, and Viet Nam. The subregional economic group has an Economic Cooperation Strategy Plan of Action that includes the exemption of duties for eight major commodities such as maize, Job's Tear, potato, cassava, eucalyptus, soybean, mung bean, and black bean. The country has also bilateral trade agreements with Bulgaria, China, Mongolia, Poland, Viet Nam, and other Eastern European countries. In November 2004, the United States Congress approved legislation

²The name refers to the three major rivers running through the five countries.

granting normal trade relations with Lao PDR, consequently bringing into effect the 2003 Bilateral Trade Agreement that gives most favored nation treatment to Lao exports to the United States.

WTO accession. Lao PDR applied to join the WTO on July 16, 1997. The Working Party, comprised of approximately 20 members (44, if the 25 EU members are counted individually), was established on February 19, 1998. The Working Party had its first meeting October 2004 and has completed a first examination of the memorandum describing the Lao PDR foreign trade regime. During the second Working Party meeting, held on November 30, 2006, Lao PDR submitted its first offers for market access in goods and services.

The more important trading partners are the Asian neighbors China, Thailand, and Viet Nam. Viet Nam and Thailand are the top ex-

port destinations of Lao products (Table 2.1). Thailand is the largest trade partner, accounting for about 19 percent of all exports and over 60 percent of all imports in 2004. Viet Nam is the second largest export market (16 percent) and the third largest source of imports (9 percent). The China–Lao trade continues to grow; the total of exports and imports was about US\$68 million in 2002 and US\$110 million in 2004. The main exports of Lao PDR are wood and wood products, electricity, forest products, coffee, tea, minerals, garments, and handicrafts. The major imports are capital goods, industrial raw materials, machine spare parts, and consumer goods. However, actual trade values are significantly higher due to high levels of unofficial trade. It is also for this reason that estimated trade data differ much among the various sources.

Agricultural trade. The agricultural export and import data are summarized in Table 2.2,

TABLE 2.1 Direction of Trade (US\$ millions), 1987–2004 (selected years)

	1987	1990	1995	2000	2001	2002	2003	2004
Total exports	23.3	64.4	311.2	390.0	375.5	385.8	454.1	549.9
Thailand	5.4	40.3	83.3	68.9	81.0	85.0	94.3	104.3
Viet Nam	–	3.6	87.7	96.1	61.8	56.9	72.0	90.2
France	2.1	2.5	11.1	27.1	33.7	33.8	33.6	43.2
Germany	–	1.7	12.7	20.8	25.5	22.0	23.6	30.6
United Kingdom	1.0	0.1	0.9	7.2	9.3	13.4	14.1	26.8
Belgium	n.a.	n.a.	n.a.	13.6	10.4	13.6	18.0	13.4
Italy	–	0.3	0.8	9.2	10.8	10.1	10.3	11.2
Netherlands	–	0.2	5.4	10.0	9.6	10.6	10.4	10.0
China, People's Republic of	9.6	5.9	8.8	4.8	6.8	8.8	10.2	12.4
Japan	1.4	4.6	5.3	10.9	6.3	6.1	6.7	7.3
Total imports	79.8	148.6	588.8	689.8	719.4	727.5	838.7	1057.7
Thailand	40.9	72.3	287.8	419.0	451.7	444.0	501.5	639.4
China, People's Republic of	0.7	15.9	21.5	37.9	59.9	59.7	108.1	97.2
Viet Nam	0.1	17.6	23.9	77.7	70.8	71.2	86.3	91.7
Singapore	–	–	15.7	32.9	28.9	29.1	22.4	42.3
Japan	17.1	21.6	48.8	23.6	13.0	19.6	15.0	15.4
France	0.7	3.1	6.2	27.5	8.5	8.9	11.8	10.5
Australia	0.1	1.2	0.4	4.2	8.3	12.6	7.9	18.3
Germany	2.1	1.0	–	3.6	7.4	4.1	7.5	26.7
Hong Kong, China	0.7	1.3	7.5	7.9	10.1	6.1	8.1	8.0
Korea, Republic of	–	–	2.3	4.9	6.9	4.9	8.7	9.2

Source: Key Indicators, Asian Development Bank, accessed April 2006.

Notes: n.a. means data not available at cut-off date; “–” means magnitude equals zero.

TABLE 2.2 Agricultural Exports and Imports (US\$ thousand), 1998–2004

	1998	1999	2000	2001	2002	2003	2004
Total exports	252,418	432,750	356,399	328,656	233,586	372,660	236,115
Total agricultural exports	84,185	121,664	148,200	151,338	73,210	179,718	42,233
Agri exports, except crude materials	27,121	31,456	27,593	19,813	17,114	23,763	16,873
Food and live animals	27,052	31,272	27,390	19,578	16,591	22,667	16,736
Live animals except fish	906	5,147	5,557	5,406	194	2,535	134
Meat and meat preparations	0	4	8	25	44	3	47
Dairy products and eggs	0	0	391	82	133	79	157
Fish/shellfish/etc.	29	550	26	153	274	28	26
Cereals/cereal preparation	133	201	350	381	437	2,854	577
Vegetables and fruit	186	589	2,041	1,638	2,710	3,117	1,913
Sugar/sugar prep/honey	8	5	28	0	1	12	23
Coffee/tea/cocoa/spices	25,737	24,754	18,985	11,873	12,548	13,899	13,860
Animal feed except unmilled cereal	13	21	2	13	6	137	0
Misc. food products	40	0	3	6	245	3	0
Beverages and tobacco	68	63	200	92	509	1,092	137
Animal/vegetable oil/fat/wax	1	122	3	143	13	4	0
Crude materials except food/fuel	57,064	90,208	120,607	131,525	56,096	155,954	25,360
Total imports	755,077	727,724	692,395	646,735	242,870	728,233	296,125
Total agricultural imports	241,156	156,859	100,223	110,298	56,277	113,192	46,252
Agri imports, except crude materials	231,818	138,657	85,855	103,262	49,632	107,639	43,987
Food and live animals	203,720	89,700	42,841	56,778	17,019	68,000	6,092
Live animals except fish	975	3,135	1,450	1,238	30	1,734	33
Meat and meat preparations	1,608	453	1,471	1,730	1,165	1,052	24
Dairy products and eggs	4,071	2,622	4,120	5,780	25	5,425	16
Fish/shellfish/etc.	67,167	17,329	3,609	1,935	176	2,467	895
Cereals/cereal preparation	22,849	11,805	12,207	14,687	4,051	13,248	2,992
Vegetables and fruit	4,056	11,518	5,887	9,366	8,923	10,577	545
Sugar/sugar prep/honey	7,721	8,347	5,406	13,871	129	9,067	0
Coffee/tea/cocoa/spices	88,004	27,698	1,607	1,316	178	8,727	22
Animal feed except unmilled cereal	2,230	2,214	2,655	2,032	19	4,967	0
Misc. food products	5,039	4,580	4,429	4,822	2,323	10,736	1,564
Beverages and tobacco	26,902	44,277	41,309	44,940	32,527	37,487	37,362
Animal/vegetable oil/fat/wax	1,196	4,680	1,705	1,545	87	2,152	534
Crude materials except food/fuel	9,338	18,202	14,367	7,036	6,645	5,553	2,265

Note: (a). For this table, “total agricultural” exports and imports include food and live animals, beverages and tobacco, animal and vegetable oil, fats and wax, and crude materials. (b) Export data are actually imports of trading partners from Lao PDR. Import data are exports of trading partners to Lao PDR. (c) ‘0’ may indicate no data for such year, country and product, not necessarily no trade. Some countries may have not yet submitted trade data, especially for more recent years. (d) More detailed information in Appendixes A.1 and A.2 to this report.

Source: UN Comtrade (World Integrated Trade Solution), using SITC3 classification, accessed April 2006.

TABLE 2.3 Sufficiency of Production for Selected Agricultural Products

Products	Average 1997–2003 (1,000 metric tons)		Self-sufficiency ratio (%)
	Production	Domestic supply	
Cereals	1,518	1,297	117
Oil crops	28	27	104
Vegetables	517	517	100
Fruits	190	192	99
Coffee	22	7	314
Meat	79	79	100
Milk	6	26	23
Eggs	10	10	100
Seafood	65	65	100

Note: Self-sufficiency ratio = (production/domestic supply) × 100. Domestic supply = production + imports + stocks – exports

Source: FAOSTAT-Nutrition 2005 Food Balance Sheet

with details in Appendixes A.1 and A.2.³ The average share of agricultural exports to total exports for 2001–2004 is 36 percent, while the average agricultural import share is 18 percent. For the same period, food and live animals comprise 22 percent of agricultural exports (or 7 percent of total exports) and 39 percent of agricultural imports (or 2 percent of total imports). Except for 2004, the imports of food and live animals exceed the export value.⁴ The main food and live animal exports are cattle, fruit, vegetables, and coffee, while imports are mostly flour, fruit, and vegetables. Coffee is exported mostly to the EU countries. China is the main source of imported apples and a main destination for dried fruits. In trade with Thailand, Lao PDR exports bovine animals, vegetables, and spices; and imports other animals, fish, shrimp, milk products, and fresh and dried fruits. In trade with Lao PDR, Viet Nam exports meat, vegetables, and spices; and imports spices, animals, and other food products.

³The data for Appendixes A.1 and A.2 made use of the SITC3 (Standard International Trade Classification, Revision 3) classification. Other trade data use the Harmonized System, the newer classification that added more product types. Many countries now use the Harmonized System, but others continue to report in SITC3. Viet Nam, one of the main Lao trading partners, reports in SITC3, thus the decision to use Lao trade data in SITC3.

⁴The import figures are significantly lower for 2004. A possible explanation is the late submission of export data for several trading partners of Lao PDR.

Food sufficiency. Lao PDR is a net importer of food, yet agricultural production is growing. Lao PDR lacks food processing, thus most agricultural imports are processed food (Lao Consulting Group, 2005). Table 2.3 presents the self-sufficiency ratio for a number of agricultural products. The average level of production for these products can meet the demands of the domestic market.

The market potential of agricultural products should be one of the main prioritization criteria for SPS capacity building.

Vegetables. Vegetables are widely grown in all provinces. Main crops are cucumbers, cabbage, cauliflower, eggplant, yardlong bean, tomato, Chinese cabbage and mustard. The Boloven plateau produces vegetables and has fertile soil and good weather that allow for year-round production with relatively few inputs (Arnold, 2003). A UNIDO (2002) study suggested that it is an “appropriate base for a regional, export-oriented strategy.” Production however is still not sufficient for domestic demand. Production problems range from “poor seed quality, limited pest management, inadequate water resources, high local labor costs, the low technical skills of farmers, and the high costs of fertilizer, pesticides, and seed” (USDA, 2004). Limited quantities of potatoes, tomatoes, cabbages, and other vegetables are exported to Thailand for processing. Lao farmers have the competitive

advantage of supplying fresh vegetables to Thailand during Thailand's off-season. In some cases, Thai merchants supply seed, fertilizers and chemicals. Development of this sector requires greater effort with regard to phytosanitary procedures, pesticide management, and distribution infrastructure.

Livestock and poultry. At present, livestock production caters mainly to domestic consumption. About 75 percent of cattle and buffalo are consumed domestically; 25 percent are exported. However, the demand for livestock products in the region is projected to increase by 3.5 to 4.0 percent annually to the year 2020 (ADB, 2004d). There is growth in the demand for meat in the neighboring urban markets in China, Thailand, and Viet Nam, and a possibility for Lao PDR to become a supplier of beef meat. There is an increasing scarcity of land in China, Thailand, and Viet Nam due to their economic growth and consequent urbanization. Lao PDR, on the other hand, still has large tracts of land suitable for pasture (UNIDO, 2003). An ADB smallholder project noted the comparative advantage of Lao PDR for supplying the neighboring livestock export markets, and the potential to increase production and value-added products for export (ADB, 2005). Yet, this projected growth is predicated on a successful management of trans-boundary animal diseases within the region. Livestock morbidity and mortality rates are as high as 50 to 70 percent in some areas of the Mekong region. For Lao PDR, the development of this potential depends on an integrated program of animal health, nutrition, and breeding; and the implementation of support services in marketing and market information systems.

Coffee. About 20,000 metric tons of primary processed coffee is exported per year (UNIDO, 2003). Europe is the main market for coffee. Export sales are monitored by the Lao Coffee Board (formerly the Lao Coffee Exporters Association). The UNIDO (2002) report on food processing recommends a marketing strategy making use of geographical origin.

Export potential. An ADB (2005) report on smallholder development identified crops with export potential based on comparative advantage analysis: for field crops (maize,

peanut, soybean, sesame, sunflower, sorghum and safflower); for fruits (grape, mandarin, sapodilla, orange, durian, rambutan, cashew, longan, and tamarind); and for industrial crops (coffee, sugar, cotton, and sericulture). The UNIDO (2003) report on medium-term strategy and action plan gave an estimate of future (5–10 years) export potential of Lao PDR for specific products: primary processed coffee (US\$50–100 million); beef meat (US\$40–50 million); and “niche” food products (US\$10–25 million). The report stresses however that this potential is “realizable” only if there are “adequate Government policies and private sector initiatives.”

FOOD SAFETY AND AGRICULTURAL HEALTH ISSUES IN LAO PDR

Exports of agricultural products from Lao PDR have not yet faced a major ban or a suspension primarily because exports of agricultural products are small and mostly destined to its Asian neighbors, except for coffee exports to European Union. This does not imply however that there is no concern at all for food safety and animal and plant health. Indeed, the country is in the midst of a spreading infectious disease (Avian flu), and is trying to manage the endemic *foot and mouth disease* (FMD) affecting livestock. Lao PDR also has major problems with food-borne diseases and damaging plant pests. Impending WTO accession and inclusion in the AFTA puts further pressure for improved SPS management.

Animal Health Issues

Avian flu. On January 2004, avian flu was confirmed in Lao PDR. The control measures used included stamping out, quarantine, movement control, active surveillance and culling program,⁵ and regional coordination through the Food and Agriculture Organization (FAO) (OIE, 2005). Accurate surveillance and diagnosis are not readily available in many Asian

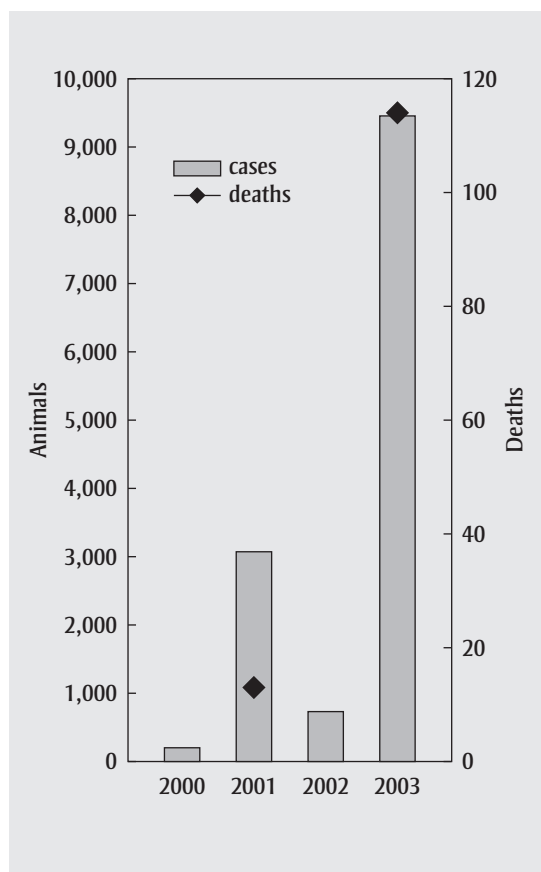
⁵The Lao Government pledged K550 million (US\$50,700) to acquire chickens for the state farms affected by the outbreak. The Ministry of Finance suggested that farmers be compensated for 20 percent of poultry deaths and 30 percent of birds culled (EIU, 2004).

countries. Diagnosis is made more difficult by the similarity of the clinical symptoms to fowl cholera and acute Newcastle disease (diseases affecting poultry). There has been no report of human cases. There has been no outbreak (confirmed by an FAO official) for 2005, but authorities have intensified controls at the border and on the farms as the disease spreads in the neighboring countries of Viet Nam and Thailand (Agence France-Presse, 2005). Thailand has recently reported outbreaks in two more provinces, one of which was the north-eastern province of Nong Khai, along the Lao-Thailand border. Lao PDR has banned imports of poultry and poultry products from Viet Nam and Thailand since January 2004. The European Union has extended the suspension of imports of all poultry products and pet birds until the end of September 2005 for Cambodia, China, Indonesia, Lao PDR, Malaysia, Pakistan, Thailand, and Viet Nam (European Commission, 2005).

Livestock diseases. The main diseases in cattle and buffalo are haemorrhagic septicemia, foot and mouth disease, Black Leg disease, classical swine fever, and Newcastle disease. The National Animal Health Center indicates that the cases of hemorrhagic septicemia, endemic among cattle and buffalo, numbers from 8,000 to 10,000 a year, resulting in economic losses to farmers. In Savannakhet, there were 878 cases in buffalo and 581 cases in cattle for the period October 2004 to September 2005, resulting in 315 deaths in buffalo and 211 deaths in cattle. The disease requires vaccinations twice a year costing about 4,000 Kip (US\$0.39) per head per year. At the provincial level, they also deal with parasites and anthrax.

Foot and mouth disease. Lao PDR is one of seven Southeast Asian countries where foot and mouth disease is endemic. Figure 2.1 shows the incidence of foot and mouth disease in Lao PDR for the years 2000–2003.⁶ The occurrence of the disease could be attributed to Lao PDR being a major transit corridor

FIGURE 2.1 Foot and Mouth Disease—Lao PDR (2000–2003)



Source: OIE, 2005.

of livestock trade from Viet Nam to Thailand, from Cambodia to Thailand through the south of Lao PDR, and from China to Thailand through northwest Lao PDR (Gleeson, 2002). Certain trading practices were also considered to be a factor in the spread of foot and mouth disease—traders buying infected animals for lower prices and selling these in other areas for slaughter. The ideal solution of removing (or reducing) the health threat at the source is often not feasible. Quarantine measures at the borders are deemed impractical in the region given the porous borders and the scarce human and capital resources to run the facilities.⁷

⁶The other countries are Cambodia, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam. Foot and mouth disease is also endemic in China, another border country.

⁷Lao Department of Livestock and Fisheries set up a four-tiered network of veterinary workers—at village, district, province and national levels—but the network is under-resourced, lacking skills and equipment. Thus, there is no detailed information available about the frequent outbreaks of diseases in buffalo, cattle, poultry, and pigs (ACIAR website).

Moreover, the increased cost would push the traders towards another route. Also, widespread vaccination will not only erode the meager resources of the smallholder farms but also may well be ineffective if authorities cannot control the movement of livestock. Following the guidelines of the World Organization for Animal Health (OIE), livestock exports are restricted to countries with the same disease status as Lao PDR.

Plant Health Issues

Pests from new varieties. There is a risk of greater pest incidence from the introduction of new and high-yielding crop varieties (Lao PDR, 2003). Occurrence of the downy mildew disease was greater after the introduction of new maize varieties. The problem of the brown plant hopper was more severe after the introduction of new rice varieties. The local varieties, apparently, are more pest-resistant. Another serious risk is that new diseases are introduced in Lao PDR with planting materials from other countries.

Food Safety Issues

Food-borne illnesses. According to health statistics, food-borne disease is the major cause of morbidity. One of the leading causes of mortality, particularly among children, is diarrhea-related diseases (Table 2.4) which are commonly associated with food-borne contaminants (FAO/WHO, 2004). Cases are prevalent mostly in areas with scarce potable water supply and environmental sanitation problems. In 2000, there were 12,440 reported cases of severe diarrhea and 1,449 cases of dysentery, food poisoning, typhoid fever, and hepatitis A. Records of food and beverage analysis at the Food and Drug Quality Control Center reported of *E. coli*, *Salmonella*, and *Vibrio cholera* found in various foods.

Research on bacterial contamination and cross-contamination on two markets in Vientiane showed frequent cross contamination of meat, poultry, and fish by *Vibrio parahaemolyticus* and *Vibrio cholerae*, most likely from poor personal hygiene and failure to clean and sanitize tables and cutting boards. There

TABLE 2.4 Selected Food and Water-Borne Diseases, 1997–2005

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Hepatitis A									
<i>Cases</i>			15	35	42	46	35	50	
<i>Deaths</i>			0	0	0	0	0	2	
Food poisoning									
<i>Cases</i>				296	239	615	300	334	758
<i>Deaths</i>				8	1	0	3	0	0
Dysentery (unspecified)									
<i>Cases</i>			160				782	878	980
<i>Deaths</i>			0				1	0	0
Typhoid Fever									
<i>Cases</i>				343		1,235	1,278	1,846	1,358
<i>Deaths</i>				3		0	0	7	0
Severe diarrhea + cholera									
<i>Cases</i>	334	6,110	10,120	12,440	2,941	2,042	1,572	1,761	1,610
<i>Deaths</i>	2	109	453	520	15	3	7	10	0
Total cases	334	6,110	10,295	13,114	3,222	3,938	3,967	4,869	3,947
Incidence per 100,000	7	121	200	248	60	71	70	85	63

Source: Division of Epidemiology, National Center for Laboratory and Epidemiology, MOH.

Note: 12-month estimates were made for 2004 (Hepatitis A) and 2005 figures where only 5 to 9 months of data were available.

have been surprisingly few outbreaks of *Vibrio cholera* recorded. However, *Vibrio parahaemolyticus* is a major problem according to the Center for Laboratory and Epidemiology of the Ministry of Health. The Center attributes the infections to the unsanitary preparation of papaya salad and padec, the sauce prepared from long-fermented fish, which is a staple part of the diet, usually eaten in the afternoon after work or school. While padec sauce is salty, the *Vibrio* stains found in Vientiane markets show high levels of tolerance to salt concentrations of 7 percent (Nakamura and others, 2004).

A national parasitological survey of 29,846 primary school children shows intestinal helminth infection prevalence of nearly 62 percent. The northern mountainous regions, such as Phongsaly, Huaphan, and Saysomboune Province, show a higher prevalence (over 70 percent) of soil-transmitted helminths. The regions along the Mekong River, such as Khammuane, Saravane, and Savannakhet Province, show a higher prevalence (over 20 percent) of fish-borne parasites. However, the morbidity effects of parasitic food-borne diseases, flukes (trematodes) of several genera, extend beyond schoolchildren to much of the adult population in lowland areas. De-worming and de-fluking medicines work well, but re-infection occurs in one year or less in areas where hygiene and sanitation improvements are not adopted broadly by the population.

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in areas where hygiene and sanitation improvements are not adopted broadly by the population.

The problem is more related to raw and undercooked fish consumption⁸ and ceviche-style fish preparations that are lightly fermented for only 2–3 days (Hongyanthong, 2005). Flukes infect people who eat undercooked, ceviche-style marinated, and raw fish, crabs, and crayfish. Incidence seems to be expanding with the increase in freshwater aquaculture (Keiser and Utzinger, 2005).

Fish processing. Sources of fish production in Lao PDR are the Mekong River and its tributaries, aquaculture, rice paddies, and reservoirs. In Vientiane, the main source of fish is the Nam Ngum reservoir. The UNIDO (2002) report on the food processing industry described the marketing and processing practices at Nam Ngum (in 1999). Shipping and processing activities (mostly done by fishermen's wives) lack hygienic practices and temperature control. Bamboo baskets, instead of insulated containers, were used to transport fresh fish, using ice made from the reservoir water without prior treatment.

Government effort in the health system is limited and much dependent on donor support. Total health care spending is about US\$11.50 per person per year, 60 percent of which is from households, 30 percent from donors, and 10 percent from government tax revenue.⁹ Of the Government spending on public health, about 80 percent is wage cost.¹⁰

Effect on fish exports. Food and water-borne diseases are currently only a latent SPS threat to

⁸The fish contain the infective metacercariae that develop in fish muscle from cercariae released by specific snails, which in turn have been infected by ingesting eggs usually released in feces from infected humans defecating in fields or in latrines built over rice paddies, ponds, or river sides. After ingestion by a suitable snail (first intermediate host), the eggs release miracidia that undergo several developmental stages (sporocysts, rediae, cercariae) in the snail. Cercariae are released from the snail and penetrate freshwater fish (second intermediate host), encysting as metacercariae in the muscles or under the scales. The mammalian definitive host (humans, cats, dogs, and various fish-eating mammals) become infected by ingesting undercooked fish containing metacercariae, re-starting the cycle.

⁹WHO, Regional Office for the Western Pacific, access information at www.wpro.who.int.

¹⁰Interview with WHO representative, August 2005.

Laotian exports within the region because regional exports of fish are small or informal. However, extra-regional exports of fish are already SPS challenged. Fish—fresh, chilled, and frozen—are exported in tiny quantities regionally and extra-regionally to the European Union and the United States. Health authorities in the European Union and the United States have not paid much attention to fish imports as a source of trematode infections until the last 15 years because most fish was consumed fully cooked. The consumption of raw fish as sushi and marinated fish in a variety of ethnic dishes has increased substantially. Guidelines for the inspection and treatment of fish intended for raw consumption have developed rapidly, with an increasing emphasis on development and application of Hazard Analysis and Critical Control Points (HACCP) to any form of processed fish. Expansion of Laotian fish exports to higher value raw fish consumers, based on low labor, land, and water costs will be increasingly called into question or subjected to costly sub-deep freezing treatments if the general trematode situation stays the same. Private firms will increasingly have to compartmentalize their production and processing from the surrounding environment if they target extra-regional exports.

Increasing use of pesticide. Pesticide residue testing is probably a low priority for national food safety, given the low utilization of pesticides in Lao PDR. However, the spread of the coffee berry borer and the coconut leaf beetle and growing demand for off-season vegetables in Thailand increases the likelihood that more pesticides will be used on export crops and crops for domestic consumption. In a 2006 study of the Plant Protection Center on the prevalence of pesticide residues on vegetables and fruits, residues from organophosphate and carbamate pesticides were found in all 113 samples, with 15 samples having levels unsafe for human consumption (Van der Wulp, 2006). Detection of banned pesticides in exported products may lead to ban in trade.

Effect on tourism. Indirect “export” sales of food through regional and international tourism to Lao PDR will be affected by domestic outbreaks of food and water-borne disease.

Trade Issues

Coffee export requirements. Unnecessary requirements, such as phytosanitary certificates for dried unroasted coffee beans, increase the transaction costs and erode the competitiveness of Laotian coffee exporters. Another concern is the forthcoming implementation of EU guidelines on ochratoxin (Box 2.1). To date no assessment has been made about potential problems faced by coffee exports because of these guidelines.

Trade organizations. WTO membership implies compliance to certain requirements, including the implementation of SPS measures. Lao neighbors China, Cambodia, and Thailand are already WTO members and Viet Nam is on its way to accession. Trade with these countries would then be regulated by SPS requirements. Likewise, the reduced tariffs of AFTA would spur an increase in the flow of goods among the member countries, thus the pressure from neighboring countries on Lao PDR to increase its capability to manage food safety and animal and plant health matters.

Harmonization of standards. One of the aspects of the SPS agreement is “harmonization.” This means basing SPS measures on international standards, primarily the standards of Codex, OIE, and the International Plant Protection Convention (IPPC), to all of which Lao PDR is a signatory.

- *Animal health standards.* Lao PDR follows OIE standards with regard to animal health and trade of animals and animal products.
- *Food safety standards.* According to an official of the Food and Drug Department official within the Ministry of Health (MOH), Lao PDR uses Codex standards as reference although the country has not yet officially adopted them (for lack of means).
- *Plant health standards.* The plant health authorities have implemented only a few International Standards for Phytosanitary Measures (ISPMs)—ISPM 3, *Guidelines for export, shipment, import and release of biological control agents and other beneficial organisms*; ISPM 6, *Guidelines for Pest Surveillance*; ISPM 7, *Export Certification System*; ISPM 12, *Phytosanitary Certificates*; ISPM 15, *Wood*

BOX 2.1**Ochratoxin A in Food Products**

Ochratoxin A (OTA) is a natural mycotoxin produced by several fungi (*Penicillium* and *Aspergillus* species). The molds grow in a variety of plant products, such as cereals, coffee beans, beans, pulses, and dried fruit; more commonly with food crops grown in semi-tropical and temperate climates. The growth of the mold and the consequent production of the mycotoxin depend on temperature and humidity during production, harvest, drying, and storage of the crop. It can also be found in food products containing the above-mentioned food crops because it is stable when heating and other physical food processing.

Low OTA levels in foods are not considered a health risk; however, at high levels it has been shown to have carcinogenic and other toxic properties. Severe dietary exposure to Ochratoxin A has been associated with chronic kidney disease. In 1993, the International Agency for Research on Cancer classified Ochratoxin A as a possible human carcinogen. In 1994, the EU Scientific Committee on Food on Ochratoxin A decided to reduce OTA exposure as much as possible. The European Union has set maximum levels for Ochratoxin A for cereals.

In October 2004, the Standing Committee on the Food Chain and Animal Health amended Regulation 466/2001 setting a maximum level of Ochratoxin A in coffee, wine, and grape juice:

- 5.0 µg/kg for roasted coffee beans and ground roasted coffee
- 10.0 µg/kg for soluble coffee
- 2.0 µg/kg for wine and other wine and/or grape must based drinks
- 2.0 µg/kg for grape juice and grape juice ingredients in other drinks

This Regulation will be formally adopted by the European Commission. The Commission is continuing to review other foodstuffs to set maximum levels where needed. As of April 2005, the Codex Committee on Food Additives and Contaminants is preparing a discussion paper on the Code of Practice for the Prevention and Reduction of Ochratoxin A Contamination in Coffee and Cocoa.

Source: www.cabi-commodities.org, europa.eu.int (Reference: IP/04/1215 October 13, 2004); www.labtechnologist.com/news/news-NG.asp?id=55422.

Packing Material; and ISPM 20, *Guidelines for a phytosanitary import regulatory system*. It would be difficult to comply with all 24 ISPMs prior to WTO accession because of the investments necessary for most of them (e.g., irradiation). Although ISPM compliance should have no direct bearing on WTO membership, the extent to which Lao PDR has the capacity to do so will have an impact on its ability to compete in international markets and to better take advantage of the benefits of WTO membership.

Risks from informal border trade and smuggling. Informal border trade, especially of agricultural products, is widespread. Some respondents believe that informal agricultural trade is much larger than formal trade. Besides the local trade between villages on both sides (Lao PDR and any of the neighboring countries), there is smuggling of goods from and to destinations beyond the Southeast Asia region by which pests and diseases in animals and agricultural products, unsafe food, and il-

legal pesticides can get into Lao PDR. Neighboring countries along the border are exposed to the same risks from the products transited through Lao PDR and informal border trade (Box 2.2).

The livestock illegal trade arises mostly to circumvent requirements and high transaction costs. There is some formal export of cattle and buffalo to Thailand, but the expensive cost of quarantine (US\$300/day) reduces profits for traders and encourages illegal trade. There is a big demand for Laotian native pigs in the northern part of Thailand, but these exports require health certificates. Viet Nam has a law that prohibits import of livestock; however, supply cannot satisfy demand in the Vietnamese domestic market thus creating an informal cross-border trade that does not allow proper monitoring of livestock trade.

Rejections. In recent years, Lao PDR has had only four noncompliance notifications—one from the Japan; two from Korea (on Cardamom, a non-timber forest product); and one from the United States. A notification from

BOX 2.2**Border Trade Supply Chain**

Thai traders collecting produce from Thai smallholders along the border districts and provinces purchase from the Laotian smallholders as well. The combined quantity of produce are then graded and sorted with the better products (in terms of size and quality, both Lao and Thai) moving forward to the regional wholesale and retail markets. Inferior products remain in the border towns for local consumption.

In another version of the supply chain, farmers growing produce along the Mekong River sell their produce to Thai border towns, aware of Thai market prices and trends. Usually, these farmers also acquire inputs and technology from Thai suppliers. By eliminating the middlemen and having a good grasp of the market, these farmers profit most from agricultural production.

Source: ADB, 2005.

Taiwan targeted Lao PDR on ISPM 15 for exported sawn wood that looked like packing wood.

SUMMARY

Unofficial exports across the border to China, Thailand, and Viet Nam indicate the latent demand for Laotian agricultural commodities. Increasing income and the growth of nearby urban centers in neighboring countries are harbingers of the future demand for food and agricultural products that could be supplied by Lao PDR. Inclusion in the ASEAN (specifically, AFTA participation) and WTO compels Lao PDR to take a serious look at its capacity

to manage food safety and animal and plant health issues. There is no urgent SPS problem that requires immediate response; but failure or delayed implementation may mean trade losses, revenue forgone, or greater expenditures. There are animal diseases in the region, notably avian flu, that have to be managed to protect human health and the livelihood of small farmers. Existing exports to EU countries and Japan can be promoted by establishing certification systems and adopting hygienic and good practices. Moreover, the domestic threats to human health through unsafe food and the health problems of animals and crops warrant increased capacity to manage food safety and agricultural health.



3

Capacity for SPS Management

An unintended consequence of increased global trade is the possible introduction and spread of plant pests, animal diseases, and contaminants into a country's food chain.

The SPS measures are designed to protect animal and plant health, and food safety of a country against these potential threats:

- **Inspection at the border** (or prior) is an initial procedure to detect the presence of pests, diseases and harmful substances. There are treatment options for these pests, diseases or substances, or the contaminated product may be returned or destroyed.
- **Surveillance activities** support border inspection to determine either the introduction of a new pest or disease, or the spread of an already existing pest or disease.
- **Diagnostic capacity** verifies the detection of a disease, pest, or harmful substance.
- Once a pest or disease has been introduced in the native environment, an appropriate *emergency response* can be undertaken to stop or contain the spread.
- **Site (farms or plants) inspection and export certification** guarantee the proper use of agricultural inputs (pesticides and antibiotics), promote hygienic practices in farms, processing plants, markets, and during transit between such destinations.
- A **risk assessment** determines the relative risks of potential threats and helps to prioritize allocation of funds according to the degree of risk. In another use, many importing countries require a risk assessment done on a specific product before access to their market is granted.

In all of the above components, Lao PDR has major shortages in human resource skills thus the *building of human skills* is an intrinsic component of improving the country's SPS management.

SPS measures however are not solely the responsibility of the public sector. There is a more efficient outcome if the various stakeholders are involved. *Information and education* campaigns on food safety, plant health, and agricultural health would garner the support of farmers, private enterprises, and consumers. To date the Government does not have an education and information

program for farmers, producers, processors, and consumers.

An effective SPS system does not only safeguard a country's food supply and agricultural health, it also provides conditions to access export markets. Importing countries gauge the 'safeness' of an exporting country's products by the manner with which it controls its markets, deals with pests and diseases, and oversees food production and processing. The following discussion describes the SPS capacity of Lao PDR in terms of the various components that make up a viable national SPS system.

INSTITUTIONAL FRAMEWORK

The core Government offices involved with SPS matters are the Department of Agriculture (plant health) and the Department of Livestock and Fisheries (animal health) within the Ministry of Agriculture and Forestry (MAF); and the Department of Food and Drug within the Ministry of Health (MOH). Other relevant agencies are the Foreign Trade Department of the Ministry of Industry and Commerce (MOIC) and the Science, Technology and Environment Agency (STEA). The Foreign Trade Department is the office coordinating the WTO accession process. A National Codex Committee¹¹ is made up of representatives from the Science, Technology and Environment Agency (chair) and the ministries of Trade; Agriculture and Forestry; Industry and Commerce; and Health (Food and Drug Department, Food and Drug Quality Control Center, and Hygiene and Prevention Department). The National Codex Committee is responsible for food safety standards.¹²

Responsibilities for food safety and animal and plant health are shared primarily by the Ministry of Agriculture and Forestry and Ministry of Health. There is a Food Safety Policy currently being drafted. It is primarily a MAF-MOH collaboration that aims to monitor the

farm-to-table chain. Objectives of the policy include the establishment and implementation of appropriate legislation and regulations and the strengthening of information gathering and analysis to incorporate risk factors in food safety management. The Ministry of Industry and Commerce and Ministry of Finance are involved with regard to the financing/budget aspects. The plan is being finalized for submission to the Government for approval.

Ministry of Agriculture and Forestry

The Ministry of Agriculture and Forestry is responsible for the food safety control for all fresh (unprocessed) food, starting from the production activities—farm and post-harvest practices—to the retail markets. Appendix B.1 shows the MAF organizational structure.

Plant health. The Department of Agriculture (DOA) is the official National Plant Protection Organization (NPPO)¹³ for Lao PDR. The Agricultural Regulatory Division and the Plant Protection Center, together with the Provincial and District Offices, are responsible for plant health activities. The Agricultural Regulatory Division functions as the NPPO contact office and the IPPC Secretariat. It issues phytosanitary certificates and import permits at the international airport and three land border posts in Vientiane capital. In light of the decentralization policy, phytosanitary certificates and import permits for the provincial land border posts are issued by the 18 Provincial Agricultural and Forestry Offices, with the assistance of the District Offices (FAO, 2005). The Plant Protection Center performs limited surveillance (together with the Provincial Agricultural offices) and pest categorization. It has a laboratory and serves as the national reference laboratory for plant quarantine. Appendix B.2 shows the DOA organizational structure.

Animal health. The Department of Livestock and Fisheries has responsibility for animals and unprocessed animal products. Appendix B.3 shows the Department's orga-

¹¹ Lao PDR has been a member of the Codex Alimentarius Commission since 1995. The Codex contact is the Director General of the MOH Food and Drug Department.

¹² For food products for which no standards have been set, the Codex standards are applied.

¹³ Contracting parties to the IPPC designate an office to be the contact point regarding phytosanitary regulations and requirements.

nizational structure. The National Animal Health Center (NAHC) is responsible for animal health activities in the country and related border controls—animal (including fish) health protection and quarantine, safety of unprocessed livestock products, safety and control of animal feed and veterinary drugs, import of breeding stock, animal movement control, veterinary certification, and relevant laboratory tests. The NAHC has supervisory responsibility for central and provincial disease diagnostic laboratories and 10 border check points. It also has technical supervisory responsibility for all abattoir and slaughter slab inspections in the country although operating responsibility remains at the provincial and district levels. However, because a number of components of NAHC are sponsored by various donors, there appear to be coordination difficulties. The Animal Disease Diagnostic Laboratory reports to the NAHC Director, but the working relationship between the NAHC and the production and veterinary supply units located at the same site is not clear. The Feed Laboratory, for example, performs feed quality analyses but is not reported to do mycotoxin analyses. It was not clear whether the Feed Laboratory provides samples for feed-borne disease to the Animal Disease Diagnostic Laboratory.

Ministry of Health

Food safety. The Ministry of Health assumes responsibility for the control of processed food and water, including hygiene in food and bottled water processing plants and restaurants. Appendix B.4 shows the MOH organizational structure. The two departments involved in food safety are the Food and Drug Department and the Department of Hygiene and Disease Prevention. The Food and Drug Department, together with its laboratory, the Food and Drug Quality Control Center, is responsible for analysis of domestic food and quality assurance of imported foods. The Food and Drug Quality Control Center performs tests on food samples submitted by food establishments for the issuance of certification (done every six months with the owners paying for the tests). The Department of Hygiene

and Disease Prevention is responsible for safe food practices (in particular, markets and street vendors) and the monitoring of 18 diseases. The National Center for Laboratory and Epidemiology provides laboratory services and coordinates the disease surveillance.

Standardization. The Science Technology and Environment Agency is the national standards development body. The Agency is primarily involved with standards-setting in the food safety area (including chairing the National Codex Committee, the secretariat is in the Ministry of Health) and accreditation. It has recently been designated by the Government to house the Enquiry Point for both SPS and TBT matters. The main tasks of an Enquiry Point are to respond to enquiries, to maintain reference databases on SPS and TBT measures, to present to the Notification Point draft SPS and TBT measures to be submitted to WTO, and to cooperate with other countries' Enquiry Points. The STEA Department of Intellectual Property, Standardization and Metrology (DISM) is responsible for standardization, metrology, testing, and quality activities, which include the formulation of national standards and maintenance of national metrology standards.¹⁴ Under DISM, the Division of Standards and Quality carries out standardization and related activities; and the Division of Metrology carries out the industrial and legal metrology activities. The DISM relies on five national technical working groups under its Standards Committee to develop legislation and standards development. These working groups have helped develop 11 Lao PDR standards that include standards for green coffee. Twelve priority products are next in line for new standards, with the draft standards for rice, ground coffee and bottled drinking water under preparation. Appendix B.5 shows the STEA and DISM organizational structure.

A Food and Drug Administration was established in 1991 and has recently been changed to Food and Drug Committee. The Committee

¹⁴The Decree on the Management of Standards and Quality of Products (No. 85/PM) named the Science, Technology, and Environment Agency as the central agency responsible for standardization activities.

BOX 3.1**Staffing**

In the livestock and fishery sectors, there are 21 livestock inspectors and 11 fishery inspectors at the central level; and 178 livestock inspectors and 49 fishery inspectors at provincial to village level. All of the inspectors are veterinarians.

The National Animal Health Center employs 25 staff and 9 apprentices (new graduates who receive on the job training). In addition, the Animal Health Division has trained 8,220 village veterinary workers, small-holders assisting in animal health matters at the village level (Lao PDR, 2004b). They can vaccinate and assist in the control of animal movement.

For the entire country, there are 50 plant protection officers and 31 plant quarantine officers. The Plant Protection Center employs 16 government employees and 24 contract employees, with most of the latter involved in production activities.

The Food and Drug Department lacks the personnel to deal with food safety issues. In the capacity plan of the Department for 2004–2005, 90 (out of 135 staff) have an advanced degree in pharmacy, and only 40 percent of the staff received specific training on food safety.¹

There are 30 persons working at the Food and Drugs Laboratory, but only a few are working on food safety.

The Food and Drugs section at the Pakse Provincial Ministry of Health has 20 staff, of which 3 or 4 deal with food safety, including import control.

There are about 70 food inspectors in the country (central to district level); however, almost all have been trained as pharmacists and chemists.

chairman is the Minister of Health and members include representatives from 6 ministries.¹⁵ The Committee is responsible for the management and control of both imported and domestically-produced food and drugs. The Food and Drug Department carries out all activities of the Food and Drug Committee.

Provincial and District Offices

As a result of the Government's program on decentralization, the implementation of food safety and agricultural health policies is carried out by provincial and local administrations. The planning and budgeting decisions lie with the district offices and their participation may be crucial to the effective implementation of certain projects. Local priorities and availability of funds can cause difference between policy and implementation. Box 3.1 provides information about staffing in health and safety areas for animals and plants.

In 2000, the National Agriculture and Forestry Extension Service was created to manage the national extension mechanism. The purpose was to establish an integrated multi-

disciplinary farming system approach to technology transfer rather than have each line department conduct its own extension. Thus, the Provincial Agriculture and Forestry Extension Service and the District Agricultural and Forestry Extension Office now report to the National Agriculture and Forestry Extension Service, and not to the Department of Agriculture. The Livestock and Fisheries Section, for example, of each Provincial Agriculture and Forestry Extension Service and District Agricultural and Forestry Extension Office technically report to the National Agriculture and Forestry Extension Service, and not to the Department of Livestock and Fisheries. The Provincial Agricultural Offices have control over export and import at land border posts, and this may run counter with the NPPO mandate to have full control of all phytosanitary activities. For this and similar SPS responsibilities, there ought to be strong linkages and clear communication among the National and Provincial and District offices.

Extension workers at the district level, however, have no technology or resources for extension work. The District Agricultural and Forestry Extension Office and Provincial Agriculture and Forestry Extension Service usually work under the auspices of donor projects.

¹⁵ Ministries of Health; Agriculture and Forestry; Industry and Commerce; Finance; Internal Affairs; and Science, Technology and Environment Agency.

However, with regard to animal disease control and eradication, the District Agricultural and Forestry Extension Office still requests help from the central government. The strengthening of the animal disease control program at the five border checkpoints are still financed by the central government.

LEGISLATION

There are four main pieces of legislation on SPS matters and other relevant regulations:

- The *National Food Law* has been enacted (May 2004) by the National Assembly.
- A draft *Veterinary Law* has gone through parliament but still requires more work to meet AFTA and WTO requirements.
- The Department of Agriculture aims to prepare a national law on the basis of existing regulations on *plant quarantine*. Current plant protection policies and activities are based on various decrees and regulations.¹⁶ The absence of parliamentary-level legislation is reflected in the lack of definition of institutional responsibilities (specifically, surveillance, emergency actions, search and seizure of imported plant materials) and individual duties and rights, such as the duty to notify the outbreak of a quarantine pest (FAO, 2005).
- The Science, Technology and Environment Agency is currently drafting a *Standards Law* (with UNIDO assistance) to cover standards and conformity assessment procedures.
- The Ministry of Health and Ministry of Industry and Commerce have regulations on the importation and exportation of food, safe processing of food, bottled drinking

water, food additives, inspection, and hygiene (Lao PDR, 2004a).¹⁷

- The Ministry of Agriculture and Forestry has regulations on livestock and pesticide management. Under the regulation on management and usage of pesticide (issued in 1992, amended in 1998 and 2000), the import, sale and transport and storage of pesticides are controlled through a registration scheme. There are 46 active ingredients with 33 trade names that are permitted within Lao PDR and 26 active ingredients that are banned (Lao PDR, 2003). Yet, despite these regulations, a systematic monitoring of the market for pesticides is missing.

According to an assessment of the Multilateral Trade Assistance Project,¹⁸ neither the National Food Law nor the draft Veterinary Law are “in conflict” with pertinent provisions of the SPS and TBT Agreements but nor do they ensure compliance with the Agreements. A number of decrees have been issued to implement the National Food Law; however, the Food Law lacks provisions for enforcement. With regard to draft legislation on animal and plant health, these acts suffer from the same weakness on enforcement provisions. Enforcement of the legislation may be weakened not only by inadequate provisions but also by the meager budget of the enforcing ministries. The lack of capacity to fulfill legislative requirements is exemplified by the virtual absence of a legal unit in the Ministry of Agriculture and Forestry.

SURVEILLANCE

Effective management of plant and animal health requires knowledge of the epidemiology of plant pests, diseases, and movement of animals and products, which requires resources and organization. There are no active surveillance programs and no comprehen-

¹⁶ Decree 66 Plant quarantine (obtained in French); Ministry regulation No 0639/AF (obtained in French); Ministry regulation 0886 of 10/3/2000, on management and usage of pesticides; Ministry regulation of management and usage of fertilizers (including organic fertilizers), based on international standards; Ministry regulation on management and usage of guano; Ministry regulation of plant material; Ministry Ordinance 0620 of 13-07-2005 dealing with sale of non-permitted pesticides (Perpetrators receive a warning on the first time, confiscation for the second time, and for the third time they need to appear in court.)

¹⁷ Most of these regulations require a review and revision. Moreover, more regulations on other issues have to be drafted.

¹⁸ The EU Multilateral Trade Assistance Project provides assistance with requirements for WTO accession.

sive databases on the prevalence of (a) food- and water-borne human health hazards and food contaminations, (b) plant pests and diseases, (c) animal diseases, and (d) the quality and safety of agricultural inputs. Data collected through inspection and passive surveillance are insufficiently analyzed and used for the design of policies and inspection programs.

Plant health. The Department of Agriculture aims to establish a database and diagnosis system of pest and disease outbreak. There is no active, only passive surveillance. From June to October 2002, a pest inventory survey on major crops (rice, maize, vegetables, coffee, and certain fruit trees) was conducted. A pesticide inventory survey that included 10 provinces was done in September 2002. Even when quarantine pests of national significance are introduced and become economically important (for example, the coffee berry borer), budget resources do not permit active surveillance programs to determine the rate of spread or economic importance. A major assistance by the New Zealand's International Aid and Development Agency (NZAID) provided for the installation of a National Phytosanitary Database, a management information system with the capability for computerization of pest records. However, resources are needed to enable plant health authorities to utilize the system and to initiate the creation of pest records. For plant pests, the plant quarantine unit has a limited collection of insect and plant disease specimen for reference. For trade purposes, records supported by voucher specimens in collections provide a more reliable evidence of a country's plant health status because they can be validated.

Monitoring of pesticide use. Notwithstanding the regulation on pesticide management, the DOA Agriculture Regulatory Division lacks the capacity for effective implementation (Van der Wulp, 2006). Surveys reveal that a number of pesticides sold were not registered. Also, there is inconsistency between the listed trade names of pesticides for 2004–2006 and the list of authorized active ingredients. Finally, there is limited technical capacity for pesticide quality control.

To date, the use of agrochemicals in Lao PDR is limited. However, with further diversification of agriculture, use of pesticides, veterinary drugs, and hormones will increase. Given the widespread use of illegal pesticides in neighboring countries and risk of illegal import (Box 3.2), regulation, monitoring, promotion of good agricultural practice, and enforcement of regulations will become important elements in promoting food safety and human health at home, and in preventing restrictions of exports in foreign markets.

Animal health. The National Animal Health Center employs a mixture of active and passive surveillance. Twice a year the staff make field surveys, one in the dry season and one in the wet season. These field visits are also used for training of field staff. However, the NAHC has not been able to put the results from surveillance in a database or health mapper because of the lack of qualification among the staff. The provincial level veterinary service has no active surveillance either; it mainly reacts to reported cases of animal disease and death. A reporting system for disease information was established from grassroots to central level with the help of the trained village veterinary workers that can gather information (Lao PDR, 2004b). Still, it is difficult to get accurate data on diseases.

The reporting problems probably derive from difficulties in getting regular reports from the village veterinary workers to the District Livestock and Fisheries Officers to the Provincial Livestock and Fisheries Officers to the National Animal Health Center. One of the root problems is the under-reporting of livestock diseases by farmers who seek to avoid having animals destroyed or to sell their animals before their symptoms prevent sale. A report from the International Center for Tropical Agriculture (CIAT) and International Livestock Research Institute (ILRI) noted the current lack of incentives to report animal disease (Hoffmann, 2005). The farmer or trader who reports will, consequently, bear the cost of resulting sanctions.

While the NAHC provides monthly notifications to OIE for Lists A and B diseases, there is no list of priority diseases. Important dis-

BOX 3.2**SPS Problems of Thailand, Viet Nam, and China**

The increase in the technical sophistication of testing equipment has allowed EU to adopt a zero tolerance for certain agricultural chemicals. Among these are chloramphenicol and nitrofurans residues (chemicals have been linked to cancer in humans). In 2001, EU authorities detected these chemicals in shrimp exports from Viet Nam, Thailand, and other Asian countries. The required destruction of the products caused tremendous losses to the exporters. In the preceding months, all shipments of shrimp imported from Vietnam, China, Thailand, Indonesia and other countries were subject to examination.

In these countries, the core problems were the lack of knowledge and awareness of farmers on the proper use of chemicals and (at least, in Viet Nam and China) the easy access to the banned chemicals.

To protect the image of Thailand as a world supplier of safe and quality foods, the public and private sectors took immediate actions. Shrimp factories source their raw material from trustworthy farms. The Government imposed a closer monitoring of chemical usage, and purchased better equipment to be able to test antibiotic residues according to EU standards. In Viet Nam, the Ministry of Fisheries, the association of seafood producers and exporters joined efforts towards the education of farmers and the regulation of the chemicals. On September 2002, the compulsory 100 percent examination policy on shrimp imports from the affected Asian countries was lifted.

A problem that harmed China's vegetables exports is pesticide residues. A coherent residue monitoring system in the wholesale and retail markets is lacking and the pesticide markets are insufficiently regulated. Farmers lack knowledge of the appropriate use of pesticides and there is insufficient technical support or service in rural China. In 2002, excess levels of pesticide residues were found in frozen spinach exported from China to Japan. The Ministry of Health, Labor and Welfare tightened the safety inspection of Chinese vegetables at the border and advised buyers to voluntarily suspend imports of frozen spinach from China. With the efforts of General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China and the Chinese spinach industry, the Ministry of Health, Labor and Welfare lifted the import ban of frozen spinach processed by 27 authorized Chinese companies in July 2004.

Sources: Manarungsan and others, 2005; World Bank. Forthcoming; Van der Meer, 2004; JETRO, 2002; Brenton, et. al., 2004.

eases that are monitored include Avian flu, foot and mouth disease, classic swine fever, haemorrhagic septicemia, anthrax, rabies, poultry infectious bronchitis, and Newcastle disease. It should be noted that the Lao PDR has been one of the better reporting countries on both Lists A and B diseases in the region. The NAHC reports monthly to the OIE, but provincial officials aggregate manual reports from districts on a 3-, 6-, and 12-month cycles. While an epi-info-based animal information system called LaoBase was designed and tested in Lao PDR with support from Australia's Agency for International Development (AusAID) in the late 1990s, it is not clear that this system is now operating (Sargent and others, 1999; Vongthilath, 1999).¹⁹

An animal registration project was started involving the eartagging of cattle together with vaccination and the issuance of certification.

Out of an estimated 1.2 million head of cattle, only 60–70,000 animals had been vaccinated and tagged, with a cost of 6,000 Kip (US\$0.58) per head. The project seemed to be too costly and ineffective; it is however still ongoing but proceeding slowly.²⁰ The tagging and vaccination is mandatory but the Government is not pushing for immediate compliance.

Certain active surveillance programs have proceeded with donor assistance—regional and bilateral support for foot and mouth disease, bilateral support for classic swine fever, and multiple donor support for Avian flu. The Avian Influenza Unit of the Animal Disease Control Center receives donor-supported virology technical assistance missions to actively sample poultry in different areas of the country. In 2006, expert missions of various international donors have concentrated on border areas with Thailand and China, with the Vietnam border next in line. A serological survey at

¹⁹ Epi-info is a series of microcomputer programs for handling and organizing epidemiologic statistics.

²⁰ Interview with MAF officials.

the Upper Mekong and Lower Mekong regions will be part of the OIE South-East Asia Foot and Mouth Disease Campaign (SEAFMD) project to look at the possibility of establishing a buffer zone and a control zone.

Food safety. There is not a clear overall program for food-borne diseases, but bits and pieces of information and data are available at various offices in the Ministry of Health. There is attention to nitrite in meat and safety of fresh vegetables. There has been a study of drinking water (heavy metal content), supported by WHO, for which samples had to be tested in Khon Kaen, Thailand. Present monitoring activities are concentrated on entry points in consumer markets. A WHO officer noted that while it may be possible to assess the incidence for food-borne disease on the clinical side, it is not the case on the chemical side—pesticides, heavy metals, among others—without investment in facilities that would require operational budget and a program for testing. The Ministry of Health is focusing on 18 diseases, of which a few are related to food-borne diseases—diarrhea and salmonellosis, among others. The time-series data on these diseases however have gaps over a nine-year period (1997–2005) that makes improved risk assessment and quantification of costs and benefits difficult (review Table 2.4, Chapter 2). There are also blind spots within the data collected; in the case of enteric diseases, all causes of dysentery or severe diarrhea are grouped. Determination of the causes, whether bacterial, viral, protozoan, or parasitic, would be difficult to maintain on a national scale.

Fundamentally, the weakness of reporting reflects weakness in recurrent funding that constrains the development of public capacity in food safety and many other areas in the Lao PDR economy.

DIAGNOSTIC CAPACITY

Metrology. A UNIDO (2004) technical report assessed that Lao PDR does not have any national level measurement standards. There are a few sets of working standard weights (5 kg. and 20 kg.) and volume vessels (5 liter and 10 liter), all of which lack traceable calibra-

tion. The food processing industry, for example, would require calibrated balances, weights, thermometers, and pressure measuring instruments. A UNIDO officer emphasized that “without a functional standards setting organization and traceable metrology, SPS compliance is impossible”.²¹ A metrology laboratory in Lao PDR or abroad should help to ensure that measurements are accurate and traceable to the international system of units. The STEA Metrology Division is being supported by Vietnam. A new building will be handed over in early 2006 along with some basic metrology equipment. Some standards are already available for length, mass, volume, and flow measurement at the national level, but limited use is made of them.

Available laboratory facilities for managing food safety and agricultural health are weak and partly deficient. The present facilities are underutilized; the Government is unable to allocate the required operational budget for acquiring reagents, chemicals, spare parts, and calibration. Human resources are weak for identification, diagnoses, and testing of food- and water-borne human health hazards and food contaminations, plant pests and diseases, and animal diseases. The available staff are few, and general levels of education and training are low. Moreover, the laboratories (covered in this report) have passive work programs. They carry out what comes up through routine inspections and emergencies given what capacity and operational budgets are available and what fees can be charged for tests.

Food safety. The Food and Drugs Quality Control Center laboratory only deals with processed food. However, the food safety section of the laboratory is the part that is weakest in equipment and training. There is a lack of experienced staff to do tests in certain fields. The Thai government provides basic laboratory training of two persons per year. For many areas, the laboratory has no standards, and equipment has not been calibrated since it was bought.

²¹ Dr. Lalith Goonatilake, Senior Industrial Development Officer, UNIDO.

Diagnostic capacity for quantitative analysis of mycotoxins (for example, aflatoxin and ochratoxin) is not readily available in Lao PDR. The High Performance Liquid Chromatography equipment, standards, and methods are not in place in either the Center for Laboratory and Epidemiology or the Food and Drug Quality Control Laboratory in the Ministry of Health. Various donors are supporting the development in the region of rapid test methods for mycotoxins that could eventually be extended to Lao PDR. These methods will be less expensive than the commercial ochratoxin and aflatoxin kits that are available from commercial companies; however, their sustainability will depend on public sector capacity to provide quality control. Any rapid test program will still require reference laboratory High Performance Liquid Chromatography back-up to cross-check for false positives and provide standards for performance comparisons.

There is at present limited capacity to test for pesticide residue levels. The Gas Chromatography equipment in the Food and Drugs Quality Control Center is old and is mainly used for drug tests. They need a separate Gas Chromatography for food testing. The Center for Laboratory and Epidemiology has a Gas Chromatography in its toxicology department. It was purchased to do environmental analyses of contamination by dioxin and poly-chlorinated biphenyl (PCB) compounds following the Second Indochina War. Currently used mainly for research purposes, it would need additional equipment and refurbishing to be used for pesticide screening (e.g., sample loader, detectors, standards, pesticide library, and data integrator.) Pesticide residue testing could also be done in Thailand for monitoring and surveillance purposes when quantitative testing is needed.

The passive testing program of the Food and Drugs Quality Control Center laboratory has a yearly maximum number of tests to be divided over different areas. The maximum number for 2005 was 2,000 tests (up from 1,500 in 2004) of which 500 were allotted for food safety. The food safety tests are mostly for the formal sector (bottled drinking water,

groundwater for drinking, food samples from food establishments and food import from companies). Virtually no tests are done on food safety in the informal market. There are fees for requested tests by provincial governments, private companies, or importers (samples at the border). Food samples from provinces are few in number since provincial governments have small budgets.

The total operation budget for the Food and Drugs Quality Control Center laboratory is US\$1,200 per year. The income from fees for analysis in 2004 was US\$15,000 of which US\$9,000 was to be paid to the Ministry of Finance. For the 2004–2005 fiscal year, there was an additional US\$20,000 in the budget for chemicals and spare parts, but within two months of the end of FY 2004/2005, nothing had been released. In 1995, US\$60,000 support was received from FAO for food analysis.

The provincial unit of the Ministry of Health at Pakse hardly has capacity for testing; it has no specialists and no equipment. The testing samples are sent to the Food and Drugs Quality Control Center laboratory, and the results arrive after one to four weeks. Annually, only 30–50 cases are sent to Vientiane.

The MAF irrigation department has capacity to test water quality, including heavy metals, but the facility has no accreditation. Although the Food and Drugs laboratory deals with food-borne health hazards, it has no regular cooperation with the Ministry of Agriculture and Forestry. There is incidental cooperation with the Animal Health laboratory on exchange of chemicals.

Animal health. The National Animal Health Center performs analyses of animal parasites and diseases and tests and certifies the safety of unprocessed livestock products and animal feed. The NAHC has been supported by multiple donors over the years and continues to receive support from AusAID, European Union, FAO, JICA, NZAID, USAID, and others. The central animal health diagnostic capacity is housed mainly in one complex but its organization reflects the fact that capital investments are funded on a project by project basis. The NAHC in Vientiane is located in a complex that houses the Animal Feed

Laboratory, Living Aquatic Resources Center, Veterinary Supply Unit, and a 5-unit Animal Disease Diagnostic Laboratory. The NAHC houses the National Reference Laboratory for Rabies. The Animal Feed Laboratory collects and analyzes samples from the feed mills.²² Fish disease diagnosis is being done by Namxuang Aquaculture Development Center and Living Aquatic Resource Research Center (World Bank, 2006a). There is however no capacity for measuring pesticide and chemical residues in meat and fish. The NAHC has a vaccine production center, but its operations have been scaled down to a limited number of vaccines only. There is more reliance now on commercial vaccines. The NAHC has a drug and vaccines sales unit with a turnover of US\$30,000 per year.²³

The Animal Disease Diagnostic Laboratory is housed in a compact but well-organized facility and divided into five diagnostic units: Avian flu (facility established in 2004), bacteriology, parasitology, serology, and rabies. The Laboratory's analytic program is limited by its operating budget. Its serology unit, for example, runs tests on only about 30 samples a month. The Animal Disease Diagnostic Laboratory has a post-mortem facility for on-site slaughter. It also has an incinerator for disposal of biological waste but finds it difficult to operate due to neighborhood complaints about odor.

In the Avian flu outbreak, samples were submitted to Viet Nam and Thailand for analysis. In 2004, funding from FAO helped to establish a unit for detecting Avian flu at the NAHC. The Avian influenza unit has the capacity to do pathogenic H5N1 diagnosis using three OIE-designated methods following inoculation of disease-free chicken eggs from a poultry breeding farm. There are three mobile teams monitoring Avian flu and every province has its own Avian flu task force.²⁴

²² Control for quality of animal feed is based on the animal feed standard and formulation of the U.S. National Research Council (Lao PDR, 2004b).

²³ Interview with representative of the Ministry of Agriculture and Forestry.

²⁴ According to Dr. Syseng Khounsy, Deputy Director of the National Animal Health Department (Agence France-Presse, 2005).

There is now cooperation with a U.S. researcher on the ecology of Avian flu. The Animal Disease Diagnostic Laboratory has recently received some new equipment and training from donors, but it still lacks accreditation and basic capacity in various fields of its responsibilities.

The diagnostic infrastructure also includes six animal disease diagnostic laboratories in the provinces that can perform simple parasitological tests. Most of the diagnoses however are performed only at the NAHC laboratory. The provincial laboratories provide support in the collection and preservation of samples. On the northern border with China, there is a small laboratory (in collaboration with China) with equipment but not yet operational.

The Lao-Australian Animal Health Research Project has a laboratory that performs antigen detection of highly pathogenic Avian flu, classic swine fever, and foot and mouth disease.

The NAHC is weak with regard to the limited training of its staff. They have only general vets and para-vets with a general agricultural training from the Agricultural College (diploma) or the Faculty of Agriculture (BSc); there are no specialists for pathology. The quality assurance system of the Animal Feed Laboratory is likewise hampered with limited staff, inadequate equipment and methods of analysis, and the often times unavailable chemicals and reagents.

The total cash budget for the NAHC was 70 million Kip (US\$6,804) for reagents and chemicals. Charges for tests are 2,000–3,000 Kip (US\$0.19–0.29) and 10,000 Kip (US\$0.97) for rabies. Commercial farms but not subsistence farms must pay. Annually the NAHC conducts 5,000 tests, of which 3,500 are for serology and 1,500 for rabies.²⁵

Plant health. An evaluation carried out by the NZAID Phytosanitary Capacity Building Project for the Mekong Region indicated that Lao PDR has "minimal or no capabilities for the identification of some significant pest groups including virus like organisms, bacteria, fungi and weeds" (NZAID, 2005). Significant

²⁵ Interview August 2005 with NAHC representative.

deficiencies were noted in systems, documented procedures, physical assets (laboratories and equipment), laboratory management and, most importantly, skilled human resources. The taxonomic sections of the Plant Protection Center have minimal and basic equipment and identification keys. Arthropod taxonomic keys are minimal, mainly old, and focused on rice and vegetables. Some Lao translations of the keys exist from the days of support from the International Rice Research Institute, when the Plant Protection Center was an extension training and applied research facility. The pathology laboratory also has limited equipment, with magnifiers and microscopes and glassware dating from long past USDA project support.

The Plant Protection Center was improved and equipped in 2003 but underutilized due to lack of budget for solvents. There is no program of work and the Center gets few samples for testing. The private sector has to pay for tests. The Center produces some biological control agents. The main physico-chemistry and microbiology laboratory of the Plant Protection Center is mainly used for fertilizer (compost) analysis and registration (of nitrogen-phosphorus-potassium using auto-digester methods), biocontrol (bacterial and fungal agent multiplication), seed testing (mainly simple germination and vigor), and pesticide effectiveness using field bioassays. The laboratory has recently been upgraded to provide better ventilation for hoods and equipped with an array of equipment.²⁶ But, for some of its core bio-control propagation activity the Center curiously lacks basic instruments such as thermometers and hygrometers. The laboratory has good space, good construction materials, and good layout, but some risk is posed to its more expensive instruments by the high voltage fluctuations in its power supply despite the use of voltage regulators.

Operation of the advanced analytic equipment requires a reliable operations and main-

tenance budget, which the Plant Protection Center and other national laboratories share as a common constraint. Center utilization appears to be strongest where there is a product (bio-control agents) or service (registration of compost materials, training services) to sell. It is weakest in the areas of public inspection and regulatory support (pest and disease surveys, pest and disease identification, physico-chemical analyses)

Standards setting. The Department of Intellectual Property, Standardization, and Metrology uses the laboratories of other bodies to provide the analyses needed for standard development and testing, for example the MOH Food and Drugs Quality Control Center for food products and the Faculty of Engineering for construction materials. Currently these laboratories do their own equipment calibration.

Accreditation. The laboratories in Lao PDR are not internationally accredited (UNIDO, 2004). The option of creating a national accreditation body in Lao PDR may not be appropriate or efficient given the few laboratories, the absence of certification bodies, and the unavailability of skilled technical staff required. Accreditation can be done by a third-party country. The DISM position is that the 16 national reference laboratories in country do not justify the investment in a national accreditation body. Neighboring country accreditation bodies could serve this purpose once a national system of calibration is in place and once laboratories meet thresholds for certification. While DISM officials hope that two MOH laboratories will be accredited in 2007 or 2008, visits made to these laboratories suggest that only the Food and Drugs Quality Control Center might be ready for accreditation by then, with partial accreditation possible in some units of the Center for Laboratory and Epidemiology. The MAF Animal Disease Diagnostic Center would also be a candidate for accreditation over the next two to three years. The Plant Protection Center is several years away from being accreditation-ready if steady investment is made in its operations and personnel. Laboratory accreditation services should be procured regionally, with basic calibration services being a more urgent national priority.

²⁶ For example an atomic absorption spectrophotometer (Model GBC 932), a flame photometer, Fourier Transform InfraRed spectrometer, pH meter, potentiometer, autoclaves, and thermostatic chambers.

EMERGENCY RESPONSE

The capacity of Lao PDR is limited for managing health hazards, animal diseases, and plant pests, including rapid alert systems, communication networks, and emergency plans.

Animal diseases. There are established procedures for dealing with outbreaks of animal diseases such as foot and mouth disease, including having compensation rates for culling of animals. Compensation rates are 20 percent for death during outbreak, 60 percent for culled animals, and 100 percent for additional costs, such as transport and testing. Budgets however may not be readily available in case of outbreaks. Currently, the only area for which there is an emergency budget is for Avian flu (US\$20,000).

Plant pests. The Government has an emergency plan for plant pests. Plant health authorities are concerned with the coconut beetle (introduced from Viet Nam and discussed in Box 3.3), coffee berry borer, and golden snail (young rice plant eaters). In case of such hazards the Ministry of Agriculture and Forestry sends an alert notification to the provincial governors and provides physical controls (for example, biopesticide was sent to control the spread of the coconut beetle).

RISK ANALYSIS

Lao PDR has practically no capacity to undertake risk analysis for food safety and agricultural health management. The main obstacles are lack of technically skilled human resource

and databases. There are no comprehensive databases on the prevalence of food-borne health hazards, plant pests, and animal diseases. These databases and other significant information on human and agricultural health status are necessary if the country is to conduct risk analyses, maintain pest- or disease-free areas, and provide relevant information to trading partners in negotiations about market access. Risk assessment and the quantification of costs and benefits require multi-year data. The existing data on human health and animal health both have information gaps within a given range of years.

BORDER INSPECTION

Only a dozen or so formal crossings exist along a border of thousands of kilometers. The official border trade points with Thailand, controlled by the relevant district office, comprise five points in Champassack, four points in Savannakhet, three points in Khammouane, and five points in the Vientiane municipality (ADB, 2005). Border inspections rely almost exclusively on visual inspection. If certain qualities are not consistent with the attached certificate, entry is not allowed. A standard operational practice is being developed for the import control of food and agricultural products. To prevent the spread of Avian flu virus, the Government has decontamination points at all 20 international border checkpoints to spray vehicles with decontaminants.

BOX 3.3

Consequences of Plant Pest Incursion

The coconut leaf beetle (*Brontispa longissima*) was believed to have entered Viet Nam in the southern part of the country through shipments of ornamental palms. It was however first sighted in 1999, and by 2001 an estimated one-million coconut palms across 150,000 hectares in all 21 southern provinces in Viet Nam had been affected. The disease has spread into the central and northern part of the country. The cost of insecticides used was US\$722,323; despite this huge expense, the estimated loss due to the pest came to US\$17.8 million in 2002.

In Thailand, the beetle was detected in 2000 in the southern provinces; 7,229 hectares were infested. In 2001 the pest was first seen in Cambodia where 1.95 million coconut trees out of 12.3 million were killed by the pest, and about 7.2 million trees were affected. The pest has been reported in the Hainan province of China, and in July 2005 the pest was detected in some Philippine provinces. The beetle is already present in Lao PDR.

Sources: NZAID, 2004; Sarian, 2005.

Plant inspection. There are six plant quarantine border posts although these are lacking in equipment (no fumigation facility), personnel, and operational budget. A needs-assessment survey by the NZAID-CLMV project²⁷ noted that phytosanitary inspectors do not have the legal authority to “search or seize ‘risk’ goods” and must depend on Customs officials to refer the items to them. Importers of germplasm/plant material are given import permits based on the documents submitted by the importer, together with a phytosanitary certificate. Importers of agrochemicals have to be licensed before they can apply for MAF permission for imports. (There are more than seven licensed importers.) Donations are also checked; a donation of alleged obsolete pesticides from a donor country was rejected.

Animal inspection. A report on transboundary diseases discussed the facilities of the 26 veterinary checkpoints at the borders, but no real quarantine (Hoffmann, 2005). Some of these checkpoints are located at a distance from the border, thus inspection of shipments is hard to enforce. Imports of feed, breeding stock, fish fry and fingerlings need MAF permission (and also from the Ministries of Commerce and Finance). Approval letters have to be shown at the border posts to veterinary officers who visually check the shipment and provide permission.

- **Vangtao border crossing.** Despite little trade,²⁸ the animal health quarantine unit consists of two inspectors.²⁹ The inspector checks whether the shipment is the same as specified in the permits, visually inspects health of the animal and collects a registration fee of 20,000 Kip (US\$1.94).³⁰ The

plant quarantine unit is located next to the animal health unit. When the shipments arrive on the border the inspector takes a copy of the certificate, inspects whether the goods are as indicated on the certificate, collects a registration fee of 15,000 Kip (US\$1.46) and confirms the certificate.³¹ From April to July 2005, only 42 forms were collected. The Department of Agriculture, following Prime Minister Decree No. 66 of 21 March 1993, abolished these fees as of June 2006.

- **Champasak province.** The Food and Drugs section at the Pakse Provincial Ministry of Health only controls processed food and bottled drinking water. It has a quick test kit to be used at the border.

SITE INSPECTION AND CERTIFICATION OF EXPORTS

The control of fresh markets for meat, fish, fruits, and vegetables is the responsibility of the Ministry of Agriculture and Forestry. The issuance of SPS certificates for agricultural and animal products is the responsibility of the MAF’s Department of Agriculture and Department of Livestock and Fisheries. Certification is generally based on visual inspection and routine issuance for established exports. The Department of Agriculture and the Provincial Agriculture and Forestry Services issue phytosanitary certificates to “certify that plants or plant products to be exported have been inspected and found free of quarantine pests and substantially free from other injurious pests” and to indicate any disinfestation or disinfection treatment done on the product. All unprocessed meat, even at the retail level, is under the domain of the public veterinarians.

Food products. For food exportation, the issuance of certificates of food analysis and quality assurance is the responsibility of MOH’s Food and Drug Department and Food and Drug Quality Control Center. The staff of the

²⁷ NZAID is supporting a major project on phytosanitary issues. The main output Phase I is the establishment of an integrated National Phytosanitary Database system for information management for the countries of Cambodia, Lao PDR, Myanmar, and Viet Nam (CLMV).

²⁸ No breeding stock has been imported since 2005. There are imports of fish fingerling (twice a week), some dried seafood, and export of fresh fish from the Mekong River.

²⁹ Inspectors attend a three-year agricultural college program.

³⁰ Similar procedures must be followed with permits from the Ministries of Commerce and Finance, which add to transaction costs.

³¹ Vegetables are main export products, mainly cabbage, coffee, peanut, and bananas, for which export certificates are issued by the Ministry of Agriculture and Forestry and a fee is required.

Food and Drug Department is insufficient for the inspection and enforcement of food regulations. In the case of the Lao Agro Industry Co., Ltd. (a Thai company branch), the Lao Government requires their exports of processed fruit and vegetables to be tested four times a year although there is no requirement by the foreign government. However, the Food and Drug Department is not able to perform the tests the foreign private client requires due to lack of training and expertise, thus the company gets testing results from its own certified laboratory in Thailand. Such practice not only increases the costs but causes delays as well.

The inspection of restaurants is the responsibility of the Hygiene Division and done by a team that includes a member of the Food and Drug Department. Inspections are all visual. The Food and Drug unit of the Champasak Provincial Ministry of Health in Pakse inspects factories as well.

Retail/wholesale market inspection. The wholesale market at Khuadin in Vientiane is where peddlers and small restaurant operators buy their food supplies. The market also provides a great array of retail products. Meat sellers buy carcasses from bigger traders who get their supply from slaughterhouses. Sellers pay 1,000 Kip (US\$0.10) for veterinary inspection fees daily, but vendors argue that there is no inspection and that the inspection is not needed since the animals have already been inspected at the slaughterhouse. Also, fish sellers pay veterinary fees. There is no food safety inspection fee for vegetables and fruits. At the somewhat modernized retail market at That Lang in Vientiane, fish and meat sellers pay no veterinary inspection fees.

Phytosanitary certificates for coffee. According to international specialists, there are no legitimate reasons for requiring the issuance of phytosanitary certificates for unroasted coffee beans for consumption.³² In Europe and the United States, for example, dried unroasted coffee beans are considered as sufficiently processed and as such are not likely to

harbor injurious pests. According to an MAF official, Lao PDR has no formal requirement for the issuance of phytosanitary certificates for coffee exports, and they should be issued only upon the request of the exporter (or foreign importer).³³ However, phytosanitary certificates are reportedly required for all coffee exports.³⁴ Some claim that Thai authorities require them for transit trade; if this claim were true, it would be an issue to discuss formally at Government level since there is no valid ground for such a requirement under SPS principles. Government officers suggest that some exporters require a certificate as a basis for extending a letter of credit. Rent seeking by inspection services on both sides of the border may be an additional reason. Phytosanitary export certificates are not imposed but only given on request.

Organic certification. Lao PDR has no system for certification (organic or otherwise). Due to the farmers' practice of not using chemicals (or very little), organic farming is a possible niche market for Lao PDR. However, because most farms are dispersed and remote, it is difficult to have an organic-certified production. In certain cases, clients of exporters come to the country and perform tests themselves. Lao PDR has organic standards. There is neither a certification for geographic origin although the Department of Agriculture once issued a document with an ad hoc statement on request for an export shipment to Taiwan.

Lao PDR does not yet have a certification body for quality assurance systems (ISO 9000, ISO 14000, HACCP). Moreover, there are no programs to promote ISO, HACCP, Good Manufacturing Practice (GMP), and Good Agricultural Practice (GAP) among producers/processors. Enterprises that want certification are dependent on foreign providers, usually Thai certifying bodies (UNIDO, 2004). The Lao Agro Industry Company, Ltd., which exports processed foods (bamboo shoots, sugar palm, tamarind to the European Union, is the first company in Lao PDR with GMP certifica-

³² There may be a phytosanitary concern for coffee beans imported for sowing; fresh coffee beans have a risk of having fruit flies and coffee rust disease, but that is another issue.

³³ Communication from the Director of the MAF Agricultural Regulatory Division.

³⁴ Arnold, 2003; and respondents in mission interviews.

tion provided by the Société Générale de Surveillance. In certain cases, such as Lao breweries, fruit canneries, the Ministry of Health has provided some support for Good Manufacturing Practice. However, its expertise and experience are limited.

BUILDING HUMAN SKILLS

Food safety. The Ministry of Health has no training center for food safety. Education and training are scattered over different units. The Food and Drug Department staff provide lectures in pharmacy (BSc) at the University and Medical Technical College. There is a vocational school for hotel business that also gives some (limited) attention to food safety. Since 1999, a food safety curriculum has been added to the Medical Science University and the College of Health and Technology. Health authorities, with the assistance of international and donor agencies, have addressed this issue by providing staff with various one-time and sometimes repeated training courses in food safety, food control, and food analyses. However, some donor technical assistance projects that provided training for laboratory staff used equipment not available in Lao PDR limiting the usefulness of such training.

Plant health. According to the NZAID-CLMV needs-assessment report, the advancement of pest diagnostic skills is seriously hampered by the lack of technically skilled personnel, the development of which will probably require more than five years. With the exception of senior management, the Plant Protection Center staff are inexperienced. They are learning analytic skills method by method as training funds and technical assistance are available. The Plant Protection Center staff would not have received practical experience with most of the instrumentation in the Center's laboratory with the undergraduate science courses at the National University. A proposed short- to medium-term solution is the appointment of more skilled (post-graduate level) staff and addition of more training programs in the various fields.

Animal health. There is no veterinary school in Lao PDR. The teaching laboratories of the

National University of Lao PDR have only very basic models, visual aids, and dissection and analytic equipment. Most of the country's veterinarians received their training from foreign universities, mostly in the former Soviet countries, Eastern Europe, and Mongolia. With the change toward a market economy, the Government has been provided with scholarships to Japan and Australia.

PUBLIC AWARENESS

Providing awareness-raising on animal diseases like classic swine fever and foot and mouth disease, FAO produces pamphlets, booklets, and radio/TV programs. The Department of Agriculture has programs for awareness-raising for farmers on good agricultural practices, but there is no funding for implementation. However, while the Lao language is generally spoken and understood by much of the population, literacy rates in rural areas are low; this may reduce the effectiveness of written materials that provide information to families about safe food preparation, water handling, and personal hygiene (Lamaningo and Sugira, 2004).

Avian flu requires a critical public health awareness campaign in Lao PDR. Efforts in human hygiene and disease control encounter substantial challenges in Lao culture, with success being measured in small increments over time. Clinics and hospitals are on alert, but it is not clear that in a rural district an outbreak in poultry or in humans would be rapidly detected and reported. This situation is similar to that of neighboring rural areas in Cambodia, China, Vietnam, and, to a lesser extent, Thailand.

PRIVATE SECTOR IN AGRIBUSINESS

The formal private sector involved in agribusiness is small and at the early stages of development. Most agribusinesses are small-scale companies employing 3–5 people (Lao Consulting Group, 2004). There are a number of constraints faced by private enterprises, with finances being the most binding. The banking system in Lao PDR has no funds for financing stock of agro-processors. Local banks tend to

lend based on a company's ability to put up collateral, but most agro-businesses do not own land and rely on internal funds to finance company expansion. One private enterprise reported an annual growth of 25 percent with retained profit and believed that it could do better if there were loans to fund the stock of products; but without collateral to back the company, no bank would provide loan.³⁵ The private enterprise can get only 50–60 percent on letters of credit. A rice-exporting company wants to expand sourcing of rice to 10,000 tons from 3,500 hectares, mill it in Lao PDR, and export it directly to Japan. The main obstacle is the lack of required capital of US\$13–15 million.

State-owned enterprises. The role of state-owned enterprises in agriculture is reportedly limited but not phased out completely. Lao Breweries with 50 percent of the shares owned by the Government is still a state-owned enterprise. On the provincial level, there are still trading companies with state-owned enterprise status. In livestock and fisheries, there are less than 5 percent state-owned enterprises remaining in production. A state-owned trading company owns the largest slaughterhouse in Lao PDR.

Competitiveness issues. The competitiveness of Lao agricultural products is still a major issue, even without SPS requirements. To improve the quality of agricultural products, private sector initiatives are needed to transfer world-class technology and quality control to producers. This has to be a private sector initiative because the public sector extension system is much constrained by lack of skills and operating funds. Moreover, extension services are not suitable for developing demand-led supply chain arrangements due to lack of knowledge on markets and business.

Unofficial fee collection. A most serious impediment to the competitiveness of Lao agribusiness in exports is the prevalence of border rent seeking.³⁶ In some cases, as much

as 45 percent of the wholesale price reportedly gets lost on various official and unofficial border fees and transactions. In the raw bean export sector, many layers of middlemen skim off margins along the chain to the exporter. An exporter intending to sell his produce to a Thai processing company may have to deal with unscrupulous border officials on both the Lao and Thai sides—a practice that much reduces the already small profit margins of the producers. In one scenario, cabbage grown in highlands for the Bangkok market is transported by Lao trucks to the border, pulled over the border on handcarts, and loaded on Thai trucks that were stopped twice on roadblocks for illegal levies on their way to Bangkok. The problem has to be dealt with from both sides of the border. A number of fees for transport between districts that have been abolished by the Prime Minister are continually being levied by some local authorities.

Weak infrastructure. A number of weaknesses in the existing infrastructure increase the costs of doing business. Farmers are negatively affected by the lack of a regular information system on prices and traded volumes of agricultural commodities which often lead to collusion among middlemen (Lao Consulting Group, 2004). Most packaging inputs (for example, containers, and packaging labels) are imported from Thailand. The absence of packaging and grading standards for any agricultural commodities limits the distance (and markets) to which these goods can travel. The lack of cold-chain facilities does not help the trade of perishable products. The agribusiness study estimated 30 percent post-harvest losses, about 70,000 million Kip (US\$ 6.8 million) per annum, arising from these infrastructural deficiencies. Trade groups and associations are not well organized. Access to segments of foreign markets for certain products requires certification (organic and others), for which systems have not yet been established. In one reported case, the cost of certification could be as high as the sales value. Trans-shipment on the border—the transport cost of transit trade through Thailand—is high. Since Lao trucks are not allowed to enter Thailand (not up to par with Thai safety requirements), traders

³⁵ Personal interview August 2005.

³⁶ From interviews with several respondents.

BOX 3.4**Private Sector in Agribusiness: Examples of SPS Management**

The *Lao Brewery Co., Ltd.* is a 50 percent state-owned enterprise. UNIDO is providing assistance for ISO 9000 and the Food and Drug Department helped in critical point analysis. The company still has to get GMP and HACCP certification. The company is required to have the water and product checked twice a year by the Food and Drug Department that uses the same method and equipment for analysis as the brewery does itself. Three times in a year, a team from the departments of Hygiene, Environment, Industry and Food and Drug Department inspects all facilities. The Food and Drug Department provides export certificates.

STE Lao-Internationale (a branch of the Japan-based company Groupe Lieu Tou) exports green vegetables to Japan. Phytosanitary charges for the shipment are 35,000 Kip (US\$3.40) per item, regardless of the amount of the item and 9,000 Kip (US\$0.87) for inspection of the whole shipment, which will add up for to \$15–20 for 4–5 items. Phytosanitary certificates take 3–4 days to get signatures and completion of document, and time is considered more of a burden than the fees charged.

The *Lao Farmers' Products* exports organic fruit juices, marmalades, candies, organic tea, alcoholic beverages and organic rice for the European market. The processing plant, although looking artisanal and a bit outdated, is implementing HACCP with the assistance of a French university and the Food and Drug Department. They send a sample of a new product to the Food and Drug Department, and a sample for each shipment, as well. The costs are relatively small. They are working with other companies on private organic certification. They send staff to Thailand for training on farm-level technology.

The *Lao Arrowny Company* belongs to the Arrowny Japan Company. It specializes in organic Japonica rice for export and exports brown rice to Thailand where it is milled. Getting phytosanitary certificates for export to Thailand is not a problem. Neither is the company worried about getting phytosanitary certificates and ISO standards accepted in Japan, since the mother company can take care of that.

The *Lao Agro Industry Factory* is a joint venture between Thai and Lao investors. The company exports canned fruits and vegetables (bamboo shoots, sugar palm nut, mango, garlic, baby corn and Chinese cabbage) to EU countries (Belgium, Germany, Poland, and the United Kingdom); Russia; and Viet Nam. It has access to testing and skilled staff from its mother company in Thailand. Their products are mainly organic, but there is no organic certification yet in Lao PDR. EU buyers require GMP and HACCP certification. This company was the first in Lao PDR that was certified (by Société Générale de Surveillance) as GMP compliant.

The *Wilaikul International Group* produces high quality soybeans for export to Thailand and Japan through a contract farming mechanism that uses the enforcement services of the District Governors and Village Headmen. The Company provides quality control through Khon Kaen University in Thailand and uses an agent of the District Agriculture and Forestry Extension Office as trained and paid extension workers. The present harvest yielded of 30,000 tons on 12,000 hectares (mainly in Luang Prabang. Wilaikul) provides credit for seeds and *Rhizobium*. The production credit is repaid at harvest.

must use licensed Thai trucks/shipping, which are costly.³⁷

SPS management. The private sector has a significant role in a country's capacity for SPS management. Only private enterprises are implementing whatever SPS regulations have been enacted by Government. If there is some failure or breach in the food safety or agricultural health system, the private sector bears the loss. Close cooperation between the Government and private sector is essential for a viable SPS system.

The increasing demand from foreign markets has provided an impetus to agricultural diversification. A number of entrepreneurs are taking advantage of this market potential (Box 3.4). They implement HACCP and traceability systems in their operations, and hire technical consultants to train and supervise farmers. The public sector is involved but at times is constrained by the lack of experience, inadequate equipment and facilities, and less-than-streamlined procedures.

Contract farming. A common problem of the agro-processing businesses is the supply of raw material. Most Lao farmers are not used to contract farming; they have difficulty supplying the agreed quantity and quality of harvest

³⁷ Although constraints have been made less severe, there are still complaints about high costs incurred by the restrictions.

due to inadequate inputs and farming practices or lack of organization. Loyalty in contract farming is problematic. At times farmers take advantage of price differentials and sell to another buyer. The Lao Agro-Processing Association attributed the failure of contract farming to the below-market prices offered by buyers.³⁸ In other cases, buyers fail to honor contracts leaving the farmers with unsold produce (Lao Consulting Group, 2004).

Nonetheless, a number of Lao agro-processors are successful in sourcing their raw materials:

- *STE Lao-Internationale*, are growers who take good care of produce by individually contracting and receiving seed and other inputs. Limited amounts of pesticides are used for some of the products and nothing for others.
- *Lao Arrowny Company* has a production base of 1,000 hectare of rice with groups in villages spread over 7 provinces.
- The *Lao Farmers' Products* buys from 15,000 households that produce or collect fruits. The company provides technical support for bio-fertilizer and bio-pest control. Growth of the company however is constrained by the cost of technical training for farmers, lack of capital, and bureaucratic procedures.
- Initially, the *Lao Agro Industry Factory* had problems with raw material supplies. Learning from their experience they adopted a more proactive approach to management; they became involved in the production (supplying seeds, providing technology and quality control) and set minimum productivity levels (yield/unit of land area); and they pay farmers a high price. Farmers who

cannot produce the minimum yield are removed as suppliers and replaced by more productive farmers.

These investors have knowledge of the market, the process, and the supply chain; and are able to deal with the gaps and inadequacies of the infrastructure. Given the risk resulting from the absence of contract enforcement, they have to take a direct and proactive management stance—be involved with the details of production, which means supplying seeds and technology, and managing quality and productivity.³⁹ Lao PDR can also look and learn from its neighboring countries for successful examples of contract farming, as with KCFresh Livestock in Thailand (Box 3.5).

Still, some companies are not concerned with SPS matters with regard to certain activities. Neither of two coffee companies interviewed, Dao Heuang Import and Export Company and Udomsap Import-Export Company, has ever considered testing for aflatoxin or ochratoxin. They do not see it as their responsibility. The same indifferent attitude of exporters was noted in the UNIDO (2004) report; the exporters do not think that there is a need for testing and leave it to the buyers to test their products. The Paksong Highland Company plants off-season potatoes for export to Thailand on 150 hectare on the Bolaven plateau and is considering having two crops per year. They are also looking into having other crops at the high-end market, such as strawberry, sweet corn, or green asparagus. Nematodes could become a major problem with the planned two-crop a year for potatoes. Although, potato import is politically sensitive in Thailand, the company seemed not to be concerned with phytosanitary risks. However, once they have a major disease problem, the Thai could close the border. Moreover, the introduction of foreign crops requires agronomic testing to determine the pest risks of the new crops and the consequent risks for the existing crops in the area. They seem to rely more

³⁸ The decentralization policy of the Government resulted to varying market/business environments in the districts; some are liberalized, others are more controlled (from an interview with Mr. Oudet Souvannavong, Agriculture and Rural Development Consultant). The differing business regulations of the local governments create a disparity among villages with respect to the local economy. In certain villages, prices of goods are controlled creating an incentive to sell in the informal market where prices are relatively higher. The presence of differentiated prices can easily undermine both contract farming and the safety control measures imposed by the Government by causing a break in the supply chain—suppliers selling to non-contracting buyers.

³⁹ Interview with Dr. Steven Schepley (Lao Consulting Group) who is involved with an ADB project on agriculture commercialization along the Mekong Corridor.

BOX 3.5**KCFresh: A Successful Case of Contract Farming**

In 1993, KCFresh (Thailand) was a packing house that collected fruits and vegetables from small producers and delivered the packed products for export to an exporter. In the late 1990s, UK buyers indicated that the company has to adopt the standards of the British Retail Consortium (BRC) and EurepGAP to have access to the market. The company decided on a proactive and offensive strategy. It improved its facilities and was accredited for HACCP, ISO 9001, and BRC. It acquired land and established good agricultural practices, and the farm became EurepGAP accredited. They decided to shorten the supply chain by exporting directly to the EU buyers.

In 2003, the company produced about 35 percent of the value of its exports from its own farms. The rest is obtained from small-scale farmers, through a system of contract arrangements with brokers who deal with farmers' groups and their individual members. The brokers provide technology and ensure compliance with delivery requirements. For vegetables, Good Agricultural Practices are prescribed; and growers receive training, seeds, pesticides, and other inputs. The inputs are repaid in kind. There is a daily recording of use of inputs and production. The farmer groups take care of product collection and initial sorting, grading and coding, making sure procedures comply with GAP requirements.

By paying 25 percent premium over the local market price, it has gained loyalty among its growers and they do not sell to other traders. This assures a steady delivery of quality products, allowing the company, in turn, some bargaining power on the price it gets from the buyers.

The share of production from the company's own farm is declining. The output per hectare from the company's farm may be higher than that of the small farmers, but the cost is also higher (about 20–50 percent higher). Forming and training farmer groups require much time and effort, but the significant cost difference justifies the effort. The number of the company's contract farmers was about 900 at the end of 2003 and has been increasing. The training, development of technology and extension services that go with this outgrower scheme have been the sole responsibility of KCFresh. This company's sales grew from US\$3.3 million in 1999 to US\$8.5 million in 2003 and to an estimated US\$11.5 million in 2004.

Source: Information collected by Sompop Manarungsan and Kees van der Meer, May 2004.

on the public services (or perhaps on political leverage) than on sound risk assessment. For such a large investment, a company should perhaps invest more in pest risk assessment by hiring foreign expertise (and include expertise in phyto-pathology).

The Participatory Livestock Development Project proposes trading farms, a set-up described in Box 3.6 that may improve livestock

management by providing experienced traders incentives to upgrade their facilities and to establish contract farming arrangements with smallholders. The management of these trading farms may be a more cost-effective way for inspection, quarantine, and export certification than the management of quarantine stations at the international border checkpoints.

BOX 3.6**Livestock Trading Farms**

Certain towns in the North serve as livestock trade hubs where licensed and unlicensed traders buy livestock from producers and sell to meat wholesalers and retailers or to other brokers. In cases where the animal's weight was too low, the traders hire local farmers to graze the animals, on the farmers' lands or the traders'. A number of these traders have some 50 hectares of grazing land capable of feeding 200 to 300 head of cattle or buffalo annually. These livestock trading farms could be registered as small-scale enterprises and have a role in market regulation and animal health inspection. District and provincial livestock officials could easily monitor a larger number of animals for inspection, quarantine, and livestock movement. Inspected animals could be certified for export, quarantined for treatment or destroyed.

Source: Zola and Souvannavong, 2005.

REGIONAL UNDERTAKING AND DONOR ACTIVITIES

Lao PDR is a member of WHO, FAO and the standard-setting bodies, International Plant Protection Convention,⁴⁰ World Organization for Animal Health, and Codex Alimentarius Commission. Lao PDR is also a member of Asia-Pacific Legal Metrology Forum (APLMF).⁴¹

Regional. The Ayeyawadi–Chao Phraya–Mekong Economic Cooperation Strategy is a subregional economic undertaking of Cambodia, Lao PDR, Myanmar, Vietnam, and Thailand, involving cooperation in trade and investment facilitation, agricultural and industrial cooperation, transport linkages, tourism, and human resource development. The group has a ten-year (2003–2012) Economic Cooperation Strategy Plan of Action. A plan of action under Agricultural Cooperation is the strengthening of cooperation with regard to SPS standards and regulations. The Greater Mekong Subregion is a subregional economic cooperation program of the Asian Development Bank that consists of Cambodia, China, Lao PDR, Myanmar, Thailand, and Viet Nam. The focus of the program is to develop infrastructure to promote flows of goods and people in the subregion. A major output is the 1999 Greater Mekong Subregion Cross-Border Transport Agreement that seeks to streamline border regulations and reduce non-physical barriers, including phytosanitary and veterinary inspection. The Greater Mekong Subregion projects however are not directly SPS related. Still, in the program's working group on agriculture, there have been discussions to prioritize programs that address SPS issues (joint research on pre- and post-harvest technology, joint development of product standards, among others) and trans-boundary

animal disease control. In the working group on trade facilitation, there were recommendations on initiating improvements in cool chain management—considering that Greater Mekong Subregion economies are mostly agriculture-based—and undertaking supply chain studies to determine the competitive edge of Greater Mekong Subregion countries.

The Asia and Pacific Plant Protection Commission, currently with 24 member countries, sets regional standards for phytosanitary measures. The two completed regional standards set the guidelines for the development of heat disinfestations treatments of fruit fly host commodities and the standard training requirements for plant quarantine inspectors. Two regional standards for phytosanitary measures are currently being drafted—requirements for the establishment and maintenance of pest-free areas for tephritid fruit flies and guidelines for the confirmation of non-host status of fruit and vegetables to tephritid fruit flies. The Asia and Pacific Plant Protection Commission is also working on the harmonization of regulatory procedures in pesticides and the promotion of safe handling of pesticides.

ASEAN. Lao PDR can benefit in two major ways from its AFTA and WTO membership: (a) several tariffs on its actual and potential exports will be reduced significantly; and (b) it can be relieved from discriminatory rules and restrictions, including SPS measures, imposed by its trading partners and countries through which it has transit trade.

The ASEAN Cooperation in Food, Agriculture and Forestry seeks to promote the region's trade in agricultural products. A major project is the harmonization of phytosanitary measures among member countries to facilitate agricultural trade. This will be initiated by the preparation (and eventual computerization) of an endemic pest list, development of adequate pest surveillance systems, and the formation of national pest risk analysis teams. The group's action plan includes some important activities related to risk analysis, animal disease control, and pest databases for the period 2005–2010:

- Revision of quarantine/endemic pest lists through surveys;

⁴⁰ Attends regular meetings of the Asia and Pacific Plant Protection Commission (APPPC).

⁴¹ APLMF consists of legal metrology authorities in APEC and other countries in the Pacific. The objective is the development of legal metrology and the promotion of trade in the region through the harmonization and/or removal of barriers related to metrology. Current membership includes nine of the ten ASEAN member countries—Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Philippines, Singapore, Thailand, and Viet Nam.

- Rehabilitation/development of biological collections and databases to underpin pest lists;
- Capacity building and ASEAN cooperation in pest diagnostics and identifications;
- Regional protocols for pest surveys;
- Capacity building in pest risk analysis;
- Development of shared database of pest information and import risk analyses on exotic pest threats;
- Control and eradication of economically important animal diseases: foot and mouth disease, Avian flu, and classical swine fever;
- Establishment of Foot and Mouth Diseases Free Zones in ASEAN member countries;
- Establishment of an animal health trust fund;⁴²
- Develop equivalent animal disease diagnostic technique among ASEAN Member Countries (2005–2008).

Still on livestock, ASEAN Cooperation in Food, Agriculture and Forestry has developed standards of good manufacturing practices in the production, storage, transportation, and handling of animal vaccines.

There is an ASEAN Task Force on Avian Flu to implement regional cooperation in the control of this disease. The ASEAN Food Safety Network website has information on food safety, such as SPS measures of various countries, issues in the international standards-setting bodies (Codex, OIE, IPPC, etc.), as well as works of various ASEAN bodies related to food safety.⁴³

The ASEAN Cooperation on Health Development prepared the ASEAN Food Safety Improvement Plan that aims to promote the sharing of resources, including technical expertise, among the member countries; to emphasize cost-sharing for priority projects; and to encourage international agencies to mobilize resources for the Plan's implementation. Other

notable proposed activities (and proposed completion dates) include the following:

- Development of a model food legislative framework and guidelines from farm to table (2006);
- Establishment of a laboratory network (2006);
- Harmonization of diagnostic techniques (2006);
- Establishment of training centers (2006);
- Development of an ASEAN module for training of trainers for inspectors and food handlers (2006);
- Facilitation of application of HACCP by small businesses (2008–2010);
- Development of a mechanism for region-wide recognition of food safety assurance systems including certification (2008–2010).

With regard to participation in international standards-setting fora, ASEAN member countries have been assigned as ASEAN Focal Points in Codex Committees in the General Subject Committees and the Commodity Standard Committees.

ASEAN also has an ongoing task involving the *harmonization of maximum residue levels* of pesticides in agricultural produces that are traded in the region. As of July 2006, there are a total of 559 harmonized maximum residue levels for 42 pesticides.⁴⁴ Another activity to help control pesticide use is the establishment of a pesticide database and network among ASEAN member countries.⁴⁵

The ASEAN Consultative Committee on Standards and Quality is involved with metrology, conformity assessment, and mutual recognition arrangements. One of its undergoing projects includes the development of mutual recognition arrangements in various areas to facilitate trade and the compilation of accred-

⁴²To provide support to the implementation of the South-east Asia Foot-and Mouth Disease (SEAFMD) Campaign, and to address other animal diseases of economic or public health importance, such as Avian flu and classical swine fever.

⁴³www.aseanfoodsafetynetwork.net

⁴⁴ASEAN Crops Publication Series No. 1. Harmonization of Maximum Residue Limits (MRLs) of Pesticides for Vegetables; and Progress Report on the Implementation of Strategic Plan of Action for the ASEAN Cooperation in Crops 2005–2010.

⁴⁵<http://agrolink.moa.my/doa/aseanpest>

ited laboratories. A working group on Accreditation and Conformity Assessment under the ASEAN Consultative Committee on Standards and Quality is assisting in capacity building on accreditation and conformity assessment for Cambodia, Lao PDR, and Myanmar. A project proposal for Cambodia, Lao PDR, and Myanmar includes the training on ISO/IEC Guide 58 (1993), *Calibration and testing laboratory accreditation systems—General requirements for operation and recognition*; and ISO/IEC 17025 (1999), *General requirements for the competence of testing and calibration laboratories*.

Donor Agencies

There are a number of development donors assisting Lao PDR. Japan is the largest bilateral donor, followed by Germany, Sweden, France, and Australia. The Asian Development Bank is the largest multilateral donor. The transport sector receives the largest support, followed by the social sectors (SIDA, 2004). Several donors and international agencies have provided and are providing assistance for building capacity, particularly in SPS fields.

The World Bank. One of the primary objectives of the World Bank's Country Assistance Strategy for Lao PDR is to foster economic growth through rural sector development, private sector development, and a stronger regional integration. The Bank leads a Diagnostic Trade Integration Study, funded by the Integrated Framework, which will develop an integrated strategy and action plan to promote exports and "the global integration of Lao PDR," providing donors with a plan for technical assistance (World Bank, 2005).

Asian Development Bank. A project preparatory technical assistance will undertake an in-depth diagnostic analysis of difficulties, including the regulatory framework, faced by the private sector, and identify measures to facilitate more foreign investment and trade. This is in preparation for the Private Sector Development Program that has an available US\$10 million. Another technical assistance on poverty and standards will initiate the development of a standards council in the STEA, and consultative steering committee and technical committee in the line ministries. The

technical assistance will provide training on quality control in non-timber forest products (regional rice products, seasonal herbs, and vegetables). Another technical assistance provides assistance for WTO accession by providing high-level meetings for developing (member) country negotiators and intensive courses on accession and dispute settlement mechanisms (ADB, 2004a; 2004b; 2004c).

Mekong Private Sector Development Facility. Private sector assistance is also provided by the Mekong Private Sector Development Facility, a multi-donor initiative led by the International Finance Corporation of the World Bank Group. It provides support to the growth of the private sector in Cambodia, Lao PDR, and Viet Nam.

European Union. The European Union has a Multilateral Trade Assistance Project (2004-Aug 2006) that seeks to assist Lao PDR in its WTO accession by providing support for the review and revision of SPS legal framework. A legislative review has been done and amendments were recommended for the draft Veterinary Law and the planned Law on Plant Protection and Plant Quarantine. It was also recommended to prepare a law on technical normative infrastructure and a decree to implement the Food Law. Assistance also includes training of Lao officials on international trade. The main program involves the establishment of the SPS/TBT Enquiry Point—where it should be situated and what its functions are. Two related programs will start in 2006: implementing SPS/TBT and the benefits of implementing SPS/TBT. However, a more immediate focus of Multilateral Trade Assistance Project is assisting the Government in its preparation for the second WTO Working Party meeting rescheduled for 2006. The project aims to assist with negotiating skills, including how to develop a strategy to protect interests. A long-term goal is to ensure sustainability by producing (and translating) handbooks on the various trade issues such as the General Agreement on Trade in Services (GATS) and Trade-Related Aspects of Intellectual Property Rights (TRIPS).

Norwegian Agency for Development Cooperation (NORAD). In the 2002 NORAD-funded UNIDO Market Access Project for

Mekong Countries (Cambodia, Lao PDR, Viet Nam), an assessment was made of the metrology and testing infrastructure in Lao PDR. Based on this assessment, skill and technical upgrading needs were identified, and measures to upgrade the laboratories for accreditation were recommended.

New Zealand's International Aid and Development Agency. The NZAID Food Safety Project is a three-year project funded by NZAID and to be implemented by FAO/WHO. The project aims to strengthen the capacity of the national governments of Cambodia, Lao PDR, and Viet Nam to regulate and enforce food safety, to assist in the production of safe food, and to reduce the incidence of food-borne diseases. Key issues include legal and regulatory framework for food safety, food control management, inspection and laboratories, improved hygiene/manufacturing practices and quality assurance, consumer awareness, and food-borne disease surveillance (NZAID/FAO/WHO, 2004). Some of the specific activities of the project include the following

- Review of existing food legislation, standards, and regulations by FAO;
- Review of the FAO inspection manual and the development of a training manual;
- Conducting a national needs assessment of laboratory services;
- Provision of essential and specialized equipment for modern analytical testing and pesticide residue analysis;
- Supplying essential inspection equipment not currently available;
- Review of capacity for surveillance (disease identification and data handling);
- Initiating a sentinel surveillance (conducting training workshops in pilot provinces);
- Development of communication and education strategies involving nongovernmental organizations, extension services, and community organizations, among others;
- Translation of training manuals on inspection, food-borne disease surveillance, and outbreak investigation; and
- Conducting training workshops on laboratory analysis, inspection and surveillance.

NZAID also supports a major project on phytosanitary issues. The main output of the NZAID Phytosanitary Project (Phase I) is establishment of an integrated National Phytosanitary Database system for information management for Cambodia, Lao PDR, Myanmar, and Viet Nam. However, the potential use of the database could be greater with improvement in each country's capacity for pest diagnosis, surveillance, and risk analysis. Thus, the objective of the second phase, for the period 2005–2008, is to increase the individual country's capability for pest surveillance, diagnosis, and risk analysis (NZAID, 2005). Initially, the FAO will conduct a review of current phytosanitary legislation to assess compliance with SPS-IPPC principles. There will be reviews (and consequent improvements) of operational/training materials in pest surveillance, diagnosis, and risk analysis. Due to budget constraints, the project will no longer include extensive assistance in pest risk analysis but instead will focus on providing understanding of the principles of pest and import risk analysis procedures of trading partners. One major component is the provision of equipment for a reference laboratory with the four countries being responsible for (construction of) the building facilities. The component (project) will provide for the purchase of equipment necessary to maintain a basic reference collection—some storage cabinets, pins, unit trays, air conditioner, a dehumidification unit, and some simple microscopes.

Australian Agency for International Development. The ASEAN Australia Development Cooperation Program, funded jointly by AusAID and ASEAN, has a program stream component with 10 projects that support ASEAN economic integration and competitiveness. Some of the ongoing projects are related to SPS issues. The plant health project will focus on the development of a regional pest list for (one) priority crop and the management of collections. Training and workshops will build capacity to undertake plant pest surveillance and build specimen-based pest list. Countries will be provided with guidance on how to consolidate information into national pest information systems (AADCP,

2005a). The objectives of the animal health management project are to improve and harmonize regional capacity for risk analysis (related to trade in livestock and livestock products) and animal disease surveillance and to develop (and implement) an integrated ASEAN animal health information system (AADCP, 2004b). A project on *standards* seeks to develop a regional best practice benchmark on standards and more importantly prepare a national standards development and conformity assessment model for Cambodia, Lao PDR, Myanmar, and Viet Nam (with special mentoring) and implement initial activities. This project will likewise focus on laboratory accreditation and accreditation of certification bodies. The component on the development of a national model started in 2004 for a period of two years (AADCP, 2003). The two-year project on food safety aims to strengthen the capacity to undertake risk assessment for food products, chemical and microbiological (AADCP, 2005b).

A regional AusAID-funded project, the three-year SPS Capacity Building Program, aims to improve the capacity of ASEAN focal countries to meet international SPS standards.⁴⁶ The project focuses on plant and animal health since most plant and animal diseases have transboundary characteristics that require regional coordination and resources. A key focus of the Program is the capacity for the construction of national pest lists, supported by specimen-based records.⁴⁷ Laboratory-based diagnostic workshops will be held to train plant health scientists in the identification of plant pests and diseases. The Program will then provide workshops for plant pathologists on the building and populating of pest collections. (NZAID's expertise in some areas of pest diagnosis such as mite diagnostics will provide additional benefit to Lao PDR.) The

SPS Capacity Building Program will provide for a train-the-trainers component in pest risk analysis (that will supplement the training provided by NZAID). For animal health, the Program aims to strengthen regional capacity in SPS measures to control transboundary animal diseases. A third component of the Program is the promotion of SPS-trade linkages among agricultural and trade ministries, planning agencies, and the private sector. A better understanding of how a country's SPS system affects international trade will hopefully increase the stakeholders' commitment and the resources available, as well as for a greater improvement of SPS capacity.

Australian Center for International Agricultural Research (ACIAR). The ACIAR assists in research and technology transfer in epidemiology and disease surveillance, foot and mouth disease diagnosis and information management methodologies in Lao PDR and Thailand. ACIAR was instrumental in the establishment of an animal diseases laboratory in Vientiane. A program on the management of classical swine fever and foot and mouth disease at the village level (2003 to June 2006) introduced a vaccination program and husbandry strategies for classic swine fever at the village level to protect against future disease outbreaks and to develop a simple and rapid diagnostic test. The program also helped to gather epidemiological data.

South-East Asia Foot and Mouth Disease Campaign (SEAFMD). The control of foot and mouth disease in Southeast Asia depends on effective coordination—adequate surveillance and reporting systems and transparent exchange of information—among the veterinary services of the various countries. The South-East Asia Foot and Mouth Disease Campaign is the coordinated control of foot and mouth disease for eight ASEAN countries (Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam). Foot and mouth disease is considered the highest priority disease in the region. Activities are coordinated by a regional coordination unit with support from AusAID. Control efforts include the creation of control and buffer zones in the region. The FAO pro-

⁴⁶ The ASEAN countries included are Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam, Malaysia, although not eligible for direct AusAID assistance, has a role in the program with its expertise and training facilities.

⁴⁷ "Specimen-based records of plant pests contained in biological collections are the only internationally recognized evidence of the existence of a pest in a country." (Australia Government, n.d.).

jects (in most of the Southeast Asian countries) and the EU projects in Lao PDR and Viet Nam help strengthen the animal health services that indirectly affect the SEAFMD program with regard to disease information management, training and animal health extension, and disease control regulation.

Japan International Cooperation Agency (JICA). Another major project in the region on animal health is JICA's Japan-Thailand Technical Cooperation on Animal Disease Control in Thailand and neighboring Cambodia, Lao PDR, Myanmar, Vietnam and Malaysia (also a collaborating country). The aim is to strengthen regional cooperation toward disease surveillance and diagnosis, improve quality control of vaccine production, and animal quarantine techniques. For Lao PDR, the project seeks to improve the diagnostic ability of the National Animal Health Center and vaccine production by the Animal Vaccine Production Center. The project includes seminars and workshops in Thailand and Malaysia, training by Thai and Japanese experts to the NAHC staff, and provision of equipment.⁴⁸ Other JICA projects include SPS-related components. The Aquaculture Quality Improvement Program focuses on the management of fish diseases. One objective of the Forest Management and Community Support Project is to increase capacity of provincial/district agricultural extension offices to promote participatory extension services at the grassroots level. For the four pilot villages, cows, pigs, and goats were vaccinated and tagged. The cost for the first vaccination is supported by the project, the second vaccination (less than US\$1 per head) will be paid by the farmers.

SUMMARY

Some private companies, in particular the joint ventures with foreign companies, are taking the

initiative in SPS compliance in part by adopting HACCP systems and designing in contract farming. Contract farming works when companies are involved and make use of proactive management. Some of these companies put in investment to overcome the water and sanitation deficiencies in Lao PDR and to train and supervise personnel on proper hygiene to avoid food contamination. Yet, some companies seemingly are not concerned about SPS issues (specifically, control of plant pests and diseases). Nonetheless, for selective products the private sector needs government assistance with regard to the SPS infrastructure—certification and testing—at reasonable cost.

There are a number of assistance projects undertaken by donor agencies and regional organizations (ASEAN) especially with regard to plant and animal diseases that have transboundary characteristics that can best be tackled with a regional approach. Lao PDR has many of the same pests and diseases attacking its crops and livestock as its neighbors—Cambodia, China, Myanmar, Thailand and Viet Nam—requiring regional cooperation. A regional focus is more efficient and has economies of scale with the sharing of expertise and facilities. Bilateral donors and international agencies are assisting with SPS capacity mostly to support the country's adjustments to being a market-oriented economy but also in response to the provision in both the SPS and TBT Agreements toward providing technical assistance.

The capacity of Lao PDR for managing the different components of a full SPS system—border and site inspections, diagnosis, surveillance, risk analysis, certifications—is limited. There is a considerable deficiency in both technical equipment and skills. Significant assistance from donor agencies and international organizations is needed to enable the country to establish a working SPS system.

⁴⁸ Equipment such as ELISA (enzyme-linked immunosorbent assay) plate washer and microscope.



4

Recommended Action Plan

The recommendations are guided by certain principles that should also be taken into consideration when discussing the individual issues. While the recommendations focus more on building trade-related SPS capacity, the benefits to be realized extend to the domestic economy as well.

To summarize:

- Lao PDR is a thinly populated country with long penetrable borders. It has limited amounts of formal agricultural exports. Imports mainly consist of consumer goods and less voluminous imports of plant material and animal breeding stock. However, it has significant amounts of informal border trade with its neighbors.
- With regard to carrying out SPS measures under the WTO SPS agreement, it has limited human skills, technical facilities, and financial resources to manage its food safety and agricultural health.
- The legal system is insufficient. The new food law is limited in scope and still need by-laws and regulations for implementation. A veterinary law is under preparation. There is no law on plant quarantine yet; current work is based on decrees. All of these legislation (draft or otherwise), however, are lacking in provisions for enforcement.
- The present SPS measures on the borders have never been assessed on conformity with WTO SPS principles, but it seems that they do not fully meet requirements of transparency, "least trade restrictive," and "science based." Present border inspections contribute little to promoting food safety and agricultural health, and the procedures applied are raising costs of doing business and erode competitiveness, especially for small- and medium-size enterprises.
- There are no active surveillance programs and no comprehensive databases on the prevalence of food- and water-borne human health hazards and food contaminations, plant pests and animal diseases, and quality and safety of agricultural inputs. Likewise, the human capacity is weak for identification, diagnoses, testing and inspection of food- and water-borne human health hazards and food contaminations, plant pests and animal diseases. The numbers of available staff are small and the general levels of education and training are low.
- Available laboratory facilities for managing food safety and agricultural health are also weak and partly deficient.

None of the laboratories has international accreditation or is close to receiving it. Yet, the present facilities are underutilized because of the lack of Government budget allocation for operational budget for acquiring reagents, chemicals, spare parts, and calibration.

GUIDING PRINCIPLES FOR RECOMMENDED ACTION PLAN

Regional perspective. There are certain activities, specifically the monitoring and control of animal diseases and plant pests and diseases, which are most efficiently carried out in cooperation with other countries in a regional approach. The countries within the region differ in their capacity. Some countries may have the expertise and resources to share, in part for their own benefit. A system of laboratory networking within the region that allows the use of other countries' facilities would ease the resource constraint on countries lacking such facilities considering the huge investment requirement of laboratories (facilities and equipment) (India, 2004). There may also be joint training programs for laboratory personnel. Regional (ASEAN) and international organizations (WTO) might also provide Lao PDR with fora to address trade concerns with trading partners.

Given the easily penetrated borders and similarities in ecosystems with neighboring countries, Lao border controls have a limited scope and, only in specific situations, impact on control of pests and diseases and safeguarding of food safety. Strengthening of control capacity on the border can be a wasteful use of scarce resources. Negotiations with neighbors should focus on increased domestic monitoring and control, cooperation among neighbors, and border control focused on cases where it is cost effective.

A regional outlook also provides an incentive for trade in safe and good quality products to neighboring country markets, which are of dominant importance for growth of Lao PDR agricultural exports. The high growth rates of the neighboring countries and the consequent increased demand for raw materi-

als and quality products (which would then bring foreign investors from these countries) augur a growing potential market for Lao products provided that these products should pass the 'safety' criteria of these markets. In another aspect, greater capacity for SPS management will allay the concern of neighboring countries—particularly Thailand, with access to high-value foreign markets—of 'inferior' goods entering their markets and jeopardizing their trade in high-value markets.

Prioritization. Existing and additional efforts for SPS control can be prioritized on the basis of qualitative and quantitative assessments of costs, risks, benefits and opportunities. The lack of surveillance data notwithstanding, Using available information including that from Internet sources, Government authorities must study pests or diseases harboring the greatest risk or prompting the biggest losses (e.g., crop damages, loss of employment) and those that would deter potential export earnings. In surveillance, for example, the level and consequent costs of activities must be balanced with the need to know (USAID-DAI, 2003). Plant protection authorities should first determine and document the plant pests that are already present in the source and transit areas. In food safety, the control of single source hazards may be appropriate given the scarce resources rather than dealing with hazards that enter at many points (FAO/WHO, 2004). Animal health authorities may have to weigh the costs (or possibility, given the landlocked geography) of achieving a disease-free zone to allow live animal trading against the investment requirement of trading processed animal products. The crucial question is whether to identify and, consequently, address the right bottlenecks for the improvement of public health, agricultural health, and competitiveness.

Private sector involvement. Lao PDR is in transition from a plan-based economy to a market-oriented economy. There are a few formal companies that have emerged as exporters of food and agricultural products, but their number is increasing. Where possible and relevant the private sector should play a role in SPS management. Increasing SPS capacity may require shared funding and shared

implementation by the private sector. In many cases, implementation and cost can be left to the private sector while the Government can concentrate on core public roles and oversight of self-control measures by the private sector.

Need for technical assistance. The human, technical and financial resources for SPS management in Lao PDR are few and can only gradually be increased with greater economic growth and trade. To improve its competitiveness and to gain maximum benefit from participation in international trade opportunities opened up by the greater liberalization of trade, Lao PDR needs technical assistance to build up the necessary framework and capacity to adopt and enforce safety and quality regulations. Sustainability of investments in SPS capacity is a major issue for the Government and the donor community. Given the limited resources available in the Government and the private sector, coordination of technical assistance for capacity building with donors and international agencies requires careful planning and prioritization. Assistance would be most effective if properly related to the framework of regional cooperation under ASEAN.

Collaboration among agencies. There are compelling reasons for close cooperation among Government agencies working on food safety and agricultural health. The scarcity of available resources justifies sharing of technical and human resources. This applies to the use of sophisticated laboratory equipment and border control facilities. Another reason is the cross cutting nature of food safety and agricultural health. Zoonotic diseases pose a danger to people, and certain agricultural practices, particularly the use of chemicals may affect human health. Food poisoning and high levels of undesirable contaminants in food can be caused at various stages in the supply chain. Thus, SPS management is a collaborative effort among various Government agencies. In the unfortunate event that new avian flu outbreaks occur, adequate response would require capable surveillance, open communication and close coordination between the Ministry of Agriculture and Forestry and the Ministry of Health.

Transparency. Coordination between Government agencies may be essential for managing SPS requirements, yet independence in performing certain functions is vital to acquire credibility among trading partners and the general public. Standard-setting and auditing responsibilities should not reside in one agency because of conflicts of interests; thus, risk assessors should be independent of the policy-making office, in the same way that certification bodies should not be affiliated with standard-setting bodies.

Interrelated goals. Plans to increase capacity for SPS management are intertwined and mutually dependent with plans and actions in other sectors (investment climate, private sector development, market development and infrastructure). The SPS measures are more cost-effective with increased improvements of basic infrastructure relevant to food safety, “such as safe water supply, electricity, storage facilities including cold storage, transport facilities and network” (Gupta, 2002). The lack of progress in one sector will render the efforts in the other sectors useless, and may create a bottleneck. The Government would do well to consider these interrelationships in its development efforts.

RECOMMENDED ACTIONS

Setting Up Coordination Unit

To reduce cost and to increase the effectiveness of the implementation of the Action Plan, it is recommended that a coordination unit be established to consist of an overall SPS coordinator and experts from the Ministry of Agriculture and Forestry; Ministry of Health; Science, Technology and Environment Agency; and Ministry of Industry and Commerce. This will facilitate the overall implementation of the Action Plan, increasing coordination among the various components, reducing potential overlaps, and making efficient use of the consultants’ time (quick familiarization and orientation). In some cases, resource mobilization will require attention as well. To facilitate coordination, it is recommended that a full-time translator be included in the team to oversee the accurate translation of relevant

documents throughout the implementation of the Action Plan.

Recommended action

- Establish a coordination unit consisting of an overall SPS coordinator and experts from the various ministries

Market Opportunities and Trade Requirements

The market potential of agricultural products should be one of the main prioritization criteria for SPS capacity building. A market study should be done of certain non-traditional agricultural export products looking at potential markets and buyers, including the SPS requirements of such markets and buyers. The study will identify SPS barriers to trade and options to reduce the impact of these barriers, such as strengthening national capacity to meet requirement.⁴⁹

For existing exports, SPS requirements of buyers and importing countries should be collected and assessed carefully to determine whether the requirements are based on WTO-SPS principles. For example, the present Thai requirement for a phytosanitary certificate for transit of green coffee is most likely unjustifiable. The same may apply for cabbage exported to Thailand. The assessment will then form the basis for bilateral negotiations with the aim to abolish redundant requirements and to waive controls on low risk goods. Unreasonable requirements should be discussed in bilateral meetings of the National Plant Protection and Veterinary Organizations. Possible disagreements could lead to addressing concerns in multilateral forums like ASEAN, IPPC, OIE, or WTO. In the same manner, there should be a review of Lao PDR's requirements for imports in light of the AFTA agreement and impending WTO accession.

Recommended actions

- Prepare a study of potential/emerging non-traditional agricultural exports that includes potential markets'/buyers' SPS requirements.

- Review SPS requirements of trading partners and transit countries for existing exports and Lao PDR SPS requirements related to imports and identify measures that may not be consistent with WTO and AFTA guidelines.

Institutional and Legislative Framework

For food safety, plant and animal health, there is already existing legislation on institutions, procedures, and standards (for certain food products). Still, a review of this legislation would identify significant gaps and weaknesses (mostly on implementation and enforcement). Moreover, this review is an important component of the country's WTO application. At present, major donor projects (NZAID/FAO/WHO) on food safety and plant health include a review of legislation.

A most important next step is to draft the many required by-laws and regulations to implement and enforce the laws and policies for food safety, animal health and plant health. Without such regulations a country is not ready for participation in international trade following its international obligations. This will require a study of international standards and regulations of main trading partners, such as ASEAN countries, China, and where relevant Japan, the European Union and the USA. This is a major task given the lack of capacity of the major agencies, for example, the Ministry of Agriculture and Forestry has virtually no legal unit. Since the capacity in Lao PDR is insufficient to do this work within a reasonable time, it is recommended to create a task force of the ministries involved, supported by the Ministry of Justice, with international support and with work in two phases. In the initial phase a plan should be made indicating the contents, resources needed and priorities for drafting the regulations and by-laws. In the second phase, the drafting would take place, while indicating at the same time what the implications would be for responsibilities of the various Ministries and agencies, and inspection and testing capacity. When drafting legislation and regulations, priority should be given to the following areas: Priority areas requiring attention in the drafting of legislation and regulations are:

⁴⁹ One of the recommended actions of the AusAID SPS Capacity Building Program is a study of existing and potential livestock and meat trading patterns within the ASEAN region and with third countries.

- Delineation of functions and responsibilities among the various ministries;
- Import restrictions to protect against human health hazards, pests and diseases;
- Regulations to monitor and enforce the import, production, sale, and use of agrochemicals (including veterinary drugs);
- Legal authority for plant and animal health authorities to implement emergency measures.

The roles of the various ministries deserve clarification and some adjustments are recommended. The role of the Ministry of Health in food safety control should be expanded to monitoring and inspecting of all food and drinking water at the wholesale, transport, storage, and retail level; this includes fresh products. The trend internationally is to give the final responsibility for food safety to the Ministry of Health or an independent body and not to the Ministry of Agriculture and Forestry because of occasional conflicts of interest. Moreover, the testing capacity for food safety is better in the Ministry of Health. The veterinary controls of the Ministry of Agriculture and Forestry should not go beyond border control, slaughterhouses, and meat processing units.

Once the responsibilities are made clear, it would benefit the various sectors—food safety, animal health, and plant health—to prepare their respective action plans/work programs for SPS capacity building. The plans should include the laboratory facilities needed for diagnosis, monitoring and inspection, together with the requisite human skills (see “Building human skills” in Appendix C). The combined plans must add funding requirements with distinction between Government and donor sources.

The monitoring and control of markets of agrochemicals deserve further assessment. To date, the use of agrochemicals in Lao PDR is limited. However, with further diversification of agriculture, use of pesticides, veterinary drugs, and hormones will increase. Given the widespread use of illegal pesticides in neighboring countries and risk of illegal import, control capacity in this area should be assessed.

The regulation, monitoring, promotion of good agricultural practice, and enforcement of regulations will become important elements in promoting food safety and human health at home, and in preventing restrictions of exports in foreign markets.

Participation of the provincial and district offices in the consultation process for the preparation and development of the SPS Action Plan could be worthwhile, to get their feedback and contribution to the design, implementation and/or financing mechanism. There could be workshops/seminars with several districts or cluster centers. This would provide a better sense of ownership.

Recommended actions

- Review existing legislation on food safety, and plant and animal health to check compliance with SPS agreement and to recommend ways for effective enforcement and implementation.
- Establish a task force of the ministries involved, supported by the Ministry of Justice, with international support for drafting the regulations and by-laws. In the initial phase, a plan should be made indicating the contents, resources needed and priorities. In the second phase, the drafting should take place, while indicating at the same time what the implications would be for responsibilities of the various ministries and agencies, and inspection and testing capacity.
- Prepare individual sector action plans/work programs for SPS capacity building for food safety, and animal and plant health.

Surveillance

Databases are fundamental in the management of food safety, and animal and plant health. Critical to an effective surveillance system is timely and accurate reporting. This is essential for rapid response in the case of disease outbreaks. With regard to food safety, records of incidence of food-borne diseases contribute to the implementation of Government health policies. For plant health, pest risk assessment that is usually a requirement for market access for fruits and vegetables makes use of data on pest incidence. The

database, which is needed to support a pest risk assessment, requires multi-year data entry, hence the urgency to start active surveillance soon. However, with inadequate resources, surveillance should focus on a limited number of "key crops and key pests" as recommended by the NZAID project. For animal health, the proper implementation of animal disease control strategies, such as zoning, requires adequate understanding of the sources of infection and disease pathways into the relevant area. Similarly, food safety monitoring should be focused on major food- and water-borne threats to human health.

The combination of increased border trade and inadequate resources for border inspection calls for greater surveillance in the domestic markets. Attention should likewise be given to monitoring of the production, sale, and use of agrochemicals and veterinary drugs for the welfare of consumers and to avoid rejection of exports at the external markets. Thus, active monitoring and maintenance of databases is required to record prevalence of pests and diseases in plants and crops, animals, and fish; pesticides and veterinary drugs and vaccines in the market; and main safety parameters of all human food and animal feed.

Recommended actions

Create, monitor, and manage databases through active surveillance and collection of vital information on the following:

- human health hazards caused by food- and water-borne diseases;
- specimen-based records of plant pests for key crops and key pests;
- animal disease prevalence;
- production, sale and use of agrochemicals and veterinary drugs.

Diagnostic Capacity

Neither agencies nor their laboratories have an active program of testing and monitoring based on pest and disease priorities. At present it seems that most tests are conducted in areas where the institutions can charge fees to the private sector. Work programs for the existing laboratories of the various ministries have to be

based on the needs for carrying out the various active and passive monitoring and inspection functions (in totality and for each sector). Gaps in the capacity and the present imbalance between staff and operational budget need to be solved. Revamping the organization and management of laboratories may be unavoidable.

Collaboration among the ministries is called for in the laboratory capacity. Given the lack of resources, there ought to be a networking of laboratories and shared utilization of specialized expertise and expensive equipment.

Reliability of results of diagnosis would depend on the availability of appropriate and properly calibrated equipment. The most cost-effective way should be assessed to achieve this for laboratories working in food safety and agricultural health (i.e., a national metrology lab or a neighboring country's lab services). Plans for expansion of hardware capacity should partly be based on active programs for monitoring and inspection, and based on priorities in food-borne diseases, managing plant pests, testing of agricultural inputs, and animal diseases. This should be based on a needs assessment and not be done independently. Following the needs assessment, laboratory facilities need to be expanded and upgraded. For some parts of the laboratories, international accreditation to ISO 17025, *General requirements for the competence of testing and calibration laboratories*, should be considered. Assessment of laboratory infrastructure should assess whether it would be efficient to subcontract parts of the tests to other laboratories, which have specialized staff and equipment. The development of laboratories and testing facilities in Lao PDR should include a program to build up skilled laboratory technicians.

The addition of diagnostic capacity needs to be done carefully and should be linked to a clear demand and source of operating and maintenance funds. Under current conditions, for example, it probably makes little sense to add equipment for quantitative analysis of mycotoxins and pesticide residues at the Plant Protection Center when competing and more important demands to support quarantine plant pest control programs and border inspections are still unmet and where other lab-

oratories have a better likelihood of using the equipment (e.g., the MOH Food and Drug Quality Control Laboratory).

The food safety section of the Food and Drug Quality Control Laboratory should be equipped to monitor and test major aspects of food safety and should be the national reference laboratory for food safety. Responsibilities would include testing of food and water for residues of pesticides, heavy metals, veterinary drugs, and contamination with other chemicals; and main microbiological hazards and mycotoxins.

The MAF National Animal Health Center should be upgraded as the national reference laboratory for animal health. Responsibilities would include diagnosis and testing for main animal diseases, including parasites; serology; control of veterinary drugs and vaccines; and control of animal feed.

The MAF Plant Protection Center should be upgraded as the national reference laboratory for plant pathology, pesticides, and fertilizers. Responsibilities would include diagnosis and testing of main plant pests and diseases; control of formulation of pesticides; and control of formulation of fertilizers.

Government resources cannot afford to have a multiple equipped laboratories for the provinces in the short term nor would it be efficient to have all tests done in Vientiane. At the provincial level and at main border crossings, facilities will only allow for rapid detection and screening, not for detailed testing. Diagnosis and testing for food safety and plant and animal health can be enhanced by having limited capacity mobile laboratory units.

Since there are only a few laboratories in Lao PDR, the creation of a National Accreditation Board is not a priority at this point. Accreditation of laboratories can be done by a third country accreditation body.

Recommended actions

- Develop work programs for laboratories, including budget requirements, based on needs requirements.
- Assess the most cost-effective way for the regular calibration of equipment and standards used in food safety and agricultural health laboratories.

- Acquire equipment for rapid detection and screening for the provinces and border posts.
- Develop and upgrade laboratory capacity, including training of laboratory technicians based on a needs assessment, and assess which parts of these laboratories should be ISO 17025-accredited.

Emergency Response

To enable the Government to adequately respond to outbreaks, there should be national guidelines that outline the responsibilities of the pertinent ministries and identify a management task force made up of experts for the various fields. Reaction time would depend on the availability of diagnostic and control equipment. A complementary action is the preparation of legislation on authority for the plant and animal health offices to implement control measures, such as plant eradication and animal movement restriction and slaughtering.

A timely response to an outbreak would only be possible if there are clear and direct lines of communication from the district/provincial level to the central authority. Moreover, farmers and traders or government staff who report diseases should not be penalized. There should be adequate compensation for culled animals and destroyed crops.

Recommended actions

- Review existing legal framework and amend to include the authority of plant and animal health offices to implement emergency measures (such as eradication for plants, and animal movement restriction and slaughtering, for animals).
- Prepare national guidelines outlining responsibilities of ministries and establish an inter-ministry task force to manage emergency measures.
- Review and amend current procedures for disease reporting in terms of incentives and having direct lines of communication.

Risk Assessment and Economic Analysis

Central to management of food safety and agricultural health under WTO principles, risk analysis has acquired a more specific definition

in the context of SPS management. The process of risk analysis comprises three components: assessment, management, and communication (Whitehead and Field, 1995). Risk assessment involves the identification and characterization of hazards, an evaluation of likely exposure to the hazard, and an estimate of the adverse effect of exposure. Risk management adopts preventive and/or control options given the findings from risk assessment. Risk communication provides the public and private sector and trading partners with information to prevent, minimize or control the risks. The entire risk analysis process is an iterative process that requires interaction between the risk assessors and risk managers (Slorach and others, 2002). The integrity of the process depends on the separation of risk assessment and risk management functions.

The component that gets most attention in capacity building is risk assessment, not because it is more important but because it requires specific skills, training, and data requirements. Standard-setting bodies have developed techniques and procedures for the risk assessment of food safety hazards, animal diseases, and plant pests and diseases.

Import regulations and priorities for public spending need to be based on some form of risk assessment. In case new species are introduced from other countries, risks for introduction of diseases from abroad should be assessed. Initial exports of fruits, vegetables, and livestock products usually require approvals from the importing country, which would be based on negotiations and risk assessments of the importing country. It is a valuable attribute for the exporting country to have an understanding of risk assessment procedures and requirements. An important component for a pest risk assessment is the database on pest prevalence, as discussed above.⁵⁰

At the moment, Lao PDR lacks expertise in risk assessments. It will take a considerable

amount of time to create a professional risk assessment unit in the country, but a start should be made. In order to build some risk assessment capacity in the country, it is recommended that a small core group of risk assessors be set up under either the University or a research institute to be identified by the Ministry of Agriculture and Forestry and Ministry of Health. This core group, in line with international practice, should be independent. Most risk assessors could be part-time. The group should in part come from outside government departments—research institutions, academia, and private enterprises. For specific risk assessment projects, they should be supported by relevant experts in food safety, plant or animal health. These experts should have training in basic risk assessment concepts and an understanding of the procedures and type of data needed. A small independent unit provides more transparency and cost-effectiveness than for each agency to develop their own risk assessment group. Accordingly, the risk management and risk communication functions for food safety and agricultural health should be with the Ministry of Health and Ministry of Agriculture and Forestry, respectively.

In the interim before the group is formed, the relevant public health and animal and plant health authorities can make use of experiences in neighboring countries in its assessments. And, where relevant, data can be collected from international agencies, neighboring countries, originating countries of the material or animal, and scientific literature. The Internet is also a valuable source of information.

Economic analysis, particularly cost-benefit analysis, is most useful considering the scarce resources and capacity necessary to manage SPS requirements. Cost-benefit analysis is important in considering the various options available in implementing SPS activities, whether it be controlling diseases, issuing certifications, setting-up surveillance, and monitoring systems. It should be carried out by the ministry that is responsible for risk management.

Economic assessment is complex since often only insufficient data are available. Investment and operational cost are often direct

⁵⁰ "There is nothing difficult in understanding the concepts and the process of pest risk analysis. Difficulties arise because of imperfect knowledge of the pests that exist in importing/exporting countries and the way in which these behave in new environments" (Australia Government, n.d.).

and tangible, whereas costs related to risks of outbreaks and rejections are uncertain by nature. Benefits from health and trade are often also uncertain as they can only be realized in the future. Investments can have multiple uses and benefits that may spill-over to other areas. Problems with noncompliance for a particular product or market may have negative commercial impacts on other products and markets. Cost-benefit assessments should be targeted at specific products and policy interventions. In the absence of quantitative data, qualitative assessments can take into account the incidence of health hazards, their impact, the likelihood of events, and the actual or potential size of production and international trade involved.

Recommended actions

- Build a small core group of risk assessors under either the University or a research institute to be supported by subject matter specialists
- Build capacity in economic analysis (e.g. cost-benefit analysis) and basic risk assessment in the Ministries responsible for risk management

Inspection and Certification

Lao PDR has significant governance problems in border procedures. For several products, reported formal and informal transaction costs contribute a high share of total cost in the supply chain and erode competitiveness. Improved governance will result in reduced transaction costs. The SPS controls and procedural requirements contribute to this. Therefore, there is a risk that expanding SPS controls will do more bad than good, especially in areas of low SPS risks and in situations where governance is poor. Concerted action is recommended to improve governance and reduce transaction costs.

Delays and transaction costs for exporters and importers would be reduced by the simplification and rationalization of border procedures. There are ongoing efforts to simplify all border procedures for different agencies. An international consultant should be hired to review procedures and to recommend sim-

plifications. Border procedures should be in accordance with international standards. A cost-efficient option that would free Government resources is combining animal and plant health border controls in one office, possibly in the Customs office. One step further would be to integrate SPS control functions in Customs procedures.

Inspection of agricultural products should be performed by appropriately trained agricultural health inspectors who should be assigned primarily to border points with high volume of agricultural trade. For this purpose, agricultural health inspectors should have the authority to search or seize 'risk' goods.

In general, traditional products and informal trade pose limited risks for food safety and plant and animal health hazards. The indirect measures to control this informal trade through reducing transaction costs of border handling and domestic surveillance of hazardous diseases and pests are preferable over efforts to directly control informal border trade. The liberalization of trade on the border should be accompanied by a program of active monitoring of domestic markets.

A report on transboundary diseases discussed certain problems regarding the veterinary checkpoints at the borders (Hoffmann, 2005). The report does realize the disproportionate costs and benefits of border checkpoints for Lao PDR. These facilities require considerable resources and personnel for maintenance. Quarantine facilities would be costly to operate considering the length of time animals need to be kept in accordance with OIE guidelines: 14 days for foot and mouth disease; 21 days for avian flu; 21 days for Newcastle disease; 40 days for classical swine fever; and 90 days for haemorrhagic septicaemia. Considering the landlocked geography of Lao PDR and the many ways by which traders can evade such checkpoints, the potential net benefits of these facilities is likely to be negative.

An NZAID (2004) report focused on the more complete Greater Mekong Subregion given the scarce resources and commonality of animal and plant health status. It suggested that these countries completely forego border

protection between each other and instead direct resources to international airports and seaports and points of entry on borders with countries outside the region. This approach, which is similar to the abolition of internal border checks within the European Union would be feasible if coordinated with ASEAN or with ADB's Greater Mekong Subregion.

The present procedures for requesting permissions and certificates and inspections deserve analysis. At the moment Lao PDR government agencies require permissions and tests for exports that are in part not required by trading partners. Several import requirements add to costs but not to safety. Plant product exporters would like a simplification of the procedures for the issuance of phytosanitary certificates. The delays are sometimes more burdensome than the formal (and informal) payments. There should be a review of all SPS permit and control requirements by Lao PDR agencies on exports and imports with the aim to rationalize inspection and certification requirements and to simplify regulations and their implementation. It is recommended to abolish unnecessary and redundant requirements; and to provide testing service only on request of the exporter. This will free resources and reduce transaction costs for exporters and importers. Guidelines should be developed for the implementation of inspection and certification procedures and communicated to personnel at the district level. These guidelines should include qualification requirements for inspectors.

Another concern is the cost of certification (from foreign certification bodies) that can be beyond the means of small producers and exporters. The development of private local certification capabilities, especially for organic products, would be beneficial.

Recommended actions

- Review Lao PDR inspection and permit requirements for export and import and identify controls that are not necessary for SPS management in a market economy.
- Develop and communicate guidelines for the proper implementation of inspection and certification procedures and pro-

vide training and equipment for border inspectors.

- Review SPS-related border procedures and recommend simplification and strengthened governance. Simplification aspects should consider integrating some SPS control functions in customs procedures; and combining SPS border controls in one office, or possibly even integrated in the Customs office.
- Review existing legal framework and amend to incorporate recommendations to improve and strengthen governance on border procedures; and authority for agricultural health inspectors to search or seize 'risk' goods.
- Assess possibilities to develop local certification capabilities, especially for organic certification.

Building Human Skills

The skills available in Lao PDR are insufficient for managing and protecting human and agricultural health in a way that meets requirements under the SPS agreement. This lack of technical expertise also does not contribute to the competitiveness of the industry. Crucial to the improvement and maintenance of a higher-level SPS capacity is the long-term development of personnel skilled in the areas of food safety, and animal and plant health.

In the short and medium term, training is needed at all levels to enhance capacity to perform more demanding tasks in diagnosis, testing, surveillance, inspection, international negotiation, planning, budgeting, and management. Part of the training should be carried out on the job, part overseas.

For the development of Lao laboratory technicians, there may be twinning projects with the laboratories of neighboring countries. This cooperative program would not only upgrade the technical capacity of Lao PDR but could eventually lead to the establishment of common standards acceptable among the neighboring countries. There are existing donor activities that provide this training; other donor agencies may choose to provide support for the expansion of these activities.

Recommended action

- Undertake training of personnel at all levels in diagnosis, testing, surveillance, inspection, international negotiation, planning, budgeting, and management.

Information and Education

Most efforts to improve food safety and agricultural health require awareness and preventive action. In food safety, providing basic hygiene training to food handlers and informing consumers about risk avoidance can be simple, yet highly beneficial approaches (Unnevehr and Hirschhorn, 2000). A study of the U.S. Food and Drug Administration's detentions of imported foods from developing countries showed that the primary problem (50 percent of rejections) is lack of basic food hygiene (contamination of food with insects and rodent filth).⁵¹

According to an ILRI (2002) report, educating farmers about causes, epidemiology, and control options of livestock diseases, and better animal management and breeding strategies can improve productivity and reduce mortality. Effective animal health interventions can be as simple as having clean pens and water supply. A simple procedure to reduce classical swine fever and other livestock diseases is an educational campaign promoting hygienic agricultural practices among farmers. A resource person for animal health emphasized the importance of awareness and understanding among farmers with regard to vaccination and control of animal movement. The Lao PDR Government subsidizes the price of vaccines, which are stored at the district level. For pigs, for example, a bottle of vaccine enough for ten pigs costs US\$1.00; still the number of vaccinations is low since only 5–10 percent are industrial livestock owners and the rest are small-scale households.

General educational programs should be initiated for farmers, food handlers, and con-

sumers. At all levels, risks can be mitigated. The FAO and WHO have information materials, publications, and training manuals on food safety issues. The translation of these materials and dissemination to all stakeholders—government staff, farmers, private enterprises and consumers—can be achieved through, among other venues, educational programs.

Recommended actions

- Initiate educational campaigns promoting hygienic agricultural practices to government staff, farmers, food handlers, and consumers on how to avoid risks.
- Translate and disseminate relevant materials from international organizations to stakeholders.

Regional Cooperation

ASEAN member countries participate in a series of ASEAN-sponsored regional activities. Some activities help with capacity-building efforts. However, still lacking are cooperative efforts with neighboring countries, especially Thailand, Viet Nam, and China in the field of food safety management, animal health management, and plant health management. Efforts in animal health management are presently limited to annual meetings with Thailand and Viet Nam.

Recommended action

- Conduct periodical bilateral consultations with China, Viet Nam, and Thailand.

Development of University Curricula

The Plant Health Strategic Plan recommends hands-on training in pest diagnosis for the staff of the National Plant Protection Organization, especially in entomology and pathology (mycology and bacteriology). The Strategic Plan also mentioned an offer by Viet Nam to train staff at the Hanoi Agricultural University with donor support.

For the medium and long term, more staff with higher educational and specialist levels will be needed. At present these staff cannot be recruited from graduates in the country. To fill this gap, scholarships will be needed for studying abroad. Moreover, the University

⁵¹The other problems are microbiological contamination, failure to comply with U.S. low acid canned food registration requirements, and failure to meet labeling requirements (Orriss, 2002).

should be expanded and upgraded to provide higher levels of education and specialization in animal science, crops science, and food science. This upgrading will require long-term cooperation with academic institutions abroad.

Recommended actions

- Provide higher educational and specialized studies abroad for staff.
- Develop curricula in University to provide higher levels of education and specialization in animal science, crops science and food science.

Private Sector Development

The main priorities for improving SPS capacity are in the field of potential and emerging formal exports of fruits and vegetables, coffee, and possibly other fresh products and high-quality beef. For these products, SPS services can be important elements of the investment climate. For fruit and vegetable investors at top-end markets, absence of reliable phytosanitary services can involve significant risks for their investment. Hence, the Government and private sector should jointly develop basic capacity for providing tailor-made services for emerging new industries.

A good business strategy for Lao PDR would be to aim for higher market segments with higher-valued agricultural export products. Technology and market access can be provided by investors from neighboring countries that are already active in these fields. Some of these companies have well-established supply chains to the top-end European and Japanese markets. A paper on the marketing of livestock products suggests a contract farming arrangement between domestic livestock traders and meat processing facilities in neighboring countries that would provide local farmers with the incentive and the means (through assistance in inputs and techniques) to improve the quality and sanitary conditions of livestock products (Zola and Souvannayong, 2005).

International standards are moving from product standards to processing and inspection standards. Processing plants are increasingly required by foreign buyers to adopt some quality assurance systems (such as ISO 9000

and HACCP) to be evaluated by a third party. This poses a big constraint for the small-scale processors. Given the limited resources, it may be advisable for the Government to promote HACCP initially to plants which process food products for export. With more resources, this requirement can subsequently be extended to other processing plants with the exporting plants sharing their expertise.

Competitiveness and growth should be promoted through (a) support for management capabilities in food safety and agricultural health, especially in the application of good management practice, good agricultural practice, and HACCP; (b) availability of certification services, and (c) rationalized public sector procedures for testing, inspection, and certification. The development of successful contract farming arrangements (out-grower schemes) (Box 4.2) will likewise help the private sector. An improved SPS infrastructure would boost private sector development to a greater degree if there are greater market incentives.

Successful performance in export markets depends foremost on company performance. However, private companies cannot work alone but sometimes need Government facilitation for achieving market access, particularly in areas of plant health and animal health. On the other hand, Government officers often have less information about market opportunities, market trends, and market requirements than private companies. The best SPS management models in the world are characterized by good public-private cooperation. This requires effective private sector associations that can provide services to their members and communicate regularly with the Government. Certain activities can be delegated to private sector associations with public oversight. An example in case is the Coffee Exporters Association, which could be mandated to promote quality standards, pest control, and issuance of phytosanitary certificates on behalf of the Government.

Recommended actions

- Promote out-grower schemes to link small farmers and large buyers through pilot projects.

- Promote business and exporters associations and empower them through frequent consultations on management of food safety, animal health control and plant protection.
- Mandate, with proper oversight, authority of the Coffee Exporters Association for quality control, pest management, and issuance of phytosanitary certificates.
- Promote HACCP initially to plants which processed food products for export and extend HACCP requirements to other processing plants in the long-run.

SPS PROBLEMS FOR SELECTED PRODUCTS

Table 4.1 presents specific products that are of major concern and their respective potential SPS problems. Possible solutions take into account the previous discussions on the guiding principles and recommendations.

RECOMMENDED ACTION PLAN DETAILED

Table 4.2 presents the recommended actions from the discussions above. For each action, the level of priority, the estimated timeframe and costs involved are indicated.⁵² The offices involved are identified and ongoing related assistance from donor agencies noted. In consideration of the costs, the table differentiates between actions recommended for the public sector and actions for the University and private sector. In such manner, the allotted resources to the University and the private sector do not compete with the resources for the public sector. The actions/activities of “high priority” for Lao PDR are those that lay the groundwork for the SPS infrastructure—institutional arrangements, legislative review, acquisition of technical facilities, equipment, and human skills. Unlike other countries with a functioning, (albeit insufficient) SPS system that only requires filling in the gaps, Lao PDR’s SPS capacity requirements are vast, cutting across the different sectors of food safety, plant health, and

animal health. Foreign technical assistance is fundamental for building up an effective SPS capacity, some of which is already provided by a number of donor agencies.

National Plan on Avian Flu. Lao PDR has developed a National Avian Influenza Control and Pandemic Preparedness Plan 2006–2010 with the support of UN agencies and the World Bank. Generally, the activities listed for each measure are similar to the activities set forth in the Action Plan—strengthening of border checkpoints; improving diagnostic capacity; establishing a surveillance system; promoting producer groups; increasing public awareness; and emphasizing emergency responses, such as restriction of animal movements, quarantine, and slaughtering of sick animals. The costs of these measures are not included in the Action Plan. However, there is a definite synergy with the integration of these measures with the recommended Action Plan.

The following are the major components and allocated budget of the Lao PDR National Avian Influenza Control and Pandemic Preparedness Plan:

- **Animal health** (US\$5.35 million)—Activities focus on the risk reduction of Avian flu infection in backyard poultry, commercial and fighting cock production and effective response at field level.
- **Human health**—surveillance and response (US\$1.10 million)—Activities aim to improve capacity for surveillance of human health and response.
- **Human health**—curative services (US\$2.54 million)—Activities strengthen laboratory and curative care to strengthen response in the event of a pandemic.
- **Information, education, and communication** (US\$1.87 million)—Activities include the formulation of a national awareness campaign on AHI.
- **Program coordination and regulatory framework** (US\$2.69 million)—Activities develop financial and legal frameworks.

Implementation of the Plan will be funded by the World Bank and other donor agencies. A National Avian and Human Influenza Co-

⁵² See Appendix Table C.1 for derivation of costs estimates.

TABLE 4.1 SPS Problems and Proposed Solutions for Specific Products

Product	Market	SPS risk	Possible solution
Coffee	EU	Aflatoxin and ochratoxin	<ul style="list-style-type: none"> • Efforts to be made by coffee exporters to check prevalence and develop solutions
Green coffee	Transit in Thailand	No particular risk	<ul style="list-style-type: none"> • Abolish requirement for phytosanitary certification • Pest risk analysis if calamity occurs
Processed fruits and vegetables	EU, Japan	Use of banned pesticides	<ul style="list-style-type: none"> • Organic certification • Coordinated supply chains • Government control of market for agro chemicals • No need for product testing
Fresh vegetables	Japan	Use of banned pesticides Phytosanitary controls	<ul style="list-style-type: none"> • Organic certification • Coordinated supply chains • Government control of market for agro chemicals • No need for product testing
Potatoes for chips	Thailand	Concrete risks to be specified	<ul style="list-style-type: none"> • Ongoing practice • Pest risk analysis if calamity occurs
Cabbage	Thailand	No particular risks	<ul style="list-style-type: none"> • Abolish requirement for phyto certification • Pest risk analysis if calamity occurs
Soybeans—organic	Japan	Concrete risks to be specified	<ul style="list-style-type: none"> • Ongoing practice • Pest risk analysis if calamity occurs • Organic certification
Rice—organic	Japan	Concrete risks to be specified	<ul style="list-style-type: none"> • Ongoing practice • Pest risk analysis if calamity occurs • Organic certification
Banana	China	Concrete risks to be specified	<ul style="list-style-type: none"> • Bilateral discussion • Possible pest risk analysis
Informal border trade	neighbors	New priority pests / diseases entering the region	<ul style="list-style-type: none"> • Surveillance on incidence of pests and diseases in regional cooperation, • Targeted measures to control spread (avian Flu is a typical example)
Formal trade in quarantine livestock products	neighbors	Concrete risks to be specified	<ul style="list-style-type: none"> • Establish disease-free zone, or licensed farms

Note: The establishment of organic certification would promote the trade of most of these agricultural products. A pest risk analysis may be needed in case of a calamity. Exports of fresh produce to Japan calls for a strict control of the sale and use of pesticides.

ordination Office (NAHICO) was established to manage all activities related to avian and human influenza (World Bank, 2006b).

ESTIMATED COSTS AND FUNDING

Absorptive capacity and sustainability. Although the capacity for managing food safety

and agricultural health are weak in Lao PDR, the absorptive capacity of the public services with responsibilities in this field pose a more binding constraint for capacity building. The support from donors and international agencies through funds and technical assistance from foreign donors are necessary but are prone to problems of sustainability if at the aim is

TABLE 4.2 Action Plan for SPS Management

Issues	Recommended actions	Time frame	Priority level	Office involved	Estimated Cost (US\$)	Related assistance
PUBLIC SECTOR Overall coordination	Establish SPS coordination team	Setting up is short-term Function of coordination team is for long-term	High	MAF, MOH, STEA, MOIC	1,140,000	—
	Market opportunities and trade requirements	Prepare study of potential/emerging non-traditional agricultural exports (include potential markets/buyers' SPS requirements) Conduct review of SPS requirements of trading partners and transit countries for existing exports, and Lao PDR SPS requirements related to imports and identify measures that may not be consistent with WTO and AFTA guidelines . . .	High	MOIC	64,000	—
Institutional and legislative framework		Short-term	High	MOIC	64,000	—
		Short-term	High	MAF, MOH	165,000	NZAID/FAO/WHO on food safety and plant health
		Short-term	High	MAF, MOH, MOIC, MOJ	60,000	—
		Medium-term			505,000	
		Short-term	High	MAF, MOH	94,000	—
		Short-term	High	MAF, MOH	94,000	—

(continued)

TABLE 4.2 Action Plan for SPS Management (Continued)

Issues	Recommended actions	Time frame	Priority level	Office involved	Estimated Cost (US\$)	Related assistance
PUBLIC SECTOR <i>continued</i> Surveillance	Initiate creation of databases through active surveillance for: <ul style="list-style-type: none"> • Human health hazards caused by food- and water-borne diseases • Specimen-based records of plant pests for key crops and key pests • Animal disease prevalence • Production, sale and use of agrochemicals and veterinary drugs 	Medium-term	High	MOH MAF MAF MOH	731,800	NZAID, FAO, WHO AusAID, NZAID, AADCP AADCP, ACIAR, SEAFMD —
	Develop work programs for laboratories including budget requirements, based on needs requirements	Short-term	High	MOH, MAF	—	—
	Assess most cost-effectiveness for regular calibration of lab equipment and standards	Short-term to medium-term	High	MAF, MOH	475,000	—
	Acquire equipment for rapid detection and screening for the provinces and border posts	Medium-term	High	MAF, MOH	250,000	—
	Develop and upgrade lab capacities, including training lab technicians based on needs assessment; and assess which parts of labs should be accredited to ISO 17025	Medium-term	High	MAF, MOH	1,073,000	NZAID/FAO/WHO (food safety)
Emergency response	Review existing legal framework and amend to include the authority of plant and animal health offices to implement emergency measures (e.g. eradication, for plants; animal movement restriction and slaughtering, for animals)	Short-term	High	MAF	Part of legislative changes	NZAID/FAO (plant health)
	Prepare national guidelines outlining responsibilities of Ministries (guidelines should include initial response of Government and compensation policies); establish an inter-ministry taskforce to manage emergency measures	Short-term	High	MAF	188,000	—

Risk assessment and economic analysis	Review and amend current procedures for disease reporting in terms of incentives and having direct lines of communication	Short-term	High	MAF, MOH	Review of procedures and other issues: 346,000	—
	Build core group of risk assessors under either the University or research institute to be supported by subject matter specialists	Medium-term	Medium	MAF, MOH	53,000 RA training: 300,200	AADCP NZAID/FAO/WHO AusAID
	Build capacity in economic analysis (e.g. cost-benefit analysis) and basic risk assessment in the Ministries responsible for risk management	Medium-term	Medium	MOH, MAF	270,000	—
Inspection and certification	Review Lao PDR inspections and permits requirements for export and import and identify controls that are not necessary for SPS management in a market economy	Short-term	High	MOT	Part of review of procedures	—
	Develop and communicate guidelines for the proper implementation of inspection and certification procedures and provide training and equipment for border inspectors	Short to medium-term	Medium	MAF, MOH	27,200 (workshops include other issues)	—
	Review border procedures related to SPS and recommend simplifications and strengthened governance; for simplification, consider possibilities of either integrating some SPS control functions in customs procedures or combining SPS border controls in one office possibly even integrated in the customs office	Short-term	High	MAF, MOT	Part of review of procedures	—
Building human skills (public sector)	Review existing legal framework and amend to incorporate the following: <ul style="list-style-type: none"> • Recommendations to improve and strengthen governance on border procedures • Authority for agricultural health inspectors to search or seize 'risk' goods 	Short-term	High	MAF, MOH, MOT	Part of legislative changes	—
	Assess possibilities to develop local certification capabilities, especially for organic certification	Short-term	High	MAF, MOH	64,000	—
	Undertake training at all levels in diagnosis, testing, surveillance, inspection, international negotiation, planning, budgeting and management (AusAID is involved in plant health training; NZAID/FAO/WHO in food safety and plant health; ADB on WTO accession and dispute settlement mechanisms)	Short-term to Medium-term	High	MAF, MOH, MOIC	534,000	AusAID NZAID/ FAO/WHO ADB

(continued)

TABLE 4.2 Action Plan for SPS Management (Continued)

Issues	Recommended actions	Time frame	Priority level	Office involved	Estimated Cost (US\$)	Related assistance
PUBLIC SECTOR <i>continued</i> Information and education	Initiate educational campaigns promoting hygienic agricultural practices to government staff, farmers, food handlers and consumers on how to avoid risks	Short-term	Medium	MAF, MOH, MOIC	415,000	ASEAN NZAID/FAO/ WHO
	Translate and disseminate relevant materials to stakeholders	Short-term	Medium	MOIC	—	—
	Conduct periodical bilateral consultations with China, Viet Nam and Thailand	Long-term	High	MOIC	797,000	—
Regional cooperation UNIVERSITY Development of University curricula	Develop curricula in university to provide higher levels of education and specialization in animal science, crops science and food science	Medium-term	Medium	MAF, MOH University	996,000	—
	Provide higher educational and specialized studies abroad for staff	Medium-term	Medium	MAF, MOH	300,000	—
PRIVATE SECTOR Private sector development	Promote out-grower schemes to link small farmers and large buyers, through pilot projects	Medium-term	Medium	MAF, MOIC	211,000	—
	Promote business and exporters associations and empower them through frequent consultations on management of food safety, animal health control and plant protection	Medium-term	Medium	MOIC	173,000	—
	Mandate, with proper oversight, the Coffee Exporters Association with quality control, pest management and issuance of phytosanitary certificates	Medium-term	Medium	MAF Lao Coffee Bd.	173,000	—
	Promote HACCP initially to plants which processed food products for export and extend HACCP requirements to other processing plants in the long-run	Medium-term	Medium	MOH	186,000	—

Note: Time frame: Short-term = 18 months; medium-term = 18 months to 3 years; long-term = 3 to 5 years. Under 5th column, "Office involved," other agencies may be included on an ad hoc basis when useful.

too high in too short a period. This Action Plan tries to strike a balance between the speed needed and absorptive capacity. Absorptive capacity constraints are to some extent specific for different units. For example, absorptive capacity in the University is rather independent and perhaps less constrained than that in the Ministries of Agriculture and Forestry, and Health. The same applies for capacity building for the private sector. Hence the plan is split in three components: public sector, private sector and academic sector (University). The main costs go to SPS capacity building in the public sector. The total estimated amount currently

stands at US\$7.7 million including miscellaneous (an average of US\$1.5 million/year for 5 years). The cost of support for the five-year period for the private sector is estimated at US\$0.7 million and for the academic sector at US\$1.3 million (Table 4.3).

Costs of components. Table 4.3 is a summary of the cost estimation detailed in Appendix Table C.1. For cost estimation purposes, related recommendations (for example, recommendations requiring legislative actions) were grouped together. Thus, certain components are not in the table. The recommendations for "Emergency response," "Inspections and

TABLE 4.3 Cost Estimate for SPS Capacity Building, (US\$) 2007–2011 (Summary)

Recommended action	Technical assistance	Training/workshops	Equipment & supplies	Total
PUBLIC SECTOR	4,863,000	1,296,200	1,551,000	7,710,200
Coordination team	1,040,000		100,000	1,140,000
Studies on markets and SPS requirements	189,000	3,000		192,000
Legislative and regulatory issues	1,032,000		44,000	1,076,000
Review of legislation	165,000			165,000
Legislative task force and work plan	30,000		30,000	60,000
Drafting of legislative amendments	498,000		7,000	505,000
Amending of regulations/procedures	339,000		7,000	346,000
Institutional issues	442,000	7,200	7,000	456,200
Responsibilities & needs of Ministries	94,000			94,000
Emergency guidelines & task force	181,000		7,000	188,000
Core group of risk assessors	53,000			53,000
Individual actions plans	94,000			94,000
Provincial/district offices	20,000	7,200		27,200
Surveillance—databases	527,000	4,800	200,000	731,800
Diagnostic capacity	796,000	2,000	1,000,000	1,798,000
Lab plans, calibration, rapid detection equip.	475,000		250,000	725,000
Lab upgrade	321,000	2,000	750,000	1,073,000
Building human skills	77,000	927,200	100,000	1,104,200
Training on risk assessment	47,000	253,200		300,200
Training on economic analysis		270,000		270,000
Training all other SPS capacity	30,000	404,000	100,000	534,000
Regional cooperation—bilateral consultations	647,000	150,000		797,000
Public information and education	113,000	202,000	100,000	415,000
II. RECOMMENDED ACTIONS FOR UNIVERSITY	276,000	570,000	450,000	1,296,000
University curricula	276,000	270,000	450,000	996,000
Higher education and specialized studies		300,000		300,000
III. RECOMMENDED ACTIONS FOR PRIVATE SECTOR	739,000	4,000		743,000
Outgrower schemes	210,000	1,000		211,000
Business and exporter associations	172,000	1,000		173,000
Coffee exporter association	172,000	1,000		173,000
HACCP promotion	185,000	1,000		186,000

certifications," and "Risk assessment" were distributed under "Legislative issues," "Institutional issues," "Building human skills," and "Preliminary studies."

Diagnostic capacity, as expected, requires the greatest financing, for the necessary laboratories and equipment and technical assistance. Building human skills comes next with its costs for training. Adjustments in the legislative framework require technical assistance in the form of legal expertise. The cost requirement of public information and education is one of the smaller costs (only bigger than the studies on markets and trade requirements); yet, if properly carried out, it has the potential of producing extensive benefits and significant improvements in food safety and agricultural health.

Sources of funding. The recommended actions will be funded by support from donors and international institutions. There are a number of ongoing projects which may have already provided part of the costs of several activities. In fact, an option for donor agencies is to finance the expansion of existing projects, for example, ongoing laboratory training in a neighboring country may be expanded from two persons a year to, maybe, five persons a year. Recommendations for the private sector (including the promotion of HACCP) are assumed to be undertaken by other donor agencies, notably ADB's project on Private Sector Development Program or IFC's Mekong Private Sector Development Facility, or possibly under the umbrella of these projects. It is assumed that funding of those actions presents no direct competition of scarce resources. Similarly, it is assumed that the development and improvement of University curriculum can be achieved through separate funding of international cooperation for higher education in the form of direct support from bilateral donors and twinning projects with other international universities. In this note no systematic effort is made yet to explore the funding possibilities of all components.

Prioritization. Allocation of resources will certainly require determination of the most urgent needs and further prioritization. Consideration should be made whether the service

provides benefit to the public (e.g., food safety) and should be funded by the public sector, or whether the benefit accrues solely to the private enterprise (e.g., official inspection that is an export requirement) and should be paid by the private company. For countries where livestock export is prevalent, vaccination is required for export and is a private good and should be funded by the exporters/traders. For small countries, such as Lao PDR, where most livestock is traded between villages or directly consumed by the household, the main purpose of the Government for vaccination is to control the spread of disease, a public good; although for the farmers, the incentive is to protect their livelihood. Certain cost-sharing schemes should be considered.

Recurrent costs. Utilization costs of existing and proposed additional capacity deserve focus in assessments and plans. These assessments should include figures of actual numbers of tests performed, operational budgets, cost recovery, and indicative levels of desirable numbers of tests and funding. The estimated costs do not include the costs required for maintenance of databases and operation of laboratories. Investments without adequate operational budget cannot be recommended. For existing laboratory capacity, sustainability is already of main concern. The available operational budget is insufficient to make adequate use of and maintain presently available capacity.

Impact on prices. The control costs (fees for licensing, inspection, and food analysis) and benefits of measures should be taken into account in the plans and strategies. The Government should take into consideration the additional costs incurred by producers, the food industry, and traders that are likely to be passed on to consumers, particularly to the low-income households, and compare these to the health and trade benefits.

Economic costs and benefits. Given the considerable financing required for improved SPS capacity, it is important to look at potential benefits. Appendix D presents an assessment of costs and benefits of implementing the SPS Action Plan. The assessment is generalized considering the expansive effects on animal

health, plant health, and public health; and the lack of detailed data. The exercise shows that the huge investment can result into positive returns even with conservative assumptions on pertinent agricultural value-added growth. Thus, the long-run benefits outweigh the expenses in the initial years.

Trade-offs. Collection of health information comes at a cost and therefore needs to be balanced with investments in preventive and curative care. In a poor country with a tight budget and with relatively clear priorities in human health, it is not always certain that additional public investment in data collection and analysis is an optimal use of public funds compared with the purchase and administration of vaccines; drugs; and critical food supplements, such as iodine or iron.

CONCLUDING SUMMARY

The establishment and consequent maintenance of a fully functioning SPS system in Lao PDR requires long-term commitment from both the Government and donor agencies. Given the available limited human and financial resources, additional funding should be selectively applied and prioritized. The scope of solutions should include efforts by the private sector. Since donors provide significant amounts of support in efforts to modernize the food safety and agricultural health system, it is important to discuss prioritization with the private sector, in order to optimize donor funding. In the long run, savings may be achieved through increased efficiency and reduction, if not elimination, of low-priority activities.

Phased project. The development and implementation of the SPS Action Plan should be a phased process. The eventual implementation of the Action Plan could take 3–5 years. For each phase, participation with stakeholders in Government and the private sector is critical. Each phase should have clearly defined goals and indicators that can measure the achievement of toward the goals.

Follow up. A follow-up project should assess SPS capacity of Lao PDR after five years to ascertain if the SPS system is viable. The ap-

propriate actions by that time would be to correct any gaps in the implementation or upgrade laboratories and technical skills.

Regional coordination. Lao PDR's membership with the ASEAN (and inclusion in AFTA and WTO) will open markets for Lao products. Moreover, several tariffs on its actual and potential exports will be reduced significantly, and it can be relieved from discriminatory rules and restrictions, including SPS measures, imposed by its trading partners and countries through which it has transit trade. However, these memberships will also bring new requirements for transparency and science-based SPS management, which the present system is insufficiently able to provide. Increased market demand for safety and quality from foreign buyers will likewise put pressure on the Government and exporters to upgrade.

Capacity building. Capacity building is needed to maintain and improve market access and to improve competitiveness. Capacity building for the SPS management of Lao PDR can be summarized as follows:

- The human, technical, and financial resources for SPS management are limited and can only be gradually increased. Sustainability of investments in SPS capacity is a major issue for the Government and the donor community. The weakness of recurrent financing is a constant threat to both public health and food safety programs.
- Given the porous borders and shared ecosystems with neighboring countries, effective control of many pests and diseases requires domestic surveillance and control and cooperation among neighbors. Border controls have only a limited impact in specific situations on control of pests and diseases and safeguarding of food safety. Negotiations with neighbors should focus on increased domestic monitoring and control, and border control focused on cases that are cost effective.
- Existing and additional efforts for SPS control can be prioritized on the basis of qualitative and quantitative assessments of costs, risks, benefits, and opportunities.

- The number of agencies involved in SPS management should be kept small in order to improve synergies and reduce the cost of coordination. Collaboration and coordination among the various agencies is imperative so as to avoid wasted resources on duplication of project or irrelevance to the SPS effort in Lao PDR.
- Where possible and relevant, the private sector should play a role in SPS management. However, the success of private sector initiatives is contingent on an effective public sector standards infrastructure.

Prioritization. Given the economic context and circumstances of Lao PDR, the following may be considered priority areas:

- Drafting of relevant legislation and respective regulations for implementation and enforcement; existing regulations need extensive updating and rationalization.
- Creation and/or improvement and update/maintenance of databases on pest and diseases for plant and animal health, and water- and food-borne human health incidents and hazards.
- Setting up of an emergency response system.
- Human resource training and technical capacity (equipment and facilities).

Immediate interim solutions. There may be simple solutions, at least for the interim capacity-building period. At all levels, risks for food contamination and spread of diseases can be reduced by carrying out hygienic practices in the production, handling, and preparation of food. There should be educational and infrastructure investment to promote household hygiene and sanitation. There are challenges. Behavioral change can be slow and constrained by the costs of building improved water supply and latrines in rural areas. Although social change has come about faster in the last decade, change in basic patterns of food consumption, water supply and use, household hygiene, and

sanitation in the rural villages where most of the Lao population lives still happens slowly. Change tends to take place faster where formal employment in food industries makes a more direct linkage between hygiene and food safety. Public health authorities are beginning to increase their attention to microbial food safety hazards in urban food markets, restaurants, and street food stands, but face the same types of water supply, sanitary infrastructure, and personnel hygiene challenges as found in rural areas. These challenges are compounded by the higher population densities in Vientiane and secondary cities.

Quality of life. The water- and food-borne diseases in the country cause loss of life, and contribute to poverty through cost of treatment and loss of productive capacity. Well-targeted efforts to create a viable SPS system will enhance food safety, improve the well-being of the domestic populace, increase productivity, and promote livelihood.

Proactive approach. Lao PDR has no acute SPS problems at the present time. The country should implement SPS measures not merely to comply with WTO and AFTA requirements but to be able to effectively participate in international trade—to access export markets, to comply with international standards, to be able to validate their own SPS measures, and to protect themselves from non-tariff barriers by being able to contest the validity of other countries' SPS measures. With the expanding trade in agricultural products in the region and the forthcoming accession to the WTO, Lao PDR should adopt a proactive approach and put in place the necessary SPS infrastructure and institutional framework. Positive actions will improve the perception of Lao PDR in the eyes of its trading partners. What is at stake for Lao PDR? Improved capacity and transparency. Strengthened negotiating capacity. And the capability to deal with pests and diseases through a solid infrastructure that will help protect the health of the country and its people, and further its prosperity.

Lao PDR Agricultural Exports, US\$ Thousands, 1998–2004

Products/Destinations	1998	1999	2000	2001	2002	2003	2004
Total agricultural exports	84,185	121,664	148,200	151,338	73,210	179,718	42,233
Food and live animals	27,052	31,272	27,390	19,578	16,591	22,667	16,736
Live animals except fish	906	5,147	5,557	5,406	194	2,535	134
Meat and meat preparations	0	4	8	25	44	3	47
Dairy products and eggs	0	0	391	82	133	79	157
Fish/shellfish/etc.	29	550	26	153	274	28	26
Cereals/cereal preparation	133	201	350	381	437	2,854	577
Vegetables and fruit	186	589	2,041	1,638	2,710	3,117	1,913
Sugar/sugar prep/honey	8	5	28	0	1	12	23
Coffee/tea/cocoa/spices	25,737	24,754	18,985	11,873	12,548	13,899	13,860
Animal feed except unmilled cereal	13	21	2	13	6	137	0
Misc. food products	40	0	3	6	245	3	0
Beverages and tobacco	68	63	200	92	509	1,092	137
Animal/vegetable oil/fat/wax	1	122	3	143	13	4	0
Crude materials except food/fuel	57,064	90,208	120,607	131,525	56,096	155,954	25,360
Live animals except fish	906	5,147	5,557	5,406	194	2,535	134
Bovine animals, live (<i>mostly Thailand</i>)	906	5,145	5,545	5,124	0	2,206	0
Poultry, live	0	0	0	0	1	0	0
Equine species, live	0	0	0	38	0	0	52
Live animals n.e.s.	0	1	12	245	194	329	82
China	0	0	0	201	17	0	0
Vietnam	0	0	0	44	177	328	0
Other countries	0	1	12	0	0	1	82
Meat & preparations	0	4	8	25	44	3	47
Dairy products and eggs	0	0	391	82	133	79	157
Fish/shellfish/etc.	29	550	26	153	274	28	26
Cereals/cereal preparation	133	201	350	381	437	2,854	577
Thailand	28	128	69	144	0	1,784	0
Taiwan, China	0	0	225	12	154	499	307
China	90	0	4	121	58	14	111
Vietnam	0	41	0	8	150	439	0
Other countries	14	33	52	97	75	117	159
Vegetables and fruit	186	589	2,041	1,638	2,710	3,117	1,913
Vegetables, fresh/chilled/frozen	37	141	101	1,002	1,130	2,001	920
China	0	0	0	832	1,080	779	885
Thailand	7	138	62	139	0	1,178	0
Other countries	30	2	39	31	50	44	35
Vegetable root/tuber prep/pres	13	0	134	244	105	547	585
United Kingdom	0	0	119	241	90	452	461
Other countries	13	0	15	3	16	95	124
Fruit/nuts, fresh/dried	85	398	1,580	188	68	45	15
China	78	364	1,518	29	4	0	3
Vietnam	0	0	0	114	35	29	0
Other countries	7	34	62	45	29	16	13
Fruit preserved/fruit preps	48	41	206	189	79	444	326
France	29	37	62	65	79	181	140
United Kingdom	0	0	87	105	0	93	64
Other countries	19	4	57	19	0	170	123

APPENDIX A.1 Lao PDR Agricultural Exports, US\$ Thousands, 1998–2004 (Continued)

Products/Destinations	1998	1999	2000	2001	2002	2003	2004
Fruit/vegetable juices	3	10	20	15	1,327	80	66
Sugar/sugar prep/honey	8	5	28	0	1	12	23
Coffee/tea/cocoa/spices	25,737	24,754	18,985	11,873	12,548	13,899	13,860
Coffee/coffee substitute	25,642	24,114	18,782	11,508	12,361	13,286	13,719
EU25	19,839	14,282	12,374	8,191	10,151	9,346	9,640
Switzerland	1,066	2,090	3,902	2,331	1,420	2,471	2,924
Thailand	2,130	0	0	0	0	7	0
Japan	1,188	19	0	0	0	5	0
Singapore	646	5,279	710	318	408	93	291
Indonesia	0	0	1,142	203	122	0	0
Vietnam	0	476	0	0	156	1,034	0
Algeria	114	1,548	131	376	19	0	0
Romania	0	36	0	0	39	56	356
Turkey	492	113	353	0	0	0	0
United States	0	125	0	0	35	76	367
Other countries	168	145	168	91	12	198	141
Tea and mate	10	3	10	24	35	68	99
Spices	84	638	193	341	152	545	42
Singapore	0	584	0	0	0	0	0
Thailand	1	13	142	53	0	129	0
Vietnam	0	0	0	275	152	379	0
Taiwan, China	78	0	0	0	0	0	0
Other countries	5	40	51	13	0	37	42
Animal feed, except unmilled cereal	13	21	2	13	6	137	0
Miscellaneous food products	40	0	3	6	245	3	0
Crude materials except food/fuel	57,064	90,208	120,607	131,525	56,096	155,954	25,360
Japan	16,756	11,011	9,875	4,870	5,044	5,791	4,844
Taiwan, China	5,071	4,748	2,012	3,737	2,750	1,164	5,250
China	7,602	9,139	4,784	6,108	8,254	10,216	11,407
Thailand	22,749	42,924	63,029	74,327	0	82,114	0
Vietnam	3,531	19,115	38,162	40,112	37,968	55,003	0
Other countries	1,355	3,272	2,745	2,370	2,080	1,666	3,860

Note: Data are actually imports of trading partners from Lao PDR.

Source: UN Comtrade (World Integrated Trade Solution), using SITC3 classification, accessed April 2006.

Lao PDR Agricultural Imports, US\$ Thousands, 1998–2004

Product/Sources	1998	1999	2000	2001	2002	2003	2004
Total agricultural imports	241,156	156,859	100,223	110,298	56,277	113,192	46,252
Food and live animals	203,720	89,700	42,841	56,778	17,019	68,000	6,092
Live animals except fish	975	3,135	1,450	1,238	30	1,734	33
Meat and meat preparations	1,608	453	1,471	1,730	1,165	1,052	24
Dairy products and eggs	4,071	2,622	4,120	5,780	25	5,425	16
Fish/shellfish/etc.	67,167	17,329	3,609	1,935	176	2,467	895
Cereals/cereal preparation	22,849	11,805	12,207	14,687	4,051	13,248	2,992
Vegetables and fruit	4,056	11,518	5,887	9,366	8,923	10,577	545
Sugar/sugar prep/honey	7,721	8,347	5,406	13,871	129	9,067	0
Coffee/tea/cocoa/spices	88,004	27,698	1,607	1,316	178	8,727	22
Animal feed except unmilled cereal	2,230	2,214	2,655	2,032	19	4,967	0
Misc. food products	5,039	4,580	4,429	4,822	2,323	10,736	1,564
Beverages and tobacco	26,902	44,277	41,309	44,940	32,527	37,487	37,362
Animal/vegetable oil/fat/wax <i>(mostly from Thailand)</i>	1,196	4,680	1,705	1,545	87	2,152	534
Crude materials except food/fuel	9,338	18,202	14,367	7,036	6,645	5,553	2,265
Live animals except fish	975	3,135	1,450	1,238	30	1,734	33
Thailand	385	468	304	1,154	0	1,704	0
Vietnam	590	2,616	1,106	76	4	0	0
Other countries	0	51	40	8	26	30	33
Meat and preparations	1,608	453	1,471	1,730	1,165	1,052	24
Beef, fresh/chilled/frozen	61	14	14	64	105	8	13
Meat n.e.s., fresh/chilled/frozen <i>(mostly from Vietnam)</i>	1,542	407	1,453	1,617	1,057	1,031	1
Other products	5	32	4	49	4	13	9
Dairy products and eggs	4,071	2,622	4,120	5,780	25	5,425	16
Milk products except butter/cheese <i>(mostly from Thailand)</i>	4,027	2,602	3,305	5,701	0	5,326	0
Other products	44	20	815	79	25	99	16
Fish/shellfish/etc.	67,167	17,329	3,609	1,935	176	2,467	895
Fish, live/fresh/chilled/frozen	290	234	224	589	7	730	75
Thailand	284	201	179	274	0	323	0
Vietnam	0	0	0	0	0	328	0
United Kingdom	0	0	0	216	0	0	0
Other countries	7	33	45	99	7	79	75
Fish, dried/salted/smoked <i>(mostly from Vietnam)</i>	0	933	15	35	0	8	0
Crustaceans, mollusks, etc	66,592	15,334	1,130	399	24	130	496
Vietnam	66,566	15,316	0	27	7	30	0
Thailand	26	18	1,041	41	0	23	0
New Zealand	0	0	0	0	0	0	496
Australia	0	0	0	180	0	0	0
Indonesia	0	0	0	119	0	77	0
Other countries	0	0	89	32	17	0	0
Fish/shellfish, prep/pres	284	828	2,241	912	145	1,599	324
Thailand	280	826	2,241	905	0	1,078	0
Japan	0	0	0	0	142	519	322
Other countries	4	2	0	8	3	1	2

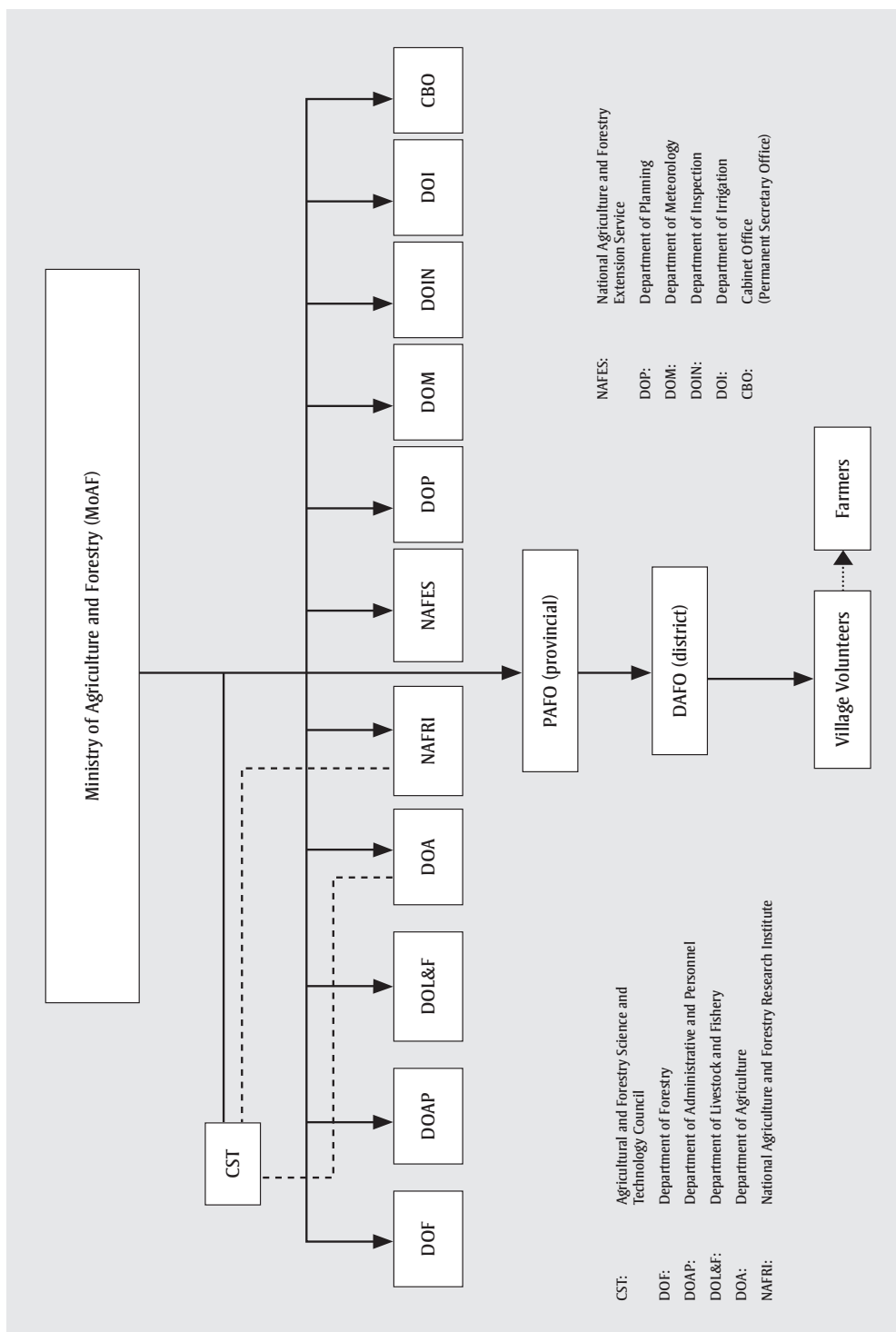
APPENDIX A.2 Lao PDR Agricultural Imports, US\$, 1998–2004 (Continued)

Product/Sources	1998	1999	2000	2001	2002	2003	2004
Cereals/cereal preparation	22,849	11,805	12,207	14,687	4,051	13,248	2,992
Thailand	10,922	8,787	8,932	10,613	0	9,664	0
Vietnam (mostly rice)	7,914	449	1,472	1,660	809	469	0
France	1,491	1,074	1,481	1,637	2,087	2,838	2,395
Japan	1,709	1,094	0	106	7	4	8
United States	0	0	0	7	1,082	0	0
Other countries	813	400	322	665	65	272	589
Vegetables and fruit	4,056	11,518	5,887	9,366	8,923	10,577	545
Vietnam	1,818	10,031	2,046	6,766	8,697	7,187	0
Thailand	1,280	712	3,554	2,158	0	2,892	0
China	921	620	261	353	93	355	477
Other countries	36	156	27	88	133	144	68
Sugar/sugar prep/honey	7,721	8,347	5,406	13,871	129	9,067	0
Thailand	7,694	8,230	5,338	13,796	0	8,610	0
Other countries	27	117	68	75	129	456	0
Coffee/tea/cocoa/spices	88,004	27,698	1,607	1,316	178	8,727	22
Vietnam	86,436	26,570	663	76	49	88	0
Thailand	330	1,053	923	793	0	2,630	0
Uganda	1,100	0	0	0	0	0	0
Honduras	0	0	0	0	36	5,666	0
Other countries	138	75	21	447	93	343	22
Animal feed except unmilled cereal	2,230	2,214	2,655	2,032	19	4,967	0
Thailand	2,191	2,178	2,647	2,030	0	3,875	0
United States	0	0	0	0	7	646	0
Denmark	0	0	0	0	0	394	0
Other countries	39	37	7	3	12	52	0
Miscellaneous food products	5,039	4,580	4,429	4,822	2,323	10,736	1,564
Thailand	4,026	3,732	3,816	3,917	0	9,106	0
Ireland	828	680	521	615	997	1,024	1,068
South Africa	0	14	0	6	663	0	0
Other countries	184	154	92	284	663	606	496
Beverages and tobacco	26,902	44,277	41,309	44,940	32,527	37,487	37,362
Singapore	15,152	29,389	25,996	23,020	23,700	17,435	32,917
Thailand	6,830	11,599	11,574	18,355	0	13,422	0
China	2,092	379	1,422	1,142	1,694	936	623
France	568	1,108	1,182	1,061	2,467	3,666	3,266
Vietnam	1,007	1,221	284	857	1,034	1,103	0
Other countries	1,253	583	851	505	3,631	925	556
Crude materials except food/fuel	9,338	18,202	14,367	7,036	6,645	5,553	2,265
Thailand	1,154	836	749	1,153	0	1,883	0
Vietnam	7,548	16,602	12,898	4,194	5,996	1,514	0
Other countries	636	763	720	1,688	649	2,156	2,265

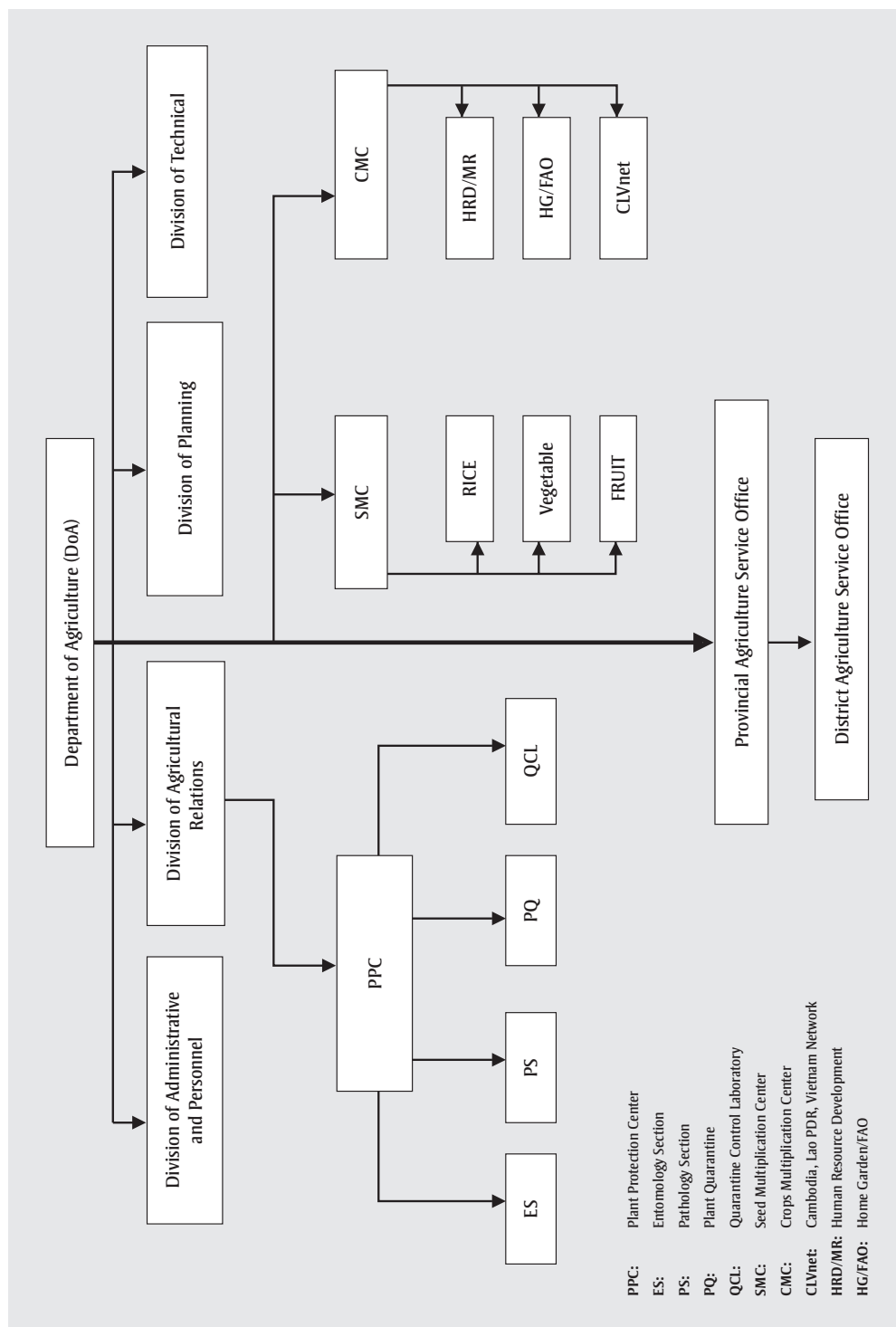
Note: Data are actually exports of trading partners to Lao PDR.

Source: UN Comtrade (World Integrated Trade Solution), using SITC3 classification, accessed April 2006.

Structure of the Ministry of Agriculture and Forestry

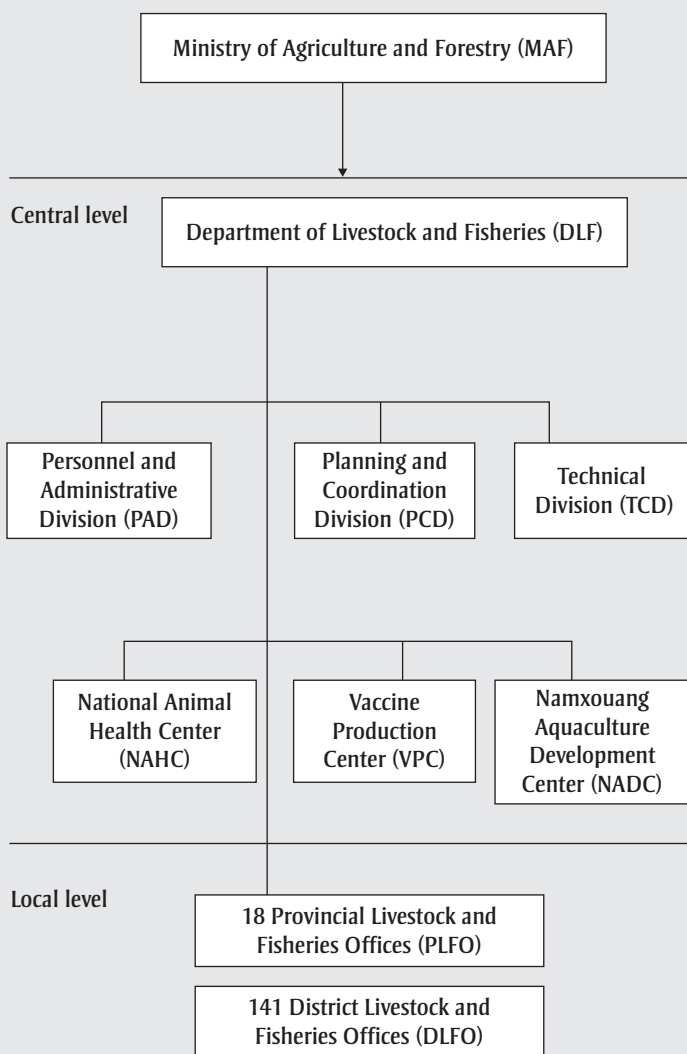


Structure of the Department of Agriculture



Structure of the Department of Livestock and Fisheries

Organization Chart:



There are 13 ministries and 3 ministry-equivalent organizations in the Lao government structure.

The MAF consists of 8 departments and 3 ranking departments.

There are 3 divisions and 3 centers in DLF structure at central level.

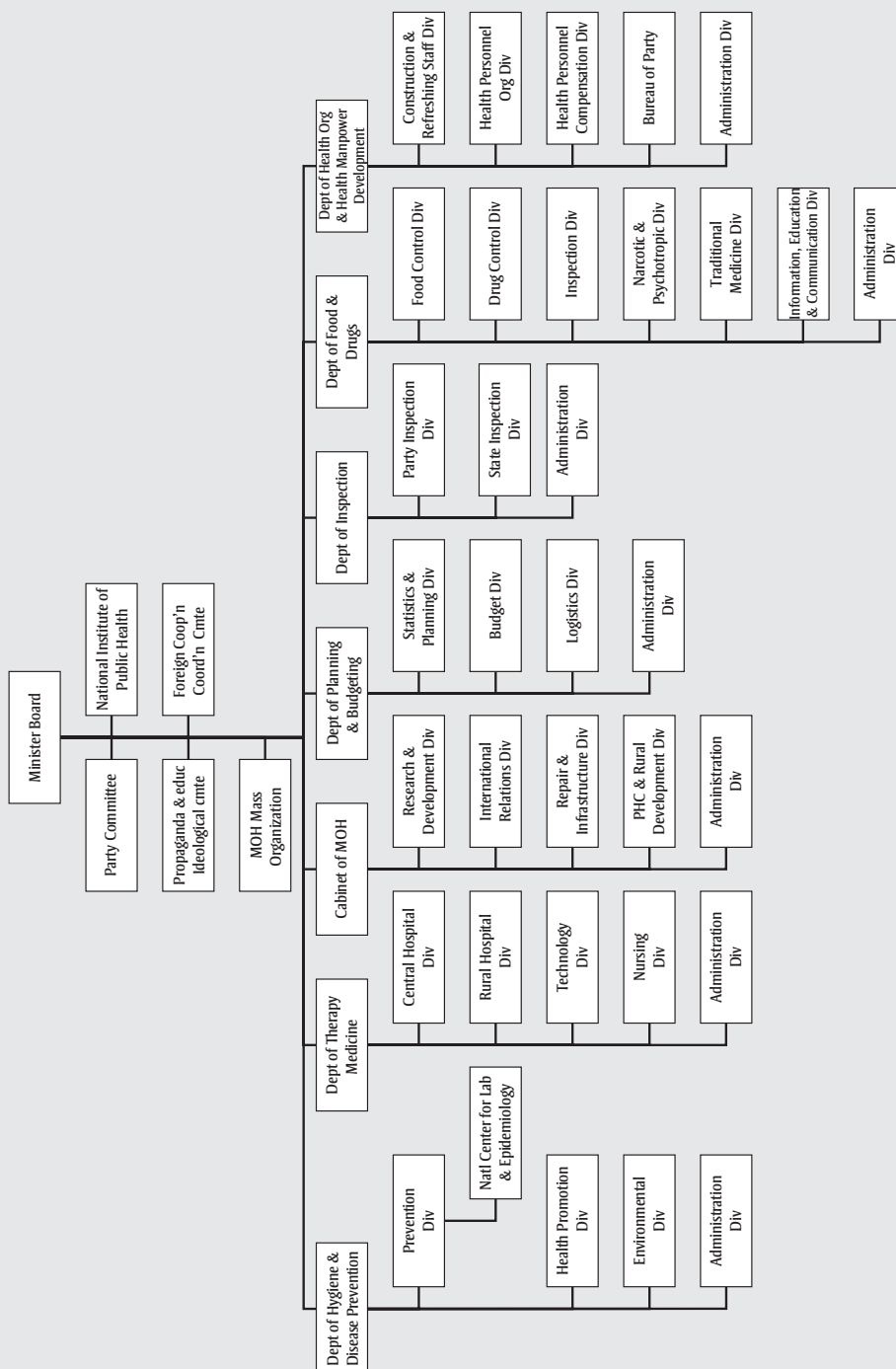
There are 10 Animal Breeding stations, 4 Poultry Breeding Stations, 32 State hatcheries, 2 Animal breeding and Animal feed stations, 8 provincial Animal Disease Diagnosis Laboratories and 10 International Animal Check Posts. (DLF, 1/2004)

Grass roots level

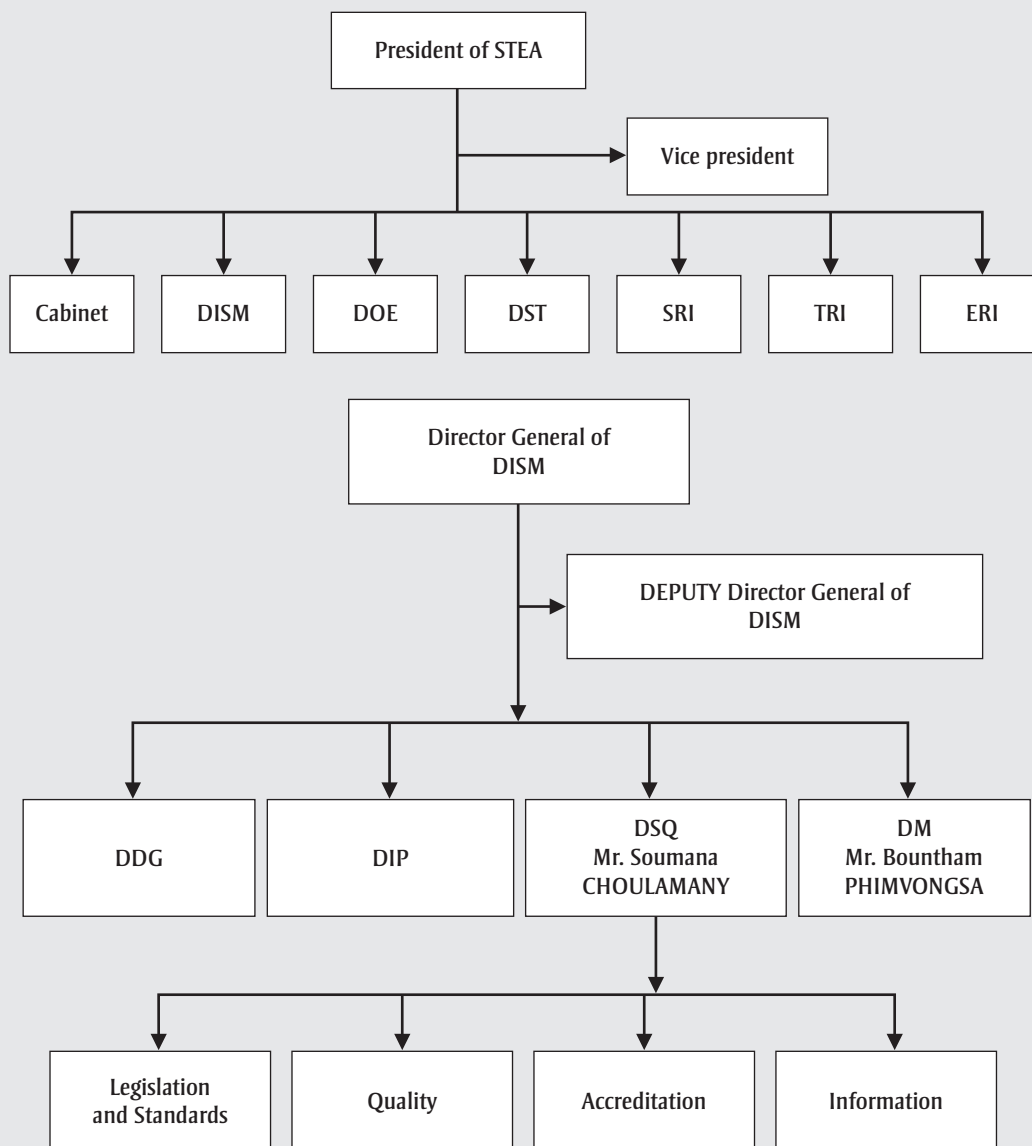
- 10,044 Villages in Lao PDR (PACS, 2004)
- 8,220 Village Veterinary Workers (DLF, 1/2004)
- 2,068 Model Smallholders (DLF, 1/2004)
- Group of farmers, Private owners, Livestock & fisheries enterprises, Smallholders

Non-government officials

Structure of the Ministry of Health



Structure of the STEA and DISM



DISM: Department of Intellectual Property, Standardization and Metrology.

DOE: Department of Environment.

DST: Department of Science and Technology.

SRI: Scientific Research Institute.

TRI: Technology Research Institute.

ERI: Environmental Research Institute.

DSQ: Division of Standards and Quality.

DM: Division of Metrology.

Estimated Costs of Action Plan for Lao PDR SPS Capacity Building

Breakdown of costs. Each recommended action involves technical assistance, training and/or workshops, and equipment and supplies. Technical assistance comprised of international and local consultants (international consultants at about US\$20,000 per month⁵³, international travel costs at US\$7000, and local consultants at US\$3,000⁵⁴ per month). The local consultants referred to in this report are private consultants. For certain actions that may need in-country or regional travel for consultants (whether they be international, private or Government staff), an amount is indicated. Trainings and workshops could either be short- or long-term courses in Lao PDR or a foreign country. Local workshops are assumed to cost US\$20 per participant.

The figures are rough estimates of expected costs based on specified numbers of participants, rates of consultants, duration of study, miscellaneous costs on supplies and travel, and number of staff. The estimation exercise provides a clarification of the specific requirements of each action in terms of technical assistance, trainings and equipment and supplies, and presents the interdependence of several actions that underlines coordination to be able to make use of the potential synergy.

Recommendations for the public sector. First of all, the ordering of the actions in Appendix Table C.1 differs from that of Table 4.2, related actions were grouped together.⁵⁵ For

example, actions relating to legislative issues (notably from emergency response and inspection and certification) were put together. Table C.1 also reflects some level of priority and sequencing—starting with the setting up of the coordination unit, conducting preliminary market studies, and dealing with legislative and institutional issues. The involvement of Government staff is necessary in each action. The staff's compensation, however, comes from the Government, and their numbers and costs are not included in the cost estimation. The following explains assumptions on the costs estimation for some of the actions.

Coordination team. The SPS coordinator requires intensive and full-time involvement for the first year and a half or first two years considering that most of the actions involve the setting up of some group or function. Thus, the total allotment of 36 months may be spread accordingly over 5 years—full-time for the first 18-24 months and part-time for the remaining months (to oversee progress of various actions). For each of the four Ministries (MAF, MOH, STEA, MOIC), it is recommended that a “fixed” staff (the assigned expert) be specifically assigned to the coordination team, perhaps, full-time for the MAF and MOH staff and part-time for the STEA and MOIC staff. The Plan allocates budget for the provision of computers and some office equipment and miscellaneous supplies; the Government is assumed to provide office space for the team. It is recommended that a full-time translator be included in the team to manage the proper translation of all relevant documents thus facilitating coordination.

Preliminary studies. These studies will identify existing and potential SPS problems

⁵³ Honorarium of \$15,000 (25 working days x \$600) and *per diem* of \$150, including hotel, or \$4,500 for 30 days, for a total of US\$19,500 for a month, rounded to US\$20,000.

⁵⁴ This represents an average rate, the responsibilities of the local consultant may range from translation and interpretation to providing analysis and recommendation.

⁵⁵ The recommended actions for “Emergency response” can be found under “Legislative issues” and “Institutional issues.” The recommended actions for “Risk assessment” are in “Institutional issues” and “Building human skills.” Recommended actions for “Inspection and certification” are

under “Preliminary studies”, “Legislative issues”, “Institutional issues” and “Building human skills.”

and determine the focus of SPS capacity building. The study on the feasibility of local certification for organic products from "Inspection and certification" is included in the preliminary studies since it will provide some economic costs and benefits, identify options and determine priority for organic certification.

Legislative and regulatory issues. For cost estimation, actions that involve legislative changes were grouped together. Thus, a review of legislation pertaining to food safety, plant and animal health should examine the needs of the country in terms of health protection and competitiveness, good governance principles, compliance of the relevant legislation with the WTO SPS Agreement, the effectiveness of implementation and enforcement, the inclusion of emergency powers for plant and animal health authorities in the case of pests and diseases outbreaks, and the provision of better governance on border procedures including the authority for animal and plant health inspectors to search goods and seize illegal and/or "harmful" agricultural products. After the legislative review of the different sectors, a task force is to be established from the relevant Ministries to be advised and supported by the Ministry of Justice. The proposed amendments and revisions to the legislation arising from review will then be drafted and submitted to the Government for proper action.

Regulations and procedures regarding inspection and certification for food safety and plant and animal health should, likewise, be reviewed and amended accordingly. The review should focus on unnecessary inspection and permit requirements, a more efficient line of communication for disease reporting and a possible simplification of border procedures.

Institutional issues. A more efficient functioning of an SPS control system requires a clear understanding of each of the offices' responsibility and an open communication among these offices. Therefore, a clarification of responsibilities among the various Ministries is a primary institutional issue. Moreover, to carry out cross-cutting functions, to enable immediate response in times of emergency and to make efficient use of scarce resources, several inter-Ministry groups have to

be established and their respective guidelines prepared. An emergency task force will identify roles for the various Ministries to enable the Government to control an outbreak. Emergency guidelines should also include compensation issues.⁵⁶ Risk assessment requires intensive training and, thus, a small core group of risk assessors under either the University or a research institute to be supported by specialists from MAF and MOH would enable Lao PDR to conduct pest or disease risk assessments at minimal costs. To carry out their respective responsibilities and identify potential difficulties or capacity needs, each of the Ministries should prepare individual action plans for food safety, plant and animal health. These work plans should be prepared in close coordination with the preparation of laboratory work plans. These general and laboratory work plans should each identify the human resources necessary (an SPS skills program, see "Building human skills" below) to carry out the goals enumerated in the respective work plans. Finally, the amended legislation, new procedures on inspection and certification, and new emergency procedures (discussed above and under "Legislative issues") should be relayed and explained to the provincial and district offices who will carry out said functions.

Surveillance. An essential component of any SPS system is information regarding existing and potential hazards on food safety, animal and plant health. Therefore, the gathering of information on priority health risk through active surveillance allows government authorities to make informed decisions with regard to the allocation of resources, and prioritization of programs. In addition to the food safety and agricultural hazards, the monitoring of the production, sale and use of agrochemicals and veterinary materials should also be included.

Diagnostic capacity. It is recommended that a laboratory work plan (together with an SPS skills program, see discussion in previous paragraph) for each of the fields (food safety,

⁵⁶ The cost for the preparation of emergency guidelines does not include responses to avian flu or other outbreak responses, inclusion of such will greatly increase the cost.

animal and plant health) be developed first to determine priorities and capacity needs. On the basis of the laboratory work plan, the laboratory capacity can be upgraded. It is to be noted that the costs indicated under “Equipment and Supplies” for the upgrade of laboratory capacity are rough estimates and do not include prioritizations for highly pathogenic Avian influenza. The calibration of equipment is another essential step towards the functioning of laboratories and a cost-effective procedure has to be designed to carry this out. The equipment for rapid sampling/detection will help identify health risks in domestic market and the control of the entry of agricultural products at the provincial border posts.

Building human skills. It is recommended that a human resource development plan or program be developed for each of the fields of food safety, plant and animal health. This SPS skills program should be prepared alongside the development of the individual work plans and laboratory work plans and will then guide each Ministry on their training and scholarship programs. For the more technical or more demanding positions, it would be useful if the Ministries would have some (specific) personnel development plan, i.e. to train the people who will have major SPS-related responsibilities in the future (it would be a waste of resources if the people who received training will not be able to practice it).

Training for all levels of SPS capacity will be undertaken based on SPS skills program. The most technically demanding of these is risk assessment capacity for all the fields—food safety, animal and plant health. Thus, the country would do well in making use of scarce resources by having only a small group of individuals to undertake risk assessment training. (A hands-on training with a foreign Government institution that regularly undertakes risk assessment may be more practical than formal courses at a University.) These individuals can then perform risk assessment for any of the three fields with proper support from the relevant Ministry specialist. This arrangement then does not necessitate each Ministry to have its own risk assessment staff.

However, it is recommended to have the Ministry support specialists undergo training and acquire basic knowledge of risk assessment so they would be aware of the procedures and data needs of risk assessments. Moreover, as risk managers responsible for SPS decisions, the Ministry staff should be able to conduct economic analysis, such as cost-benefit analysis, so they can make decisions on the basis of the risk assessments performed.

Regional cooperation. An inter-Ministry group is formed to hold regular consultations with the country’s primary trading partners—China, Vietnam and Thailand. The talks focusing on agricultural trade will include issues regarding SPS requirements of these countries, compliance to these requirements, border procedures, joint undertakings particularly with regard to the surveillance and control of trans-boundary diseases, and possible technical assistance.

Public information and education. Various international bodies have relevant materials on food safety (FAO and WHO), animal health (OIE) and plant health (IPPC), perhaps a number of these are already available in Laotian and can readily be distributed among the consumers, producers and food processors. Materials in English or other languages should be translated. The Government can hold workshops for producers, processors, consumer groups and food retailers. A nationwide information campaign involving the local media (TV, radio and print) may be carried out to increase awareness on common health issues, such as fish-borne parasites. Other materials specific to Laotian culture (on food preparation and hygienic practices, for example) may be prepared by the relevant Ministry and made available to the public.

Recommendations for the Academic Sector (University)

The existing curricula of the University need stronger and more up-to-date programs on food safety, animal and plant health that can respond to the human resource needs of an efficient SPS system. The implementation of the new curricula would then require advanced

training for the faculty and infrastructure—offices, classrooms and laboratories. Training for the faculty may be achieved through twinning projects with international universities (Australia, Japan, Thailand or Vietnam) either by sending Lao faculty to their universities for training or having international experts come to Lao PDR to teach. To complement this, the various Ministries may provide their staff either with more specialized studies or higher education in preparation for a more involved SPS position in the future.

Recommendations for the Private Sector

The actions for the private sector will directly improve the competitiveness of the sector—initiating pilot projects involving outgrower schemes, promoting business and exporter associations, encouraging the adoption of HACCP by processing food plants and providing the coffee exporter association with the authority to establish and implement guidelines on quality control, pest management and the issuance of phyto certificates.

APPENDIX TABLE C.1 Cost Estimate for SPS Capacity Building, US\$, 2007–2011

Recommended actions	Technical assistance	Training/workshops	Equipment & supplies	Total
PUBLIC SECTOR				
Coordination team and preliminary studies				
1. Establish coordination team International SPS coordinator: 36 months + travel (10 times)	36 x \$20,000 = \$720,000 10 x \$7,000 = \$70,000 In-country or regional travel (for 4-5 years): \$70,000 Full-time translator (5 years): 60 x \$3,000 = 180,000		3 computers, office equip.+ miscellaneous (for 4-5 years): \$100,000	1,140,000
2. Conduct studies on the following: a. SPS requirements of potential markets for NTAE b. Consistency of SPS requirements of both Lao PDR and trading partners with WTO&AFTA c. Possibility of local certification	1 international + 1 local consul- tant for 2 months for each study: 2 x 3 x \$20,000 = \$120,000 3 x \$7,000 = \$21,000 2 x 3 x \$3,000 = \$18,000 In-country or regional travel: \$30,000	1 workshop with 50 partici- pants for each study: 3 x 50 x \$20 = \$3,000		192,000
Legislative and regulatory issues				
3. Review legislation on food safety, plant and animal health on compliance with SPS agreement and to recommend ways for effective enforcement and implementation	1 international consultant +1 local consultant each for food safety, plant health, and animal health 1 local consultant for legislative matters; for 2 months 3 x 2 x \$20,000 = \$120,000 3 x \$7,000 = \$21,000 4 x 2 x \$3,000 = \$24,000			165,000
4. Establish legislative task force and work plan in preparation for drafting of legislative amendments	1 international consultant + 1 local consultant for 1 months \$20,000 + \$7,000 = \$27,000 \$3,000		3 computers +miscellaneous, also to be used for the drafting of amendments = \$30,000	60,000

APPENDIX TABLE C.1 Cost Estimation for SPS Capacity Building, US\$, 2007–2011 (Continued)

Recommended actions	Technical assistance	Training/workshops	Equipment & supplies	Total
PUBLIC SECTOR (Continued)				
Legislative and regulatory issues (Continued)				
5. Draft proposed amendments on: <ul style="list-style-type: none"> a. effectiveness of enforcement b. import restrictions to protect against human health hazards, pests and diseases c. monitoring and enforcement of the import, production, sale and use of agrochemicals d. inclusion of emergency powers for plant/animal authorities e. better governance on border procedures <p><i>Note:</i> 4 months (to be distributed over course of project) for international consultants, 12-18 months for local consultants. International consultants are allotted 2 travels, to provide intensive guidance in the initial drafting and, later, to review final draft. Local consultants are expected to have longer involvement.</p>	1 international consultant +1 local consultant each for food safety, plant health, and animal health 1 local consultant for legislative matters $3 \times 4 \times \$20,000 = \$240,000$ $2 \times 3 \times \$7,000 = \$42,000$ $4 \times 18 \times \$3,000 = \$216,000$	Workshop, refer to Action #11	Using equipment and supplies from task force, see Action #4 Copies of (proposed) amendments or new legislation for dissemination to provincial and district offices: \$7,000 Refer to Action #11	505,000
6. Review and amend regulations/procedures on food safety, plant/animal health on: <ul style="list-style-type: none"> a. better guidelines for inspection and certification b. unnecessary inspection and permit requirements c. more effective lines of communication and better incentives for disease reporting (especially in cases of outbreaks), d. possible simplification of border procedures 	1 international consultant +1 local consultant for 4 months each for food safety, plant health, and animal health 1 local consultant for legislative matters $4 \times 3 \times \$20,000 = \$240,000$ $3 \times \$7,000 = \$21,000$ $4 \times 4 \times \$3,000 = \$48,000$ In-country travel: \$30,000	Workshop, refer to Action # 11	Copies of new regulations and procedures for dissemination to provincial and district offices: \$7,000 Refer to Action #11	346,000
Institutional issues				
7. Determine implications of proposed amendments to downstream responsibilities and inspection and testing capacity needs of various Ministries and agencies	1 international consultant + 3 local consultants (food safety, plant and animal health) for 3 months $3 \times \$20,000 + \$7,000 = \$67,000$ $3 \times 3 \times \$3,000 = \$27,000$			94,000
8. Prepare national guidelines outlining responsibilities of Ministries in cases of outbreaks Establish inter-Ministry emergency task force to deal with pest/disease outbreaks	1 international consultant + 3 local consultants (food safety, plant and animal health) for 6 months $6 \times \$20,000 + \$7,000 = \$127,000$ $6 \times 3 \times \$3,000 = \$54,000$	Workshop, refer to Action #11	Copies of guidelines for dissemination to provincial and district offices: \$7,000 Refer to Action #11	188,000

(Continued)

APPENDIX TABLE C.1 Cost Estimation for SPS Capacity Building, US\$, 2007–2011 (Continued)

Recommended actions	Technical assistance	Training/ workshops	Equipment & supplies	Total
PUBLIC SECTOR (Continued)				
Institutional issues (Continued)				
9. Establish small core group of risk assessors under University/research institute with support specialists from MAF and MOH	1 international consultant + 1 local consultant for 2 months $2 \times \$20,000 + \$7,000 = \$47,000$ $2 \times \$3,000 = \$6,000$	Training, refer to Action #18		53,000
10. Prepare individual actions plans (food safety, plant and animal health) The preparation of the individual work plans should be done in close coordination with or alongside the preparation of lab work plans (Action #13). Moreover, it is recommended that these work plans include the identification of human resource requirement to be able to achieve goals (Action #17).	1 international consultant + 3 local consultants (food safety, plant and animal health) for 3 months $3 \times \$20,000 + \$7,000 = \$67,000$ $3 \times 3 \times \$3,000 = \$27,000$			94,000
11. Communicate new legislation, regulations, procedures and emergency guidelines to provincial and district offices 3 SPS workshops for provincial and district staff/inspectors with 40 participants each for food safety, plant health and animal health to discuss: a. SPS in general b. (Proposed) Changes in legislation (Action #5 above) c. Changes in procedures and regulations (Action #6 above) d. Emergency guidelines (Action #8 above)	Refer to Action #5, Action #6 and Action #8 above In-country travel: \$20,000	3 workshops with 40 participants each for food safety, plant health and animal health: $3 \times 3 \times 40 \times \$20 = \$7,200$	Distribute copies of new legislation, regulations, procedures and emergency guidelines developed in previous actions Refer to Action #5, Action #6 and Action #8	27,200
Surveillance				
12. Create databases through active surveillance for the following: a. Human health hazards caused by food- and water-borne diseases b. Plant pests/disease specimens c. Animal disease prevalence d. Production, sale and use of agro-chemicals & veterinary materials	1 international consultant + 1 local consultant each for food safety, plant and animal health 4 months for international consultants; 24 months for local consultants $4 \times 3 \times \$20,000 = \$240,000$ $3 \times \$7,000 = \$21,000$ $24 \times 3 \times \$3,000 = \$216,000$ In-country travel: \$50,000	2 workshops for provincial and district staff with 40 participants each for food safety, plant health and animal health: $2 \times 3 \times 40 \times \$20 = \$4,800$	3 computers + computer support (software, etc.) + misc: \$100,000 Equipment for communication, collection and storage: \$100,000	731,800
Diagnostic capacity				
Note: The following actions should be done in close coordination to assure consistency with planned capacity and needed equipment.	1 international consultant + 1 local consultant for 6 months each for food safety, plant and animal health:		25 mini-kits for 4 diagnostic ranges at \$2500 each: \$250,000	725,000

APPENDIX TABLE C.1 Cost Estimation for SPS Capacity Building, US\$, 2007–2011 (Continued)

Recommended actions	Technical assistance	Training/workshops	Equipment & supplies	Total
PUBLIC SECTOR (Continued)				
Diagnostic capacity (Continued)				
13. Develop lab work plans for food safety, animal and plant health (Refer to Action #10) Work includes identification of appropriate equipment for labs (Action #16)	6 x 3 x \$20,000 = \$360,000 3 x \$7,000 = \$21,000 6 x 3 x \$3,000 = \$54,000 In-country travel: \$40,000			
14. Assess/design cost-effective regular calibration of equipment				
15. Acquire equipment for rapid detection and screening for provinces/border posts				
16. Upgrade lab capacity in accordance with recommendations from Action #13 International consultant will advise on installation and initial testing of equipment, provide training for local staff on proper operation and calibration, will advise on steps to obtain accreditation to ISO 17025. (excluding special budget for highly pathogenic Avian influenza)	1 international consultant for 5 months each for labs of food safety, plant and animal health: 5 x 3 x \$20,000 = \$300,000 3 x \$7,000 = \$21,000	Training for 100 lab staff: 100 x \$20 = \$2,000	Rough estimate of \$250,000 each for 3 labs – food safety, plant and animal health: \$750,000	1,073,000
Building human skills				
17. Develop an SPS skills program that will identify human resource requirements to achieve the goals identified in the individual work plans (Action #10) and laboratory work plans (Action #13).	Refer to Action #10 and Action #13			
18. Provide training on risk assessment of food safety, animal and plant health Two kinds of training: a. Overseas training for core group of risk assessors (Action #9) b. Local basic risk assessment training for staff of MAF, MOH and STEA	1 international consultant to provide basic risk assessment workshops (2 or 3) for staff of MAF, MOH and STEA (total of 80 participants) (2 months) 2 x \$20,000 + \$7,000 = \$47,000	Training for core group, 5 persons at (assumed) \$50,000 each: \$250,000 Basic training (assumed 2 days): 80 x 2 x \$20 = \$3,200		300,200
19. Provide training on economic analysis, cost-benefit analysis for senior staff of MAF and MOH (overseas)		9 persons at (assumed) \$30,000 each: \$270,000		270,000
20. Training at all levels for all other SPS capacity Two types of training: a. Overseas training for staff of MAF and MOH to be future trainers b. Local training for all other staff by trainers	In-country travel for trainers: \$30,000	Overseas training for future trainers, 20 persons at (assumed) \$20,000 each: \$400,000 Training for 200 persons at \$20: \$4,000	Equipment and supplies for inspection and issuance of certification: \$100,000	534,000

(Continued)

APPENDIX TABLE C.1 Cost Estimation for SPS Capacity Building, US\$, 2007–2011 (Continued)

Recommended actions	Technical assistance	Training/ workshops	Equipment & supplies	Total
PUBLIC SECTOR (Continued)				
Regional cooperation				
21. Conduct periodical bilateral consultations with China, Vietnam and Thailand Consultations are assumed to be held twice a year for four years for each of the three countries. Trade panel composed of 5 Government staff. International consultant to assist in setting up trade panel and to advise on agenda for negotiations and trade and SPS issues	1 international consultant, 2 months: $2 \times \$20,000 + \$7,000 = \$47,000$ Regional travel: $2 \times 4 \times 3 \times 5 \times \$5000 = \$600,000$	Relevant training for trade panel, 5 persons at \$30,000 each: \$150,000		797,000
Public information and education				
22. • Design and initiate educational campaigns • International consultant to advice on relevant materials and design of campaign • Workshops to be held for producers, foodprocessors, consumer groups, and food retailers • Use of local media (TV, radio and print) to disseminate general information on hygiene or info on specific health concerns, such as fish-borne parasites 23. Gather, translate and disseminate relevant materials to stakeholders	1 international consultant + 1 local consultant, 2 months: $2 \times \$20,000 + \$7,000 = \$47,000$ $2 \times \$3,000 = \$6,000$ 5 local consultants to translate technical materials, 4 months: $5 \times 4 \times \$3,000 = \$60,000$	Workshops for 100 participants at \$20: \$2,000 Use of local media: \$200,000	Information materials and supplies: \$100,000	415,000
Estimated costs for the public sector	4,863,000	1,296,200	1,551,000	7,710,200
UNIVERSITY				
24. Develop and implement appropriate University curricula on animal and plant health and food safety Implementation of new curricula would require both additional faculty and infrastructure to house labs and equipment	1 international consultant + 1 local consultant to develop revised curricula for 3 months: $3 \times \$20,000 + \$7,000 = \$67,000$ $3 \times \$3,000 = \$9,000$ Lump sum for twinning arrangements \$200,000	Advanced training for existing faculty, 9 persons at \$30,000 each: \$270,000	Infrastructure – building and labs: \$300,000 Equipments and supplies: \$150,000	996,000
25. Provide higher education and specialized studies for MAF and MOH staff Scholarships for senior staff Assumptions: • Overseas training, 3 persons at \$20,000 each • Master's level, 3 persons at \$30,000 each • PhD level, 3 persons at \$50,000 each		Overseas training: \$60,000 Master's level: \$90,000 PhD level: \$150,000		300,000
Estimated Costs for the University	276,000	570,000	450,000	1,296,000

APPENDIX TABLE C.1 Cost Estimation for SPS Capacity Building, US\$, 2007–2011 (Continued)

Recommended actions	Technical assistance	Training/ workshops	Equipment & supplies	Total
PRIVATE SECTOR				
26. Promote outgrower schemes via pilot projects Workshop for producers, traders, processors and retailers	Int'l consultant, 3 months, 2 visits: 3 x \$20,000 = \$60,000 2 x \$7,000 = \$14,000 Local consultant, 12 months: 12 x \$3,000 = \$36,000 Matching grants: \$100,000	Workshop for 50 persons at \$20 each: \$1000		211,000
27. Promote business and exporter associations Workshop for agribusiness groups and exporters associations, with support from MOIC	Int'l consultant, 2 months, 2 visits: 2 x \$20,000 = \$40,000 2 x \$7,000 = \$14,000 Local consultant, 6 months: 6 x \$3,000 = \$18,000 Matching grants: \$100,000	Workshop for 50 persons: \$1,000		173,000
28. Provide mandate for coffee exporter association on quality control, pest management and issuance of phyto certificates Workshop for coffee producers and exporters, with support from plant authorities	Int'l consultant, 2 months, 2 visits: 2 x \$20,000 = \$40,000 2 x \$7,000 = \$14,000 Local consultant, 6 months: 6 x \$3,000 = \$18,000 Matching grants: \$100,000	Workshop for 50 persons: \$1,000		173,000
29. Promote HACCP to processed food plants Workshop for food processors, with support from MOH	Int'l consultant, 3 months: 3 x \$20,000 + \$7,000 = \$67,000 Local consultant, 6 months: 6 x \$3,000 = \$18,000 Matching grants: \$100,000	Workshop for 50 persons: \$1,000		186,000
Estimated Costs for the Private Sector	739,000	4,000		743,000

Cost-Benefit Exercise for the Lao PDR SPS Action Plan

A simplified computation of costs and benefits is applied to provide some insights in the potential benefits of the SPS Action Plan. Indicative figures for benefits are assumed for animal health, plant health, and public health. The assumptions used may be arbitrary but hopefully within reason.

Scenarios

The exercise illustrated in Appendix Table D.1 was extended to examine deviations in net benefits with optimistic and pessimistic cases. The optimistic case assumes the negative net benefits were lower by 5 percent and the positive, higher by 5 percent. The operating costs may have been lower or there were positive spillover effects. The pessimistic case is the opposite—higher negative net benefits and lower positive net benefits. Net present values remain to be positive for the three discount rates. The IRR ranged from 21 percent in the pessimistic case to 25 percent in the optimistic case.

Costs

The investment cost is the estimated costs of the recommended actions for the public sector, US\$7.7M, spread over the first three years. An annual additional cost of US\$1 million is assumed for operational cost, maintenance and depreciation.

Benefits

Benefits include economic benefits and non financial human values. The economic benefits can occur through (a) increased exports through improved market access, (b) reduced risks of non-compliance with international requirements and, hence, less risk of trade bans in foreign markets, (c) lower losses agricul-

tural production by improved prevention of damage from pest and diseases, (d) lower losses of productive days for workers through better surveillance, control and prevention, and (e) lower medical cost. Reduced mortality and reduced suffering from food related health hazards are important human values.

Unfortunately, there are at present few hard data readily available in Lao PDR to quantify the benefits. Here assumptions are made about financial benefits as a proportion of value added of production and some financial impacts of reduced health hazards. Since important human benefits are not included in the assessment, such as the benefits from reduced suffering and mortality, especially child mortality, the total benefits are underestimated.

Animal health. Agriculture value-added in 2005 is US\$1.1 billion (WB SIMA). Livestock value-added for the same year was 35 percent (Bank of Lao PDR Annual Reports) of this value-added or US\$385 million. Using this information, the assumption is made that by the fifth year, the benefits derived from the improvements in surveillance and diagnostic capacity, among others, would amount to 0.8 percent of US\$385 million or US\$3.1 million.

Plant health. Although crops contributed 59 percent or US\$649 million to agriculture's value-added, it would be mostly the fruit, vegetable and coffee production that would benefit from the SPS measures to be put in place. The assessment assumes the value-added of the plant sector to gain 0.25 percent of US\$649 million or US\$1.62 million.

Public health. According to the Lao Expenditure and Consumption Survey 2002 (LECS 3), about 14 percent of the people surveyed had temporary health problems, of these cases, 56 percent resulted in the disruption of work, schooling and other activities. If

we are to extrapolate this information to the 5.8 million people, about 455,000 people had their activities disrupted by temporary health problems. The assessment assumes that SPS measures would prove effective in assuring safe food supply and educating producers, consumers and other food handlers about proper hygiene and this would be translated to a reduction in incidence of illnesses—with a US\$1 loss/person/day, a savings of US\$0.455 million (the average person's number of sick days is reduced by one).

The assumed "full" benefits (US\$3.1 million for animal health, US\$1.62 million for plant health, and US\$0.455 million for pub-

lic health) are assumed to accrue by the fifth year; however, some degree of benefits (25 percent of the “full” benefits) start in the third year and grow in Year 4.

Results

Net economic benefits are positive for discount rates of 5 percent, 10 percent and 15 percent. Consistent with this result is the computed internal rate of return of 23 percent for the base case. The exercise shows that even with the high public investment required, improved SPS capacity can result into positive benefits—the benefits for the future years outweigh the costs incurred in the initial years.

APPENDIX TABLE D.1 Cost Benefit Exercise[illegible]

Glossary

Absorptive capacity: Ability of countries to make efficient use of aid money.

Accession: Access or admittance, as in accession to WTO or ASEAN.

Accreditation, laboratory (*also, accreditation bodies*): Formal recognition that a laboratory is competent to perform specified tests or measurements. An accreditation body is an organization that performs accreditation service. (UNIDO)

Agricultural diversification: Broadening the range of products produced, often in response to changing opportunities created by new technology or market demand.

Agricultural health: Animal health and plant health, see animal health and plant health.

Agrochemical: Synthetic chemical used in agriculture such as fungicide, pesticide, insecticide, chemical fertilizer, herbicide, feed additives, fumigant, plant hormones, steroids and antibiotics.

Agronomic testing: Includes crops and soil testing.

Animal health: Issues pertaining to diseases of fish, bees and livestock and the prevention thereof.

Border post: Port, airport, railway station or road checkpoint open to international trade of commodities and where veterinary or plant inspections may be performed. (OIE)

Buffer zone: Zone established to protect health status of animals in a country free of a certain disease from a country or zone with a

different health status to prevent spread of pathogenic agent that causes the particular disease. (OIE)

Calibration, traceable: Calibration consists of comparing the output of the process or instrument being calibrated against the output of a standard instrument of known accuracy when the same input (measured quantity) is applied to both instruments. Traceable calibration is a mandatory requirement in meeting standards such as ISO 9000, and requires documentation that shows that process instruments are calibrated by standard instruments which are linked by a chain of increasing accuracy back to national reference standards

Certification of geographic origin: Certifies a good as originating in a region or locality "where a given quality, reputation or other characteristic of the good is essentially attributable to its geographic origin." (WTO)

Conformity assessment : Entire process that includes testing, calibration, inspection and certification to determine whether products, processes, systems and people meet specified requirements. (UNIDO)

Contract farming: Agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products usually characterized with forward agreements, frequently at predetermined prices. (FAO)

See outgrower scheme

Disinfestation: Application of procedures to eliminate arthropods which may cause disease or are potential sources of infectious agents of animal disease or zoonoses. (OIE)

Arthropods include insects, centipedes, millipedes, spiders, scorpions, mites and ticks.

Dunnage: Loose packing material used to protect a ship's cargo from damage during transport

Epidemiology: Study of the causes, distribution, and control of disease in populations.

Equivalence: When the sanitary and phytosanitary measures of one country, though not identical to another country's SPS measures, have the same effect or achieve the same level of sanitary or phytosanitary protection. (WTO)

False positive: When the result of an individual test is positive but the disease or condition is not present. (FAO EMPRES)

Good agricultural practice (GAP): GAP refers to the application of recommendations and available knowledge to addressing environmental, economic and social sustainability for on-farm production and post-production processes resulting in safe and healthy food and non-food agricultural products. (FAO)

Germplasm: Plants intended for use in breeding or conservation programs. (FAO)

Hazard Analysis and Critical Control Point (HACCP): A widely accepted food safety management system to assure the safety of food. The approach monitors critical points in food chain to prevent food safety problems by identifying specific hazards and measures for their mitigation to ensure the safety of food. (FAO Food Quality and Safety Systems Manual, 1998)

Harmonization (of standards): The establishment, recognition and application by different countries of sanitary and phytosanitary measures based on common or uniform standards. (WTO)

International Organization for Standardization (ISO): ISO is a non-governmental organization that is a network of the national standards institutes of different countries that seeks to achieve a consensus among these countries on specifications and criteria to be applied consistently in the classification of materials, in the manufacture and supply of products, in testing and analysis, in terminology and in the provision of services.

ISO 9000 provides a framework for quality management throughout the processes of producing and delivering products and services.

In June 1997, Codex recommends that laboratories responsible for control of export and import foods comply with ISO/IEC Standard 17025 "General Requirements for the Competence of Calibration and Testing Laboratories." (ISO)

International Standards for Phytosanitary Measures (ISPM): Standards, guidelines and recommendations adopted by contracting parties to the IPPC (and selected other FAO members) as the basis for phytosanitary measures. (IPPC)

Maximum residue level (MRL): It is the maximum concentration of a pesticide, veterinary drug or other chemical substance residue (expressed as mg/kg), recommended by the Codex Alimentarius Commission to be legally permitted in or on food commodities and animal feed. Food derived from commodities that comply with the respective maximum residue levels are intended to be toxicologically acceptable and safe for human consumption. (FAO).

Food regulators can use maximum residue levels different from those recommended by Codex Alimentarius, and choose their own maximum residue levels for substances and food products for which no Codex Alimentarius advice has been formulated.

Monitoring: Continuous investigation of an infected population or subpopulation and its environment to detect changes in the prevalence or incidence of a disease, often to chart progress of a disease control program in assessing its effectiveness. (OIE, FAO EMPRES)

See Surveillance

Morbidity rate: Incidence or prevalence of disease. (FAO EMPRES)

Mortality rate: Proportion of death in a population. (FAO EMPRES)

Mutual recognition arrangements: Mechanisms by which a user or acceptance authority in one country can have sufficient confidence in the validity of test reports and calibration certificates from laboratories in foreign countries without having to make individual evaluations of the competence of those laboratories. (UNIDO)

Non-discrimination in trade: A country treats its trading partners equally (giving them equally “most-favored-nation” or MFN status). Some exceptions are free trade areas where special arrangements apply to goods traded among countries within the “free trade area”.

Also, imported and locally-produced goods are treated equally—at least after the foreign goods have entered the market. This treatment of foreign and domestic goods, services, trademarks, copyrights and patents is known as “national treatment”—giving others the same treatment as one’s own nationals. (WTO)

Notifiable disease: Disease listed by law which as soon as detected or suspected, must be brought to the attention of veterinary authority. (OIE)

OIE listed diseases: Transmissible diseases agreed by the OIE International Committee (Chapter 2.1.1 of the Terrestrial Animal

Health Code 2005). In May 2004, OIE member countries approved the creation of a single list of diseases notifiable to the OIE. A new list has been approved in May 2005 by the International Committee and became effective in 2006. [Note that before 2006, diseases notifiable to the OIE were classified into two lists, List A and List B]

Outbreak: Occurrence of disease in an identifiable group of animals (for example, animals in a pen, or animals within a village) at a level greater than that normally expected. (FAO EMPRES)

Outgrower scheme: Contractual relationship between farmers and a wholesaler or manufacturing company where the companies provide extension services to farmers and provide inputs on loan that are to be repaid at the time of harvest.

See contract farming

Pest: Any biotic agent capable of causing injury to plants or animals or to plant and animal products.

Pest list: [Also referred to as regulated pest lists] Either or both a list of quarantine pests associated with the plant products which are not present in the importing country, and/or of pests of quarantine importance associated with the product found only in parts of the importing country and are subjected to official control. These lists are a requirement under the International Plant Protection Convention (IPPC), and aim to help in safeguarding activities including pre-clearance inspection at ports of entry, exotic pests surveys, and eradication activities.

See quarantine pest, regulated non-quarantine pest, regulated pest

Pest categorization: Produce a list of pests of the commodity parent species and then determine their quarantine status. (FAO)

Pesticide residue: Any specified substance in food, agricultural commodities, environment or animal feed resulting from the use of a pesticide. The term includes any derivatives of a pesticide that are considered to be of toxicological significance. (FAO)

Phytosanitary: Pertaining to plant quarantine. (FAO)

Phytosanitary certificate also, phytosanitary certification: A phytosanitary certificate is an official document which attests to the phytosanitary status of any consignment affected by phytosanitary regulations. (FAO)

Phytosanitary legislation: Basic laws granting legal authority to the relevant Ministry or agencies to draft phytosanitary regulations. (FAO)

Phytosanitary measure: Any legislation, regulation or official procedure having the purpose to prevent the introduction and/or spread of quarantine pests. (FAO)

Plant health: Issues pertaining to pest and diseases affecting plants and the prevention thereof.

Plant quarantine: All activities designed to prevent the introduction and/or spread of quarantine pests or to ensure their official control. (FAO)

Proactive: Anticipate future changes and incorporate responses in long-term development goals/plans. (WB)

Prevalence: Total number of cases or outbreaks of disease present in a population at risk in a particular geographical area. (OIE)

Quarantine: For plants, official confinement of plants or plant products subject to phytosanitary regulations for observation and research or for further inspection, testing and/or treatment. (FAO)

For animals, isolating a group of animals in such a way that it precludes contact with other animals and prevents spread of disease. Dur-

ing quarantine animal may undergo observation for a specified length of time and, if appropriate, testing and treatment. (OIE)

Quarantine pest: A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled. (FAO)

Recurrent cost: Operating costs

Regulated non-quarantine pest: A non-quarantine pest whose presence in plants for planting affects the intended use of those plants with an economically unacceptable impact and which is therefore regulated within the territory of the importing contracting party. (IPPC, 1997)

Regulated pest: A quarantine pest or a regulated non-quarantine pest. (IPPC, 1997)

Risk: Likelihood of the occurrence and likely magnitude of the consequences of an adverse event to human health, plant and animal health in an importing country as a result of a hazard. (OIE)

Risk analysis: Process composed of hazard identification, risk assessment, risk management, and risk communication. (FAO)

Risk assessment is the evaluation of the likelihood and the biological and economic consequences of entry, establishment, or spread of a pathogenic agent within the territory of an importing country. Risk management is the process of weighing policy alternatives in the light of the results of risk assessment and, if required, selecting and implementing appropriate control options, including regulatory measures. Risk communication is the interactive exchange of information on risk among risk assessors, risk managers and other interested parties.

In plant health, a Pest Risk Analysis consists of pest risk assessment and pest risk management. Pest risk assessment is the determina-

tion of whether a pest is a quarantine pest and evaluation of potential effects of its introduction. Pest risk management is the decision-making process of reducing the risk of introduction of a quarantine pest (FAO)

Sanitary and phytosanitary (SPS) measures:

Any measure applied to protect human, animal and plant health or life from risk arising from the entry, establishment or spread of a hazard. (OIE)

Science-based: Based on scientific justification or as a consequence of consistent risk decisions based on an appropriate risk assessment. (WTO)

Stamping out: Method of eradicating disease by killing all animals that are infected and/or exposed to pathogens in a herd or defined region. (OIE)

Surveillance (*also, active surveillance, passive surveillance*): Observation and investigation of a susceptible (uninfected) population or subpopulation aimed at the early detection of cases of a particular disease so that control action can be quickly instituted. (OIE, FAO EMPRES)

Surveillance is often subdivided into two categories, passive and active. Passive surveillance is the secondary use of routinely collected data which was generated for some other purpose such as diagnostic service. Active surveillance is the routine collection of data whose primary purpose is for surveillance. (FAO EMPRES)

See Monitoring

Traceability : Ability to follow the movement of a food through specified stage(s) of production, processing and distribution chain. (Codex Alimentarius Commission)

Transboundary animal disease: Diseases that are of significant economic, trade and/or food security importance for a considerable

number of countries; which can easily spread to other countries and reach epidemic proportions; and where the control and/or management, including exclusion, requires cooperation between several countries. (FAO EMPRES)

Transit, transit corridor: Country or area through which commodities destined for an importing country are transported or in which a stopover is made at a border post (OIE)

Transparency: The principle of making available, at the international level, information on sanitary and phytosanitary measures and their rationale. (OIE, FAO)

Zoonosis: Disease or infection that is naturally transmissible from animals to humans (OIE)

Sources:

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Persons Interviewed

- Dr. Phoung Parisak PRAVONGVIENKHAM, Permanent Secretary, MAF
- Mr. Xaypladeth CHOULAMANY, Deputy Permanent Secretary, MAF
- Ms. Khemmani PHONESENA, Director General, Foreign Trade Department, MOIC
- Mr. Inthadom AKKHARATH, Deputy Director, Permanent Secretary Office, MAF
- Mr. Viravanh PHANNOURATH, Director General, Department of Agriculture, MAF
- Mr. Phaydy PHIAXAYSARAKHAM, Director, Agricultural Regulatory Division, Department of Agriculture, MAF
- Mr. Bounlom DOUANGNGEUN, Director, National Animal Health Centre, MAF
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- Mr. Sivong SENGALOUNDETH, Pharmacist, Head, Administration Division, MOH
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- Dr. Steven C. SCHEPLEY, Consultant Team Leader, Lao Consulting Group

Mr. Kevin RUTTER, Team Leader, Participatory Livestock Development Project, ADB, CIAT

Oudomsab Company

Daoheuang Import & Export Company

Cabbage planters, Thongset area, Paksong district

Paksong Highland Company

Ms. Sisavath XAVANA, QA Auditor, Lao Brewery Co. Ltd.

Ms. Chanmaly VANHNABOUN, Director, STE Lao International, (Group Lieu Tou)

Dr. Sisaliao SVENGSAUKSA, President, Lao Farmer's Product

Mr. Boonchai PUNYALERDCCHAI, Director Manager, Lao Agro Industry Co. Ltd.

Mr. Khamsavang MINGBOUBPHA, Director, Lao Arrowny Corporation

Mr. Eric SISOMBAT, Coffee Planter/Trader/Roaster, Lacomex Co. Ltd.



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