ECONOMIC AND FINANCIAL ANALYSIS

A. Introduction

1. The project comprises the strengthening of national sanitary and phytosanitary (SPS) institutional performance across a broad range of public expenditure types (i.e., hardware and software investments, including the upgrade of academic education) designed to improve understanding and management of trade-related risks in plant health, animal health, and food safety—covering trade in agriculture, food, and forestry (AFF) products in Cambodia and the Lao People's Democratic Republic (Lao PDR). The project also contains elements of regulatory improvement and institutional development, although not policy reforms per se. The project is typical of many SPS investments, in that (i) it comprises a number of heterogeneous activities and delivers somewhat differentiated outputs; (ii) the created and enhanced physical capacities (e.g., laboratories) may only be a part of wider systems that undertake other tasks (i.e., beyond performing SPS functions alone); and (iii) major elements of information exchange (between various domestic agencies and across borders—with trading partners) and technical skills upgrading are very hard to quantify in terms of impact. In short, clear identification and quantification of the linkages between the project investments (i.e., the various types of activities undertaken and outputs delivered) and identifiable economic impacts is especially difficult for SPS investments. For this reason, more detailed and extensive discussion regarding the methodological issues (especially in identifying, quantifying, and valuing impacts) surrounding the economic analysis of SPS projects is available as a supplementary document.[1]

B. Economic Rationale for Investment

2. The economic rationale for the proposed investments rests largely on the public goods nature of the goods and services to be provided.[2] However, it is supported on a subregional economic goods basis; without public intervention, SPS public (and varying impure public) goods supply will be suboptimum and under-provided—especially where weaker or weakest link technology [3] is involved and where the poorer member countries (especially Cambodia and the Lao PDR in relation to SPS capacity) lack the capacity to meet relevant international standards (for health, for trade, etc.).[4] Transboundary and animal diseases (TAD) control and plant pests and diseases management across long and porous borders are classic examples of where subregional performance can be determined by weaker members' capacities.[5]

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[1] Supplementary Economic Analysis (accessible from the list of linked documents in Appendix 2 of the Report and Recommendation of the President) also contains detailed country-by-country discussion.

[2] In terms of the degree of publicness that Greater Mekong Subregion (GMS) goods exhibit, the control of communicable diseases and management of domestic food safety (for animals and humans) are classic examples of pure public goods (i.e., where there is non-rivalry in consumption, and it is not possible to separate and charge individual users—non-excludability). Many services designed to promote trade, support agriculture and livestock productivity, etc. by raising SPS standards and capacity would be classified impure public goods to varying extents—there may be opportunities to charge for services (thus rationing or excluding some potential users, e.g., for vaccinations) and there will likely be some rivalry in consumption (exhibited through congestion or queuing for such services). Other SPS goods may be de facto toll goods, such as testing certificates issued through government monopolies.

[3] SPS capacities in GMS countries are in part dependent on capacities in the weakest countries because of cross border spill-over effects.

[4] The only caveat to the economic logic and underlying rationale for the project within the GMS context is that in some areas (e.g., TAD control) Myanmar has limited SPS management capacity and its performance may compromise the subregion as a whole despite proposed investments.

[5] The location of Cambodia and the Lao PDR in the GMS and the fact that the project's design incorporates similar features to ensure that transboundary effects occur (e.g., regarding the management of TAD, supporting AFF trade among GMS countries and between GMS and the world) and may offer some possibilities for cost-sharing, means that the project embodies at least some subregional characteristics. Thus, its rationale and design can be considered using the framework of regional public goods analysis. For definitions and exposition of regional public

C. Summary of Economic Benefits

3. The Table summarizes the estimated potential economic benefits from various sources by project component and by country.[6] The total quantified benefits are estimated at $5 million–$10 million per country per year.

4. As well as quantification of the specified impacts, it is useful to consider the without-project scenario. For both Cambodia and the Lao PDR, in the absence of investments to increase national SPS capacity, it is likely that (i) the overwhelming majority of Cambodia and Lao PDR AFF trade will remain relatively small-scale, informal (and thus unrecorded, unregulated, and not generating any tax revenues), unprocessed, unsuited for value-adding processes, and destined to low-end markets; (ii) specific AFF export opportunities (such as rice, corn, and other exports to the PRC or cashew nut, fruit, and vegetables to high-end markets) will be lost (or will at best stall and be dependent on other countries' ability and willingness to inspect and approve their' primary produce); (iii) the countries will be at a greater risk from various forms of pest invasions, transboundary animal disease outbreaks, and food safety risks (especially tourist establishments, but also more widely); and (iv) both countries may become dumping grounds for some sub-grade agricultural inputs and consumer products in the region.

D. Alternatives Analysis

5. Alternative approaches to outputs delivery have been considered in the project design.[7] The chosen investment option has attempted to maximize cost-effectiveness.

6. In Cambodia, regional consultant skills have been assessed as appropriate and save over 50% of the total cost that would be incurred if all international consultants were to be used. In several cases, a small amount of international consultancy is combined with regional consultancy to combine full access to international good practice with regional expertise. National consultants are also used to the extent possible to promote cost-effectiveness—21 person-months are allocated to specific tasks under the technical components, and a further 40 person-months are included under project management for support on a need basis. As regards the use of laboratory facilities, one option would have been to construct three laboratories (i.e., one for plant health, one for animal health, one for food safety) at the Royal University of Agriculture (RUA) in Cambodia, costing about $1.2 million. The base cost of the proposed shared microbiology laboratory under the chosen option is about $620,000.[8] Recourse to regional laboratories is made where it is more cost-effective to send a small number of samples out of Cambodia to regional laboratories rather than establish such capacity within the country.[9] As well as choices between discrete alternatives, overall strategic choices in design have supported least cost approaches.

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[6] The bases for the calculation of these estimates are detailed in the supplementary economic analysis.

[7] Although alternative outputs are not always identical in qualitative terms (in the ways that hospitals, schools, etc. may be), it is possible to argue that an overall least-cost approach (e.g., to strengthen plant, animal, and food safety surveillance systems) has been adopted, in that choices of approach and technology have been employed to minimize costs per unit of expected output.

[8] Including equipment.

[9] In animal health, for example, regional reference testing costs $10,000—compared with hundreds of thousands of US dollars in capital costs for the required laboratory equipment. Likewise, the approach taken to large-scale sampling in food safety has been to use rapid test kits (at a total cost of about $160,000) as opposed to much more expensive analytic laboratory services.

Table: Indicative Scales of Economic Benefits from Project Components

Component	Cambodia	Lao PDR
Plant Health	1. Rice becomes SPS measures compliant: $50/ton at 50,000 tons = $2.5 million 2. New trade agreements $3 million + $1 million = $4 million annually of gross export revenues (= $0.8 million net economic benefit, based on prevailing enterprise budgets analysis) Expected beneficiaries are smallholder crop-producing households throughout Cambodia (i.e. rice-growers, plus cassava, cashews, fruits and vegetable producers).	1. Trade agreements: $3 million + $2 million + $0.5 million = $5.5 million annually of gross export revenues (= $1 million net economic benefit, based on prevailing enterprise budgets analysis) 2. Rice and corn value chains: $2.5 million + $2.5 million = $5 million annual net economic benefit. Expected beneficiaries are smallholders crop-producing (i.e. rice and corn) households, mainly in the northern provinces (trading with the PRC), but also other (largely southern) provinces adjoining Viet Nam.
Animal Health	Reduced livestock mortality: If the project sustains provincial livestock (cattle, pigs) populations by 1%, the annual economic benefit is $2.25 million (cattle) + $0.19 million (pigs) = $2.44 million for both. If the project sustains these populations by 0.5%, the annual economic value is $1.22 million annually. Including buffalo and goats may increase this estimate by 15%–20%, based on populations and current farm-gate prices. Expected beneficiaries are smallholder households owning livestock in three provinces (plus likely spillovers).	Reduced livestock mortality: If the project sustains provincial livestock (cattle, pigs) populations by 0.5%, the annual economic benefit is $1.31 million (cattle) + $0.13 million (pigs) = $1.43 million for both. If the project sustains these populations by 0.25%, the annual economic value is $0.72 million annually. Including buffalo and goats may increase this estimate by 50%–60%, based on populations and current farm-gate prices. Expected beneficiaries are smallholder households owning livestock in two provinces (plus likely spillovers).[a]
Food Safety	If the project reduces national disability adjusted life years (DALY) losses by 1% = $5.62 million annually If the project reduces national losses by 0.5% = $2.81 million annually Expected beneficiaries are potentially all of Cambodia's population, but mainly in urban areas (restaurant and food establishment users).	If project reduces national Disability Adjusted Life Years (DALY) losses by 1%, = $1.49 million annually; If project reduces national losses by 0.5% = $0.75 million annually. Expected beneficiaries are potentially all of the Lao PDR's population, but mainly in urban areas (restaurant and food establishment users).
Project	**About $5 million–$10 million annually**	**Up to $10 million annually**

PRC = People's Republic of China, Lao PDR = Lao People's Democratic Republic, SPS = sanitary and phytosanitary.

[a] Estimates from studies in the Lao PDR in the late 1990s (Perry et al, cited in McLeod) suggest costs of half a ton of rice to hire alternative animals for draught—perhaps $70 in 2011 prices. Other economic costs at household level would be medicines and reductions in sale values.

Source: Asian Development Bank estimates.

7. For example, (i) in the case of the plant health component, the scale and timing of technical inputs has been designed to correspond to, and coincide with, completion of annual pest survey cycles' fieldwork so that individual consultants will be involved with taxonomic identification work as well as more general training, and will thus provide effective in-depth mentoring functions on the job as opposed to stand-alone training in a generalized environment; and (ii) the animal health component has incorporated a reliance on vaccines from the Southeast Asia China Foot-and-Mouth Disease project in outbreak response as a way of developing regional links and a cost-effective source of supply.

8. In the Lao PDR, the project design has employed the extensive use of rapid test kits as a more cost-effective approach to strengthening surveillance and diagnostic capacity than using capital-intensive analytical equipment capable of handling large volumes of more expensive conventional tests annually. In addition, budget has been allocated to conduct small numbers of specific tests (e.g., on veterinary drug formulation, for screening of feeds for pesticides such as organochlorines and pyrethroids) and heavy metals to be carried out in neighboring countries (most likely Thailand or Viet Nam).[10] The construction of the shared core facility at the Faculty of Agriculture at the National University of Laos (FA-NUOL), compared with a more expensive approach of building specialist laboratories and teaching facilities for each of the three departments, is also cost-effective. Adopting the core approach costs about $625,000 for civil works (laboratory and teaching demonstration building) and shared equipment, compared with about double this for three individual facilities. Under the chosen option, student throughput per square meter is maximized, building costs per student are minimized, and economies of scale are realizable.[11]

E. Financial Sustainability and Fiscal Analysis

9. Consideration of financial sustainability and the fiscal implications for the governments of Cambodia and the Lao PDR has been undertaken. The financial sustainability of SPS projects is particularly acute because of their reliance on recurrent funding to maintain surveillance and testing systems, and the (presently limited) opportunities for cost recovery from the private sector.[12] Recurring expenditures for SPS systems can be grouped into two categories: (i) costs that support institutions' laboratory systems; and (ii) costs that are directly related to (seasonal or annual) plant, animal, and food safety surveys.[13]

10. In Cambodia, the first category of costs to support laboratory systems in addition to the investment costs totals just over $1.2 million over the 5 years across all components (about $243,000 a year). The base costs associated directly with the survey programs total $2.05 million ($410,000 a year). By component, animal health accounts for almost half of

[10] This suits Lao PDR surveillance circumstances, where anticipated testing volumes and demand for high precision in measurement are low. Investment in equipment for pesticide residues that can detect low levels of residues demanded by countries of the Organisation for Economic Co-operation and Development (OECD) can each cost up to $1 million in equipment and up to $100,000 in annual operational costs. Comparable investments for veterinary drug residues would be $750,000 and annual operational costs about $50,000.

[11] This is the case as long as a coordinated and collaborative management approach, which implies a small but manageable administrative overhead, is applied by faculty administration.

[12] The potential for cost recovery through charging fees for services (e.g., testing of feeds, pesticides, and food) is limited in all countries because of the modest size and sophistication of the private sectors and the absence of regulatory-driven compliance incentives.

[13] The two expenditure categories may include such items as the following: (i) for laboratory systems – outsourcing of testing and diagnostics to other laboratories (e.g., regional/neighboring countries), laboratory equipment servicing and calibration, training, documentation, proficiency testing, and accreditation; purchase of standards, columns, chemicals/reagents, and glassware, which may last for a few years; and the management and storage of survey data, laboratory records, etc.; and (ii) for operational and survey costs – items may include the purchase and collection cost of samples (plant, animal, food); rapid test kits (for aflatoxin, pest residues, formalin in seafood, etc.); staff travel and per diems for survey fieldwork; and other non-staff survey and inspection costs (small equipment items, stationary, communications, etc.).

project costs to support laboratories—the Department of Animal Health and Production would need additional resources of about $550,000; plant health (under General Directorate of Agriculture) requires about $350,000; and the RUA needs about $300,000. For operational and survey costs, animal health is about $950,000; food safety just under $500,000; plant health about $425,000; and Royal University of Agriculture and academic education about $175,000—all over the life of the project.

11. In the Lao PDR, the costs to support laboratory systems in addition to the investment costs total slightly over $1 million over the 5 years across all components (about $200,000 a year). The base costs associated directly with the survey programs total about $2.0 million ($400,000 a year). Animal and plant health each require about $440,000 (about $85,000 a year) to support laboratories; food safety accounts for the remainder ($127,000 or $25,000 a year). For operational and survey costs, plant health is about $550,000; animal health is about $850,000; food safety is about $325,000; and academic education is just over $300,000—all over the 5-year life of the project.

F. Regional Analysis

12. The project has significant regional orientation. In Cambodia, about 15% of the project costs are for regional activities (meetings, working groups, study tours) or resources (consultants, information, and skills). For the Lao PDR, the figure is just under 20% for regional activities.