Sector Assistance Program Evaluation

SAP: LAO 2005-17

Sector Assistance Program Evaluation for the Agriculture and Natural Resources Sector in the Lao People's Democratic Republic

December 2005

Operations Evaluation Department
Asian Development Bank

ABBREVIATIONS

ACFTA	–	ASEAN-PRC free trade area
ACMECS	–	Ayeyawaddy-Chao Phraya Mekong Economic Cooperation Strategy
ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
AFD	–	Agence Française de Développement
AFTA	–	ASEAN free trade area
ANR	–	agriculture and natural resources
APB	–	Agricultural Promotion Bank
ASEAN	–	Association of Southeast Asian Nations
AusAID	–	Australian Agency for International Development
BME	–	benefit monitoring and evaluation
CBTA	–	Cross-Border Transport Agreement
CEPT	–	common effective preferential tariff
CIDF	–	Community Irrigation Development Fund
CMI	–	community-managed irrigation
CMISP	–	Community-Managed Irrigation Sector Project
COSS	–	country and operational strategy study
CSP	–	country strategy and program
DAFEO	–	district agriculture and forestry extension office
DAFO	–	district agriculture and forestry office
DIDMSP	–	Decentralized Irrigation Development and Management Sector Project
DOI	–	Department of Irrigation
EA	–	executing agency
EdL	–	Electricité de Lao
EIRR	–	economic internal rate of return
FAO	–	Food and Agriculture Organization of the United States
FAPL	–	(first) Agriculture Program Loan
FDI	–	foreign direct investment
GDP	–	gross domestic product
GIS	–	geographic information system
GMS	–	Greater Mekong Subregion
HPO	–	Hydropower Office
IFAD	–	International Fund for Agricultural Development
IFC	–	International Finance Corporation
ILRI	–	International Livestock Research Institute
IMF	–	International Monetary Fund
IMT	–	irrigation management transfer
IRRI	–	International Rice Research Institute
ISF	–	irrigation service fee
ITPP	–	Industrial Tree Plantation Project
IWMU	–	Integrated Water Management Unit
IWRM	–	integrated water resource management
JFPR	–	Japan Fund for Poverty Reduction
JICA	–	Japan International Cooperation Agency
Lao PDR	–	Lao People’s Democratic Republic
LECS	–	Lao Expenditure and Consumption Survey
LIRRTP	–	Lao-IRRI Rice Research and Training Project

LNMC	–	Lao National Mekong Committee
LPRP	–	Lao People's Revolutionary Party
LRM	–	Lao Resident Mission
LUP/LA	–	land use planning/land allocation
MAF	–	Ministry of Agriculture and Forestry
MKRD	–	Mekong Regional Department
MOC	–	Ministry of Commerce
MRC	–	Mekong River Commission
MV	–	modern variety
NAFES	–	National Agriculture and Forestry Extension Service
NAFRI	–	National Agriculture and Forestry Research Institute
NCMISP	–	Northern Community-Managed Irrigation Sector Project
NEM	–	New Economic Mechanism
NGO	–	nongovernment organization
NGPES	–	National Growth and Poverty Eradication Strategy
NNRBDSP	–	Nam Ngum River Basin Development Sector Project
NPEP	–	national poverty eradication program
NRDS	–	northern region development strategy
NTFP	–	nontimber forest product
NTR	–	normal trade relations
O&M	–	operation and maintenance
OED	–	Operations Evaluation Department
OEM	–	Operations Evaluation Mission
ONPM	–	Office of the National Project Manager
OPEC	–	Organization of Petroleum Exporting Countries
PCR	–	project completion report
PPAR	–	project performance audit report
PPR	–	project performance report
PPTA	–	project preparatory technical assistance
PRC	–	People's Republic of China
PSC	–	Project Steering Committee
R&D	–	research and development
RRA	–	rapid rural appraisal
RRP	–	report and recommendation of the President
SAC	–	structural adjustment credit
SAF	–	structural adjustment facility
SAPE	–	sector assistance program evaluation
SAPL	–	Second Agriculture Program Loan
SCSPP	–	Shifting Cultivation Stabilization Pilot Project
SDP	–	Smallholder Development Project
SIDA	–	Swedish International Development Agency
SMEs	–	small and medium enterprises
SOE	–	state-owned enterprise
TA	–	technical assistance
TCR	–	technical assistance completion report
TFAP	–	Tropical Forestry Action Plan
TPAR	–	technical assistance performance audit report
UNDP	–	United Nations Development Programme
UNODC	–	United Nations Office on Drugs and Crime
US	–	United States
UXO	–	unexploded ordnance

VDF	–	village development fund
WFP	–	World Food Program
WRCC	–	Water Resources Coordination Committee
WUA	–	water users association
WUG	–	water users group

MEASUREMENTS

ha	–	hectare
kg	–	kilogram
km	–	kilometer
m	–	meter
t	–	ton

NOTE

In this report, "$" refers to US dollars.

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The guidelines formally adopted by the Operations Evaluation Department (OED) on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. Jonathan Cook (project evaluation specialist), Jindra Samson (research associate), Samjhana Shrestha (economist, rice research), and Keith Ward (agricultural policy specialist) were the consultants collaborating with the OED evaluation team. To the knowledge of the management of OED, there were no conflicts of interest of the persons preparing, reviewing, or approving this report.

APPENDIXES

EXECUTIVE SUMMARY

This report by the Operations Evaluation Department (OED) evaluates 20 years (1986–2005) of Asian Development Bank (ADB) support to agriculture and natural resources (ANR) development in the Lao People's Democratic Republic (Lao PDR). During this period, ADB financed the following ANR projects: 2 programs (totaling $50 million), 7 investment projects ($84 million), 32 technical assistance (TA) grants of $12.4 million, 11 project preparatory TAs ($6.7 million), and 14 regional TAs ($10.5 million) with coverage that included the Lao PDR. During 1986–2004, ANR accounted for 13% of ADB lending to the Lao PDR, 22% of total TA, and 27% of total project preparatory TA provided by ADB to the country.

Following the Lao PDR's pronouncement of its New Economic Mechanism (NEM) in 1986 for the transition of the country to a market-based economy, ADB responded to the NEM's unprecedented reform initiatives with policy-based lending. This lending modality followed a broad-based approach aimed at reducing market distortions with measures to liberalize trade, rationalize pricing practices, restructure taxation systems, and separate commercial and central banking functions, among others. After the NEM, ADB support for investment projects began in 1993. These investments and associated TAs comprised several subsectors covering development efforts targeted at agribusiness, commercialization of smallholder agriculture, irrigation, livestock, river basins, watersheds, upland agriculture, and tree plantations.

Individual projects have been relevant to the country's development challenges and ANR issues. However, the composition of ADB sector assistance in ANR (in terms of objective, scope, type, and location) has been diffused. For ANR, the ADB country strategies have been less effective. The country strategies for ANR sector assistance are rated as **partly satisfactory**. They are broad, and have not provided guidance for focused sector assistance. The current pipeline of ADB sector assistance in ANR includes investments in river basin and watershed management, livestock development, tree plantations, and initiatives to stabilize shifting cultivation. This represents a project-driven approach of providing assistance. The current Country Strategy and Program (CSP) does not have a framework for prioritizing ANR sector assistance. Clear links have not been established to optimize development synergies among projects and TAs. Investment projects in ANR have been localized interventions, without significant coordination to address common constraints facing subsistence agriculture, and to overcome the impediments confronting commercialization of agriculture. Over the last two decades, the ADB country strategies have emphasized the importance of the transition of the ANR sector to a market-based economy, crop diversification, commercialization, and increased role of the private sector. However, ADB-financed investment projects have generally emphasized improvements of rural infrastructure, facilities, and capacity development related to factors of production without adequate attention to finding solutions to binding constraints facing crop diversification, market orientation, and value addition. Agriculture has remained largely rice based and subsistence in nature, but there is an increasing trend towards commercialization and diversified cropping.

The CSP emphasizes the role of the private sector for ANR development, recognizing that improved performance and marketing are critical to improving rural livelihoods. Nonetheless, there has not been a clear distinction between (i) addressing the needs of subsistence farmers and their immediate concerns for household food security; and (ii) options for commercialization of agriculture, and the extent to which such options were also meant for the predominantly subsistence farmers who have encountered genuine obstacles to becoming commercial farmers. Although ADB has paid attention to the poor mountainous Northern Region through the Northern Regional Development Strategy (2004), and emphasized economic

integration of the region with neighboring economies, the dichotomy between subsistence farmers and those who can produce for the market has not been clearly dealt with.

The Operations Evaluation Mission (OEM) rates the overall performance of the ANR sector assistance as **partly successful** using OED guidelines (and based on a four-category scale of highly successful, successful, partly successful, or unsuccessful). ADB's policy-based lending was partly successful. TA operations (16 TAs) supporting policy-based lending and reform generated mixed results: unsuccessful (2), partly successful (6), successful (6), and highly successful (2). The performance of investment projects has been equally mixed. Among six projects assessed by the OEM, one was unsuccessful, three were found doubtful to succeed, and two were likely to succeed. There is room for improvement if midcourse actions are taken to improve development results and make ongoing projects successful. Among six other TAs sampled by the OEM, two were rated successful, and the rest were not rated because they had just commenced. Among a sample of seven regional TAs, the OEM rated one as partly successful, three as successful, two as likely to succeed, and one was unrated (it had just commenced).

Policy-based operations have been relevant to the country's policy and priorities for the transition to a market-based economy. Individual projects and TAs were relevant to the Government's development priorities and ANR issues. However, clear links were not established to address overriding constraints facing ANR sector development, and to overcome impediments confronting the commercialization of agriculture. Individual operations had their own merits and relevance to specific ANR development issues, but their combined objectives and scope lacked focus, and their targets were dispersed over many aspects. Sequencing of separate operations was not fully consistent, and several projects and TAs were not coordinated. Overall, ADB sector assistance in ANR has been **partly relevant** (based on a four-category scale of highly relevant, relevant, partly relevant, or irrelevant) to the ANR strategies and the ANR sector performance of the Lao PDR.

Policy-based lending has been less effective. Many of the individual policy measures represented a case of outputs being delivered rather than outcomes achieved. Major impediments to doing business in ANR persisted. Investment projects have been less effective to effective. ADB, through TA operations, helped the Government develop its Strategic Vision for the Agriculture Sector (1999). The development of this strategy had a high level of government ownership. Various elements of this policy direction were subsequently taken up further by the Government, and incorporated into the current National Growth and Poverty Eradication Strategy. Some undesirable effects also occurred: Loan 1295-LAO jeopardized the financial health of the Agricultural Promotion Bank and undermined the development of rural finance. TA operations yielded mixed results. The contribution of ADB-financed projects to ANR sector performance has been limited. On balance, the OEM rates the performance of the ANR sector assistance as **less effective** (based on a four-category scale of highly effective, effective, less effective, and ineffective).

Policy-based lending has been less efficient. It underestimated the efforts required to effect policy changes. Requirements for institutional preparedness for change, management of change, and the time needed to generate outcomes in the context of the Lao political economy were underestimated. Achievements of outcomes were moderate. Investments in irrigation were less efficient with heavy costs, low returns, negligible crop diversification, and continuing market constraints. ADB-financed investments in tree plantations generated economic losses. The efficiency of TA operations was generally affected by inadequate counterpart arrangements, poor absorptive capacity, and lack of institutional analysis. TAs intended for capacity development often resulted in capacity substitution. Although some capacity development has

occurred, the overall ANR sector assistance is assessed as **less efficient** (based on a four-category scale of highly efficient, efficient, less efficient, or inefficient).

The policy reform measures achieved have been sustained, with no overt reversals in the formal policy direction. However, policy implementation has been affected by an environment characterized by regulatory uncertainty, unpredictability, lack of transparency and accountability, and other governance issues including corruption. Central and local government jurisdictions and decentralization measures have also influenced the reform process and implementation. TA operations often produced recommendations that could not be implemented because of deficient analysis of the implications of recommended actions concerning requirements for resources, institutional arrangements, and organizational development and management. The sustainability of investment projects is generally assessed as less likely due to (i) shortfalls in operation and maintenance, (ii) inadequate arrangements (human, financial, institutional and other resources) to sustain outcomes, and (iii) marketing constraints confronting farmers and agribusinesses. The investment climate remains poor and presents a formidable challenge to doing business in the country.

Overall sector performance has been encouraging, but with constraints on market orientation and commercialization. In constant terms, the size of the gross domestic product (GDP) of the ANR sector slightly more than doubled between 1986 and 2004, accounting for about half of the total GDP in 2004. Agricultural growth rates averaged 4.7% per annum up to 2000, then declined slightly to 2–4% per annum. Agriculture has remained largely rice based, subsistence, and extensive in nature, without major structural transformation over the last two decades. Rice production underwent tremendous changes over the last 20 years, and the Lao PDR has become self-sufficient in rice since 1999. However, ADB-financed investments in irrigated agriculture contributed only a fraction of the country's increased crop production. There is still household food insecurity in parts of the country, particularly in the Northern Region.

ADB's policy-based operations were partly responsible for policy change in the country. This supported reform initiatives in ANR soon after the NEM. Major contributions included policy changes that helped the State to (i) exit from agricultural production, (ii) end the state order procurement, (iii) promote state divestment of state-owned enterprises, (iv) liberalize input/output prices, and (v) prevent investments in inefficient large irrigation schemes. Policy reforms resulted in a legislative framework for ANR to promote investment and development. While significant challenges remain in many areas, the improved policy environment and greater incentives for private individuals have contributed to growth in agriculture. ADB, development partners, and the Government contributed to the modest growth of the ANR sector through two decades of engagement, and progressive policy and institutional reforms towards a market-based economy. Policy-based measures can impact upon the formal structure of the operating context and policy environment of the sector, but this in itself can generate only limited ANR outcomes (in terms of incomes, employment and poverty reduction) unless private sector resources can be attracted and mobilized to invest in the sector. The policy reforms were relevant and necessary for the formal transition of ANR to a market-based system, but these policy measures were not sufficient. Promoting greater private sector involvement requires that the enabling environment for ANR investment be made attractive. This point has not yet been reached in the Lao PDR. Making the business and investment climate attractive is part of an unfinished agenda. Overall, the sustainability of the ANR sector assistance is assessed as **less likely** (based on a four-category scale of most likely, likely, less likely, or unlikely).

The aggregate contribution of ADB-financed investment projects to the ANR sector performance has so far been limited, with relatively small investments dispersed over many locations and types of interventions (total approved loans of $84 million over the last 12 years).

Clusters of projects and TAs with similar development themes and focus (such as commercialization, irrigation, livestock, river basin, upland agriculture, and watershed) do not generally interact. Coordination among staff of ADB and implementing agencies of projects and TAs needs to be strengthened. Greater efforts are required to interface ANR sector operations to develop workable and replicable development approaches through information sharing and collaborative efforts within ADB's own portfolio. Further synergies should be attained by collaborating closely with the Government and development partners.

ADB's portfolio management and project administration of ANR sector assistance need strengthening in several areas. The OEM rates the historical performance of ADB in managing its ANR assistance as **partly satisfactory**. Review missions were not conducted on a regular basis, and appropriate expertise in ANR was not always available. Systemic problems affect project administration in ADB. However, more could and should have been done by the concerned department to mitigate these ADB-wide limitations. There was a mismatch between available resources and the requirements of the ANR portfolio. Review missions were typically of short duration, and did not visit project sites in rural areas extensively. Many of these project sites are in remote locations and difficult to reach. On the ground, observations are needed to help resolve implementation difficulties and ensure that the projects are benefiting people as intended. Staff movements, frequent changes of assigned staff, and a lack of technical expertise have created client perceptions that ADB's engagement has been characterized by discontinuity, distance, slow response, and deficiency in sector and country knowledge. The composition and spread of the ANR portfolio make it difficult for ADB to service the client satisfactorily. Options for delegating more project administration to the Lao Resident Mission (LRM) need to be explored. As of 31 December 2004, only 2 (8.7%) of a total of 23 active ADB loans were delegated to LRM, compared with an average of 30.6% ADB-wide and 23.8% in the Mekong Region. The OEM discussed these issues with staff of the Mekong Department, who confirmed that steps were being taken to address these issues.

The relevance of the sector assistance to the country's development policies and strategies is important, but this relevance alone will not make ADB an effective institution to deliver and monitor its assistance. Greater selectivity in engagement is required, recognizing that ADB's staff resources, capacity, and expertise limit its ability to effectively service its clients in all ANR subsectors. Reliance on external consultants and outsourced expertise is not synonymous with having an in-house institutional capacity to make a strategic impact and achieve development results in the ANR sector in the Lao PDR.

A number of actions will be required for ADB (in consultation with the Government) to improve the performance of its sector assistance. In light of the evaluation findings, the following are recommendations for ADB and government considerations.

(i) **During the CSP process, the Government and ADB should jointly reassess ADB's future involvement in the ANR sector.** Recognizing that ANR is an important sector in the Lao economy and OED's assessment that ADB has only partly succeeded in achieving development results in this sector, the question should be asked whether continued involvement in the sector is an optimal use of scarce Asian Development Fund resources. Continued support to the ANR sector needs to be based on an evaluation of the performance of the country assistance program and the current priorities of the Government. In terms of future support to ANR sector development, a better approach may be to address some of the broader economic and policy issues that adversely affect the performance of the ANR sector, including through Greater Mekong Subregion

programs such as the initiation of cross-border trade facilitation and investment in the context of regional cooperation.

(ii) **If the joint government/ADB assessment concludes that ADB has a role to play in the ANR sector, prepare a suitable strategy that results in a higher probability of achieving development results.** Such a strategy should consider the following elements: ADB activities in the ANR sector should be more selective and focused in terms of composition and spread, and should take into account government priorities, the division of roles and responsibilities among development partners, past performance of ADB operations, identified lessons, and ADB's comparative advantage and skills mix requirements. ADB should discontinue the project-by-project approach of defining relevance and priorities for the ANR sector, because this approach has led to diffused ANR sector assistance. This should result in a more strategic and results-oriented framework for prioritizing development assistance in the ANR sector. This should be based on an assessment of key challenges, binding constraints, and opportunities facing the ANR sector, including overriding considerations that have significant bearing on the sector's performance (e.g., the investment climate, governance, corruption, markets, and opportunities for economic integration and regional cooperation). The future approach should include using existing aid coordination channels more effectively to (a) share experience and knowledge, (b) find solutions to binding constraints facing the ANR sector, and (c) develop replicable approaches that can provide greater benefits countrywide.

(iii) **Within the next 12 months, ADB should assess its in-house capacity to service clients in the ANR sector in the Lao PDR, and determine the extent to which it can offer expertise and knowledge with respect to the country's development strategies and priorities.** If ADB does not have the requisite in-house expertise, there is a significant risk that its operations will not lead to the anticipated development results.

(iv) **Within 12 months, ADB should improve its project administration capabilities and commit resources to match the current ANR portfolio.** Adequate resources should be made available to support project administration in the ANR sector. ADB should conduct review missions more regularly for ANR projects, ensuring that missions are of appropriate frequency and duration, particularly for complex ANR projects. If resources are not available, the scope of ADB's ANR activities should be scaled back accordingly. Delegation of responsibilities and provision of resources to LRM for project administration should also be considered.

(v) **Within 12 months, ADB and the Government will review the performance of ongoing projects such that mid-course actions can be taken to improve the probability of achieving development results.** This review will take into account the findings of the case studies presented in this report. In particular, the review should (a) examine options to increase the economic efficiency of irrigation projects; (b) assess the development costs of community-managed irrigation schemes, reexamine the heavy reliance on contractors, and promote greater community engagement and self-reliance to find more cost-effective ways of delivering assistance; (c) assess the existing policy and procedures for irrigation management transfer and the rules for irrigation service fee; (d) examine options to use the Smallholder Development Project more

strategically to address commercial impediments and improve the marketing of agricultural crops of other ADB-financed ANR projects; and (e) analyze the piloting experience of ongoing projects and TAs, and develop a strategy to increase synergies among them.

(vi) **ADB should strengthen ex-ante project economic analysis of ANR projects in the Lao PDR to recognize realistic assumptions and risks.** This will avoid unrealistic assumptions as encountered, for example, with past irrigation projects, and reduce the risk of ADB financing projects that are not viable.

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LAO PEOPLE'S DEMOCRATIC REPUBLIC
PEOPLE'S REPUBLIC OF CHINA
MYANMAR
VIET NAM
THAILAND
CAMBODIA
Gulf of Tonkin
Mekong River
102°00'E
106°00'E
20°00'N
16°00'N
Ghot-Ou
Phongsaly
PHONGSALY
Yo
Samphan
Boun-Tai
Mai
Sing
Luangnamtha
LUANGNAMTHA
Khoa
Namo
La
Xay
Nambak
Ngoy
Meung
Viangphoukha
Houayxay
Beng
OUDOMXAY
BOKEO
Viangkham
Sobbao
Xamneua
Vieng Xai
HUAPHANH
LUANGPRABANG
Pakbeng
XAYABURY
Luangprabang
Xiang Ngeun
XIENGKHOUANG
Kham
Phoukhoun
Phonsavanh
Khoun
Xayabury
Kasi
XAYSOMBOUN SPECIAL REGION
Vang Vieng
Phoun
Phiang
Xaysomboun
VIENTIANE
Viengkham
Thabok
Pakxane
BOLIKHAMXAY
Viangthong
Pakkading
Thong Mixai
Kaew Neua
Khamkeut
Paklay
VIENTIANE CAPITAL
B. Donnoun
Xanakham
VIENTIANE
Tha Dua
Ban Nong Su
Kenthao
Thakhek
KHAMMUANE
Xaibouri
Seno
Xepon
Khanthabouly
Champhon
Phin
SAVANNAKHET
Songkhon
Ta-oy
Toumlan
SARAVANE
Saravane
SEKONG
Laongam
Thateng
Lamarm
Dakchung
Chong Mek
Pakxong
CHAMPASACK
Pakse
Samakkhixai
Pathoumphon
ATTAPEU
Soukhouma
Khong
N
0
50
100
Kilometers
National Capital
Provincial Capital
City/Town
National Road
Paved Provincial Road
River
District Boundary
Provincial Boundary
International Boundary
Boundaries are not necessarily authoritative.
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I. INTRODUCTION

A. Purpose and Scope of the Evaluation

1. This report, prepared by the Operations Evaluation Department (OED) of the Asian Development Bank (ADB), presents the findings of a sector assistance program evaluation (SAPE) for the agriculture and natural resources (ANR) sector in Lao People's Democratic Republic (Lao PDR) for two decades from 1986 to 2005. This report will be an input to OED's Country Assistance Program Evaluation for the Lao PDR, and will also support the formulation of a new ADB country strategy and program in 2006. This SAPE was designed to answer two broad questions: (i) Did ADB do the right things? and (ii) Did ADB do things right in the ANR sector? The SAPE (i) assessed the relevance of ADB assistance to the country's development strategies and priorities; (ii) reviewed ANR sector performance, including its major challenges, constraints, and opportunities; (iii) evaluated the performance of the ANR sector assistance program; and (iv) identified lessons and key issues for the future.

2. The SAPE sought answers to the following specific questions: (i) Were the right strategies pursued by ADB to support ANR sector development? (ii) How has ADB sector assistance performed? (iii) Was there effective synergy in the ADB sector assistance? (iv) Has ADB managed its ANR sector assistance well? (v) How has the ANR sector performed? (vi) In what ways did ADB assistance contribute to sector outcomes? and (vii) What actions does ADB need to take to improve its performance in delivering assistance to support the ANR sector?

B. Approach and Methodology

3. The SAPE used qualitative and quantitative methods of data collection and inquiry. The evaluation used a combination of methods including (i) desk review of relevant project documents, reports of various economic sector studies, and non-ADB publications on the Lao PDR; (ii) secondary data collection and analysis from various data sources; (iii) key informant interviews and focus group discussions; (iv) participatory rapid rural appraisal (RRA); and (v) case studies of ADB-financed projects and technical assistance (TA). Data and information analyses included content analysis of relevant documents, compilation of statistics and trend analysis, and distillation of key insights from interviews. Complementary tools were used to validate major findings and to capture stakeholders' perceptions and insights. The evaluation adopted an adaptive and pragmatic approach to respond to emergent conditions that were encountered.

4. Information gathering conducted by the Operations Evaluation Mission (OEM) included

(i) fact-finding in the Lao PDR (8–18 December 2004) to define the scope of the evaluation, which led to approval of the position paper for the SAPE on 31 March 2005 by the Director General of OED;

(ii) consultations and field visits in the Lao PDR (1–30 April 2005) to conduct RRA in central, northern, and southern regions of the country covering selected project and nonproject areas; and further consultations and RRA in the Lao PDR (4 July–4 August 2005) to assess performance of programs, projects, and TAs, and to gather information from government agencies and development partners;

(iii) consultations with staff of the Ministry of Agriculture and Forestry (MAF) and its organizational units including the Department of Agriculture, Department of Forestry, Department of Irrigation, Department of Livestock and Fisheries, Department of

Planning, National Agriculture and Forestry Extension Service (NAFES), and National Agriculture and Forestry Research Institute (NAFRI);

(iv) review of documentation, including ADB reports such as appraisal reports, reports and recommendation of the President (RRPs), project performance reports (PPRs), project completion reports (PCRs), TA completion reports (TCRs), project performance audit reports (PPARs), TA performance audit reports (TPARs), back-to-office reports (BTORs), project preparation TA reports, TA consultants' reports, and OED evaluation reports; reports and studies prepared by development partners and other agencies; various reports of the Government relevant to the development of the sector; and the OEM prepared case studies to complement the PCRs and PPARs, to assess performance of more recent projects, and to compensate for the small number of TCRs and TPARs;

(v) RRA to (a) assess contextual development issues, including constraints, challenges, and opportunities; and (b) examine various dimensions of relevance, effectiveness, efficiency, and sustainability of project interventions; the RRA engaged people affected by ADB-financed projects as respondents, key informants, and participants; individual interviews and focus group discussions covered more than 300 farmers and villagers; complementary tools were used;[1]

(vi) consultations with staff of cofinanciers of ADB projects: Agence Française de Développement (AFD) and the United Nations Office on Drugs and Crime (UNODC); the OEM also consulted staff of the International Rice Research Institute (IRRI) and the Centro Internationale Agricultura Tropicale (CIAT), which are both active in promoting agricultural research and development (R&D) in the Lao PDR; document references (including online documents available on websites) were also acquired from the Australian Agency for International Development (AusAID), Food and Agriculture Organization (FAO) of the United Nations, International Fund for Agricultural Development (IFAD), International Livestock Research Institute (ILRI), Mekong River Commission (MRC), Swedish International Development Agency (SIDA), United Nations Development Programme (UNDP), World Food Program (WFP) of the United Nations, World Bank, and other international aid agencies; and

(vii) consultations with private sector entrepreneurs engaged in small and medium agribusiness enterprises, representatives of international nongovernment organizations (NGOs), members of nonstate mass organizations, and members of organizations at the village level.

5. During the conduct of the SAPE, consultations were held with operations staff of ADB at Headquarters and at the Lao Resident Mission (LRM).[2] The extent to which identified lessons had influenced subsequent operations was also a pertinent part of the evaluation. In assessing the performance of ADB's portfolio in the ANR sector, the SAPE reviewed the role and performance of ADB in project administration. The SAPE also drew on pertinent findings of relevant OED

[1] These included (i) crop/seasonal calendar, (ii) labor and gender analysis, (iii) farm budget analysis, (iv) problem and solution tree analysis, (v) analysis of historical timeline/milestones, (vi) weighting and ranking methods, and (vii) stakeholder mapping or diagram.

[2] This was done repeatedly due to turnover of ADB operations staff assigned to the ANR sector of the Lao PDR.

evaluation reports on the Lao PDR.[3] A workshop (attended by more than 50 participants) was held in Vientiane during 29–30 November 2005 to discuss the SAPE findings with government officials, project staff, ADB staff, representatives of cofinanciers (AFD and UNODC), and IRRI. During this workshop, representatives of MAF presented contemporary issues and challenges facing the ANR sector (strengths, weaknesses, opportunities, and threats), and related topics including trade constraints and border non-tariff barriers.

C. Study Limitations

6. This SAPE focused on ADB sector assistance. It was not intended as a comparative study of the performance of ANR sector assistance with other sectors in the Lao PDR, with other countries, or with the performance of sector assistance of other aid agencies in the country. Further, the SAPE is not an impact evaluation study, and thus its assessments of outcomes and impacts of selected development interventions are illustrative. In analyzing specific cases of investment projects, consideration was given to analyzing ex-ante with-and-without project scenarios, as well as before-and-after project situations. Reliable project baseline data were generally not available. Despite standard loan covenants, benefit monitoring and evaluation (BME) systems of projects proved to be largely ineffective, having irregular schedules of observation. Data gathering and information analysis took into account the availability or absence of baseline data for selected projects. The OEM employed recall methods to compensate for the absence of baseline data to draw qualitative comparisons between current and past conditions from the people interviewed.

7. The SAPE covered ADB operations from 1986 to 2005, a period marked by the commencement of the New Economic Mechanism (NEM). Of a total of 14 loans (projects/programs) approved by ADB from 1970 to 2004 for the ANR sector, 9 were approved after 1986. The SAPE excluded five pre-1986 projects (1970–1984) as being of little relevance to the SAPE. The major transition to a market-based economy since the NEM has changed the operating environment of the entities targeted under the pre-1986 projects.[4]

D. Report Structure

8. Chapter II provides country contexts and features of the ANR sector. Chapter III discusses government and ADB sector strategies, ADB sector assistance, and contexts. Chapter IV discusses the political economy of the reform process and the performance of ADB's policy-based operations in ANR. Chapter V covers performance assessments of investment projects and selected TAs, and ADB's management of its ANR sector assistance. Chapter VI assesses the

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[3] Available: http://www.adb.org/Evaluation/reports.asp (i) ADB. 1992. *Project Performance Audit Report on the Agricultural Support Facilities Project.* Manila; (ii) ADB. 1993. *Program Performance Audit Report on the Agriculture Program.* Manila; (iii) ADB. 1999. *Program Performance Audit Report on the Second Agriculture Program.* Manila; (iv) ADB. 1999. *Special Evaluation Study of the Effectiveness of ADB Approaches and Assistance to Poverty Reduction in Bangladesh, Kyrgyz Republic, Lao PDR, Nepal and Philippines.* Manila; (v) ADB. 1997. *Technical Assistance Performance Report on Institutional Development and Strengthening of the Ministry of Agriculture and Forestry in the Lao PDR.* Manila; (vi) ADB. 2003. *Special Evaluation Study on Participatory Approaches in Forest and Water Resource Operations in Selected Developing Member Countries*. Manila; (vii) ADB. 2004. *Special Evaluation Study on Capacity Development Assistance of the Asian Development Bank to the Lao PDR*. Manila.

[4] State-owned enterprises of wood industries assisted by Loan 0361-LAO (Forestry Development Project) and Loan 0716-LAO (Second Forestry Development Project) were privatized, and their contexts as operating entities are no longer relevant to future ADB operations in the Lao PDR. Three projects, namely Loan 028-LAO (Tha Ngon Agricultural Development Project), Loan 0418-LAO (Casier Sud Pioneer Agricultural Project), and Loan 0716-LAO (Second Forestry Development Project), do not have PCRs, and assessment of their performance cannot be done now because of poor access to information and fading institutional memory. Loan 028-LAO and Loan 0418-LAO are more than two decades old since project completion.

overall sector performance and ADB's contribution to this sector performance. Chapter VII analyzes key challenges facing the sector towards a market-based economy. Finally, Chapter VIII concludes the report with a number of recommendations.

II. COUNTRY AND SECTOR CONTEXTS

9. This chapter describes the country and sector contexts of ANR, the country's transition to market-based economy, poverty dimensions, economic composition and trends, key features of the sector, and the overall investment climate. Aspects concerning the political economy and policy reforms in ANR are described further in Chapter IV.

A. Country Context

1. Transition to Market-Based Economy

10. The Lao PDR was proclaimed in 1975, ending the rule of the Royal Lao Government of the Kingdom of Lao (1946–1975). At that time, much of the country was in ruins after 20 years of political struggle and the effects of the Indochina war (1964–1973). The communist government sought development through agriculture. Attempts to collectivize agriculture, designed to gain state control over agricultural production, encountered strong opposition. Agricultural production stagnated. In 1979, the Lao People's Revolutionary Party (LPRP) took its first steps towards market-oriented reform by easing restrictions on private trade and encouraging joint ventures between the State and the private sector. An interim 3-year economic development plan began in 1979. The Government reduced agricultural taxes and increased state procurement prices for most crops, but retained central planning. In 1981, implementation of the first 5-year development plan began.

11. More far-reaching reforms began with the introduction of the NEM in 1986, coinciding with the commencement of the second 5-year development plan. The NEM recognized the dominant role of ANR, which at that time contributed about 60% of the country's gross domestic product (GDP) and more than 80% of total employment. The Government sought to address shortcomings in the ANR sector through reform measures that would use market forces to improve economic growth and productivity and to create income and wealth. It abandoned the collectivization of agriculture, eased restrictions on private sector activities, and allowed state enterprises to have more decision-making authority. In 1987, the Government eased trade restrictions between provinces, and privatization began in 1988. The Lao PDR and the International Monetary Fund (IMF) entered into an agreement in 1989 for a structural adjustment facility (SAF) to accelerate the pace of economic reforms, including the privatization of state-owned enterprises (SOEs), price and exchange rate liberalization, financial sector development, and improvement of the country's tariff system.

12. In support of the NEM, ADB provided two consecutive agriculture program loans[5] from its Asian Development Fund (ADF) resources to support policy reform, capacity development, and reorientation of investment priorities. This policy-based lending marked a new era of ADB assistance to develop the ANR sector in the Lao PDR, with the overriding objective to facilitate the

[5] (i) ADB. 1989. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Agriculture Program.* Manila. Loan 965-LAO (SF): *Agriculture Program Loan*, for $20 million, approved on 3 August 1989.
(ii) ADB. 1992. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Second Agriculture Program.* Manila. Loan 1180-LAO (SF): *Second Agriculture Program Loan,* for $28.7 million, approved on 8 October 1992.

country's transition to a market-based economy. During 1986–2004, and in addition to the first agriculture program loan (FAPL) and the second agriculture program loan (SAPL) for the ANR sector, ADB provided ADF-loans for 7 investment projects, and financed 32 TA grants, 11 project preparatory TAs, and 14 regional TAs with coverage that included the Lao PDR. Appendix 1 presents a list of ADB assistance (approved from 1986 to 2004) in the ANR sector in the Lao PDR.

13. The Lao reform process since the NEM can be divided over the last two decades into several distinct periods,[6] summarized in Table 1.

Table 1: Major Periods of Economic Reform in the Lao PDR

Period	Character	Major Macroeconomic and Policy Events
1975–1986	Prereform	Accelerated socialism, state ownership and control of assets, collectivization of agriculture, economic stagnation, collapse of rice production (1979), and inflation; COMECON aid and trade predominate; realignment of the local currency (kip)
1986–1989	Early economic reforms	Price and trade liberalization, ending of major state monopolies, exchange rate adjustment, and tax reform; beginning of the New Economic Mechanism (NEM); foreign investment law and foreign investment code, allowing foreigners to hold 100% capital, repatriation of after-tax profits, and guarantees against nationalization
1990–1994	Successful economic management and stabilization	Adoption of new Constitution in 1991; structural adjustment measures, supported by World Bank, International Monetary Fund, United Nations, Asian Development Bank, and other aid agencies; increased revenue collection, effective monetary policy, stable exchange rate, and modest inflow of foreign direct investment; Central Bank Law (Bank of Lao PDR as the central bank)
1995–1997	Emerging financial problems	Political commitment to reform weakened; decentralization began; weak fiscal (weak revenue administration, partly compounded by decentralization) and monetary policies (such as policy lending to state-owned enterprises [SOEs]); competitive kip devaluations, slow structural change (especially with SOE divestment); the Lao PDR joined the Association of Southeast Asian Nations (ASEAN)
1997–1998	Asian financial crisis	Foreign exchange losses, some capital flight; budget problems and deficit financing; recurring bouts of inflation
1998–2000	Financial destabilization	Continuing destabilization and recurring budget deficits; excess liquidity and inflation, currency depreciation
2000–2004	Recovery and restabilization	5-year recovery plan adopted; improved fiscal discipline, with some evidence of structural transformation and revitalization of reform process; increasing regional integration; National Growth and Poverty Eradication Strategy adopted

2. Poverty and Economic Trends

14. The Lao PDR is a poor country with a per capita GDP of about $400 in 2004 at current prices. Since 1986, the economy has grown at between 4% and 7% per annum such that real GDP had almost trebled by 2004. In spite of its economic progress, the incidence of poverty in the Lao PDR remains among the highest in the region. Selected country economic, poverty, and social indicators are presented in Appendix 2. The country's population grew by 57% from 3.7 million in 1986 to 5.8 million in 2004. Life expectancy at birth (54 years in 2002) is low; child malnutrition (15% in 2001–2002) is high; and infant mortality (87 per 1000 in 2002), and maternal mortality (530 per 100,000 in 2000) are high compared with conditions in other countries in the region. Poverty incidence reached 33% in 2002/2003, down from 45% a decade earlier.[7] Poverty incidence data

[6] (i) UNDP. 2004. *Economic Reforms in Transition Economy: The Recurring Experience of Laos.* Vientiane
(ii) *The Lao Economy – Review of the New Economic Mechanism and the Challenge of Integration* by Chi Do Pham (Research Paper, Banking College of the Bank of the Lao PDR, September 2004).

[7] Lao Expenditure and Consumption Survey; National Statistical Center, preliminary data 2003.

(2002/2003) by region indicate that the central and northern regions are the poorest: Vientiane Municipality (26.2%), central region (35.8%), northern region (35.5%), and southern region (30.8%).

15. Villagers' definitions of poverty are based on livelihood. Poverty in the Lao PDR is not synonymous with hunger. Primary aspects of livelihood that signify well-being in all villages include rice sufficiency and ownership of livestock. To the rural population, access to rice is the most important factor determining their welfare status. Lao people consume 171 kilograms (kg) per capita of milled rice per annum, constituting almost 70% of their calorie and protein requirements.[8] Achieving national self-sufficiency in rice has been a top priority goal for the country since the introduction of the NEM.

16. The population of the Lao PDR includes more than 47 official ethnic groups (others put this figure close to 230 groups based on language and other differences).[9] This diversity enriches cultural dimensions, but it also has serious implications for development. In many parts of the country, ethnic minorities are in the majority, and language barriers are serious. Livelihood patterns and sociocultural dimensions require specific considerations for the provision of social services and infrastructure, and for developing and accessing economic opportunities. The northern region has an ethnically diverse population of over 2 million people scattered over 5,000 villages across rugged mountainous terrain, making provision of services (e.g., education, health, and transport) difficult.[10] Gender disparities across ethnic groups are serious. An important factor reflecting poverty among ethnic groups is their high illiteracy rates. Based on the 1995 census, the most recent data available, disparities in literacy rates among ethnic groups were evident.[11] While literacy rates have improved since then, differences among ethnic groups may not disappear in the immediate future.[12]

17. Relative growth trends of different sectors have changed the structural composition of the GDP. Agriculture (including forestry) accounted for 57.3% of GDP in 1987, and 47.2% in 2004. During the same period, industry's contribution to the GDP went up from 13.9% (1987) to 26.6% (2004), while services fluctuated from 28.9% (1987) to 26.2% (2004). Industry sector growth was due largely to growth in mining, manufacturing (up eight-fold from a very low base), and construction (trebled over the period). This growth scenario has experienced some instability vis-à-vis internal and external balances. The period since 1986 has seen massive depreciation of the local currency (kip) against the dollar, from KN95 to $1.00 (1985) to KN10,750 to $1.00 (July 2005).

18. With the collapse of the former Soviet Union, aid from COMECON to the Lao PDR ended.[13] Towards the end of the 1990s, the country underwent an acute period of macroeconomic instability, partly due to the Asian financial crisis but also due to weaknesses in monetary and fiscal management. Inflation reached 134% year-on-year in 1999. The kip depreciated by about 80%

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[8] Maclean, J. L. D.C. Dawe, B. Hardy, and G. P. Hettel. 2002. *Rice Almanac*. Los Baños: IRRI.

[9] ADB. 2001. *Participatory Poverty Assessment: Lao People's Democratic Republic*. Manila.

[10] The northern region has 61 of the country's 142 districts, 45% of its villages, and 35% of the total households. The average size of the villages (404 inhabitants) and the average number of households (62 households) in the northern region are smaller than the national averages.

[11] Literacy rates by ethnolinguistic groups based on the 1995 census: Lao-Phutai/Tai-Kadai (72.9%), Mon-Khmer/Austroasiatic (36.9%), Hmong-Yao (26.5%), and Tibeto-Burman/Sino-Tibetan (17%).

[12] Ministry of Education. 2004. *Lao National Literacy Survey 2001*. Vientiane. The 2001 survey reported improvements in the literacy rate of the major ethnic groups in the Lao PDR: Lao-Phutai/Tai-Kadai (77.2%), Mon-Khmer /Austroasiatic (58.3%), Hmong-Yao (44.6%) and Tibeto-Burman/Sino-Tibetan (40.7%).

[13] COMECON (Council for Mutual Economic Assistance) was a multilateral economic alliance headquartered in Moscow until it was disbanded in 1991.

against the dollar between 1997 and 1999. Capital spending rose from 50% of total government expenditures to 75% during the crisis, mainly because the Government invested heavily and imprudently in large-scale irrigation systems. The financial crisis, through inflation, increased the kip-denominated costs of development projects and eroded the value of recurrent expenditures, particularly government salaries. Subsequently, tighter fiscal and monetary policies after mid-1999 and the recovery of the economies in the region helped restore economic stability. Annual inflation fell to 7.8% (2001). By early 2001, the kip had stabilized. A perennial challenge for the country has been the low revenue base. In fiscal year (FY) 2002/03, when revenue from timber royalties and other nontax revenues fell by nearly 2% of GDP, the overall fiscal deficit increased significantly. Adjustment took place the following year, with vigorous efforts to mobilize taxes. Expenditures were reduced and the fiscal deficit curtailed. Since 2000, inflation has been contained at between 8% and 15% per annum, and it stood at 10.6% in 2004. The dependence of the Lao PDR on concessionary grant finance/capital inflows for fiscal balance is still significant, and external aid per capita amounted to $53 in 2003.

B. Key Features of Agriculture and Natural Resources

19. Key features of agriculture in the Lao PDR are summarized in Box 1.

Box 1: Key Features of Agriculture in the Lao PDR

- In 2004, agriculture and forestry accounted for 47% of GDP and provide more than 80% of total employment. Agricultural output rose steadily over the past decade, with an average annual growth of 4.3%. About 620,000 households depend on agriculture for their livelihoods, and more than 80% of farmers practice subsistence farming.
- Arable land (3.7%) and permanent cropland (0.4%) are limited in terms of the country's total land area of 236,800 square kilometers. In comparison, arable land in Cambodia amounts to 21% of the total land area; Viet Nam has 20%, and Thailand 29.4%.
- Geographically, the country is predominantly mountainous, with hills and steep terrain covering two thirds of its land area. Much of the country is characterized by remote settlements and low population density. In terms of arable and cultivable land, the population density is high. In the northern region, only 6% of the land area is with slopes of less than 20%. The northern region is characterized by inadequate market access, poor distribution networks, and lack of all-weather roads. Prime agricultural land is unevenly distributed, and mostly confined to the floodplains of the Mekong River and its tributaries in the central and southern regions. Existing farming systems are categorized into lowland rain-fed, lowland irrigated, upland rain-fed, highland farming, and plateau farming systems.
- The area planted to rice represents more than 80% of the nation's cropped land.
- The Lao PDR is self-sufficient in rice overall, but localized rice deficits and household food insecurity continue to occur in many parts of the country, particularly in the northern region.
- Crop cultivation is characterized by limited use of pesticides and fertilizers.
- Crop yields are below average for the region. Harvest and postharvest technologies are relatively weak, and crop losses reach as high as 30%.
- Apart from rice, rural households meet their basic food requirements from livestock, inland fisheries, and nontimber forest products.

20. Within agriculture, crops are the main products, contributing 53% of agricultural GDP compared with about 40% for livestock and fisheries and 7% for forestry. Rice is the foundation of the farming system in the Lao PDR, accounting for 85% of total crop production and 39% of agricultural GDP. About 90% of farming households grow rice for their own use. Glutinous rice *(khao niao)* accounts for over 90% of total planted area, and 80% of rice consumption in the country. Rice cultivation is generally of low intensity, for subsistence. Rice is produced mainly by small farm households that have an average farm size of less than 2 hectares (ha). The Lao Expenditure and Consumption Survey (LECS) conducted in the late 1990s estimated that, on average, only 8% of the rice produced is sold. Compared with the national average, farm

communities closer to urban areas sell more rice (about 10%).[14] The Lao PDR has one of the highest incidences of rice biodiversity in the world, and it is a recognized biodiversity center of glutinous rice. Appendix 3 provides an evaluation synthesis of rice in the Lao PDR.

21. Rain-fed rice in the lowlands dominates rice cultivation. Almost 90% of the rice area is rain-fed. In 2004, about 75% of the area cultivated (576,000 ha) and 78% of the production (about 2 million t) originated from rain-fed lowland areas (Table 2).

Table 2: Rice Area and Production by Region and Ecosystem, 2004

	Irrigated Lowland (%)		Rain-fed Lowland (%)		Rain-fed Upland			
					Upland (%)		Shifting Cultivation (%)	
Region	Area	Production	Area	Production	Area	Production	Area	Production
Northern	4.3	5.9	46.8	64	25.7	17.4	23.2	12.7
Central	14.3	18.3	82	79.8	1.9	1.1	1.8	0.8
Southern	6.6	9.2	87.6	87.3	5.1	3.1	0.7	0.4
Lao PDR	10	13.5	74.7	78.1	8.5	5.1	6.8	3.3

Data source: Ministry of Agriculture and Forestry. 2004.

22. Upland rice accounts for over 15% of the total rice area. Half of the rice grown in the northern region originates from the rain-fed upland rice ecosystem (of which nearly a quarter is cultivated under slash-and-burn shifting cultivation).[15] Upland rice is cultivated on slopes with altitudes ranging from 300 to 800 m, and the upper limit of the altitude for rice cultivation is about 1,500 m.[16] Rice cultivation is sensitive to temperature decline at higher elevation.[17] This upland farming system commonly integrates crop production, animal husbandry, and forestry.

23. Rice self-sufficiency was achieved in 1999, with production reaching two million tons (t), although there are differences in opinion on the extent to which the country has actually achieved this goal. Irrespective of the achievement of rice self-sufficiency at the national level, various studies indicate that not all households are able to meet their rice consumption requirements.[18] Much of the rice deficiency occurs in the northern and eastern mountainous regions, while surplus areas are mostly in the Mekong River valleys.[19] ADB estimated that poor households were able to meet their rice requirements for about 7 months per year on average.[20] Significant household rice insufficiency persisted in mountainous regions, primarily due to low productivity and inadequate integration of domestic markets in the country. This condition of rice sufficiency at the country level, and food deficits at the localized household level, characterizes much of the country, particularly the uplands. However, poverty in the Lao PDR is not synonymous with hunger. Villages do not perceive poverty as an endemic condition, but as something due to events beyond their control,

[14] LECSs are comprehensive national level surveys sponsored by the World Bank. Three LECS surveys have been conducted: LECS1 covered 1992–1993, LECS2 1997–1998, and LECS3 2003–2004.

[15] Typically, land preparation involves slashing shrub vegetation and secondary forest in January and February, burning the biomass in March and April before the wet (rainy) season, and planting in late May in time for the rainfall. Rice cultivation does not involve tillage, and weed control accounts for about 50% of labor input. Rice varieties used are predominantly traditional varieties of glutinous rice. To reduce risks of crop losses associated with weather and pests, different rice varieties are commonly used to sequence harvesting.

[16] IRRI. 2001. *Slash-and-Burn Rice Systems in the Hills of Northern Lao PDR: Description, Challenges, and Opportunities.* Los Banos.

[17] Temperature declines at the rate of about 0.5 degree celsius per 100 m change in altitude.

[18] According to WFP, about 30% of the population has insufficient food for more than 6 months of the year. Chronic malnutrition is reported to be high, affecting up to 47% of the population.

[19] WFP. 2005. *World Hunger Laos.* Available: <http://www.wfp.org/country_brief/indexcountry.asp?country=418>

[20] Asian Development Bank. 2001. *Participatory Poverty Assessment in Lao PDR*. Manila.

such as the weather, effects of war, resettlements, and livestock diseases. Rural households meet their basic food requirements and cash incomes from rice, livestock, inland fisheries, and non-timber forest products (NTFPs).

24. Challenges to increase and secure rice production are serious. Much of the rice in the country is produced under rain-fed conditions. Various constraints to rice production systems have persisted. Climatic factors account for at least 10% of the annual variability in production.[21] The main constraints to rice production are abiotic, biotic, and socioeconomic. Abiotic factors include drought, flood, cold temperature, and poor soil fertility. In the dry season, poor soil fertility is the main abiotic constraint. Late season drought can reduce grain yields by 30%.[22] Biotic factors are insects, diseases, and weeds. In the upland ecosystem, weeds and rodents are the two major constraints that result in significant economic losses. At least 15% of the annual harvest is lost to rodents. Major production constraints in the main rice-producing environment—the lowland ecosystem of the Mekong River Valley—are drought, flood, and poor soil fertility. From 10% to 30% of the lowlands in the central and southern regions are regularly affected by flooding of the Mekong River in the wet season.[23]

25. Livestock is a significant component of the ANR economy, accounting for about 10% of the national GDP.[24] Livestock and fisheries contribute about 40% of the agricultural GDP. Livestock numbers by region are summarized in Table 3.

Table 3: Livestock Numbers by Region ('000)

Region						Large Ruminant Density	
	Cattle	Buffalo	Pigs	Goats	Poultry	Animals per km²	Animals per 100 People
Northern	199	297	554	51	4,180	5.4	29
Central	547	457	339	36	4,962	9.9	40
Southern	199	238	144	8	2,073	9.9	42
Total	944	992	1,036	94	11,215	8.2	37
Estimated Annual Increase	5%	0.8%	1.2%	8%	na		

km^2 = square kilometer, na = not available.
Source: ILRI. 2002. *Review of the Livestock Sector in Lao PDR*. ADB Manila.

26. Fish are farmed or captured from inland waters (the Mekong River, its tributaries, reservoirs, swamps, and rice fields) almost entirely for home consumption. In most cases, fish are not formally traded, except in small amounts in district markets along the Mekong and from the Nam Ngum reservoir. Fish, frogs, turtles, snails, and other aquatic animals provide for more than 50% of the animal protein of Lao people and are of critical importance to national food security. Recent studies by the MRC indicate an annual per capita consumption of about 15 kg of aquatic animals and the production of fish and other aquatic animals of 130,000 t per year. Although there are no reliable statistics, fish production from aquaculture was estimated at 14,000 t per year.[25] Fish farming, as part of rural livelihoods, has performed well in the Lao PDR. Freshwater aquaculture can generate significant employment and incomes, and improve human nutrition through increased protein intake among the rural population.[26] Increased population pressure,

[21] Pandey, S. and M. Sanamongkhoun. 1998. *Rain-fed Lowland Rice in Laos: A Socioeconomic Benchmark Study*. Los Baños: IRRI.
[22] Fukai, S., P. Sittisuang, and M. Chanphengsay .1998. Increasing Production of Rain-fed Lowland Rice in Drought Prone Environments: a Case Study in Thailand and Laos. *Plant Production Science* 1 (1): 75–82.
[23] Schiller, J.M., B. Linquist, K. Douangsila, P. Inthapanya, B. Douang Boupha, S. Inthavong, and P. Sengxua. 2001. Constraints to Rice Production Systems in Lao. ACIAR Proceedings 101; Canberra, ACT 2601, pp 3–19.
[24] FAO. 2004. *Review of the Livestock Sector In The Mekong Countries.* Rome
[25] The Living Aquatic Resources and Research Center. 2000. *Review of Aquaculture Support to Lao PDR During 1975–2000.* Vientiane.
[26] ADB. 2004. *An Evaluation of Small Scale Freshwater Rural Aquaculture Development for Poverty Reduction.* Manila.

increased fishing effort, pesticides used in agriculture, and extensions of hydropower schemes and structures built along rivers tend to compromise fisheries production.

27. The existence of unexploded ordnance (UXO) on more than half of the land hinders farmers from making full use of the limited cultivable land. The Lao PDR has one of the highest levels of UXO in the world. During the Indochina War period (1964–73), more than 2 million t of ordnance was dropped in the country, with concentration in the northern and southeastern provinces.[27] UXO contamination limits expansion into new agricultural areas.[28] UXO is also an impediment to development in heavily affected areas.[29] The presence of UXO deters planting of crops and grazing of livestock, and slows transport between villages in affected areas. While work to remove UXO continues, it represents significant incremental costs for development.

28. Forestry accounts for 7–10% of GDP, 15–20% of non-agricultural GDP, and 24% (2002) of export earnings. In rural areas, NTFP provide more than half of household incomes.[30] Forests have served as a source of food security, and also protection for soils and water resources essential for the agriculture sector. Deforestation presents major environmental challenges to the country. Several factors contributing to deforestation and forest degradation include unabated commercial logging, shifting cultivation practices, land conversion for agriculture and infrastructure, and increasing and uncontrolled exploitation of NTFP.

29. Royalty revenues from forestry as a share of government revenues decreased from 20% in the mid-1990s to 6% of tax revenues and 5% of all revenues in 2000. Collection rates were low (about 50%), and the Government collected about one third of the estimated market value of the timber harvested.[31] Forest cover in the Lao PDR is currently about 40% of the total land area, compared with 60% in the 1960s, and 50% in the late 1980s.[32] Deforestation occurred at an alarming rate of 527 square kilometers (km^2) per year during 1990–2000, and much of the remaining forest is severely degraded. Deforestation, continuing at the current rate of 0.5% per year, will reduce natural forest cover to less than 30% by 2020.

30. Regulations for forest management, timber exports, and royalties are among the key factors influencing the behavior of resource users. These factors plus poor governance, corruption, and limited law enforcement have influenced the utilization of forest resources, placing excessive demands on the resource base and producing unintended disincentives for appropriate resource management. Log production quadrupled from about 0.2 million cubic meters (m^3)1986 to more than 0.7 million m^3 in 1999. Experts claim that (i) Lao's forestry is characterized by inefficiencies and high wood wastage,[33] (ii) logging has exceeded sustainable yields,[34] (iii) illegal logging has

[27] UNDP. 1995-2003. *Lao National Unexploded Ordnance Programme*. Vientiane.
[28] MAF/JICA. 2001. *Master Plan Study on Integrated Agricultural Development in Lao PDR*. Vientiane.
[29] Severe UXO contamination still affects 15 provinces, particularly Savannakhet, Xiengkhouang, Saravane, Khammuane, Sekong, Champasack, Huaphanh, Attapeu, and Luangprabang.
[30] NTFPs include food (such as game, bamboo shoots, fruits, honey, and plants), fibers (*khem* grass used to produce brooms, and paper mulberry), medicinal products, resins and oleoresins, bamboo poles, rattan, fuelwood, frogs, and fish.
[31] World Bank, Swedish Bilateral Assistance (SIDA), and the Ministry of Foreign Affairs of the Government of Finland. 2001. *Lao PDR Production Forestry Policy: Status and Issues for Dialogue*.
[32] Conflicting data, different definitions, and continuing changes in the resource base have led to different estimates of the magnitude and conditions of Lao forest resources. Forest cover (including evergreen, deciduous, regrowth, and tree plantations) was estimated at 40% (1997) of the country's land area. Source: Forest Cover Mapping Project, Mekong River Commission and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ).
[33] Poor harvesting practices may cause more than 60% loss of potential extractable wood volume.
[34] There is no official estimate for the annual allowable cut (AAC). Available AAC estimates for commercial species range from 282,000 m^3 to 1.0 million m^3 per year. Total annual extraction (recorded commercial logging and household use) from production forests was estimated at 1.3 million m^3. An interim AAC for commercial species was estimated at 0.6–0.7 million m^3.

posed serious problems, and (iv) wood industries' capacity exceeds long-term sustainable yields. The performance of wood industries, despite heavy investment, has not met expectations in terms of value addition, employment creation, and export earnings. There is limited documented evidence that commercial wood production and the associated benefits have reduced rural poverty. Irresponsible logging practices have deteriorated the environment on which the poor depend for their livelihoods. Facing enormous challenges, the Government's forest strategy is to increase the resource base while preserving natural habitats. It has set an ambitious target to achieve 60% forest cover by 2020. An extensive forest plantation program and appropriate forest management are its core objectives, including protection of national biodiversity conservation areas and watersheds.[35] Major issues facing Lao's forest management include logging[36] practices, replanting, controlling access, and protection of biodiversity and ecosystems. The Forestry Law (1996) recognizes the involvement of local people in natural forest resources management.[37] The World Bank is currently helping the Lao PDR to achieve sustainable management of production forests to reduce rural poverty by implementing forest policy reform actions.[38] Tree plantations cover relatively small areas, with mixed results. Degraded lands do not necessarily hold potential for commercial tree plantation development, and areas suited for tree plantations may also have potential for agricultural crops (food and cash crops). Thus, tree plantation development may actually compete for land with agricultural development in lowland areas.

C. Investment Climate

31. Access to rural finance is a constraint to the ANR sector. The state-owned Agricultural Promotion Bank (APB) has limited capacity and has been incurring large losses due to a high rate of nonperforming loans arising primarily from its directed, subsidized lending portfolio.[39] APB is currently undergoing a major restructuring process to clean up its portfolio and transform it into a market-oriented rural finance institution. While undergoing this transformation, its ability to extend credit to commercial agribusiness will be limited, but is expected to grow. Other banks have expressed limited interest in financing agricultural production because of various reasons including their own weaknesses, perceived high risks, inexperience in the ANR sector, and general preference for other sectors. Three state-owned commercial banks dominate the financial sector, accounting for more than 80% of total bank assets.[40]

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[35] The Government has established a system of 20 national biodiversity conservation areas (NBCAs) covering 3.1 million hectares. However, production forest areas are not clearly mapped and demarcated. This situation poses management and enforcement problems to control unauthorized and illegal logging in NBCAs.

[36] Logging quotas are not yet established using annual-allowable-cut guidelines for sustainable forestry operations.

[37] The Forestry Law (1996) subsumes and supersedes all previous regulations, with Prime Ministerial Decree 169 (November 1993) on the Management and Use of Forests and Forestland forming the basis of this new law. The Forestry Law provides a framework for sustainable forest management that allows communities to participate in management of forests despite certain limitations. This law recognizes five categories of forest (protection conservation, production, regeneration, and degraded forests), outlines the responsibilities and rights of the Government in forest management, and makes provision for village resource use and traditional rights.

[38] World Bank. 2003. *Sustainable Forestry for Rural Development Project.* Washington DC.

[39] The Government established APB in June 1993 as a specialized bank to provide credit to agriculture.

[40] Boumphrey, R., P. Dickie, and S. Tukuafu. 2005. Instilling Credit Culture in State-Owned Banks--Experience from Lao PDR. *ERD Policy Brief No. 36*. Manila: ADB.
Total bank assets in the Lao PDR amounted to $465 million at the end of 2003. Credit to the private sector accounts for 6.5% of GDP and credit to SOEs accounts for 2% of GDP. Banque pour le Commerce Exterieur Lao serves predominantly large business customers, while the Lao Development Bank has an extensive branch network throughout the country and serves small and medium enterprises, and individuals. APB serves the rural areas, with government policy-directed credit programs to the ANR sector.

32. A snapshot (Table 4) of the business environment (2004) in the Lao PDR does not provide encouraging perceptions of predictability and transparency for doing business in the country.[41]

Table 4: 2005 Doing Business Review for Selected Asian Countries

Indicators 2004	Average	CAM	INO	Lao PDR	MAL	MON	SIN	VIE
A. Starting a Business								
1. Number of Procedures	10	11	12	9	9	8	7	11
2. Time (days)	80	94	151	198	30	20	8	56
B. Hiring/Firing Workers								
1. Difficulty of Hiring Index	41	67	61	11	—	11	—	56
2. Difficulty of Firing Index	45	30	70	80	10	10	—	70
C. Registering Property								
1. Number of Procedures	6	7	7	9	4	5	3	5
2. Time (days)	66	56	42	135	143	11	9	67
D. Enforcing Contracts								
1. Number of Procedures	33	31	34	53	31	26	23	37
2. Time (days)	357	401	570	443	300	314	69	404
3. Cost (% of debt)	51	121	127	30	20	23	9	30

— = not available, CAM = Cambodia, INO = Indonesia, Lao PDR = Lao People's Democratic Republic, MAL = Malaysia, MON = Mongolia, SIN = Singapore, VIE = Viet Nam.
Source: World Bank Group. <Available: http://www.doingbusiness.org/>

33. The challenges of launching a business in the Lao PDR are serious. Entrepreneurs can expect to go through nine steps to launch a business, taking more than 198 days on average. Employers face rigid regulations on working hours and difficulties in dismissing a redundant worker. It takes 135 days to register property. Many challenges were found in enforcing contracts: 53 procedures from the moment the plaintiff files a lawsuit until actual payment, taking 443 days, at a cost of 30.3% of the debt value (in court and attorney fees).

34. The 2005 Index of Economic Freedom ranked the Lao PDR 150th among 155 countries, with a weighted score of 4.33 (1 indicates best, 5 worst) comprising trade policy (4), fiscal burden (3), property rights (5), regulation (5), informal market (5), government intervention (3), monetary policy (4), foreign investment (4), banking and finance (5), and wages and prices (4).[42] The recorded volume of foreign direct investment (FDI) into the Lao PDR has fallen in recent years, as the implementation of economic reform faltered.[43] Investment in ANR in the Lao PDR has been relatively small scale and informal. Since the NEM, there has been increased interest from potential regional investors in ANR opportunities, but the overall national investment climate and the lack of the rule of law have precluded major FDI flows into agriculture and agribusiness.

35. Preliminary analysis of data from a joint ADB-World Bank investment climate survey suggests that key perceptions of constraints include (i) electricity (disruption, losses, and time to obtain connections), (ii) regulatory policy uncertainty (cumbersome procedures, differences among provinces, and informal payments to public officials to get things done), (iii) macroeconomic uncertainty, (iv) tax rates, (v) transportation, (vi) customs and trade regulations, (vii) tax

[41] World Bank. 2004. Doing Business, Snapshot of Business Environment, Lao PDR. 2004. <http://www.doingbusiness.org/ExploreEconomies/BusinessClimateSnapshot.aspx?economyid=107>
[42] Available:<http://www.heritage.org/research/features/index/country.cfm?id=Laos>
[43] Bank of Lao PDR statistics show FDI of $17 million in 2004, or less than half of the 1999 level and one fifth of that in 1997 (before the Asian financial crisis). There are discrepancies among different sources of data on approved and actual FDI, but they show a similar trend of declining FDI in recent years.

administration, (viii) access to financing, (ix) cost of financing, and (x) skills and education of workers.[44]

III. ANR SECTOR STRATEGIES AND ASSISTANCE

36. This chapter discusses government policies and strategies, and ADB's country strategies and sector assistance. It also discusses the relevance, rationale, country contexts, and composition of ADB sector assistance.

A. Country Sector Strategies

37. Following the NEM (1986), and in response to unprecedented reform initiatives demonstrated by the Government, ADB's policy-based lending commenced in 1989 and marked a new era of ADB assistance in the ANR sector in the Lao PDR, with the overriding objective to facilitate the country's transition to a market-based economy. This coincided with a structural adjustment program supported by IMF and the World Bank. ADB's country and operational strategy study (COSS) was prepared in 1991 to assist the Government in this transition through (i) policy analysis and institutional reforms for the development of markets and private sector investment, and (ii) direct investment interventions in the development of essential physical infrastructure. Following the NEM and throughout the 1990s, the Government's policy on ANR was largely subsumed within its broad macroeconomic reform agendas. ADB was responsive to the Government's reform agenda at that time, as evidenced by the scope of the FAPL and SAPL, which addressed the Government's policy objectives for both macroeconomic and ANR reforms. Nevertheless, the main focus of agricultural policy in the Lao PDR, throughout the 1990s and until recently, has been to promote self-sufficiency in rice production to meet domestic consumption.

38. The Government's medium-term development strategy (1996–2000) aimed to (i) consolidate macroeconomic reform to ensure smooth transition to a market-oriented economy, (ii) improve efficiency and performance of the public sector, (iii) accelerate socioeconomic development and improve living standards, and (iv) arrest degradation of the natural resource base. Consistent with this broad government strategy, the COSS in 1996 placed high priority on supporting sustainable economic growth through infrastructure investments, policy reform, social services support, human development, and subregional cooperation. The 1996 COSS emphasized the need for (i) synergy among development activities, (ii) better social and environmental management in economic development planning and implementation, (iii) effective institutional and capacity development, (iv) increased sustainability of investments, and (v) emphasis on participation and ownership of stakeholders.

39. In 2001, ADB's Country Strategy and Program (CSP) endorsed the position that poverty reduction (by broadening community participation and opportunities) would be the unifying principle of ADB's interventions in the Lao PDR over the next 5 years. Core pillars for poverty reduction include sustainable economic growth, inclusive social development, and good governance through policy and institutional development. The CSP emphasizes several operational priorities including rural development and market linkages, human resource development, sustainable environmental management, private sector development, and regional integration. The CSP also identifies the Northern Region provinces and Savannakhet Province along the East-West economic corridor as the geographical focus for ADB assistance. The CSP updates (2002–2005) have maintained these strategic thrusts and priority areas. For agriculture, the CSP includes (i) institutional development

[44] ADB and World Bank (2005), *Informal Seminar on the Lao PDR Investment Climate Survey*, ADB's Lao Resident Mission, Vientiane. October 2005. The full results of the survey are expected to be released in a joint ADB/World Bank report in 2006.

and policy reform; (ii) crop diversification, including livestock and commercialization; (iii) reducing shifting cultivation; (iv) rural finance development; and (v) provision of extension services.

40. In September 2001, the Government and ADB signed a poverty reduction partnership agreement that lays out short-, medium-, and long-term visions to reduce poverty in accordance with the Millennium Development Goals (MDGs). The Government finalized a national poverty eradication program (NPEP) in 2003, which identified 72 poor districts (including the 47 poorest) out of 142 districts, and ambitiously aimed to eliminate poverty in the 47 poorest districts by 2005. Prepared with participation of development partners (including IMF and the World Bank) the NPEP served as the Government's poverty reduction strategy paper (PRSP) to describe the country's macroeconomic, structural, and social policies and programs aimed at promoting growth and reducing poverty.[45] These efforts led to the Government's National Growth and Poverty Eradication Strategy (NGPES) which replaced the NPEP.[46] Discussed at the Donor Roundtable Meeting in September 2003, the NGPES aims to reduce poverty through economic growth and increased emphasis on the poorest districts (47 districts prioritized). The NGPES maintains four priority sectors for poverty reduction: (i) agriculture, (ii) education, (iii) health, and (iv) transport.

41. ADB designed its assistance to help implement the Government's development strategy, including formulation of a northern region development strategy (NRDS) that emphasizes economic integration of the poor northern region with neighboring economies, market-based development, human resource development, and sustainable social and environmental management. The Government's vision for ANR development aims to increase productivity by strengthening research and extension, developing human resources, liberalizing trade, reducing shifting cultivation, and enhancing irrigation management. In the context of rural development, the CSP supports the development of rural access roads, electricity and water supply, and other rural infrastructure to promote investment in agriculture and other rural businesses.

42. Most of the poor rely on natural resources and fragile ecosystems for their livelihoods. For example, mountain ecosystems are fragile, and agriculture-based livelihoods are heavily dependent on soil regeneration made possible by long fallow periods and nutrient recycling in shifting cultivation cycles. Reduction of fallow periods has affected soil fertility and caused hardship to farmers who practice shifting cultivation. The CSP outlines several areas relevant to ANR for ADB support: (i) capacity development to analyze environmental policy and regulatory enforcement, including social and environmental impact assessments; (ii) consultations with stakeholders on social and environment issues, and transparency in environmental assessment and monitoring; (iii) monitoring of land registration to ensure protection of women's traditional property rights and ethnic minorities' traditional rights; and (iv) river basin development, stabilizing shifting cultivation, and stopping opium poppy cultivation by offering alternative livelihood schemes.

43. The Government intended to shift agriculture from subsistence farming to commercial agriculture, and the CSP (2001) responded to this aim by committing ADB to focus on institutional development, policy reform, agricultural diversification (also livestock and commercialization), reduction of shifting cultivation and opium poppy, and rural finance development. ADB would address specific needs of women and ethnic minorities in the ANR sector by (i) supporting the rural population, especially ethnic minorities, during the transition period from shifting cultivation to alternative livelihood schemes; and (ii) highlighting gender and development in agriculture and rural development. To facilitate the transition to commercial agriculture, the CSP recognizes that niche markets and enhanced market linkages are critical, and an enabling environment is required to encourage private investment in agriculture. Contract farming with traders from neighboring

[45] Available: <http://poverty.worldbank.org/prsp/index.php?view=ctry&id=94>
[46] Available: <http://www1.worldbank.org/prem/poverty/strategies/cpapers/cr04393.pdf>

countries needs to be promoted, introduced, and developed. Enhancing urban-rural market linkages and connecting the Lao PDR with subregional and international markets are also important. The CSP and its updates emphasize the role of the private sector for agriculture and forestry development, recognizing that improved agricultural performance and marketing are critical to improving rural livelihoods.

B. ANR Sector Assistance

44. For ANR, from 1986 to 2004, ADB provided $134 million in loan financing (two program loans totaling $50 million and seven investment projects totaling $84 million), and $19.1 million in TA grant financing (32 TA grants totaling $12.4 million and 11 project preparatory TAs totaling $6.7 million). In addition, ADB funded 14 regional TAs totaling $10.5 million with coverage that included the Lao PDR (Appendix 1). During 1986–2004, ANR accounted for 13% of ADB lending to the Lao PDR, 22% of total TA and 27% of total project preparatory TA provided by ADB to the country. The SAPE included projects and TAs closely (content and components) related to ANR. Appendix 1 provides cross references of project classifications with the new sector classifications as of December 2004.

45. After the NEM, ADB used a policy-based lending modality for two consecutive program loans in ANR (namely, the FAPL and the SAPL). This policy-based lending comprised a broad-based approach aimed at reducing market distortions with measures to liberalize trade, rationalize pricing practices, restructure taxation systems, and separate commercial and central banking functions, among other reform measures. The push for policy reform fitted well with the policy thrust of the 1991 COSS and the 1996 COSS. The 1996 COSS recognized that the development of a more commercial and export-oriented agriculture would be a challenging and difficult task, given the predominantly subsistence nature of agriculture, the country's poor physical infrastructure, its weak human resource base, and the legacy of past policies associated with the command economy. Some of these challenges continue to pose as serious constraints. ADB's policy-based operations in ANR (including 16 associated TAs) are discussed in Chapter IV.

46. ADB approved seven investment projects in the ANR sector from 1993 to 2004. The following briefly describes the objectives of these investment projects.

(i) **Loan 1295-LAO: Industrial Tree Plantation Project (ITPP), approved in December 1993.**[47] The objectives of the project were to (a) reestablish tree cover on unstocked and degraded forest land, thereby converting such land to productive use; (b) produce wood raw materials for industrial use and as alternative sources of wood for construction and fuel; and (c) establish a policy and institutional framework for the development of industrial plantations.

(ii) **Loan 1488-LAO: Community Managed Irrigation Sector Project (CMISP), approved in November 1996.**[48] The project aimed to improve food security in central mountainous regions (provinces of Vientiane, Borikhamxay, Huaphanh, and Xiengkhouang; and Xaysomboun Special Region). The objectives of the project

[47] ADB. 1993. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grants to the Lao People's Democratic Republic for the Industrial Tree Plantation Project.* Manila.

[48] ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Community-Managed Irrigation Sector Project.* Manila. Loan 1488-LAO: *Community-Managed Irrigation Sector Project*, for $14.7 million, approved on 21 November 1996. The project components included (i) community mobilization and training, (ii) development of community-managed irrigation (CMI) schemes, (iii) construction of district feeder roads, and (iv) institutional support for CMI Development.

were to (a) increase agricultural production on a sustainable basis; (b) increase the food security and incomes of about 6,000 farm families, most of whom were small landholders; and (c) improve watersheds by reducing shifting cultivation and promoting tree planting.

(iii) **Loan 1688-LAO: Shifting Cultivation Stabilization Pilot Project (SCSPP), approved in May 1999.**[49] The objectives of the project were to (a) improve income of upland farmers; and (b) conserve natural resources through environmentally sustainable, diversified sedentary farming systems as alternatives to shifting cultivation, and provision of basic rural infrastructure. The project aimed to pilot test technologies and establish land allocation procedures. Located in Xam Neua District of Huaphanh Province, the SCSPP was designed in the context of sector goals to reduce poverty, increase food production, reduce the production and consumption of opium, and protect natural resources.

(iv) **Loan 1788-LAO: Decentralized Irrigation Development and Management Sector Project (DIDMSP), approved in November 2000.**[50] The overall goal is to encourage economic growth through improved efficiency in agriculture, which is expected to reduce poverty and improve food security. The project supports the transfer to farmers of the ownership and maintenance of irrigation systems in six provinces (Xayabury, Luangprabang, Vientiane, Vientiane Capital, Borikhamxay, and Savannakhet). The objectives of the project are to establish sustainable irrigated agriculture through an irrigation management transfer (IMT) process, and strengthen water users associations (WUAs) and agricultural extension.

(v) **Loan 1933-LAO: Nam Ngum River Basin Development Sector Project (NNRBDSP), approved in November 2002.**[51] This river basin is one of the most vital ones in the country. The project aims to help the Government to implement integrated water resource management (IWRM) in relatively degraded watersheds of the river basin to provide sustainable livelihoods for poor ethnic groups. The project has three main components: (a) IWRM, (b) reservoir management and river basin modeling, and (c) watershed management.

(vi) **Loan 1949-LAO: Smallholder Development Project (SDP), approved in November 2002.**[52] The project promotes commercial smallholder agriculture and agribusiness, with the objectives of achieving sustained increases in rural incomes

[49] ADB. 1999. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Shifting Cultivation Stabilization Pilot Project.* Manila. This project was originally classified as a multisector project. The SAPE included this project in the evaluation because its scope and content are closely related to ANR.

[50] ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Decentralized Irrigation Development and Management Sector Project.* Manila. The project aims to (i) assist irrigators to organize themselves into water users associations, (ii) rehabilitate existing irrigation systems, (iii) provide extension services to farmers, (iv) enhance extension capacity to sustain farmer-managed irrigation, and (v) provide support for capacity development of water users associations.

[51] ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Nam Ngum River Basin Development Sector Project*. Manila.

[52] ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to the Lao People's Democratic Republic for the Smallholder Development Project*. Manila. The project has four components: (i) farmer support services to improve farmers' technical knowledge of integrated farming systems, and access to market information and inputs; (ii) agribusiness and marketing to stimulate investment in agribusinesses; (iii) rural infrastructure to improve physical access to produce markets and reduce marketing costs; and (iv) project management.

and long-term reductions in rural poverty. Specifically, the project aims to (a) increase production and marketing of diversified, nonrice dry season cash crops, livestock, and fish; (b) improve smallholder access to markets and market information; and (c) increase investment in value-adding agribusiness. The project provides for strategic road linkages to the East-West and North-South economic corridors, where commerce and trade have begun to develop. It was designed to improve the living standards of people in selected districts of Savannakhet, Champasack, Khammuane, and Vientiane.

(vii) **Loan 2086-LAO: Northern Community-Managed Irrigation Sector Project (NCMISP), approved in July 2004.**[53] The project aims to reduce rural poverty in 11 districts in 5 provinces (Huaphanh, Xiengkhouang, Xaysomboun Special Region, Luangprabang, and Xayabury) of the Northern Region through sustained growth of agricultural production by developing community-managed irrigation schemes with strong community ownership. The project will provide integrated services to each subproject: (a) community mobilization, (b) institutional capacity development for better participatory planning facilitation and technical management, (c) rehabilitation and upgrading of community-managed irrigation schemes, and (d) agricultural extension and resource use planning.

47. While individual projects (as they stand on their own) are relevant and responsive to the country's challenges and development priorities, the collective composition of ADB assistance in ANR (in terms of objectives, scope, types, and locations) has been diffused. Clear links have not been established to optimize development synergy among projects and TAs. Following the FAPL and SAPL, investment projects in ANR have comprised localized interventions, without nationwide and coordinated efforts to address common binding constraints facing subsistence agriculture, including the challenges, impediments, and contextual operating environment facing the commercialization of agriculture. ADB's country strategies and country program updates of the last two decades have repeatedly emphasized the importance of the transition of the ANR sector to a market-based economy, crop diversification, commercialization, and the role of the private sector. However, ADB-financed investment projects in ANR, with the exception of the SDP, have been focused on supply-side improvements of infrastructure, facilities, and capacity development related to factors of production without concerted thrusts to find solutions to major constraints facing crop diversification, market orientation, and value addition. Agriculture has remained largely rice based and subsistence in nature, without major changes over the last two decades in terms of product diversification, value addition, and market orientation. The operating environment for the sector to flourish depends on many factors outside the purview of the sector. Key areas of ADB-assisted investments in ANR are discussed in the following sections.

C. Irrigated Agriculture Development and Management

48. ADB assistance for irrigation development and management has been relevant and responsive to the country's priorities. Two projects, the CMISP (Loan 1488-LAO) and the NCMISP (Loan 2086-LAO), targeted community-managed irrigation systems in the mountainous central and northern areas to improve household food security, reduce poverty, and stabilize shifting cultivation. The Government has actively discouraged upland rice production based on shifting cultivation, using a two-pronged strategy to limit the rice area under shifting cultivation. The first is to raise the productivity of rice so that food needs are met from a smaller area by increasing the productivity of upland rice on sloping lands and raising the productivity of pockets of lowlands in

[53] ADB. 2004. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Northern Community-Managed Irrigation Sector Project.* Manila.

valley bottoms and irrigated terraces. With the overall increase in food supply coming from irrigated terraces and valley bottoms, the pressure to intensify rice production in the uplands is expected to decrease. The second strategy is to improve market access of rural communities through investments in roads, transport, and marketing infrastructure. Farmers are unlikely to continue to grow upland rice using shifting cultivation when more remunerative options become available. The NRDS (2004) is based on this two-pronged approach.

49. Both the CMISP and the NCMISP have objectives that respond well to upland and poverty conditions, where access to arable land and markets is limited. Preceded by the CMISP, the NCMISP fits well with the northern geographical focus emphasized by the CSP. Both the CMISP and NCMISP are relevant to the needs of poor subsistence farmers and rural communities in relatively remote areas. With inadequate access to reliable supply of water, and pronounced drought over an extended period during the dry season, crop cultivation is exposed to risks. This instability generates threats to household food security in remote rural areas, where market links to rice surplus areas have not developed, and the probability for such links to develop fully is unlikely due to the physical isolation and terrain of the areas. Thus, the thrust of ADB development assistance has been focused, in this context, on objectives to increase household food security. Typically, irrigation in the uplands has involved traditional small-scale schemes constructed, operated, and maintained by local communities.[54] Dry-season flows of water are generally limited in small watersheds. Under these conditions, irrigation serves its purpose well during the wet season and less so in the dry season due to water scarcity. Maintenance is labor intensive, consuming a lot of household labor.

50. In theory and practice, upgrading these small-scale irrigation schemes with more permanent structures can reduce the labor burden of poor farmers so that they can use their limited household labor more effectively. Farmers have responded with strong interest in improving and modernizing their small-scale irrigation schemes. They have expressed willingness to contribute labor and local materials to improve and rehabilitate their community-managed irrigation schemes. Improved irrigation is expected to benefit farmers and their communities in several ways: (i) fewer structural repairs and consequently reduced labor for operation and maintenance (O&M), (ii) reduced use of wood and thus less tree cutting for structural repairs, (iii) improved water supply and distribution to farms, (iv) improved rice yields with increased stability of water supply, (v) increased opportunities for dry season crops when water is adequate, (vi) expansion of irrigated areas and increased crop production, and (vii) reduced crop production instability and consequently improved household food security among subsistence farmers. The combined effects are also expected to reduce slash-and-burn shifting cultivation in upland areas.

51. In contrast to the small-scale community-managed irrigation in the uplands, most of the irrigation systems in the lowlands along the Mekong River and its tributaries comprise pump irrigation schemes.[55] Through the DIDMSP (Loan 1788-LAO), ADB supported irrigation development and management in these lowlands. With heavy investments in irrigation in the past, which caused major fiscal imbalance, many irrigation schemes had been poorly maintained. The Government had allocated its budget for capital works to expand irrigated areas, but had not been able to allocate adequate funds for O&M. Hence, many of these irrigation schemes did not function efficiently, and did not deliver sustainable benefits. Thus, the rationale was that rehabilitation of

[54] Farmers rely on small weirs to divert surface water from streams into gravity channels for conveyance to farmlands. These weirs provide supplementary irrigation to wet season rice cultivation for subsistence. Typically, traditional diversion weirs are made of local materials such as bamboo, brushwood, logs, and stones. These traditional structures are not robust, and require frequent repair, replacement, and reinforcement throughout the year.

[55] Irrigation systems in the lowland floodplains are usually supplied with water from rivers pumped by diesel or electric pumps. Irrigation water in the lowlands serves as the main source of water to farms during the dry season, and provides supplemental water during the wet season.

dysfunctional irrigation systems and improved O&M could improve scheme performance and water management, and allow IMT. To date, there is no systematic program for undertaking O&M of irrigation schemes. While farmers of larger irrigation systems have relied on government-funded support to maintain the irrigation systems and infrastructure, the continuing neglect of routine and periodic maintenance has caused irrigation systems to deteriorate rapidly, much sooner than their expected economic lifespan. Existing water user groups frequently do not have sufficient technical and extension support.

52. To remedy O&M deficiency and improve irrigation system operation, the Government launched initiatives to establish and develop WUAs with an appropriate legal framework. Accordingly, these WUAs would be trained to undertake administrative, financial, and technical functions to operate and maintain the irrigation schemes. The Government promoted a program to rehabilitate dysfunctional irrigation systems and transfer O&M responsibilities to farmers. The Government piloted and subsequently endorsed a nationwide IMT program.[56] In 2000, ADB responded to this government strategy by providing assistance through the DIDMSP. The DIDMSP does not fit well with the focus and priorities of the 1996 COSS, although it responded to the Government's emerging strategy on irrigation management. The objectives of the DIDMSP partly coincide with the CSP's emphasis to support institutional development, policy reform, crop diversification, and infrastructure development in agriculture. Nevertheless, the DIDMSP does not serve the CSP's geographical focus of poverty reduction in the northern region. It mainly included irrigated areas along the Mekong River and its tributaries in the Central and Southern regions. Although relevant and responsive to the Government's emerging priorities, the DIDMSP's partial fit with ADB's COSS and CSP reflects ADB's evolving country strategies and country programming at that time.

D. Upland Agriculture and Stabilization of Shifting Cultivation

53. Shifting cultivation has been a traditionally dominant land use system in the uplands of the Lao PDR, particularly in the northern mountainous region. Upland mountainous areas lack facilities and infrastructure required for development. Isolated villages often do not have roads, and when they do, roads are impassable during the wet season. Reaching these villages in some cases requires days of walking. LECS2 (1997–98) found that more than 40% of villages are at least 6 km from a main road, and nearly half do not have access to all-weather roads. Villages in the Northern Region are generally isolated. While challenges and constraints to upland agriculture and shifting cultivation are complex and relevant to poverty, the 1991 COSS and 1996 COSS did not focus on such issues as priority areas for ADB assistance at that time. Nevertheless, the 1991 COSS mentioned that slash-and-burn did not always result in permanent degradation of forest, and cautioned that providing assistance to regenerate denuded areas should take into account the capacity of government agencies. In subsequent years, ADB's country programming considered shifting cultivation as an environmental problem that needed to be addressed. A decade later, the CSP (2001) included reduction of shifting cultivation and opium poppy cultivation as priority areas for ADB assistance. ADB assisted the Government in stabilizing shifting cultivation by approving Loan 1688-LAO (SCSPP) in 1999 for a pilot project in Houapanh Province. Thus, the SCSPP preceded the CSP's direction.

[56] Prime Ministerial Order No.26/PM (December 1998) allows the transfer of irrigation projects to community organizations, but the order aimed to encourage farmers to repay a portion of the investment costs in irrigation infrastructure through farmers' contribution to village development funds (VDF). Farmers, organized in water users groups, were mandated to establish VDFs. Subsequently, a more comprehensive regulation (MAF Regulation No. 1149, 27 June 2000) introduced and elaborated the IMT program, including provisions for government support before and after the transfer of irrigation assets to beneficiaries.

1. Policy and Strategy Context

54. The Government's policy directions and strategies to address shifting cultivation have evolved over time. These have generated effects that need to be considered in the context of ADB's current and future assistance for upland agriculture. Estimates of shifting cultivation areas vary.[57] Shifting cultivation is most prevalent in the Northern Region, one of the poorest areas of the country, where livestock and animal husbandry can play a significant role in improving livelihood systems.[58] In the last two decades, increased population pressure and the effects of government policies to curb shifting cultivation have shortened fallow periods from 10–20 years to 3–7 years. Shortened fallow reduces time for vegetative regeneration. This has led to increased soil erosion, reduced secondary forests and biodiversity, and reduced soil fertility.

55. During the first National Forestry Conference (1989), the Government reformulated its strategy to stabilize shifting cultivation by focusing on actions to address allocation of land and forest to village communities.[59] The Government viewed shifting cultivation as unsustainable, and intended to stabilize it by making agriculture more sedentary through (i) promoting crop diversification on sloping lands, (ii) developing market access to communities through feeder road development and market information delivery, (iii) promoting land use zoning based on land capability and slope, (iv) promoting rural savings and credit provision for alternative livelihoods, and (v) implementing land use planning and land allocation. The Government's strategy uses a focal site approach to target poor areas. This approach aims to reduce shifting cultivation by improving access to social services, developing market-oriented activities, and integrating regions into the national economy. The focal site approach has been ostensibly used to enhance service delivery and reduce poverty in remote areas, but this has been perceived and criticized by observers in some cases as constituting relocation and resettlement.

56. The Government has enacted several laws that are relevant for upland agriculture. These include the Forestry Law[60] (1996), Land Law[61] (1997), Agriculture Law[62] (1998), and Environmental Protection Law[63] (1999). The Seventh Party Congress (2001) set targets endorsed by the National Assembly to stabilize pioneering shifting cultivation by 2005, with complete stabilization of shifting cultivation by 2010.[64] Five provinces of the Northern Region are the main area focus, and each is given an annual target for reduction. Stabilization of shifting cultivation has become a major national objective. While central government policies set annual targets to eliminate shifting cultivation and implement land and forest allocation, decisions and implementation arrangements

[57] MAF reports that the area under shifting cultivation decreased from 249,000 ha in 1990 to 99,000 ha in 2001, with a corresponding decline in the number of people involved, from 210,000 to 99,000 families.

[58] Pravongviengkham P. 1998. T*he Role of Animal Husbandry and Aquaculture in Improvements of Swidden-Based Livelihood Systems in the Lao PDR.* Unpublished Doctoral Dissertation. Asian Institute of Technology. Bangkok.

[59] Stabilization implies preventing the increase in the areas under shifting cultivation by converting shifting cultivation practices into sedentary farming systems.

[60] The Forestry Law signifies a more comprehensive management and utilization of forest resources, including the legal provision for reforestation. Under this law, the customary use of land and forest is acknowledged as the starting point of forest management planning and allocation.

[61] The Land Law reaffirms the nationalization of natural resources, whereby the State declares ownership of all land, abolishing any previous private property rights. Land not currently under cultivation, or claimed by other individuals or entities, is to be classified as State forestland. Land left to fallow for more than 3 years can be claimed by the State for the purpose of reforestation and/or commercial production.

[62] The Agriculture Law provides citizens with the rights to use agricultural land for production based on land availability and capacities. This law provides every household the right to use sufficient land, subject to their production capacities, requiring that the land must be used within a period of 3 years. Otherwise, land is relinquished to the State.

[63] The Environmental Protection Law provides measures for the protection, mitigation, and restoration of the environment. It also provides direction for environmental management, monitoring, and the requirements for environmental impact assessment of major projects in the country.

[64] Pioneering shifting cultivation involves felling undisturbed (primary/secondary) forest for cultivation.

are mostly devolved to provinces and districts, with inadequate consideration of their institutional capacity and resources.

57. Various observers have noted that policies aimed at stabilizing shifting cultivation have shortened the forest fallow for rotational agriculture and in many cases worsened the plight of poor farmers. For example, (i) the Forestry Law (1996) indicates that regeneration forest will be maintained until it reaches maturity, and also encourages landholders not to clear fallow forests for shifting cultivation; (ii) the Land Law (1997) specifies that land left to fallow for more than 3 years can be claimed by the State for the purpose of reforestation; and (iii) the Agriculture Law (1998) allows farm households the right to use land, subject to their production capacities, requiring that land must be used within a period of 3 years. Interpretations of policies in practice have often been incongruent. Existing policies suggest that fallows of more than 3 years can be considered as degraded forest instead of a stage within a cycle of rotational agriculture. As lands unutilized (abandoned) for more that 3 years can be reclassified as regeneration forest, farmers face pressure to not let their land rest to regenerate for more than 3 years. Shortened fallow periods have been observed to cause serious detrimental impacts on poverty, as soil productivity declines and crop yields worsen.

58. Since the late 1990s, there have been attempts to introduce more flexible practices on a pilot scale by promoting land use planning that allows participatory zoning and land allocation within village boundaries. Issues concerning shifting cultivation are complex, including land and forest allocation, relocation and its effects on people, opium poppy eradication, and livelihoods. The length of cultivation and fallow periods makes understanding farming systems difficult. Relocation programs have in some cases led to human suffering and increased mortality because of poor sanitary conditions, inadequate resettlement facilities, and sickness, such as malaria and water-borne diseases. The Government is increasingly aware of these effects. Various views on technologies, approaches, and methods for improving upland livelihoods were discussed in a national workshop (2004) on poverty reduction and shifting cultivation stabilization in the uplands.[65]

2. Opium Poppy Cultivation

59. Shifting cultivation has often included opium poppy cultivation in some of the most remote, isolated, and least accessible areas of the Northern Region. For many years, the Lao PDR was an important producer and supplier of illicit opiates to the world.[66] Opium poppy cultivation was concentrated in the northern part of the country. Cultivation of opium poppy reached more than 40,000 ha in 1989, but declined to 26,800 ha in 1998 and 6,600 ha in 2004. Opium cultivation provided cash income, and alternative sources of income were scarce.[67]

60. The national drug control program addresses complex issues. Opium poppy cultivation is both a source of income to growers, and a source of poverty in the Northern Region. In 2002, opium production occurred in 67 districts countrywide; of these, 32 were among the 47 poorest districts, and 45 were among the 72 poor districts. Opium was produced by approximately 50,000

[65] Bouahom, B., A. Glendinning, S. Nilsson, and M. Victor (Editors). *Poverty Reduction and Shifting Cultivation Stabilization in the Uplands of the Lao PDR: Technologies, Approaches and Methods for Improving Upland Livelihoods.* Proceedings of a workshop held in Luangprabang, 27–30 January 2004. National Agriculture and Forestry Research Institute. Vientiane.

[66] UNODC. 2004. *Laos Opium Survey*. Vienna.

[67] Cash income from selling opium was important for farmers living below the poverty line. The average national opium yield potential for 2004 was estimated at 6.5 kg/ha, ranging from 3.5 kg/ha to 10.1 kg/ha. The average farm gate price of opium in 2004 was $218/kg. In 2004, the average cash income of an opium-producing household was $371, representing 94% of the average income of non-opium producing households, who were less poor than their opium producing neighbors. Opium production and trade contributed to 12% to the total income of the producers.

households in about 1,600 villages, mostly in the remote highlands of 10 northern provinces, which accounted for 90% of the country's total opium production. Poor households consumed up to 60% of their opium production for traditional, medicinal, and other purposes.

61. The National Drug Control Program, launched in 1994, emphasized a gradual and balanced approach to eliminating opium poppy cultivation with a focus on alternative livelihood development. A strategy for opium elimination was prepared in 1999 in response to an agreement between the Government and UNODC[68] to eliminate opium in 6 years through rural development in major opium producing districts. The 1999 strategy aims to eradicate opium production by 2006. Subsequently, the Seventh Party Congress (2001) resolved to eradicate opium production by 2005, and efforts intensified. UNODC surveys indicated substantial reduction of opium poppy cultivation to almost negligible levels. Opium poppy cultivation declined to 6,600 ha (846 villages) with an estimated production of 43 t in 2004. The UNODC survey (2005) reported that, among those who had given up opium poppy cultivation, half did so because of compliance with the law.

62. Farmers consider opium poppy as a crop that has been cultivated for decades, and abandoning it has not been a simple choice. Traditional use of opium for household consumption for medicinal, social, and other purposes was common. Permanent elimination of opium poppy cultivation will require sustainable alternative livelihoods among poor farmers. Maintaining opium-free farming will continue to pose challenges despite increased law enforcement and overt government commitment to eradicate it. During focus group discussions conducted by the OEM, about half of the interviewed farmers confirmed that if they had not been told to stop cultivating opium poppy by law enforcers and government agents, they would have continued. While farmers have been encouraged to plant other cash crops, diversification can succeed only when there are markets for diversified farm products. The elimination of opium as a source of cash income in the short run can lead to more extensive rice farming in the uplands. This can increase shifting cultivation. Households still prefer to grow glutinous rice for subsistence rather than other crops for which a market is still uncertain. With reduced supply, farm gate prices of opium have increased sharply, indicating severe scarcity of the commodity in the area.[69] This increase in price is likely to have had three major effects: (i) allowing remaining producers to make above-normal profits; (ii) causing hardship to addicts; and (iii) possibly causing drug users to use alternative drugs such as amphetamine, leading to serious health problems.[70]

E. River Basin Development and Watershed Management

63. The CSP (2001) discusses river basin development in the context of regional cooperation and environment management. Water resources in the Lao PDR have regional significance, particularly since more than 35% of the total Mekong River flow is generated in the country's watersheds. The CSP emphasizes that ADB will closely work with other aid agencies, community groups, and NGOs to improve the institutional, policy, and regulatory framework for environmental management. Key focus areas, as stated in the CSP, include (i) strengthening the social and environmental management of infrastructure developments, (ii) supporting community-based initiatives to better protect the environment, (iii) supporting activities to improve upland agricultural systems, and (iv) developing management capacity for sustainable river basin development.

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[68] UNODC was formerly known as the United Nations Drug Control Programme.

[69] Several villagers in Huaphanh province informed the OEM that opium prices had tripled over the last 3 years, and farm gate price reached $350/kg (April 2005), while district statistics reported the opium price as reaching KN6.5 million/kg ($630/kg).

[70] UNODC reported that the opium farm gate price in March 2005 reached $520/kg, while the price in Huaphanh was reported to have reached $950/kg. Since 1997, abuse of and trafficking in amphetamine-type stimulants (including methamphetamine [*ya ba*]) have posed new dangers to society in the Lao PDR.

64. In the late 1990s, the Lao PDR enacted a watershed and water resources management law (Water Law) and prepared a national water sector profile, a water sector strategy, and an action plan. As a first step to implement these policies and plans, the Government established the Water Resources Coordination Committee (WRCC) in February 1998. Two ADB-financed TAs in the late 1990s supported the WRCC.[71] The CSP subsequently responded to the Government's development strategy that recognized the importance of poverty reduction and economic growth through improved management of water resources. As a logical and relevant step forward to improve water resources management, ADB approved Loan 1933-LAO (NNRBDSP) in November 2002, cofinanced with AFD, to help the Government implement IWRM in relatively degraded watersheds of the river basin to provide sustainable livelihood opportunities for the rural poor.[72] The NNRBDSP is relevant and responsive to the CSP's focus on the Northern Region and to the country's priorities to manage its fragile ecosystem. The IWRM concept seeks to ensure that the water resources of a river basin are managed effectively and efficiently. While the IWRM concept is intended to reinforce links and synergies between water, land use, environment, and development, in practice it is complex. The IWRM concept involves a number of agencies, often with competing or conflicting interests, and also cuts across administrative boundaries. There are 12 major river basins in the Lao PDR, including the Nam Ngum River Basin. This basin was selected to initiate the IWRM concept due to its important existing and planned water sector investments as well as its proximity to Vientiane. In theory, the NNRBDSP provides the first opportunity for central and provincial departments to attempt to implement IWRM through hands-on and closely interlinked activities.

F. Commercialization of Smallholder Agriculture

65. The CSP (2001) recommended that ADB interventions over the next 5 years focus on poverty reduction by broadening community participation and opportunities. The SDP (Loan 1949-LAO) fits closely with several of the CSP's priorities: (i) rural development and market linkages, (ii) human resource development, (iii) private sector development, and (iv) regional integration. While the SDP can potentially make a significant contribution to the country's economic development, it is less relevant to the geographic focus of ADB in the Northern Region. The SDP focuses on the central and southern Mekong floodplain provinces, and it will have little impact on the Northern Region. However, the SDP is relevant to the East-West Economic Corridor in Savannakhet, and it can benefit from subregional cooperation initiatives with neighboring countries in the Greater Mekong Subregion (GMS).[73] The SDP supports the development of commercial agriculture among smallholder farmers who have the capacity to grow crops beyond their subsistence needs. Of the SDP's coverage of 16 districts, only 4 are among the 47 poorest districts identified by the NGPES. Improved agricultural performance and marketing are critical to improving rural livelihoods. Thus, the SDP is relevant and responsive to ADB's country strategy and the

[71] (i) ADB. 1998. *Technical Assistance to the Lao People's Democratic Republic for Institutional Strengthening of the Water Resources Coordination Committee (TA 3006-LAO)*. Manila.
(ii) ADB. 1999. *Technical Assistance to the Lao People's Democratic Republic for Implementation of the Water Sector Action Plan (TA 3205-LAO)*. Manila.

[72] The Nam Ngum River Basin (NNRB) is an important river basin in the country, being the first river basin where water resources were utilized through inter-river and interwatershed diversions, reservoir management, hydropower generation, and irrigation. In 1997, recognizing the potential of the NNRB for hydropower and agriculture, with the help of ADB-financed TA, the Government carried out a study to develop a management plan for the Nam Ngum watershed. The study evaluated hydropower and agricultural development options and recommended investments to expand development opportunities and enhance environmental mitigation efforts. ADB. 1996. *Technical Assistance for Nam Ngum Watershed Management Plan*. Manila.

[73] The GMS comprises Cambodia, People's Republic of China, Lao PDR, Myanmar, Thailand, and Viet Nam. In 1992, with ADB assistance, the six countries entered into a program of subregional economic cooperation, designed to enhance economic relations among them.
Available:<http://www.adb.org/GMS/>

Government's development strategies. Of the 10 strategic priorities of the NGPES, the SDP can potentially contribute to 6: (i) develop and modernize social and economic infrastructure in order to facilitate economic development in each region of the country and to accelerate the Lao PDR's regional and international economic integration; (ii) promote industries utilizing domestic natural resources, and actively promote small and medium enterprises (SMEs); (iii) develop and promote all economic sectors, particularly the private sector, including FDI, in order to expand business opportunities; (iv) enhance market linkages and trade facilitation; (v) strengthen existing legal and regulatory frameworks; and (vi) promote economic cooperation with all partners and countries.[74]

G. Livestock Development

66. The main focus of agricultural policy in the Lao PDR over the last two decades has been on promoting self-sufficiency in rice. Recognizing that other rural areas were relatively disadvantaged, the policy focus of the Government shifted towards development of mechanisms to support upland dwellers and ethnic minorities. The importance of livestock in Lao farming systems has been recognized for many years, but livestock did not receive prominence until 1999, when the Government articulated its Strategic Vision for the Agriculture Sector.[75] Several approaches recommended by this Strategic Vision involve livestock, although the strategy for livestock development was not detailed. Subsequently, the NGPES recognized the importance of livestock to poverty reduction, particularly in upland agriculture. The NRDS further recognizes the importance of livestock. Livestock accounts for 35% of agricultural production in the Northern Region. Despite this prominence, ADB assistance to the livestock sector has been delivered largely through TAs. A synthesis of ADB's involvement in livestock in the Lao PDR is presented in Appendix 4. There was a 10-year hiatus in ADB assistance for livestock development in the Lao PDR between the completion of TA 1277-LAO in 1990 and the commencement in 2000 of regional TA 5866 (Developing Sustainable Forage Technologies for Resource-Poor Upland Farmers in Asia). ILRI completed an ADB-financed review of the livestock sector in the Lao PDR in 2002. Prior to that sector review, TA 3544-LAO for the preparation of the NNRBDSP and the appraisal of the NNRBDSP provided analyses on livestock and fisheries, including the extension program.

67. Since 2002, ADB has provided further assistance to the Lao PDR through (i) regional TA 6067 (Improving Livelihoods of Upland Farmers Using Participatory Approaches to Develop More Efficient Livestock Systems), (ii) regional TA 6192 (Transboundary Animal Disease Control in the GMS), (iii) TA 4406-LAO (Capacity Building for Smallholder Livestock Systems in the Lao PDR), and (iv) project preparatory TA 4287-LAO (Participatory Livestock Development Project). It has taken 15 years for the partnership between ADB and the Lao PDR to reach a stage where an investment project for livestock development appears imminent. Regional TA 6192 is relevant and responsive to emerging challenges of transboundary animal diseases, including global and regional threats of highly infectious avian influenza, which has devastated poultry farms in the region. The CSP Update (2005) includes a proposed participatory livestock development project in its pipeline of projects. Several ongoing ADB-financed projects have indirect livestock development perspectives because of the existing farming systems. Examples include the DIDMSP, the NNRBDSP, the SCSPP, and the SDP. However, these projects were not specifically designed to support livestock development.

[74] The other four strategic priorities of the NGPES are (i) maintain an appropriate level of economic growth for the medium and long-term period in response to demographic trends; (ii) enhance human resource development through education, particularly basic education at all levels, including formal, informal, and vocational training; (iii) facilitate access to electricity for people in all areas and regions of the country to foster integrated economic development; and (iv) create favorable conditions and mechanisms for improving financial institutions and capital market development.

[75] MAF. 1999. *The Government's Strategic Vision for the Agricultural Sector*. Vientiane.

68. ADB had waited for clear government policy and increased sector knowledge before providing more assistance for livestock development. While TA 1277-LAO identified the significance of livestock to agriculture and the national economy in 1990, this did not translate into policy initiatives until 1999. In part this was because the TA focused on reducing the role of the Government in the livestock sector, rather than on areas for which the sector required support. In retrospect, the Government could have undertaken more policy analysis on livestock after TA 1277-LAO, with or without ADB support.

H. Development of Tree Plantations

69. In 1990–1991, the Government prepared the Tropical Forestry Action Plan (TFAP), which serves as a framework for the management and development of the country's forest resources.[76] ADB assisted the Government in the preparation of the TFAP through TA 1156-LAO.[77] The TFAP outlined three priorities including those that needed to be done as soon as possible, within 5 years, and during 5–10 years. The longer term priorities emphasize institutional and capacity development, conservation of ecosystems, land use in forestry, and forest industry development. In the context of forest industry development, the TFAP covers production and management of production forests, as well as objectives to create a stable investment climate and incentives for tree plantation development. The TFAP recommends that fast-growing tree plantations be classified as cash crops, and emphasizes the difference between natural forests and plantations. The TFAP (i) is cautious about the feasibility of large-scale, fast-growing plantations; (ii) emphasizes that successful development demands institutional changes to attract investors, including legal rights to land and products, and credit facilities; and (iii) recommends that feasibility studies be undertaken for the establishment of tree plantations.

70. The 1991 COSS, in its discussion on forestry, did not mention tree plantation development as a priority area. Nevertheless, ADB support for the development of tree plantations evolved from the TFAP, and continued with TA 1418-LAO (Third Forestry Development Project), which completed a feasibility study in February 1992 for the ITPP (Loan 1295-LAO). Favorable preconditions (capacity, institutions, and legal framework to attract private investments) did not exist in the country, and the ITPP was intended to respond to the Government's policy direction at that time. These favorable preconditions still do not exist today. The ITPP was ambitiously designed and supported by TAs to improve enabling conditions during project implementation.[78] Subsequently, the 1996 COSS discussed the importance of commercial crops to economic growth, export diversification, and value addition to broaden benefits to farmers, although this COSS did not specifically discuss tree plantations as a major focus area for ADB assistance. Later, the CSP describes tree plantation development as part of a broader range of alternative livelihood schemes that include crop diversification. Past COSS, CSP, and CSP updates have not articulated the relevance and significance of tree plantations to poverty reduction, the comparative advantages of the country, and the extent to which tree plantation development can contribute to economic development of the country. ADB's approach to support the development of tree plantations has been evolutionary, pilot-based, and driven by a project approach. Subsequent to the ITPP, ADB assisted the Lao PDR in the preparation of a new project (Forest Plantations for Livelihood) with an objective to develop an efficient and equitable forest plantation subsector.[79] This preparation led to

[76] The TFAP became part of MAF's forest policy including the classification of forest land into different land use categories and the initiation of tree plantations.
[77] ADB. 1989. *Tropical Forestry Action Plan*. Manila.
[78] TA 2028-LAO: Institutional Support to Department of Forestry, for $1.55 million, approved on 22 December 1993. TA 2029-LAO: Institutional Support for Agriculture Promotion Bank, for $450,000, approved on 22 December 1993.
[79] TA 3794-LAO: *Tree Plantation for Livelihood Improvement*, for $700,000, approved on 12 December 2001. This was supplemented by TA 4419-LAO: Small-Scale Technical Assistance for Preparing the Forest Plantations Sector Project, for $150,000, approved in October 2004.

a proposed ADB-financed project to achieve this objective by (i) establishing a semi-autonomous new institution; and (ii) supporting livelihood and enterprise plantations, and facilitating the establishment of industrial plantations and the associated processing industry.[80]

IV. ADB'S POLICY-BASED OPERATIONS IN ANR

71. This chapter assesses the key dimensions of the country's political economy and the performance of ADB's policy-based operations. This assessment illustrates the operating environment and dynamics of the reform process.

A. Political Economy of the ANR Reform Process

72. **Macroeconomic Context.** The process of reform in ANR in the Lao PDR began with the adoption of the NEM in 1986. The process and experience of policy reform in ANR is inseparable from the entire national economic reform process, because of the importance of agriculture (half of GDP) in the economy. Major developments in the ANR sector affect overall macroeconomic performance. Similarly, macroeconomic policies (such as those affecting public finance, interest rate, and taxation) or national legislation (such as that affecting access to factors of production, business and investment climate, land tenure, or property rights) can seriously influence ANR operations. The rationale of the ADB's policy-based lending (FAPL and SAPL) in ANR must be viewed in this context, which explains why the FAPL and the SAPL dealt with broad economic issues instead of only agricultural policies.

73. **Regulatory Uncertainty.** The experience of the economic reform and transition process in the Lao PDR, although positive, has been unpredictable in nature and somewhat sporadic in its implementation. Policy reform, particularly in ANR, has not generally been reversed or in retreat, but it has stalled from time to time. Appendix 5 provides a summary of key policy reforms (1986–2004). A large number of laws passed by the National Assembly, decrees issued by the Prime Minister and ministers, and orders and instructions issued by government ministries and agencies affect ANR. These are not always clear in intent, nor completely consistent with one another. Specific measures of ADB's policy-based lending were aimed at resolving legislative inconsistencies and overlaps, for example with respect to harmonizing and simplifying business licensing under the SAPL. Different source documents often refer to the same piece of legislation or decree with different dates of issuance.[81] In theory, the priority of documents and processes in the Lao PDR is as follows: (i) the Constitution (1991), (ii) laws adopted by the National Assembly, (iii) Presidential orders (issued by the President of the State, based on the proposal of the Standing Committee of the National Assembly; such an ordinance can be adopted later as law by the National Assembly), (iv) Prime Minister's or minister's decrees (which apply to legal provisions, defining principles, rules, and measures), (v) government resolutions (typically policy statements), and (vi) ministerial decisions (single topic notices).[82]

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[80] ADB. 2005. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Asian Development Fund Grant to the Lao People's Democratic Republic for the Forest Plantations Development Project.* Manila.

[81] Laws are published only in the Lao language, and translations into English are unofficial. Multiple English translations or versions exist. A UNDP-financed project plans to publish definitive translations of selected legislative documents in English.

[82] Danida. 2002. *Regulative Framework Within the Natural Resources and Environment Sector – Summary Report*. Vientiane.

74. Some ANR laws have been passed, but no instructions or implementing arrangements have been issued to civil servants and the public.[83] Legislative inconsistencies and considerable administrative uncertainty have sometimes characterized the ANR operating environment. This is partly due to the historically strong Lao oral tradition, combined with the continuing practices of the National Assembly and government authorities to favor generalized statements of policy direction rather than specific technical directives. More fundamentally, this uncertain condition derives from the prevailing policy-making and institutional environment, which requires greater accountability and transparency.[84]

75. **Autonomy and Decentralization.** The sparsely populated Lao PDR did not have a centralizing bureaucratic administration in the past. Instead, it was characterized by a loose alliance of feudal kingdoms. Emerging from decades of political struggles and the effects of the Indochina War, the Lao PDR as a modern state has suffered from a fragile process of nation formation and from an underdeveloped economy, which contribute to its current dimensions of political economy. Observers have described the unique characteristics of the LPRP in terms of its top-down organizational structure, overlaying the traditional Lao networks of patronage and informal family connections.[85] Another factor influencing the reform process is the degree of autonomy enjoyed by the provinces. Historically, most of what are now provinces were independent feudal territories before the State of Lao (colonial, royal, and revolutionary) existed. These provinces continue to demonstrate significant control over their internal affairs.[86]

76. **Rule of Law.** Other contributory factors that determine the nature and impacts of policy reform in the Lao PDR relate to the legal system. A number of laws in ANR are the direct results of measures under ADB's policy-based lending. However, unclear distinctions in practice between judiciary and executive authorities hamper legal enforcement.[87] The small number of judges, the cost of going to court, the time taken for this process, and shortcomings in rules and regulations mean *de facto* that the rule of law is weak, and contracts are ultimately unenforceable.[88] For example, the Bankruptcy Law lacks any provision for bringing suit against persons who may have guaranteed loans, and the Secured Transactions Law (1994) offers no instruction for the creditor to enforce security rights.[89] Although the Lao PDR has on paper an open investment policy (the Foreign Investment Law and other laws allow 100% foreign ownership, long leases on land, transfer of property, and protection against expropriation), in practice the protection available to foreign investors is weak. Potential agribusiness investments, because of their nature of being land based and long term, fare poorly in this business environment.

77. **Human Resources.** Decision makers in the Lao PDR (i.e., the high cadres of the ruling LPRP) are distant from the technical and professional members of the civil service. In reality, government employees with whom ADB staff and consultants interact in the course of project design, implementation, and evaluation are not decision makers. Human resource capacity and

[83] For example, there was a 5-year gap between the passage of the Water Law (watershed and water resources management) in 1996 and the implementing Prime Ministerial Decree in 2001.
[84] In general, laws, decrees, rules, and regulations are not readily made available to the public.
[85] Stuart-Fox, Martin. 2004. *Politics and Reform in the Lao People's in the Lao People's Democratic Republic.* Virginia.
[86] The recently introduced decentralization processes (from 2000) and their associated fiscal arrangements have increased provincial autonomy. Provinces retain control over many sources of locally raised revenues (e.g., from issuance of permits, licenses, and business taxes) and remit to Vientiane certain portions of these revenues.
[87] The Constitution establishes differentiation of authorities among the executive, legislative, and judicial branches of the Government. However, limited capacity of audit institutions and the legislative, judiciary, and court systems of the country constrain checks and balances on executive power.
[88] Governance programs funded by UNDP and SIDA are strengthening institutions such as the Lao Bar Association (established in 2004 with 75 members), but this is a long-term process.
[89] Embassy of the United States of America. 2005. *Doing Business in the Lao PDR*. Vientiane.

technical support in government ministries and agencies are generally weak. Relatively senior government officials (particularly at the provincial and district levels) are often poorly informed about government policies, legislation, and administrative procedures. This means that there is a fundamental disconnect between the reform process on paper and how it is implemented in reality.

78. **Governance.** While progress has been made in the transition to a market-based economy, institutional and regulatory weaknesses have resulted in limited accountability, predictability, transparency, and administrative discretion, and inambiguity, all of which reduce the efficiency of public service delivery, create a climate in which corruption can flourish, and discourage investment. Red tape constrains small enterprises, including agribusiness enterprises. Many private enterprises depend on close links with the state sector to remain viable. Cumbersome bureaucratic requirements and procedures (such as lengthy procedures for business licenses), poorly developed market institutions, and lack of transparency in tax collection and law implementation remain major constraints to private investment. Governance issues, including corruption, affecting the ANR sector are discussed in Appendix 6. Accountability, predictability, and transparency in the management of these resources are weak. People's participation, including that of civil society and local NGOs, in the context of their access to and influence over policy and decision making is also weak. The Governance Research Indicator Country Snapshot (2005) of the World Bank ranked the Lao PDR below all other countries in the region except Myanmar on measures covering the rule of law, regulatory quality, control of corruption, and government effectiveness.[90] Recent studies indicate that the seriousness of corrupt practices is intensifying.[91] Transparency International, in its 2005 corruption perception index survey (10 = highly clean, 0 = highly corrupt), ranked the Lao PDR at 77th place (score of 3.3) among 159 countries.[92] Corruption adds to the costs of doing business, and discourages private investment. The effectiveness of reform measures is affected by petty and more serious corruption. Weak, underpaid, and decentralized bureaucracies operating with weak rule of law, inadequate transparency, and lack of accountability contribute to the slow establishment of capacity for effectively managing a market economy. The Government has recognized these issues, and taken several important steps to increase the efficiency of public services.

79. **Regional Cooperation.** In 1997, the Lao PDR joined the Association of Southeast Asian Nations (ASEAN). Membership and participation in ASEAN, and engagement in the ASEAN free trade area (AFTA) and common effective preferential tariff (CEPT), can catalyze policy change and direction. The Lao PDR hosted the tenth ASEAN summit, during which ASEAN leaders endorsed (i) the Vientiane Action Program to implement the ASEAN Vision 2020 for the next 6 years; and (ii) a framework agreement for the integration of priority sectors, which constitute more than 50% of the value of intra-ASEAN trade. Participation in regional cooperation and integration, as promoted under the GMS initiatives and the Ayeyawaddy-Chao Phraya Mekong Economic Cooperation Strategy (ACMECS), can serve as a catalyst for change. Efforts to transform the country from being landlocked to becoming land-linked are under way. There has been significant progress in opening and upgrading border crossings and improving infrastructure links with neighboring countries. Such links affect all aspects of the economy and the ANR sector. Under the ACMECS, Thailand is helping to improve physical infrastructure between Thailand and the Lao PDR,

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[90] World Bank. 2005. *Governance Research Indicator Country Snapshot, 1996-2004*. Washington DC
Available: <http://info.worldbank.org/governance/kkz2004/>

[91] Keuleers, Patrick. 2002. *Case Study Lao PDR Corruption in the Lao PDR: Underlying Causes and Key Issues for Consideratio*n. Bangkok: UNDP.

[92] Transparency International. 2005. *Corruption Perception Index*. Among ASEAN countries, the degree of perceived corruption in the Lao PDR was less than in Viet Nam (score 2.6, 107th), Philippines (score 2.5, 117th), Cambodia (score 2.3, 130th), Indonesia (score 2.2, 137th), and Myanmar (score 1.8, 155th).
Available: <http://www.transparency.org/cpi/2005/cpi2005_infocus.html>

including bridges, roads, and a railway link. Key transport components of the GMS East-West Economic Corridor are expected to be complete by 2007.

B. ADB's Policy-Based Lending in ANR

80. The NEM recognizes the dominant role of agriculture. The private sector, foreign investment, and trade are expected to play an increasing role in the economy, including the agriculture sector. In support of the NEM, ADB assistance to the ANR sector has focused on policy reform, capacity building, restructuring, and the reorientation of investment priorities to promote market-based agriculture. ADB provided two agriculture program loans (FAPL and SAPL) with a total of 67 measures to support policy reform. This policy-based lending was designed to develop the ANR sector and facilitate the country's transition to a market-based economy. The FAPL (Loan 0965-LAO), approved in August 1989 and completed in September 1993, covered 28 policy measures. The OEM's assessment of the FAPL is summarized in Appendix 7. With 39 policy measures, the SAPL (Loan 1180-LAO) was approved in October in 1992 and completed in August 1995. Appendix 8 summarizes the OEM's assessment of the SAPL. Along with the two policy-based loans, ADB provided 16 TAs to support reform initiatives on several fronts.

1. First Agriculture Program Loan

81. The FAPL used a broad-based approach to reduce market distortions to support and develop the Government's policy reforms and institutions in the ANR sector. The FAPL aimed to (i) liberalize trade, (ii) rationalize pricing practices, (iii) restructure the taxation system, (iv) promote market-based exchange rate, (v) separate commercial and central banking functions, (vi) promote foreign investment, (vii) encourage private sector involvement in production and trade, (viii) prioritize and defer investments in irrigation, (ix) promote cost recovery for irrigation O&M, (x) promote planning and research, (xi) review budgetary processes, (xii) reorganize and strengthen MAF, and (xiii) improve agricultural statistics. The program content was consistent with the NEM and ADB's country strategies and priorities to facilitate the country's transition to a market-based economy.

82. The FAPL hinged on measures that the Government had already begun to undertake in the preceding 3 years—thus, the program rationale was about encouraging and sustaining reform progress, rather than initiating the reform. The national development strategy was only broadly articulated at the time, and the FAPL helped to strengthen the strategy for the agriculture sector. The FAPL was designed in concert with the World Bank structural adjustment credits (SACs) and the IMF's SAF, which provided a macroeconomic framework. The Government's finances (internal and external balances) were in a critical state, and loans from ADB, World Bank, and IMF provided timely support for balance of payments. In hindsight, the program objectives could not have had higher priority at that time in terms of addressing sector reform issues and institutional performance. Nevertheless, the FAPL was not supported with detailed stakeholder or institutional analyses. It was diffused, comprising a large number of interventions, from macro to micro aspects. Tranching and reforms were not synchronized, and there was little assessment of expected outcomes and impacts. The design depth of the program (diagnosis of problems, the mix of policy and technical measures, and the absence of a monitoring framework) suggests both inadequate preparation and ambitious expectations of reform implementation in the Lao context.

83. There were significant and numerous TAs linked to the FAPL, but they were not well integrated into a long-term program involvement. The time frame to realistically implement reforms was overambitious. The FAPL did not have quantifiable and verifiable indicators for monitoring reform progress during program implementation. It did not have baseline benchmarks, nor

performance indicators and targets. There was no framework for systematically monitoring and reporting the reform progress. While nearly all of the 28 separate measures were implemented, and the macroeconomic reform agenda of the FAPL was implemented with clear direction, achievements for many of the individual policy measures represented a case of outputs being delivered rather than outcomes achieved. For example, the Foreign Investment Code was reformulated and published in the *Government Gazette*, new banking regulations were promulgated, and the taxation system was restructured to improve the investment climate including the availability and access to rural finance. But real changes in the enabling environment did not significantly materialize, despite the preparation of various plans, reviews, and pronouncements of initiatives. Crisis had precipitated the reform agenda. There was no strong constituency for ANR reform in an environment with very limited public participation. Preparedness and the adequacy of institutional arrangements for implementing the FAPL were poor. While outputs were produced largely on paper by the issuance of directives and passage of legislation, implementation of their intent proved elusive. Despite its shortcomings, on balance, the FAPL catalyzed a long-term policy development and planning process within MAF specifically, and in the Government in general. This increased the likelihood of sustaining sound policymaking and decisions for ANR, but it did not succeed in bringing management of the natural resource base fully under control (notably in forestry). Nonetheless, the reforms as introduced have proved resilient in principle, and there has not been any specific major reversal or retreat in response to changing economic conditions. The OEM rated the FAPL as partly successful.

2. Second Agriculture Program Loan

84. The SAPL aimed to further the reform process, not only in relation to the unfinished reforms under the FAPL, but also to cover other areas including labor mobility and access to information. Given the circumstances at the time, the SAPL was considered by ADB as the most appropriate modality to complement the strong reform initiatives taken by the Government under the NEM. The SAPL objectives were to enhance and consolidate economic performance through policy and institutional reforms, with emphasis on agriculture. The major reform measures were aimed at (i) liberalizing trade, export taxes, agricultural prices, business, and trade; (ii) formulating and adopting medium-term agricultural policies and operational plans that favor more liberal market-oriented policies; (iii) reducing subsidies in ANR; (iv) ensuring positive real interest rates for credit; (v) removing restrictions on land transfer; (vi) improving the collection and reporting of national statistics; (vii) reorganizing and downsizing MAF; (viii) implementing a public sector reform program; (ix) privatizing ANR SOEs; (x) introducing a cost recovery plan for irrigation; and (xi) promoting and implementing forestry sector reform.

85. Like its predecessor, the SAPL was relevant in terms of the macro and sector context, and of its intended contribution to economic growth and employment. Intensifying policy dialogue, prominent initiatives under the medium term program for agricultural adjustment and development (prepared under the FAPL), and government commitments indicated high-level technical ownership and understanding within MAF of the FAPL. However, doubt persisted about the institutional capacity to undertake reform effectively, based on FAPL experience and past performance (such as the length of time to pass laws and implement institutional changes, and continuing resource constraints). The SAPL turned to medium-term planning for agriculture (including defining a role for MAF in a market economy). The SAPL allowed more time for reform implementation than the FAPL, showing evidence of learning from experience. In hindsight, the wide range of reform measures (as in the case of the FAPL), which encompassed macro and micro/technical perspectives without a monitoring framework, reduced the focus of the program.

86. The SAPL enhanced and sustained the efforts of the FAPL, and contributed to the momentum of reform in the country. Again, the SAPL was not working in isolation. It was one part of external support to the reform process pursued in the country, and it was programmed in the context of the SAC, the SAF, and other external assistance. Continuing dialogue between ADB and the Government, with subsequent support from TA 2883-LAO (Agriculture Strategy Study) led to the development of the Government's Strategic Vision for the Agriculture Sector (1999) several years after the completion of the SAPL.

87. The purpose of the SAPL was partly achieved. Similar to the FAPL, specific technical outputs were delivered, and MAF was further strengthened. Legislative and policy changes broadened, deepened, and improved the enabling environment for the ANR sector. While the SAPL initiatives were largely fulfilled on paper (e.g., by passage of ANR legislation), effective implementation of their intent proved difficult. This is largely due to the continuing lack of administrative and technical capacity within central ministries, and also because of implementation issues at the provincial and district levels. Nevertheless, MAF became stronger as a result of support provided under the SAPL and associated TAs (reinforcing the FAPL). Reform measures falling under MAF's own purview were more actively pursued than those of a more general nature, both during and after the program period.

88. Outcomes took more time to materialize, and to date, major impediments to doing business and developing commercial agriculture still persist. The SAPL underestimated the efforts required to implement and effect difficult policy changes. Institutional preparedness for change and change management were also underestimated. The time needed for outcomes of the policy reforms to materialize and the political economy contexts were not analyzed. Nevertheless, the SAPL promoted dialogue for policy reform in ANR that had begun with the FAPL. The strengthening of MAF has continued through other initiatives including subsequent TAs and projects. There have been no overt legislative policy reversals. However, problems have persisted to date with rural finance, access to credit, electricity pricing for irrigation, and irrigation O&M. A major aspect of the SAPL relates to the increased planning capacity of MAF. The adoption of the medium-term program for agricultural adjustment (1992), and, later, the Strategic Vision for the Agriculture Sector (1999) emphasized the high level of government ownership of, and commitment to, ANR policy reform direction towards a market-based economy. Various elements of this policy direction were subsequently taken up further by the Government, and incorporated into the current NGPES. Overall, the OEM rated the performance of the SAPL as partly successful.

3. Technical Assistance Support for Policy Reform

89. ADB provided 16 TAs (Table 5) to support reform initiatives on several fronts. The OEM's assessment of these 16 TAs is summarized in Appendix 9.

90. The technical content of these individual TAs was generally appropriate and relevant to the Government's sector priorities, with attention to fundamental ANR constraints and opportunities in the country. TA outputs (e.g., consultant reports and training) were generally delivered on time and of adequate quality, with recommendations and proposals for action. However, relevance alone and delivery of reports do not make TAs effective, efficient, and sustainable. The OEM observed a number of TA limitations that warrant serious attention for future consideration.

91. Terms of reference were not always well defined. For example, the scope of TA 2011-LAO (Study to Evaluate the Impact of Agriculture Program Lending) was broad, and its analytical coverage did not identify requirements and constraints for further reform. In several cases, TA durations were too short. Intermittent inputs of different TA consultants could not be easily

coordinated and scheduled to have meaningful and focused engagement with Lao counterparts. There was little evidence of effective ownership of some TAs among government officials and counterpart agencies. These TAs were perceived as being imposed externally and driven by ADB staff or consultants. The overall composition of the TAs appears to be diffuse and incongruent, reflecting a mix of interventions without an overall bond and coordination reflecting a strategic focus and technical framework. In retrospect, although these TAs addressed genuine ANR issues, there was inadequate prioritization, sequencing, and synergy among them.

Table 5: Technical Assistance Supporting Policy-Based Lending

Number and Cluster Type	TA Title	Approval Year	Actual Cost ($'000)	Rating by PCR/ PPAR/ TCR/ TPAR	Rating by the OEM
Agriculture Support Services					
TA 1134	Agriculture Research	1989	730	None	PS
TA 1188	Improvement of Agricultural Statistics	1989	163	S (PPAR)	S
TA 1190	Study of National Agriculture Manpower and National Extension Service	1989	133	U (PPAR)	U
TA 1191	Study of National Crop Development and Seed/Planting Material Multiplication	1989	134	None	PS
TA 1192	Pesticides and Environmental Control	1989	61	None	PS
TA 1765	National Integrated Extension and Research Program	1992	410	PS (PPAR)	PS
Institutional Strengthening					
TA 1745	Institutional Development and Strengthening of the Ministry of Agriculture and Forestry (MAF)	1992	1,229	S (TPAR)	S
TA 2333	Institutional Development and Strengthening of the MAF (Phase II)	1995	543	S (TPAR)	S
Agriculture Planning, Strategy, and Evaluation					
TA 1279	Agriculture Sector Third Five-Year Plan Programming	1990	339	S (PCR)	S
TA 2011	Study to Evaluate the Impact of Agriculture Program Lending	1993	536	PS (TCR)	PS
TA 2883	Agriculture Strategy Study	1997	591	PS	HS
TA 3403	Towards Implementation of the Agriculture Strategy	2000	89	None	HS
Irrigation and Rural Development					
TA 1189	Review of the Irrigation Subsector	1989	122	U (PPAR)	U
TA 1764	Strengthening and Restructuring Irrigation Development	1992	2,536	PS (PPAR)	PS
Livestock					
TA 1277	Livestock Sector Policy Development and Industry Restructuring	1990	94	None	S
Forestry					
TA 1156	Tropical Forestry Action Plan	1989	88	S	S
TOTAL			**7.798**		

HS = highly successful, OEM = Operations Evaluation Mission, PCR = program completion report, PPAR = program performance audit report, PS = partly successful, S = successful, TA = technical assistance, TCR = technical assistance completion report, TPAR, technical assistance performance audit report, U = unsuccessful.
Notes: In Appendix 1, these TAs are cross-referenced with the new sector/subsector classifications of December 2004.

92. The outputs of the technically oriented TAs comprised numerous recommendations, action plans, and agendas for change. In most cases, the recommendations were not backed by analyses of resource implications within the country and within MAF in particular. In reality, resource constraints, institutional conditions, and existing operating procedures of the government bureaucracy reduced the likelihood of adoption or implementation of the recommendations. The effectiveness of the TAs at the time was compromised by events that took place within MAF: repeated reorganizations, inadequate policy clarity, and deficient arrangements and preparedness of counterpart staff to work with TA consultants. Without adequate counterpart and partnership

arrangements, in many instances, the TAs operated in isolation, and served as capacity substitution instead of capacity development initiatives. Outcomes of the technical and capacity development TAs were generally limited.

93. There were few direct outcomes and impacts following completion of technically-oriented TAs. The OEM found that TAs on agriculture support services, irrigation, forestry, and livestock were largely premature. TA 1745-LAO and TA 2333-LAO for MAF catalyzed institutional development.[93] TA-assisted data management systems faced uncertain availability of resources for their O&M. Implications for human resource requirements and budgets were not adequately considered, and many recommendations could not be implemented following TA completion. Sustainability of TA outcomes was less likely without continuing support to MAF from aid agencies. Nevertheless, TA 2333-LAO introduced an indicative planning approach to MAF and designed a farming system approach to extension.

94. The absence of an effective policy framework and institutional capacity to absorb and exploit these TAs meant that the overall efficiency of the reform-related TAs was compromised. In hindsight, deficiencies of TA design and implementation may be attributed to an abundance of optimism and enthusiasm following the NEM to catalyze reform, but under operating conditions when the characteristics and challenges facing the reform process, constituencies of support, and champions for reform were not fully understood.

95. TA recommendations could not be immediately taken up at the time of delivery or soon after TA completion, although evidence of delayed effects could be traced to several TAs. For example, TA 1134-LAO (Agricultural Research, approved in 1989) appears to be the genesis of current research programs at NAFRI that emphasize agro-ecology, low-input agriculture, pasture improvement and management, environmentally friendly agriculture, and integrated approaches for watershed management and land use planning. Similarly, many technical recommendations of earlier TAs with respect to smallholder livestock development, small-scale irrigation, pesticide control, and forestry policy were taken up years after TA completion through other initiatives of similar nature. Claiming any causality or attribution of effects in relation to individual ADB-financed TAs is impossible, given the long gestation periods for the uptake of recommendations and the presence of continuing external assistance from various sources. This suggests four things: (i) the long-term nature of capacity development, (ii) the relevance of TA sequencing, (iii) the importance of recognizing the requisites for change and management of change, and (iv) continuous ADB involvement long after TA is completed to ensure that the knowledge is not lost.

96. TAs that focused on planning and strategy had more success in achieving outcomes than did the technical and capacity development TAs. Notably, TA 1279-LAO (Agriculture Sector Third Five-Year Plan Programming) helped to prepare the SAPL, and contributed to building a strategic dimension to planning in ANR. Several years later, TA 2883-LAO (Agriculture Strategy Study) led to the development of the Government's Strategic Vision for the Agriculture Sector (1999). This document was prepared with strong government ownership. The TA consultant acted as facilitator and catalyst, rather than as manager of the entire process.[94] TA 2883-LAO was highly effective and innovative in discussing the dynamics of the transformation that was happening in ANR, strategic locations (land-linked instead of landlocked), and the dichotomy of flatland and sloping land development strategies for the Mekong flatlands and sloping lands in mountainous areas. The

[93] ADB. 1997. *Technical Assistance Performance Report on Institutional Development and Strengthening of the Ministry of Agriculture and Forestry in the Lao PDR.* Manila.

[94] According to MAF, report preparation underwent 15 drafts, and each iteration involved participation by counterparts. The length and depth of the strategy formulation, while not anticipated at the onset, constituted a constructive engagement that resulted in a wide understanding of strategic issues among senior officials and counterparts.

TA developed seven thematic approaches linked to existing programs, and defined expected outputs and outcomes in terms of policies, strategies, and programs. Embodying the national ANR strategy, the Strategic Vision was presented by the Government to a roundtable meeting of aid agencies at the end of 1999. This discussion was facilitated through TA 3403-LAO (Towards Implementation of the Agriculture Strategy). The strategic themes of the 1999 Strategic Vision for the Agriculture Sector were incorporated into the NGPES 6 years later (2003–2004).

4. ADB's Contribution to the Reform Process

97. Attribution of sector performance to ADB's policy-based lending cannot be isolated. The FAPL and the SAPL encompassed a broad reform agenda that went beyond the bounds of the ANR sector. These policy-based loans were implemented during the time when other major policy-based initiatives were also in place, notably those of the World Bank (SAC1 and SAC2) and IMF (SAF). ADB's policy-based loans were complementary and parallel to the policy content of other policy-based instruments supported by others. Other aid agencies, such as AusAID, UNDP, and the Japan International Cooperation Agency (JICA), were also active in financing key investments, TAs, and capacity development in ANR. There were significant endogenous and exogenous events contemporaneous with FAPL/SAPL implementation (uneven weather in 1991 and termination of COMECON assistance). Major events during the decade following the completion of the FAPL/SAPL have also influenced ANR and macroeconomic performance. These events included internal financial destabilization (mid-1990s), favorable weather (1998–1999), the Asian financial crisis (1997–1998), and joining ASEAN (1997). During 1990–1995, a large number of projects and TAs were funded by various aid agencies for MAF and the ANR sector. For example, in 1993 alone, MAF was the executing agency for about 60 TAs. Thus, it is methodologically impossible to disassociate and attribute part of the broad outcomes and impacts of economic and sector reform (for example, socioeconomic changes at the sector and household levels) to the FAPL/SAPL. TA 2011-LAO (Study to Evaluate the Impact of Agriculture Program Lending) identified a number of favorable impacts in the ANR sector, and suggested only a general inference of causality.

98. It is reasonable, nonetheless, to conclude that the combined effects of the FAPL and the SAPL were partly responsible for policy change in the country. ADB had significant interactions with MAF and related agencies in the 1990s, and supported reform initiatives in ANR soon after the NEM was promulgated in 1986. ADB assistance supported the reform process over a period of 15 years. Evidence of this is the strong ownership by the Government of the ADB-sponsored Strategic Vision for the Agriculture Sector. Subsequently, the JICA-sponsored Master Plan Study on Integrated Agricultural Development outlined investment priorities, and produced an implementation plan for the Strategic Vision. The FAPL and the SAPL contributed to the following, without which growth in ANR could have been dampened: (i) reduced State involvement in agricultural production and procurement activities by promoting divestment of SOEs, liberalizing input/output prices, and discouraging further investments in inefficient large irrigation schemes; (ii) a legislative framework for ANR (and in some respect for the economy as a whole) to promote domestic and foreign private investment; and (iii) strengthened MAF services to ANR, although outcomes have been moderate. ADB was not the only agency that provided assistance to the Lao PDR.[95] The FAPL and SAPL contributed to ending most government interventions in agricultural input/output pricing and product marketing, and reducing the State's burden of SOE operations through divestment and privatization. ADB assistance has helped to transform MAF into an agency more capable of planning for ANR development in a market-oriented context, although MAF

[95] Systematic data on foreign assistance from all sources are available from 2000. ADB assistance out of total assistance (from all bilateral and multilateral sources, and NGOs) during 2000–2003 reached 22% in terms of total agreement, and 13% in terms of actual disbursement.

continues to face limited resources and issues of institutional effectiveness. Reform processes have been internalized within MAF, and the hands of reform champions have been strengthened.

V. PERFORMANCE OF PROJECTS AND TECHNICAL ASSISTANCE

99. This chapter assesses the performance of completed and ongoing ADB-financed projects and TAs in the ANR sector. The OEM reviewed 6 projects, 6 TAs, and 7 regional TAs. The OEM's assessments are presented in Appendix 10 (CMISP, Loan 1488-LAO), Appendix 11 (SCSPP, Loan 1688-LAO), Appendix 12 (DIDMSP, Loan 1788-LAO), Appendix 13 (NNRBDSP, Loan 1933-LAO), Appendix 14 (SDP, Loan 1949-LAO), Appendix 15 (six TAs), and Appendix 16 (seven regional TAs).

A. Performance of Investment Projects

100. The OEM's assessments of six investment projects are summarized in Table 6. The OEM also drew from OED's in-depth review of the PCR of the ITPP (Loan 1295-LAO), and complemented the PCR findings with visits to selected ITPP sites and interviews with farmers and key informants, as well as with individuals and enterprises who had invested in tree plantations.[96] The OEM did not prepare a case study on the NCMISP (Loan 2086-LAO) because its implementation had just commenced, and conceptually, the design of the NCMISP has evolved from the CMISP with a few enhanced features.[97] Although most projects were rated as relevant, performance was less satisfactory in the areas of effectiveness, efficiency, and sustainability. Of a sample of six projects, one (17%) was rated unsuccessful, three (50%) were rated doubtful to succeed (potentially partly successful), and two were rated likely to succeed (33%). This tentative success rate is less than the ADB-wide success rate in the ANR sector.[98] However, mid-course actions can be taken to improve the performance of ongoing projects to increase the probability of success and to generate desired development results.

Table 6: Performance Rating of Selected Investment Projects

Evaluation Criteria	Loan 1295 ITPP[a]	Loan 1488 CMISP	Loan 1688 SCSPP	Loan 1788 DIDMSP	Loan 1933 NNRBDSP	Loan 1949 SDP
Approved Loan ($ million)	11.2	14.7	5.6	15.5	15.0	12.0
Relevance	Partly relevant	Highly relevant	Relevant	Relevant	Relevant	Relevant
Effectiveness	Less effective	Effective	Effective	Less effective	Less effective	Effective
Efficiency	Inefficient	Less efficient	Less efficient	Less efficient	Less efficient	Efficient
Sustainability	Unlikely	Less likely	Less likely	Less likely	Less likely	Likely
Overall assessment by the Operations Evaluation Mission	Unsuccessful	Likely to succeed (potentially successful)	Doubtful to succeed (potentially partly successful)	Doubtful to succeed (potentially partly successful)	Doubtful to succeed (potentially partly successful)	Likely to succeed (potentially successful)

[a] Based on OED's in-depth review of the project completion report.

[96] ADB. 2005. *Project Completion Report on the Industrial Tree Plantation Project in the Lao People's Democratic Republic.* Manila. This PCR was part of a sample of PCRs independently reviewed by OED.

[97] The loan became effective in October 2004, project inception took place in October 2004, and MAF mobilized the project consultants in June 2005.

[98] Among all ANR projects that had been rated ADB-wide, 44% were successful, 39.8% partly successful, and 16.8% unsuccessful. Of all rated ADB-financed projects in the Lao PDR, 77% were successful.

1. Industrial Tree Plantation Project

101. **Preparation and Design.** While the ITPP was relevant to the Government's strategy for reforestation and reduction of shifting cultivation, this relevance was diluted by poor project design, as the ITPP did not adequately assess the capacity of the Department of Forestry and private enterprises. Favorable conditions for investments in tree plantations did not exist in the country at that time. The ITPP design counted on its associated advisory TAs (TA 2028-LAO and TA 2029-LAO) to improve these conditions rapidly. The newly established state-owned APB was used as a conduit for channeling and delivering credit without adequate institutional and capacity assessments.[99] During project implementation, and based on the original project design, no private enterprises could meet the technical and financial requirements of the project because of (i) poor track records of enterprise performance, (ii) inability to provide collateral to qualify for credit, (iii) inability to contribute 30% up-front equity for investments,[100] and (iv) inability of enterprises to provide technical assistance or extension services to farmers. With the ITPP unable to use private enterprises, in October 1997, ADB approved the Government's proposal to reallocate the entire target of 9,000 ha plantation development to individuals and small farmers, and to expand the project area to two additional provinces (Champasack and Saravane). Another province (Khammuane) was added to the ITPP in 2001 without any feasibility study. This change of scope was a misjudgment of feasibility. As a result, the ITPP coverage increased from 8 districts in 4 provinces to 32 districts in 7 provinces. The project scope was expanded simply because the credit facility was underutilized. The original project design was abandoned, but without a critical review of the implications of the new arrangement on requirements for demonstration and sustained extension services. The revised scope was overly ambitious, introducing a livelihood option to farmers who had no experience in tree plantations.

102. **Achievement Shortfalls.** The ITPP reestablished tree cover on degraded forestlands, but in many cases, such lands were reported by farmers to be areas traditionally used for shifting cultivation. Plantations (comprising *Eucalyptus camaldulensis*) established and managed by the majority of farmers and individuals were unproductive or had low yields. Only a small number of participating farmers successfully demonstrated that tree plantations can be profitable when properly established, maintained, and managed. NAFES reported that the ITPP established a total of 12,940 ha of plantations, and exceeded the planned target of 9,000 ha.[101] This claimed achievement is doubtful due to discrepancies between reported planted areas and observed actual planted areas. Some of the plantations were damaged or destroyed by fire or termites. APB carried out an investigative survey using global positioning system (GPS) equipment in 2003 and confirmed that actual planted areas of sampled sites were significantly less than the corresponding area measurements for which loans were made. The APB survey indicated that, based on the survey sample, actual planted areas were 60% of those reported. ADB's PCR reported similar results based on its sample survey, which corroborated the findings of APB's investigative survey.

103. **Subsidized Credit.** The low and subsidized interest rate of the ITPP credit for tree plantation development attracted opportunistic borrowers who abused the program.[102] Targeted and subsidized credit in the form of government-directed policy lending led to inefficiency. There were allegations of collusion and corrupt practices between APB credit officers and ITPP clients to

[99] APB was established in 1993 during the time when the ITPP was being designed and prepared.
[100] Though the Loan Agreement required 20% contribution of the enterprises, APB increased it to 30%.
[101] NAFES was established as a result of MAF's reorganization during 2001. The Department of Forestry transferred its responsibility as executing agency to NAFES in 2002.
[102] The interest rate to sub-borrowers was kept at 7% per annum in nominal terms in the local currency, while inflation rates were subsequently higher than the interest rate.

obtain credit approval and disbursements.[103] There were allegations of ghost borrowers, misuse of credit funds, inflated development costs, and overdisbursements of loan funds.[104] There was also external interference, as APB acted as an agent of the Government to deliver directed credit. This allegedly included lending by APB to individuals endorsed by people of political influence. Thousands of inexperienced farmers and individuals were misled by prospects of unattainable gains, leaving the majority of farmers with onerous debts, with no prospect of repaying their loans, and with failing plantations. Business plans of individual sub-borrowers were developed with unrealistic assumptions of expected yields, prices, and borrowers' debt repayment capacity. The ITPP hinged on the prospect of a market rather than on actual markets. The overall economic internal rate of return (EIRR) of the ITPP was recalculated and found to be negative by the PCR. The ITPP failed to improve the socioeconomic conditions of intended beneficiaries, as people were driven further into poverty by having to repay loans that financed failed plantations. The net effect of the ITPP on poverty was negative. The ITPP adversely affected the financial health of APB and undermined the development of rural finance in the Lao PDR. Nearly 90% of the ITPP loans were delinquent, and by the end of 2003, 82% of the outstanding loans were overdue for more than a year. The ITPP was rated as unsuccessful.

104. **Project Administration.** The poor performance of the ITPP may be attributed to some extent to unsatisfactory performance and institutional weaknesses of the executing agencies. The performance of ADB in the administration of the ITPP was equally unsatisfactory. Contrary to the findings of the OEM and the assessments of ADB's PCR, ADB's project performance reports (PPR, 1994–2003) rated the performance of the ITPP as satisfactory.[105] This raises a fundamental question on the reliability and accuracy of PPR interim assessments. The poor performance of ADB in project administration may be attributed to several reasons: (i) 14 short missions (5–10 days each, with one exception) with limited site visits outside of Vientiane; (ii) frequent turnover of assigned staff (a total of five), affecting continuity and constraining follow-up actions; (iii) from late 1996 to project completion in 2003, no forestry specialist included in project review missions; and (iv) a long period without ADB review mission (20 months, July 2000 to February 2002) when the ITPP's sustainability was at risk. This 20-month gap without a review mission was not warranted, because several significant issues relating to the minimal capacity of APB had been identified. Greater attention to project administration by ADB might have averted the poor decision to expand the ITPP from 8 to 32 districts and might have addressed various implementation issues.

2. Community-Managed Irrigation Sector Project

105. The following discussion is pertinent to the overall development concept of community-managed irrigation (CMI) schemes, and also to the ongoing NCMISP, given its common features with the CMISP. The CMISP is highly relevant to poverty reduction and household food security, and responsive to the Government's development strategy, including its subsequent focus on the northern region.[106] The CMI schemes were an integral part of the Government's strategy for rural development, providing an avenue to promote sedentary irrigated farming, to reduce pressure on fragile lands, and to provide an alternative to shifting cultivation.

[103] Credit amounts authorized by APB for individuals and, particularly, for enterprises were excessive. It was likely that credit funds were not used solely for the purpose of establishing tree plantations.

[104] OED has reported the allegations on corruption to the Integrity Division of the Office of the Auditor General of ADB.

[105] Satisfactory ratings were given in the context of development objectives and implementation progress.

[106] The CMISP completed 47 subprojects, covering total irrigated areas of 2,679 ha (wet season, 2003) and 884 ha (dry season, 2003). Funded by the Organization of Petroleum Exporting Countries Fund, the CMISP rehabilitated and constructed 342.6 km ($1.73 million) of access roads and 46 km ($1.76 million) of feeder roads. These roads significantly improved the accessibility of the project sites, allowing easier transportation of goods and people, and access to services. These roads have been instrumental in reducing the isolation of the targeted communities.

106. **Benefits to Communities.** An overwhelming majority of farmers (more than 90%) interviewed by the OEM stated that the CMISP had generated significant benefits, and contributed to substantial improvements to their living conditions over the previous 5 years.[107] Benefits include increased rice yields, reduced labor for O&M of improved irrigation systems, emerging opportunities for diversified crops, and physical access to project areas.

107. **Assumptions of Ex-Ante Benefits.** Although the CMISP has been highly relevant and effective, this project scores low on efficiency and sustainability criteria. Over the 30-year project life, the project would generate an EIRR of only 1.7%, indicating a low level of economic efficiency.[108] Key reasons for the low EIRR are low profitability of glutinous rice production, high cost of developing the CMI schemes, and low irrigation intensity during the dry season. Ex-ante economic analysis to support the RRP of the CMISP is misleading. The projected increase in income relied on incremental rice production (13%), upland crops (23%), and fish (64%) in rice fields. In practice, the project contributed to increased fish production, but largely through the construction of fishponds of about 79 ha in 2003, which draw water from project irrigation canals. While fish are likely to be caught in rice fields in the project areas, there has not been substantial stocking or harvesting of fish. There was inadequate justification to assume that fish farming as an enterprise could provide two thirds of the expected incremental benefits (and 54% of farm income).[109] This was a misrepresentation of feasible options for targeted farmers. If benefits from fish farming had been excluded from the ex-ante analysis, the estimated EIRR of the sampled subprojects would have fallen to around 5%, making the project less economically attractive and unlikely to have been presented to the Board.

108. **Development Costs.** Investment costs (civil works for irrigation) for the CMI schemes are high. Based on maximum irrigated areas (wet season) in 2003, the average unit cost of civil works of the 47 subprojects amounts to $3,890/ha.[110] The unit cost of civil works for irrigation development reached $3,000/household, with a total cost of $10.4 million for civil works (including contributions from communities) covering 3,467 WUA households of the 47 CMI schemes. This cost of aid per household is high in comparison with the country's GDP of $400 (2004). At this cost per household, ADB assistance in irrigation development is unlikely to benefit a large number of people. Cost effectiveness and efficiency issues raise legitimate questions concerning the extent to which the CMI development concept can be replicated at an affordable level.[111] Heavy reliance of the CMISP on contractors, rather than on the communities, contributed to higher costs of delivering aid to traditionally self-reliant communities.[112] Challenges remain to find cost-effective ways of delivering aid to the poor with increased outreach, coverage, and affordability. Desires to change

[107] The most frequently cited reasons by farmers as key factors for their participation in the CMISP were (i) the need for reliable water supply for rice cultivation; (ii) the importance of household food security and self-sufficiency in rice production; (iii) the desire to improve livelihood conditions; and (iv) the desire to reduce shifting cultivation by practicing more sedentary irrigated crop cultivation.

[108] The baseline EIRR calculation excludes investment in access roads on the basis that there are other benefits from road investment in addition to increased agricultural production.

[109] The RRP (para. 87) indicated that, in addition to crop production gains, "there will also be an increase in the production of fish from paddy fields."

[110] There is significant cost variation among schemes, from as low as $716/ha at the Nam Mone subproject to as high as $21,200/ha at the Nam La subproject, and 11 subprojects exceeded $5,000/ha. The average unit cost was highest ($7,492) for the first batch of CMI schemes, compared with $2,895/ha (second batch), $3,206/ha (third batch), $3,483/ha (fourth batch), and $2,697/ha (fifth batch).

[111] Various approaches have been used in the country by other development partners and international NGOs (such as Quaker Service Laos) to develop and improve small-scale irrigation schemes at lower investment cost. These approaches emphasize community contributions, participation, and empowerment in construction, rehabilitation works, and supervision.

[112] A different approach has been used by the SCSPP (Loan 1688-LAO) to develop small-scale irrigation at relatively low cost, with supervision of UNODC (without contractors), direct involvement of provincial/district technical staff for design and supervision, and participation of the communities in construction and rehabilitation works.

ways of doing business for greater efficiency may be hindered by vested interests among those who benefit the most from the contractor-managed irrigation rehabilitation in the name of CMI development initiatives. The CMI development concept needs further assessment by the Government to avoid the high transaction costs of delivering aid, and also to prevent the new/ongoing NCMISP from repeating the CMISP high-cost experience.[113] Overdependence on contactors for community-based interventions is unlikely to increase self-reliance, participation, and ownership among targeted communities. Rigorous application of selection criteria for subprojects can achieve greater effectiveness, efficiency, and sustainability. With support from AFD, MAF has planned to undertake diagnostic studies to increase the effectiveness and efficiency of irrigation projects by capitalizing on past experience.

109. **Challenges to Sustainability.** The CMISP facilitated farmers to organize themselves through the establishment of WUAs. Although farmers were self-reliant in the past, their organizational and management arrangements required some adjustments to meet the challenges of operating and maintaining modernized irrigation systems. The capacities of WUAs to operate and maintain the CMI schemes vary significantly. Further efforts are required for the capacity development of the WUAs so that they can carry out their functions effectively as intended. After the completion of the CMISP, and with no funding for WUA development and extension, MAF and its provincial/district offices have no resources to provide further assistance to farmers. Completed CMI schemes are no longer monitored by the Government. The project-to-project assistance to farmers, which focuses on irrigation infrastructure rehabilitation without effective monitoring of irrigation system performance after project completion, represents a systemic institutional shortcoming and risks to the sustainability of the CMI schemes. Heavy reliance on contractors and external assistance had raised expectations among targeted communities that the Government would continue to provide assistance for future major repairs and rehabilitation.

110. WUAs collect irrigation service fees (ISFs) from their members as a way of pooling financial resources to meet routine and periodic O&M requirements. Collection of ISFs among WUAs of the CMI schemes differs in methods, rates, and performance.[114] In general, farmers have not adequately saved money for future major repairs and rehabilitation. While farmers are expected to be responsible for routine and periodic O&M of their irrigation systems, provisions and arrangements by the WUAs for such purposes are not fully in place. The ISF system requires further improvements in relation to (i) methods and assumptions for calculating ISF, (ii) records of collections, and (iii) transparency for greater accountability of the ISF administration. Farmers' willingness to pay for ISF depends on good WUA management, assurance of reliable water supply, accountability of the ISF administration, expectations of good service, and the profitability of the irrigated agriculture.

111. In the past, farmers repaired traditional weirs made of bamboo, brushwood, logs, stones, and pieces of rock. The O&M requirements of new permanent concrete weirs and improved water

[113] The selection criteria of the NCMISP include (i) a ceiling of $2,500/ha for construction cost including all imported material, local material, and labor costs; (ii) an EIRR of at least 12%; and (iii) a command area of 10–100 ha per subproject. The project preparation TA report (January 2003, para. 375) of the NCMISP recommended that *"contractors should only be used when work is beyond the scope of the community, as determined by the community. Contracting arrangements should be as transparent as possible. The community must have a clear understanding of the process and what they are getting for the money spent, and together with the Government and project staff, should be one of the parties involved in the approval of contractor selection and payments to contractors for work done."*

[114] ISF collections were reported to range from 60% to 70%. The current ISF rates and collection rates do not provide enough funds for farmers to pay for routine and periodic maintenance.

distribution systems are different from those of the past.[115] The change in O&M requirements has challenged the existing capacity of the WUAs. Soil erosion in the watershed areas has silted weir sites and canals, and the increased sedimentation has affected the capacity for water conveyance in the irrigation command areas. While farmers may mobilize enough labor to clean and flush silted weirs during the wet season, redesign may be required to address sedimentation problems in the future. Organizational arrangements, capability, readiness, and willingness to carry out routine O&M are often inadequate. Farmers have responded to O&M needs in ways that may not optimize the efficiency of water distribution to all farmers.[116] The problems related to O&M and the WUAs raise questions about the sustainability of the project.

3. Decentralized Irrigation Development and Management Sector Project

112. The DIDMSP was relevant to the Government's development strategy and priorities. It helped to develop sustainable irrigated agriculture through the IMT process, and to establish WUAs and agricultural extension. Rehabilitation of irrigation systems was expected to improve water management and increase cropping, particularly in the dry season.[117] During the wet season, improved irrigation supply would supplement rainfed rice production. Part of the area of most schemes cannot be irrigated every wet season because of flooding, which varies in severity depending on climatic conditions and river flows. In most areas, wet season irrigation is supplementary.

113. **Crop Diversification Performance.** While the irrigation schemes differ greatly in their achievements, overall performance has been disappointing. Wet season rice production has continued much as before the project, with little supplementary irrigation. There was no change in wet season yields, which averaged 3.2 t/ha in 2004, the same as the before-project benchmark. Dry season cropping has increased, but by substantially less than expected at appraisal. A key factor was the reluctance of farmers to plant nonrice crops, on which the economic performance of the subprojects critically depends. Dry season rice yields improved (from 2.8 t/ha benchmark to 3.1 t/ha), partly attributable to project extension efforts, improved water availability, and use of improved varieties. Dry season cropping intensity for the overall project amounted to only 41% in 2004/05 including 7% for diversified crops, compared with a highly optimistic target of 130% assumed by subproject feasibility studies. The major factor underpinning economic and financial performance in the feasibility studies of the subprojects was the expectation that the area of dry season diversified crops and overall cropping intensity would increase significantly. In practice, the area of diversified crops on most schemes (apart from Kantachane) has been low, with farmers continuing to grow local glutinous rice varieties for home consumption and limited sale. Markets remain limited for most crops, a factor being addressed under the ADB-funded SDP.

114. **Irrigation Service Fees.** ISFs are collected to pay for O&M including fees for water user group (WUG)[118] management and staff. Collection of ISF and the related Community Irrigation

[115] The O&M of the modernized CMI systems requires regular replacement of failed canal structures, and fixing of cracks and damage to concrete structures. These repairs require cash for purchases of construction materials, including cement. Although farmers have collected ISF from WUA members, the availability of funds and labor alone does not automatically translate into immediate actions.

[116] For example, farmers constructed additional canals and outlets to divert water, inadvertently at the expense of downstream farmers.

[117] A total of 35 irrigation systems had been rehabilitated: 18 in Batch 1 (2002/03), and 17 in Batch 2 (2003/04). The total command area of these schemes amounted to 9,445 ha, or 94% of the 10,000 ha targeted for rehabilitation. The total irrigable area of the 35 schemes reached 8,074 ha, with the balance comprising canals, roads, and high ground. Of the total irrigable area of 8,074 ha, a maximum of 7,700 ha can be irrigated in the dry season, and around 7,200 ha in the wet season with supplementary irrigation when necessary. Based on current estimates, the wet and dry season targets represent an increase of 1,400 ha and 4,300 ha, respectively, over the before-project baseline.

[118] A WUG may become a WUA after meeting certain requirements and demonstrating the requisite capacity.

Development Fund (CIDF)—which is in effect a renamed Village Development Fund (VDF)—is critical to the operation and survival of the irrigation schemes.[119] MAF agreed to the redefinition of the VDF as the CIDF, and to the cancellation for DIDMSP schemes of the 15% of collection that should be paid to the district finance office.[120] The retention of 100% of ISFs by the WUGs is desirable to increase members' motivation and ability to maintain their irrigation schemes. Electricity payments averaged 59% of accrued electricity charges for the 2003/04 dry season crop. ISF and CIDF reached 71% and 45% of due amounts, respectively. Issues concerning outstanding electricity debts are serious, and their resolution requires cooperation among (i) WUAs/WUGs and farmers, (ii) the electricity company, (iii) government irrigation services, and (iv) district and provincial policies.

115. **Challenges to Sustainability.** Overall, the DIDMSP did not succeed in developing a viable model for IMT that can be widely replicated using either government or development assistance resources.[121] The high demands of the WUGs for extension support have been met largely by the DIDMSP. However, the cascade model, with training of trainers at the provincial level to train officers in the districts, who in turn would work with the farmers, has not proved viable. Training of district extension officers to work directly with the farmers was more successful. While the DIDMSP has more than met its physical construction targets for its first 3 years, the quality of rehabilitation in many cases was poor. Poor construction quality creates O&M challenges that were also caused by physical rehabilitation that had outpaced the organizational and management preparation for successful IMT.

116. Crop diversification and cropping intensity have not reached expected targets, and the production of additional crops has probably been less than 30% of that envisaged at design. While future gains are expected, irrigation efficiency will decline over time unless maintenance is adequate, making it even harder to achieve cropping targets. Farmers have always been responsible for scheme O&M apart from major repairs, and have come to view IMT as a mechanism for the Government to pass all responsibility to them. Farmers see few benefits and some risks from IMT, and may hesitate to accept the transfer. There is ambiguity about whether scheme ownership will be transferred to the WUAs, with differences between the English version of the relevant decree (which infers ownership transfer) and the Lao version, which does not. It is desirable that ownership and management of the irrigation schemes are transferred to the WUAs for farmers to take full responsibility for O&M of the irrigation schemes. However, this requires review of the existing IMT policy; O&M sustainability; affordability; and the capacity of WUAs for O&M of the irrigation systems with or without further assistance, taking into account specific responsibilities of the Government and the extent to which these responsibilities or parts thereof can or should actually be devolved to the WUAs.

117. **Economic Efficiency.** Supplementary appendixes of the RRP of the DIDMSP could not be located at ADB and the executing agency.[122] This reflects poor project administration and doubt over the intended use of ex-ante analyses for benchmarking project implementation and performance. The OEM reevaluated the economic performance of Batch 1 and 2 schemes

[119] ISF collection varies greatly between schemes, from about 25% to 100% of target.

[120] In theory, this payment is to be used for irrigation development in the district. In practice, little is known of its use.

[121] Batch 1 schemes are due to attain full IMT, with the establishment of WUAs by the end of 2005. In practice, only a proportion of WUAs will be ready for this step, while others who consider their irrigation scheme quality unsatisfactory may refuse to take increased responsibility from the IMT process.

[122] The OEM conducted an extensive search for these supplementary appendixes at ADB Headquarters, the Lao Resident Mission, the offices of the executing agency, and the offices of project consultants. None of the interviewed respondents had seen or read these supplementary appendixes, which were intended to substantiate the initial environmental examination, socioeconomic survey results, cost estimates, financial and economic analyses of a sample of subprojects, and mobilization schedule of consultants.

combined, based on data available in July 2005.[123] With the project, the OEM estimated that paddy production would increase from 27,000 t in 2002 to 39,000 t in 2008. The net incremental value of production would reach around KN12 billion ($1.1 million) annually.[124] Over a project life of 30 years, this generates an EIRR of 2.3%, indicating low economic efficiency. The key reason for the low EIRR is low profitability of paddy production, and the lower than predicted level of dry season non-rice cropping. The economic viability of the DIDMSP hinged on an assumption that farms would diversify their crops during the dry season. This has not occurred. Reasons include (i) a strong preference for paddy production; (ii) knowledge of all farmers of paddy production technology; (iii) improved paddy yields due to modern/improved varieties; (iv) lack of knowledge of diversified crops and production technology; (v) lack of effective demonstration and extension programs; (vi) lack of access to and availability of inputs, particularly seeds; (vii) difficult weed control; (viii) inadequate knowledge of and access to defined and secure markets for diversified crops; (ix) lowland areas prone to flooding; (x) irrigation scheme layout (paddy to paddy watering) and water distribution systems (continuous flow) unsuitable for diversified cropping; and (xi) difficulty of interspersing paddy and diversified crops due to varying irrigation needs.

4. Shifting Cultivation Stabilization Pilot Project

118. The SCSPP was designed as a pilot project to address predominant development issues related to shifting cultivation of nationwide importance. The SCSPP was relevant to the Government's development strategies and priorities. Consistent with these strategic directions, the SCSPP uses an area development approach.[125] The SCSPP experienced implementation delays of 20 months, and faced critical issues concerning constrained cash flow, shortfalls of counterpart funds, inadequate staffing from provincial and district agencies, unfamiliarity with ADB guidelines, postponed baseline socioeconomic survey, and delayed development of infrastructure. ADB changed its designated staff several times.[126] Frequent changes contributed to perceived discontinuity in ADB's engagement.[127] By July 2005 there had been 15 months without an ADB review mission. Furthermore, the SCSPP has not maintained a functional monitoring system. This undermines the value of the SCSPP as a pilot project.

119. **Benefits to the People.** The OEM's interviews with farmers and villagers confirmed that the SCSPP has generated positive outcomes. Almost all villagers interviewed reported that access roads and rural tracks had provided easier access to markets, improved access to health and other services, reduced travel time, created off-farm employment, and enabled household industries (such as weaving, which employs mostly women) to flourish.[128] Weaving is a profitable household occupation, generating profits of more than 100% of materials costs.[129] Microfinance has enabled hundreds of girls and women to become active in weaving. Traders have facilitated marketing of woven cloth, and have advanced money to weavers as working capital. Interviewed farmers

[123] Since the rehabilitation of Batch 3 schemes is uncertain to proceed, Batch 3 was excluded from the evaluation.
[124] Nonrice dry season production is budgeted to increase to KN5.2 billion per year over the same period, double the without-project level.
[125] This approach comprises (i) participatory land use planning and allocation, (ii) delivery of extension services, (iii) diversified sedentary farming systems development, (iv) village development (including irrigation, water supply and sanitation, rural tracks, and village revolving funds), and (v) rural infrastructure development (rural access roads and rural markets). The project area is located in Xam Neua District of Huaphanh Province, comprising two subproject areas (Nam Han and Nam Ven) covering a total of 52 villages, 2,100 households, and an area of about 70,000 ha.
[126] Since the project inception in 2000, ADB has had five project officers administering this project.
[127] The executing agency expressed its concerns to the OEM that the SCSPP was due to close on 31 December 2005 with incomplete achievements, and it needed a 1-year extension.
[128] Access roads and rural tracks were constructed in the project area to improve links among the 52 villages and accessibility to the provincial main road.
[129] At an average selling price of KN400,000/piece, the women could make a profit of KN200,000/piece after deducting all materials costs.

claimed that there had been a reduction in shifting cultivation in the area. The development of small-scale irrigation schemes along foothills and valley bottoms contributed to the promotion of sedentary farming. However, farmers continue to face serious marketing constraints that have impeded the adoption of new farming technologies and approaches. There is evidence that opium poppy cultivation has declined significantly in the project area. Huaphanh declared itself opium free in 2005, and UNODC nationwide surveys indicated substantial reduction of opium poppy cultivation to almost negligible levels.

120. **Innovative Land Use Planning.** Despite promising outcomes, the sustainability of the SCSPP depends on the land use planning/land allocation (LUP/LA) approach that the project developed. The SCSPP promoted participatory land allocation process covering 10 steps after village boundary delineation and land use zoning.[130] This process aims at zoning forest and land use categories, taking into account livelihoods while maintaining the forest cover. This principle allows containment of shifting cultivation by demarcating agricultural zones within which villagers can cultivate their land using forest fallow rotations. Thus, rotational agriculture is permitted and encouraged under this system, contrary to the existing policies, which encourage shorter fallow and attempt to eliminate shifting cultivation. Land allocation is phased in later when villagers have become comfortable with managing their land use zones. While village boundary delineations and land use zoning were completed in all 52 villages by December 2003, the effects of the LUP on shifting cultivation will take time to evolve. The SCSPP needs to critically assess the LUP/LA process and implementation, and to determine if this approach can be replicated.

121. **Coordination and Synergy.** Without an extended implementation period to compensate for start-up delays, the SCSPP is doubtful to succeed. The SCSPP has the potential to succeed, with at least 1-year extension, to effect sustained changes to the farming system, ensure secure land tenure through the LUP/LA process, respond to livelihood requirements, and make the project more market oriented. Without market development, and despite good intentions, the aim to promote diversified crops will become futile. The SCSPP and other ADB-financed initiatives on upland agriculture are distant from each other, and although they have the potential to generate synergy to find workable approaches to agriculture, this synergy has not yet occurred.[131] ADB and the Government should create and support a network for these efforts to develop replicable approaches.[132]

5. Nam Ngum River Basin Development Sector Project

122. Water is one of the Lao PDR's key resources. Hydropower is the country's largest export, and irrigation is important to national policy on food security. Flooding is severe along much of the Mekong floodplain and its tributaries. Interbasin transfers have been controversial, as in the case

[130] The modified approach used by the SCSPP involves 10 steps: (i) land allocation preparation, (ii) recording details in each village of fields with permanent land developments, (iii) village land allocation adjudication and decisions, (iv) field location and measurement of agricultural land parcels, (v) preparation of land allocation documents, (vi) transfer of land allocation documents to villagers, (vii) temporary land use certificate storage and record-keeping, (viii) digitizing land allocation information for each village, (ix) periodic monitoring of land use and ownership status, and (x) periodic updating of land allocation information.

[131] These initiative include (i) JFPR 9062-LAO: Sustainable Agroforestry Systems for Livelihood Enhancement of the Rural Poor; (ii) TA 4434-LAO: Poverty Reduction Through Land Tenure Consolidation, Participatory Natural Resources Management, and Local Communities Skills Building Project; (iii) Loan 1933-LAO: Nam Ngum River Basin Development Sector Project; (iv) TA 4339-LAO: Study on Gender Inequality in Women's Access to Land, Forests, and Water; (v) JFPR 9034-LAO: Reducing Poverty Among Ethnic Minority Women in the Nam Ngum Basin; and (vi) TA 4392-LAO: Marketing Support for Organic Produce of Ethnic Minorities.

[132] For example, NAFRI has started to serve as a national center for the development of approaches and technologies for upland agriculture including for stabilization of shifting cultivation.

of the Theun-Hinboun hydropower project.[133] Further large developments are planned, including several (often mutually exclusive) dam sites in the Nam Ngum River basin. While water shortage is not likely to be an issue for the foreseeable future (apart from drought in some years), adequate planning and management of the country's water resources are essential. Thus, river basin and water resources planning and management are highly relevant to the future development of the country and to the welfare of its people, particularly those impacted by dam projects, either through resettlement or downstream effects.

123. **Demand for Increased Coordination.** The coordination required for integrated river basin planning and management is substantial, given the diverse stakeholders and issues involved. The NNRBDSP underestimated the capacity required for such coordination. The RRP identified limited capacity in the three implementing agencies and the need for increased resources and human resources development. However, the project preparatory TA and the RRP did not fully assess the mechanisms that would be required to improve coordination among agencies once strengthened.[134] The dominant issues were considered by the RRP to relate to lack of resources, rather than to management, integration, and coordination.[135] The complex design of the project, with two levels of objectives and three implementing agencies, has been a major factor leading to current implementation difficulties. IWRM is challenging to implement under normal circumstances. Integrating it with an area development program to create livelihood opportunities based on watersheds rather than administrative boundaries is likely to be a significant challenge to implementation.

124. To the extent that the NNRBDSP is attempting to develop viable coordination systems that can extend to other watersheds, it will contribute to sound water resources management in the country. Conversely, failure to establish IWRM in the Nam Ngum basin or to strengthen it at the national level may make further development in watershed planning and management more difficult. The challenges of coordination between water sector institutions suggest that it will be difficult for the project to meet its objectives by 2008. Issues relating to consultation, shared decision-making, procurement, and reporting have not been resolved. Such issues have been exacerbated by the sectoral nature of project components. Unless improved coordination can be established soon, the potential for achieving sustainable IWRM will be less likely. If the project succeeds in developing viable mechanisms, it is likely that IWRM will be extended to other river basins over time.

125. **Challenges to Sustainability.** Keys to sustainability include (i) development of strong ownership of IWRM and its implementation by the Lao authorities, and (ii) well-established and clearly defined institutional arrangements. Extension of IWRM to other watersheds such as Nam Ou, in the pipeline for ADB support, may be problematic.[136] To overcome these issues, the Government needs to clearly define the role and responsibility of WRCC and the parallel Lao National Mekong Committee, and to consider them in any future reorganization of ministerial responsibilities. Ways should be found to improve coordination at the regional level for ADB-financed initiatives in river basin development and watershed management, consistent with the approach taken by the CSP (2001), which discusses river basin development in the context of regional cooperation and environmental management. The role of MRC in regional cooperation is

[133] ADB. 2002. *Project Performance Audit Report on the Theun-Hinboun Hydropower Project in the Lao People's Democratic Republic*. Manila.

[134] Of the eight supplementary appendixes supporting the RRP, only two (D and E) could be located in ADB Headquarters. None could be located with the executing agency, implementing agencies, or offices of project consultants in Vientiane.

[135] The latter factors have been demonstrated in other regional countries such as Viet Nam to be major causes of problems facing integrated river basin planning and management projects.

[136] The Nam Ou River Basin Development Project is listed as a standby loan for 2006 in the CSP Update (August 2005).

instrumental for promoting IWRM.[137] Collaboration with MRC may be warranted for promoting IWRM, including river basin planning and management, in the spirit of regional cooperation.

6. Smallholder Development Project

126. The SDP's smallholder support, market intelligence, market development, and extension activities are relevant to the long-term transformation of the agriculture sector (particularly the crop sector) to more commercialized agriculture. The SDP, capitalizing on previous ADB-financed TAs, is reviewing marketing chains, market opportunities, and the comparative advantage of Lao agricultural products. Knowledge gained by the SDP about market access and impediments, and about constraints to doing agribusiness, can inform policymakers of the serious difficulties facing agribusiness in the country. Improvement in the marketing and operating environment will take time and will require strong commitment by the Government and regional cooperation. Nonetheless, the SDP can significantly contribute to agribusiness development and commercialization of agriculture for smallholders.

127. **Strategic Use of the SDP.** ADB and the Government should consider using the SDP more strategically to provide links to other ADB-financed interventions, particularly the DIDMSP to support the development of contract farming and other agribusiness approaches that can transform the DIDMSP from a supply-driven initiative to a demand-driven approach. Market uncertainty is one of the key factors constraining the development of diversified cropping on the DIDMSP and elsewhere in the country, which has reduced the economic viability and sustainability of investments in irrigation. The SDP highlights the need to take a market-driven approach to agricultural development. Its recognition that all nonsubsistence production must be geared towards its market separates this project from other ADB-financed interventions in the ANR sector in the Lao PDR. Irrigation projects (DIDMSP, CMISP, and NCMISP) have assumed that if irrigation water supply is improved, extension services are delivered, and crop diversification is promoted, then increased production of diversified crops will result. Knowledge of market impediments and their effects on crop production and marketing, and finding solutions to overcome binding constraints (supply and demand) are prerequisites for achieving higher productivity, profitability, and income.

B. Performance of Selected Technical Assistance

128. The OEM's assessments of a sample of six advisory and seven regional TAs for the Lao PDR are summarized in Table 7. The OEM assessed the regional TAs only in the context of their design, implementation, and performance in the Lao PDR. The OEM did not rate the performance of a number of TAs, because their implementation has either just commenced or not yet started. The TAs are individually relevant to the Government's development strategies and sector challenges. The overall performance of eight TAs rated by the OEM is generally good: two successful advisory TAs, three successful regional TAs (rated in the context of the Lao PDR), one partly successful regional TA, and two ongoing regional TAs that are likely to succeed.

129. In general, consultants may deviate from their advisory, facilitating, and catalytic roles when counterpart arrangements are deficient. For example TA 4005-LAO, which commenced in April 2005, was not designed to have significant institutional impacts. With its deficient counterpart arrangements, TA 4005-LAO may continue to serve as capacity substitution rather than helping to catalyze the development of domestic institutional capacity.

[137] MRC promotes and coordinates sustainable management and development of water and related resources in the region by implementing strategic programs and activities and by providing scientific information and policy advice. Available: <http://www.mrcmekong.org/>

Table 7: Performance Rating of Selected Advisory and Regional TAs in the Lao PDR

Number	Title of Technical Assistance	Approval Year	TA Amount ($'000)	Rating by PCR/PPAR/ TCR/ TPAR	Rating by the OEM[a]
Advisory Technical Assistance					
TA 3006	Institutional Strengthening of the Water Resources Coordination Committee	1998	260	GS[b](TCR)	S
TA 3205	Implementation of the Water Sector Action Plan	1999	300	GS[b] (TCR)	S
TA 4005	Agribusiness Support and Training (associated with Loan 1499: Smallholder Development Project)	2002	250	None	NR
TA 4339	Study of Gender Inequality in Women's Access to Land, Forests, and Water	2004	250	None	NR
TA 4392	Marketing Support for Organic Produce of Ethnic Minorities	2004	600	None	NR
TA 4406	Capacity Building for Smallholder Livestock Systems	2004	550	None	NR
Regional Technical Assistance					
TA 5582	Workshop on Vegetable Research and Development in Cambodia, Lao PDR and Viet Nam	1994	94	GS[b] (TCR)	S
TA 5680	Establishment of a Vegetable Research Network in Cambodia, Lao PDR, and Viet Nam	1996	600	GS[b] (TCR)	S
TA 6011	Strengthening the Collaborative Vegetable Research Network in Cambodia, Lao PDR, and Viet Nam (Phase II)	2001	650	None	PS
TA 5866	Developing Sustainable Forage Technologies for Resource-Poor Upland Farmers in Asia	1999	1,200	HS (TCR)	S
TA 6067	Improving Livelihoods of Upland Farmers Using Participatory Approaches to Develop More Efficient Livestock Systems	2002	950	None	Likely to Succeed (Potentially Successful)
TA 6192	Transboundary Animal Disease Control in the Greater Mekong Subregion	2004	1,000	None	NR
TA 6136	Integrating and Mobilizing Rice Knowledge to Improve and Stabilize Crop Productivity to Achieve Household Food Security in Diverse and Less Favorable Rain-fed Areas of Asia	2003	900	None	Likely to Succeed (Potentially Successful)

GS = generally successful, HS = highly successful, NR = not rated, OEM = Operations Evaluation Mission, PCR = program/project completion report, Lao PDR = People's Democratic Republic, PPAR = program performance audit report, S = successful, TA = technical assistance, TCR = technical assistance completion report, TPAR = technical assistance performance audit report.

[a] OEM rating for a regional TA is only in the context of performance in the Lao PDR.

[b] The rating system was then based on three categories: (i) generally successful, (ii) partly successful, and (iii) unsuccessful.

Note: In Appendix 1, these TAs are cross-referenced with the new sector/subsector classifications of December 2004.

130. The expected outputs and outcomes of TAs are sometimes ambitious. Realistic performance targets and indicators are required for benchmarking TA performance based on feasibility and available resources. For example, TA 4339-LAO is seeking to assist 50% of minority women in the Nam Ngum River Basin to participate in village meetings and attend training courses. The TA may face difficulties in achieving this target within its objectives and scope. One of the three objectives of this TA is to institutionalize gender-responsive programs within government agencies that can help to address the issues of gender inequality and poverty. Close interface and coordination of efforts will be required between TA 4339-LAO and a recent TA (September 2005) that aims to (i) develop gender-responsive institutional structures and systems at MAF;

(ii) strengthen the capacity of MAF staff to incorporate gender dimensions in policies, strategies, programs, and projects; and (iii) deliver gender-sensitive agricultural extension services.[138]

131. Several grant-funded initiatives focus on livelihood issues and poverty faced by upland farmers, including ethnic minorities, but there is little synergy among these initiatives: (i) Japan Fund for Poverty Reduction (JFPR) 9062-LAO: Sustainable Agroforestry Systems for Livelihood Enhancement of the Rural Poor; (ii) TA 4434-LAO: Poverty Reduction Through Land Tenure Consolidation, Participatory Natural Resources Management, and Local Communities Skills Building Project; (iii) TA 4339-LAO: Study on Gender Inequality in Women's Access to Land, Forests, and Water; (iv) JFPR 9034-LAO: Reducing Poverty Among Ethnic Minority Women in the Nam Ngum Basin; and (v) TA 4392-LAO: Marketing Support for Organic Produce of Ethnic Minorities. There is little evidence of cooperation and interface among different groups who execute and deliver these grant-funded initiatives. There is need for a strategy, greater selectivity, and focus of the TA portfolio in the future to address binding constraints facing the ANR sector, rather than relying on the relevance of individual TA operations without a clear bond and synergy to achieve optimal development effects. For example, TA 4392-LAO should not work in isolation to develop alternative income-generating opportunities for ethnic minority farmers in rural villages by addressing their primary marketing constraints.

132. Typical constraints facing the sustainability of TAs stem from limited availability of human, institutional, financial, and other resources to implement TA recommendations. TAs frequently do not analyze the feasibility and implications of recommended actions on capacity requirements, resources, institutional arrangements, and operating conditions in the country. The risks of operating individual TAs as stand-alone initiatives (in a narrow context of delivering consultants' outputs) may jeopardize the achievement of broader outcomes and impacts. Clear institutional responsibilities (mandates, roles and functions), counterpart arrangements, ownership, and synergy are instrumental to achieving capacity development objectives.[139]

C. Management of ANR Sector Assistance

133. **Strengthening Project Administration.** The role of ADB in portfolio management and project administration of ANR operations in the Lao PDR requires strengthening to match the portfolio that ADB has developed to date. Several indicators have emphasized the need for improvement. Review missions were not conducted on a regular basis for a number of projects, and appropriate sector expertise was not always available. Project administration challenges included (i) long gaps between review missions,[140] (ii) unavailability of appropriate sector expertise among ADB staff,[141] and (iii) resource constraints that limit review missions to short duration and low frequency (usually not more than one mission per year). ANR operations (projects and TAs) are invariably complex, with multiple components, cross-cutting development issues, and piloting

[138] ADB. 2005. *Technical Assistance to the Lao People's Democratic Republic for Capacity Building for Gender Mainstreaming in Agriculture.* Manila.

[139] ADB. 2004. *Special Evaluation Study on Capacity Development Assistance of the Asian Development Bank to the Lao PDR*. Manila.

[140] For example, (i) there was no review mission for the ITPP for 20 months (July 2000 to February 2002); (ii) in July 2005, the SCSPP had been without an ADB review mission for 15 months; and (iii) with the targeted project completion in December 2006, the DIDMSP had been without an ADB review mission for more than 18 months (March 2004 to September 2005), and by November 2005 the planned midterm review (joint ADB-AFD) had not taken place.

[141] For example, (i) from late 1996 to project completion in 2003, no forestry specialist was included among ADB review missions of the ITPP; (ii) ADB does not have a livestock specialist to review projects and TAs with livestock development initiatives; and (iii) among its staff in the Mekong Region, ADB has limited in-house technical expertise in agronomy, aquaculture, fisheries, and upland/mountain agriculture. Current staff composition includes generalist positions (natural resources management specialists, water resources management specialists, project specialists, and economists).

objectives that require intensive monitoring and dialogue in the country. Project sites are dispersed throughout the country, at locations often characterized by difficult access because of terrains and transportation constraints. There is a mismatch between available resources (including ADB staff and time) and the current requirements of the ANR portfolio. The Mekong Agriculture, Environment, and Natural Resources Division of the Mekong Department of ADB attributed this situation to the following: (i) operational staff resources are limited and generally insufficient to adequately administer ongoing programs and process new loans; (ii) processing new loans is generally given higher priority than project administration as a critical performance result; and (iii) ADB continues to cut the travel budget. Options to address these issues must be explored through improved allocation, use, and management of available resources.

134. **Client Perceptions.** Review missions were typically of short duration and unable to visit project sites extensively in rural areas. Available time was spent largely on visiting national project offices and implementing agencies in the capital city, Vientiane. Staff movements (transfers and promotions), frequent changes of mission leaders, and inappropriate staffing had created perceptions among government officials interviewed by the OEM that ADB's engagement was characterized by discontinuity, distance, slow response, and deficiency in sector and country knowledge. To date, the ANR portfolio is largely administered from ADB Headquarters, with little delegation to LRM. Only recently was the SCSPP delegated to LRM, with a plan for the DIDMSP to follow. Options for delegating portfolio management and administration of selected projects and TAs to LRM should be explored, and such delegation should be accompanied with commensurate resources and expertise made available to LRM.

135. **Consideration for Greater Selectivity.** The ANR portfolio (including parts or components of projects) includes seven subsectors, which makes it even more difficult for ADB to service the country satisfactorily.[142] The current portfolio of investment projects (including those in the pipeline) requires ADB to commit staff and resources to irrigation, upland agriculture, agroforestry, river basins and watersheds, tree plantations, agribusiness, commercial smallholder agriculture, and livestock development. TA operations are equally dispersed: (i) R&D on livestock, vegetables, and rice; (ii) organic agriculture; (iii) upland agriculture and agroforestry; and (iv) cross-cutting social dimensions (gender, ethnic minorities, and poverty). ADB is unlikely to be able to commit such a wide range of expertise for a relatively small portfolio. Given the relatively poor performance of ANR loans, ADB needs to play a more effective portfolio management role. This requires greater focus and selectivity in ANR. While the relevance of the sector assistance program to the country's development policies and strategies is important, this relevance alone will not make ADB an effective institution to deliver and monitor its sector assistance. Considerations and choices should be made in the future for selectivity in engagement by paying more attention to ADB's own resources, expertise, and capacity to service its clients. Reliance on external consultants and intermittent outsourced expertise is not synonymous with having an in-house institutional capacity to stay engaged rigorously with a complex ANR sector in the Lao PDR.

136. **Aid Coordination.** A number of multilateral development partners operate in the ANR sector in the Lao PDR, including the European Union, IFAD, MRC, World Bank, and UNDP. Bilateral assistance for ANR comes from Australia, Denmark, France, Germany, Japan, Luxemburg, Sweden, Switzerland, and the United States (US). ADB, AFD, UNODC, and the Organization of Petroleum Exporting Countries have cofinanced ANR projects in the Lao PDR. In pursuit of greater selectivity in ANR sector assistance, ADB should take into account the scope of involvement of development partners in the sector, and aim for complementary engagement rather than attempt to cover all subsectors. Overall aid coordination activities have been carried out

[142] As of 31 December 2004, the overall ADB loan portfolio in the Lao PDR had 23 active loans (including 5 ANR loans) covering nine sectors.

through roundtable meetings (every 2 years) and working group meetings (semiannually). LRM co-chairs with AFD and SIDA the ANR (including environment) working group. Efforts to develop a database of ANR programs, projects, and TAs of development partners began in 2005, and by the end of 2005, the database was still incomplete. Preliminary estimates show that total financing from development partners for ongoing ANR projects amounts to more than $500 million, and ADB's financial contribution represents 20% of this total. Aid coordination among development partners in the ANR sector has been moderately effective, but it needs to improve and to involve the Government more for greater synergy, selectivity, and focus. A recent decision by the Government to chair and cochair the roundtable and working group meetings with development partners reflects its commitment to increase the relevance of the aid consultation process with the Government's development strategies and priorities, and the NGPES in particular.

VI. ANR SECTOR PERFORMANCE AND ADB'S CONTRIBUTION

137. This chapter reviews the performance of the ANR sector and its contribution to the country's economy. It also assesses ADB's contribution to the sector's performance.

A. ANR Performance and Contribution to the Economy

138. The ANR sector accounts for a large portion of GDP and of the population. Agriculture accounts for more than 80% of employment in the country and is central to macroeconomic performance. Countrywide, more than 600,000 households depend on agriculture for their livelihoods, and about 80% of these households practice subsistence farming. In constant terms, the size of the ANR share of GDP slightly more than doubled between 1986 and 2004. Agricultural growth rates averaged 4.7% per annum up to 2000, but declined slightly thereafter to 2–4% per annum. With agricultural production being largely for subsistence, agriculture has been partly insulated from the effects of the Asian financial crisis and other exogenous events. Agriculture has remained largely rice-based (glutinous rice) and subsistence in orientation, without major structural transformation over the last two decades. Table 8 shows production of major crops from 1986 to 2004. Selected statistics on agricultural production, livestock, land use, and irrigation facilities are presented in Appendix 17.

Table 8: Major Production by Crop ('000 tons, Selected Years, 1986–2004)

Crops	1986	1990	1995	2000	2004
Rice	1,449	1,508	1,418	2,202	2,529
Corn	33	44	56	96	112
Sweet potato	85	160	160	81	194
Cassava	70	62	68	71	83
Banana	12	13	17	35	55
Groundnut	5	6	5	13	17
Fresh vegetables	41	66	156	236	780
Fresh fruit	20	28	37	36	38
Coffee	6	5	9	18	32
Tobacco	9	20	21	23	27

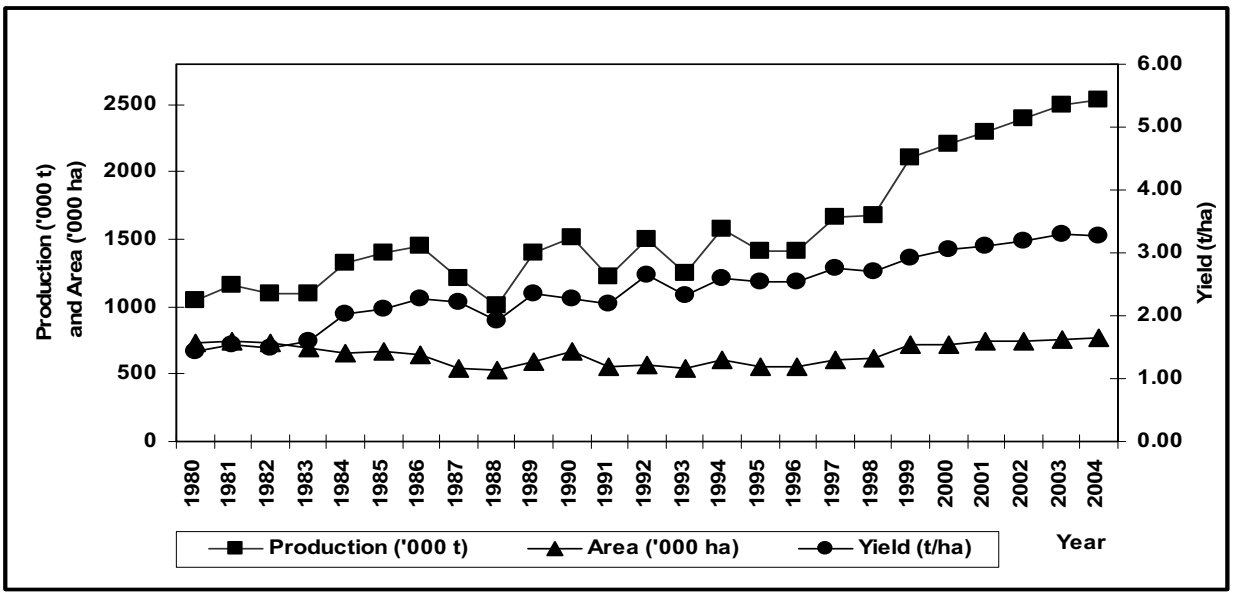
Source: Food and Agriculture Organization (FAO) statistics (2004), and in-country FAO estimates.

139. Agriculture remains extensive in nature. Farm holdings are small (about 1.6 ha on average, and of which three quarters is cultivated). Input use has nearly quadrupled since pre-NEM years,

but it is only about one tenth or less of that in most countries in the region.[143] Only 5% of permanent agricultural land produces more than one crop a year. Growth in crop value has come mainly from increases in rice production. Since 1986, corn output has more than trebled, and sweet potato doubled, but their volumes are small in comparison with rice. Cassava production has stagnated. Banana and groundnut more than quadrupled and trebled, respectively, and tobacco production trebled. The recorded production growth of fresh vegetables is remarkable (20-fold increase), and fresh fruit production appears to have doubled (considerably more so when melons and citrus fruits are included in the estimate). Coffee production more than trebled from 1995 to 2004.

140. The rice production system in the Lao PDR has undergone tremendous changes in the past 20 years (Appendix 3). Rice production averaged 1.35 million t from 1986 to 1996, with no clear trend in production. A significant break occurred during the mid-1990s, with production rising steeply and reaching 2.5 million t in 2004 (Figure 1). Production of irrigated rice increased substantially; in 1990, it made up less than 2% of the total rice area, but this increased to 10% in 2004. Irrigated rice yield reached 4.4 t/ha in 2004. Over the past decade, the development of irrigation facilities has contributed to increases in rice production. The Government's Strategic Vision for the Agriculture Sector recognizes the lack of irrigation facilities as a fundamental constraint to agricultural development.[144] However, there has been some decrease in irrigated rice area during recent years. Irrigated rice area was reportedly highest at 102,000 ha in 2001. In all rice ecosystems, the increase in yield during 1986 to 2004 ranged from 20% to 30%.[145]

Figure 1: Rice Area, Production, and Yield in the Lao PDR, 1980–2004



Data source: MAF. 2004.

141. The increase in rice production during 1986–2004 was due mainly to yield increases. Rice yields increased at an annual rate of 2.6%, while the rice area expanded by 1.8% annually. Several factors contributed to this rapid increase in yield. Empirical studies in rice production across Asia

[143] Only one fourth of farm households reported using inorganic fertilizer in 2003, and fewer than one in three used any machinery.

[144] The Government's vision for agricultural development includes enhancement of irrigation management as a key factor for increased agricultural productivity.

[145] The average yields for 1986–2004 for irrigated, rain-fed, and upland rice ecosystems were estimated at 3.9 t/ha, 3.1 t/ha, and 1.6 t/ha, respectively.

have shown that the main factors for increased rice production have been the adoption of modern varieties (MVs), use of inorganic fertilizers, increased availability of irrigation facilities, and government commitment to support rice production. The significant growth in rice production in the Lao PDR during the last two decades is also the result of these factors. In the early 1990s, rice varieties in the Lao PDR were mostly traditional varieties, with MVs accounting for only 2%–5% of the total rice area.[146] A national statistical bulletin published in 2000 indicated that the area under MVs expanded to 30% of the rice area during the 1990s.[147] In more recent years, several studies conducted in major rice-growing regions of the country indicated substantially high adoption rates. An extensive literature review on this topic suggests that the adoption rate of MVs in recent years is at least 50% of the total rice area.

142. There have been rapid increases in area, yield, and production of rice in irrigated areas. However, statistics on irrigated agriculture are inconsistent, and there are data discrepancies. According to IRRI, yield increase rather than area expansion was the main factor that led to the impressive growth in rice production in the Lao PDR. An impact study of IRRI development initiatives in the Lao PDR suggests that underpinning the productivity growth has been the adoption of rice MVs.[148] IRRI has developed high-yielding glutinous rice varieties, targeting rice-breeding efforts at specific characteristics (such as drought tolerance, resistance to diseases, and improved tolerance for low temperature) to increase productivity and reduce production risks and instability. The Australian Centre for International Agricultural Research (ACIAR) and other international organizations have also contributed to rice research in the country. In 2004, ADB provided regional TA 6136-REG to support rice research targeted at less favorable rain-fed areas, and the Lao PDR was chosen as one of the sites.[149] To maintain self-sufficiency in rice, the Lao PDR will need to produce an additional one million t annually by 2020 to meet the increasing demand resulting from population growth. This will require the yield growth to be no less than the current population growth rate of 2.5% per year. The yield growth rate in recent years (2000–2004) has been at about 2% per year. There is a need to continue and to accelerate the productivity growth through the development and dissemination of improved varieties and technologies, maintenance of irrigation facilities, and policy support. At present, the Lao PDR does not have a policy for seeds (e.g., R&D, certification, multiplication, and distribution). Improved rice varieties and management practices that produce stable yields in adverse conditions need to be continually made available to farmers. In the uplands, suitable technologies and cropping options are needed, not only to improve rice productivity but also to conserve fragile resources. Agricultural research and extension systems require further institutional development. There is a need for investment in capacity development for agricultural research. Agricultural research and its associated agencies are not routinely and sufficiently funded to meet the challenges facing them. Although an important milestone has been achieved with the establishment of NAFES and NAFRI,[150] the extension system needs capacity development, with more effective links among research, district-level organizations, and grassroots agents for extension to be an effective conduit for disseminating agricultural technologies.

143. Production of beef (cattle and buffalo) has doubled since 1986, poultry tripled, and pork more than doubled. Livestock productivity improvement (kg/animal/year) has been the main reason for these increases in production, rather than increases in the numbers of animals. However,

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[146] Lao-IRRI Project. 2000. *Rice Variety Recommendations for the Wet Season Lowland Environment of the Lao PDR.* Vientiane.

[147] Agricultural Census Office. 2002. *Lao Agricultural Census, 1990 to 1999: highlights*. Steering Committee for the Agricultural Census Office. Vientiane.

[148] Lao-IRRI Project. 2002. *Impact Assessment of Research and Technology Development.* Vientiane.

[149] ADB. 2004. *Integrating and mobilizing rice knowledge to improve and stabilize crop productivity to achieve household food security in diverse and less favorable rain-fed areas of Asia.* Manila.

[150] Available: <http://www.nafri.org.la/index.htm>

overall livestock productivity in the Lao PDR remains low when compared with neighboring countries. Livestock productivity is constrained by endemic diseases and poor nutrition. Operating constraints include (i) low-quality natural forage and fodder; (ii) inadequate coverage of animal health protection; (iii) low productivity of native species; (iv) remote upland villages, which limit marketing options; and (v) movement restrictions imposed by some provinces. Trade in livestock is important to the Lao PDR, although much of the cross-border movement is conducted informally and unrecorded. Most estimates put a figure of 100,000 live animals (worth $25 million) going to Thailand annually from the Lao PDR.[151] Formal trade is hindered by bureaucratic paperwork for licenses, letters of approval, and certificates. Over 95% of all livestock is produced by smallholders, and there are only a few commercial pig and poultry enterprises, located mostly near major urban markets. Livestock are an important feature of smallholder livelihoods, and sales of livestock account for more than 50% of cash income in many upland and highland areas, especially in the Central and Northern regions. Large livestock serve as a way to accumulate capital and act as a safety net for the family for liquidation when cash is needed. In the upland areas, it is typically only when households can accumulate enough livestock to feel financially secure that they will make long-term investments in their farming and livelihood systems (e.g., planting fruit trees, buying a two-wheel tractor, or investing in a rice mill).

144. The Department of Forestry reported that about 57,000 ha of tree plantations were established during the 1990s (an area equivalent to less than 1% of the country's forest cover), which is likely to be an overestimate, since it does not take into account failed plantations, replanting, losses, early harvest, and poor management. While past performance of tree plantations in the Lao PDR has been generally poor, a few enterprises have demonstrated promising results. There is commercial private sector interest (domestic and multinational companies) in investment opportunities in tree plantations.[152] FDI in tree plantations has been limited. Future prospects depend on the investment climate to attract FDI, social safeguards, and protection of property rights. The proposed Forest Plantations Development Project aims to facilitate and catalyze investments (small livelihood plantations, small and medium-sized enterprise plantations, and large industrial plantations) to support development of the subsector. Project risks (governance, institutional, political economy, and other factors influencing the investment climate) are significant.

B. Contribution of ADB Assistance to ANR Performance

145. The combined effects of the FAPL, SAPL, and associated TAs were partly responsible for policy change in the country that improved the incentive structure and operating environment for individual farmers since 1986. ADB assistance supported the reform process for more than 15 years. The FAPL and SAPL contributed to growth in ANR by helping the State to exit from agricultural production, eliminating state order procurement, promoting divestment of SOEs, liberalizing input/output prices, and discouraging investments in inefficient large irrigation schemes. Policy reforms have resulted in a legislative framework for ANR to promote investment and development. MAF services to ANR have been strengthened with moderate outcomes. The FAPL and SAPL helped to end most government interventions in agricultural input/output pricing and product marketing, and to reduce the State's burdens of SOE operations through divestment and privatization. While major challenges remain in many areas, improved policy environment and greater incentives to private individuals have contributed to growth in agriculture. ADB, along with

[151] ILRI. 2002. *Review of the Livestock Sector in Lao PDR.* Manila. This report was prepared by the International Livestock Research Institute for ADB.

[152] For example, in 2005, Oji Paper Company, Ltd. of Japan (available: http://www.ojipaper.co.jp/english/) acquired 85% of BGA Lao Plantation Forestry, Ltd. (the Government of Lao PDR owns 15% of the shares). BGA planted about 1,700 ha of tree plantations, part of which was financed under the ITPP credit line.

many development partners and the Government itself, contributed to this through two decades of engagement in the ANR sector and progressive policy and institutional reforms towards a market-based economy.

146. The contribution of ADB-financed investment projects to ANR sector performance has so far been limited through projects that have been completed or near completion. ADB-financed investment in tree plantations (Loan 1295-LAO) was unsuccessful: it jeopardized the financial health of APB, undermined the development of rural finance, and failed to improve the socioeconomic conditions of intended beneficiaries. ADB-financed investments in irrigation have been costly and less than efficient, and their sustainability appears to be less likely, although individual farmers and communities (who received grant assistance for improvement of infrastructure and facilities) have benefited to some extent. While the NCMISP has just begun, both the CMISP and the DIDMSP have contributed to the country's increased crop production. The CMISP and DIDMSP combined can potentially and annually generate an incremental unmilled rice production of about 25,000 t, 2,000 t of other crops, and 5,000 t of vegetables. The SCSPP has generated alternative livelihoods, reduced shifting cultivation, and eliminated opium poppy cultivation. However, the SCSPP has so far had limited impacts on crop production and diversification, and many more years will be required for it to generate sustained changes to land use. While the SDP has the potential to succeed, its market-based initiatives have just begun; it will require some years to come for the SDP to show its lasting effects on commercialization of smallholder agriculture. Implementation of the NNRBDSP has also just begun, and it must overcome serious impediments to succeed. The majority of ADB assistance in ANR investments took place over the last 10 years, with four projects approved during 2000–2004. Thus, with relatively small investments dispersed over many locations and types of interventions (total approved loans of $84 million over the last 12 years), the effects of these investments are limited and diffused, taking into account their effectiveness, efficiency, and sustainability ratings.

VII. ANR SECTOR CHALLENGES: TOWARDS A MARKET-BASED ECONOMY

147. This chapter discusses key challenges facing the ANR sector. These include improving the investment climate, overcoming corruption, removing market constraints, and optimizing benefits from regional integration. Making the ANR business and investment climate attractive is part of an unfinished business. The nature and extent of this unfinished business are considerable.

A. Improving Investment Climate

148. **Protecting Property Rights.** An issue facing investors in the Lao PDR is the perceived lack of protection for property rights. Entrepreneurs and companies who are used to operating in the region find the unpredictability of the Lao legal context to be a major impediment to land-based investments in agriculture. For example, faced with such conditions, Thai agribusiness entrepreneurs are reluctant to invest directly in farm operations and processing in the Lao PDR. They prefer to purchase raw materials for processing in Thailand. Agribusiness investments, because they are land based and long term, fare poorly in this business environment.

149. **Improving Access to Rural Finance.** Another binding constraint to domestic investment in ANR is difficult access to finance. All sizes of ANR businesses claim that (i) commercial banks in the country are reluctant to lend, and when they do, they require 100%-plus collateral; (ii) informal and formal costs of borrowing are high; (iii) trade financing is unavailable; and (iv) terms and conditions for short-term loans for working capital (when accessible) are generally the same as those for investment loans. Poor access to credit for working capital impedes entrepreneurs from developing contract farming arrangements with smallholder farmers. Small and medium-sized

agribusinesses in the country rely on informal credit from elsewhere, including from joint-venture partners and family connections abroad. Moreover, one of the main threats to the effectiveness of many investment projects in agriculture is the shortage of credit to expand cultivation of alternative and high-value crops.

150. Difficult access to rural credit highlights a general problem with the financing of agricultural production chains. Part of the solution involves the Government taking a more relaxed approach to registering and allowing local as well as international NGOs to serve as microfinance partners. Such additional sources of financing are needed while the banking sector cannot provide adequate service to the rural population. Many of the problems and challenges with accessibility and availability of rural finance for ANR cannot be tackled from within the ANR sector. ADB has helped the Lao PDR with initiatives to develop rural finance, including through TA 3413-LAO (Rural Finance Development) and the forthcoming Rural Finance Sector Development Program Loan.[153] Links and coordination need to be developed and closely nurtured between the ANR sector and the financial sector. The scope of such coordination may include, but not necessarily be limited to, the establishment and operation of demand-driven microfinance institutions to serve rural areas. Without access to rural finance, the ANR sector is unlikely to achieve its commercialization objectives.

151. **Removing Administrative and Bureaucratic Burdens.** Meeting formal administrative, licensing, and technical procedures can be time consuming and expensive. Larger enterprises tend to have sections of office staff dedicated to processing of government paperwork. The main burden of this falls on SMEs. Microenterprises trade mainly informally. Technical and institutional infrastructure to provide information, advice, and support to ANR businesses (such as chambers of commerce and associations of producers and exporters) is limited in the country. Businesses have to deal individually with government agencies instead of through organized trade and industry associations. Complying with food safety standards for export requirements is a challenging task. The country lacks laboratory and testing facilities for agriculture and food certification. Arrangements for testing of food products abroad can consume a considerable amount of time and money.

152. **Creating an Attractive and Safer Investment Environment.** The Lao PDR is perceived to be an unsafe place to invest by many companies. Impediments include (i) risks imposed by the uncertain legal environment; (ii) difficulties with contract enforcement; (iii) high transaction costs for business registrations, export licenses, and other administrative processes; (iv) weak, sometimes contradictory, and often opaque regulatory and legal frameworks, which impose extra burdens; and (v) market-restraining practices, nontariff barriers, and border irregularities. While the legal framework for the operation of commercial businesses has been developed, uncertainty persists. Several factors hinder lending by banks, and discourage foreign investors: (i) lack of translation and dissemination of legislation, (ii) limits on judicial capacity, (iii) incomplete repeal of legislation that is technically no longer in force, (iv) overlap between laws and between decrees, (v) uncertainty of title registration procedures, (vi) incomplete land titling, and (vii) time-consuming legal processes in relation to contract enforcement and debt recovery. All of these undermine the business environment, including those in the ANR sector and in agribusiness. When the overall business and legal climate remains poor, it is unlikely that there will be large inflows of foreign capital, technology, and market information links to the ANR sector.

[153] TA 3413-LAO facilitated the creation of pilot savings and credit unions in three locations with strong market linkages. The Government has been working on a rural and microfinance development strategy and on the associated legal and regulatory framework.

B. Overcoming Corruption

153. Corruption adds to the complexity and costs of doing business and affects the ANR sector. New opportunities for corruption opened up as economic reforms started to take hold in the 1980s and afterwards. For example, giving provinces the right to trade directly with neighboring countries has opened the way for trade-related graft, and opening up to foreign investment has introduced opportunities to collect money to facilitate required authorizations.[154] Recent work by UNDP suggests that corruption in the Lao PDR has now reached a level where it can no longer be ignored or tolerated by society, and that it may be the single biggest impediment to ongoing reform.[155] Corrupt behavior reduces government revenues, misallocates expenditures, reduces foreign investment, and erodes public trust. Entrenched corruption may pose a serious threat to liberalization and deregulation of the business environment—many available opportunities for rent-seeking would be curtailed if not eliminated with increased efforts to fight corruption.

154. Border trade is frequently conducted informally and illegally, largely in response to customs officials' demands for illicit payments. While this is hard to document systematically, an example encountered by the ADB-financed SDP in early 2005 indicated that traders exporting castor beans to Thailand had to pay customs officials.[156] The added cost, unpredictability, and lack of transparency of this situation inevitably affect the country's competitive advantage in export markets. Arbitrary imposition of informal levies on livestock exports also encourages illegal activities and noncompliance with quarantine regulations. Numerous regulations (about which there is little understanding by officials and traders) governing the interprovincial movement of livestock, rice, fruits, and vegetables provide opportunities for domestic rent seeking. The overall consequence of corrupt behavior exploiting an ambiguous and often inconsistent regulatory framework keeps ANR activity small-scale, informal, and low in value addition. Increased transparency would reduce opportunities for corruption.

155. Since 1993, the Government has taken many actions to address corruption by adopting an anticorruption decree in 1999; issuing new directives at the LPRP Congress in 2002; publicly condemning lavish consumption; and strengthening the State Audit Organization, State Inspection Authority, and Inspection Department of the Ministry of Finance. With increased corruption risks, the Government has taken steps to intensify its anticorruption efforts. In April–May 2005, the National Assembly deliberated on and adopted laws on anticorruption measures. Factors contributing to corruption in the civil service include (i) inconsistent understanding among government staff of government policies and their responsibilities, (ii) incomplete legal framework, (iii) unclear decentralization system and inadequate job descriptions, (iv) limited capacity in public administration, and (v) inadequate organizational systems. Despite past wage increases, government salaries are still below the minimum needed for food and basic necessities.[157] Low salaries effectively mean that government employees must have other jobs, family businesses, or other sources of incomes to survive. The current salary scale is a major impediment to curbing abuse of public positions for private gain.

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[154] ADB. 2001. *Key Governance issues in Cambodia, Lao PDR, Thailand, and Viet Nam.* Manila.

[155] Footnote 91.

[156] Reportedly, traders paid B6/kg to customs officials at the border, while the crop price at the farm gate was only B4/kg.

[157] In January 2005, the government salary-scale was categorized into 5 grades, each with 15 steps. The lowest salary grade and step was KN202,500 ($19/month) and the highest KN631,500 ($59/month).

C. Removing Market Constraints

156. The openness of the ANR sector (as measured by the sum of the value of agricultural imports and exports to agricultural GDP) is presently among the lowest in the region (at 0.09, compared with 0.18 in Cambodia, 0.42 in Viet Nam, and 0.57 in Thailand).[158] Marketing for agricultural products in the Lao PDR tends to be regionally confined, with significant variation in market prices from region to region due to (i) formal and informal regulations, which impede free movement of goods; (ii) prohibitive fees and administrative costs; (iii) poor access roads and an underdeveloped farm-to-market road network; (iv) transportation shortages and high transport costs; (v) limited urban demand; and (vi) interregional transport fees and controls in the country.

157. Despite earlier policy interventions to remove market-distorting practices, distortions still persist to some degree, as confirmed in the Inception Report (2005) of the SDP: (i) price ceilings on some strategic agricultural commodities and livestock in certain areas, (ii) state commodity trading and its impacts on farm gate prices, (iii) export trading monopolies and procedural impositions, (iv) certain restrictions on trade and marketing in a number of provinces, (v) excessive regulation of the livestock sector, (vi) nontariff barriers affecting livestock and agricultural commodities, (vii) lack of transparency at border check points, and (xiii) government-owned or abetted monopsonies and monopolies for a number of commodities in domestic markets. Agribusinesses are also constrained by insufficient raw material supply, lack of trade and market experience, limited understanding of existing markets, low domestic demand for diversified food commodities, absence of local processing facilities, small number of agricultural commodity traders, and weak commercial networks throughout the country.

D. Enhancing Economic and Regional Integration

158. Increasing economic integration with the regional and global economy brings opportunities and poses challenges to the Lao PDR and its ANR sector. The Government recognizes that regional cooperation can narrow the gap between the Lao PDR and other regional economies, and will enable the country to strengthen its role as a land link at the center of the GMS. This integration may take several forms: (i) improved physical infrastructure; (ii) greater migration and cross-border labor mobility, (iii) improved trading conditions (for example, reductions in tariffs and in nontariff barriers); and (iv) increased foreign investment, which provides access to capital, technology, and market information. The situation in each of these areas is evolving.

159. **Improving Physical Infrastructure.** Major developments in recent years to enhance cross-border links include (i) the construction of the Friendship Bridge at Vientiane; (ii) the ongoing construction of a bridge across the Mekong River at Mukdahan-Savannakhet;[159] (iii) the opening of the bridge across Nam Heung;[160] (iv) the upgrading of internal roads in the North-South[161] and East-West economic corridors; and (v) proposals to construct a road from Huay Goan in northern Thailand border to Pak Baeng, and the railway construction from the Friendship Bridge to Tha Na Laeng (Mekong River port). Along with improvements in the transport infrastructure, there are

[158] World Bank. 2004. *Country Economic Memorandum – Realizing the Development Potential of Lao PDR*. Vientiane.

[159] The link is part of the East-West Economic Corridor, linking Mukdahan in northeastern Thailand, Savannakhet in southern Lao PDR and the port of Da Nang in central Viet Nam.

[160] The Nam Heung bridge is across the Heung River between Loei Province in Thailand and Xayabury in the Lao PDR. It opened in October 2004.

[161] The North-South economic corridor links Kunming (Yunnan Province, PRC) with Bangkok (Thailand) via the Lao PDR. The highway is planned to be completed in 2007. The objectives of the North-South Economic Corridor initiative are to: (i) facilitate trade and development between and among Cambodia, Lao PDR, Myanmar, Thailand, Viet Nam, and Yunnan Province, PRC; (ii) reduce transport costs in the area and move goods and people more efficiently; and (iii) reduce poverty and support the development of rural and border areas.

various plans for agroindustrial export processing zones and facilities at border locations, such as the Savan-Seno Special Economic Zone in Savannakhet, and Dansavanh/Lao Bao (both on the East-West Economic Corridor/route 9). These developments will help improve the Lao PDR's connections with the wider subregion.[162] They can reduce importers' and exporters' transport costs, and further help to develop the Lao PDR as a land-linked country (instead of remaining landlocked) to its neighbors.[163]

160. **Facilitating Labor Mobility and Curbing Human Trafficking.** The Lao PDR has supplied labor to regional countries, both formally[164] and informally. With sustained economic growth, demand for unskilled labor in Thailand, improved communications, and better physical access within the Lao PDR, migration for work opportunities abroad is expanding. Current estimates indicate that there are 200,000–300,000 Lao workers in Thailand, perhaps a quarter of them legally registered. This is about 5% of the Lao population and 20% of the population engaged in subsistence agriculture. The value of remittances is around $100 million a year. Most migrants are lowland Lao from the southern provinces along the Mekong River (Savannakhet, Champasack, and Khammuane). Once in Thailand, these migrants are largely indistinguishable from ethnic Lao Thai nationals from Northeast Thailand.

161. Conditions influencing labor mobility contribute to illegal labor migration and illegal human trafficking. There is increasing concern that expansion of road networks in the Lao PDR with neighboring countries can facilitate the trafficking of girls and women from remote rural areas.[165] In October 2004, the National Assembly of the Lao PDR passed legislation (Law on the Development and Protection of Women) that includes provisions on domestic violence and trafficking in women and children. Recent surveys provide a profile of Lao migrants in Thailand. For example, the Thai immigration police claim that more than 10,000 Lao migrants were repatriated from Thailand in 2000.[166] Their ages were between 14 and 24, and 60% were girls and women working illegally in service businesses, entertainment venues, and garment factories. The availability of employment due to migration establishes an opportunity cost for agricultural labor with which domestic enterprises and agriculture have to compete.[167]

162. **Enhancing Trading Conditions.** Regional cooperation has intensified in recent years. In this context, developments fall into two main categories: (i) reducing the nonphysical barriers to trade, and (ii) changing the system of tariffs that affect agricultural exports and imports. Efforts to reduce nonphysical barriers to trade have occurred for many years. Apart from ASEAN, there are bilateral agreements between GMS countries. Work has also commenced on the North-South Economic Corridor which will establish an important trade link among Thailand, the Lao PDR, and the People's Republic of China (PRC).

163. The first bilateral trade agreement between the Lao PDR and Thailand was established in 1978. Despite such agreements, barriers to trade and the free movement of people among GMS

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[162] ADB. 2004. *The GMS: Beyond Borders - Regional Cooperation Strategy and Program.* Manila.

[163] Thailand remains the preferred transit route for Lao trade with third countries. Thailand is a regional hub, with daily feeder connections to Singapore. Currently, movement of goods through Thailand between the Lao PDR and a third country is governed by an annual/renewable transit transport agreement between Thailand and the Lao PDR. Other shipping avenues are via Viet Nam and Malaysia.

[164] The formal category includes persons entering legally and/or under various official government-to-government agreements.

[165] ADB. 2004. *Lao PDR: Gender, Poverty and the Millennium Development Goals.* Manila.

[166] ILO. 2003. *Lao PDR: Preliminary Assessment of Illegal Labour Migration and Trafficking in Children and Women for Labour Exploitation.* Bangkok.

[167] Present unskilled wage levels in Thailand are at least $5 a day, while wages for rural employment in the Lao PDR are as low as $1.50/day.

countries remain substantial. Nonphysical barriers that impede the free movement of vehicles, goods, and people across international borders in the GMS include (i) restrictions on the entry of motor vehicles;[168] (ii) different standards pertaining to vehicle size, weight and safety requirements, and driver qualifications; (iii) inconsistent and difficult formalities related to customs procedures, inspections, clearances, and assessment of duties;[169] and (iv) restrictive visa requirements. In early 2005, several provinces in the Lao PDR were still collecting tariffs on goods imported through international ports within their provincial borders.[170]

164. An important milestone was the signing in 2004 of the GMS Cross-Border Transport Agreement (CBTA), a comprehensive multilateral instrument covering cross-border transport facilitation, including (i) single-stop/single-window customs inspection; (ii) cross-border movement of persons (i.e., visas for persons engaged in transport operations); (iii) transit traffic regimes, including exemptions from physical customs inspection, bond deposit, escort, and phytosanitary and veterinary inspection; (iv) requirements that road vehicles will have to be eligible for cross-border traffic; (v) exchange of commercial traffic rights; and (vi) infrastructure, including road and bridge design standards, road signs, and signals. The CBTA will apply to selected and mutually agreed upon routes and points of entry and exit in the signatory countries. Full implementation is expected by 2008. Implementation of the CBTA began at the Dansavanh–Lao Bao border crossing points between the Lao PDR and Viet Nam along the East–West Economic Corridor on 30 June 2005.

165. There have also been changes in tariff regimes. Although the Lao PDR applied for World Trade Organization membership in 1997, the accession process started recently, with the first working party taking place on 28 October 2004, and with the implementation of diagnostic trade integration studies under the integration framework. The Lao PDR was granted normal trade relations (NTR) status by the US in 2004, reducing tariffs on imports to the US from 40% to 2% on average, and a bilateral trade agreement entered into force in January 2005. However, the most important changes to tariffs likely to affect ANR are those that are being introduced under ASEAN's CEPT scheme. CEPT has existed since 1992, and its coverage of agricultural and semiprocessed goods has been relatively restricted. The number of agricultural goods included in the normal list is continually increasing, thereby providing opportunities to the Lao PDR for agricultural exports. Actual CEPT utilization by the Lao PDR to date is reported to be low, at less than 0.1% of AFTA imports. The CEPT scheme required the Lao PDR to bring down tariffs of products on the inclusion list to no more than 5% by 2008.[171] Nevertheless, the Lao PDR's extensive sensitive list of products to which CEPT will not apply (leaving tariffs at about 30–40% on average) includes major livestock and poultry, fruits and vegetables, grains, and sugarcane. This sensitive list offers some protection to domestic producers in the Lao PDR, but conditions may change. Specific initiatives under AFTA can also provide opportunities for Lao agricultural products. For example, Thailand approved a zero import tariff for nine agriculture crops from the Lao PDR in March 2004.

166. Another regional agreement that impacts on the Lao PDR is the ASEAN-PRC closer economic partnership framework agreement, which was agreed upon during the ASEAN Summit in Cambodia in 2002. The framework agreement identifies five priority areas for economic cooperation: agriculture, human resource development, information and communication technology, investment, and Mekong River basin development. This led to the proposed ASEAN-

[168] Thailand and the Lao PDR have allowed each other's vehicles to enter since March 2004.
[169] Cumbersome customs procedures and corruption at the border raise transport costs and increase delivery times for key exports.
[170] United States Embassy. 2005. *Doing Business in the Lao PDR*. Vientiane.
[171] Under the CEPT scheme, the Lao PDR has been implementing trade liberalization to lower tariff rates on eligible ASEAN imports to 0–20% by 2005 and 0–5% by 2008.

PRC free trade area (ACFTA).[172] An early-harvest clause commits ASEAN and the PRC to reduce their respective tariffs for certain products by January 2006. These early-harvest products are mainly agricultural products that represent 10% (or more than 600) of all tariff lines in the harmonized system of tariff classification.[173] The timetable for elimination of tariffs for products on the normal track is from January 2005 to January 2015 for newer ASEAN member states (Cambodia, Lao PDR, Myanmar, and Viet Nam) and from January 2005 to January 2010 for the original six ASEAN countries.[174]

167. **Capturing Trade Opportunities**. Increased integration is necessary, but not sufficient, to increase trade and generate export-led, pro-poor growth in the Lao ANR sector. Integration-based opportunities in agriculture are likely to include (i) low technology opportunities, familiar and feasible to smallholders in areas close to improved physical infrastructure and points of exports to regional markets; and (ii) agribusiness opportunities with minimal processing and value adding within the Lao PDR. These represent opportunities that have been promoted in the Southern Region (Champasack, Savannakhet, and Khammuane) with the production of soybean, sugar, and maize for export to Thailand. There are also opportunities for Lao products destined for world markets, which are relatively small in scale, high in value to volume/weight (such as coffee, specialty rice, and fruit products), and nonperishable. For these products, improvements in trading conditions to ensure that goods can be exported without undue hindrance are likely to be more important than reductions in domestic transport costs.

168. Market opportunities are possible for new export products made possible by the granting of NTR status by the US, such as for NTFPs and innovative wood products. In the context of agribusiness opportunities with low technology and minimal processing, deficient state support services to agriculture may be circumvented by large-scale foreign private sector playing a catalytic and deterministic role in establishing contract-farming systems. Specific actions by the Government to remove trade impediments and reduce transaction costs are required to realize trade opportunities in ANR for diversification and value addition to ensure that at least some of the effects are pro-poor. Worldwide experience suggests that increased integration and international trade can be a catalyst for economic growth.

VIII. CONCLUSION AND RECOMMENDATIONS

169. This chapter summarizes the conclusion of the evaluation in the context of the questions the SAPE was intended to answer. Based on the findings of the SAPE, a number of recommendations are proposed for consideration by ADB and the Government.

170. **Were the right strategies pursued by ADB to support the ANR sector development?** The ADB country strategies are broad, and did not provide guidance for focused assistance in the ANR sector. Although policy-based lending was important, the composition of assistance to ANR (in terms of objectives, scope, types, and locations) has been diffuse. The ANR portfolio (including parts and components of projects) includes seven subsectors, and investment projects are localized and mostly pilot based. ADB does not have the range of technical skills and human resources to adequately plan, design, and manage such a diverse portfolio. The lack of focus and

[172] ADB. 2005. *Asian Economic Cooperation and Integration.* Manila.

[173] The products include live animals, meat and edible meat offal, fish, dairy produce, other animal products, live trees, edible vegetables, and edible fruits and nuts.

[174] In November 2004, at the 10th ASEAN Summit in Vientiane, Lao PDR, the Economic Ministers of ASEAN and the PRC signed an agreement on trade in goods called the Framework Agreement on Comprehensive Economic Cooperation between ASEAN and the PRC. This marked a major step towards the realization of an ACFTA for goods, which is set to be established by 2010 for ASEAN (Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, and Thailand) and the PRC, and by 2015 for the newer ASEAN member states (Cambodia, Lao PDR, Myanmar, and Viet Nam).

ADB's inconsistent support during implementation have contributed to less than satisfactory results of the ANR portfolio. Considerations and choices should be made in the future for a strategy that shows greater selectivity and more focus.

171. ADB responded to the NEM's unprecedented reform initiatives with policy-based lending, with the overriding objective to facilitate the country's transition to a market-based economy. After the NEM, ADB support for investment projects began in 1993. The Government aimed to increase agricultural productivity by strengthening research and extension, developing human resources, liberalizing trade, reducing shifting cultivation, and enhancing irrigation management. The Government also intended to shift agriculture from subsistence to commercial. The CSP responded to this by focusing on institutional development, policy reform, agricultural diversification (including livestock and commercialization), reduction of shifting cultivation, eradication of opium poppy, and rural finance development. The CSP emphasized the role of the private sector for agriculture and forestry development, recognizing that improved performance and marketing are critical to improving rural livelihoods. However, there was no clear distinction made by ADB between (i) addressing the needs of subsistence farmers and their immediate concerns for household food security, and (ii) options for commercialization of agriculture and the extent to which such options were also meant for the predominantly subsistence farmers who encountered genuine difficulties in becoming more commercial farmers. ADB has paid more attention to the poor mountainous northern region through the NRDS, which emphasized economic integration of the region with neighboring economies. MAF recognizes the need for variable approaches to challenges in upland sloping land areas and flatland areas. The dichotomy between subsistence farmers and those who can produce for the market should be explicitly dealt with in future country strategies by developing appropriate approaches to match their needs and potential. ADB's ANR strategy for the Lao PDR has been assessed against seven criteria (Table 9).

Table 9: Assessment of ADB's ANR Sector Strategies

Criteria	ANR Sector Strategy in Country Strategies (1990, 1996, 2001, 2002, 2003, 2004, 2005)
Evidence of sound analytical base?	There was little evidence that TA findings were strategically incorporated into country strategies for ANR sector assistance. A number of studies through TAs (Appendix 9) supported agricultural reforms associated with ADB's policy-based operations. Broad-based economic sector work in ANR commenced in 1998 with TA 2883-LAO, followed by TA 3403-LAO, which resulted in the Government's Strategic Vision for the Agriculture Sector (1999). However, ADB itself did not align its ANR operations with this Strategic Vision. In 2002, a livestock sector study was undertaken in cooperation with ILRI. ANR sector studies were undertaken in part through TAs in the 1990s, but their overall synthesis, integration, and application to ANR sector assistance have been weak. There is no substantive evidence that non-TA economic and sector work on ANR has been done in-house by ADB staff over the last 5 years.
Baseline and targets described and quantified?	ADB's country strategies described the general performance of the ANR sector and its contribution to the economy, but they did not include baseline benchmarks and quantifiable targets for ANR sector performance. This was not a requirement for CSPs until recently. ADB's expected contributions in terms of measurable targets and indicators for the ANR sector were not quantified.
Explicit consideration of options, justification for selected option, and evidence of focus?	ADB's country strategies recommended priority areas for the ANR sector, but did not provide analysis of options and strong justifications for the recommended priority areas. Country strategies did not adequately address differences between the needs of subsistence farmers and those who can produce for the market. The recent geographic focus on the northern mountainous region, subsequently supported by the Northern Regional Development Strategy (2004), does not fully guide ANR sector assistance. ANR sector assistance has also been linked to the East-West Economic Corridor. The CSP (2001) and subsequent CSP updates (2002–2005) provide broad choices for ANR sector assistance covering several subsectors, with inadequate considerations for selectivity and focus. The guiding principles embraced by the CSP are broad, and they do not constitute an effective strategy for ANR assistance. ANR sector assistance has been delivered through a project-to-project approach (including individual TA operations), with little apparent sectorwide prioritization or interventions to (i) overcome key constraints, (ii) meet the challenges facing the sector, and (iii) develop replicable approaches. Most of the project initiatives can be categorized as small, dispersed in locations, and pilot-based, with diffused coverage. Pilot-based initiatives can be an effective means of testing new approaches. However, it is essential that good quality data be collected

	to allow lessons to be identified and pilots to be scaled up, if successful. This was generally not the case, so pilot initiatives have remained as isolated interventions.
ADB's comparative advantage identified and justified?	ADB's country strategies did not identify areas in ANR where ADB had demonstrated comparative advantage. No consideration was made of the prerequisites for ADB to stay engaged in the ANR sector (human resources, skill mix, in-house expertise, etc.) in the context of the scope and features of the identified priority areas for ADB sector assistance.
Performance monitoring and evaluation provided for?	ADB's country strategies for the ANR sector did not have a framework for monitoring and evaluating the performance of ANR sector assistance.
Partnership clearly developed?	ADB's country strategies for the ANR sector did not have a clear strategy for partnership and collaboration with development partners in the context of the Government's strategies and priorities. There has not been an explicit division of roles and responsibilities among development partners in ANR. While cofinancing has been obtained, this is not synonymous with establishing partnerships and collaboration to meet the country's development priorities with designated roles, shared responsibilities, and division of tasks.
Evidence of risk identification and mitigation?	ADB's country strategies recognized that (i) rapid buildup of resources channeled through local institutions would increase risks of project failure and misuse of resources; (ii) a lack of continuity and insufficiency of ADB and counterpart staff would hinder CSP implementation. The CSP considered that the LRM could help provide continuity, with continuous high-level ADB staff inputs. ADB support would be dissipated if the Government could not improve governance and accountability. In the broad sense, the country strategies highlighted measures to address this risk. Risks related to failure to address geographic, ethnic, and gender inequities in income and social indicators, as well as unsustainable environmental management, were recognized by the CSP as factors that can limit development results.

172. Assistance in the current pipeline (CSP 2001; CSP updates, 2002–2005) includes investments in tree plantations, river basin and watershed management, livestock development, and further initiatives to stabilize shifting cultivation. This represents a continuation of a project-driven approach of providing assistance to the Lao PDR. The current CSP does not have a framework for prioritizing ANR assistance. Individual project proposals can still claim relevance to the broad range of priorities of the CSP, which includes (i) institutional development and policy reform; (ii) crop diversification, including livestock and commercialization; (iii) reducing shifting cultivation; (iv) rural finance development; and (v) provision of extension services. Prioritizing ANR assistance has been a significant challenge to ADB. Overall, the OEM rates the ADB's country strategies for ANR sector assistance as **partly satisfactory.**

173. **How has ADB sector assistance performed?** On balance and in aggregate, based on relevance, effectiveness, efficiency, and sustainability criteria, the OEM rates the overall performance of ANR sector assistance as **partly successful** (Table 10).

Table 10: Assessment of Overall Performance of ANR Sector Assistance of ADB

Relevance. The ADB sector assistance in ANR has several dimensions. The policy-based operations were relevant to support the country's policy and priorities for the transition of the country to a market-based economy. Individual projects and TAs on their own were relevant to the Government's development priorities and issues in ANR. Collectively, clear links were not established to address overriding constraints facing ANR sector development, and to overcome the impediments confronting commercialization of agriculture. The dichotomy between subsistence and commercial agriculture has not been clearly addressed by ANR sector assistance. Individual operations had their own merits and relevance to specific ANR development issues, but their combined objectives and scope lacked focus, and their targets were dispersed. Sequencing of separate operations and timing of ADB assistance have not been fully consistent, and several projects and TAs were not coordinated. Since completion of the SAPL, there were no further significant policy-based operations to address the remaining constraints to private investment in ANR. Overall, ADB sector assistance in ANR is assessed as **partly relevant** to the needs of the ANR sector in the Lao PDR.
Effectiveness. Policy-based lending was less effective. Many of the individual policy measures represented a case of outputs being delivered rather than outcomes achieved. Moderate outcomes took more time to materialize than originally anticipated. Major impediments to doing business in ANR persist. Projects have ranged from being generally less effective to effective. The Smallholder Development Project is effectively addressing issues related to constraints to

commercial agriculture development for smallholders. Undesirable effects of Loan 1295-LAO jeopardized the financial health of APB, undermined the development of rural finance, and generated lessons for developing more effective development approaches in the future. TA operations yielded mixed results. The contribution of ADB-financed projects to the ANR sector performance has been limited. Overall, the ANR sector assistance is assessed as **less effective**.
Efficiency. Policy-based lending was less efficient. It underestimated the efforts required to effect policy changes under the Lao political economy context. Requirements for institutional preparedness for change, management of change, and the time needed to generate outcomes under the Lao political economy were underestimated. Investments in irrigation were less efficient with heavy costs, low returns, negligible crop diversification, and continuing market constraints. ADB-financed investments in tree plantations (Loan 1295-LAO) generated economic losses with negative impacts on poverty, and few enterprises demonstrated potentially viable plantation operations. Efficiency of TA operations was generally affected by inadequate counterpart arrangements, absorptive capacity, and lack of institutional analysis. TAs intended for capacity development were often used for capacity substitution. The use of TA resources partly resulted in capacity development. Overall, ANR sector assistance is assessed as **less efficient**.
Sustainability. Policy reform measures have largely been sustained on paper, with no overt reversals in the formal policy direction. However, policy implementation has been affected by an environment characterized by regulatory uncertainty, unpredictability, lack of transparency, and other governance issues. Central and local government jurisdictions and decentralization measures have influenced the reform process and implementation. TA operations often produced recommendations that could not be implemented because of deficient analysis of their implications on requirements for resources, institutional mandates, and organizational development and management. The sustainability of investment projects was generally assessed as less likely due to (i) shortfalls in operation and maintenance, (ii) inadequate arrangements (human, financial, institutional, and other resources) to sustain outcomes, and (iii) overriding impediments that impose marketing constraints on farmers and agribusinesses. The investment climate remains poor and presents a formidable challenge to doing business in the country. Overall, the sustainability of ANR sector assistance is assessed as **less likely**.

174. The OEM rates the policy-based operations partly successful. The two program loans were partly successful. TA operations (16 TAs) supporting policy-based lending and reform generated mixed results: unsuccessful (2), partly successful (6), successful (6), and highly successful (2). The performance of investment projects has been equally mixed. Of six projects assessed by the OEM, one was unsuccessful, three were found doubtful to succeed, and two were rated as likely to succeed. If appropriate midcourse actions are taken, it may be possible to improve development results and make ongoing projects successful. Among six other TAs sampled by the OEM, two were rated successful, and the rest were not rated because of they had just commenced. Among a sample of seven regional TAs, the OEM rated one as partly successful, three as successful, and two as likely to succeed, and one was unrated (because it had just commenced).

175. **Was there effective synergy in ADB sector assistance?** The composition of sector assistance is diffused among several subsectors, and there is little evidence of planned and implemented synergies among projects and TAs. Clusters of projects and TAs with similar development themes and focus (such as commercialization, irrigation, livestock, river basin, upland agriculture, and watershed) do not generally interact. Coordination among staff and implementing agencies of projects and TAs needs to be strengthened. Greater efforts are required to realize synergies among ANR sector operations to develop workable development approaches through information sharing, collaborative efforts, and learning lessons to replicate successful initiatives. Further synergy on common development themes may be attained by collaborating more closely with the Government, other institutions, and other development partners without creating parallel structures and processes, which can be costly and less effective.

176. **Has ADB managed its ANR sector assistance well?** Portfolio management and project administration need to be strengthened.[175] Review missions were not conducted regularly, and appropriate sector expertise in ANR was not always available. There was a mismatch between available resources and the current requirements of the ANR portfolio. Review missions for ANR projects in the Lao PDR were typically of short duration, and did not visit project sites in rural areas extensively. Many of these project sites are in remote locations and difficult to reach. On the ground observations are needed to help resolve implementation difficulties and ensure that the projects are benefiting people as intended. Staff movements, frequent changes of assigned staff, and a lack of technical expertise have created client perceptions that ADB's engagement has been characterized by discontinuity and a lack of sector and country knowledge. There are institution-wide constraints in ADB relating to portfolio management and project administration. However, the lack of focus (composition and spread) of the ANR portfolio in the Lao PDR makes it more difficult for ADB to service the client satisfactorily.

177. Options for delegating more project administration to LRM need to be explored. As of 31 December 2004, only 2 (9%) of a total of 23 active ADB loans were delegated to LRM, compared with an average of 31% ADB-wide, and 24% in the Mekong Region. There is room for increased delegation of project administration responsibilities to LRM, although it may require a reallocation of resources within the ADB's Mekong Department. The increasing trend in ADB to delegate project administration to resident missions is expected to result in more frequent contact between ADB project staff and executing agency staff. Access to project documentation needs to be improved to ensure that key documents (including supplementary appendixes of RRPs) are made available to executing and implementing agencies for reference. While the relevance of the sector assistance program to the country's development policies and strategies is important, this relevance alone will not make ADB an effective institution to deliver and monitor its assistance. Greater selectivity in engagement is required, recognizing that ADB's staff resources, capacity, and expertise limit its ability to effectively service its clients in all ANR subsectors. Reliance on external consultants and outsourced expertise does not replace the need to have an in-house institutional capacity to make a strategic impact and achieve development results in the ANR sector. Overall, the OEM rates the historical performance of ADB in managing its ANR assistance as **partly satisfactory**. The OEM discussed these issues with staff of the Mekong Department, who confirmed that steps were being taken to address these issues.

178. **How has the ANR sector performed?** In contrast to the performance of ADB-supported ANR operations, the overall performance of the ANR sector has been encouraging, despite constraints on market orientation and commercialization. In constant terms, the GDP of the ANR sector more than doubled between 1986 and 2004. Agricultural growth rates averaged 4.7% per annum up to 2000, and declined thereafter to 2–4% per annum. Agricultural production remained largely rice-based, subsistence, and extensive in nature. There has not been a major structural transformation of the sector over the last two decades. The Lao PDR has become self-sufficient in rice, although food security is a problem for some households in parts of the country.

179. The ADB-supported policy-based measures were designed to impact upon the formal structure of a sector and to facilitate its transformation. While these policy measures changed the policy environment on paper (as represented by a range of laws and regulations), these efforts

[175] In 2004, of 491 active ADB loans, 120 loans (24%) were without review mission. Of 94 active loans in the ANR sector in 2004, 19 loans (20%) were without review mission. Of 23 active loans covering 22 projects (31 December 2004) to the Lao PDR, 5 loans (22%) were not reviewed during the year. In ADB, professional staff days on project administration mission declined by 18% from 1995 to 2004, despite ADB's 34% increase in professional staff from 1995 to 2004. By contrast, only 24.5% of 1,018 active ADB-financed TAs were reviewed in 2004 Source: ADB. 2005. *Annual Report on Loan and Technical Assistance Portfolio Performance for the Year Ending 31 December 2004.* Manila.

have not yet resulted in ANR outcomes (in terms of incomes, employment, and poverty reduction). Private sector resources must be attracted and invested in the sector to achieve these results. The policy reforms were relevant and necessary for the formal transition of ANR to a market-based system, but they were not sufficient to effect the transition. Promoting greater private sector involvement and the move from subsistence to commercial agriculture require an enabling environment for private investment in ANR. This point has not yet been reached in the Lao PDR. Making the ANR business and investment climate attractive for private investment is part of an unfinished agenda.

180. **In what ways did ADB assistance contribute to sector outcomes?** ADB's policy-based operations, including TAs, contributed to policy change in the country, although other factors were also important. ADB assistance supported the reform process over more than 15 years. Major contributions included policy changes that reduced involvement of the State in agricultural production, eliminated State procurement, promoted divestment of SOEs, liberalized input/output prices, and reduced investments in inefficient large irrigation schemes. ADB-supported policy reforms contributed to an improved legislative framework for ANR. While challenges remain in many areas, improved policy environment and greater incentives for private individuals have contributed to the growth in agriculture. ADB, along with many other development partners and the Government itself, contributed to these developments through two decades of sustained engagement in the ANR sector that supported progressive policy and institutional reform towards a market-based economy.

181. The contribution of ADB-financed investment projects to ANR sector performance has been limited. A few projects have been fully or almost completed. Most of the ADB-supported ANR projects took place during the past decade, with four projects approved during 2000–2004. With small investments dispersed over many locations and types, the effects of these investments are limited and diffused. ADB-financed investments to promote and develop tree plantations have not been successful, and the subsidized credit line has undermined the capability of APB and the development of rural finance in the country. Identified lessons have led to new approaches to attract domestic and foreign investments in tree plantations. Contributions to irrigated agriculture and crop diversification were limited due to high development costs, low efficiency, and risks to sustainability. A workable IMT model has not been developed. The contribution of ADB-financed irrigation investments to incremental rice production represents a small portion of the country's achievements in doubling rice production. Pilot initiatives to create alternative livelihoods for upland farmers to reduce shifting cultivation have yielded promising results, but their impacts on crop production and diversification have been limited. Coordination challenges have hampered development of IWRM to strengthen river basin development and watershed management.

182. **What actions does ADB need to take to improve its performance in delivering assistance to support the ANR sector?** A number of actions will be required to improve the performance of the ANR sector assistance of ADB. Based on the SAPE findings, the following recommendations are made for ADB and government consideration.

Recommendation	Responsibility
(i) **During the CSP process, the Government and ADB should jointly reassess ADB's future involvement in the ANR sector.** Recognizing that ANR is an important sector in the Lao economy and OED's assessment that ADB has only partly succeeded in achieving development results in this sector, the question should be asked whether continued involvement in the sector is an optimal use of scarce ADF resources. Continued support to the ANR sector needs to be based on an evaluation	Mekong Department (MKRD) and the Government

of the performance of the country assistance program and the current priorities of the Government. In terms of future support to ANR sector development, a better approach may be to address some of the broader economic and policy issues that adversely affect the performance of the ANR sector, including through Greater Mekong Subregion programs such as the initiation of cross-border trade facilitation and investment in the context of regional cooperation.	
(ii) **If the joint government/ADB assessment concludes that ADB has a role to play in the ANR sector, prepare a suitable strategy that results in a higher probability of achieving development results.** Such a strategy should consider the following elements: ADB activities in the ANR sector should be more selective and focused in terms of composition and spread, and should take into account government priorities, the division of roles and responsibilities among development partners, past performance of ADB operations, identified lessons, and ADB's comparative advantage and skills mix requirements. ADB should discontinue the project-by-project approach of defining relevance and priorities for the ANR sector, because this approach has led to diffused ANR sector assistance. This should result in a more strategic and results-oriented framework for prioritizing development assistance in the ANR sector. This should be based on an assessment of key challenges, binding constraints, and opportunities facing the ANR sector, including overriding considerations that have significant bearing on sector's performance (e.g., the investment climate, governance, corruption, markets, and opportunities for economic integration and regional cooperation). The future approach should include using existing aid coordination channels more effectively to (a) share experience and knowledge, (b) find solutions to binding constraints facing the ANR sector, and (c) develop replicable approaches that can provide greater benefits countrywide.	MKRD and the Government
(iii) **Within the next 12 months, ADB should assess its in-house capacity to service clients in the ANR sector in the Lao PDR, and determine the extent to which ADB can offer expertise and knowledge with respect to the country's development strategies and priorities.** If ADB does not have the requisite in-house expertise, there is a significant risk that its operations will not lead to the anticipated development results.	MKRD and Budget, Personnel and Management Systems Department (BPMSD)
(iv) **Within 12 months, ADB should improve its project administration capabilities and commit resources to match the current ANR portfolio.** Adequate resources should be made available to support project administration in the ANR sector. ADB should conduct review missions more regularly for ANR projects, ensuring that missions are of appropriate frequency and duration, particularly for complex ANR projects. If resources are not available, the scope of ADB's ANR activities should be scaled back accordingly. Delegation of responsibilities and provision of resources to LRM for project administration should also be considered.	MKRD
(v) **Within 12 months, ADB and the Government will review the performance of ongoing projects such that mid-course actions can be taken to improve the probability of achieving development results.** This review will take into account the findings of the case studies presented in this report. In particular, the review should (a) examine options to increase the economic efficiency of irrigation projects; (b) assess the development costs of community-managed irrigation schemes, reexamine the heavy reliance on contractors, and promote greater	MKRD

community engagement and self-reliance to find more cost-effective ways of delivering assistance; (c) assess the existing policy and procedures for IMT and the rules for ISF; (d) examine options to use the SDP more strategically to address commercial impediments and improve the marketing of agricultural crops of other ADB-financed ANR projects; and (e) analyze the piloting experience of ongoing projects and TAs, and develop a strategy to increase synergies among them.	
(vi) **ADB should strengthen ex-ante project economic analysis of ANR projects in the Lao PDR to recognize realistic assumptions and risks.** This will avoid unrealistic assumptions as encountered, for example, with past irrigation projects, and will reduce the risk of ADB financing projects that are not viable.	MKRD

ADB ASSISTANCE (APPROVED DURING 1986–2004) TO LAO PDR IN THE AGRICULTURE AND NATURAL RESOURCES SECTOR
as of 31 December 2004

Table A1.1: Loans to the Agriculture and Natural Resources Sector

	Loan Number	Project Title	Loan Amount ($ million) Approved	Loan Amount ($ million) Actual [a]	Approval Date	Closing Date [b]	Status	Performance Rating PCR	Performance Rating PPAR
1	0965	Agriculture Program	20.0	21.9	3-Aug-89	28-Jun-91	Closed	NR	PS[c]
2	1180	Second Agriculture Program	30.0	28.8	8-Oct-92	9-Aug-95	Closed	PS[d]	PS[d]
3	1295	Industrial Tree Plantation Project	11.2	10.0	22-Dec-93	21-Oct-05	Completed	U	—
4	1488	Community-Managed Irrigation Sector Project	14.7	13.0	21-Nov-96	5-Oct-04	Completed	—[e]	—
5	1688	Shifting Cultivation Stabilization Pilot Project[f]	5.6	5.6	11-May-99	31-Dec-05	Ongoing	—	—
6	1788	Decentralized Irrigation Development and Management Sector Project	15.5	15.5	28-Nov-00	30-Jun-07	Ongoing	—	—
7	1933	Nam Ngum River Basin Development Sector Project	15.0	15.0	11-Nov-02	31-Mar-09	Ongoing	—	—
8	1949	Smallholder Development Project	12.0	12.0	28-Nov-02	31-Oct-09	Ongoing	—	—
9	2086	Northern Community-Managed Irrigation Sector Project	10.0	10.0	5-Jul-04	30-Apr-11	Ongoing	—	—
		Total	**134.0**	**131.8**					

— = not available/none prepared, NR = no rating, PCR = project completion report, PPAR = project performance audit report, PS = partly successful, U = unsuccessful.

[a] For ongoing loans, actual loan amount shown refers to the loan amount approved.

[b] For ongoing loans, closing dates refer to the dates as shown in ADB's Loan Financial Information System.

[c] The PPAR (December 1993) did not provide a performance rating. Subsequently, a memo dated 8 June 2000 of the Operations Evaluation Office rated this program as partly successful.

[d] Ratings were based on past guidelines with three categories of performance rating.

[e] PCR preparation is scheduled for 2006.

[f] The project is classified as Multisector. The project scope includes (i) institutional strengthening and capacity building, (ii) diversified sedentary farming systems development, (iii) village-based development, (iv) rural infrastructure development, and (v) project management, which are closely related to the agriculture and natural resources sector.

Source: Relevant ADB databases.

Table A1.2: Technical Assistance to the Agriculture and Natural Resources Sector Approved During 1986–2004)

	TA No.	Project Name	New Sector/Subsector Classification as of December 2004	Amount					Approval Date	TCR Rating
				TASF	JSF	Other	Source	Total		
Agricultural Support Services										
1	1134	Agricultural Research	AG/3001	0	0	1,115,000	UNDP	1,115,000	3-Mar-89	NE[a]
2	1188	Improvement of Agricultural Statistics	AG/3008	170,000	0	0		170,000	3-Aug-89	S[a]
3	1190	Study of National Agriculture Manpower and National Extension Service	AG/3001	178,000	0	0		178,000	3-Aug-89	NE[a]
4	1191	Study of National Crop Development and Seed/Planting Material Multiplication	AG/3008	153,000	0	0		153,000	3-Aug-89	NE[a]
5	1192	Pesticides and Environmental Control	AG/3008	80,000	0	0		80,000	3-Aug-89	NE[a]
6	1279	Agriculture Sector Third Five-Year Plan Programming		380,000	0	0		380,000	19-Mar-90	S[a]
7	1745	Institutional Development and Strengthening of the Ministry of Agriculture and Forestry	AG/3008	690,000	600,000	0		1,290,000	18-Aug-92	
8	2011	Study to Evaluate the Impact of Agriculture Program Lending	AG/3008	578,000	0	0		578,000	10-Dec-93	PS[b]
9	2029	Institutional Support to Agricultural Promotion Bank	AG/3004	450,000	0	0		450,000	22-Dec-93	
10	2333	Institutional Development and Strengthening of the Ministry of Agriculture and Forestry (Phase II)	LW/3601	597,000	0	0		597,000	22-May-95	GS
11	2883	Agriculture Strategy Study	AG/3008	0	600,000	0		600,000	30-Sep-97	PS
12	3205	Implementation of the Water Sector Action Plan	AG/3007	300,000	0	0		300,000	9-Jun-99	GS
13	3403	Towards Implementation of the Agriculture Strategy	AG/3008	100,000	0	0		100,000	11-Feb-00	
14	3413	Rural Finance Development (TA Cluster)	FI/3304	2,020,000	0	0		2,020,000	9-Mar-00	
15	4005	Agribusiness Support and Training	AG/3001	250,000	0	0		250,000	28-Nov-02	
16	4392	Marketing Support for Organic Produce of Ethnic Minorities	AG/3001	0	0	600,000	PRF	600,000	17-Sep-04	
17	9012	Supporting the Community-Managed Livelihood Improvement Project	AG/3008	0	0	1,000,000	JFPR	1,000,000	18-Dec-01	
18	9034	Reducing Poverty Among Ethnic Minority Women in the Nam Ngum Basin	MS	0	0	530,000	JFPR	530,000	12-Nov-03	
		Subtotal		**5,946,000**	**1,200,000**	**3,245,000**		**10,391,000**		
Forestry										
19	815	Management Reorganization and Strengthening of the Lao Wood Industries Corporation	IN/3502	299,000	0	0		299,000	7-Nov-86	
20	1156	Tropical Forestry Action Plan	AG/3004	75,000	0	0		75,000	12-May-89	S[a]
		Tropical Forestry Action Plan (Supplementary)		25,000	0	0		25,000	31-Jan-90	
21	1262	Second Forestry Development (Institutional Support)	AG/3004	346,000	0	554,000	UNDP	900,000	28-Dec-89	

AG = agriculture and natural resources; FI = finance; GS = generally successful; IN = industry and trade; JFPR = Japan Fund for Poverty Reduction; JSF = Japan Special Fund; LW = law, economic management, and public policy; MS = multisector; NE = not explicit; No. = number; PCR = project completion report; PRF = Poverty Reduction Cooperation Fund; PS = partly successful; S = successful; TA = technical assistance; TASF = TA Special Fund; TCR = TA completion report; UNDP = United Nations Development Programme.

Note: Sub-sector Codes

3001	Agriculture production, agroprocessing and agribusiness	3304	Microfinance
3004	Forest	3601	National government administration
3007	Water resource management		
3008	Agriculture sector development		

[a] As provided in the PCR of Loan 965-LAO(SF).

[b] As provided in the PCR of Loan 1180-LAO(SF).

Source: Relevant ADB databases.

Continued on next page

Table A1.2: Technical Assistance to the Agriculture and Natural Resources Sector Approved During 1986–2004) *Continued*

	TA No.	Project Name	New Sector/Subsector Classification as of Dec 2004	Amount					Approval Date	TCR Rating
				TASF	JSF	Others	Sources	Total		
22	2028	Institutional Support to Department of Forestry	AG/3004	0	1,550,000	0		1,550,000	22-Dec-93	S
23	4434	Poverty Reduction through Land Tenure Consolidation, Participatory Natural Resources Management, and Local Communities Skills Building	AG/3004	0	0	850,000	PRF	850,000	17-Nov-04	
		Subtotal		**745,000**	**1,550,000**	**1,404,000**		**3,699,000**		
Irrigation and Rural Development										
24	1189	Review of the Irrigation Subsector	AG/3005	132,000	0	0		132,000	3-Aug-89	NE[a]
25	1764	Strengthening and Restructuring Irrigation Development	AG/3005	893,000	0	0		893,000	8-Oct-92	
		Strengthening and Restructuring Irrigation Development (Supplementary)		0	0	1,665,000	Netherlands	1,665,000	13-Dec-93	
26	3006	Institutional Strengthening of the Water Resources Coordination Committeee	AG/3007	0	260,000	0		260,000	15-Apr-98	GS
		Subtotal		**1,025,000**	**260,000**	**1,665,000**		**2,950,000**		
Livestock										
27	1277	Livestock Sector Policy Development and Industry Restructuring	AG/3006	100,000	0	0		100,000	14-Mar-90	S[a]
28	4406	Capacity Building for Smallholder Livestock Systems in Lao PDR	AG/3006	0	0	550,000	PRF	550,000	11-Oct-04	
		Subtotal		**100,000**	**0**	**550,000**		**650,000**		
Multisector and Others (Closely related to Agriculture and Natural Resources sector.)										
29	759	Southern Area Development Master Plan Study	MS	150,000	0	600,000	UNDP	750,000	13-Mar-86	
30	2329	Strengthening Environmental Planning and EIA Capacity	AG/3002	0	599,000	0		599,000	10-May-95	
31	2734	Nam Ngum Watershed Management	AG/3007		800,000	400,000	Denmark	1,200,000	23-Dec-96	GS
32	4339	Study of Gender Inequality in Women's Access to Land, Forests, and Water	HL/3405	0	0	250,000	PRF	250,000	20-May-04	
		Subtotal		**150,000**	**1,399,000**	**1,250,000**		**2,799,000 0**		
		Total		**7,966,000**	**4,409,000**	**8,114,000**		**20,489,000 0**		

AG = agriculture and natural resources; EIA = environmental impact assessment; GS = generally successful; HL = health, nutrition, and social protection; JFPR = Japan Fund for Poverty Reduction; JSF = Japan Special Fund; Lao PDR = Lao People's Democratic Republic; MS = multisector; NE = not explicit; No. = number; PRF = Poverty Reduction Cooperation Fund; S = successful; TA = technical assistance; TASF = TA Special Fund; TCR = TA completion report; UNDP = United Nations Development Programme.

Note: Sub-sector Codes

3002 Environment and biodiversity
3004 Forest
3005 Irrigation and drainage
3006 Livestock
3007 Water resource management
3405 Social protection

[a] As provided in the PCR of Loan 965-LAO(SF).

[b] As provided in the PCR of Loan 1180-LAO(SF).

Source: Relevant ADB databases.

Table A1.3: Project Preparatory Technical Assistance to the Agriculture and Natural Resources Sector (Projects Approved Since 1986 and in the Pipeline)

	TA No.	Project Name	New Sector/Subsector Classification as of December 2004	Amount				Approval Date
				TASF	JSF	Other	Total	
Agricultural Support Services								
1	1765	National Integrated Extension and Research Program	AG/3001	410,000	0	0	410,000	8-Oct-92
2	2779	Shifting Cultivation Stabilization (preparation for L1688-LAO)	AG/3008	0	600,000	0	600,000	15-Apr-97
3	3603	Smallholder Development Project (preparation for L1949-LAO)	AG/3001	0	750,000	0	750,000	20-Dec-00
Forestry								
4	1418	Third Forestry Development (preparation for L1295-LAO)	AG/3004	0	320,000	0	320,000	15-Nov-90
5	3794	Tree Plantation for Livelihood Improvement	AG/3004	0	700,000	0	700,000	12-Dec-01
6	4419	Preparing the Forest Plantation Sector	AG/3004	150,000	0	0	150,000	26-Oct-04
		Preparing the Forest Plantation Sector (supplementary)		120,000	0	0	120,000	20-Dec-04
Irrigation and Rural Development								
7	2447	Small-Scale Community-Managed Irrigation Sector (preparation for L1488-LAO)	AG/3005	0	530,000	0	530,000	20-Nov-95
8	3189	Irrigation Management Transfer (preparation for L1788-LAO)	AG/3005	0	650,000	0	650,000	27-Apr-99
9	3544	Nam Ngum River Basin Development (preparation for L1933-LAO)	AG/3007	0	850,000	0	850,000	14-Nov-00
10	3718	Northern Community-Managed Irrigation Sector (preparation for L2086-LAO)	AG/3005	0	700,000	0	700,000	11-Sep-01
Livestock								
11	4287	Participatory Livestock Development	AG/3006	0	900,000	0	900,000	18-Dec-03
		Total		**680,000**	**6,000,000**	**0**	**6,680,000**	

AG = agriculture and natural resources, JSF = Japan Special Fund, No. = number, TA = technical assistance, TASF = TA Special Fund.

Note: Sub-sector Codes

- 3001 Agriculture Production, agroprocessing and agribusiness
- 3004 Forest
- 3005 Irrigation and drainage
- 3006 Livestock
- 3007 Water resource management
- 3008 Agriculture sector development

Source: Relevant ADB databases.

Table A1.4: Regional Technical Assistance under the Greater Mekong Subregion Program to the Agriculture and Natural Resources Sector

	TA No.	Title	Amount ($'000)	Source	Approval Date	TCR Rating
1	5557	Regional Conference for Biodiversity Conservation	200.0	TASF	10-Dec-93	S
2	5582	Workshop on Vegetable Workshop Research and Development in Cambodia, Lao PDR, and Viet Nam	94.5	TASF	6-Jun-94	GS
3	5680	Establishment of a Vegetable Research Network for Cambodia Lao PDR and Viet Nam	600.0	TASF	8-Apr-96	GS
4	5822[a]	Protection and Management of Critical Wetlands in the Lower Mekong Basin	1,650.0	JSF Finland	22-Dec-98	PS
5	5866[b]	Developing Sustainable Forage Technologies for Resource-Poor Upland Farmers in Asia	1,200.0	TASF	14-Oct-99	HS
6	6011	Strengthening the Collaborative Vegetable Research Network in Cambodia, Lao PDR, and Viet Nam (Phase II)	650.0	JSF	17-Dec-01	—
7	6034	Study on Subregional Issues in the Agriculture Sector in the Greater Mekong Subregion	150.0	TASF	31-May-02	NR
8	6067[c]	Improving Livelihoods of Upland Farmers Using Participatory Approaches to Develop More Efficient Livestock Systems	950.0	TASF	6-Dec-02	—
9	6067[c]	Promoting Utilization of Indigenous Vegetables for Improved Nutrition of Resource-Poor Households in Asia	1,000.0	TASF	6-Dec-02	—
10	6110	Promoting Partnerships to Accelerate Agriculture Development and Poverty Reduction in the Greater Mekong Subregion	300.0	TASF	9-Jun-03	—
11	6115	Poverty Reduction in Upland Communities in the Mekong Region through Improved Community and Industrial Forestry	800.0	PRF	4-Aug-03	—
12	6149	Support for the Mekong River Commission Flood Management and Mitigation Program	1,000.0	TASF	16-Dec-03	—
13	6136[d]	Integrating and Mobilizing Rice Knowledge to Improve and Stabilize Crop Productivity to Achieve Household Food Security in Diverse and Less Favorable Rain-fed Areas of Asia	900.0	TASF	11-Nov-03	—
14	6192	Transboundary Animal Disease Control in the GMS	1,000.0	TASF	11-Oct-04	—
		Total	**10,494.5**			

— = not yet due, CGIAR = Consultative Group on International Agricultural Research, GMS = Greater Mekong Subregion, GS = generally successful, HS = highly successful, JSF = Japan Special Fund, No. = number, NR = not required, PDR = People's Democratic Republic, PRF = Poverty Reduction Cooperation Fund, PS = partly successful, S = successful, TA = technical assistance, TASF = TA Special Fund, TCR = TA completion report.

a Included in ADB. 1999. *Impact Evaluation Study of Asian Development Bank's Program of Subregional Economic Cooperation in the Greater Mekong Subregion*. *Manila*.

b TA 5866-REG: Fourth Agriculture and Natural Resources Research at CGIAR Centers.

c TA 6067-REG: Seventh Agriculture and Natural Resources Research at International Agriculture Research Centers.

d TA 6136-REG: Eight Agriculture and Natural Resources Research at International Agriculture Research Centers.

Source: Relevant ADB databases.

COUNTRY INDICATORS

Table A2.1: Country Economic Indicators

(1987–2004)

Item	1987	1990	1995	1996	1997	1998
A. Income and Growth						
1. GDP per Capita ($, current prices)	—	—	377.0	395.0	364.0	263.0
2. GDP (Kn billion, current factor cost)	160.9	612.7	1,419.1	1,725.7	2,200.7	4,240.2
Agriculture	91.9	371.8	767.6	891.1	1,138.6	2,226.9
Industry	22.3	88.1	265.3	351.7	454.0	940.4
Services	46.3	147.4	357.9	442.0	564.3	1,011.5
3. Sector Shares (% of GDP, current)						
Agriculture	57.3	61.2	55.2	52.9	52.8	53.3
Industry	13.9	14.5	19.1	20.9	21.0	22.5
Services	28.9	24.3	25.7	26.2	26.2	24.2
4. GDP Growth (%, constant prices)	(1.1)	6.7	7.0	6.9	6.9	4.0
Agriculture	(1.2)	8.7	3.1	2.8	7.0	3.1
Industry	(16.0)	16.2	13.1	17.3	8.1	9.2
Services	8.0	(0.4)	10.2	8.5	7.5	5.5
B. Savings and Investment (% GDP, market prices)						
1. Gross Domestic Investment [a]	—	—	24.5	29.0	26.2	24.7
2. Gross National Savings[a]	—	—	11.5	12.4	10.0	14.8
C. Money and Inflation (annual % change)						
1. Consumer Price Index						
Country[b]	—	35.6	19.4	13.0	19.3	87.4
Vientiane	—	—	19.6	13.0	13.0	95.8
2. Food Price Index [c]	—	—	—	—	—	92.7
3. Money Supply (M2)	308.7	7.8	16.4	26.7	65.8	113.3
D. Government Finance (% of GDP)						
1. Total Revenue	12.5	9.9	11.4	12.6	10.4	8.9
2. Total Expenditure	18.3	23.4	20.4	21.7	18.7	20.0
3. Overall Fiscal Balance (excluding grants)	—	—	(9.7)	(9.1)	(8.8)	(12.9)
E. Balance of Trade Payments						
1. Trade Balance ($, Mn)	(152.0)	(106.0)	(281.0)	(372.0)	(335.0)	(216.0)
2. Merchandise Exports ($, Mn)	64.0	79.0	308.0	317.0	313.0	337.0
3. Merchandise Imports ($, Mn)	216.0	185.0	589.0	690.0	648.0	553.0
4. Trade Balance ($) Growth (annual % change)	(16.5)	18.9	(6.6)	(32.4)	10.0	35.6
5. Merchandise Exports ($) Growth (annual % change)	16.2	24.8	2.4	3.1	(1.4)	7.7
6. Merchandise Imports ($) Growth (annual % change)	16.4	(4.6)	4.4	17.1	(6.0)	(14.7)
7. Merchandise Exports (% of GDP)			17.3	16.9	17.9	26.2
8. Merchandise Imports (% of GDP)			33.1	36.8	37.1	43.0
9. Current Account Balance (% of GDP)	(13.9)	(9.6)	(7.5)	(12.3)	(10.2)	(2.6)
10. Exports by Principal Commodity ($ Mn)						
a. Wood products[d]	32.9	25.9	88.3	124.6	89.7	115.4
b. Electricity	13.7	19.2	24.2	29.7	20.8	66.5
c. Coffee	9.5	8.6	21.3	25.0	19.2	48.0
d. Garments	—	—	76.7	64.1	90.5	70.2
F. External Payments						
1. Gross Official Reserves ($ Mn)	21.2	2.4	92.7	170.1	112.8	112.8
2. External Debt Service (% of exports of goods and services)	—	—	5.7	5.9	7.3	9.6
3. Total External Debt (% of GDP)	—	—	—	116.8	132.9	210.7
4. SDRs ($ Mn)	—	0.0	14.1	10.3	12.6	6.1
5. Foreign Exchange ($ Mn)	20.6	1.8	78.0	159.2	99.6	106.1
G. Memorandum Items						
1. GDP per Capita (Kn '000)	42.0	148.0	308.0	366.0	456.0	854.0
2. Exchange Rate (Kn/$, average)	188.0	708.0	805.0	921.0	1,260.0	3,298.0
3. Population (Mn)	3.8	4.1	4.6	4.7	4.8	4.9

— = not available, CSP = country strategy and program, GDP = gross domestic product, Kn = Kip, Mn = million, SDR = special drawing rights.

[a] Figures sourced from 1995–1996 (ADB Country Economic Review,1998); 1997–1999 (ADB Country Strategy Program, 2001); 2000–2004 (ADB Country Strategy Program Update, 2005).

[b] 1990 figures from ADB Outlook 1996/97, 1995–1998 from various CSP(2001) and CSP (2002–2005) update reports.

[c] Based on country.

[d] Includes timber. From 1991 onward, item refers to logs, timber, and other wood products.

Sources: ADB. 2005. *Key Indicators.* Manila; Various Lao PDR Country Strategy Program Updates (2001–2005); ADB Outlook 2005. (Available: http://www.adb.org/Documents/Books/ADO/2005/default.asp); ADB. 1998.Country Economic Review. Manila; Country Assistance Program Evaluation Mission estimates.

Continued on next page

Table A2.1: Country Economic Indicators—*Continued*

Item	1999	2000	2001	2002	2003	2004
A. Income and Growth						
1. GDP per Capita ($, current prices)	285.0	335.0	333.0	326.0	351.0	402.0
GDP (Kn billion, current)	10,328.6	13,672.3	15,704.9	18,390.4	22,536.1	24,621.0
Agriculture	5,507.5	7,127.4	7,974.6	9,173.5	10,828.8	—
Industry	2,320.7	3,105.6	3,687.4	4,498.5	5,782.5	—
Services	2,425.4	3,332.6	3,902.0	4,546.8	5,684.8	—
2. Sector Shares (% of GDP, current)						
Agriculture	53.7	52.5	51.2	50.4	48.6	47.2
Industry	22.6	22.9	23.7	24.7	25.9	26.6
Services	23.7	24.6	25.1	25.0	25.5	26.2
3. GDP Growth (%, constant prices)	7.3	5.8	5.8	5.8	5.8	6.5
Agriculture	8.2	4.9	3.8	4.0	2.2	3.5
Industry	8.0	8.5	10.1	10.1	11.5	11.4
Services	6.7	4.9	5.7	5.6	7.5	7.3
B. Savings and Investment (% GDP, market prices)						
1. Gross Domestic Investment[a]	22.7	20.5	21.0	21.2	21.2	22.0
2. Gross National Savings[a]	13.8	12.2	14.1	15.6	18.7	—
C. Money and Inflation (annual % change)						
1. Consumer Price Index						
Country[b]	134.0	8.4	7.8	10.7	15.5	10.6
Vientiane	139.7	20.5	12.3	13.0	16.9	—
2. Food Price Index[c]	118.9	—	6.7	9.6	15.2	—
3. Money Supply (M2)	78.3	45.9	20.1	27.0	19.2	21.3
D. Government Finance (% of GDP)						
1. Total Revenue	9.0	12.4	12.6	13.4	11.0	11.9
2. Total Expenditure	16.6	18.4	20.2	21.7	18.8	16.7
3. Overall Fiscal Balance (excluding grants)	(9.0)	(8.3)	(7.5)	(8.3)	(7.8)	(4.8)
E. Balance of Payments						
1. Trade Balance ($, Mn)	(253.0)	(205.0)	(191.0)	(146.0)	(127.0)	(145.0)
2. Merchandise Exports ($, Mn)	302.0	330.0	320.0	301.0	336.0	361.0
3. Merchandise Imports ($, Mn)	554.0	535.0	510.0	447.0	462.0	506.0
4. Trade Balance ($) Growth (annual % change)	(17.0)	18.9	6.9	23.3	13.5	(14.4)
5. Merchandise Exports ($) Growth (annual % change)	(10.5)	9.6	(3.3)	(5.9)	11.6	7.6
6. Merchandise Imports ($) Growth (annual % change)	0.3	(3.4)	(4.7)	(12.4)	3.4	9.5
7. Merchandise Exports (% of GDP)	20.8	19.1	18.2	16.4	16.4	15.5
8. Merchandise Imports (% of GDP)	38.2	30.9	29.1	24.4	22.6	21.8
9. Current Account Balance (% of GDP)	(5.2)	(0.5)	(3.2)	0.2	(1.2)	—
10. Exports by Principal Commodity ($ Mn)						
a. Wood products[d]	54.9	72.9	78.6	70.8	63.9	67.0
b. Electricity	90.5	112.2	106.4	103.6	91.0	97.0
c. Coffee	15.2	12.1	14.9	8.5	10.2	13.5
d. Garments	65.5	91.6	98.7	100.3	90.9	97.0
F. External Payments						
1. Gross Official Reserves ($ Mn)	105.3	139.6	133.5	194.1	212.7	227.3
2. External Debt Service (% of exports of goods and services)	6.3	5.7	7.8	8.9	6.8	9.4
3. Total External Debt (% of GDP)	195.5	83.2	82.7	88.8	104.0	93.9
4. SDRs ($ Mn)	0.1	0.1	3.4	6.1	19.1	15.4
5. Foreign Exchange ($ Mn)	101.1	138.9	127.5	185.5	189.5	207.9
G. Memorandum Items						
1. GDP per Capita ('000 Kn)	2,029.0	2,613.0	2,921.0	3,328.0	3,968.0	—
2. Exchange Rate (Kn/$, average)	7,102.0	7,888.0	8,955.0	10,056.0	10,569.0	10,586.0
3. Population (million)	5.1	5.2	5.3	5.4	5.7	5.8

— = not available, CSP = country strategy and program, GDP = gross domestic product, Kn = Kip, Mn = million, SDR = special drawing rights.

[a] Figures sourced from 1995–1996 (ADB Country Economic Review,1998); 1997–1999 (ADB Country Strategy Program, 2001); 2000–2004 (ADB Country Strategy Program Update, 2005).

[b] 1990 figures from ADB Outlook 1996/97, 1995–1998 from various CSP(2001) and CSP (2002–2005) update reports.

[c] Based on country.

[d] Includes timber. From 1991 onward, item refers to logs, timber, and other wood products.

Sources: ADB. 2005. *Key Indicators.* Manila; Various Lao PDR Country Strategy Program Updates (2001–2005); ADB Outlook 2005 (Available: http://www.adb.org/Documents/Books/ADO/2005/default.asp); ADB. 1998. Country Economic Review. Manila; Country Assistance Program Evaluation Mission estimates.

Table A2.2: Country Social and Poverty Indicators

Item	Period					
	Late 80s–Early 90s		Mid–Late 90s		2000s	
A. Population Indicators						
1. Population (in million)	4.1	(1990)	4.8	(1995)	5.8	(2004)
2. Annual Population Growth Rate (% change)	2.5	(1990)	2.6	(1995)	2.8	(2004)
B. Social Indicators						
1. Total Fertility Rate (births per woman)	6.0	(1990)	5.3	(1995)	4.8	(2002/03)
2. Maternal Mortality Rate (per 100,000 live births)	750	(1988)	650	(1998)	530.0	(2000)
3. Infant Mortality Rate (below 1 year per 1,000 live births)	118.0	(1985-88)	104.0	(1995)	87.0	(2002/03)
4. Life Expectancy at Birth (years)	45.0	(1985-88)	49.7		54.5	(2002/03)
Male			48.5		53.3	(2002/03)
Female	46.0	(1985-88)	51.0		55.8	(2002/03)
5. Adult Literacy Rate (%)	44.0	(1985-88)	60.2	(1995)	70.0	(2000)
Male		—	73.5	(1995)	85.0	(2002/03)
Female		—	47.9	(1995)	64.0	(2002/03)
6. Primary Gross Enrollment Ratio[a] (%)	104.8	(1991)	—		72.0	(2000)
Female	93.3	(1991)	—			—
7. Lower Secondary School Gross Enrollment Ratio (%)	31.8	(1991)	—		76.0	(2002/03)
Female	25.7	(1991)	—			—
8. Child Malnutrition (% of children under 5 years)	34.0	(1990)	—		15.0	(2001/02)
9. Population below Poverty Line (%)	45.0	(1992/93)	38.6	(1997/98)	32.7	(2002/03)
10. Population with Access to Safe Water[b](%)	28.0	(1990/91)	—		43.0	(2004)
11. Population with Access to Sanitation[b](%)	24.0	(1990/91)	—		51.0	(2002/03)
12. Public Education Expenditure (% of GDP)	1.9	(1991)	—		1.1	(2001/02)
13. Human Development Index	0.450	(1990)	0.487	(1995)	0.545	(2003)
Ranking[d]			—		133rd	
14. Gender Related Development Index		—	—		0.528	(2001)
Ranking		—	—		109th	out of 144
C. Poverty Indicators						
1. Poverty Incidence (% of population)	45.0	(1992/93)	38.6	(1997/98)	32.7	(2002/03)
2. Percent Poor to Total Population						
a. Vientiane Municipality	24.4	(1992/93)	—		26.2	(2002/03)
b. Northern Region	58.4	(1992/93)	—		35.5	(2002/03)
c. Central Region	39.5	(1992/93)	—		35.8	(2002/03)
d. Southern Region	45.9	(1992/93)	—		30.8	(2002/03)
3. Poverty Gap Index	11.3	(1992/93)	10.3	(1997/98)		
4. Poverty Severity Index	4.2	(1992/93)	4.0	(1997/98)		
5. Inequality[c]	28.6	(1992/93)	35.7	(1997/98)		
6. Human Poverty Index		—	—		40.3	(2002)
Rank		—	—		66th	out of 94

— = not available/no data.

[a] Gross enrollment ratio (GER) is defined as the number of students enrolled in a level of education, whether or not they belong to the age group for that level, expressed as a percentage of the population in the age group 6–10 years for primary school, 11–13 years for lower secondary school, and 14–16 years for upper secondary school.

[b] Percentage of population with reasonable access to sanitary means of excreta and waste disposal, including outdoor latrines and composting.

[c] Refers to Gini Index. The Gini Index refers to inequality in per capita real consumption, which takes into account differences in the cost of living and changes in monthly consumer prices.

[d] Out of 177 countries.

Sources: Various Lao PDR Country Strategy Program Updates (2002–2004).
ADB. 2005. Key Indicators. Manila; UNDP. 2005. Human Development Report. New York.

AN EVALUATION SYNTHESIS ON RICE IN THE LAO PDR

A. Introduction

1. This appendix reviews the development in the rice sector in the Lao People's Democratic Republic (Lao PDR) since the introduction of the New Economic Mechanism (NEM) in 1986, including (i) the importance of rice in the current cultural, social, and economic context; (ii) rice production systems, highlighting characteristics of the rice-growing areas; (iii) constraints facing rice farmers; (iv) research conducted and technologies developed to address these constraints; (v) pattern of growth in rice production; and (vi) future priorities for further rice development.

2. Since the NEM, the country has experienced a steady increase in the national output and improvements in the general standard of living. Policy changes in the agriculture sector have contributed to the economic growth and improvements in welfare.[1] The current strategic objectives for agricultural development are to improve rural livelihoods, reduce vulnerability of poor households, create opportunities for diversifying livelihoods, and maintain environmental quality in rural areas.[2] Increased rice production and improved access of the poor to rice contribute directly to achieving these objectives. Increasing rice production to achieve self-sufficiency at the national level and to generate exportable surplus is one of the eight priority programs in the country.[3] Rice production in the Lao PDR increased by 75% from 1.4 million tons (t) in 1986 to 2.5 million t in 2004.[4] Strengthening of agricultural research and extension systems, implementation of supportive agricultural policies, and increased public sector investments in irrigation are the major factors that have contributed to the rapid increase in production.

B. Current Rice Situation in the Lao PDR

3. **Significance of Rice in Lao Culture.** As the staple food, rice has cultural and religious significance. There are many traditions and rituals associated with rice production in different environments, and among many ethnic groups. For example, *Khamu* farmers in Luangprabang consider popularly planted rice varieties as the "father" and the "mother" varieties. *Khao Kam* is a "father" variety, late maturing glutinous (sticky) black rice. It is a special-purpose variety planted in small quantities near the hut in memory of dead parents, and also at the edge of the rice field to indicate that parents are still alive. *Khao Chao Leuang* is a "mother" variety. It is nonglutinous rice valued for consumption when the rice supply is lean, and for making noodles.[5]

4. **Biodiversity of Rice.** Centuries of farmers' selection and seed exchanges among different ethnic groups have resulted in the development of an amazing diversity of traditional rice varieties in the Lao PDR. Some rice varieties are glutinous and some nonglutinous, with colors such as black, purple, red, and white. Farmers commonly plant three or four varieties—typically a combination of one early, one medium, and one or two late-maturing varieties—to provide the continuity in their food supply.

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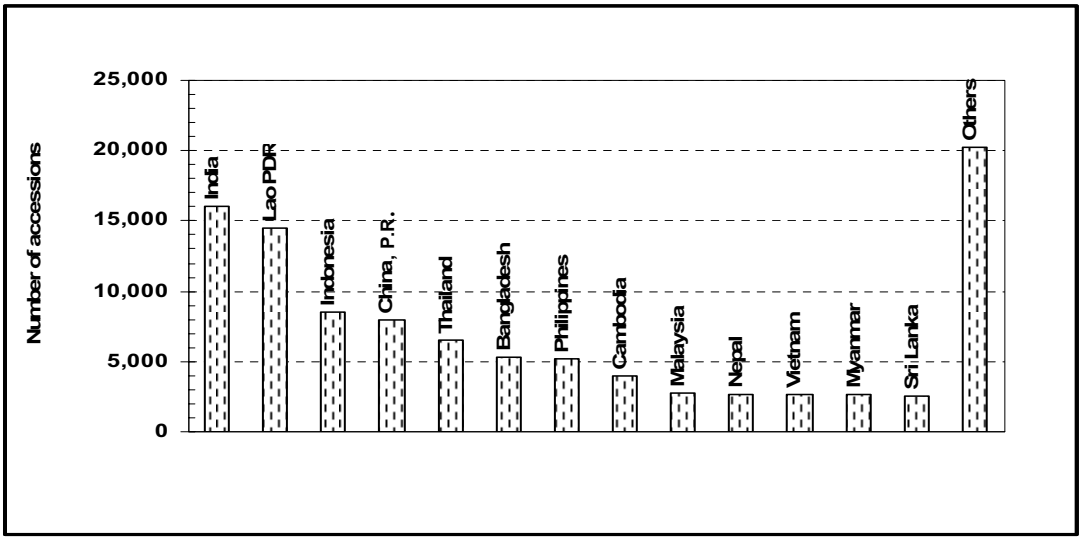
1 Government of the Lao PDR. 2004. *Northern Region Development Strategy Volume II*: NRDS. Vientiane.
2 Ministry of Agriculture and Forestry (MAF) and Japan International Cooperation Agency. 2001. *Master Plan Study on Integrated Agricultural Development in the Lao PDR*. Vientiane.
3 United Nations Development Program. 2002. *National Human Development Report Lao PDR 2001*. Vientiane.
4 Rice data released by MAF has been used for analyzing the rice sector.
5 International Rice Research Institute (IRRI). 2005. *Lao PDR Rice Biodiversity Project (Phase 2).* Progress Report submitted to the Swiss Agency for Development and Cooperation. Los Baños.

5. The Lao PDR has one of the highest degrees of biodiversity of rice in the world, and it appears to be the center of biodiversity for glutinous rice. Since the early 1990s, more than 13,500 rice samples have been collected, of which 85% are glutinous types. These samples represent more than 3,000 rice varieties. These resources are conserved in the country, and in the International Rice Genebank at the International Rice Research Institute (IRRI), which holds the world's most comprehensive collection of rice genetic resources. The Lao PDR's contribution to the International Rice Genebank ranks the second highest (Figure A3.1). Indigenous knowledge of the traditional rice varieties have also been collected and catalogued.

Figure A3.1: Origin of the Germplasm in the International Rice Genebank



Source: IRRI. 2005. *Genetic Resources*. Los Banos: IRRI.
Available: <http://irriwww1/irrihome/GRC/GRCHome/Home.htm>.

6. **Significance as Food and Self-Sufficiency.** Access to rice is the single most important factor determining the welfare status of the Lao people in rural areas. Lao people consume 171 kilograms per capita of milled rice per annum, which constitutes almost 70% of their calorie and protein intake.[6] Self-sufficiency in rice is equated with self-sufficiency in food in The Lao PDR. Achieving self-sufficiency in rice at the national level has been a top priority goal for the country since the introduction of the NEM. Rice self-sufficiency was reported to have been achieved in 1999 at more than 2 million t. However, opinions among observers vary on the extent to which the country has achieved rice self-sufficiency.

7. Irrespective of the achievement of rice self-sufficiency at the national level, various studies indicate that not all households are able to meet their rice consumption requirements. According to the United Nations World Food Program, about 30% of the population has insufficient food for more than 6 months of the year. Chronic malnutrition is reported to be high, affecting up to 47% of the population. Much of the severe deficiency occurs in the Northern and Eastern mountainous regions, while surplus areas are mostly along the Mekong River valleys.[7] The Asian Development Bank (ADB) estimated that poor households were able to meet their rice requirements for about 7 months per year on average.[8] Furthermore, annual rice production

[6] Maclean, J.L., D.C. Dawe, B. Hardy, and G.P. Hettel. 2002. Rice Almanac. Los Baños: IRRI.
[7] UNWFP. 2005. *World Hunger Laos.* Available: <http://www.wfp.org/country_brief/indexcountry.asp?country=418>.
[8] Asian Development Bank. 2001. *Participatory Poverty Assessment in the Lao PDR*. Manila.

remains unstable, as much of the rice is produced under rain-fed conditions. Climatic factors account for at least 10% of the annual variability in rice production.[9]

8. **Future Rice Demand and Supply.** The demand for rice is expected to grow substantially, as the population is currently growing at 2.5% per annum—the highest in the region. At this rate of growth, the population is expected to increase from 5.3 million in 2000 to 8.8 million in 2020, an increase of 66% (footnote 2). Furthermore, in low-income countries, improvements in income generally lead to an increase in per capita consumption of rice. At the current rate of population growth, and assuming the current rate of rice consumption per capita, the total demand for rice will increase to 3.6 million t by 2020. This will require an additional one million t of rice production annually. Assuming that the total rice area does not increase, the productivity of rice will have to increase to 4.7 tons per hectare (t/ha) at the national level by 2020 to maintain self-sufficiency

9. **Subsistence and Market Orientation of Rice Production.** Rice production in the country is subsistence-oriented. It is produced mainly by small farm households that have an average farm size of less than 2 ha. Although rice production is the single most important economic activity, accounting for 39% of agricultural gross domestic product, very little rice is currently marketed. The Lao Expenditure and Consumption Survey (LECS)[10] conducted in the late 1990s estimated that, on average, only 8% of the rice produced is sold. Compared with the national average, farm communities closer to urban areas sell more rice (by about 10%). It is believed that domestic and international trade in rice has also increased with the increase in production in recent years. Although, there is no recent comprehensive study documenting border trade of rice, there is anecdotal evidence that the rice trade has flourished along the border with the People's Republic of China (PRC) and Thailand.

C. Characteristics of Rice Production Systems

10. **Regional Distribution.** Rice cultivation covers more than 80% of the total cropped area. Rice is grown in all regions of the country. The Central Region accounts for more than half of the total rice area (51%) and production (55%). Savannakhet Province, located in this region, has the largest rice area of all provinces, and it accounts for over 20% of national production. Vientiane (including the municipality) and Khammuane also have large rice areas in the region (Table A3.1).

[9] Pandey, S., and M. Sanamongkhoun. 1998. *Rainfed Lowland Rice in Laos: A Socioeconomic Benchmark Study*. Los Baños: IRRI.

[10] The LECS is a comprehensive national level survey sponsored by the World Bank. Three LECS have been conducted, the first, LECS1, covered 1992–1993; the second, LECS2, 1997–1998; and the third, LECS3, has recently been completed for 2003–2004 (report in preparation).

Table A3.1: Rice Area, Production, and Yield
(by Region and Province, 2003—2004)

Region/Province	Area (% of total)	Production (% of total)	Yield (t/ha)
A. Northern	**24.57**	**21.60**	**2.89**
1. Phongsaly	1.89	1.61	2.80
2. Luangnamtha	2.81	2.51	2.93
3. Oudomxay	3.90	3.02	2.54
4. Bokeo	2.25	2.35	3.43
5. Luangprabang	4.30	3.32	2.53
6. Huaphanh	3.60	3.28	2.99
7. Xayabury	5.82	5.52	3.11
B. Central	**51.36**	**55.22**	**3.53**
1. Ventiane Municipality	9.45	11.67	4.06
2. Xiengkhouang	3.24	2.77	2.80
3. Ventiane	6.79	8.09	3.91
4. Borikhamxay	4.51	5.02	3.66
5. Khammuane	6.73	6.11	2.98
6. Savannakhet	20.13	21.09	3.44
7. Xaysomboun	0.51	0.47	3.00
C. Southern	**24.07**	**23.18**	**3.16**
1. Saravane	9.08	9.04	3.27
2. Sekong	0.60	0.53	2.93
3. Champasack	12.32	12.04	3.21
4. Attapeu	2.07	1.56	2.48
Lao PDR	**100.00**	**100.00**	**3.28**

t/ha = ton per hectare.
Note: In 2003–2004, the total rice area was estimated at 770,300 ha and total rice production at 2.5 million.
Source: Ministry of Agriculture and Forestry. 2004. *Agricultural Statistics*. Vientiane.

11. The remaining half of the rice area is located in the Northern (25%) and Southern (24%) regions, which account for approximately 45% of total production. Champasack and Saravane are the two major rice-producing provinces in the Southern Region. The Northern Region is characterized by mountainous terrain and contributes approximately 22% of total production. Of the three regions, the Northern Region has the lowest yield (2.89 t/ha). Xayabury, Luangprabang, Huaphanh, and Oudomxay are the provinces with most of the rice area of the Northern Region. Most of the rice production in these provinces (except for Xayabury) is based on shifting cultivation.

12. **Rice Ecosystems.** Almost 90% of the rice area in the Lao PDR is rain-fed. Rain-fed rice may be grown in lowland or in uplands. Rain-fed rice in the lowlands dominates rice cultivation in the country. In 2004, about 75% of the area cultivated (576,000 ha) and 78% of the production (about 2 million t) originated from this ecosystem (Table A3.2). Upland rice accounts for over 15% of the total rice area. Almost 50% of the rice grown in the Northern Region originates from the rain-fed upland rice ecosystem (of which over 23% is cultivated under shifting cultivation). Luangprabang (17,000 ha) and Oudomxay (11,000 ha) are the main provinces in the Northern Region where rice is grown under shifting cultivation systems.

Table A3.2: Rice Area and Production by Region and Ecosystem, 2004

Region	Rain-fed Lowland (%)		Rain-fed Upland				Irrigated Lowland (%)	
			Upland (%)		Shifting Cultivation (%)			
	Area	Production	Area	Production	Area	Production	Area	Production
Northern	46.84	63.97	25.67	17.44	23.23	12.70	4.28	5.90
Central	82.03	79.82	1.94	1.08	1.76	0.79	14.26	18.30
Southern	87.55	87.32	5.10	3.13	0.70	0.36	6.65	9.19
Lao PDR	74.71	78.13	8.53	5.09	6.78	3.26	9.98	13.51

Data source: Ministry of Agriculture and Forestry. 2004.

13. The second rice crop, dry season rice, is cultivated under irrigated conditions.[11] About 10% (76,800 ha) of the total rice area, and almost 14% (34 million t) of total production, originated from this ecosystem in 2004. Most of the dry season rice is cultivated in the Central Region. Vientiane Municipality (103,000 t) and Savannakhet province (80,000 t) have the largest areas under dry season rice. The irrigated rice ecosystem had the highest yield at 4.4 t/ha in 2004. Yields in rain-fed lowlands and uplands were 3.4 t/ha and 1.8 t/ha, respectively.

14. **Shifting Cultivation.** Rice production based on shifting cultivation is practiced mainly in the Northern and Eastern mountainous regions. Estimates in 2000 indicated that about one third of the total Lao population still depended on shifting cultivation, which covered about 13% of the total land area of the country (footnote 1). Traditionally, farmers cleared the forest with fire for growing upland rice. After growing rice for a year or two, land used to be left fallow for 10–20 years before farmers returned to the same field to plant upland rice. Increasing population pressure and land-use restrictions have led to a reduction in fallow periods in recent years to as short as 3 years. Production based on such short fallow period is unsustainable.[12] Hence, the Government has actively discouraged upland rice production based on shifting cultivation. A two-pronged strategy has been used by the Government to limit the rice area under shifting cultivation. The first is to raise the productivity of rice so that farmers' food needs are met from a smaller area. This may take the form of increasing the productivity of upland rice on sloping lands. The same result can also be obtained by raising the productivity of pockets of lowlands in valley bottoms and irrigated terraces, where rice yields are much higher. With the overall increase in food supply coming from irrigated terraces and valley bottoms, the pressure to intensify rice production in uplands will decrease. The second strategy is to improve the market access of rural communities through investments in roads, transport, and marketing infrastructure. A market-oriented production system may evolve when farmers can use price signals in making their decisions on which crops to grow. Farmers are unlikely to continue growing upland rice using shifting cultivation when more remunerative options become available. The Northern Region Development Strategy is based on this two-pronged approach.

[11] Estimates of irrigated area vary widely depending on the source. According to the data from the Department of Irrigation, the total irrigated area of rice in the Lao PDR was 295,000 ha in 2000. The area of irrigated rice estimated by MAF was, however, less than 100,000 ha in 2004. The Department of Irrigation data probably include the area of rice based on the total capacity created for providing supplemental irrigation in the wet season, while the data from MAF provide an estimate of the dry season area of irrigated rice.

[12] Walter, R. 2001. *Slash-and-Burn Rice Systems in the Hills of Northern Lao PDR: Description, Challenges, and Opportunities*. Los Baños: IRRI.

D. Rice Research, Technology Development, and Dissemination

15. **Institutional Setup for Research and Extension.** The Ministry of Agriculture and Forestry (MAF) operates its agricultural research program through the National Agriculture and Forestry Research Institute (NAFRI) and its extension program through the National Agriculture and Forestry Extension Services (NAFES). Both NAFRI and NAFES have active and long-term collaboration with a number of international institutes. NAFRI and IRRI have collaborated on rice research since 1990. The Lao-IRRI Rice Research and Training Project (LIRRTP), funded by the Swiss Agency for Development Cooperation (SDC), established the foundation of rice research in the country. The Australian Centre for International Agricultural Research and other international organizations have also contributed to rice research in the country. In 2004, ADB provided funds to support rice research targeted on less favorable rain-fed areas, and the Lao PDR was chosen as one of the key sites.[13] The Helvetas/SDC-funded Lao Extension for Agriculture Project contributes to the institutional development of NAFES. In addition to this, several other international and local organizations work closely with NAFES.

16. Before NAFES was established in 2001, much of the extension services were provided by research organizations, extension departments and local agencies, particularly the provincial agriculture and forestry offices and the district agriculture and forestry offices. Several local and international nongovernment grassroots organizations also played important roles in the dissemination of rice technologies, for example, World Vision, the Menonite Central Committee, and Cooperation Internationale pour le Development et la Solidarité. Furthermore, Lao farmers have a strong tradition of seed exchange among neighbors, across regions, and across the border. Much of the dissemination of new rice varieties has been credited to this practice, rather than through formal channels of seed distribution. Since its establishment, NAFES has coordinated the extension services of the country. Extension service centers have been set up in parallel to the research organizations. Up to June 2005, before NAFES was reorganized, there were provincial agriculture and forestry extension services and district agriculture and forestry extension services.

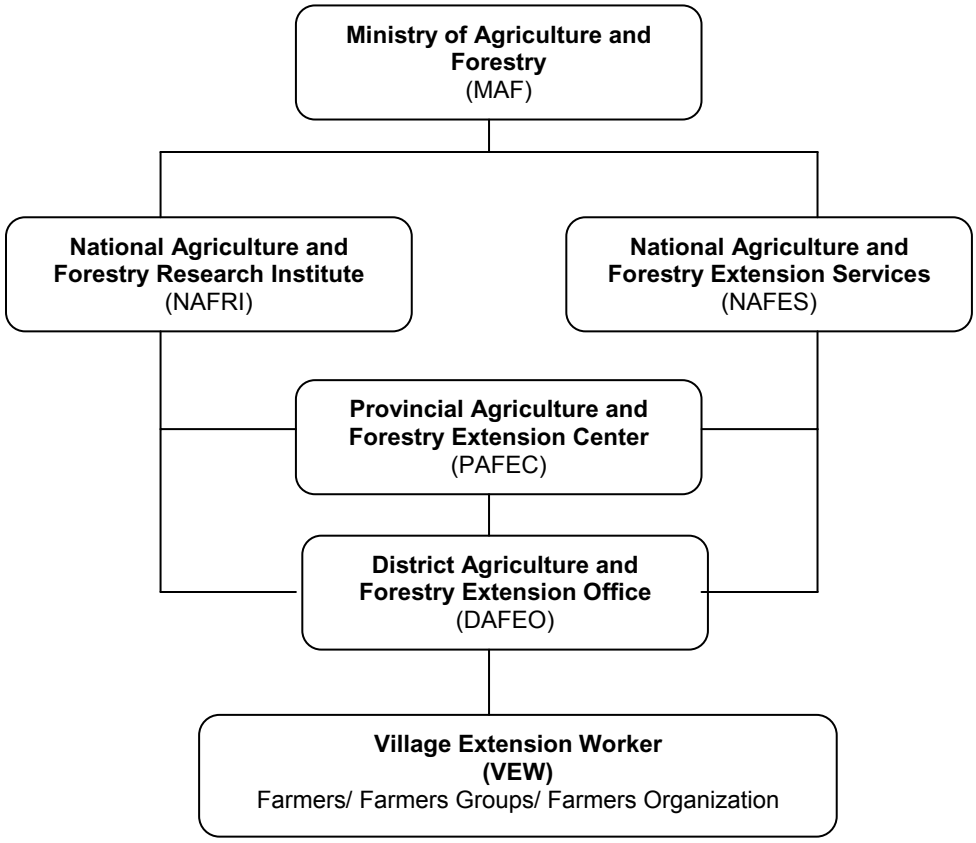
17. Following the reorganization of extension services in June 2005, the new arrangement for extension comprises two systems: (i) the government extension system, and (ii) village extension.[14] The Government Extension Service consists of three strata: (i) NAFES, (ii) the provincial agriculture and forestry extension center, and (iii) the district agriculture and forestry extension office (DAFEO).[15] The link between research and extension is illustrated in Figure A3.2. Once new technologies are successfully introduced, the main responsibility for spreading the technology throughout the villages lies with DAFEO in cooperation with the village extension workers.

[13] ADB. 2004. *Integrating and Mobilizing Rice Knowledge to Improve and Stabilize Crop Productivity to Achieve Household Food Security in Diverse and Less Favorable Rainfed Areas of Asia. TA No: 6136-REG.* Manila.

[14] NAFES. 2005. *Consolidating Extension in the Lao PDR.* Vientiane.

[15] Provincial staff subject matter specialists and district staff will be retrained as generalists and called farming systems extension workers. The village extension system is jointly managed by villagers and village authorities. Activities are facilitated by village extension workers who are appointed and compensated by the community, while receiving technical support through the government service. The village extension system involves a cycle of activities that starts with a training needs assessment. The extension workers from DAFEO have the primary responsibility as generalists to regularly interact with local communities, farmers, and village extension workers, and to understand their needs.

Figure A3.2: Institutional Setup for Research and Extension Linkages



18. The country, with external assistance, has invested to improve its research and extension capacity. Although research capacity and human resource skills need to be developed further, the need for skilled extension staff is perhaps even greater, considering that extension organizations have been established only recently. Reducing the current gap between research and extension has been identified as an area that is likely to have a high return (footnote 1). Bottom-up and participatory approaches to rural development are increasingly promoted in the Lao PDR. The government sees the district level line agencies such as DAFEO as the main agencies for implementing agricultural extension programs. Improvements in their capacity are needed for them to be effective change agents for rural development.

19. **Production Constraints.** The main constraints to rice production are abiotic, biotic, and socioeconomic. Abiotic factors include drought, flood, cold temperature, and poor soil fertility. Biotic factors are insects, diseases, and weeds. Socioeconomic factors include labor shortages, and lack of access to credit and markets. The top three production constraints identified by farmers for wet and dry season are listed in Table A3.3**.** Annual drought and flooding are the most serious constraints to rice cultivation throughout the Central and Southern regions, and the third most serious in the Northern Region. Regular flooding of the Mekong River affects 10%– 30% of the rice area in the Southern and Central regions. Savannakhet Province suffers most from early or late season drought almost every year. Late season drought alone can

reduce grain yields by 30%.[16] In the upland environment, drought at seeding is an important production constraint. In addition, short fallow is one of the major factors for low yields. Soils in the Northern Region are generally poor and lacking in basic nutrients. Frequently occurring floods result in further loss of productive capacity through soil erosion.

Table A3.3: Farmers' Ranking of the Three Most Important Constraints to Rice Production

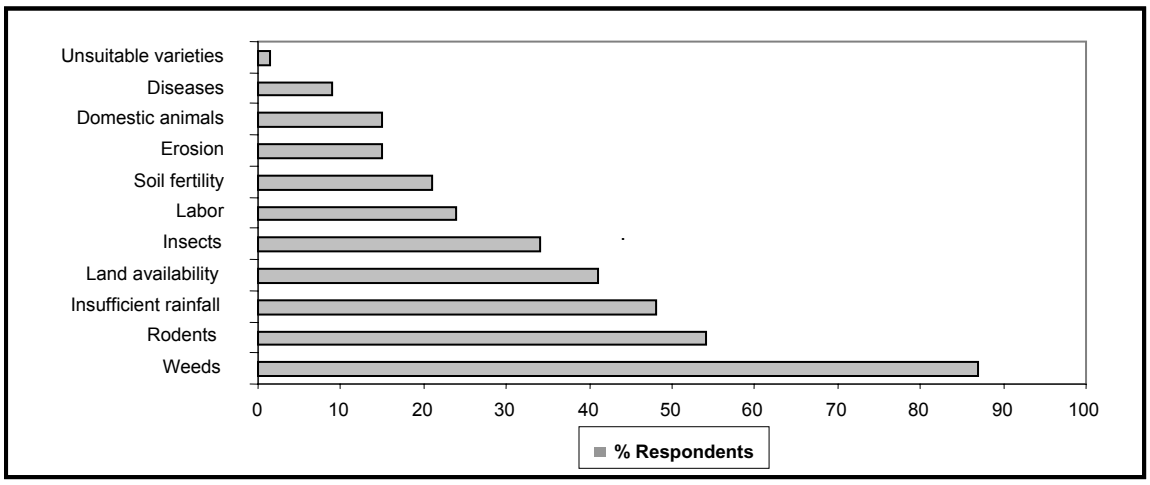
	Ranking of Production Problems					
	Wet Season			Dry Season		
Province	**1**	**2**	**3**	**1**	**2**	**3**
Vientiane Municipality	Drought	Weeds	Insects	Weeds	Insects	Labor Shortage
Vientiane	Insects	Drought	Weeds	Water Shortage	Insects	Weeds
Khammuane	Drought	Insects	Weeds	Weeds	Insects	Labor Shortage
Savannakhet	Drought	Crabs and Snails	Weeds	Insects	Weeds	Soil Fertility
Saravane	Drought	Insects	Weeds	Weeds	Labor Shortage	Soil Fertility
Champasack	Drought	Insects	Weeds	Credit	Labor Shortage	Weeds
Xayabury	Drought	Insects	Weeds	n.a.	n.a.	n.a.

n.a. = not available.
Source: Schiller, J.M., B. Linquist, K. Douangsila. 2001. *Constraints to Rice Production Systems in the Lao PDR.* Vientiane: Lao-IRRI Project.

20. Biotic constraints (insects, diseases, and weeds) are ranked to be the most serious constraints affecting rice production in the uplands and the third most serious among lowland farmers. Brown planthopper, stemborer, rice bug, golden apple snail, gall midge, and white grub (particularly in the drought period) are some of the insect pests reported to result in significant crop losses during both the wet and dry seasons. Blast, bacterial leaf blight, brown spot, bakanae in the lowlands, and nematodes in the uplands also reduce yields substantially. With increasing rice cropping intensity in the lowlands, and shortened fallow periods in the uplands, these factors have become more constraining, and crop losses are expected to increase. In the upland ecosystem, weeds and rodents are the two major constraints that result in significant economic losses (Figure A3.3). It is estimated that at least 15% of the annual harvest is lost to rodents. The need to control weeds is the single most labor-demanding operation.

[16] Fukai, S., P. Sittisuang, and M. Chanphengsay .1998. Increasing Production of Rainfed Lowland Rice in Drought Prone Environments: A Case Study in Thailand and Laos. *Plant Prod. Sci*. 1(1):75–82.

Figure A3.3: Farmers' Perceptions of Major Constraints to Upland Rice Production



Source: Walter, R. 2001. Slash-and-Burn Rice Systems in the Hills of Northern Lao PDR: Description, Challenges, and Opportunities. Los Baños: IRRI.

21. **Research Programs.** Systematic rice research in the country was established in 1990 with the initiation of the LIRRTP. The project aimed to improve and stabilize rice productivity. In collaboration with Lao scientists, the project developed technologies consisting of improved varieties and complementary crop management practices (Table A3.4). These technologies are aimed at improving the productivity of the overall farming system.

Table A3.4: Rice Research Program and Production Constraints in the Lao PDR

	Research and Technology Development				
Production Constraints	**Varietal Improvement**	**Nutrient Management**	**Plant Protection**	**Agronomic Practices**	**Ecosystem Targeted**
Drought	Yes	—	—	Yes	RL, RU
Flood	—	Yes	—	Yes	RL
Low Soil Fertility	—	Yes	—	Yes	RU, IL
Soil Erosion	—	Yes	—	Yes	RU
Insect Pests	Yes	—	Yes	—	RL, RU, IL
Diseases	Yes	—	Yes	—	RU, IL
Weeds	—	Yes	Yes	Yes	RU
Rodents	—	—	Yes	Yes	RU
Labor Shortage	—	Yes	Yes	Yes	RL, RU, IL

IL = irrigated lowland, RL = rain-fed lowland, and RU = rain-fed upland.

Source: Shrestha, S. 2002. *Lao-IRRI Project: Impact Assessment of Research and Technology Development*. Los Baños: IRRI.

22. Initially, the activities for germplasm improvement focused on improving the yield potential of glutinous varieties. Collecting and characterizing the abundant biodiversity of traditional varieties were major activities initially. Along with these traditional varieties, introduced lines were also used for the selection of traits suitable to Lao conditions. There has also been some research to develop nonglutinous varieties mainly for the urban and export markets. More recently, breeding efforts have been targeted at specific abiotic constraints limiting rice production. For example, new varieties that escape drought or are more tolerant to drought are being developed.

23. Considerable agronomic research was conducted for improving rice crop management. The effects of plant spacing on efficiency of nutrient use; the effects of sowing time on yield loss to drought, flood, and cold temperature; and the effects of hill spacing on weed management were studied. The feasibility of direct seeding to reduce the labor requirement was also assessed. One of the important research activities in the Lao PDR relates to the development of improved nutrient management technology. Studies were conducted to estimate yield responses to the application of organic and inorganic fertilizers. Studies were also conducted to quantify the minimum input level required to sustain yield improvements. Suitable recommendations for raising fertilizer use efficiency were developed.[17]

24. To address biotic constraints, earlier studies concentrated on screening and identifying varieties with resistance to common pests and diseases. Some of the newly released varieties have such traits. Studies were also undertaken to help farmers understand the benefits of using natural predators for pest control through the application of integrated pest management.[18]

25. **Research Outputs.** Two major groups of modern rice varieties were released in the Lao PDR after 1990. The first group consists of the Lao-IRRI modern rice varieties (LMVs) developed from the joint Lao-IRRI research programs. Nine varieties developed specifically for Lao conditions have been officially released (Table A3.5). These are glutinous varieties selected for good quality, high yield potential, and suitability to saline and low fertility soils. Some are also resistant to common insects and diseases such as brown planthopper, gall midge, stemborer, leaf blast, bacterial leaf blight, and brown spot. Several more LMVs are scheduled for release in 2005 and 2006. The second group of improved rice varieties, referred here as other modern varieties (OMVs), were developed in other countries (mainly Thailand and Viet Nam) and at IRRI. Ten of these OMVs, five glutinous and five nonglutinous, have been released in the Lao PDR. The large pool of genetic biodiversity of rice in the Lao PDR provided important contributions to the development of these improved rice varieties. Of the over 3,000 varieties collected, 2000 samples have been tested and used for crossbreeding. Eight traditional varieties have also been officially released for selected provinces.

Table A3.5: Improved Rice Varieties Developed and Released for Lao Conditions

Name	Year Released	Major Positive Traits
TDK 1	1993	High N response, good tillering, resistance to most biotypes of BPH and to rice leaf diseases
TDK 2	1993	Moderately resistant to leaf blast, bacterial leaf blight, BPH, gall midge, and stemborer
PNG 1	1994	Good grain quality, moderate yield, broad adaptability, maturity at 125–130 days, and resistance to blast
PNG 2	1995	Moderately resistant to brown spot, flowering in mid-October
TDK 3	1997	Good grain quality, resistance to rice diseases and suited to favorable rain-fed lowland
TDK 4	1998	Good grain quality, high N response, suited to medium fertile and saline soils
TSN 1	1998	Good grain quality and high N response, best suited to fertile soils
NTN 1	1998	Good grain quality, 130 days maturity, resistance to blast
TDK 5	2000	Good grain quality, maturity at 125–130 days, plant height 95–115 cm, resistance to blast, bacterial leaf blight

BPH = brown planthopper, cm = centimeter, N = nitrogen, NTN = Namtane, PNG = Phone Ngam, TDK =Thadokkham, TSN = Thasano.
Source: Lao-IRRI Project. *Annual Technical Reports: 1995 to 2001*. Vientiane.

[17] Linquist B., and P. Sengxua. 2001. *Nutrient Management in Rain-fed Lowland Rice in the Lao PDR*. Los Baños: IRRI.

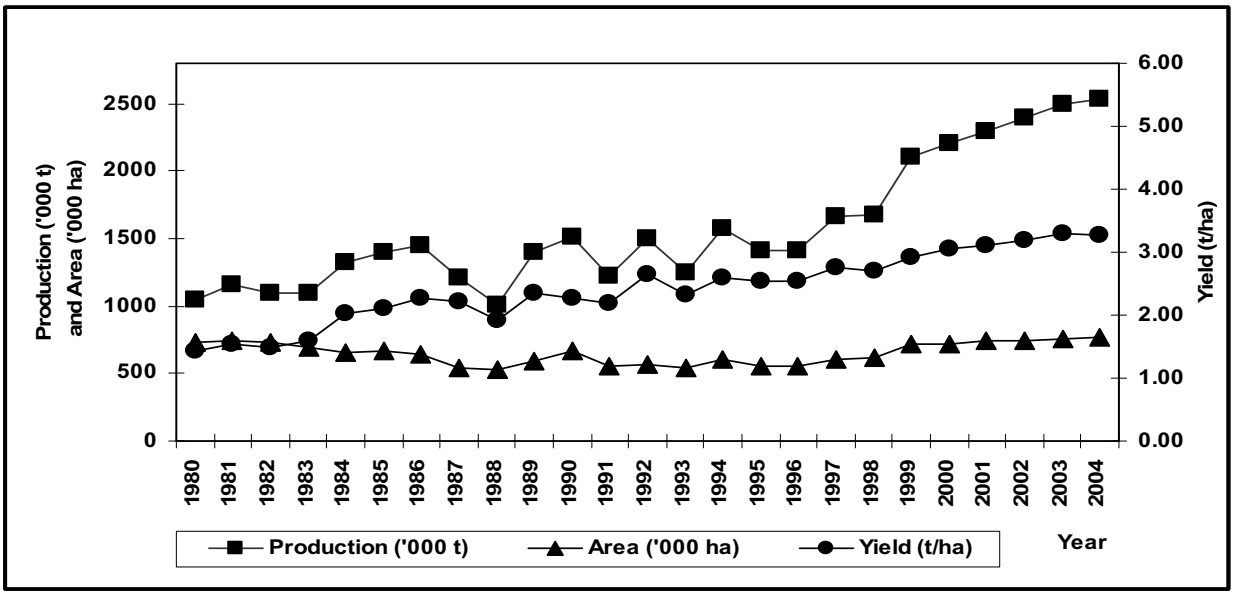
[18] Heong, K. L, M. M. Escalada, V. Sengsoulivong, and J. M. Schiller. 2001. *Insect Management Beliefs and Practices of Rice Farmers in Laos.* Vientiane: Lao-IRRI Project.

26. Research outputs were packaged into technological options for wider dissemination to farmers. Recommended technology packages and their major components include (i) establishment of 25-day-old seedlings, (ii) plant spacing of 15 x 15 cm with four or five plants per hill, (iii) application of higher and balanced doses of inorganic fertilizers in several splits, (iv) use of organic fertilizers, (v) direct seeding in furrows when transplanting not possible, (vi) weed management strategies for the uplands, and (vii) recommendation of several legume crops to be planted in rice-based farming systems in for the uplands.

E. Analysis of Rice Production Trends and Growth Patterns

27. **National Level.** The rice production system of the Lao PDR has undergone tremendous changes since the 1990s. Rice production averaged around 1.3 million t per annum until the early 1990s, with no clear trend in production. A significant breakthrough occurred during the mid-1990s, with production rising steeply to 2.5 million t in 2004 (Figure A3.4).

Figure A3.4: Rice Area, Production, and Yield in the Lao PDR, 1980 to 2004



Data source: The Ministry of Agriculture and Forestry. 2004.

28. Rice area increased from approximately 642,000 ha in 1986 to over 770,000 ha, an increase of more 20%. This represents a growth rate of 1.8% per annum (Table A3.6). The yield increased by over 45% for the period, representing an annual growth of 2.6%.

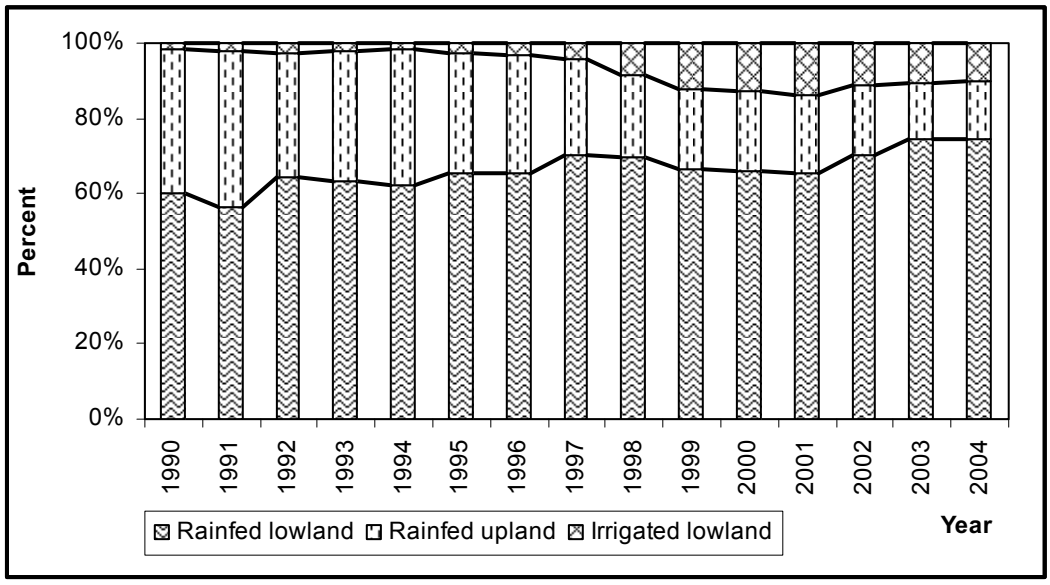
Table A3.6: Growth in Rice Area, Production, and Yield, 1986–2004

Item	Year		Average for (1986–2004)	% Change (1986–2004)	Compound Annual Growth Rate (1986–2004)[a]
	1986	2004			
Area (‘000 ha)	641.60	770.30	633.20	20.10	1.75
Yield (t/ha)	2.26	3.28	2.64	45.30	2.60
Production (‘000 t)	1,449.30	2,529.00	1,701.10	74.50	4.34

ha = hectare, t = ton.
[a] Growth rates (%) estimated by fitting semilogarithmic trend lines to time-series data.
Data source: Ministry of Agriculture and Forestry. 2004.

29. **Disaggregated Analysis.** Figure A3.5 illustrates the changes in rice area for different ecosystems from 1990 to 2004. On average, the rain-fed lowland accounted for 66% of the total rice area for the period. This ecosystem experienced a substantial increase in rice area (47%) during this period (Table A3.7).[19]

Figure A3.5: Rice Area for Different Ecosystems in the Lao PDR, 1990 to 2004



Data source: Ministry of Agriculture and Forestry. 2004.

Table A3.7: Change in Rice Area, Yield, and Production by Ecosystem, 1990 to 2004

	Rain-fed Lowland			Rain-fed Upland			Irrigated Lowland		
Item	1990	2004	% Change (1990–2004)	1990	2004	% Change (1990–2004)	1990	2004	% Change (1990–2004)
Area ('000 ha)	392.40	575.50	46.70	245.90	118.00	(52.00)	12.00	76.80	540.30
Yield (t/ha)	2.76	3.43	24.62	1.50	1.79	19.20	3.42	4.45	30.19
Production ('000 t)	1,081.10	1,976.00	82.80	369.40	211.20	(42.80)	41.00	341.80	733.70

ha = hectare, t = ton.
Note: Growth rates estimated by fitting semilogarithmic trend lines to time-series data.
Data source: Ministry of Agriculture and Forestry. 2004.

30. The rice area cultivated in the uplands decreased by 52%, and its contribution to the total rice area declined from a high of 41% in 1991 to around 15% in 2004 (Figure A3.5). Much of the decline is reported to have been due to the decrease in rice area under shifting cultivation. The yield of rice in this ecosystem is the lowest and changed marginally from 1.5 t/ha in 1990 to 1.8 t/ha in 2004 (Table A3.7).

31. Production of irrigated rice took a substantial upward turn and its area increased significantly over the period; in 1990, it made up less than 2% of the total rice area, but this increased to 10% in 2004. The yield in this ecosystem was highest of all three ecosystems at 4.45 t/ha in 2004. Despite its area share being only 10%, the share of production of irrigated rice

[19] The lowest rice area in rain-fed lowlands was 328,000 ha in 1991, and the highest was 576,000 ha in 2004.

in 2004 was 14%. However, there has been some decrease in rice area in this ecosystem during recent years.[20] In all rice ecosystems, the increase in yield during 1986–2004 ranges from 20% to 30% (Table A3.7). The average yield levels for 1986–2004 for irrigated, rainfed, and upland rice ecosystems were estimated at 3.9 t/ha, 3.1 t/ha, and 1.6 t/ha, respectively.

32. **Factors Contributing to Growth in Production.** The increase in rice production during 1986–2004 was due mainly to an overall increase in yield. Rice yield increased at an annual rate of 2.6%, while rice area expanded by 1.8% annually (Table A3.6). Several factors contributed to this rapid increase in yield. Empirical studies in rice production across Asia have shown that the main factors are the adoption of modern varieties (MVs), use of inorganic fertilizers, availability of irrigation facilities, and government commitment to support rice production. The significant growth in rice production in the Lao PDR during the last two decades is also the result of these factors.

33. In the early 1990s, the rice varieties grown were mostly traditional varieties, with the MVs accounting for only 2%–5% of the total rice area.[21] A national statistical bulletin published in 2000 indicated that the area under MVs expanded to 30% of the rice area during the 1990s.[22] In more recent years, several farm-level studies conducted in major rice-growing regions of the country indicated substantially high adoption rates. An extensive literature review on this topic suggests that the adoption rate in recent years is at least 50% of the total rice area (Table A3.8).

Table A3.8: Adoption of Modern Rice Varieties in the Lao PDR

Author(s)	Study Based on Province(s)	Study Year	Households Adopting MVs	% of Area Under MVs
Shrestha[a]	Champasack, Savannakhet, and Vientiane Municipality	2001	88	81
Braun[b]	Savannakhet	2000	87	50
Pilot Extension Project[c]	Champasack and Saravan	1998	42	20
Hossain, et. al.[d]	na	1998	na	53
Schiller, et. al.[e]	Champasack	1998	100	61
Schiller, et. al.	Vientiane	1998	94	57
Pandey and Sanamongkhoun[f]	Champasack and Saravan	1996	60	21

na = not available, MV = modern variety.
Sources:

[a] Shrestha, S. 2002. *Lao-IRRI Project: Impact Assessment of Research and Technology Development*. Consultancy Report for IRRI. Los Banos: IRRI.

[b] Braun, R. 2002. *Savannakhet Province Survey Data.* Vientiane. Lao-IRRI Project. (draft report).

[c] Pilot Extension Project. 1999. Project Completion Report: An Internal Assessment. Vientiane: Department of Agriculture.

[d] Hossain M., D. Gollin, V. Cabanilla, E. Cabrera, N. Johnson, G. S. Khush, G. McLaren. 2002. Research for Genetic Improvement in Rice in Asia and Latin America: Investment, Output and the Role of International Centers. In: *Constraints to Increasing Rice Production in Asia*. Edited by M. Hossain. Los Baños: IRRI.

[e] Schiller, J.M., S. Phanthavong, V. Siphaphone , S. Sidavong, and A. Erguiza. 2000. *Impact Assessment of Improved Rice Production Technologies for the Rain-fed Lowland Environment in the Lao PDR*. Vientiane.

[f] Pandey S. and Sanamongkhoun, M. 1998. *Rain-fed Lowland Rice in Laos: A Socioeconomic Bench Study*. Los Baños: IRRI.

[20] Irrigated rice area was reported to be highest at over 102,000 ha in 2001.

[21] Lao-IRRI Project. 2000. *Rice Variety Recommendations for the Wet Season Lowland Environment of the Lao PDR.* Vientiane.

[22] Agricultural Census Office. 2002. *Lao Agricultural Census, 1990 to 1999: Highlights*. Steering Committee for the Agricultural Census Office. Vientiane.

34. Based on a farm-level study, the yield of MVs is estimated to be 43% higher than that of traditional varieties. At the national level, this yield increase translates to a production gain of at least 280,000 t. Net income among the adopters was 15% higher despite a significant increase in the cost of production. These gains translate at the national level to the range of $9–$13 million per year.[23]

F. Rice Marketing

35. The small rice market and the poor marketing infrastructure have resulted in a lack of integration of the domestic rice market in the country. Accordingly, prices across provinces vary widely. The price differences across provinces in most cases cannot be explained solely on the basis of marketing costs, indicating that the rice markets in the Lao PDR are segmented spatially. Local demand and supply situations seem to determine price formations, with traders not being able to take advantage of the possibility of arbitrage. It has been found that, with few exceptions, the price of rice is positively correlated with per capita income in various provinces.[24]

36. Currently, international trade in rice is limited and takes place mainly across the border towns in PRC, Viet Nam, and Thailand. One of the major factors limiting the access to international markets is that Lao rice is predominantly glutinous while export demand is mainly for nonglutinous rice. Glutinous rice accounts for 80%–90% of the rice consumed in the Lao PDR. Trade in glutinous rice is limited mainly to the areas bordering Thailand, where glutinous rice is also consumed. However, Lao glutinous rice has to compete with Thai glutinous rice in these markets. Depending on seasonal effects and local price factors, glutinous rice may be traded in small quantities in either direction. Some small quantities of rice were exported recently through the mechanism of contract farming. Despite the likely opening of rice markets through regional trade arrangements, poor marketing infrastructure severely limits the export competitiveness of the Lao PDR relative to neighboring countries; Thailand and Viet Nam have established themselves as major rice exporters, and it will be a difficult task for the Lao PDR to compete for the same product in the markets already captured by these countries. One way out of this situation is to be able to differentiate the Lao product by targeting some niche markets such as those for organically grown rice or high-quality black rice. The Government is exploring the production and marketing possibilities for such products.

G. Major Current and Future Issues

37. The rice economy has made tremendous progress during the past two decades. Rice production has increased, and its growth rate has been above the population growth rate. Thus, per capita rice availability has increased at the national level. Important progress has been made on the technological and institutional fronts. Nevertheless, the country continues to face challenges in developing a dynamic, stable, and market-responsive agriculture that meets the dual goals of achieving household food security and income growth.

38. To maintain self-sufficiency in rice, the Lao PDR will need to produce an additional one million t annually by 2020 to meet the increasing demand resulting from population growth. This will require the yield growth to be no less than the population growth rate of 2.5% per year. However, the yield growth rate in recent years (2000–2004) has been at about 2% per year.

[23] Shrestha, S. 2002. Lao-IRRI Project: Impact Assessment of Research and Technology Development, Consultancy Report for IRRI. Los Baños: IRRI.
[24] Bourdet, Y. Undated. *Emerging Rice Market in Laos*. Lund: University of Lund.

Thus, there is a need to continue and accelerate productivity growth through the development and dissemination of improved technologies, maintenance and expansion of irrigation, and policy support for rice production. Improved rice varieties and management practices that produce stable yields even in the face of adverse conditions need to be continually made available to farmers. In uplands, suitable technologies and cropping options are needed, not only to improve rice productivity but also to conserve fragile resources. There is also an urgent need to improve the availability of high-quality seeds of LMVs to maintain their productivity potential.

39. Although food availability at the national level has improved, household food security has not been achieved fully. Farmers with limited incomes and those in remote areas are still unable to meet their rice requirements fully. Addressing this will not only require increased rice productivity on the farms operated by such households, but also improved marketing systems so that rice from surplus areas in the south can be economically marketed in the deficit areas in the north. Addressing such regional variations in food availability still remains a major issue.

40. Agricultural research and extension systems require further institutional development. There is a need to continue to invest in capacity development for agricultural researchers. Agricultural research and its associated agencies are still not routinely and sufficiently funded to meet the challenges facing them. Although an important milestone has been achieved with the establishment of NAFES, the extension system needs further capacity development, with more effective links among research, district-level organizations, and grassroots agents for extension to be an effective conduit for disseminating agricultural technologies.

INVOLVEMENT OF THE ASIAN DEVELOPMENT BANK IN THE LAO PDR LIVESTOCK SECTOR

A. Livestock Sector Development

1. Livestock are an important component of smallholder farms in the Lao People's Democratic Republic (Lao PDR), with sales of livestock accounting for more that 50% of cash income in many upland and highland areas. Over 95% of all livestock is produced by smallholders, and there are only a few commercial enterprises farming pigs and poultry near major urban markets. The Participatory Poverty Assessment, undertaken by the Asian Development Bank (ADB) in 2000, clearly showed the importance of livestock for poor villages. The International Livestock Research Institute (ILRI) completed an ADB-financed review of the livestock sector in the Lao PDR in 2002.[1] Key findings of this study are given in this appendix.

2. When asked about possible solutions for overcoming poverty, villagers in the central, eastern, and northern parts of the Lao PDR listed improved livestock production as their highest priority. Livestock numbers by region in about 2000 are summarized in Table A4.1. The number of large livestock per 100 population in the Lao PDR is approximately three times that of Thailand.

Table A4.1: Livestock Numbers by Region
('000)

						Large Ruminant Density	
Region	**Cattle**	**Buffalo**	**Pigs**	**Goats**	**Poultry**	**Animals per km²**	**Animals per 100 People**
Northern Region	199	297	554	51	4,180	5.4	29
Central Region	547	457	339	36	4,962	9.9	40
Southern Region	199	238	144	8	2,073	9.9	42
Total	944	992	1,036	94	11,215	8.2	37
Estimated Annual Increase	5%	0.8%	1.2%	8%	n.a.		

Km = kilometer, n.a. = not available.
Source: ILRI. 2002. *Review of the Livestock Sector in the Lao PDR*. ADB Manila

3. Livestock play a major role in all farming systems in the country. Buffalo and cattle are primary sources of organic fertilizer and major instruments of household savings. They are now rarely used for draft animals in lowland areas as they have been replaced with small two-wheel tractors. Animal sales constitute the major source of cash income for emergencies and on-farm investments. Small animals (pigs and poultry) are raised by farm households, and with fish constitute the main sources of protein for human nutrition in rural areas.

4. Livestock production has grown rapidly since the pronouncement of the New Economic Mechanism in 1986, averaging more than 4% annually, well above the rate for crops. Livestock and fisheries contribute about 40% of agricultural gross domestic product. They contribute substantially to unofficial exports, and represent the main source of cash income and rural assets for most farm households. However, these activities receive only 3–5% of the local resource component of the Ministry of Agriculture and Forestry. Studies conducted through technical assistance (TA), such as TA 1277-LAO (Livestock Sector Policy Development and Industry Restructuring) have shown that the Lao PDR has substantial comparative advantage over other countries in the region in livestock production. Trade in livestock is important to the Lao PDR. Although much of the large ruminant movement is unrecorded, current estimates

[1] ILRI. 2002. *Review of the Livestock Sector of Lao PDR*. Manila.

indicate that 100,000 live animals (worth about $25 million) are sent annually to Thailand from the Lao PDR.

5. Major constraints to increasing livestock productivity include (i) low quality natural forage and fodder; (ii) inadequate coverage of animal health protection; (iii) low productivity of native species; (iv) remoteness of many upland villages, which limits marketing options; (v) marketing issues including poor market intelligence and continuing official and unofficial tax burdens; and (vi) movement restrictions imposed by some provinces. Formal trade is also hindered by excessive paperwork for licenses, letters of approval, and certificates—all of which usually require payments to be made at all levels, district and provincial.

B. Livestock Policy Development

6. The main focus of agricultural policy in the Lao PDR over the last two decades has been on promoting self-sufficiency in rice. A significant proportion of national investment in agriculture has been directed at lowland irrigation development, and as a result of this, combined with the introduction of improved rice varieties, the country achieved overall self-sufficiency in rice in 1999 and subsequently became a minor net exporter. The main beneficiaries of this policy were the lowland dwellers with access to irrigated land. In recognition that other rural areas were relatively disadvantaged, in recent years the policy focus has shifted towards development of mechanisms for supporting upland dwellers and ethnic minorities.

7. The importance of livestock has been recognized for many years, but the subsector came to prominence in 1999 through the Government's Strategic Vision for the Agriculture Sector.[2] A number of the strategies recommended by the Strategic Vision involve livestock, though not at any detailed level. This Strategic Vision remains current and relevant. This strategy incorporated some recommendations from TA 1277-LAO (Livestock Sector Policy Development and Industry Restructuring). Subsequently, the National Growth and Poverty Eradication Strategy (2004) recognized the importance of livestock to poverty reduction, particularly in upland and sloping land areas. The problems of livestock diseases are also recognized, but with little reference to livestock nutrition or forage development. Further, the Northern Region Development Strategy (NRDS, 2004) also recognizes the importance of livestock in the economy of the Northern Region. The NRDS reports that livestock production increased by about 50% during the 1990s despite the absence of significant government assistance for disease control or herd improvement. Livestock was estimated to account for about 35% of agricultural production in the Northern Region. ADB's Country Strategy and Program Update (2006–2008) includes a proposed Participatory Livestock Development Project (PLDP) in its pipeline of projects and programs.

C. Livestock Sector Interventions

8. Overall, ADB assistance to the livestock sector has been relevant to the country's priorities and strategies for poverty reduction and for enhancement of rural livelihoods. In the early period of assistance, and in hindsight, ADB could have done more to bring livestock to the forefront of the rural development agenda and correspondingly could have assisted the Government to reduce its emphasis on investing in irrigation infrastructure. However, ADB waited for clear government policy and the NRDS to achieve the necessary focus. Support to the livestock sector in the Northern Region is now fully in line with the Government's

[2] MAF. 1999. *The Government's Strategic Vision for the Agricultural Sector*. Vientiane. TA-2883-LAO *Agriculture Strategy Study* provided an input to the strategy. However, the TA had few recommendations on livestock.

development strategies. The proposed PLDP, which is supported by ADB and other aid agencies, is designed to facilitate commercialization of livestock production that was promoted 15 years earlier by TA 1277-LAO.

9. **Projects and TAs.** A number of aid agencies have supported livestock development in the Lao PDR, often as part of area development projects. For example, the Strengthening of Livestock Service and Extension Activities Project (1998–2004), financed by the European Union (EU), improved animal health services and supported improvement of animal production at the village level, though success in these activities was limited. The Australian Agency for International Development (AusAID)-financed Forage and Livestock System Project (FLSP) was implemented in four districts of Luangprabang and two districts of Xiengkhouang from 2000 to 2005. The FLSP integrated forage and improvements in animal management practices in upland farming systems. ADB has supported several interventions in the livestock sector, mainly through TA. Table A4.2 lists ADB-financed TAs with livestock components, together with selected projects funded by other aid agencies, which form part of the policy development continuum. In addition to the listed TAs and projects, extension activities on several ADB-financed projects have had a significant livestock and fisheries focus.[3]

10. **Regional Technical Assistance (RETA) Program.** A series of three ADB-financed RETAs in the livestock sector have had a relatively modest impact in the Lao PDR. RETA 5866 (Developing Sustainable Forage Technologies for Resource-Poor Upland Farmers in Asia) was the first ADB-supported intervention to review livestock nutrition and other impediments in the country. It thus underpinned the forage-related activities in later ADB-funded initiatives. Livestock nutrition has been assessed as a major constraint to increased livestock productivity. The proposed PLDP and other interventions such as the Nam Ngum River Basin Development Sector Project recognize this constraint and incorporate forage development activities. Activities in the Lao PDR under RETA 6067 (Improving Livelihoods of Upland Farmers Using Participatory Approaches to Develop More Efficient Livestock Systems) are small-scale and distant from ADB's main focus of livestock activities in the Northern Region. Unlike the approach to vegetable crop development under other RETAs, there has been a limited attempt under the livestock RETAs to develop networking among regional countries. It is important that networking occurs under the recent RETA 6192 (Transboundary Animal Disease Control in the Greater Mekong Subregion), since close cooperation among neighboring countries is essential for minimizing the impact of livestock diseases and improving intraregional trade.

11. Overall, the ADB-financed TAs represent a reasonably logical program of assistance to the livestock sector in the country. However, there was a 10-year hiatus between the completion of TA 1277-LAO in 1990 and the commencement of RETA 5866 in 2000. While TA 1277-LAO identified the significance of livestock to agriculture and the national economy, this did not translate into government policy initiatives until 1999. In part this was because the TA focused on reducing the role of the Government in the livestock sector, rather than on identifying the areas in which the sector required support. In retrospect, this can be seen as a missed opportunity, and the Government could have undertaken more policy analysis, following completion of TA 1277-LAO, with or without ADB support. The minor focus on livestock to date has been due largely to the allocation and application of most government funds to the irrigation sector (estimated at more than 60% of the national budgets for agriculture through the 1990s).

[3] Smallholder Development Project, Community Managed Irrigation Sector Project, Decentralized Irrigation Development and Management Project, and Shifting Cultivation Stabilization Pilot Project.

Table A4.2: Projects, TAs, and RETAs in the Lao PDR's Livestock Sector

Project/Study/Dates	Name/Summary Objectives
TA 1277-LAO Approved 14 March 1990	**Livestock Sector Policy Development and Industry Restructuring** Reduction of government involvement in production, improvement in smallholder production, and reduction of livestock marketing impediments
FSP1 (AusAID) Jan 1995–Dec 1999	**Forages for Smallholders Project** Assessment of forage species in the Lao PDR, Indonesia, Malaysia, Philippines, Southern PRC, Thailand, and Viet Nam
TA 2883-LAO Approved September 1997	**Agriculture Strategy Study** Focused on crop sector; limited information on livestock and livestock policy
RETA 5866 and FSP2 Approved 14 October 1999 2000–2003	**Developing Sustainable Forage Technologies for Resource-Poor Upland Farmers in Asia** Building on FSP1, developed sustainable forage technologies and supported research in the Lao PDR, Indonesia, Philippines, PRC, Thailand, and Viet Nam
FLSP (AusAID) Jul 2000–Jun 2005	**Forages and Livestock Systems Project** Integrated forage activities into upland farming systems and improved smallholder livestock management in Luangprabang and Xiengkhouang provinces
2002 Sector Review July 2002	**Review of the Livestock Sector in the Lao PDR** Identified key constraints and developed an appropriate framework for participatory livestock development
RETA 6067: Approved 6 December 2002 2003–2006	**Improving Livelihoods of Upland Farmers Using Participatory Approaches to Develop More Efficient Livestock Systems** Limited TA activity in the Lao PDR, focusing on goat production in 11 villages in Savannakhet Province
PPTA 3544-LAO 2001–2002	**Preparation of Nam Ngum River Basin Development Project** Final Report, Appendix 6 - Livestock and Fisheries Improvement Final Report, Appendix 9B - Livestock
Loan 1933-LAO Supplementary Appendix G 2003–2009	**Nam Ngum River Basin Development Sector Project** Detailed sector analysis/alternative interventions for livestock management Includes livestock extension and credit program
PPTA 4287 Approved 18 December 2003	**Participatory Livestock Development Project** Project proposed for ADB funding covering 16 districts in six northern provinces
RETA 6192 Approved 11 October 2004	**Transboundary Animal Disease Control in the GMS** Developing a regional cooperation framework, upgrading regional and national laboratories, and strengthening staff capacity for disease control in GMS countries
TA 4406-LAO Approved 11 October 2004	**Capacity Building for Smallholder Livestock Systems in the Lao PDR** Improving livestock productivity and strengthening extension capacity and capability in several PLDP districts

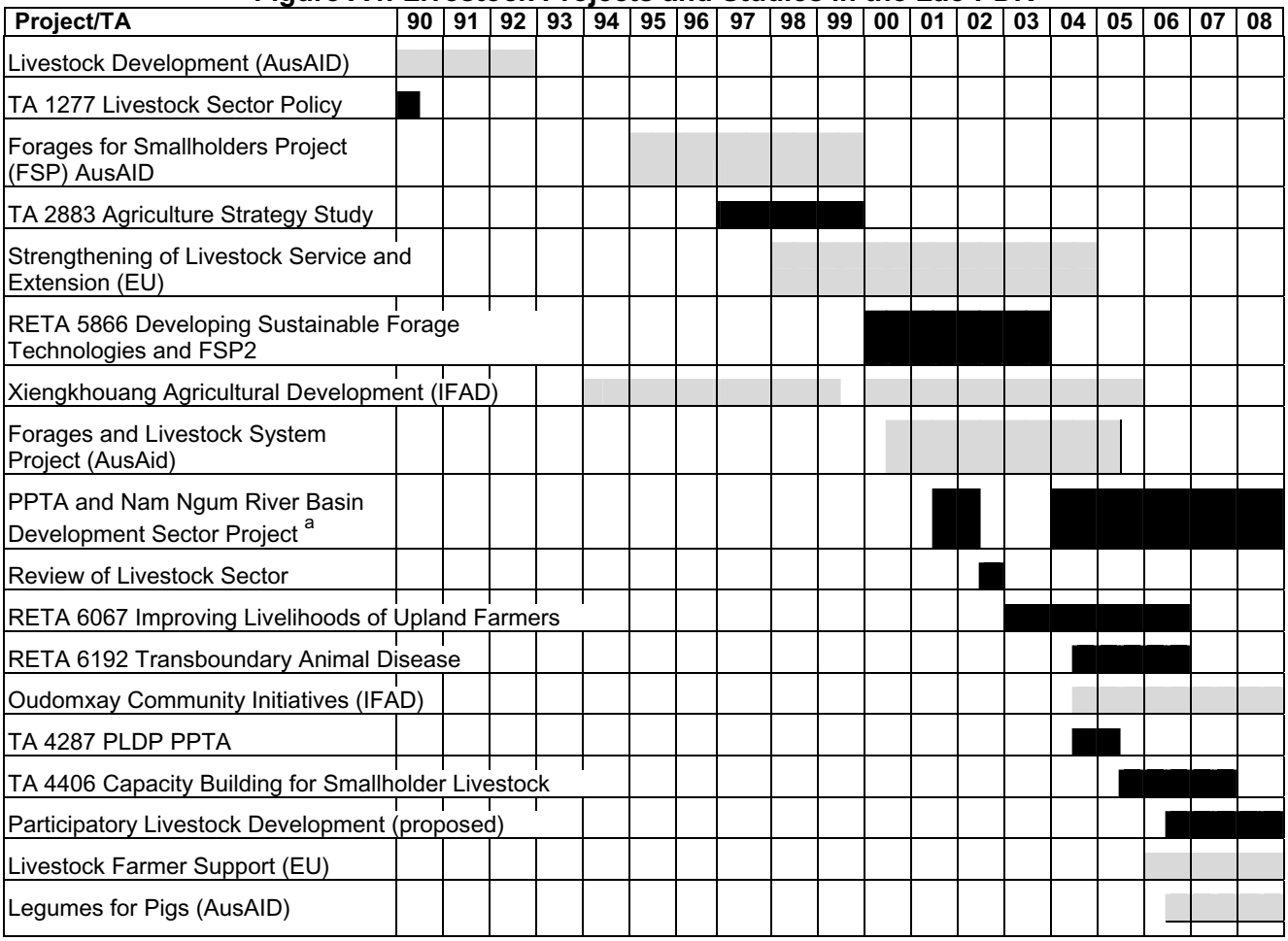
ADB = Asian Development Bank, AusAID = Australian Agency for International Development, FLSP = Forage and Livestock System Project, FSP = Forages for Smallholders Project, GMS = Greater Mekong Subregion, Lao PDR = Lao People's Democratic Republic, PLDP = Participatory Livestock Development Project, PRC = People's Republic of China, PPTA = project preparatory technical assistance, RETA = regional technical assistance, TA = technical assistance.
Source: Various project reports.

12. While it has taken 15 years for the partnership between ADB and the Lao PDR to reach the stage where an investment project for livestock development appears imminent, several ongoing interventions have significant livestock development perspectives in the context of the

existing farming systems. Examples include the Shifting Cultivation Stabilization Pilot Project (Loan 1688-LAO), Decentralized Irrigation Development and Management Sector Project (Loan 1788-LAO), and Smallholder Development Project (Loan 1949-LAO). The extension services provided under these projects are based on a farming systems approach to development, and these services generally reflect MAF's new approach to extension. However, these projects were not specifically designed to support livestock development, and are likely to experience implementation challenges.

13. ADB-financed interventions have been intertwined with a series of studies and projects funded by other aid agencies including AusAID, the EU, and the International Fund for Agriculture Development. Livestock projects and other projects with major livestock components are summarized in Figure A4 with their approximate implementation periods.

Figure A4: Livestock Projects and Studies in the Lao PDR



AusAID = Australian Agency for International Development, EU = European Union, IFAD = International Fund for Agricultural Development, PLDP = Participatory Livestock Development Project, PPTA = project preparatory technical assistance, RETA = regional technical assistance, TA = technical assistance.
Note: Durations of ADB-financed projects are shown in black, non-ADB projects in grey.
[a] Livestock improvement activities under the watershed management component.
Source: Various TA and project reports.

D. Implications for Future Activities

14. Livestock projects are among the most challenging in the ADB portfolio, with an overall success rate to date of only 14%. They require careful design, detailed monitoring, and a flexible implementation approach so that rapid responses can be made to problems encountered. This is due to several main features pertaining to livestock projects: (i) animal health, nutrition, and other factors influence morbidity and mortality; (ii) livestock are categorized as fungible assets, which can be easily moved and sold; and (iii) a large number of variables and risks affect livestock performance.

15. Despite inherent risks and challenges facing livestock development, the poor in the Lao PDR perceive livestock farming as an approach or pathway to escape from poverty. The proposed PLDP capitalizes on a substantial body of work and research in the Lao PDR and the region, particularly with respect to forage development and models for extension services. TA 4406-LAO (Capacity Building for Smallholder Livestock) is relevant to and complements the proposed PLDP. TA 4406-LAO can potentially assist the implementation and performance of the proposed PLDP during the first 2 years.

16. The conceptual development framework of PLDP emphasizes secure and improved livestock management practices including sustained availability of forage as a precondition for making livestock credit available to farmers. This requires farmers to demonstrate successful examples of animals being reared on balanced diets in confined areas and with improved management. Funding small livestock (goats and pigs) development may be more appropriate than targeting cattle for smallholder livestock credit (particularly through cattle banks), as credit packages can be too large for small farmers, and the repayment duration too long. Small livestock are more suitable than large ruminants for a number of reasons: (i) they are widely reared at affordable unit costs, (ii) they have shorter gestation periods and production cycles, and (iii) technologies for increasing productivity and reducing risks in small animals are readily available. However, poultry are currently at severe risk from avian influenza, and should be cautiously supported until epidemic threats can be mitigated and brought under control.

SUMMARY OF KEY POLICY REFORMS IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC (1986–2004)

Period	Major National Political Economy Events	Significant Administrative/Legal/Policy Events
1986–1989 **EARLY ECONOMIC REFORMS**	4th Lao People's Revolutionary Party (LPRP) Congress Promulgation of New Economic Mechanism (NEM)—Economic reform process began formally Drought affected agriculture and natural resources (ANR) sector severely in both 1987 and 1988	**Macroeconomic Reforms:** (i) State activities—State monopoly on most trade effectively abandoned, fixing of government procurement prices (including rice and other crops), most retail prices freed; international trade liberalized, private sector authorized to produce and distribute most goods, leasing of some non-agriculture state-owned enterprises (SOEs) began (ii) Banking and finance—exchange rates devalued and more aligned to parallel rate, separation of central bank and commercial bank functions of state bank, elimination of preferential interest rates for public corporations and cooperatives, foreign exchange rates unified, market determination policy established for interest rate structure (i.e., no negative real rates, loan rates to exceed deposit rates, long-term rates to exceed short-term rates, and state bank granted the sole right to determine and manage foreign exchange rate) (iii) Tax regime—major tax reforms (profit and turnover taxes replaced SOE direct transfers, income-based export taxes introduced, reduction in maximum import tax, itemized export taxes, restructured turnover taxes, extensive and progressive income tax, *ad valorem* taxes on natural resource exploitation, tax on non-agricultural land) (iv) Legal environment—Foreign Investment Law and Foreign Investment Code prepared (guarantees against nationalization, provides for repatriation of after-tax profits, and allows foreigners to hold 100% of capital) (v) Institutions and Processes—Board of Investment established **ANR Reforms:** (i) Government formally retains control over 11 classes of strategic exports to COMECON (Council for Mutual Economic Assistance) countries (such as saw logs, processed woods, rattan, coffee, tobacco, cardamom, benzoin, mineral, cattle, wild animals), but also begins to issue licenses to private traders (ii) Some private sector rights (long-term land rental, autonomy of private firms, profit retention) established (iii) Log export tax introduced; high quality log export quota introduced (iv) Ministry of Agriculture and Forestry (MAF) departments reduced from 21 to 10; National Agricultural Research Center (NARC) established

Period	Major National Political Economy Events	Significant Administrative/Legal/Policy Events
1990–1994 **SUCCESSFUL ECONOMIC MANAGEMENT AND STABILIZATION**	**Adoption of new Constitution (1991)** Effective end of external assistance and commodity aid from COMECON Ongoing structural adjustment measures (International Monetary Fund [IMF], World Bank, United Nations, Asian Development Bank [ADB]), effective monetary policy and stable exchange rate, some foreign direct investment (FDI) inflow	**Macroeconomic Reforms:** (i) State activities—Government to disengage from all enterprise activities (except seven strategic activities), strategic goods exportable only by state companies are reduced, bilateral payment arrangements with COMECON countries eliminated, quantitative restrictions, and specific licensing requirements for most goods eliminated (ii) Banking and finance—Central Bank Law (Bank of the Lao PDR, as central bank), kip (local currency) to be used for all domestic transactions, restrictions on foreign exchange holdings removed, state commercial banks established (iii) Tax regime—excise tax on petroleum products and luxury goods introduced, some tax rate rationalization, Customs Code and revised tariff rates adopted, minimum corporate income tax reactivated, protection to business investors extended under Foreign Investment Code, tariff rationalization and revision, minimum 5% duty on exempted items, registration tax introduced, removal of remaining export taxes, raising of electricity tariff (iv) Legal environment—Budget Law (05/94, 18/07/94) defines process (fiscal centralization adopted, consolidation of national budget), Foreign Investment Law (No 01/94, 14/03/94) and code revised (harmonizes foreign investment and commercial laws), Business Law (No 03/94, 18/07/94) defines roles in licensing of Ministry of Commerce (MOC), Ministry of Agriculture and Forestry (MAF), and line ministries (iv) Institutions and Processes—Public Investment Programming (PIP) began, National Treasury established, external assistance centralized, Department of Public Administration and Civil Service established, Committee for Planning and Cooperation (CPC) established **ANR Reforms:** (i) Twenty of 37 SOEs controlled by MAF privatized under leases, ending of export taxes on agricultural products, border trade settlements via banks began, long-term land use and transfer rights established, Land Tax replaced Agriculture Tax, and credit made available to farmers at preferential rates (ii) Tropical Forestry Action Plan programs completed; timber royalties restructured, export tariffs revised, logging ban and changes to quotas (iii) MAF departments reduced from 10 to 6, National Agricultural Extension Service (NAES) established, Center for Protected Areas and Watershed Management (CPAWM) established (iv) Irrigation operation and maintenance (O&M) regulations; handing over of schemes to users (v) The Lao PDR and the International Rice Research Institute (IRRI) began to collaborate on rice research in 1990

Period	Major National Political Economy Events	Significant Administrative/Legal/Policy Events
1995–1997 **EMERGING FINANCIAL PROBLEMS**	6th LPRP Congress; Party confirmed that reforms would continue. The Lao PDR joined the Association of Southeast Asian Nations (ASEAN, 1997; Common Effective Preferential Tariff-ASEAN Free Trade Agreement process began). Asian financial crisis began. Lax fiscal and monetary policies Policy lending to SOEs	**Macroeconomic Reforms:** Competitive kip devaluations and slow structural change Decentralization began Import tariff bands reduced, Customs Law introduced, raising of electricity tariff, foreigners living/working in the Lao PDR have right to lease land Land Law (01/97/NA) serves as new basis for land administration and management. Land titling program of the Government started in 1997 with the support of the World Bank and the Australian Government in 1997 **ANR Reforms:** SOEs of MAF privatized—only six centers retained to support MAF research and extension activities National Strategic Plan for Agriculture and Forestry approved Watershed and Water Resource Management Law (includes specifications on O&M; No. 02/96, 11/10/96, and implemented 2001 with PM Decree); National Water Sector Profile prepared Forest and Forest Land Management Law integrates agroforestry and upland agriculture activities and planning (01/96, 11/10/96, and replaces PM Decree 169 of 1993) End of large-scale irrigation investments Partial cost recovery for electricity on pump-irrigation lands Establishment of water users' associations with a legal framework Focal site approach to rural development strategy initiated Modification of the Lao PDR Penal Code to outlaw opium poppy cultivation

Period	Major National Political Economy Events	Significant Administrative/Legal/Policy Events
1997–1998 **ASIAN FINANCIAL CRISIS**	Foreign exchange losses, with some capital flight; budget problems and deficit financing, recurring bouts of inflation Favorable weather for rice crop	Agriculture Law passed by National Assembly (No. 01/98/NA, 10/10/98) Irrigation projects transferred to community organizations; PM Order 26 sets up management details for Village Development Funds PM Decree (No. 68 of 1998) designates the Science, Technology and Environment Agency (STEA) as the agency responsible for oversight and coordination of environmental protection By 1999, some 20 locations had been designated as National Biodiversity Conservation Areas (although with insufficient budget to manage them) A nationwide irrigation management transfer (IMT) was prepared to entrust O&M responsibility to farmers Definition of irrigation service fees to fully cover O&M

Period	Major National Political Economy Events	Significant Administrative/Legal/Policy Events
1998–2000 **FINANCIAL DESTABILIZATION**	Continuing destabilization and recurring budget deficits, excess liquidity and inflation, and currency depreciation Favorable weather for rice crop in 1999	**Macroeconomic Reform:** Environment Protection Law adopted by National Assembly (No. 02/99/NA, 3/04/99) Implementation of 1997 Land Law New procedures for State Budgets Presidential Decree on Land Tax Decentralization policy adopted National Agriculture and Forestry Research Institute (NAFRI) established to lead the technical research work on agriculture, forestry, fishery, and livestock **ANR Reforms:** Water Resources Coordination Committee established Water Sector Strategy and Action Plan prepared Key regulations concerning forest natural resource utilization approved in 1998: (i) planting and rehabilitating forests, (ii) exploitation of forest products and forest industry, and (iii) rights and obligations of forest and forest land users Series of regulations governing water users' associations (1997–2003) Strategic Vision for Agriculture (1999) produced and adopted as ANR policy, including (i) commercialization of agriculture along the Mekong Corridor, (ii) promotion of subsistence agriculture in the Northern sloping lands for poverty reduction The Lao PDR declared rice self-sufficiency; total rice production reached more than 2.1 million metric tons Processing Industry Law No. 01/99/NA, 3/04/99 'Balanced Approach to Opium Elimination in the Lao PDR' policy and PM Order against cultivation and production of opium poppy, leading to 80% decline in opium poppy cultivation by 2004 (compared with 1990)

Period	Major National Political Economy Events	Significant Administrative/Legal/Policy Events
2000–2004 **RECOVERY AND RESTABILIZATION**	National 5-year recovery plan adopted Better fiscal discipline, some evidence of structural transformation and revitalization of reform process Increasing regional integration underway (ASEAN, Greater Mekong Subregion [GMS]) 7th LPRP Congress (approves 5th Socioeconomic Development Plan) United States of America (USA) Bilateral Trade Agreement World Trade Organization (WTO) accession process began with diagnostic trade integration study Lao PDR and IMF (2001) Poverty Reduction and Growth Facility	**Macroeconomic Reforms:** (i) **State activities**—further SOE reform program initiated (including Agro-industrial Development Company); management of roles and responsibilities of SOEs clarified (ii) **Banking and finance**—various banking reforms regarding loans: classification, foreign exchange, individual and group limits, etc. (and for subsequent years) (iii) **Legal environment**—implementation of Water Law, Environment Protection Law, Law on Promotion and Management of Foreign Investment (guidelines for approval registration etc); revision of Domestic and Foreign Investment Laws adopted by National Assembly, and PM Decision 43/PM on one-stop shop for FDI approvals; decentralization of regulations on investment approval (iv) **Tax regime**—White Paper on water tariffs, electricity tariffs increase (v) **Institutions and processes**—websites on investment processes set up to improve transparency and promote simplicity; further efforts at trade promotion; National Land Policy Committee established (vi) National Growth and Poverty Eradication Strategy (NGPES) adopted (vii) **Rural Finance and Microfinance**—committee established under Bank of Lao to develop action plan for finance provision; draft legal and regulatory framework for microfinance being finalized; pilot savings and credit unions established **ANR Reforms:** Ongoing forestry reform—decrees on management of production forest and sustainable management of production forestry

GOVERNANCE ISSUES IN AGRICULTURE AND NATURAL RESOURCES IN THE LAO PDR

A. Background

1. The Asian Development Bank (ADB) defines governance as the manner in which power is exercised in the management of a country's economic and social resources for development.[1] The pillars of the ADB's policy on governance are presented in Table A6.1. The concept of governance is concerned with the management of the development process, involving both the public and private sectors. It covers the functioning and capability of the public sector, including the rules and institutions that create the framework for the conduct of both public and private business, and regulatory frameworks. There is an extensive literature on governance in the Lao People's Democratic Republic (Lao PDR), and this appendix highlights a few key issues which affect the agriculture and natural resources (ANR) sector's performance.

Table A6.1: Pillars of the ADB Governance Policy

Pillars of Governance	Key Dimensions	Specific Action Areas
1. Accountability means making public officials answerable for their behavior, actions, and decisions and being responsive to the entity from which they derive authority	• Establishing criteria to measure performance of public officials • Institutionalizing mechanisms to ensure that standards are met	• Public sector management • Public enterprise management • Public financial management • Civil service reform
2. Participation refers to enhancing people's access to and influence over policy and decision making	• Undertaking development for and by the people	• Participation of beneficiaries and affected groups • Government-private sector interface • Decentralization of public and service delivery functions (empowerment of local governments) • Cooperation with nongovernment organizations
3. Predictability refers to the fair and consistent application of laws, regulations, and policies to regulate society	• Establishing and sustaining appropriate legal and institutional arrangements • Observing and upholding the rule of law • Maintaining consistency of public policies	• Law and development • Legal frameworks for private sector development
4. Transparency refers to the availability and accessibility of information to the public and the clarity of rules and regulations	• Ensuring access to accurate and timely information about the economy and government policies	• Disclosure of information

Source: Summarized from ADB. 1995. *Governance: Sound Development Management*. Manila.

2. The Lao PDR was proclaimed in 1975, ending the rule of the Royal Lao Government of the Kingdom of Lao (1946–1975). Much of the country was in ruins after 20 years of political struggle and the effects of the Indochina war (1964–1973). The communist government sought development through agriculture. Attempts at collectivization of agriculture, designed to gain state control over agricultural production, encountered strong opposition. Agricultural production stagnated. In 1979, the Lao People's Revolutionary Party (LPRP) took its first steps towards market-oriented reform by easing restrictions on private trade and encouraging joint ventures between the State and the private sector. An interim 3-year economic development plan began in 1979. The Government reduced agricultural taxes and increased state procurement prices for

[1] ADB. 1995. *Governance: Sound Development Management.* Manila.

most crops, but it retained central planning. In 1981, the first 5-year development plan began. More far-reaching reforms began with the introduction of the New Economic Mechanism (NEM) in 1986, coinciding with the commencement of the second 5-year development plan. The NEM recognized the dominant role of agriculture and sought to address shortcomings in the sector through reform measures to move toward a market economy. The Government abandoned the collectivization of agriculture, eased restrictions on private sector activities, and allowed state enterprises to have more decision-making authority.

3. The adoption of the 1991 Constitution of the Lao PDR marked an important milestone, laying the foundation for the country to create an effective legal system on which to establish the rule of law. The Constitution defines the country as a people's democratic state, with the LPRP as the nucleus of the country's political system. With around 65,000 members, the LPRP is the only political party in the country. It is governed by a Central Committee and headed by an 11-member Politburo. The members of the Politburo are elected from and by the Central Committee. The Politburo dominates policy making within the LPRP and is the single most influential body within the Lao PDR. Major policy is set at the LPRP Congress, which is held every 5 years, and at meetings of the Central Committee in the interim.

4. The political economy of the Lao PDR exhibits certain features that may be regarded as constituting weak governance. These include an overly bureaucratic, politicized, and underperforming civil service; a weak judicial system and poor legislative oversight; and the lack of empowerment of civil society.[2] There is some nepotism and patronage within the political and bureaucratic systems.[3] With inadequate transparency and accountability, observers (including aid agencies) find it difficult to understand the decision-making processes and structures. The Governance Research Indicator Country Snapshot (2005) of the World Bank rated the Lao PDR below all countries in the region except Myanmar on measures covering the rule of law, regulatory quality, control of corruption, and government effectiveness.[4]

5. The Government has taken several steps to increase the efficiency of public services by (i) introducing guidelines on public administration reform in 1998, (ii) establishing the central committee for government organization improvement under the Prime Minister and provincial committees (1998–2000), (iii) establishing the State Audit Organization (1998), (iv) issuing a Prime Ministerial order on anticorruption (1999), (v) restructuring central agencies and ministries (1999–2000), (vi) issuing a Prime Ministerial decree on decentralization (2000), (vii) transferring personnel management functions from the LPRP (organizational committee) to the Prime Minister's Office (Public Administration Department) in 2001, (viii) reviewing and increasing civil servants' salaries (2000–2002), and (ix) developing and implementing a new performance evaluation system for civil servants (2000–2002). However, even with these measures, the structure and capability of public service needs further strengthening to realize the country's potential.

6. Priority areas for governance reform were identified and described by the Government in 2003. For the first time, the Government drafted a policy paper on governance issues and

[2] There are four nonstate mass organizations: the Lao Women's Union, Lao People's Revolutionary Youth Union, Lao Front for National Construction, and the Lao Federation of Trade Unions. The Government does not officially encourage the establishment of local nongovernment organizations. Except for the Lao Red Cross, there are few indigenous organizations that may be considered as emerging organizations operating independently of the Government. Two examples are Champa, which is active on health issues, and Padek Lao on agriculture.

[3] Articles 36 and 37 of the Civil Service Decree prohibit nepotism. Article 32 seeks to stop conflicts of interest in relation to involvement of government employees in private businesses. Neither of these Articles has been elaborated with procedures of mutual rights and obligations.

[4] World Bank. 2005. *Governance Research Indicator Country Snapshot, 1996-2004*. Washington DC. Available: <http://info.worldbank.org/governance/kkz2004/>.

discussed it with funding agencies at a governance roundtable meeting in 2003.[5] This represents an important milestone towards governance reform, emphasizing public service improvement, people's participation, the rule of law, and sound financial management. In November 2004, a follow-up governance roundtable was held, and the Government reported on progress during the first 18 months of implementation, further prioritized governance policy reform areas, and highlighted resources required.

7. Strengthening the legal framework has continued. Regulatory frameworks for public finance were introduced with assistance from ADB including (i) decrees on the public investment program and official development assistance management, and (ii) government accounting regulations and procedures. Nevertheless, weak governance and capacity, particularly at the local level, continue to be serious constraints to the country's development and poverty reduction efforts. Further progress in establishing a regulatory framework for improved governance includes (i) amendments to the Constitution, strengthening the public administration mechanism and structure; (ii) adoption of the revised National Assembly Law, the Government Law, the Local Administration Law, and the Law on Enforcement of Court Sentences; and (iii) revisions to the Land Law, Civil and Criminal Law, the Law on the People's Court, and the Law on People's Judiciary Authority. The Prime Minister issued the Civil Service Act in May 2003 to improve civil service management by introducing recruitment exams, job descriptions, assignment criteria, performance evaluations, and a reward system. ADB has supported development of commercial courts.

8. The Government developed a program to strengthen public expenditure management with assistance from ADB and the World Bank. The program was designed to improve consistency, efficiency, transparency, and accountability in public expenditure management, including expenditure planning and budgeting, budget execution, accounting, and reporting at both the central and provincial levels. ADB has provided technical assistance to the Government to strengthen its accounting regulations and procedures, and the institutional capacity of the State Audit Organization. In 2004, the Lao PDR adopted laws on enforcement of court decisions and the National Assembly's monitoring and inspection function.

9. Major governance concerns in the ANR sector include (i) corruption and its consequences, (ii) deficiencies and inconsistencies in the legislative framework and its implementation to manage common property natural resources on a sustainable basis, (iii) inadequately supervised and largely unaccountable state-owned enterprises (SOEs), and (iv) a number of policies that appear to be biased against the interests of the rural poor (including ethnic minorities). The importance of good governance in ANR to the country's economic development is well recognized by the Government and aid agencies including ADB. The Government recognizes that governance is a vital link between economic growth and poverty reduction and that environmental sustainability is a prerequisite for continued sustained economic growth and poverty reduction.

10. A key governance constraint in the Lao PDR is corruption at all levels. New opportunities for corruption emerged as economic reforms started to take hold in the 1980s.[6] Since 1993, the Government has taken many actions to address corruption by adopting an anticorruption decree in 1999; issuing new directives at the LPRP Congress in 2002; publicly condemning lavish

[5] Lao PDR: Public Service Reform, People's Participation, Rule of Law and Sound Financial Management - Background Paper on Governance, Priority Areas for Governance Reform: Roundtable Process. Vientiane, March 2003.

[6] Clay Wescott in Jack Rabin, ed. *Encyclopedia of Public Administration and Public Policy.* New York: Marcel Dekker, Inc., in press (Online).
Available: <http://www.dekker.com/sdek/132499623-95569352/issues~db=enc~content=t713172970>.

consumption; and strengthening the State Audit Organization, State Inspection Authority, and Inspection Department of the Ministry of Finance. Box A6.1 presents a chronology of major anticorruption initiatives. In April–May 2005, the National Assembly deliberated on and adopted laws on anticorruption measures, commercial arbitration, and amendments to laws on taxation and customs.

Box A6.1: Chronology of Anticorruption Initiatives in Lao PDR

1986	Corruption was recognized for the first time at the 4th Party Congress. The system of central planning was blamed for the deficiencies in the management of state affairs.
1993	The Prime Minister issued a decree designating the role of Party Control Committees to fight corruption at the central, provincial, and local levels, as well as in the ministries, prosecutor's offices, and courts. The decree stipulated that all citizens have the right to sue and provide information to battle corruption. A Central Task Force on Corruption was formed.
1996	Prime Ministerial Decree No. 8 details the relevance of eradicating corruption; the State Inspection Committee was created, tasked to serve as the internal control within the Government. However, the committee was dissolved after a year and was replaced by the Party Control Committee. The United Nations Development Programme (UNDP) funded the first study on audit and inspection in the country, which led to the formation of the State Audit organization in 1998 with technical assistance (TA 2987-LAO) from ADB.
1998	At the time of the financial crisis, Prime Ministerial instruction No. 16/PM was issued to prevent mismanagement and misuse of government resources, including resources obtained from official development assistance. This instruction also attempted to cease widespread unofficial use of government vehicles. The State Audit Organization was established under PM Decree No. 174/PM.
1999	Prime Ministerial Decree No. 192/PM established detailed regulations of the budget law and how to economically use the state budget. The Anticorruption Decree (No. 193/PM) was issued to suppress the growing incidence of petty and grand corruption in the government. It defined corruption as the endemic abuse by some groups and individuals, who intentionally misuse their position, power, and authority to steal public assets, accept illegal fees or bribes; and disobey rules, regulations, and laws in order to benefit themselves, their families and relatives, their cronies, and partners (article 2).
2001	The State Inspection Authority (SIA) was established as the new anticorruption body reporting directly to the Prime Minister.
2003	The first Round Table Meeting on Governance was organized by the Government and the United Nations Development Programme. Aid agencies were requested to provide assistance in the area of accountability, transparency, and integrity. Lao PDR became a signatory of the United Nations convention against corruption.
2005	April–May 2005, the National Assembly deliberated on and adopted laws on anticorruption measures.

Sources:
Keuleers, Patrick. 2002. *Case Study Lao PDR Corruption in the Lao PDR: Underlying Causes and Key Issues for Consideratio*n. Bangkok: UNDP.
UNDP. 2004. *Combating Fraud and Corruption for the Transparency and Effectiveness of the Public Management in Lao PDR*. Paper presented at the Training and Experience Sharing Seminar on "Public Ethics and Accountability". 20-22 September 2004 Hanoi, Viet Nam.
ADB. 2005. *Lao PDR: Country Strategy and Program Update (2006–2008)*. Manila.

11. Factors contributing to corruption in the civil service include (i) inconsistent understanding among government staff of government policies and their responsibilities, (ii) incomplete legal framework, (iii) unclear decentralization systems and inadequate job

descriptions,[7] (iv) limited capacity in public administration at the central and local levels, and (v) inadequate organizational systems.[8] Despite past wage increases, government salaries are still generally below the minimum needed for food and basic necessities.[9] Low salaries effectively mean that government employees must have other jobs, family businesses, or other sources of income to survive. The current salary-scale is a major impediment to curbing abuse of public positions for private gain.

12. The relevance of governance to the ANR sector can be illustrated as follows: (i) agricultural growth directly benefits the majority of the poor; this growth (including in foreign direct investment) in ANR depends on the transparency and predictability in the implementation of investment laws, the trade regime, and taxation; (ii) farmers, agribusiness enterprises, and investors must have confidence in relation to their land tenure to ensure security of property rights; (iii) agricultural growth also depends on protecting water, soil, and forest resources through controlling the commercial and population-driven loss of forest, and on the Government's capacity to monitor and regulate, and to impose penalties for illegal acts; and (iv) changes required to increase the agricultural growth rate depend partly on governance and how well domestic organizations function.

B. Resource Allocation

13. Since fiscal year (FY) 2001, with the implementation of fiscal stabilization initiatives launched in late 1999, the Government has made some progress in shifting the structure of spending towards priorities laid out in its development and poverty reduction strategies. However, the scope for reallocation of resources has been constrained by slow recovery of revenues and, consequently, modest growth in the budget base. Allocations to agriculture fell sharply from 19% of total public expenditures in FY2001 to 9% in FY2004, as the Government cut back on large irrigation schemes (Table A6.2). About one half of domestically financed expenditures were allocated to public administration, security and justice, with the share of these rising slightly in recent years, partly driven by increases in personnel costs. Across all sectors, there has been a marked shift from capital to recurrent spending, with recurrent spending increasing from 53% of domestically financed expenditures in FY2001 to 65% in the FY2004 budget. However, operating and maintenance expenditures are still under-funded across all sectors, including ANR, and cost-recovery schemes finance key inputs.

[7] New administrative and financial arrangements were introduced in 2000-2001 with the government decentralization measures, which devolved financial management to the provinces and districts. These changes worsened weaknesses in revenue management, budget formulation and execution, and expenditure management. Reportedly, provincial authorities failed to remit taxes and duties collected locally to the national treasury as required under the law.

[8] Lao PDR. *Implementation of Priority Areas of Governance Reforms, Progress Report, Governance Round Table Meeting.* Vientiane, November 2004.

[9] In January 2005, the government salary scale was categorized into 5 grades, each with 15 steps. The lowest salary grade and step was KN202,500 ($19/month) and the highest KN631,500 ($59).

Table A6.2: Percentage of Public Expenditures in the Lao PDR
(Excluding Debt Service)

Sector	Total Expenditure				Excluding External Capital			
	Actual 2000/01	Actual 2001/02	Actual 2002/03	Budget 2003/04	Actual 2000/01	Actual 2001/02	Actual 2002/03	Budget 2003/04
Public Administration	32	40	34	29	47	47	49	54
Economic Sectors, of which	50	35	41	38	34	31	31	25
Agriculture	19	13	13	9	23	15	14	6
Transport and Communications	26	19	25	26	8	12	13	16
Social Sectors, of which	18	25	24	24	18	22	17	19
Education	9	13	11	12	10	12	10	11
Health	4	6	6	6	4	4	3	3
Other/Reserve	0	0	1	9	0	0	2	2

Source: Ministry of Finance, Budget Books.

C. Business and Investment Climate

14. When the overall business and legal climates remain poor, it is unlikely that there will be large inflows of foreign capital, technology, and market information links to the ANR sector. For example, the 2005 Index of Economic Freedom ranked the Lao PDR 150th among 155 countries, with a weighted score of 4.33 (1 indicates best, 5 worst). Individual scores were as follows: trade policy (4), fiscal burden (3), property rights (5), regulation (5), informal market (5), government intervention (3), monetary policy (4), foreign investment (4), banking and finance (5), and wages and prices (4).[10] A snapshot of the business environment (2004) in the Lao PDR does not provide encouraging perceptions, reflecting major predictability and transparency issues in doing business in the country.[11]

15. The Lao PDR is perceived to be an unsafe place to invest by many companies that might otherwise invest in Lao agribusiness. Impediments include (i) risk imposed by the uncertain legal environment; (ii) difficulties with contract enforcement; (iii) transaction costs for business registrations, export licenses and other administrative processes; (iv) weak, sometimes contradictory, and often opaque regulatory and legal framework, which imposes extra burdens; and (v) market-restraining practices, nontariff barriers, and border irregularities. While the legal framework for the operation of commercial businesses has been developed, uncertainty persists.

16. Several factors hinder lending by banks and discourage foreign investors: (i) lack of translation and dissemination of legislation, (ii) limits on judicial capacity, (iii) incomplete repeal of legislation that is technically no longer in force, (iv) overlap between laws and between decrees, (v) uncertainty of title registration procedures, (vi) incomplete land titling and associated transaction costs, and (vii) time-consuming legal processes in relation to contract enforcement and debt recovery. All of these factors undermine the business environment in general, including the ANR sector.

[10] Available: <http://www.heritage.org/research/features/index/country.cfm?id=Laos>.
[11] World Bank. 2004. Doing Business, Snapshot of Business Environment, Lao PDR. 2004. Available: <http://www.doingbusiness.org/ExploreEconomies/BusinessClimateSnapshot.aspx?economyid=107>.

D. Corruption and Its Consequences

17. The issue of corruption in the ANR sector is important, because it is both inequitable and it affects economic efficiency. Lao society is characterized by social control systems, inspired by tolerance, compassion, respect for authority and seniority, loyalty to kinships, and avoidance of confrontation. Some of these factors, combined with the country's political and economic history, contribute to the difficulties experienced in addressing corruption. Some of the new opportunities for corruption (which opened up as economic reforms started to take hold in the 1980s and afterwards) have included, for example, the following: (i) giving provinces the right to trade directly with neighboring countries has opened the way for trade-related graft; (ii) the opening up to foreign investment has introduced opportunities to collect money to facilitate required authorizations; and (iii) the enhanced political and economic role given to the army has provided new opportunities for smuggling.[12] Appointment or promotion on factors unrelated to merit and motivation can be a major disincentive for all government staff to perform effectively. Allegations of corruption in the ANR sector are not uncommon, and these may have also affected the ADB-financed Industrial Tree Plantation Project (Box A6.2).

Box A6.2: Industrial Tree Plantation Project (Loan 1295-LAO)—Allegations of Corrupt Practices

The Project Completion Report (PCR) of this project was included as part of a sample of PCRs subjected to an in-depth review by the Operations Evaluation Department. The project was rated unsuccessful.

- Targeted and subsidized credit in the form of government-directed "policy" lending led to abuse and inefficiency. The interest rate to sub-borrowers was kept at 7% per annum in nominal terms in the local currency, while the inflation rates were subsequently higher than the interest rate.
- There were alleged cases of corrupt practices such as collusion between credit officers of the Agriculture Promotion Bank (APB) and clients to facilitate clients obtaining credit, and alleged ghost borrowers.
- There were serious allegations of misuse of credit funds, inflated development costs, and overdisbursements of loan funds. Credit amounts authorized by APB for individuals and, particularly, for enterprises were excessive. It was likely that credit funds were used not solely for the purpose of establishing tree plantations. An APB survey found major discrepancies between actual planted areas and the areas for which subloans were authorized.
- There was external interference, as APB acted as an agent of the Government to deliver directed credit. This allegedly included lending by APB to individuals endorsed by people of political influence.
- Thousands of farmers and individuals were misled into expecting unattainable gains, leaving the majority of farmers with onerous debts and with no prospect of repaying their loans. Business plans of individual sub-borrowers were developed based on unrealistic assumptions of expected yields, prices, and sub-borrowers' debt repayment capacity. The project counted on the prospect of markets developing rather than on actual markets. The approach as it evolved during project implementation was too risky for a public sector investment.

Sources:
(i) ADB. 2005. *Project Completion Report on the Industrial Tree Plantation Project in the Lao People's Democratic Republic.* Manila.
(ii) Interviews and observations by the Operations Evaluation Mission.

18. Recent work by the United Nations Development Programme suggests that corruption in the Lao PDR has now reached a level where it can no longer be ignored or tolerated by society, and that it may be the single biggest impediment to ongoing reform.[13] Articles have appeared in official media saying that corruption is a "chronic problem" and may be "undermining the revolution."[14] This helps to explain resistance to liberalization and deregulation of the business

[12] ADB. 2001. *Key Governance Issues in Cambodia, Lao PDR, Thailand, and Viet Nam.* Manila.
[13] Keuleers, Patrick. 2002. *Case Study Lao PDR Corruption in the Lao PDR: Underlying Causes and Key Issues for Consideratio*n. Bangkok: UNDP.
[14] For example, in the '*Vientiane Times*' (18-21 July 2003), cited in *Politics and Reform in the Lao People's Democratic Republic;* Martin Stuart-Fox, Political Economy of Development Working Paper No.1 Program on Civil Society and Governance, The College of William & Mary, 2004.

environment. Many opportunities for rent-seeking can be curtailed if not eliminated with increased efforts to fight corruption. Corrupt behavior reduces government revenues, misallocates expenditures, reduces foreign investment, and erodes public trust.

19. Rent-seeking behavior on the part of officials helps to explain many of the features of ANR transactions and activities in the Lao PDR. For example, the border trade with Thailand is driven by the market's ability to pay for primary produce. However, much of the border trade is conducted informally and illegally, largely in response to customs officials' demands for illicit payments. While this is hard to document systematically, an example encountered by the ADB-financed Smallholder Development Project in early 2005 indicated that traders exporting castor beans to Thailand had to pay customs officials.[15] The added cost, unpredictability, and lack of transparency adversely affect the country's competitive advantage in export markets. Arbitrary imposition of informal levies on livestock exports encourages illegal activities and noncompliance with quarantine regulations. Numerous regulations (about which there is little understanding by officials and traders) governing the interprovincial movement of livestock, rice, fruits, and vegetables provide opportunities for domestic rent-seeking. The overall consequence of corrupt behavior exploiting the ambiguous and often inconsistent regulatory framework keeps ANR activity small-scale, informal, and low in value addition. More generally, the weakness of the tax and customs administrations, and corruption, are perceived to be among the main reasons for poor revenue generation. This has direct consequences on the rural poor, as services that might have been provided by the State cannot be made available (or are of inferior quality) because of a lack of funding.

E. Need to Protect Common Property Resources

20. The policy, legal, and regulatory framework for sustainable environmental management has improved with passage of the Law on Water and Water Resources (1996), Forestry Law (1996), Land Law (1997), Agriculture Law (1998), and Environmental Protection Law (1999). Major gaps remain, however, between the formulation and implementation of legal instruments, and between the establishment and enforcement of rules and regulations. Inadequate transparency and poor accountability compromise the ability to monitor the environment. The lack of transparency is evident in the case of logging, where breaches of the law have not been dealt with or have gone unnoticed (Box A6.3).

[15] Allegedly, traders paid B6/kg to customs officials at the border, while the crop price at the farm gate was only B4/kg.

Box A6.3: Governance Issues in Forestry

In general, legislation and regulations governing forestry are complex, incomplete, inconsistent, and difficult to interpret and apply. This creates a lack of transparency and predictability that permits various forms of inefficiency and inequity and severely compromises the performance of the forestry sector. Work under way for the possible creation of a plantation authority for the Lao PDR identified 26 specific pieces of legislation, decrees, and regulations that cover plantation operations with a list of articles that have to be complied with in plantation operations.

Logging is based on a complex system of quotas and permissions. The public allocation of logging rights has managed to guarantee neither long-term sustainability nor optimal economic return for the country or the local community. The system suffers from a lack of clear procedures, poor accountability, poor predictability, lack of transparency, and short-sighted views. It suffers from undue interventions by politicians and vested interests. Decisions on logging quotas are not based on sustainable forest management principles but rather on the need to supply wood industries with raw material and the Government with budget revenues. Four main factors contribute to this situation.

First, the regulatory framework is not geared to supporting effective forest management and utilization; criteria for land/forest designation are not published, and the official production forest is not mapped. Production forest designation is largely administrative, and not technical or economic. The arbitrary production forest designation distorts and is a serious constraint to planning and policy making.

Second, some entities issuing logging permits do not have the authority to do so. Logging approval obtained from local or central government authorities is often granted in violation of the law. In addition, unauthorized logging— carried out with or without the knowledge of the authorities—is illegal. Weaknesses in the enforcement of laws and regulations mean that illegal logging is not punished in the courts.

Third, the inadequate field demarcation and definition of protected areas compromises the system of national biodiversity conservation areas (which are extensive).

Fourth, the pressure exerted by companies for logging permits combines with the opportunities for corruption that the confusing legal and administrative arrangements permit. Allocation of production forest resources to firms is unsystematic, uncompetitive, and nontransparent; nor is it related to the annual allowable cut. Allocations are based on *ad hoc* short-term administrative criteria rather than on long-term sustainable forest management principles. Procedures for quota setting and granting are not clear, criteria not disclosed to the public, and guidelines are not available. Company proposals should be submitted through the provincial agriculture and forestry offices or the provincial governors to the Department of Finance and/or the Ministry of Agriculture and Forestry for review. There are allegations of companies circumventing this process.

Poor governance in the forestry subsector directly affects government finances. Logging royalties from forestry as a share of government revenues decreased from 20% in the mid-1990s to 6% of tax revenues and 5% of all revenues in 2000. In the 5 years to 2000, only 50% of royalties on logs was paid (representing a cumulative loss of some $114 million in 1994/95–1998/99). Due to low recovery rates and log price trends, the government royalty from logging has been declining since 1990. The royalty system is based on an administrative pricing system that does not adequately respond to market trends. Wood processing is dominated by SOEs of various types and there is significant overcapacity.

Sources:

(i) Lao PDR Production Forestry Policy: Status and Issues for Dialogue. A Joint Report (June 2001) by the World Bank, Swedish Bilateral Assistance (SIDA), and Ministry of Foreign Affairs of the Government of Finland.
(ii) SIDA. 2004. *Lao PDR Country Analysis*. Embassy of Sweden, Vientiane.
(iii) Keuleers, Patrick. 2002. *Case Study Lao PDR Corruption in the Lao PDR: Underlying Causes and Key Issues for Consideratio*n. Bangkok: UNDP.
(iv) ADB. 2005. *TA 4419–LAO: Forest Plantations Sector Project, Model for the Proposed Lao Plantation Authority, (Draft) 2005*.

21. Law enforcement is a continuing challenge to protect common property in ANR. Experience suggests that it is difficult for the Science, Technology and Environmental Agency (STEA) to ensure that laws and regulations are followed at the provincial and district levels. Whereas technical and administrative competence at STEA has improved (via externally funded projects), little has been done to enhance competence and capabilities at the provincial and

district levels. This situation adversely affects the poorest, whose livelihoods typically depend on common property resources to a disproportionate extent.

22. Since poorly defined property rights often result in market failures in the development and use of these resources, a robust institutional framework is required (particularly in the context of securing informal property rights and good management of common resources) if private sector development and markets are to work for the poor. In the Lao PDR, the institutional framework is weak and largely ineffective. For example, for nontimber forest products (NTFP),[16] the Government's ability to enforce regulations on illegal exports appears weak. Increased commercialization (mainly with the People's Republic of China, Viet Nam and Thailand) of rare NTFPs is a threat to biodiversity, bringing several rare species to the edge of extinction. The importance of these products to rural livelihoods should not be overlooked. In 2001 a rural family consumed about $280 equivalent per year of NTFPs.[17] Thus, the 800,000 rural families (about 4 million people) may use or consume NTFPs worth more than $200 million annually, equivalent to 40% of the average rural family income. Experience from other countries indicates that the Government alone cannot ensure sustainable management of natural resources. Rural residents, civil society, and the autonomous research community, although weak in the Lao PDR, can play an important and necessary role in monitoring the actions of the Government and the private sector.[18]

F. Role of State-Owned Enterprises in Logging, Livestock, and Marketing

23. The political economy of the Lao PDR and its impacts on ANR may be illustrated through the operations of SOEs, mainly but not exclusively involved in logging. Until recently, three SOEs under the jurisdiction of the Ministry of Defense dominated the forestry sector (footnote 17).[19] At the heart of the military's commercial domain is the Import-Export Company, whose diverse activities include agriculture and forestry, construction, light industry, trade, and tourism (footnote 12). The forestry SOEs enjoyed preferential treatment in the allocation of logging, processing, export quotas, and logging contracts as well as exemptions from paying royalties (footnote 17). Over time, these SOEs grew increasingly independent and nontransparent, and their operations were rarely disclosed by the Government.

24. The administrative distribution of timber quotas has now been replaced by more competitive procedures for allocating production forest resources. While the virtual monopoly exercised by certain enterprises has been abolished, the new system lacks transparency—with new and hard-to-identify enterprises (state dominated, if not 100% owned) taking over from the previous SOEs. Consequently, logging remains an obscure issue of national concern because of its effects on the environment, and because it is prone to corruption. A public debate on these issues has not yet taken place. As the 2001 forestry policy review concluded, *"….the privileged position enjoyed by SOEs is a serious obstacle to improved performance and reform. In view of both strong demand from other enterprises, domestic and foreign, for Lao timber, and poor revenue and forest management performance, there is little justification for the continued reliance on SOEs".*

[16] NTFPs include food (such as game, bamboo shoots, fruits, honey, and plants), fibers (*khem* grass used to produce brooms, and paper mulberry), medicinal products, resins and oleoresins, bamboo poles, rattan, fuelwood, fish, and frogs.

[17] World Bank, Swedish Bilateral Assistance (SIDA), and the Ministry of Foreign Affairs of the Government of Finland. *Lao PDR Production Forestry Policy: Status and Issues for Dialogue* A Joint Report (June 2001).

[18] SIDA. 2004. *Lao PDR Country Analysis*. Embassy of Sweden, Vientiane.

[19] The three SOEs are the Agricultural Development Services Group, Bolisat Phathana Khet Phoudoi Group, and Development Agriculture Forestry Industry Group.

25. SOEs have also been inefficiently involved in livestock and agricultural activities. Following the Asian financial crisis, and as an attempt to control part of the food commodity markets, the Government reinstated the State Enterprise and Food Crop Promotion (SEFCP). SEFCP fixed prices (sometimes at lower than production costs) for certain commodities (rough rice, milled rice, and meat). Consequently, wholesale markets for rice and meat became less competitive. In some provinces, the SEFCP mechanism exerted a virtual monopoly over markets for food commodities, and private traders were not permitted to trade beyond provincial borders without authorization. There are lengthy procedures (accompanied by rent-seeking opportunities) for private enterprises to obtain licenses and permits to trade food commodities. For example, in Khammuane Province, any business trading in livestock and livestock products requires nine different documents to operate legally.[20]

G. Political Economy of Uplands and Lowlands

26. Another aspect of governance that affects ANR performance in the Lao PDR is policy regarding upland areas and ethnic minorities. Although the term *"multiethnic Lao people"* is employed frequently in the 1991 Constitution (in an attempt to emphasize unity within an ethnically diverse society), conditions in lowland and upland areas of the country are different. Lowland perspectives dominate the political economy. The past decade has seen growing concern over poverty incidence gaps between the lowlands and uplands, which are populated by ethnic minorities, as economic development and poverty reduction have largely been confined to the lowlands. Poverty incidence data (2002/2003) by region indicate that the central and northern mountainous regions are the poorest. A concerted attempt has been made to change the livelihood basis of upland areas; the swidden farming system practiced in the uplands has long been viewed as detrimental to the country by the Government. Phasing out shifting cultivation has been part of the prioritized development agenda of the Government. The Seventh Party Congress (2001) set targets endorsed by the National Assembly to stabilize pioneering shifting cultivation by 2005, with elimination of all shifting cultivation by 2010.[21]

27. For many years, the Lao PDR was an important producer and supplier of illicit opiates to the world. Opium poppy has been part of the farming system based on shifting cultivation concentrated in the Northern Region. For highlanders, opium cultivation provided cash income, and options were often scarce. Opium poppy cultivation is both a source of income to growers and a source of poverty in the Northern Region. Households consume up to 60% of their opium production for traditional, medicinal, and other purposes. The Seventh Party Congress (2001) resolved to eliminate opium production by 2005. Consequently, efforts to eliminate opium poppy cultivation intensified. Many poor farmers have given up opium poppy cultivation. The United Nations Office on Drugs and Crime survey (2005)[22] reported that among those who had given up opium poppy cultivation, 50% did so because of law enforcement. However, permanent elimination of opium poppy cultivation will require sustainable alternative livelihoods among poor farmers.

28. The Government views shifting cultivation as unsustainable and intends to stabilize it by making agriculture more sedentary. Its strategy to stabilize shifting cultivation is to (i) promote sedentary agriculture on sloping lands through crop diversification, (ii) develop market access to communities through road development and market information delivery, (iii) promote land use zoning based on land capability and slope, (iv) promote rural savings and credit provision, and

[20] ILRI. 2002. *Review of the Livestock Sector in the Lao PDR*. Prepared for the Asian Development Bank. Manila.
[21] Pioneering shifting cultivation involves undisturbed (primary/secondary) forest being felled for cultivation.
[22] UNODC. 2005. *Laos Opium Survey.* Vienna.

(v) implement land use planning and land allocation.[23] One reason for increased hardship in the uplands in recent years is misconceived or poorly implemented policies. Two interlinked policies have been detrimental to the livelihoods of the people in the uplands—land allocation policy and the policy to stabilize shifting cultivation. Many upland dwellers consider the land allocation policy to be a major factor behind growing hardship.[24] The core issue, however, is the way land is allocated rather than the land allocation itself; too little land has been allocated for shifting cultivation, which means shortened rotation periods. This, in turn, results in falling soil fertility and lower productivity. Interpretations of policies in practice have often been inconsistent. Existing policies suggest that fallows of more than 3 years can be considered as degraded forest instead of a stage within a cycle of rotational agriculture. As lands unutilized (perceived to be abandoned) for more than 3 years can be reclassified as regeneration forest, farmers face increased pressure not to let their land rest and regenerate for more than 3 years. To compensate for reduced self-sufficiency in rice and other crops, upland households are forced to overexploit wild forest resources, both for their own consumption and as a source of cash income.

29. The Government has used a focal site approach to curb shifting cultivation in targeted remote poor areas. This approach aims to stabilize shifting cultivation by improving access to social services, developing market-oriented economic activities, and integrating regions into the national economy. The focal site approach was ostensibly used as an instrument for enhanced service delivery and for poverty reduction in remote areas but has often been perceived in practice and criticized by observers in some cases as resembling relocation and resettlement. Some observers claim that relocation programs in some cases led to human suffering and increased mortality because of poor sanitary conditions, inadequate resettlement facilities, and sickness, such as malaria and water-borne diseases.[25]

[23] MAF. 1999. *The Government's Strategic Vision for the Agricultural Sector.* Ministry of Agriculture and Forestry. Vientiane.

[24] ADB. 2001. *Participatory Poverty Assessment: Lao People's Democratic Republic*. Manila.

[25] Romagny, Laurent. 2005. *Resettlement: An Alternative for Upland Development?* A paper in Bouahom, B., A. Glendinning, S. Nilsson, M. Victor (Editors). *Poverty Reduction and Shifting Cultivation Stabilization in the Uplands of the Lao PDR: Technologies, Approaches and Methods for Improving Upland Livelihoods.* Proceedings of a workshop held in Luangprabang, January 27–30, 2004. National Agriculture and Forestry Research Institute. Vientiane.p. 117–127.

LOAN 965-LAO(SF): AGRICULTURE PROGRAM LOAN (1989–1993)

Outline Policy Content	Relevance	Effectiveness and Efficiency	Sustainability	Impact
Objectives and Scope The program objectives were to support and develop the Government of the Lao People's Democratic Republic (Lao PDR) policy reforms and institutions in the agriculture sector. Its primary objectives were to (i) increase and diversify agricultural production, (ii) improve farm productivity, and (iii) promote agricultural exports. The scope included supply of foreign exchange for essential imports for the sector, providing counterpart funds for budgetary support to the Ministry of Agriculture and Forestry (MAF), strengthening the institutional capacity in the agriculture sector, and assisting the Government in introducing further policy initiatives for the establishment of a more commercially oriented agriculture sector that would increase rural incomes and savings, as well as foreign exchange earnings.	**Consistency with National Development Strategy** The program content was entirely consistent with the Government's New Economic Mechanism (NEM) and with the Asian Development Bank's (ADB's) priorities to facilitate the country's transition to a market-based economy. The program hinged on measures that the Government had already begun to undertake in the preceding 3 years—thus, program rationale was about encouraging and sustaining reform progress, rather than initiating the reform. The national development strategy was only broadly articulated at this time, and this first agriculture program loan (FAPL) aimed to strengthen the strategy for the agriculture sector. The FAPL was designed in concert with World Bank Structural Adjustment Credits (SAC) and an International Monetary Fund (IMF) Structural Adjustment Facility (SAF) that provided a macroeconomic framework. **Unwritten Objectives** The failure of accelerated socialism had led to a stagnant and subsistence economy. Government finances (internal and external balances) were in a critical state, and loans from ADB, World Bank, and IMF provided timely support for	**Achievement of Objectives** While nearly all of the 28 program measures were implemented, and the Program Performance Audit Report (PPAR) stated that the macroeconomic reform agenda of the FAPL had been implemented with clear direction, achievements for many of the policy measures represented a case of outputs being delivered rather than outcomes. Real changes in the enabling environment had not materialized, despite the preparation of various plans, reviews, and pronouncements of initiatives. **Political Economy Context** Crisis had precipitated the NEM and its reform agenda, while at this time there was no strong constituency for agriculture and natural resources (ANR) reform in an environment with very limited public participation. **Contribution to Macro Outcomes** Contributions were likely to be significant, but macro impacts were linked to World Bank (SAC) and IMF (SAF), and these impacts could not be attributed separately. **Achievements of Outcomes** **Macro.** Mixed results—declining inflation, stable kip, increased foreign direct investment, and reduced budget deficit and foreign debt-service ratio, but Government revenue, balance of payments, and gross domestic product (GDP) growth did not show significant	**Evidence of Policy Reversals** There were no major reversals and formal change of policy, apart from delays in irrigation operation and maintenance (O&M) cost recovery, partly due to electricity pricing and technical reasons, which were addressed through subsequent technical assistance (TA). **Borrower Commitment Evidence Post-Loan** There was no diminution of commitment, as the reform process continued under the SAPL, and also with World Bank- and IMF-sponsored programs. **Sociopolitical Support for Reforms** Consensus was built among senior staff (MAF and other ministries working with ADB) about the appropriateness of the introduced measures. However, in practice there was little evidence of very high-level political enthusiasm (other than the desire for foreign exchange). Farmers experienced major price changes and had mixed views at time of program completion.	TA 2011-LAO identified agricultural growth at 4.8% per annum in the first half of the 1990s, despite the fact that resources were directed at industrial and manufacturing development. Cash crop output grew faster than outputs of staple crops (with rice output per capita falling). Households benefited differentially. Lack of access to credit to change production practices was identified as a major constraint. **Attribution to program-based lending** The FAPL was the largest intervention in ANR at the time of implementation, although wider reform measures (such as the SAC and SAF) were also in place. Attribution of causality is difficult methodologically and because of data limitations. It is also difficult to separate the FAPL from the SAPL.

Outline Policy Content	Relevance	Effectiveness and Efficiency	Sustainability	Impact
There were 28 separate policy measures: 1. Liberalize domestic and foreign trade. 2. Promote fundamental reform of pricing and salary policies. 3. Increase state enterprise autonomy. 4. Restructure the tax system. 5. Apply a market-oriented exchange rate. 6. Separate commercial and central banking functions of the State Bank. 7. Apply the Foreign Investment Code. 8. Promote the private sector in production and trade. 9. Remove remaining distortions in input pricing. 10. Defer direct investment in irrigation schemes (greater than 1,000 hectares). 11. Implement phased cost recovery for irrigation O&M expenses (based on TA 1189-LAO recommendations). 12. Prepare a National Tropical Forestry Action Plan. 13. Plan for national livestock adaptive	balance of payments. **Importance of Policy Objectives in the context of Development Constraints** Program objectives could not have had higher priority in terms of addressing sector reform issues (pricing, markets liberalization, state-owned enterprise [SOE] reform, private sector involvement) and also institutional performance (human resources and technical skills upgrading). **Reform Ownership** National commitment to reform was within context of NEM, as clearly stated in the Development Policy Letter regarding ANR. Ideological, institutional, and technical barriers to reform remained to be overcome within ANR. No detailed stakeholder or specific institutional analysis was undertaken. **Validity of Diagnosis** Despite previous project lending in ANR, the technical knowledge base (such as agriculture statistics) was weak, and at this time, there was no previous reform experience to base judgment on the likelihood of commitment. Reforms envisaged were so fundamental that alternative modalities were not considered during design.	improvement. ANR export earnings increased, but production and productivity showed only modest evidence of growth. **Financial.** Some very slow progress was made towards cost recovery (e.g., in irrigation), and continuing financial burden of some SOEs. **Institutional.** MAF's capacity to plan was strengthened but it was compromised by collective TA deficiencies (MAF capacity to absorb, timing conflicts, and other constraints). Institutional strengthening was confined within MAF, with little effect on non-ANR institutions. **Social.** Reliable information was not available to show the specific impact of the FAPL on specific income groups (PPAR). Land tenure changes were perceived to be favorable for all, as well as women's participation in self-help retail enterprises. **Environmental.** Effects were likely to be positive. There was increased awareness of pesticides through TA, and National Tropical Forestry Action Plan. There were no adverse effects from fertilizers purchased with loan funds, considering the low usage countrywide. **Contribution to Continuity of Reform Process** The contribution of the FAPL to the reform process was very positive at both the macro and sector levels, and led directly to design and development of the SAPL (Loan 1180-LAO). Dialogue, research, and	**Adequacy of Institutional Arrangements for Reforms** Preparedness and the adequacy of institutional arrangements for implementing the FAPL were very poor. This was also the case for the subsequent SAPL. While outputs were largely produced on paper by the issuance of directives and passage of legislation, implementation of their intent proved elusive and has remained so to date (July 2005). This is largely due to a continuing lack of administrative and technical capacity within central ministries, and also because the national authority's intentions can be seriously impeded by provincial and district authorities. **Conducive Political Setting** The political regime has been very stable and as equally conducive to the reform process in recent years as at the time of the FAPL. However, in practice there is perceived ambiguity of high-level political commitment to reform, change, and pace of change. **Conducive Macro Setting** The relatively stable years of FAPL implementation were	**Counterfactual Evidence** There was limited counterfactual analysis, apart from a hypothesis about what would have continued to happen without the FAPL: (i) Under accelerated socialism, rice production would have fallen further, as farmers would have continued to resist collectivization and reject state order procurement and payment systems. (ii) The NEM would have no specific measures for its implementation, characterized by continuing agricultural and economic stagnation, excessive state involvement in ANR, and lack of smallholder supply response in the absence of inputs, technical services, and other constraints. **Key Development Impacts** Economic growth had been positive, with favorable impacts on poverty reduction, but

Outline Policy Content	Relevance	Effectiveness and Efficiency	Sustainability	Impact
research centers (with TA 1277-LAO). 14. Review the status of state farms. 15. Adjust government procurement prices. 16. Promulgate new banking regulations. 17. Restructure the taxation system. 18. Review logging royalty structure and quotas. 19. Increase budget allocations to MAF by at least 50%. 20. Increase budget allocations to support services by $2.2 million. 21. Reorganize and reduce MAF departments. 22. Strengthen MAF institutional capacity for planning, implementation and monitoring of investments (TA 1190-LAO and TA 1279-LAO). 23. Create the National Agriculture Research Center and appoint a National Agriculture Research Director. 24. Establish an extension program and appoint its head. 25. Improve agricultural statistics and the National Statistics Center (TA 1188-	**Program Formulation** The program comprised a large number of disparate interventions, from macro aspects (such as exchange rate, central banking) to micro aspects (livestock research). The tranching and reforms program were not synchronized in detail, with little assessment of expected impacts. There were significant and numerous TAs, but they were not well integrated in a long-term program involvement. The time frame to realistically implement reforms was over-ambitious. Eight conditions were specified for release of the second tranche. The design and implementation should have included quantifiable and verifiable indicators for monitoring reform progress during implementation (PPAR). The program did not have (i) baseline benchmarks nor (ii) performance indicators and targets. Essentially, there was no framework for monitoring and reporting the reform progress systematically. **Summary** The FAPL was **relevant** to the Government's development strategy, and was provided at an opportune moment. However, in hindsight, the design depth (diagnosis of problems, the mix of policy and technical measures, and the absence of a	learning carried out under several TAs of the FAPL (e.g., National Tropical Forestry Action Plan, agricultural statistics) built the constituency for the second wave of reform in ANR. **Exogenous Factors Affecting Outcomes** Structural adjustment loans from the World Bank and IMF, plus financial sector operations by ADB and a multiplicity of loans, grants, and TAs from other agencies (e.g., there were more than 60 TAs being implemented by MAF in 1993), and weather conditions all affected agriculture sector performance. Because agriculture largely means rice, and because the economy largely means agriculture, the variability of rice production (up in 1989–1990, down in 1991, and up in 1992) greatly affected GDP growth. **Summary** The purpose of the FAPL was partly achieved. Some specific technical outputs were delivered, and government institutions were strengthened. Legislative and policy changes represented a new enabling environment, but there was no substantial evidence of changed production, its composition, and productivity gains. Agricultural exports grew modestly. Overall, the FAPL was **less effective** in the context of outcomes, and **less efficient,** as it underestimated the (i) enduring efforts required to effect and implement difficult policy	followed from the mid-1990s by periods of macroeconomic and financial destabilization in which general commitment to reform weakened. Post-2000 has witnessed a period of renewed commitment. **Degree of Reform Resilience** The reforms as introduced have proved resilient in that there have not been specific major reversals or retreats in response to changing economic conditions. Political factors have not really changed at all. **Summary** The FAPL may be seen as the start of a process that continued under the SAPL and gained further strength through investment projects and TAs in the ANR sector. As such, the process of reform in ANR itself has been sustained, and the specific (28) measures promoted under the FAPL have largely been embodied in government policy statements and, to the extent possible. With continued efforts to improve the enabling environment for the ANR sector over more than a decade after the completion of the FAPL, the outcomes of the FAPL, as reinforced through the SAPL, are **likely**	with different response abilities by location, gender, and economic activities. Overall impact on the environment had probably been positive. The FAPL built the technical capacity of senior MAF staff and raised their awareness of and credibility in domestic reform dialogue and ongoing policy processes. Overall, the impacts of the FAPL were **moderate**. **Summary** Overall, the FAPL contributed to the beginning of a period of long-term sustained growth in ANR, but attribution is impossible due to the interconnectivity of policy reforms, parallel and other policy measures. The FAPL catalyzed a long-term policy development and planning process within MAF specifically, and in the Government in general. This increased the likelihood of sustaining sound policy decisions for ANR, but it did not succeed in bringing management of the natural resource

Outline Policy Content	Relevance	Effectiveness and Efficiency	Sustainability	Impact
LAO). 26. Prepare a program for national agricultural manpower development (TA 1190-LAO). 27. Carry out a national crop development study. 28. Prepare a plan for national seed and plant multiplication (with TA 1191-LAO).	monitoring framework) suggest both inadequate preparation and also ambitious expectations of reform implementation in the Lao PDR context.	changes, (ii) requirements for institutional preparedness for change and management of change, and (iii) time needed for outcomes to materialize under Lao PDR conditions and political economy.	to be sustained.	base fully under control, especially in forestry. **Rating**: The PPAR of the FAPL did not provide a performance rating. The OEM rates the FAPL as **partly successful.**

ADB = Asian Development Bank, ANR = agriculture and natural resources, FAPL = (First) Agriculture Program Loan, Lao PDR = Lao People's Democratic Republic, MAF = Ministry of Agriculture and Forestry, NEM = New Economic Mechanism, OEM = Operations Evaluation Mission, O&M = operation and maintenance, PPAR = Program Performance Audit Report, SAC = structural adjustment credits, SAPL = Second Agriculture Program Loan, SAF = structural adjustment facility, SOE = state-owned enterprise, TA = technical assistance.

LOAN 1180-LAO: SECOND AGRICULTURE PROGRAM LOAN (1992–1995)

Outline Policy Content	Relevance	Effectiveness and Efficiency	Sustainability	Impact
Objectives and Scope The program objectives were to enhance and consolidate economic performance through policy and institutional reforms, with emphasis on agriculture. The major reform measures were to 1. liberalize trade, export taxes, agricultural prices, and business and trade licenses; 2. formulate and adopt medium-term agricultural policies and operational plans that favor more liberal market-oriented policies; 3. reduce subsidies in agriculture and natural resources (ANR); 4. ensure positive real interest rates for credit; 5. remove restrictions on land transfer and movement; 6. reform the collecting and reporting of national statistics; 7. reorganize/downsize the Ministry of Agriculture and Forestry (MAF); 8. implement a public sector reform program; 9. privatize all ANR SOEs; 10. introduce a cost recovery plan in irrigation; and 11. approve and implement a forestry sector reform package.	**Consistency with National Development Strategy** The second agriculture program loan (SAPL) was to support the continuing national reform process (5 years plus) as the costs of adjustment became apparent as well as the need to extend reform to more general areas (such as labor mobility and information access). The SAPL was consistent with the new economic mechanism (NEM), given the predominance of agriculture in the economy and its historical levels of underinvestment. **Unwritten Objectives** Collapse of aid from COMECON (Council for Mutual Economic Assistance) and slow growth in 1991 (adverse weather affected rice production) added pressure to government finances. By then, the Asian Development Bank (ADB) had become the lead lender to ANR in the Lao People's Democratic Republic (Lao PDR), and had gained considerable technical and financial leverage.	**Achievement of Objectives** According to the Program Performance Audit Report (PPAR), many of the policy reforms supported by the SAPL and the capacity-building intended under the associated two technical assistance (TA) grants (TA 1764-LAO and TA 1765-LAO) had generally been accomplished, apart from (i) interest rate subsidies (with high inflation, interest rates remained negative); (ii) the pace of irrigation cost, recovery being slow; (iii) slower than desired disengagement of state-owned enterprises (SOEs); and (iv) delay in a passing a law on statistics. **Political Economy Context** The Government was able to issue decrees, and (via the National Assembly) pass laws, but with very limited public participation. It was likely that some special interest groups in ANR would resist further reform (e.g., SOEs, logging concession holders). **Contribution to Macro Outcomes** Likely to be significant, but macro-impacts were also linked to the World Bank Structural Adjustment Credit (SAC) and the International Monetary Fund Structural Adjustment Facility (SAF). The overall effects, including those of the SAPL, cannot be separated. The SAPL accounted for about 7% of total foreign assistance during 1993–1995 (PPAR).	**Evidence of Policy Reversals** No legislative changes indicating reversals were recorded, but some SOEs were reacquired by the Government post-SAPL, and the turnover tax was reimposed under macroeconomic stress (1999). The PPAR of the SAPL indicated that several policy reforms pursued under it were either reversed or put on hold. Examples of policy erosion or gradual reversal include tariff rates of electricity for irrigation, which were raised in nominal terms, but in practice, these rates were subsequently eroded due to hyperinflation (inflation reached 134% in 1999). Further, the Agriculture Promotion Bank continued with its policy lending at very low interest rates (in some years, inflation exceeded the interest rate), including through the ADB-financed Loan 1295-LAO (Industrial Tree Plantation Project). Such reversals illustrate that compliance with conditionalities had been met nominally, but not substantively, over time.	Sustained growth in ANR continues from the SAPL onwards. Modest evidence of increased use of farm inputs (leading to small yield improvements), some crop diversification (into higher value cash crops), and greater output marketing (even though largely informal and via border trade). Emerging greater regional differentiation in farming systems and agricultural production within the Lao PDR. (Mekong flatlands and upland areas dichotomy informs ANR policy-making). Evidence of poverty reduction throughout the country over the last decade, albeit with significant regional variations (relatively greater impact on poverty achieved in the center and south of the country).

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The policy reform matrix contained 39 separate measures: 1. Formally adopt a medium-term policy framework for agriculture by September 1993. 2. Agree on policies for MAF operational activities by September 1992. 3. Extend central control over issuance of business and trade licenses to all provinces and enforce Decree 43 of 10 March 1991 by the State Control Committee and line ministries by September 1993. 4. Issue regulations making the Ministry of Commerce a one-stop shop for issuing business licenses by July 1993. 5. Pass an amended and simplified Foreign Investment Law and reissue associated regulations by September 1993. 6. Remove export taxes (except logs, timber, and wood products) by September 1993. 7. Implement a budget line item for Electricite du Laos by September 1993 for subsidy on irrigation electricity, and introduce a phased rate increase. 8. Adhere to a positive real interest rate policy from 1992 for agricultural and rural credit. 9. Initiate a study to facilitate the development of rural finance by July 1993 (with TA 2029-LAO: Institutional Support to Agricultural Promotion Bank). 10. Complete the above study (no. 9) and agree on follow-up actions by October 1993. 11. Issue a Prime Ministerial (PM)	**Importance of Policy Objectives in the Context of Development Constraints** Like the First Agriculture Program Loan (FAPL), the SAPL was relevant in terms of macro and sector contexts, sector performance, and contribution to growth and employment. The Report and Recommendation of the President stated that *"the core strategy for achieving this is the rapid development of the agriculture sector and product markets on which effective utilization of the country's considerable…… resource endowment depends."* **Reform Ownership** Intensifying policy dialogue (ADB/Government). Medium- Term Program for Agricultural Adjustment and Development (prepared under the FAPL) and the Development Policy Letter of the SAPL indicated high levels of technical ownership and understanding within MAF. However, doubts remain about institutional commitment and capacity to reform in the Lao PDR, based on FAPL experience and past performance, e.g., length of time to pass laws and effect institutional reforms, and also continuing resource constraints.	**Achievements of Outcomes** **Macro.** Continued economic growth. Gross domestic product (GDP) annual growth of around 7%, up from 5.5% during the FAPL, and reduced inflation. Reductions in trade deficit as exports grow. Positive, if erratic, ANR sector growth (largely rice-driven) at around 3% on average annually. **Financial.** Positive, but qualified. Reduced budget deficit/GDP ratio. Large foreign direct investment and capital inflows (increased aid, including SAPL funds) add to inflationary pressure by 1995. **Institutional.** Like the FAPL, enhanced capacity in MAF (greater ability to plan and implement reform). The SAPL contributed to the decentralization of MAF. **Social.** Positive. TA 2011-LAO (study to evaluate the impact of agriculture sector program lending) indicates positive impacts in some places with irrigation. The study cites land tenure, access to credit, and development of water user associations as dimensions of empowerment. **Environmental.** Potentially positive, with no adverse effects. Negative list of chemical imports were in place under the SAPL. The forest law and efforts to stabilize shifting cultivation (upland and pastoral activities) may have had mixed effects on the environment. **Contribution to Continuity of Reform Process** The SAPL provided continuity, enhanced and sustained the impacts of the FAPL, and contributed to sustaining the	**Borrower Commitment —Evidence Post-Loan** Government commitment to full operation and maintenance (O&M) cost recovery and to rational interest rate structure was doubtful, in view of protracted dialogue with ADB and the performance of banking sector projects. Also, implementation of the Water Law (5 years delay) is still problematic. **Sociopolitical Support for Reforms** Further consensus developed among senior MAF staff about the appropriateness of the introduced policy measures. (See the FAPL, Loan 965-LAO). Greater farmer awareness of the transition to market-based economy was evolving. **Adequacy of Institutional Arrangements for Reforms** Poor. (see comments on the FAPL). While the objectives of the SAPL were largely fulfilled on paper (e.g., by passage of ANR legislation) implementation of their intent proved elusive and has remained so to date (2005). This is largely due to continuing lack of administrative and	**Attribution to Policy-based Lending** The SAPL was the largest intervention in ANR at the time of implementation, although wider reform measures (e.g., SAC, SAF) were also in place. Attribution of causality is very difficult, both methodologically and because of data limitations. Also, it is impossible to separate the effects of the SAPL from those of the FAPL. **Evidence of Counterfactual** Counterfactual analysis was largely absent, but a hypothesis about what would have happened had the SAPL not sustained the nascent ANR reform process might indicate policy retreats, reversals, and weakening support for reformers in MAF and elsewhere. **Key Development Impacts** Sustained growth in ANR over 1995–2005; increases in

Outline Policy Content	Relevance	Effectiveness and Efficiency	Sustainability	Impact
decree by January 1993 as an interim provision to establish land usufruct rights for value and transfer rights for community land/forest areas. 12. Submit a draft land law to the Council of Ministers by January 1995, including a specific provision permitting transfer of land usufruct rights for value. 13. Issue a Ministry of Economy, Planning, and Finance (MEPF) decree by September 1993 offering saleable, long-term, freely transferable leasehold rights to foreign investors for at least 15 years. 14. Issue an MEPF decree by March 1993 setting out fees for cadastral services. 15. Approve a PM decree by September 1993 permitting unrestricted movement of labor. 16. Issue a PM decree by September 1993 permitting importation of foreign news, trade, marketing papers, and publications. 17. Assess the needs for a mass media market information and technology transfer program (with TA 1765-LAO: National Integrated Extension and Research Program) by September 1993. 18. Issue a PM statistical decree by July 1993. 19. Pass a statistics law by July 1994. 20. Agree on composite MAF national programs by September 1993. 21. Agree on a program by September 1993 for	**Validity of Diagnosis** With some major trade and price reforms completed and commitment to the process of reform apparently established, the focus of the SAPL turned to medium-term planning for agriculture (this includes defining the role of MAF in the context of a market economy). The SAPL allowed more time for reform implementation than the FAPL, showing evidence of learning from experience. **Program Formulation** Strong diagnostic evidence, based on Medium-Term Framework (1991), a comprehensive sector review, and implementation experience of the FAPL. Evidence of more detailed knowledge base/sector information than for the FAPL. Very wide range of reform measures (like the FAPL), encompassing macro and micro/technical perspectives. This might have diluted focus. The PPAR of the FAPL suggested splitting broad reform measures from specific technical measures. Longer term TA was provided to support the SAPL, unlike those for the FAPL. Nine conditions were placed for release of the second tranche. The program did not have a framework or performance	momentum of reform process in the country and ANR specifically. But, the SAPL was only one part of external support to the reform process, and it was in context of SAC/SAF and other external assistance. TA 1764-LAO developed capacity for understanding O&M issues in the Department of Irrigation, but its recommendations did not translate into actions. Continuing ADB-Government dialogue led to support for the development of the Government's Strategic Vision for the agriculture sector (1999) several years after SAPL completion. **Exogenous Factors Affecting Outcomes** Period of general financial stability, macroeconomic growth, and increasing trends towards regional participation and integration. Weather conditions still drive rice and maize production (typically 20% plus changes from year to year). Production of vegetables, coffee, and other crops was also very variable. Emerging national financial problems at the end of the SAPL period. **Summary** The purpose of the SAPL was partly achieved. Similar to the FAPL, specific technical outputs were delivered, MAF was further strengthened, and legislative and policy changes represented an extension and deepening of a new enabling environment for the ANR sector. By the end of 1995, there	technical capacity within the central ministries, and also because of implementation issues at the provincial and district levels. Nevertheless, MAF became stronger as a result of support provided under the SAPL (reinforcing the FAPL), and the reform measures falling under MAF's own purview were more actively pursued than those of a more general nature, both during and after the program period. **Conducive Political Setting** The political regime has been very stable and as equally conducive to the reform process in recent years as at the time of the SAPL. **Conducive Macro Setting** The SAPL was implemented under generally stable macro and financial conditions. Although the period following the mid-1990s was difficult and less stable, this probably did not seriously compromise the sustainability of SAPL policy measures, apart from the imposition of the turnover tax and import duties. The financial position of	formal and informal exports (e.g., coffee, glutinous rice, and livestock); and some reduction in rural poverty. Achievement of national self-sufficiency in rice in 1999, with a small surplus for net exports. Emerging consensus on the role of ANR to reduce poverty (by raising incomes and creating employment) and to preserve the natural resource base. **Summary** The SAPL contributed to sustained growth in the ANR sector. However, attribution to the SAPL alone is impossible, given the parallel and subsequent reforms (e.g., SAC and SAF). Contribution of the SAPL to the policy reform process also included (i) justification through technical analysis and dialogue; (ii) consolidation and continuity of policy

Outline Policy Content	Relevance	Effectiveness and Efficiency	Sustainability	Impact
rationalizing MAF activities into the national program framework. 22. Review the findings of TA 2333-LAO: Institutional Development and Strengthening of MAF; commence implementation of action plan by September 1993. 23. Incorporate mechanisms, by September 1993, for management of public sector resource flows to agriculture as part of a rolling public investment management mechanism. 24. Establish a department for public administration and personnel under the PM's office by December 1992. 25. Issue a plan outlining the scope for public administration reform by December 1992. 26. Issue a PM decree by September 1993 on staff resignations, stating that public sector employees are free to resign. 27. Draw up a medium-term staff rationalization program by September 1993 for national and provincial pubic agencies in agriculture. 28. Disengage MAF from 12 of 19 enterprises by September 1993. 29. Disengage MAF from the remaining seven enterprises by end-1994. 30. Prepare summary inventory of agriculture SOEs under the provincial agriculture departments by September 1993.	indicators. Monitoring of the SAPL rested on the executing agency and interministerial committee, supported by four ADB review missions. Monitoring of the program was compromised by the large number of agencies involved, reorganization of MAF itself, and the small cadre of qualified staff within MAF. **Summary** Like the FAPL, the SAPL was **relevant** in its technical content and design (including its nonsector-specific reform measures), essentially building on previous achievements. It constituted a continuity of efforts (enhancing and consolidating economic performance) that began under the FAPL. The SAPL demonstrated (i) rigorous problem analysis (including understanding the realities of the reform process) and technical design content (e.g., with respect to TA provision), (ii) more focus on planning and the role of MAF (as opposed to simply creating conditions for its evolution) for the agriculture sector, and (iii) the emergence of MAF as a more able and committed partner than in the FAPL.	was little evidence of significant change in production (volumes and mix) or productivity gains in the agriculture sector. Outcomes took more time to materialize, and—to date—major impediments to doing business and commercial agriculture have persisted. The SAPL has been **less effective** in the context of achieving outcomes, although the Government has remained on track with the NEM. Overall, the SAPL has been less efficient as in the case of the FAPL, as it also underestimated the (i) efforts required to effect and implement difficult policy changes, (ii) requirements for institutional preparedness for change and management of change, and (iii) time needed for outcomes to materialize under Lao PDR conditions and political economy.	the Government would probably have been stronger if it had followed the SAPL agenda more fully, for example by going for more irrigation O&M cost recovery and disengaging from SOEs more quickly. **Degree of Reform Resilience** The reforms and their overall intent as introduced have proved resilient. There have not been specific reversals or retreats in response to changing economic conditions—apart from the tax impositions described above. Political factors have not changed since SAPL implementation. **Summary** The SAPL has sustained the process of dialogue-based reform in ANR that began with the FAPL. The strengthening of MAF has continued through other initiatives (including subsequent TAs and projects). There have been no overt legislative reversals. However, problems have persisted to date (2005) with rural finance, access to credit, electricity pricing, and irrigation O&M. A major aspect of SAPL	development by building upon the FAPL; and (iii) strengthening of key stakeholders within MAF and other ministries. Overall, the impacts of the SAPL have been moderate. **Rating:** The PPAR rated the SAPL as partly successful. The OEM also rates the SAPL as **partly successful.**

Outline Policy Content	Relevance	Effectiveness and Efficiency	Sustainability	Impact
31. The Government should not subsidize or prefer SOEs. 32. Approve a PM decree setting out a mandatory compensation package for redundant employees by August 1992. 33. Open competitive bidding by September 1993 for all irrigation contracts above $60,000 (at 1992 constant terms). 34. Commence moves towards cost recovery in irrigation by September 1993 (including water user groups, with TA 1764-LAO: Strengthening and Restructuring Irrigation Development). 35. Defer public sector investment in irrigation above 1,000 hectares in size, and/or capital intensive (above $2,500/ha) unless construction was under way prior to 1 July 1992. 36. Promulgate a PM forestry sector reform decree by October 1992. 37. Approve and implement a forestry sector reform law by September 1993. 38. Initiate a new system of resource management for community and commercial forest resource use by September 1993. 39. Establish a single entity within MAF to manage agroforestry and upland agriculture activities by September 1993.			sustainability relates to the planning capacity of MAF. The adoption of the Medium-Term Framework (1992), and then later the Strategic Vision for the agriculture sector (1999), indicates a high level of government ownership of ANR policy, which subsequently fed into the current National Growth and Poverty Eradication Strategy (NGPES, 2004). Overall, the intent, achievements, and outcomes of the SAPL are **likely to be sustained** with subsequent and continued efforts to remove binding constraints facing agriculture.	

ADB = Asian Development Bank; ANR = agriculture and natural resources; FAPL = (first) agriculture program loan; GDP = gross domestic product; Lao PDR = Lao People's Democratic Republic; MAF = Ministry of Agriculture and Forestry; MEPF = Ministry of Economy, Planning, and Finance; NEM = New Economic Mechanism; O&M = operation and maintenance; PM = Prime Ministerial; PPAR = Program Performance Audit Report; SAC = Structural Adjustment Credit; SAF = Structural Adjustment Facility; SAPL = Second Agriculture Program Loan; SOE = state-owned enterprise; TA = technical assistance.

The Lao PDR: Summary Review of the Performance of Technical Assistance Supporting Agricultural Reforms Associated with Loan 965-LAO: Agriculture Program and Loan 1180-LAO: Second Agriculture Program Loan

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
1	**TA 1134-LAO: Agriculture Research** Approval to completion: Mar 1989–Aug 1991 Ministry of Agriculture and Forestry (MAF) Actual cost: $0.73 million This was one of nine TAs supported under Loan 965-LAO: Agriculture Program.	The objectives of the TA were to (i) support the reorganization, rationalization, and upgrading of existing national research activities; (ii) support the preparation of a national, long-term research program; and (iii) formulate a national research policy and an investment project with a medium-term horizon. Scope: (i) reorganization of research among three existing stations, and establishment of a national agricultural research system as a basis for future expansion; (ii) training staff in research design and off-station trials; (iii) coordination of all research (including IRRI), and expansion of food crop research trials geographically; and (iv) providing assistance to fruit tree and coffee trials.	Two main recommendations: (i) Role of socioeconomic research needs to be broadly defined to include farmer needs assessment, evaluation of agricultural technologies, extension and diffusion of information and services, land-use planning, and other policy-related issues. (ii) Transition to a sustainable national system away from aid dependency will require training of Lao staff based in a central agency, and establishment of a well-coordinated program of multisectoral applied research. Other recommendations suggested concentration of research on areas where it was not possible to import existing technologies, and the amalgamation of research and extension services under MAF. The TA recommended the establishment of two socioeconomic units in MAF by upgrading the existing statistics unit with a strong research orientation. The TA suggested that the research budget be broken down by topic and by agronomic zone, emphasizing a watershed management approach and the need for crop diversification.	This TA was **relevant**. It was among the key factors underpinning agricultural development in the country. It started appropriately from the premise that planning of research activities was needed in the first instance. The TA was **less effective**. Outputs were delivered, but the institutional environment in MAF was not ready to adopt them. With limited outcomes, the objectives of the TA were partly achieved. In terms of efficiency of process and the use of inputs, the delivery of the TA was **less efficient**. Difficulties with shortness of TA time frames, overlapping TAs being implemented, and competition for government staff time and resources affected the delivery of this TA.	The timing of the TA was too early to catalyze more immediate results. With human and financial resource constraints, and institutional limitations, the TA initiatives were **less likely** to be sustainable. The institutional development impacts were **moderate**. Interview with the Deputy Director General of the National Agriculture and Forestry Research Institute (NAFRI) in 2005 confirmed that the genesis of current research programs began with this TA in 1989 (for example, emphasis on agro-ecology, low-input cropping systems, pasture improvement technologies, and clean agriculture). Watershed management and integrated land use planning concepts have become major national policy in recent years. However, NAFRI still wrestles with seed distribution (not dealt with by this TA) and its link with the extension system. By July 2005, the country still did not have an operational strategy for seed supply and distribution that links up with agriculture research. The TA and subsequent efforts aimed at improving research should have assessed the links among research, seed distribution, and extension services. **Rating:** The PPAR of Loan 965-LAO did not rate this TA. The OEM rates this TA as **partly successful.**

ADB = Asian Development Bank, IRRI = International Rice Research Institute, MAF = Ministry of Agriculture and Forestry, NAFRI = National Agriculture and Forestry Research Institute, OEM = Operations Evaluation Mission, PPAR = Program Performance Audit Report, TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB	Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
2 **TA 1156-LAO: Tropical Forestry Action Plan** Approval to completion: May 1989–Mar 1991 Ministry of Agriculture and Forestry Actual cost: $88,400 This was one of nine TAs supported under Loan 965-LAO: Agriculture Program.	The objective was to prepare an Action Plan to serve as a framework for the management, development, conservation, and use of the country's forest resources so as to optimize their long-run contribution to economic and social development and environmental stability. Scope included (i) review of the forestry sector, (ii) analysis of existing forest policies and strategies, (iii) formulation of development strategy for the next 5 years, (iv) identification of investment opportunities, and (v) recommendation of further studies.	Defined sets of time-bound prioritized actions on institutions (roles, staffing, budgets, training, and staff development), policy and forest law, ecosystem conservation, forest land use planning and industry development within the framework of the Tropical Forestry Action Plan (TFAP) headed by a government coordinator. Identified government and external financing needs (e.g., $230 million needed from external sources during 1990–2000) within the context of a process of support. Specific programs and projects were outlined.	The TA was **highly relevant** in terms of government development strategy and priorities, and the importance of forestry to the country. The TA recommendations were technically sound. However, the political obstacles at the core of forestry resource management issues were given insufficient attention, and the broader macroeconomic framework and external support conditions were insufficiently analyzed. The TA output was delivered, but changed government and private sector practices did not result. Effectiveness was reduced by the absence of political will and unavailability of adequate resources to carry out the recommendations. Thus, the TA was **less effective**. In terms of timing, efficiency of process, and delivery, the TA was **efficient**.	There was no evidence that any aspects of the TFAP were taken forward at the time of TA completion, although general thrusts of its thinking were subsequently embodied in national forestry policies. The general outcome of the TA was **likely to be sustained**. Subsequently, a decade later, the World Bank/Swedish International Development Agency/Finnish International Development Agency study on Production Forestry Policy (2001) covered almost the same areas as the TFAP, and its Forestry Policy Matrix and Proposed Action Plan recommends a very similar set of actions. By this time, the seriousness of both forestry problems and the commitment to address the issues had arisen. Institutional and other impacts of the TA have been **negligible**. **Rating:** This TA was rated as **successful** in the PPAR (Loan 965-LAO). The OEM confirms this rating.

ADB = Asian Development Bank, OEM = Operations Evaluation Mission, PPAR = Program Performance Audit Report, TA = technical assistance, TFAP = Tropical Forestry Action Plan.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
3	**TA 1188-LAO: Improvement of Agricultural Statistics** Approval to completion: Aug 1989–Sep 1991 National Statistics Center Actual cost: $162,800 This was one of nine TAs supported under Loan 965-LAO: Agriculture Program.	The objectives of the TA were to improve the accuracy and consistency of agricultural statistics, remedy data gaps, and reduce the time lag between collection of data and release of statistics. Scope: (i) undertake a detailed study of the country's agricultural statistics system, report on weaknesses, and recommend improvements; (ii) provide course-based training; (iii) provide on-the-job training in sampling and statistical methods; (iv) plan overseas training for staff; and (v) assist in the establishment of microcomputer-based systems.	The TA recommended sampling design changes for field and market surveys, and produced substantial documentation for enumerators/village data collectors on sample survey design, crop and market surveys, among other methods. Recommended establishment of a National Statistics Committee to integrate work of the Ministry of Agriculture and Forestry (MAF) and provincial offices. Recommended further Asian Development Bank assistance to agricultural statistics, in conjunction with other aid providers at that time.	The TA was **relevant**. The consultant's technical recommendations were statistically sound in the context of the practicalities of field sampling and country/sector conditions. The TA was **less effective**. As the TA report itself recognized, the recommendations could not be implemented in the short run on any scale without further resources being made available, and these could not be provided by the Government. Also unresolved was the level of MAF staff resources; who would be assigned as field enumerators?. The timing, process, and delivery of the TA was **efficient**. The TA training component (on collection and compilation of area and production statistics) was well received within MAF, and good-quality training manuals were produced.	The TA was **likely to be sustainable**, despite uncertain human, financial, and institutional resources at that time to implement and sustain its recommendations. Statistical approaches and methods were practical, applicable, and well received by MAF. The impact of the TA was **moderate** due to staff and other resource constraints within MAF at the time. MAF has continued to collect, compile, and publish agricultural statistics on an annual basis (for example, the annual Agricultural Statistics Yearbook published by the Department of Planning, MAF; and an Agricultural Census was completed in 1998–1999).[1] **Rating:** The TA was rated as **successful** in the PPAR (Loan 965-LAO). The OEM confirms this rating.

ADB = Asian Development Bank, MAF = Ministry of Agriculture and Forestry, OEM = Operations Evaluation Mission, PPAR = Program Performance Audit Report, TA = technical assistance.

[1] The statistics published by MAF differ greatly from those of the National Statistics Department, for example in relation to irrigated and cropped areas. Resolution of these differences needs to be given high priority, since planning is difficult without an adequate statistical base.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
4	**TA 1189-LAO: Review of the Irrigation Subsector** Approval to completion: Aug 1989–Mar 1991 Ministry of Agriculture and Forestry (MAF) Actual cost: $121,700 This was one of nine TAs supported under Loan 965-LAO: Agriculture Program.	The objectives of the TA were to (i) gather and document information to support an analysis of the status and dynamics of irrigation in the Lao PDR, its role in Lao agriculture, constraints, and government capacity; (ii) identify lessons and issues to be addressed; (iii) derive policies for effective irrigation development and define the role of government; and (iv) develop a medium-term action program.	A review of the economic background in agriculture and natural resources, including physical environment, institutions, and state of irrigation schemes led to the development of a broad strategy for irrigation and an action plan for its implementation. This was essentially aimed to reduce the role of the Government in irrigation, and promote small-scale irrigation development such as small-scale weirs and pumps and development of water user groups.	The TA was **relevant** to the irrigation subsector. TA recommendations were technically appropriate, and in line with the policy measures contained within the first Agriculture Program Loan (Loan 965-LAO). The effectiveness of the TA was minimized by the absence of a mechanism and the resources for recommendations to be adopted and implemented. Thus, the TA was **ineffective.** TA implementation was **less efficient**. According to the PPAR of Loan 965-LAO, this TA had not been completed satisfactorily. The duration of the TA was too short. MAF, which was seriously short of trained staff, could not effectively involve its staff. There was not much evidence that skills were transferred, and most senior officials were not aware of the recommendations of the study.	Sustainability of the TA outcome was **unlikely**. Institutional development and other impacts were **negligible**. **Rating:** The PPAR (Loan 965-LAO) rated this TA as unsatisfactory. The OEM rates it as **unsuccessful**.

ADB = Asian Development Bank, Lao PDR = Lao People's Democratic Republic, MAF = Ministry of Agriculture and Forestry, OEM = Operations Evaluation Mission, PPAR = Program Performance Audit Report, TA = technical assistance.

	Title, Date, Executing Agency, and TA Cost Financed by ADB	Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
5	**TA 1190-LAO: Study of National Agriculture Manpower and National Extension Service** Approval to completion: Aug 1989–Dec 1990 Ministry of Agriculture and Forestry (MAF) Actual cost: $132,700 This was one of nine TAs supported under Loan 965-LAO: Agriculture Program.	The objectives of the TA were to (i) provide the Government with a planned approach for human resource development and the ability to determine training needs in the future; (ii) plan for all sector categories, especially extension services, to define future requirements for skilled agricultural human resources Scope: The TA (i) summarized use of human resources within agriculture; (ii) made proposals for restructuring MAF, provincial agriculture and forestry services, and district agriculture and forestry units; (iii) analyzed issues prior to the establishment of the national extension service; (iv) recommended organization and design of a national extension system; and (v) evaluated agricultural sector training.	TA recommendations included setting up an internal MAF body to continue restructuring work, creating a national extension service based directly on the training and visit (T&V) model, MAF to close its marketing and information sections,[2] divestment of seed and vaccine enterprises and heavy machinery services, establishment of a single training division, establishment of programming and budgeting functions within MAF, restructuring of current budgets, and regular reporting by the administration department. Detailed training recommendations were made for extension (including establishment of a national extension center) and training including an action plan.	The TA was **relevant**. TA recommendations were sensible in the context of MAF's structure and functions (for example, to remove some pre-New Economic Mechanism functions) and the associated training that such restructuring would require. Due to the TA's limited resources, the T&V model suggested for extension was generic and not tailored to Lao conditions. In retrospect, the model was not appropriate, although it was popular elsewhere in the region and the world at the time. The TA was **ineffective**; extension recommendations presumed that significant external funding would be available from ADB and other aid agencies. Delivery of the TA was **less efficient**. According to the PPAR of Loan 965-LAO, it was not completed satisfactorily. Duration of the TA was too short. MAF was short of trained staff and was not able to involve its staff in TA activities effectively. There was little evidence that skills were transferred. Most senior officials were not aware of the study recommendations.	The TA outcome was **unlikely** to be sustainable. The study recommended establishment of extension functions within technical departments at each administrative level, as opposed to establishing a dedicated extension agency; this is the opposite of what subsequently happened with the creation of NAFES. Institutional development impacts were negligible. **Rating:** The PPAR (Loan 965-LAO) regarded this TA as unsatisfactory. The OEM rates it as **unsuccessful.**

ADB = Asian Development Bank, MAF = Ministry of Agriculture and Forestry, OEM = Operations Evaluation Mission, PPAR = Program Performance Audit Report, TA = technical assistance, T&V = training and visit.

[2] Smallholder Development Project (Loan 1949-LAO) is assisting MAF to develop capacity in the collection and dissemination of local agricultural market data.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
6	**TA 1191-LAO: Study of National Crop Development and Seed/Planting Material Multiplication** Approval to completion: Aug 1989–June 1990 Ministry of Agriculture and Forestry (MAF) Actual cost: $134,100 This was one of nine TAs supported under Loan 965-LAO: Agriculture Program.	The objectives of the TA were to (i) assist in developing national crop/commodity programs; (ii) establish a rationale, systems, and a program for future crop development; and (iii) develop a seed/planting multiplication program.	The TA recommended a set of action programs on trade and transit negotiations, infrastructure investment, media development, agribusiness, export taxes, and privatization of agricultural supplies, among other initiatives to support the national crop production program. The TA discussed policy measures and constraints to development, but these were very general recommendations.	The TA was **partly relevant**. The TA was **less effective** with its generally descriptive recommendations, which were not clear or specific about what needed to be done. In terms of timing and process, the implementation was **efficient**.	Sustainability of the TA was **unlikely**. There have been **negligible** institutional development or other impacts. According to the PCR of Loan 965-LAO, the TA was carried out at a time of significant institutional uncertainty within MAF, when the sectoral framework for development had yet to be developed. Consequently, the TA was able to make only general and uncoordinated recommendations. Its main usefulness was to provide a database for and a review of crop subsectors. **Rating:** The TA was not specifically rated in either the PCR or PPAR of Loan 965-LAO. The OEM rates this TA as **partly successful**.

ADB = Asian Development Bank, MAF = Ministry of Agriculture and Forestry, OEM = Operations Evaluation Mission, PCR = Program Completion Report, PPAR = Program Performance Audit Report, TA = technical assistance.

	Title, Date, Executing Agency, and TA Cost Financed by ADB	Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
7	**TA 1192-LAO: Pesticides and Environmental Control** Approval to completion: Aug 1989–Sep 1990 Ministry of Agriculture and Forestry (MAF) Actual cost: $60,600 This was one of nine TAs supported under Loan 965-LAO: Agriculture Program.	The objective of the TA was to strengthen and develop the pesticide regulation process in the Lao PDR. The scope of the TA was modified during implementation when it was discovered that a parallel TA being undertaken by the Food and Agriculture Organization covered almost exactly the same topics. Revised scope: (i) Identifying major pesticides used, (ii) transfer of knowledge about safe use of pesticides, (iii) developing a proposal for simple registration and control of pesticides, (iv) investigating pesticide use, (v) investigating pesticide dealers' registration, and (vi) investigating quality control issues.	The TA recommended (i) introducing centralized registration and clearance of pesticides (having identified unlabelled materials being on sale and illegally imported from Thailand), (ii) passage of a Pesticides Law, (iii) conducting an inventory of surplus pesticides and safe disposal from government warehouses, (iv) strengthening transfer/ extension of advice on pesticides to farmers, (v) introduction of a coordinated approach to pest control policy, (vi) providing technical support to plant quarantine procedures, and (vii) abandonment of the State's role in pesticide procurement and distribution.	The TA was **relevant**. It addressed issues related to the end of state ability to control and manage either flows of pesticides into the Lao PDR or their storage and distribution from government warehouses. The TA was **less effective,** with technically sound recommendations but without realistic means of implementing them. The timing and process of delivery of the TA was **efficient**.	Sustainability of the TA outcome is rated as **unlikely**. Institutional development and other impacts were **negligible.** Unregulated pesticide access and use continued in 2005. According to the PCR of Loan 965-LAO, the TA was carried out at a time of significant institutional uncertainty within MAF when the sectoral framework for development had yet to be prepared. The PPAR (Loan 965-LAO) indicated that there was not much evidence that the necessary skills or technology were transferred from the consultants to the local counterpart officials to strengthen institutions. **Rating:** The PPAR (Loan 965-LAO) did not rate this TA. The OEM rates it as **partly successful.**

ADB = Asian Development Bank, FAO = Food and Agriculture Organization of the UN, Lao PDR = Lao People's Democratic Republic, MAF = Ministry of Agriculture and Forestry, OEM = Operations Evaluation Mission, PCR = Program Completion Report, PPAR = Program Performance Audit Report, TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
8	**TA 1277-LAO: Livestock Sector Policy Development and Industry Restructuring** Approval to completion: Mar–Jul 1990 Ministry of Agriculture and Forestry Actual cost: $93,900 This was one of nine TAs supported under Loan 965-LAO: Agriculture Program.	The objectives of the TA were to (i) define a policy framework that can be used to guide the development of the livestock sector, with particular reference to defining the appropriate roles of the Government and the private sector; and (ii) define strategies and action plans to put the policy into effect.	The TA recommended (i) developing secure export markets with Thailand, (ii) developing a competitive internal market structure, (iii) attraction of foreign investment, (iv) promotion of commercialized smallholder investment, and (v) limiting the role of government services to aspects that the private sector cannot fulfill. A 14-point action plan was developed with its estimated cost, with suggestions that the existing export tax would cover most of the cost. Additional TA needs were also identified.	The TA was **relevant**. The recommendations were technically sound and entirely appropriate given the New Economic Mechanism impacts on agriculture and natural resources (ANR) and the attraction of a nearby export market for cattle. The TA was **effective**. Aspects of the action plan were taken forward following TA completion. TA delivery in terms of timing and process was **efficient**.	Sustainability was **likely.** The general thrusts of the action plan were subsequently embodied in national ANR and livestock policies, following completion of the TA. ADB commissioned the International Livestock Research Institute to do a livestock sector review in 2002 – many recommendations (although more detailed) were similar those of this TA, especially in relation to intensifying smallholder production. Institutional and other impacts have been **moderate**. **Rating:** The PCR (Loan 965-LAO) describes the recommendations of the TA as actionable, but the PPAR does not refer to this TA. The OEM rates it as **successful.**

ADB = Asian Development Bank, ANR = agriculture and natural resources, OEM = Operations Evaluation Mission, PCR = Program Completion Report, PPAR = Program Performance Audit Report, TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
9	**TA 1279-LAO: Agriculture Sector Third Five-Year Plan Programming** Approval to completion: Mar–Jul 1990 Ministry of Agriculture and Forestry (MAF) Actual cost: $338,800 This was one of nine TAs supported under Loan 965-LAO: Agriculture Program.	The objectives of the TA were to (ii) assist the Government in identifying, refining, and framing medium-term sector and subsector development goals, strategies, and policies; and (ii) formulate a 3rd Five-Year Plan program of policy actions and interventions. The scope included (i) preparation of a detailed inventory of all planned and ongoing agriculture activities; (ii) analyzing and integrating all other TA outputs; (iii) establishing links between agriculture and natural resources and the macroeconomy; (iv) identifying sector issues and building policy consensus; (v) identifying and ranking proposed sector interventions; (vi) formalizing cohesive sector and subsector plans; and (vii) developing local monitoring and evaluation capacity	The TA agreed that the New Economic Mechanism provided the right framework for growth in agriculture, but suggested that further fundamental change of role for MAF was needed, in particular in relation to 10 key policy areas (grouped into developing factor markets and trade policy, developing macro contexts, and developing production support services). For each policy area, detailed strategies and actions were proposed. National programs for research and extension, livestock, irrigation, and forestry were proposed. An adjustment agenda was outlined for MAF based on a staged process, including resolution of outstanding issues, finalization of reorganization of MAF (and necessary staff training), and then implementation of action plans (dependent upon external assistance).	The TA recommendations were both **relevant** and **effective** in that they directly impacted upon the largely contemporaneous design of the Second Agricultural Program Laon (SAPL, Loan 1180-LAO). In effect, this TA provided the basis for ADB-Government dialogue, providing a technical bridging step between the two agriculture program loans (i.e., Loan 965-LAO and Loan 1180-LAO). The main output of this TA was repackaged and refined to allow its recommendations to be incorporated into the SAPL. The definition of the appropriate role for MAF led to the explicit incorporation of its roles and responsibilities as an appendix in the RRP of the SAPL, and was also manifest as the technical basis for the Government's development policy letter for the SAPL. Requirement for development of national programs in irrigation and in research/extension led to design of the two SAPL-linked TAs (TA 1764-LAO and TA 1765-LAO). In terms of timing and process, the TA delivery was **efficient**.	Many recommendations depended upon resource availability. Thus, the implementation of recommendations was piecemeal. The sustainability of the TA outcome was **likely**. There was evidence of considerable impact at the time of the conclusion of the TA. MAF was streamlined from 10 to 6 departments along functional lines as broadly suggested by the TA. Institutional impacts were **significant**. **Rating:** This TA was rated as **successful** in the PCR of Loan 965-LAO. The OEM confirms this rating.

ADB = Asian Development Bank, MAF = Ministry of Agriculture and Forestry, OEM = Operations Evaluation Mission, PCR = Program Completion Report, RRP = Report and Recommendation of the President, SAPL = Second Agriculture Program Loan, TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
10	**TA 1745-LAO: Institutional Development and Strengthening of the Ministry of Agriculture and Forestry** Approval to completion: Aug 1992–May 1995 Ministry of Agriculture and Forestry (MAF) Actual cost: $1.23 million	The objectives of the TA were to assist the Government to strengthen and develop the institutional capabilities of MAF to enable it to carry out its mandate under the New Economic Mechanism. Scope: (i) 6-monthly cycles of activities for budgeting (formulation, review, and revision of development programs), (ii) establishment of an operational and administrative framework to plan and coordinate national programs for the agriculture sector, (iii) mandate for establishment of a single entity to coordinate multidisciplinary and multidonor interventions aimed at upland agriculture, and (iv) training and direct support.	The TA developed numerous training manuals and reports on baseline agroecological information, geographic information system (GIS) database development, and overall human resource development for MAF. Various Lao language training manuals were produced and a series of workshops held for MAF staff. The Resource Management Information Center established. A logframe-based PPBME (programming, planning, budgeting, monitoring and evaluation) system established.	The objectives and scope of the TA were **highly relevant**, given the level of skills among MAF staff and lack of functional cohesion within MAF agencies. The TA established new procedures using generally appropriate technology. The baseline work in GIS database development applied sound statistical techniques to verify data, while the provincial human resource surveys applied rapid appraisal techniques. Construction of the GIS was done largely by international consultants, who trained MAF staff to use the system. The TA was **effective**. Delivery of the TA was **efficient**.	It was recognized before TA completion that a longer run approach to institutional strengthening in MAF was needed if capacity was to be increased. The TA outcome was **less likely** to be sustained within MAF without further assistance. Because of this TA, a second-phase effort (TA 2333-LAO) was approved in 1995. With limited budgetary support and staff constraints within MAF, the data management systems run the risk of being neglected. **Rating**: This TA and TA 2333-LAO were both rated as **successful** in the TA Performance Audit Report (1997). The OEM confirms this rating.

ADB = Asian Development Bank, GIS = geographical information system, MAF = Ministry of Agriculture and Forestry, OEM = Operations Evaluation Mission, TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
11	**TA 1764-LAO: Strengthening and Restructuring Irrigation Development** Approval to completion: Oct 1992–Dec 1998 Department of Irrigation, Ministry of Agriculture and Forestry Actual cost: $2.54 million This advisory TA was implemented with cofinancing from the Government of the Netherlands. This TA supported Loan 1180-LAO: Second Agriculture Program.	The objectives of the TA were to (i) assist the Department of Irrigation (DOI) with the enhancement of its role and organization to enable it to support the much more rapid expansion of community-managed, government-supported irrigation in line with national policy; (ii) develop effective strategies and programs for irrigation development (strategy development); and (iii) strengthen DOI technical and management capability to implement effective strategies (strategy implementation).	The TA provided a framework for the strengthening and restructuring of DOI. The TA developed strategies and programs for irrigation development in the Lao PDR (in line with the policy measures of Loan 1180-LAO: Second Agriculture Program) and strengthened DOI's technical and management capability to implement strategies and programs.	The TA was **relevant** to government strategies, priorities, and ongoing reform, as well as to the ADB's country strategy. In general, the TA objectives were addressed and targets met. The TA recommendations (related to technical matters, human resources, administration, management, training, capacity building and the Tatthong Irrigation School) were acceptable to the Government but were not entirely implementable. For example, the restructuring of DOI was hampered by difficulties of assigning and recruiting staff to proposed positions. Overall, this TA was **less effective**. In terms of process, the delivery of TA was **efficient**.	Sustainability has been **less likely**. TA outcomes could not be sustained. Recommendations could not be fully implemented due to various resource institutional and constraints. Institutional impacts and other impacts have been **moderate**. **Rating**: This TA was rated as **partly successfu**l in the PPAR (Loan 1180-LAO). The OEM confirms this rating.

ADB = Asian Development Bank, DOI = Department of Irrigation, Lao PDR = Lao People's Democratic Republic, OEM = Operations Evaluation Mission, PPAR = Program Performance Audit Report, Operations Evaluation Mission, TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
12	**TA 1765-LAO: National Integrated Extension And Research Program** Approval: Oct 1992 Ministry of Agriculture and Forestry (MAF) Actual cost: $0.4 million This TA was a project preparatory TA associated with Loan 1180-LAO: Second Agriculture Program.	The objectives of the TA were to assist the Government to prepare a medium-term integrated national extension and research program, focusing on forms of technology transfer that can help reduce land resource degradation associated with current patterns of cultivation; and assist the transition to move towards commercial agriculture. Scope: (i) reaching consensus on extension and research policies; (ii) defining priorities for extension and research; (iii) formulation of research and extension program for crops, livestock, fisheries, and forestry; (iv) developing coordination and monitoring mechanisms; (v) identifying training needs; (vi) specifying requirements for information support services; and (vii) preparing an overall integrated extension and research program	The TA designed an integrated extension and research program within the existing MAF structure with the province as the functional technical unit (providing agricultural services, training subject matter specialists, among other features); incorporated the then-National Agriculture Research Centre (NARC) within the extension system under the Department of Agriculture and Extension (DAE); designed a project for possible funding, envisaging a very slow implementation (one province per year, one new district per province per year) program; and recognized that external funding would have to be sought to implement recommendations on any scale.	The TA was **relevant** to the government strategies and priorities and to the ongoing reform agenda. The respective roles and functions of research and extension were subject to continual review and instability within MAF, and issues had not been resolved following TA 1190-LAO. New recommendations were appropriate in context, and concentration of technical functions at the provincial level, with districts focusing only on extension, is prescient of the recent (June 2005) reorganization of the National Agriculture and Forestry Extension Service (NAFES) and refocusing of the district functions in delivering extension services. The TA was **less effective**. Recommendations were not taken forward by MAF. The TA delivery was **efficient** in terms of timing and process.	Similar to TA 1190-LAO, the recommendations made may have been technically plausible, but without resources for implementation this was largely a paper exercise. This was a project preparatory technical assistance, but no project resulted, as the Government was reluctant to use loan funds for this purpose and no bilateral assistance was identified. Sustainability has been **less likely**. Despite the suggested benefits of integration between research and extension it is notable that the national Agriculture and Forestry Research Institute (former NARC) and NAFES (formerly extension under DAE) remain separate institutions within MAF. The institutional development impact was **negligible**. **Rating:** No rating was given in the PCR (Loan 1180-LA), but the PPAR rated this TA as **partly successful.** The OEM confirms this rating.

ADB = Asian Development Bank, DAE = Department of Agriculture and Extension, MAF = Ministry of Agriculture and Forestry, NAFES = National Agriculture and Forestry Extension Service, OEM = Operations Evaluation Mission, PCR = Program Completion Report, PPAR = Program Performance Audit Report, TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
13	**TA 2011-LAO: Study to Evaluate the Impact of Agriculture Program Lending** Approval to completion: Dec 1993–Jan 1996 Committee for Planning and Cooperation Actual cost: $0.54 million	The objectives of the TA were to (i) evaluate the socioeconomic implications of economic restructuring in the Lao PDR during 1986–1995, with specific focus on the effects of ADB-supported agricultural policy and institutional reforms on rural economic activity (production, trade, marketing, incomes, and growth) and welfare; (ii) identify costs and benefits of these reforms with respect to agricultural performance, resource use, and poverty reduction; and (iii) create a framework under which the Government could independently monitor rural socioeconomic trends. Scope: (i) review of statistics and reports, (ii) village surveys, (iii) field interviews; (iv) identification of data gaps and development of low-cost rural sociological indicators, and (v) conduct of seminars to present and review findings.	The TA provided some evidence of the impact of reforms in the agriculture and natural resources sector. For example: (i) Agricultural growth at 4.8% per annum during the first half of 1990s. This was despite the fact that resources were simultaneously being released to industrial and manufacturing development. (ii) Cash crop output grew faster than outputs of staple crops (with rice output per capita falling). (iii) Households benefited from reform differently. Lack of access to credit to change production practices was identified as a constraint. (iv) Indicative positive impacts in some places with irrigation, citing land tenure, access to credit, and water user associations as dimensions of empowerment. The TA provided recommendations regarding continuing agriculture sector monitoring and food security policy analysis.	The TA was **relevant** to the diagnostic needs for assessing the impacts of reforms. The TA was **less effective**. Its objectives were achieved; however, it was relatively broad in scope, and its analytical coverage was deficient. There was no analysis of the attribution of impacts. Data limitations were only partly responsible for the deficiency in analytical rigor. There was evidence that recommended practices in the collection of agricultural statistics were adopted. However, the TA did not provide further suggestions for the remaining agenda for reforms. This might have been due to limitations of the TA terms of reference. In terms of efficiency of process and timing, the TA was **efficient**.	This impact assessment was commissioned as a one-time exercise. The Government does not carry out such assessments periodically and routinely. **Rating:** The TCR, attached to the PCR (Loan 1180-LAO) rated this TA as **partly successful.** The OEM confirms this rating.

ADB = Asian Development Bank, Lao PDR = Lao People's Democratic Republic, OEM =, Operations Evaluation Mission, PCR = Program Completion Report, TA = technical assistance, TCR = TA Completion Report.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
14	**TA 2333-LAO: Institutional Development and Strengthening of the Ministry of Agriculture and Forestry (Phase II)** This TA was preceded by TA 1745-LAO Approval to completion: May 1995–Sep 1996 Ministry of Agriculture and Forestry (MAF) Actual cost: $0.54 million	The objectives of the TA were to (i) create a more cohesive national agricultural administration by establishing integrated annual planning, budgeting, monitoring, and evaluation (APBME) within MAF's technical departments; and (ii) move MAF towards the creation of an effective farmer-oriented extension and research system by finalizing and initiating a long-run plan for retraining and redeploying state agriculture personnel. The scope included (i) training workshops and advisory services in agricultural administration and programming, human resource development (HRD), database and statistical analysis (follow-on from TA 1745-LAO); (ii) HRD analysis and planning; (iii) developing consensus among senior MAF officials on MAF's HRD strategy; and (iv) establishing simplified APBME, including training, in provincial agriculture and forestry offices.	HRD and training reports, five training manuals, and integrated APBME procedures were established. Technical training in general project appraisal, planning and administration, and more specific technical areas (statistics, computing) was provided.	The TA was **highly relevant**. It was part of a long-run process to restructure MAF, and in particular to establish it as a vertically integrated and technically robust institution that links policy-making to farmers and does not depend on provincial relationships to intermediate implementation (previously provincial chiefs had considerable sway over implementation). As such, it was fundamental in establishing a modern agricultural institution. Improvements in the quality of MAF's annual plans were evident. Improved information flows between national level and selected provinces/districts. Defined objectives for HRD planning were indicators of positive outcomes. The TA was **effective**. The lack of a comprehensive long-term plan for MAF institutional development was still evident during TA implementation, and this constrained TA operation. Nevertheless, the TA delivery in terms of process and timing was **efficient**. Lack of counterpart staff was also a constraint to TA implementation, and as a result the transfer of knowledge and skills to local staff was partial.	Both this TA and TA 1745-LAO catalyzed institutional strengthening. The data management systems ran the risk of being neglected because of doubts about future availability of resources. HRD planning proved not to be adequately resourced, and many provisions were not implemented during and following the completion of the TA. The sustainability of the TA was **less likely** without continuing support to MAF from aid agencies. However, the TA brought in an indicative planning approach, designed the farming systems approach to extension, and developed specific human resource capacity (with one beneficiary being the current Permanent Secretary of MAF). **Rating**: This TA and TA 1745-LAO were both rated as **successful** in the TA Performance Audit Report (1997). The OEM confirms this rating.

ADB = Asian Development Bank; APBME = annual planning, budgeting, monitoring, and evaluation; HRD = human resource development; MAF = Ministry of Agriculture and Forestry; OEM = Operations Evaluation Mission; TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
15	**TA 2883-LAO: Agriculture Strategy Study** Approval to completion: Sep 1997–Dec 1999 Ministry of Agriculture and Forestry (MAF) Actual cost: $0.59 million	The objectives of the TA were to (i) assist the Government in reviewing the existing agriculture sector development plan; and (ii) develop an appropriate agriculture development strategy that prioritizes areas suitable for investment, including possibly for ADB financing. Scope: The TA included (i) reviewing MAF's role in managing agriculture and natural resources (ANR), (ii) assisting MAF to prepare a strategy and revise existing ANR development plans, (iii) assessing MAF's capacity to implement and manage the strategy, and (iv) making recommendations regarding provision of sustainable and cost-effective rural finance.	The major output of the strategy study was the Strategic Vision for the Agriculture Sector (1999). This document was innovative in discussing the dynamics of transformation that was happening in ANR and the Lao PDR's strategic location in the region ("land-linked" instead of landlocked), and in identifying the flatland/sloping land development dichotomy (leading to proposals for different development strategies for the Mekong flatlands and sloping lands). The TA developed 7 thematic approaches, linked to existing Lao PDR programs (defined in terms of policies, strategies, programs, and outputs). The TA placed its recommendations in the context of MAF reorganization (e.g., in relation to decentralization and bottom-up planning).	The TA was **highly relevant** to the country's development strategy and the transition to a market-based economy. Unlike all previous papers produced under various TAs, the Strategic Vision for the Agriculture Sector (1999) had high government ownership. The consultant operated as facilitator and catalyst rather than manager of the entire process. The TA was **highly effective**. It underwent 15 drafts. The TA scope and resources were extended to support this process of close engagement with the counterparts. The length and depth of the strategy formulation, while not anticipated at the onset, was a constructive and useful engagement that has resulted in a much wider understanding of strategic issues. The TA particularly benefited from the National Agricultural Strategy Conference in 1999. The Strategic Vision was presented to a roundtable meeting of aid agencies as embodying the national ANR strategy at the end of 1999. Subsequently, this discussion was facilitated through a small-scale TA 3403–LAO: Towards Implementation of the Agriculture Strategy. The TA delivery was **efficient,** emphasizing stakeholder participation and ownership by the Government.	The outcomes of the TA have become major features of the national ANR sector strategy. Thus, the TA outcome was **most likely** to be sustainable. The subsequent Japan International Cooperation Agency Master Plan study of 2001 was an attempt to operationalize the Strategic Vision, indicating the Government's strong desire to move forward with the vision. The basic strategic themes of the 1999 Strategic Vision for the Agriculture Sector were later incorporated and embodied into the National Growth and Poverty Eradication Strategy 6 years later (2003–2004). Interviews conducted by The OEM with senior MAF officials confirmed the strategic value of TA 3403-LAO and TA 2883-LAO. **Rating:** The OEM rates this TA as **highly successful.**

ADB = Asian Development Bank, ANR = agriculture and natural resources, Lao PDR = Lao People's Democratic Republic, MAF = Ministry of Agriculture and Forestry, OEM = Operations Evaluation Mission, TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
16	**TA 3403-LAO: Towards Implementation of the Agriculture Strategy** Approval to completion: Feb–Dec 2000 Ministry of Agriculture and Forestry (MAF) Actual cost: $88,000	The original objectives of the TA were to (i) disseminate the Agriculture Strategy (derived from TA 2883-LAO: Agriculture Strategy Study) to provincial and district agriculture offices, (ii) conduct an institutional assessment of MAF, (iii) prepare and conduct study tours of market-oriented agriculture, (iv) coordinate with aid agencies and develop an investment plan for agriculture, and (v) prepare project concepts to implement the Agriculture Strategy. This small-scale TA was modified during its implementation. The scope of the TA also included (i) maintaining aid agency interest at the Seventh Round Table meeting for the Government's Strategic Vision for the Agriculture Sector, and (ii) supporting the upcoming Japan International Cooperation Agency (JICA) Master Plan study.	The TA facilitated and supported government efforts to present its Strategic Vision to donors. The TA contributed to the Government's Report to the 7th Round Table meeting – November 2000 (Partnership For Development). The intended agriculture-specific presentation was changed to a multisectoral and cross-cutting presentation. Some originally intended activities under the TA appear to have been revised and/or neglected.	The TA was **highly relevant** in the context of providing follow-on support to TA 2883-LAO. The TA was also **highly effective** in supporting the roundtable process which led directly to (i) JICA commitment to proceed with the Master Plan study for agriculture, and (ii) Swiss Development Corporation to develop its extension support program. The delivery of this TA was **efficient**, in terms of timing and process.	The sustainability of the TA outcome is **most likely**. The basic strategic themes promoted by this TA complemented TA 2883-LAO, and the outcomes and recommendations of these two TAs were later embodied in the agricultural and natural resources section of the National Growth and Poverty Eradication Strategy in 2003. Interviews conducted by the OEM with senior MAF officials confirmed the strategic value of TA 3403-LAO and TA 2883-LAO. **Rating**: The OEM rates this TA as **highly successful**, in conjunction with TA 2883-LAO.

ADB = Asian Development Bank, JICA = Japan International Cooperation Agency, MAF = Ministry of Agriculture and Forestry, OEM = Operations Evaluation Mission, TA = technical assistance.

Loan 1488-LAO: Community-Managed Irrigation Sector Project

BASIC DATA

TA No.	TA Name	Type	Person-Months	Amount ($)	Approval Date
2447	Small-Scale Community-Managed Irrigation Sector Project	PPTA	36.5	530,000	20 Nov 1995

EXECUTING AGENCY Department of Irrigation, Ministry of Agriculture and Forestry

KEY PROJECT DATA ($ million)	As per ADB Loan Documents	Actual
Total Project Cost	24.1	TBD
ADB Loan Amount/Utilization[a]	14.7	13.0
ADB Loan Amount/Cancellation	–	0.6

KEY DATES	Expected	Actual
Fact-finding		27 May–11 Jun 1996
Appraisal		21 Jul–7 Aug 1996
Loan negotiations		11 Oct 1996
Board approval		21 Nov 1996
Loan signing	21 Feb 1997	21 Feb 1997
Loan effectiveness	21 May 1997	29 Oct 1997
No. of extensions in loan effectiveness – 2	21 Aug 1997 21 Nov 1997	
First disbursement		12 Jan 1998
Project completion	31 Dec 2003	30 Jun 2004
Loan closing	30 Jun 2004	5 Oct 2004
No. of extensions in loan closing – 0		
Months (effectiveness to completion)	79	80

– = not available, PPTA = project preparatory technical assistance, SF = special fund, TA = technical assistance, TBD = to be determined.

[a] The original loan amount of SDR10.213 million was equivalent to $14.7 million at appraisal. Upon closing, the final loan amount of SDR9.8 million was equivalent to $13.0 million.

A. Objectives and Scope

1. The Community-Managed Irrigation Sector Project (CMISP) aims to improve food security in the central mountainous regions (provinces of Vientiane, Borikhamxay, Huaphanh, and Xiengkhouang, and Xaysomboun Special Zone) of the Lao People's Democratic Republic (Lao PDR).[1] The objectives of the CMISP were to (i) increase agricultural production, (ii) increase food security and incomes of about 6,000 farm families, and (iii) improve watersheds by reducing shifting cultivation and promoting tree planting. The CMISP was formulated under technical assistance financed by the Asian Development Bank (ADB).[2] Key performance targets/indicators, as stated in its project framework, were as follows.

(i) **Goal/Impact Indicators:** (a) sustainable increased rice production of 1,500 tons (t)/year by 2010, and commencement of production of high-value crops,

[1] ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Community-Managed Irrigation Sector Project.* Manila.
Loan 1488-LAO: *Community-Managed Irrigation Sector Project*, for $14.7 million, approved on 21 November 1996.

[2] TA 2447-LAO: *Small-Scale Community Managed Irrigation Sector Project*, for $530,000, approved on 13 December 1995.

(b) incremental job opportunities of 7,000 person-years per annum, and (c) shifting cultivation reduced by 20% by 2000.

(ii) **Purpose/Outcome Indicators:** (a) increased rice yields from 2.2 t/hectare (ha) to 3.0 t/ha by 2010, and (b) water users associations (WUAs) operating well.

2. The project was designed to do the following:

(i) assist communities to organize themselves to participate in the selection, design, implementation, and subsequent operation and maintenance (O&M) of irrigation systems;
(ii) develop community-managed irrigation (CMI) schemes to improve irrigation, in parallel with construction of rural access roads, agricultural extension, environmental monitoring, and watershed protection;
(iii) construct access and district feeder roads to link CMI schemes in remote areas to the national road network; and
(iv) support project management, and institutional support for CMI development.

3. The project was designed to include 70 CMI schemes covering 3,800 ha of new and improved irrigation. Each system was proposed to include construction of a permanent diversion structure on a water stream, and provision of gravity irrigation channels to convey water to the command areas. The command areas were expected to range from 30 ha to 70 ha, with the exception of a few that could exceed 100 ha Communities, through their WUAs, were expected to provide labor and local materials needed for the construction, and to own the irrigation systems after completion, including assuming responsibility for O&M.

4. **Financing Plan.** At appraisal, the project cost was estimated at $24.1 million, comprising $13.6 million in foreign exchange, and $10.5 million equivalent in local currency. Financing sources were (i) $14.7 million from ADB, covering $10.2 million in foreign exchange and $4.5 million equivalent in local costs; (ii) $4 million from the Organization of Petroleum Exporting Countries Fund for International Development (OPEC Fund), including $3.4 million in foreign exchange and $0.6 million equivalent in local costs; (iii) $2.4 million from the Government for local costs; and (iv) contributions of $3 million equivalent in local costs by the communities. The OPEC Fund provided a loan of $4 million for construction of rural access and district feeder roads and for purchase of design and survey equipment.

5. Implementation of the CMISP was completed on 30 June 2004. With the assistance of project consultants, the Department of Irrigation of the Ministry of Agriculture and Forestry (MAF) prepared its Project Completion Report (PCR, March 2004).[3] ADB has scheduled its PCR for 2006. The Operations Evaluation Mission (OEM) conducted in-depth interviews and focus-group discussions with 129 farmers (89 males and 40 females) in 10 CMI subprojects (Table A10.1).

[3] MAF. 2004. *Project Completion Report on the Community-Managed Irrigation Sector Project.* Vientiane. MAF prepared this report with assistance from project consultants.

Table A10.1: Subprojects and the Number of Farmers Interviewed

Province	Subproject	Date of Visit (Day/Month/Year)	Number of Farmers		
			Male	Female	Total
Vientiane	Nam Nga	04/04/05	14	2	16
Vientiane	Nam Mone	05/04/05	10	5	15
Vientiane	Nam Hong	06/04/05	12	8	20
Vientiane	Houay Lao	07/04/05	8	4	12
Xiengkhouang	Nam Pieu	19/04/05	6	4	10
Xiengkhouang	Nam Nyat	19/04/05	7	0	7
Xiengkhouang	Nam Keua	20/04/05	7	3	10
Huaphanh	Nam Soy1	22/04/05	7	7	14
Huaphanh	Nam Soy2	22/04/05	10	4	14
Huaphanh	Kaeng Ay	24/04/05	8	3	11
			89	**40**	**129**

B. Evaluation

1. Relevance

6. Overall, in the context of the following analysis, the CMISP was highly relevant to poverty reduction and household food security, and responsive to the Government's development strategy and subsequent focus on the Northern Region. Poverty assessment during the preparation of the CMISP indicated that subsistence farmers in targeted rural communities suffered from household food insecurity. Household rice deficits of up to 4 months per year were common. When the CMISP was designed in 1996, about 80% of the targeted beneficiaries lived below the poverty line. Faced with food shortfalls, these households resorted to traditional food foraging in the forests. These households had little cash incomes or any other surplus to purchase food. With physical isolation (without reliable access to roads, transportation, and markets), subsistence farming persisted, and self-reliance was the norm. Living conditions were harsh, housing conditions were poor, and households' vulnerability to livelihood shocks was serious. These poverty conditions were further evidenced through other poverty assessments conducted by ADB.[4]

7. **Farmers' Binding Constraints.** In the uplands, there is limited access to arable land, and floodplains and valley bottoms are usually utilized for rice cultivation. With inadequate access to a reliable supply of water, and pronounced drought over an extended period during the dry season, crop cultivation was constantly exposed to severe production risks. This instability generated threats to food security in remote rural areas. At that time, less than 3% of the 62,000 ha of the rice cultivation areas in the CMISP-targeted provinces was irrigated. Typically, irrigation in the uplands involved traditional schemes constructed, operated, and maintained by local communities. Farmers relied on small weirs to divert surface water from streams into gravity channels for conveyance to farmland. These weirs provided supplementary irrigation to wet season rice cultivation, allowing farmers to grow rice for subsistence. Dry season water flows were generally limited in relatively small watersheds where CMI schemes were located. Thus, these weirs were most useful during the wet season. Traditional diversion weirs were made of local materials such as bamboo, brushwood, logs, stones, and pieces of rock. In general, these traditional weirs were not robust, requiring frequent repair, replacement, and reinforcement. Consequently, maintenance and repairs consumed a lot of labor by farmers and prevented households from using their scarce labor for other activities more efficiently. The

[4] ADB. 2001. *Participatory Poverty Assessment: Lao People's Democratic Republic.* Manila.

CMISP constructed permanent weirs, improved water conveyance, and enhanced water distribution to irrigated farmlands.

8. **Response to Demand.** Communities, villagers, and farmers were very interested in the improvement of their traditional small-scale irrigation schemes. They expressed willingness to contribute labor and local materials to the implementation of the CMISP. There was high demand among the communities for the type and scope of assistance that the CMISP was designed to provide. Improvements of the traditional irrigation systems were anticipated to benefit farmers and their communities in several ways: (i) fewer weir repairs and consequently reduced labor for O&M; (ii) reduced tree cutting for weir repairs; (iii) improved water distribution and increased reliability of water supply to farms; (iv) improved wet season paddy yields; (v) opportunities for dry season crops and crop diversification; (vi) expansion of irrigated areas; and (vii) reduced crop production instability. The combined effects were expected to reduce slash-and-burn shifting cultivation in the targeted area.

9. **Consistency of the CMISP with the Government's Development Strategy.** The Government's policy goals for the agriculture sector as stated in the Fourth Five-year Development Plan (1996–2000) emphasized (i) food security, (ii) reduction of shifting cultivation (slash-and-burn agriculture), (iii) mitigation of environmental degradation, (iv) diversification of products, and (v) rural development and irrigation. The Government's strategy for irrigation has focused on the improvement of O&M of existing irrigation schemes, promotion of participatory approaches, and enhancement of community management of small-scale irrigation schemes. An important feature of this strategy was an expressed desire by the Government to shift its role to become an enabler and facilitator for development, with greater participation of farmers in the planning, design, construction, and O&M of small-scale irrigation schemes. The CMI schemes were an integral part of the Government's strategy for rural development, providing an avenue for promoting sedentary irrigated farming, to reduce pressure on fragile lands and to provide an alternative to shifting cultivation.

2. Effectiveness

10. The OEM rated the project as effective for the following reasons. The CMISP completed 47 subprojects.[5] As reported in MAF's PCR of March 2004, the 47 CMI schemes cover total irrigated areas of 2,679 ha (wet season, 2003) and 884 ha (dry season, 2003). Benchmarking this achievement against available baseline data is difficult. There are discrepancies among baseline data sources, including the benefit monitoring and evaluation (BME) system. Table A10.2 shows the aggregate baseline existing irrigated areas from two sources (feasibility studies and the BME), targeted areas, actual irrigated areas (after O&M turnover as reported by the BME), and actual irrigated areas as reported by MAF's PCR. Measurements of incremental irrigated areas depend on the baseline data of irrigated areas. Overall, the incremental irrigated areas due to the CMISP depend on the data source: (i) when the feasibility studies are used as the baseline, by 2003 the incremental irrigated area amounted to 1,564 ha (wet season) and 713 ha (dry season); and (ii) when the BME is used as the baseline, by 2003 the incremental irrigated areas reached 1,758 ha (wet season) and 787 ha (dry season). Tables A10.3 and A10.4 provide details by scheme of baseline, targets, achievements, and potential expansion.

[5] Although the report and recommendation of the President (RRP) expected the project to cover about 70 schemes, only four CMI schemes were appraised at the time of project design, and the rest were subject to further assessments through feasibility studies and selection.

Table A10.2: Comparison of Total Existing (Baseline) and Achieved Irrigated Areas (ha)

Baseline FS Wet Season	Baseline FS Dry Season	Baseline BME Wet Season	Baseline BME Dry Season	Target Wet Season	Target Dry Season	BME Irrigated After O&M turnover Wet Season	BME Irrigated After O&M turnover Dry Season	PCR Irrigated 2003 Wet Season	PCR Irrigated 2003 Dry Season
1,114	171	921	97	3,845	2,353	2,579	710	2,679	884

BME = benefit monitoring and evaluation, FS = feasibility studies, ha = hectare, O&M = operation and maintenance, PCR = project completion report.

11. **Access Roads.** The CMISP, through the use of the OPEC Fund, rehabilitated and constructed 342.6 kilometers (km) ($1.73 million) of access roads and 46 km ($1.76 million) of feeder roads. These roads significantly improved accessibility of the project sites, allowing easier transportation of goods and people, and access to services. The roads have been instrumental in reducing the isolation of the targeted communities. Tables A10.5 and A10.6 provide details of the investment costs and beneficiaries (villages, households, and number of people) of access and feeder road development.

12. **Farmers' Perception of Benefits.** The most important and frequently cited reasons by farmers as key factors for their participation in the CMISP were (i) the need for reliable water supply for rice cultivation, (ii) the importance of household food security and self-sufficiency in rice production, (iii) the desire to improve livelihood conditions, and (iv) the desire to reduce shifting cultivation by practicing more sedentary irrigated crop cultivation. In-depth interviews and focus-group discussions with 129 farmers in 10 CMI subprojects showed that an overwhelming majority (more than 90%) felt that the CMISP had generated significant benefits and had contributed to substantial improvements in their living conditions over the last 5 years.

13. **Increased Rice Yields.** The effects of the CMISP on rice yields through improved water supply and management were evident. Farmers claimed that they had gained incremental yields ranging from 0.5 t/ha to 2 t/ha. Improved reliability of water supply enabled farmers to increase rice production during the wet season. This production increase can be attributed to improved yields, reduced crop instability, increased cropping intensity, and increased irrigated areas. Increased rice yields were due not only to improved irrigation, but also to the introduction of modern varieties. Improved rice yields and increased production allowed participating farmers to reduce and, to a large extent, abandon slash-and-burn upland agriculture. Reduction in shifting cultivation and more sedentary farming saved labor among men and women. This change in the farming system allowed more young children to go to school instead of following their parents to distant fields with shifting cultivation.

14. **Reduced Labor Requirements for O&M.** Farmers reported significant reduction in labor requirements for O&M due to the construction of permanent weirs and associated structures. Labor savings are substantial, and have been instrumental in catalyzing farmers to engage in other livelihood activities. For example, farmers in the Nam Mone subproject claimed that in the past, their traditional wooden weir required 6 or 7 major repairs a year, each repair requiring 10 days of labor from each household. The CMISP saved farmers 70 person-days of labor annually for each household. Similar claims resonated among farmers in other subprojects visited by the OEM, and labor savings were reported by farmers to range from 40 to 90 person-days/household/year. Labor savings enabled farmers to spend more time on crop cultivation, fish farming, livestock husbandry, gardening, and off-farm employment. Women claimed that labor savings because of the CMISP allowed them to spend time on collection of nontimber forest products and to engage in weaving and other activities to earn cash.

15. **Diversified Crops.** The CMISP promoted crop diversification to include options such as vegetables, which require less water in the dry season when irrigation water is limited. In places close to major urban areas (for example, Vientiane Province), farmers have the incentive to grow crops of higher value than rice because of the proximity of and access to markets. In Xiengkhouang and Huaphanh provinces, markets are still limited. Poor access to markets has dampened efforts to promote crop diversification, while farmers continue to show preference for growing glutinous rice for subsistence to ensure household food security.

3. Efficiency

16. Overall, the OEM rated the project as less efficient. Economic performance of the CMISP at the time of design was estimated (ex-ante) for four schemes. Detailed assumptions were not included in the final report of the project preparatory technical assistance (PPTA), and thus the OEM could not confirm the validity of the ex-ante economic analysis calculations. The analysis as presented in the report and recommendation of the President (RRP) is also inadequate. Although the RRP provides 22 pages of economic internal rate of return (EIRR) calculations, there is little information on the basis for calculation (e.g., yields and quantities of inputs). Information was provided on present and future farm incomes (in Supplementary Appendix E, page 47), indicating incremental farm income of KN707,400 per hectare or $765/ha at the prevailing exchange rate of KN925 per dollar. This projected increase in income comprised 13% incremental paddy, 23% upland crops, and 64% fish in paddy. In practice, the project has contributed to increased fish production, but largely through the construction of fish ponds of about 79 ha in 2003, which draw water from project irrigation canals. While fish are likely to be caught from paddy fields of the project areas, there has not been substantial stocking or commercial harvesting of fish.

17. On the basis that the project benefits were budgeted and forecast heavily on incremental freshwater fish production, the CMISP was in effect an aquaculture development project with an expected outcome that was never likely to be realized. The PPTA stated (Final Report, PPTA Section 7.1) that a large majority of farmers reported an interest in rice and fish production. Under present water management arrangements, fish production in paddy fields is difficult because of insufficient water during the complete growing season. There is inadequate justification for including fish farming as an enterprise that will provide almost two thirds of incremental benefits (and 54% of farm income).[6] Thus, this has been a misrepresentation of feasible options for targeted farmers. If benefits from aquaculture had been excluded from the ex-ante analysis, the EIRR of the subprojects would have fallen to around 5%, making the project less economically attractive.

18. The OEM reevaluated the economic performance of all subprojects combined, based on available data including from the final BME report in 2003. Costs were based on the data presented in the PCR (2004) of the Government, with costs added to bring an additional 500 ha under the command area at an estimated cost of KN2 million/ha. This assumes an expansion of the irrigated area in future. Cost savings due to the elimination of the need to repair traditional weirs were not accounted for directly in the OEM's analysis, but estimated savings in labor (e.g., 20 person days/ha) were included in paddy crop budgets. Local and foreign cost breakdowns were based on appraisal estimates. Local costs were converted to economic costs using a standard conversion factor of 0.9 based on recent practice in the Lao PDR (0.8 in the RRP

[6] The RRP (para. 87) indicated that, in addition to crop production gains, "there will also be an increase in the production of fish from paddy fields." More analysis was necessary.

analysis). Total project cost based on these assumptions in nominal (current) terms is KN187 billion ($22 million), and in 2005 economic value terms KN281 billion ($26.1 million). Foreign costs were converted using the G-5 manufacturing value index, and local costs using the country's gross domestic product (GDP) deflator. Midyear exchange rates were used.

19. Irrigable and irrigated areas were based on BME data. Without the project, irrigation intensity was estimated at a stable 111% (e.g., dry season cropping extends to 11% of the wet season area). With the project, cropping intensity was estimated to increase to a peak of 140%. Project life was estimated to cover 30 years, with no residual value. Many of the project diversion weirs have silted up, and allowance was made for an average of 300 cubic meters (m^3) per scheme to be removed annually at a cost of KN30,000 per m^3.

20. For the economic reevaluation, dry season cropping was based on maize and peanut (representing leguminous crops). With the project, crop yields were forecast to increase from 2.4 t/ha to 3.2 t/ha for the 2005 wet season, rising to 3.7 t/ha in 2010. Dry season paddy yield would increase from 3.3t/ha to 4.0 t/ha in 2005 due to improved irrigation and access to the project's extension services. Similar increases were forecast for dry season nonrice crops. Input costs were estimated based on border prices, with labor at the approximate average market value of KN20,000 per day. In the RRP, labor was shadow priced at 80% of its market value, and this assumption was retained for the OEM base case. Full pricing of labor was tested through sensitivity analysis.

21. Without the project, cropping was forecast to remain unchanged from its baseline levels. With the project, the OEM estimated that paddy production would increase from around 4,400 t in 1998 (KN10.2 billion) to 16,600 t (KN.26.6 billion) in 2009. Paddy was valued at the import parity price because of the project locations, which are largely rice-deficit areas and isolated from internal markets and rice surplus areas in the country. While a small amount of rice is traded at the project sites, rice deficits in the Northern Region cannot be easily supplied from rice surplus areas in the Southern Region. Food aid experience (World Food Programme) indicates that rice imports were necessary, and such arrangements would justify the use of import parity prices for valuing domestic rice production at rice deficit areas in the Northern Region. The economic farm gate price of paddy (unmilled rice) at import parity was estimated at KN1,740/kg ($0.16/kg) in 2005. Maize was valued at KN1,370/kg ($0.13/kg) export parity at the farm gate. Nonrice dry season crop production was modestly budgeted to increase from 130 t (KN0.3 billion) in 1999 to 1,140 t (KN2 billion) per year by 2009, representing 10 times the production level without the project. The overall net incremental value of production was estimated to reach around KN12 billion ($1.1 million) annually by 2008. Over its 30-year life, the project would generate an EIRR of only 1.7%, indicating a low level of economic efficiency.[7] For the base case, labor was shadow priced at 80% of market value, considering the high incidence of underemployment in many northern areas. Removing the shadow price parameter would reduce the EIRR to 1.2%.

22. The key reason for the low EIRR for the base case is the low profitability of paddy production at the yields budgeted, even at import parity prices. The high cost of developing the CMI schemes and low irrigation intensity (although forecast to reach substantially higher levels of cropping intensity than at present) are significant factors in the projected low EIRR.

[7] The baseline EIRR calculation excludes investment in access roads on the basis that there are other benefits from road investment in addition to increased agricultural production. If road improvement costs were included, the EIRR declines to 0.6%.

23. The investment costs (civil works for irrigation) for the CMI schemes are high (Tables A10.7 and A10.8). Based on the total maximum irrigated area (wet season) in 2003, the average unit cost of civil works of the entire 47 subprojects amounts to $3,890/ha. There is significant cost variation among schemes, from as low as $716/ha in the Nam Mone subproject to as high as $21,200/ha in the Nam La subproject, and 11 subprojects exceed $5,000/ha. The average unit cost was highest ($7,492) for the first batch of CMI schemes, compared with $2,895/ha (second batch), $3,206/ha (third batch), $3,483/ha (fourth batch), and $2,697/ha (fifth batch). The cost of civil works for irrigation development reached $3,000/household, with total costs of $10.4 million for civil works (including contributions from communities).

24. Financial performance for a typical 1 ha farm would improve significantly, with a net farm income of KN3.2 million (before family labor costs) with the project, eight times higher than the estimated level without the project. With changes introduced by the CMISP, family labor inputs would increase from 61 to 110 days per year, and income per labor day would rise from KN7,100 to KN29,100 per day.

4. Sustainability

25. The OEM rated the sustainability of the CMISP as less likely for the following reasons: The CMISP assisted and facilitated farmers to organize themselves through the establishment of WUAs. Although farmers had been self-reliant in the past, their organizational and management arrangements required some adjustment to meet the challenges of operating and maintaining modernized irrigation systems. The WUA concept is new to farmers. With capacity development efforts, including training, during the implementation of the CMISP, WUAs were established. The capacities and abilities of these WUAs to operate and maintain the CMI schemes vary significantly. Further efforts are required for the capacity development of the WUAs so that they can effectively carry out their functions as intended. However, there are no provisions for further assistance to and monitoring of the WUAs after the completion of the CMISP. There is an unrealistic expectation that the decentralized district agriculture and forestry offices (DAFOs)[8] will continue to support WUA development and to provide further extension services to farmers. After the completion of the CMISP, and with no earmarked funding for WUA development and extension, DAFOs have no resources to provide further assistance to farmers. At present, MAF does not have a system for monitoring and evaluating the performance of completed projects, and countrywide, completed CMI schemes have been left without further monitoring by the Government. The project-to-project modality of assistance to farmers represents a systemic institutional shortcoming and risk to the sustainability of the CMI schemes.

26. WUAs collect irrigation service fees (ISFs) from their members as a way of pooling financial resources to meet routine and periodic O&M requirements. The collection of ISFs by WUAs of the CMI schemes differs substantially in method, rates, and performance. Overall, ISF collections were reported to range from 60% to 70%. The WUAs frequently established ISF rates based on quantities of rice per season, while others set these rates in financial terms. For example, (i) the WUA of the Nam Nga subproject claimed that it collected 100% of the established ISF rates of KN30,000/ha (wet season) and KN15,000/ha (dry season), representing no change in the ISF rates from 2003 to 2005; (ii) the WUA of the Nam Hong subproject significantly increased its ISF rate from 15 kilograms (kg) of unmilled rice per ha to

[8] DAFO is currently known as the district agriculture and forestry extension offices, and obtained its new name in June 2005, following the reorganization of the national extension services under the National Agriculture and Forestry Extension Service.

50 kg/ha in 2004, but it failed to collect from its members because of unwillingness among farmers to pay the ISF at the established rate; (iii) the WUA of the Houay Lao subproject set its ISF rate at KN36,000/ha (wet season) based on 36 kg of unmilled rice/ha of irrigated land, KN5/m^2 of land in the dry season, and KN10/m^2 of fishpond; and (iv) the WUA of the Nam Nyat subproject established its ISF rate at KN50,000/ha (wet season). The ISF rates in 2004 were as high as 60 kg of unmilled rice per ha (wet season) in Nam Keua, Nam Pieu, Nam Soy1, and Nam Soy2, and 120 kg/ha/year in Kaeng Ay. Among the 10 CMI sites that the OEM visited, the WUA of Nam Mone was the only one that did not collect an ISF from its members. The current ISF rates and the collection rates do not provide enough funds for farmers to meet routine and periodic maintenance. In general, farmers have not adequately saved money for future major repairs and rehabilitation. While farmers are expected to be responsible for the entire routine and periodic O&M of their irrigation systems, provisions and arrangements by the WUAs for such purposes are not yet fully in place.

27. The Government issued a ministerial guideline to the irrigation management transfer policy No. 0672 in August 2003 to (i) focus the payment responsibility of WUAs with small-scale schemes on ISFs that will fully cover future O&M costs, but not on the repayment of rehabilitation capital costs; (ii) allow each WUA to decide its ISF level based on its future maintenance requirement; and (iii) clarify that the WUA's responsibility covers only routine and periodic maintenance works. In reality the implementation of this policy guideline might have been confused with other rules. In Vientiane Province, WUAs were required to pay to the respective DAFO a portion (20%) of the ISF collections, while in other provinces (Xiengkhouang and Huaphanh), such contributions to DAFO were not observed.[9] CMI farmers (Vang Vieng and Kasi districts) in Vientiane Province confirmed that the 20% contribution to DAFOs acted as a disincentive to increasing the ISF rates. This DAFO collection was effectively perceived by farmers as a form of direct taxation. Further, the collections made by DAFO were not transparently recorded and open to potential corruption opportunities.[10]

28. The ISF system requires further development to improve its (i) methods and assumptions for calculating ISF, (ii) records of collections, and (iii) transparency for greater accountability of ISF administration. Willingness to pay ISFs is not synonymous with farmers' ability to pay. While members of the WUAs can largely afford the ISF payments at the established rates (equivalent to less than 100 kg of unmilled rice), their willingness to pay has been mixed. Based on interviews with farmers, the farmers' willingness to pay depends on (i) good WUA management, (ii) assurance of reliable water supply, (iii) accountability of the ISF administration, (iv) expectations of good service from DAFO when the WUA is expected to pay DAFO a portion of the ISF, (v) accountability of DAFO in the context of the ISF payments received from the WUAs, and (vi) profitability of the irrigated farming system.

29. The transition from the traditional CMI system to the new system developed by the CMISP has posed serious challenges to the farmers in regard to the new O&M requirements. Routine maintenance of the irrigation system comprises (i) removing silt from weir sites and canals; (ii) canal weeding; (iii) repairing slippage of canal embankment and erosion;

[9] This 20% contribution rule appears to stem from the Prime Ministerial Order No. 26 of December 1998, which requires collection of an irrigation development fund (equivalent to 200 kg of rice per hectare of irrigated land) by the WUAs, and of which 20% is to be passed on to DAFOs for agricultural extension activities.

[10] In the case of the Nam Mone subproject (Kasi District, Vientiane Province), WUA members reported to the OEM that they did not collect the ISF because of disagreement over the ISF rates. However, the WUA claimed that it collected the equivalent of 20% of 200 kg of unmilled rice per ha of irrigated paddy field from its members, and paid this amount to the DAFO. No receipts were produced for the WUA, and the amounts recorded at DAFO could not be reconciled with the amounts that the WUA claimed to have paid to DAFO.

(iv) repairing wear and tear, cracks, and other damage to concrete structures; and (v) backfilling of earth to support canal and weir structures from erosion. In the past, farmers spent much of their time repairing traditional weirs made of bamboo, brushwood, logs, stones, and pieces of rock. The O&M requirements of the new permanent concrete weirs and the improved water distribution system are different from that of the past. The change in O&M requirements has challenged the existing capacity of the WUAs. The OEM observed the following which can seriously affect the sustainability or shorten the expected economic life of the CMI schemes.

30. Soil erosion in the watershed areas has rapidly silted weir sites and canals, and increased sedimentation has affected the capacity for water conveyance and distribution in the irrigation command areas. Silted weirs and canals were common problems observed by the OEM. Farmers claimed that heavy upstream soil erosion contributed to rapid silting of weirs and canals. Cleaning up these weirs requires routine maintenance and labor. In some cases, labor and locally available resources will not be sufficient, particularly when the construction design and inappropriate sites are the contributing factors. For example, the weir at the Nam Keua subproject has been ineffective because of heavy sedimentation, and its design and location were not well adapted to site conditions. While farmers may mobilize enough labor to clean and flush the silted weir at Nam Nga during the wet season, redesign and an upgrade may be required to address the sedimentation problems faced at Nam Keua.

31. Farmers have responded to O&M issues with methods they know best. Improvisation is evident, and farmers have continued to apply their traditional ways of O&M and water distribution. In the past, farmers used primarily locally available materials, without any purchase of materials from outside their villages. The O&M of the modernized CMI systems requires regular replacement of failed canal structures, and fixing of cracks and damage to concrete structures. These repairs require cash for purchases of construction materials, including cement. Although farmers have collected ISFs from WUA members, the availability of funds and labor alone does not automatically translate into immediate O&M actions. Organizational arrangements, capability, readiness, and willingness to carry out routine O&M were often inadequate, while farmers (in a group or individually) responded to O&M needs in ways that might not optimize the efficiency of water distribution to all WUA farmers. The OEM has observed that at some CMI sites farmers have constructed additional canals and water outlets to divert water to their farmland at the expense of downstream farmers.

32. The coexistence of shifting cultivation on steep slopes, rain-fed agriculture, and irrigated land in adjacent valleys poses the continuous threat of soil erosion and sedimentation to the sustainability of the CMI schemes. For example, a section of a major canal at Kaeng Ay was destroyed by a landslide in 2004, and the affected farmers were consequently deprived of irrigation water. Farmers without access to irrigated land have no choice but continue to cultivate rice and other crops on sloping land. The increasing population, limited arable land, and lack of access to alternative off-farm employment opportunities have continued to add pressure to the utilization of scarce land resources for subsistence agriculture.

33. In general, DAFOs are poorly equipped, and confronted with serious resource constraints for delivering extension services to farmers. Typically, DAFOs are unable to deliver extension services effectively due to (i) budget constraints; (ii) inadequate human resources; (iii) lack of mobility; (iv) poor incentives, including frequent delays in payments of staff salaries; and (v) an overall mismatch between available resources and the DAFO's role, functions, and territorial coverage. The effectiveness of a DAFO with respect to its expected role in the CMI schemes after the completion of the CMISP is very limited. Diffusion of agricultural knowledge and technologies through DAFOs has been limited. According to interviewed farmers, DAFO

extension staff did not come to their villages on a regular basis, and extension visits were typically short, lasting less than half a day.

34. To illustrate the constraints faced by DAFO, the OEM visited and interviewed staff of the DAFO of Kasi District, Vientiane Province. In April 2005, this DAFO had 21 employees (including its head, 2 deputies, 2 for financial administration, 3 for extension services, 3 for livestock development, 3 for irrigation, 5 for forestry, and 2 for meteorology). The district of 27,500 people (4,680 households) covers 59 villages, 16 of which were reported to be inaccessible during the wet season. The nearest village is less than 1 km away from this DAFO, while the furthest is 50 km away. Because of its relative inaccessibility, 2 days were needed to reach the furthest village. There were no regular schedules for field visits. Nonproject villages were visited twice a year for collection of statistics, each visit lasting from several hours to a day. Staff mobility was limited, with seven motorbikes and one four-wheel drive vehicle. Under the CMISP, staff travel was paid for by project funds channeled through Vientiane's provincial agriculture and forestry office. Funding for routine operations was extremely limited.[11] Essentially, DAFO has no budget for field work, and travel budgets are usually project based and restricted to areas targeted by the project. DAFO staff perceived that project-based funding was an assured way of securing resources, without which services could not be delivered effectively. However, project-based funding attracted staff to work on targeted areas, depriving other areas that equally needed attention. Project-based funding bypasses the day-to-day resource constraints faced by DAFOs, but discontinuation of funding after project completion invariably means an abrupt end to services.

5. Overall Performance

35. Based on four evaluation pillars (relevance, effectiveness, efficiency, and sustainability), the OEM rates the performance of the CMISP as likely to succeed (potentially successful), albeit at the low end of the successful range. Despite its high relevance and effectiveness, the CMISP faces serious shortcomings on measures of efficiency and sustainability, which have the potential to improve when critical factors contributing to these shortcomings are addressed in the future.

36. **Enhanced Household Food Security.** Overall, with increased rice production and greater self-sufficiency, farmers have improved their household food security. The overall target of an incremental rice production by 1,500 t per year has been achieved. With modest incremental yields ranging from 0.5 t/ha to 2 t/ha (wet season), the total irrigated area of 2,679 ha of the 47 CMI schemes could easily produce an incremental production of more than 1,500 t annually. Farmers with limited access to irrigated land, and with a large number of dependents, continue to have rice deficits of 1–3 months per year. However, farmers also reported surpluses in rice production, showing evidence of rice sales to villagers and traders. Farmers with inadequate rice production have been able to purchase rice in their villages and from nearby markets to meet their food requirements, using income earned from other sources, primarily from raising livestock (cattle, buffaloes, pigs, and poultry) and sales of nontimber forest products.

37. **Effects of Improved Access Roads on Livelihoods.** Overwhelmingly, farmers and other members of the communities reported that they had significantly benefited from new and rehabilitated access roads, including year-round mobility, easier access to markets, health

[11] Of KN6.0 million (Jan–June 2005) requested from the province, this DAFO received only KN500,000 ($50) by early April 2005, with the rest held in arrears by the province. Salaries were 2 months late (Feb–Mar 2005).

services, and schools outside their villages. A total of 102 villages with about 64,150 people (including those who do not reside within CMI villages) benefited directly and indirectly from improved access and feeder roads. Road access has catalyzed trade, allowing market intermediaries to come in contact with farmers, and opening opportunities for diversifying crop cultivation. With limited irrigation during the dry season, farmers reported that they could grow cash crops that require less water, such as cucumbers, watermelons, and various vegetables, although their volumes are still limited. Livelihoods of many farmers have changed. Access to markets has created job opportunities. Women have benefited from self-employment in weaving, allowing them to sell their products to traders, who frequently provide them with working capital and an assured market. Increased incomes from livestock, crops, and other gainful activities have enabled farmers to build new homes, improve their existing houses, and purchase household furniture.

38. **Reduced Shifting Cultivation.** A large majority of farmers participating in the CMI schemes confirmed to the OEM that they had abandoned shifting cultivation. With improved irrigation during the wet season, the rehabilitated CMI schemes have increased crop productivity on farmers' irrigated land. This improvement reduced the farmers' need for cultivating rice on sloping land with their traditional slash-and-burn farming system. The OEM observed that neighboring farmers, without access to irrigated land, continue to practice shifting cultivation.

39. **Increased Farm Incomes.** Diversification of crops, to some extent, enabled farmers to grow cash crops in the dry season, although the irrigation command area had been reduced significantly during the dry season because of the long period of drought. Farmers confirmed that increased cash incomes from cash crops, livestock, and other sources contributed to improve standards of living. Participating farmers and village dwellers also confirmed that increased incomes allowed them to improve their housing, have access to health services, provide for their children's education, and purchase a small tractor for tilling land and transportation. Overall, farmers reported that the effects of the CMISP investments on their farm incomes have been positive.

Table A10.3: Benchmark Data on Irrigated Area in CMI Subprojects

				Existing Irrigated Area								
				ISA[b] (ha)		Feasibility Study (ha)			Before Project[c] BME (ha)		Turnover[d] BME (ha)	
Subproject Name	Subproject Year	Province	Number of WUA HH [a]	Type of Existing Weir	Wet Season	Wet Season Rain-fed Paddy	Wet Season	Dry Season	Wet Season	Dry Season	Wet Season	Dry Season
1 Nam La	1	HPH	373	wheel		nd	20.0		0.0	0.0	49.0	0.0
2 Houay An Ma 1	1	HPH	170	wheel	69.0	75.0	45.0	8.0	0.0	0.0	78.0	37.0
3 Houay An Ma 2	1	HPH	201	wheel	142.0	45.0	35.0	5.0	0.0	0.0	57.0	21.0
4 Houay Lao	1	VTE	77	wood		15.0	25.0	0.0	0.0	0.0	71.0	11.0
5 Houay Mouang	1	BLX	16	wheel	4.0		50.0	0.0	25.0	0.0	25.3	0.0
6 Houay Phak Huang	1	BLX	10	none	RF		5.0	0.0	0.0	0.0	17.0	2.0
7 Nam Mak	1	BLX	31	stone		10.0	33.0	5.0	0.0	0.0	30.0	32.0
8 Nam Han	1	BLX	33	stone	4.0	28.0	36.0	4.0	0.0	0.0	37.0	25.0
9 Nam Mat 1 (upper)	1	XKH	39	stone	34.0	0.0	29.0	7.0	28.7	0.0	46.0	37.0
10 Nam Pieu	1	XKH	56	concrete	24.0	23.0	34.0	10.0	30.0	0.0	41.0	26.0
11 Nam Mat 2 (lower)	1	XKH	61	stone	61.0	23.0	24.0	8.0	31.0	0.0	54.0	26.0
Subtotal for YR1					**338.0**	**219.0**	**336.0**	**47.0**	**114.7**	**0.0**	**505.3**	**217.0**
12 Nam Soy 1	2	HPH	84	wood	70.0	23.0	16.0	0.0	16.0	0.0	41.0	24.0
13 Nam Soy 2	2	HPH	73	wood		22.0	24.0	0.0	24.0	0.0	33.0	20.0
14 Kaeng Ay	2	HPH	242	wood	34.8	34.0	45.0	0.0	45.0	0.0	84.0	14.0
15 Nam Hang	2	HPH	164	stone laying	48.0	60.0	8.0	2.0	8.0	2.0	81.0	53.0
16 Nam Khaeng	2	VTE	95	earth		37.0	63.0	40.0	63.0	40.0	93.0	57.0
17 Nam Nga	2	VTE	93	wood	149.0	58.0	32.0	21.0	32.0	21.0	106.0	30.0
18 Nam Ngat	2	VTE	55	wood	41.0	59.0	41.0	10.0	41.0	10.0	58.0	30.0
19 Nam Hong	2	VTE	37	wood	49.0	51.0	49.0	3.0	49.0	3.0	40.0	3.0
20 Nam Mone	2	VTE	53	stone laying	61.0	39.0	21.0	2.0	21.0	0.0	95.0	1.0
21 Nam Ngok	2	BLX	120	stone laying	73.0	59.0	37.0	0.0	37.0	0.0	101.0	30.0
22 Houay Huang	2	BLX	20	none	RF	35.0	0.0	0.0	0.0	0.0	30.0	2.0
23 Houay Lap	2	BLX	30	wood	25.0	10.0	3.0	0.0	3.0	0.0	25.0	1.0
24 Nam Pung Nyai	2	VTE	53	none	RF	43.0	0.0	0.0	0.0	0.0	46.0	0.0
25 Nam Lanth	2	VTE	59	stone mortar	61.0	29.0	31.0	1.0	31.0	0.0	59.0	3.0
26 Nam Pung Noi	2	VTE	21	destroyed	8.0	20.0	0.0	0.0	0.0	0.0	24.0	0.0
27 Phai Mo	2	XKH	166	concrete	93.0	46.0	54.0	4.0	54.0	4.0	149.0	50.0
28 Nam Keua	2	XKH	40	stone laying	117.0	25.0	20.0	5.0	20.0	5.0	42.0	29.0
29 Phai Mouang	2	XKH	52	wood		42.0	23.0	0.0	23.0	0.0	51.0	9.0
Subtotal for YR2					**829.8**	**692.0**	**467.0**	**88.0**	**467.0**	**85.0**	**1,158.0**	**356.0**
30 Houay Miang	3	VTE	53	wood		27.0	3.0	1.0	3.0	1.0	46.0	11.0
31 Nam Thom	3	VTE	41	none	RF	20.0	0.0	0.0	0.0	0.0	43.0	15.0
32 Nam Lao-1	3	VTE	161	wood		71.0	19.0	4.0	19.0	4.0	154.0	1.0
33 Nam Thob-3	3	BLX	82	stone laying		56.0	34.0	7.0	34.0	7.0	93.0	9.0
34 Nam Ngio	3	VTE	50	wood		37.0	3.0	1.0	3.0	0.0	35.0	2.0
35 Nam Nyat	3	XKH	60	wood		49.0	5.0	0.0	5.0	0.0	63.0	3.0
36 Nam Tong	3	XKH	66	stone laying		56.0	14.0	3.0	0.0	0.0	24.0	0.0
Subtotal for YR3						**316.0**	**78.0**	**16.0**	**64.0**	**12.0**	**458.0**	**41.0**
37 Nam Maet-2	4	VTE	40	wood	17.0	21.0	56.0	20.0	17.0	0.0	36.0	12.0
38 Nam Maet-3	4	VTE	30	wood	26.0	0.0	43.0	0.0	28.0	0.0	38.0	24.0
39 Houay Na	4	VTE	21	wood/stone	20.0	24.0	17.0	0.0	20.0	0.0	31.0	0.0
40 Houay Deua	4	VTE	23	wood/stone	21.0	24.0	26.0	0.0	21.0	0.0	36.0	0.0
41 Nam Oun	4	XSB	16	wood/stone	44.0	44.0	20.0	0.0	0.0	0.0	28.0	3.1
42 Houay Keo Hae	4	XSB	34	none	RF	0.0	21.0	0.0	40.0	0.0	39.0	18.0
43 Nam Pee	4	XSB	14	none	RF	40.0	0.0	0.0	0.0	0.0	31.2	0.3
44 Nam Pui	4	XKH	33	wood/stone	50.0	10.0	0.0	0.0	50.0	0.0	62.0	18.0
Subtotal for YR4					**178.0**	**163.0**	**183.0**	**20.0**	**176.0**	**0.0**	**301.2**	**75.4**
45 Nam Kouan	5	VTE	57	wood/stone	43.0	2.0	0.0	0.0	43.0	0.0	78.0	1.0
46 Nam Long	5	HPH	125	wood/stone	56.0	15.0	50.0	0.0	56.0	0.0	33.0	0.0
47 Nam Khek	5	XKH	37	none	RF	23.0	0.0	0.0	0.0	0.0	45.0	20.0
Subtotal for YR5					**99.0**	**40.0**	**50.0**	**0.0**	**99.0**	**0.0**	**156.0**	**21.0**
Total			**3,467**		**1,444.8**	**1,430.0**	**1,114.0**	**171.0**	**920.7**	**97.0**	**2,578.5**	**710.4**

BLX = Borikhamxay, BME = benefit monitoring and evaluation, CMI = community-managed irrigation, HH = households, HPH = Huaphanh, ha = hectare, ISA = initial social assessment, RF = rain-fed, VTE = Vientiane Province, WUA = water users associations, XKH = Xiengkhouang, XSB = Xaysomboun Special Zone, YR = year.

[a] Based on water block groups (Department of Irrigation, Ministry of Agriculture and Forestry [MAF]. Final Benefit Monitoring and Evaluation Report. Appendix 2- Summary of Benchmark Information. Vientiane).

[b] Irrigated areas were based on village reports (Department of Irrigation, MAF. 1997, 1998, 1999 and 2001. Initial Social Assessment for Subproject Year 1, 2, 3, and 4. Vientiane).

[c] Irrigated areas were based on village reports before project construction (Department of Irrigation, MAF. Final Benefit Monitoring and Evaluation Report. Appendix 2- Summary of Benchmark Information. Vientiane).

[d] Irrigated areas were based on WUA records after a monitoring system was established and the CMI handover of irrigation schemes to the WUAs. (Department of Irrigation, MAF. 2004. Final Benefit Monitoring and Evaluation Report. Vientiane.

Source: Department of Irrigation, MAF.

Table A10.4: Targets and Achievements in Irrigated Area

Subproject Name	Sub-project Year	Province	Project Target: Feasibility Study Target (ha) Wet Season	Feasibility Study Target (ha) Dry Season	Revised Target[b] (ha) Wet Season	Revised Target[b] (ha) Dry Season	Achieved Irrigation Area[a] (ha) Wet Season: Rice	Wet Season: Fish-ponds	Wet Season: Total	Dry Season: Rice	Dry Season: Fish-ponds	Dry Season: Other Crops	Dry Season: Total	Potential Irrigable Areas (ha)[c]: Bush Areas	Potential Irrigable Areas (ha)[c]: Non-WUA Paddy
1 Nam La	1	HPH	166.0	166.0	166.0	166.0	48.0	1.0	49.0	0.0	1.0	13.0	14.0	78.0	39.0
2 Houay An Ma 1	1	HPH	250.0	250.0	150.0	150.0	78.0	2.0	80.0	37.0	2.0	8.0	47.0	47.0	23.0
3 Houay An Ma 2	1	HPH	250.0	250.0	200.0	200.0	54.0	3.0	57.0	10.0	3.0	8.0	21.0	126.0	17.0
4 Houay Lao	1	VTE	100.0	8.0	100.0	15.0	68.0	3.0	71.0	5.0	3.0	3.0	11.0	19.0	10.0
5 Houay Mouang	1	BLX	90.0	21.0	90.0	21.0	29.0	0.0	29.0	2.0	0.0	5.0	7.0	0.0	61.0
6 Houay Phak Huang	1	BLX	30.0	23.0	30.0	23.0	17.0	1.0	18.0	3.0	0.0	2.0	5.0	12.0	0.0
7 Nam Mak	1	BLX	60.0	50.0	60.0	50.0	29.0	1.0	30.0	11.0	0.0	21.0	32.0	0.0	30.0
8 Nam Han	1	BLX	90.0	30.0	90.0	30.0	37.0	0.0	37.0	19.0	0.0	6.0	25.0	0.0	53.0
9 Nam Mat 1 (upper)	1	XKH	67.0	67.0	68.0	67.0	45.0	1.0	46.0	16.0	0.0	21.0	37.0	0.0	22.0
10 Nam Pieu	1	XKH	61.0	13.0	61.0	30.0	40.0	1.0	41.0	21.0	0.0	5.0	26.0	0.0	20.0
11 Nam Mat 2 (lower)	1	XKH	57.0	57.0	57.0	57.0	49.0	5.0	54.0	1.0	0.0	0.0	1.0	0.0	3.0
Subtotal for YR1			**1,221.0**	**935.0**	**1,072.0**	**809.0**	**494.0**	**18.0**	**512.0**	**125.0**	**9.0**	**92.0**	**226.0**	**282.0**	**278.0**
12 Nam Soy 1	2	HPH	39.0	39.0	48.0	48.0	40.0	1.0	41.0	15.0	1.0	8.0	24.0	0.0	7.0
13 Nam Soy 2	2	HPH	46.0	46.0	46.0	46.0	31.0	2.0	33.0	9.0	2.0	9.0	20.0	0.0	13.0
14 Kaeng Ay	2	HPH	100.0	100.0	100.0	100.0	77.0	7.0	84.0	3.0	7.0	4.0	14.0	0.0	16.0
15 Nam Hang	2	HPH	68.0	68.0	100.0	70.0	81.0	1.0	82.0	53.0	1.0	2.0	56.0	18.0	0.0
16 Nam Khaeng	2	VTE	100.0	100.0	100.0	100.0	93.0	1.0	94.0	75.0	1.0	2.0	78.0	0.0	6.0
17 Nam Nga	2	VTE	90.0	60.0	110.0	60.0	106.0	1.0	107.0	30.0	1.0	6.0	37.0	0.0	3.0
18 Nam Ngat	2	VTE	100.0	100.0	80.0	80.0	56.0	2.0	58.0	30.0	2.0	9.0	41.0	10.0	12.0
19 Nam Hong	2	VTE	100.0	28.0	100.0	28.0	40.0	1.0	41.0	3.0	1.0	2.0	6.0	0.0	59.0
20 Nam Mone	2	VTE	60.0	20.0	97.0	20.0	96.0	1.0	97.0	1.0	1.0	3.0	5.0	0.0	0.0
21 Nam Ngok	2	BLX	96.0	21.0	106.0	40.0	100.0	6.0	106.0	30.0	0.0	7.0	37.0	0.0	0.0
22 Houay Huang	2	BLX	90.0	10.0	90.0	10.0	29.0	1.0	30.0	2.0	0.0	2.0	4.0	40.0	20.0
23 Houay Lap	2	BLX	25.0	6.0	32.0	6.0	25.0	1.0	26.0	1.0	0.0	2.0	3.0	0.0	6.0
24 Nam Pung Nyai	2	VTE	100.0	100.0	100.0	100.0	46.0	0.0	46.0	0.0	0.0	1.0	1.0	54.0	0.0
25 Nam Lanth	2	VTE	60.0	15.0	60.0	15.0	59.0	0.0	59.0	2.0	0.0	1.0	3.0	0.0	1.0
26 Nam Pung Noi	2	VTE	35.0	21.0	35.0	21.0	24.0	0.0	24.0	0.0	0.0	2.0	2.0	0.0	11.0
27 Phai Mo	2	XKH	100.0	100.0	160.0	100.0	149.0	5.0	154.0	50.0	0.0	47.0	97.0	0.0	6.0
28 Nam Keua	2	XKH	45.0	36.0	48.0	36.0	41.0	1.0	42.0	20.0	1.0	8.0	29.0	0.0	6.0
29 Phai Mouang	2	XKH	65.0	20.0	65.0	20.0	48.0	3.0	51.0	4.0	1.0	4.0	9.0	0.0	14.0
Subtotal for YR2			**1,319.0**	**890.0**	**1,477.0**	**900.0**	**1,141.0**	**34.0**	**1,175.0**	**328.0**	**19.0**	**119.0**	**466.0**	**122.0**	**180.0**
30 Houay Miang	3	VTE	90.0	23.0	90.0	23.0	45.0	1.0	46.0	5.0	1.0	5.0	11.0	0.0	44.0
31 Nam Thom	3	VTE	90.0	35.0	90.0	35.0	43.0	1.0	44.0	15.0	1.0	2.0	18.0	46.0	0.0
32 Nam Lao-1	3	VTE	95.0	46.0	170.0	46.0	162.0	8.0	170.0	1.0	8.0	35.0	44.0	0.0	0.0
33 Nam Thob-3	3	BLX	90.0	56.0	93.0	56.0	92.0	1.0	93.0	4.0	0.0	5.0	9.0	0.0	0.0
34 Nam Ngio	3	VTE	50.0	38.0	50.0	38.0	35.0	0.0	35.0	1.0	0.0	1.0	2.0	0.0	15.0
35 Nam Nyat	3	XKH	76.0	44.0	76.0	20.0	58.0	5.0	63.0	0.0	0.0	3.0	3.0	13.0	0.0
36 Nam Tong	3	XKH	71.0	50.0	88.0	50.0	81.0	3.0	84.0	5.0	0.0	1.0	6.0	4.0	0.0
Subtotal for YR3			**562.0**	**292.0**	**657.0**	**268.0**	**516.0**	**19.0**	**535.0**	**31.0**	**10.0**	**52.0**	**93.0**	**63.0**	**59.0**
37 Nam Maet-2	4	VTE	95.0	83.0	80.0	50.0	35.0	1.0	36.0	8.0	1.0	3.0	12.0	13.0	31.0
38 Nam Maet-3	4	VTE	45.0	45.0	45.0	45.0	37.0	1.0	38.0	14.0	1.0	9.0	24.0	7.0	0.0
39 Houay Na	4	VTE	44.0	5.0	44.0	5.0	31.0	0.0	31.0	0.0	0.0	1.0	1.0	0.0	13.0
40 Houay Deua	4	VTE	45.0	5.0	45.0	5.0	36.0	0.0	36.0	0.0	0.0	1.0	1.0	3.0	6.0
41 Nam Oun	4	XSB	70.0	22.0	70.0	22.0	26.0	1.6	27.6	3.0	0.0	0.1	3.1	42.0	0.0
42 Houay Keo Hae	4	XSB	40.0	25.0	40.0	25.0	39.0	0.0	39.0	15.0	0.0	3.4	18.4	1.0	0.0
43 Nam Pee	4	XSB	43.0	43.0	43.0	43.0	31.0	0.2	31.2	0.2	0.0	0.1	0.3	12.0	0.0
44 Nam Pui	4	XKH	60.0	35.0	64.0	35.0	58.0	4.0	62.0	1.0	2.0	15.0	18.0	0.0	2.0
Subtotal for YR4			**442.0**	**263.0**	**431.0**	**230.0**	**293.0**	**7.8**	**300.8**	**41.2**	**4.0**	**32.6**	**77.8**	**78.0**	**52.0**
45 Nam Kouan	5	VTE	45.0	16.0	78.0	16.0	78.0	0.0	78.0	1.0	0.0	0.0	1.0	0.0	0.0
46 Nam Long	5	HPH	80.0	80.0	80.0	80.0	33.0	0.0	33.0	0.0	0.0	0.0	0.0	0.0	47.0
47 Nam Khek	5	XKH	50.0	50.0	50.0	50.0	45.0	0.0	45.0	0.0	0.0	20.0	20.0	5.0	0.0
Subtotal for YR5			**175.0**	**146.0**	**208.0**	**146.0**	**156.0**	**0.0**	**156.0**	**1.0**	**0.0**	**20.0**	**21.0**	**5.0**	**47.0**
Total			**3,719.0**	**2,526.0**	**3,845.0**	**2,353.0**	**2,600.0**	**78.8**	**2,678.8**	**526.2**	**42.0**	**315.6**	**883.8**	**550.0**	**616.0**

BLX = Borikhamxay, CMI = community-managed irrigation, HH = households, HPH = Huaphanh, ha = hectare, RF = rain-fed, VTE = Vientiane Province, WUA = water users associations, XKH = Xiengkhouang, XSB = Xaysomboun Special Zone, YR = year.

[a] Actual achieved irrigated area (Department of Irrigation, Ministry of Agriculture and Forestry [MAF]. 2004. Project Completion Report. Appendix 13. Vientiane).

[b] Target irrigation area based on the project's revised plan (Department of Irrigation, MAF. 2004. *Project Completion Report.* Appendix 13. Vientiane).

[c] Potential expansion area consisting of bush areas and existing paddy field of non-WUA farmers who refused to join due to insufficient water distribution to their fields.

Source: Department of Irrigation, MAF.

Table A10.5: Cost of Access Roads and District Feeder Roads

	Subproject Name	Location	Subproject Year	Province	Cost of Access Road: Length[a] (km)	Cost[b] ($)	Average Cost per Kilometer[c] ($/km)
A. Access Road							
1	Nam La	B. Tao - B. Phieng Khoun	1	HPH	2.5	24,321	9,728
2	Houay An Ma 1	-	1	HPH	-	-	-
3	Houay An Ma 2	B. Nam Et - Nahom	1	HPH	9.5	57,565	6,034
4	Houay Lao	B. Ngiou - Road No. 13 North	1	VTE	4.8	22,612	4,711
5	Houay Mouang	B. Mouang Houang - Weir Site	1	BLX	1.2	0	0
6	Houay Phak Huang	B. Phamuang - Weir Site	1	BLX	1.0	0	0
7	Nam Mak	-	1	BLX	-	-	-
8	Nam Han	B. Nahan - Muang B to Phadai Road	1	BLX	4.0	16,360	4,090
9	Nam Mat 1(upper)	B. Nhum Chong - Road No.7	1	XKH	2.8	15,515	5,541
10	Nam Pieu	B. Phiengchan - Weir Site	1	XKH	2.4	7,607	3,170
11	Nam Mat 2 (lower)	-	1	XKH	-	-	-
12	Nam Soy-1	B. Nayang - B. Natoung	2	HPH	2.5	11,109	4,444
12	Nam Soy-1	B. Nayang - Ban Naho	2	HPH	5.0	42,676	8,535
13	Nam Soy-2	B. Natoung - B. Donkhoun	2	HPH	2.5	11,109	4,444
13	Nam Soy-2	B. Donkhoun - B. Dai	2	HPH	14.0	120,928	8,638
14	Kaeng Ay	-	2	HPH	-	-	-
15	Nam Hang	B. Danhang - Road No. 6	2	HPH	10.4	9,619	925
15	Nam Hang	B. Nam Hang - B. Tat	2	HPH	10.1	68,436	6,756
16	Nam Khaeng	B. Namon - Weir Site	2	VTE	5.0	5,886	1,177
16	Nam Khaeng	Namon - Nakham-Nongbuathong	2	VTE	8.5	77,488	9,116
17	Nam Nga	B. Phonyang - B. Phonkeo	2	VTE	3.5	29,161	8,332
17	Nam Nga	B. Phonkeo - B. Phongyang	2	VTE	3.6	22,344	6,138
18	Nam Ngat	N. Nalao - B. Ngiou	2	VTE	1.0	2,839	2,839
19	Nam Hong	B. Napho - Road No. 13 North	2	VTE	5.2	13,489	2,594
19	Nam Hong	Nam Lik - B. Naxaikhao	2	VTE	5.5	23,403	4,294
20	Nam Mone	B. Namone - B. Chiang	2	VTE	13.0	48,418	3,724
21	Nam Ngok	B. Napae - B. Nahat	2	BLX	1.8	14,545	8,081
22	Houay Huang	-	2	BLX	-	-	-
23	Houay Lap	B. Phon Nhaeng - B. Mouang Bo	2	BLX	2.8	15,364	5,487
24	Nam Pung Nyai	B. Nam Pung Nyai - B. Phalavek	2	VTE	13.0	46,239	3,557
24	Nam Pung Nyai	B. Phalavek - B. Phoukatha	2	VTE	38.0	17,440	459
25	Nam Lanth	B. Vanglouang - Weir Site	2	VTE	2.0	9,040	4,520
26	Nam Pung Noi	-	2	VTE	-	-	-
27	Phai Mo	B. Mo - Road No. 7	2	XKH	2.2	13,493	6,133
27	Phai Mo	B. Longkai - Road No.7	2	XKH	2.4	8,118	3,411
27	Phai Mo	B. Tatuang - Road No.7	2	XKH	1.6	5,950	3,719
27	Phai Mo	B. Xang - Road No.7	2	XKH	1.5	5,850	3,799
27	Phai Mo	B. Tat noi - Road No.7	2	XKH	2.2	10,204	4,638
28	Nam Keua	B. Xiengkieu - Road No. 7	2	XKH	1.4	14,153	10,109
28	Nam Keua	B. Xan - Road No.7	2	XKH	1.5	5,481	3,780
29	Phai Mouang	B. Thoum - B. Phosi	2	XKH	2.5	10,355	4,142
30	Houay Miang	-	3	VTE	-	-	-
31	Nam Thom	B. Tom - B. Soaunmon	3	VTE	2.8	16,949	6,163
32	Nam Lao-1	-	3	VTE			
33	Nam Thob-3	B. Nathon - Road No.8B - B. Vangpha	3	BLX	26.0	197,320	7,589
34	Nam Ngio	-	3	VTE	-	-	-
35	Nam Nyat	B. Xang - B. Xoy	3	XKH	2.0	24,855	12,428
35	Nam Nyat	B. Ngoy - B. Xoy	3	XKH	11.5	86,978	7,563
36	Nam Tong	B. Phonxai - B. Khang Muang	3	XKH	6.5	38,075	5,858
36	Nam Tong	B. Muangnoy - B. Miang	3	XKH	12.0	95,170	7,931
37	Nam Maet-2	B. Namone - B. Keokadat	4	VTE	13.0	29,826	2,294
38	Nam Maet-3	B. Keokadat - B. Nakangpa	4	VTE	12.0	29,393	2,449
39	Houay Na	-	4	VTE	-	-	-
40	Houay Deua	-	4	VTE	-	-	-
41	Nam Oun	-	4	XSB	-	-	-
42	Houay Keo Hae	B. Naxaysavang - B. Houaykhoang	4	XSB	6.4	49,275	7,699
43	Nam Pee	B. Muangphoun - B. Koualek	4	XSB	28.0	137,999	4,929
44	Nam Pui	B. Hokang - B. Latsen	4	XKH	7.0	39,971	5,710
44	Nam Pui	B. Hokang - Phaxay District Capital	4	XKH	5.5	36,491	6,635
45	Nam Kouan	B. Nongbuathong - B. Namee	5	VTE	2.0	21,000	10,500
46	Nam Long	B. Mouang Long - Road No.6	5	HPH	12.0	50,000	4,167
47	Nam Khek	B. Khek - B. Nagnod	5	XKH	5.0	30,000	6,000
		Survey, Design and Supervision				38,820	
	Average						**5,048**
	Subtotal				**342.6**	**1,729,239**	
B. District Feeder Road							
1	Xam Tai - Ban Tao District Feeder Road			HPH	16.0	875,590	**54,724**
2	Mouang Bo - Pha Dai District Feeder Road			BLX	30.0	805,000	**26,833**
3	Repairs of Xamtai - Ban Tao District Feeder Road					17,590	
4	Repairs and Construction of 2 Box Culverts of Mouang Bo - Pha Dai District Feeder Road					57,000	
	Subtotal				**46.0**	**1,755,180**	**38,156**
	Total				**388.6**	**3,484,419**	

- = no access road component, BLX = Borikhamxay, CMI = community-managed irrigation, HPH = Huaphanh, km = kilometer, VTE = Vientiane Province, XKH = Xiengkhouang, XSB = Xaysomboun Special Zone.

[a] Source: Subproject profiles, Final Benefit Monitoring and Evaluation Report, 2004.

[b] Data were provided to the Operations Evaluation Department by the CMI Project Office during the operations evaluation mission, 31 March to 3 May 2005.

[c] Values were computed.

Source: Department of Irrigation, Ministry of Agriculture and Forestry, Lao PDR.

Table A10.6: Beneficiaries of CMI Access Roads and District Feeder Roads

	Subproject Name	Location	Subproject Year	Province	Length (km)	Access Road Beneficiaries: CMI Direct Beneficiaries: Number of CMI Villages [b]	Number of CMI Households [c]	People Using the Access Road [d]	Access Road Beneficiaries: Non-CMI Beneficiaries [a]: Number of Other Villages	Other Households	Other People Using the Access Road
A. Access Road											
1	Nam La	B. Tao - B. Phieng Khoun	1	HPH	2.5	5	409	2,454	3	485	3,210
2	Houay An Ma 1	-	1	HPH	-	10					
3	Houay An Ma 2	B. Nam Et - Nahom	1	HPH	9.5	8	519	3,452	10	750	4,785
4	Houay Lao	B. Ngiou - Road No. 13 North	1	VTE	4.8	2	172	1,217	2		
5	Houay Mouang	B. Mouang Houang - Weir Site	1	BLX	1.2	2	66	435	2	113	756
6	Houay Phak Huang	B. Phamuang - Weir Site	1	BLX	1.0	1	43	269	2	70	448
7	Nam Mak	-	1	BLX	-	1					
8	Nam Han	B. Nahan - Muang B to Phadai Road	1	BLX	4.0	1	33	225	2	84	560
9	Nam Mat 1(upper)	B. Nhum Chong - Road No.7	1	XKH	2.8	1	39	266	1	67	453
10	Nam Pieu	B. Phiengchan - Weir Site	1	XKH	2.4	2	118	805	2	96	651
11	Nam Mat 2 (lower)	-	1	XKH	-	4					
12	Nam Soy-1	B. Nayang - B. Natoung	2	HPH	2.5	2	84	225	7	278	1,889
12	Nam Soy-1	B. Nayang - Ban Naho	2	HPH	5.0			346		352	2,026
13	Nam Soy-2	B. Natoung - B. Donkhoun	2	HPH	2.5	2	73	182	6	254	1,420
13	Nam Soy-2	B. Donkhoun - B. Dai	2	HPH	14.0			296		339	2,463
14	Kaeng Ay	-	2	HPH	-	2					
15	Nam Hang	B. Danhang - Road No. 6	2	HPH	10.4	2	164	389	3	91	590
15	Nam Hang	B. Nam Hang - B. Tat	2	HPH	10.1			658		101	654
16	Nam Khaeng	B. Namon - Weir Site	2	VTE	5.0	4	462		6	55	357
16	Nam Khaeng	Namon - Nakham-Nongbuathong	2	VTE	8.5			2,772		198	1,851
17	Nam Nga	B. Phonyang - B. Phonkeo	2	VTE	3.5	5	238		4	125	811
17	Nam Nga	B. Phonkeo - B. Phongyang	2	VTE	3.6			1,428		148	997
18	Nam Ngat	N. Nalao - B. Ngiou	2	VTE	1.0	3	55	330	3	153	970
19	Nam Hong	B. Napho - Road No. 13 North	2	VTE	5.2	1	37	111	2	81	490
19	Nam Hong	Nam Lik - B. Naxaikhao	2	VTE	5.5			123		78	502
20	Nam Mone	B. Namone - B. Chiang	2	VTE	13.0	1	84	504	6	408	2,570
21	Nam Ngok	B. Napae - B. Nahat	2	BLX	1.8	4	120	778	3	225	1,440
22	Houay Huang	-	2	BLX	-	1	42	252			
23	Houay Lap	B. Phon Nhaeng - B. Mouang Bo	2	BLX	2.8	1	30	190	2	143	915
24	Nam Pung Nyai	B. Nam Pung Nyai - B. Phalavek	2	VTE	13.0	1	53		3	67	428
24	Nam Pung Nyai	B. Phalavek - B. Phoukatha	2	VTE	38.0			343		113	757
25	Nam Lanth	B. Vanglouang - Weir Site	2	VTE	2.0	2	292	1,752	2	130	887
26	Nam Pung Noi	-	2	VTE	-	1	28	168			
27	Phai Mo	B. Mo - Road No. 7	2	XKH	2.2					62	411
27	Phai Mo	B. Longkai - Road No.7	2	XKH	2.4					78	491
27	Phai Mo	B. Tatuang - Road No.7	2	XKH	1.6	1	324	1,944	5	56	375
27	Phai Mo	B. Xang - Road No.7	2	XKH	1.5					48	307
27	Phai Mo	B. Tat noi - Road No.7	2	XKH	2.2					80	512
28	Nam Keua	B. Xiengkieu - Road No. 7	2	XKH	1.4	2	177		3	63	407
28	Nam Keua	B. Xan - Road No.7	2	XKH	1.5			1,602		82	511
29	Phai Mouang	B. Thoum - B. Phosi	2	XKH	2.5	2	52	312	3	166	1,029
30	Houay Miang	-	3	VTE	-	1					
31	Nam Thom	B. Tom - B. Soaunmon	3	VTE	2.8	1	170	1,121	2	115	724
32	Nam Lao-1	-	3	VTE	-	1					
33	Nam Thob-3	B. Nathon - Road No.8B - B. Vangpha	3	BLX	26.0	1	82	574	7	406	2,557
34	Nam Ngio	-	3	VTE	-	1					
35	Nam Nyat	B. Xang - B. Xoy	3	XKH	2.0	1	60	280	4	87	548
35	Nam Nyat	B. Ngoy - B. Xoy	3	XKH	11.5			140		115	713
36	Nam Tong	B. Phonxai - B. Khang Muang	3	XKH	6.5	2	77		7	163	1,059
36	Nam Tong	B. Muangnoy - B. Miang	3	XKH	12.0			600		192	1,190
37	Nam Maet-2	B. Namone - B. Keokadat	4	VTE	13.0	2	68	471	4	204	1,220
38	Nam Maet-3	B. Keokadat - B. Nakangpa	4	VTE	12.0	1	46	279	8	381	2,469
39	Houay Na	-	4	VTE	-	1					
40	Houay Deua	-	4	VTE	-	1					
41	Nam Oun	-	4	XSB	-	1					
42	Houay Keo Hae	B. Naxaysavang - B. Houaykhoang	4	XSB	6.4	1	66	403	2	109	691
43	Nam Pee	B. Muangphoun - B. Koualek	4	XSB	28.0	1	62	318	3	196	1,168
44	Nam Pui	B. Hokang - B. Latsen	4	XKH	7.0	1	77		5		
44	Nam Pui	B. Hokang - Phaxay District Capital	4	XKH	5.5			1,503		228	1,402
45	Nam Kouan	B. Nongbuathong - B. Namee	5	VTE	2.0	1	76	463	4	188	1,163
46	Nam Long	B. Mouang Long - Road No.6	5	HPH	12.0	3	147	1,024	10	673	3,893
47	Nam Khek	B. Khek - B. Nagnod	5	XKH	5.0	1	37	279	3	141	897
		Survey, Design and Supervision									
	Subtotal				342.6	96	4,682	31,283	141	8,837	56,617
B. District Feeder Road											
1	Xam Tai - Ban Tao District Feeder Road			HPH	16.0	1	215	1,652	12	595	3,298
2	Mouang Bo - Pha Dai District Feeder Road			BLX	30.0	5	172	1,119	4	652	4,235
	Subtotal				46.0	6	387	2,771	16	1,247	7,533
	Total				**388.6**	**102**	**5,069**	**34,054**	**157**	**10,084**	**64,150**

- = no access road component, BLX = Borikhamxay, CMI = community-managed irrigation, HPH = Huaphanh, km = kilometer, VTE = Vientiane Province, XKH = Xiengkhouang, XSB = Xaysomboun Special Zone.

[a] Figures were based from the provincial estimate.

[b] Source: Initial Social Assessment Reports and Feasibility Study on additional Rural Access Road of CMISP (2002).

[c] Source: Initial Social Assessment Reports (for Year 4 suboriject) and Feasibility Report (Year 1 to 3 subprojects).

[d] Number of people using access road for Year 1-3 subprojects were computed based on household of six members, Year 4 subproject figures were from ISA Report.

Source: Department of Irrigation, Ministry of Agriculture and Forestry, Lao PDR.

Table A10.7: CMI Subproject Civil Works Cost ($)

			Civil Works Development Cost						
			Contracted Civil Works[a]			Community Contribution			
Name of Subproject	Year	Province	From Loan	Supported by Govt.	Subtotal	Labor	Materials	Subtotal	Total Cost
1 Nam La	1	HPH	892,581	46,978	939,559	84,652	14,422	99,074	1,038,633
2 Houay An Ma 1	1	HPH	740,782	38,989	779,771	69,546	14,426	83,972	863,743
3 Houay An Ma 2	1	HPH	632,081	33,267	665,348	79,764	14,064	93,828	759,176
4 Houay Lao	1	VTE	192,448	10,129	202,577	34,691	16,225	50,916	253,493
5 Houay Mouang	1	BLX	121,449	6,392	127,841	19,326	12,465	31,791	159,632
6 Houay Phak Huang	1	BLX	36,693	1,931	38,624	14,036	13,516	27,552	66,176
7 Nam Mak	1	BLX	82,530	4,344	86,874	32,418	11,452	43,870	130,744
8 Nam Han	1	BLX	69,524	3,659	73,183	35,631	11,373	47,004	120,187
9 Nam Mat 1 (upper)	1	XKH	113,882	5,994	119,876	65,867	24,432	90,299	210,175
10 Nam Pieu	1	XKH	21,143	1,113	22,256	33,859	11,319	45,178	67,434
11 Nam Mat 2 (lower)	1	XKH	70,736	3,723	74,459	78,240	13,901	92,141	166,600
Subtotal for Year 1			**2,973,849**	**156,518**	**3,130,367**	**548,030**	**157,595**	**705,625**	**3,835,992**
12 Nam Soy 1	2	HPH	51,078	2,688	53,766	39,587	11,259	50,846	104,612
13 Nam Soy 2	2	HPH	79,191	4,168	83,359	42,127	11,942	54,069	137,428
14 Kaeng Ay	2	HPH	217,459	11,445	228,904	31,051	15,346	46,397	275,301
15 Nam Hang	2	HPH	159,722	8,406	168,128	92,937	17,069	110,006	278,134
16 Nam Khaeng	2	VTE	136,836	7,202	144,038	33,081	12,978	46,059	190,097
17 Nam Nga	2	VTE	193,116	10,164	203,280	33,370	12,433	45,803	249,083
18 Nam Ngat	2	VTE	209,637	11,034	220,671	37,201	13,187	50,388	271,059
19 Nam Hong	2	VTE	104,747	5,513	110,260	30,574	11,571	42,145	152,405
20 Nam Mone	2	VTE	34,262	1,803	36,065	23,677	9,704	33,381	69,446
21 Nam Ngok	2	BLX	185,599	9,768	195,367	53,653	12,826	66,479	261,846
22 Houay Huang	2	BLX	126,991	6,684	133,675	29,870	11,021	40,891	174,566
23 Houay Lap	2	BLX	48,293	2,542	50,835	22,577	9,833	32,410	83,245
24 Nam Pung Nyai	2	VTE	219,817	11,569	231,386	38,269	13,004	51,273	282,659
25 Nam Lanth	2	VTE	140,639	7,402	148,041	27,708	13,078	40,786	188,827
26 Nam Pung Noi	2	VTE	45,604	2,400	48,004	16,640	10,325	26,965	74,969
27 Phai Mo	2	XKH	269,405	14,179	283,584	69,909	16,564	86,473	370,057
28 Nam Keua	2	XKH	109,039	5,739	114,778	36,795	15,425	52,220	166,998
29 Phai Mouang	2	XKH	24,655	1,298	25,953	35,562	9,537	45,099	71,052
Subtotal for Year 2			**2,356,090**	**124,005**	**2,480,095**	**694,588**	**227,102**	**921,690**	**3,401,785**
30 Houay Miang	3	VTE	162,253	8,540	170,793	25,326	10,521	35,847	206,640
31 Nam Thom	3	VTE	279,654	14,719	294,373	42,039	11,158	53,197	347,570
32 Nam Lao-1	3	VTE	178,878	9,415	188,293	27,658	11,715	39,373	227,666
33 Nam Thob-3	3	BLX	203,093	10,689	213,782	68,031	15,036	83,067	296,849
34 Nam Ngio	3	VTE	210,739	11,092	221,831	19,729	10,541	30,270	252,101
35 Nam Nyat	3	XKH	139,427	7,338	146,765	48,945	10,604	59,549	206,314
36 Nam Tong	3	XKH	125,450	6,603	132,053	36,123	10,102	46,225	178,278
Subtotal for Year 3			**1,299,494**	**68,394**	**1,367,888**	**267,851**	**79,677**	**347,528**	**1,715,416**
37 Nam Maet-2	4	VTE	109,397	5,758	115,155	38,085	10,253	48,338	163,493
38 Nam Maet-3	4	VTE	69,224	3,643	72,867	36,491	10,405	46,896	119,763
39 Houay Na	4	VTE	11,037	581	11,618	20,004	10,349	30,353	41,971
40 Houay Deua	4	VTE	16,754	882	17,636	21,241	10,243	31,484	49,120
41 Nam Oun	4	XSB	197,407	10,390	207,797	26,419	9,877	36,296	244,093
42 Houay Keo Hae	4	XSB	119,065	6,267	125,332	35,729	10,400	46,129	171,461
43 Nam Pee	4	XSB	130,974	6,893	137,867	25,692	9,779	35,471	173,338
44 Nam Pui	4	XKH	24,704	1,300	26,004	43,770	14,675	58,445	84,449
Subtotal for Year 4			**678,562**	**35,714**	**714,276**	**247,431**	**85,981**	**333,412**	**1,047,688**
45 Nam Kouan	5	VTE	90,283	4,752	95,035	24,137	22,713	46,850	141,885
46 Nam Long	5	HPH	109,785	5,778	115,563	32,075	23,772	55,847	171,410
47 Nam Khek	5	XKH	72,157	3,798	75,955	12,767	18,768	31,535	107,490
Subtotal for Year 5			**272,225**	**14,328**	286,553	**68,979**	**65,253**	**134,232**	**420,785**
TOTAL			**7,580,220**	**398,959**	**7,979,179**	**1,826,879**	**615,608**	**2,442,487**	**10,421,666**

BLX= Borikhamxay, CMI=community-managed irrigation, Govt. = Government of the Lao People's Democratic Republic, HPH = Huaphanh, VTE=Vientiane Province, XKH=Xiengkhouang, XSB=Xaysomboun Special Zone.

[a] Contracted Civil works include (1) cost of nonlocal materials (cement and steel bars) under international shopping contract, (2) Rental contract of heavy equiptment under local competitive bidding, and (3) construction contracts to companies.

Source: Department of Irrigation, Ministry of Agriculture and Forestry, Lao PDR.
CMI Project Office, Vientiane, Lao PDR.

Table A10.8: Unit Cost per Hectare Based on Civil Works

					Wet Season Cropping				
Subproject name	Subproject Year	Province	Actual Cost of Civil Works[a] ($) (a)	Cost of Repairs ($) (b)	Target Area[b] (ha) (c)	Cost per Hectare Based on Target[c] ($/ha) [d =(a/c)]	Achieved Area[d] (ha) (e)	Cost per Hectare Based on Achieved Area[e] ($/ha) [f = (a/e)]	Cost Difference[f] ($) [g = (f-d)]
1 Nam La	1	HPH	1,038,633	-	166.0	6,257	49.0	21,197	14,940
2 Houay An Ma 1	1	HPH	863,743	-	250.0	3,455	80.0	10,797	7,342
3 Houay An Ma 2	1	HPH	759,176	-	250.0	3,037	57.0	13,319	10,282
4 Houay Lao	1	VTE	253,493	-	100.0	2,535	71.0	3,570	1,035
5 Houay Mouang	1	BLX	159,632	-	90.0	1,774	29.0	5,505	3,731
6 Houay Phak Huang	1	BLX	66,176	-	30.0	2,206	18.0	3,676	1,471
7 Nam Mak	1	BLX	130,744	-	60.0	2,179	30.0	4,358	2,179
8 Nam Han	1	BLX	120,187	-	90.0	1,335	37.0	3,248	1,913
9 Nam Mat 1 (upper)	1	XKH	210,175	-	67.0	3,137	46.0	4,569	1,432
10 Nam Pieu	1	XKH	67,434	-	61.0	1,105	41.0	1,645	539
11 Nam Mat 2 (lower)	1	XKH	166,600	-	57.0	2,923	54.0	3,085	162
Subtotal for YR1			**3,835,992**		**1,221.0**		**512.0**		**45,026**
Average Cost/ha						**3,142**		**7,492**	
12 Nam Soy 1	2	HPH	104,612	-	39.0	2,682	41.0	2,552	(131)
13 Nam Soy 2	2	HPH	137,428	-	46.0	2,988	33.0	4,164	1,177
14 Kaeng Ay	2	HPH	275,301	-	100.0	2,753	84.0	3,277	524
15 Nam Hang	2	HPH	278,134	-	68.0	4,090	82.0	3,392	(698)
16 Nam Khaeng	2	VTE	190,097	-	100.0	1,901	94.0	2,022	121
17 Nam Nga	2	VTE	249,083	-	90.0	2,768	107.0	2,328	(440)
18 Nam Ngat	2	VTE	271,059	-	100.0	2,711	58.0	4,673	1,963
19 Nam Hong	2	VTE	152,405	-	100.0	1,524	41.0	3,717	2,193
20 Nam Mone	2	VTE	69,446	-	60.0	1,157	97.0	716	(441)
21 Nam Ngok	2	BLX	261,846	54,500	96.0	2,728	106.0	2,470	(257)
22 Houay Huang	2	BLX	174,566	-	90.0	1,940	30.0	5,819	3,879
23 Houay Lap	2	BLX	83,245	-	25.0	3,330	26.0	3,202	(128)
24 Nam Pung Nyai	2	VTE	282,659	-	100.0	2,827	46.0	6,145	3,318
25 Nam Lanth	2	VTE	188,827	-	60.0	3,147	59.0	3,200	53
26 Nam Pung Noi	2	VTE	74,969	-	35.0	2,142	24.0	3,124	982
27 Phai Mo	2	XKH	370,057	-	100.0	3,701	154.0	2,403	(1,298)
28 Nam Keua	2	XKH	166,998	-	45.0	3,711	42.0	3,976	265
29 Phai Mouang	2	XKH	71,052	-	65.0	1,093	51.0	1,393	300
Subtotal for YR2			**3,401,785**		**1,319.0**		**1,175.0**		**11,383**
Average Cost/ha						**2,579**		**2,895**	
30 Houay Miang	3	VTE	206,640	-	90.0	2,296	46.0	4,492	2,196
31 Nam Thom	3	VTE	347,570	-	90.0	3,862	44.0	7,899	4,037
32 Nam Lao-1	3	VTE	227,666	-	95.0	2,396	170.0	1,339	(1,057)
33 Nam Thob-3	3	BLX	296,849	55,000	90.0	3,298	93.0	3,192	(106)
34 Nam Ngio	3	VTE	252,101	-	50.0	5,042	35.0	7,203	2,161
35 Nam Nyat	3	XKH	206,314	-	76.0	2,715	63.0	3,275	560
36 Nam Tong	3	XKH	178,278	-	71.0	2,511	84.0	2,122	(389)
Subtotal for YR3			**1,715,416**		**562.0**		**535.0**		**7,402**
Average Cost/ha						**3,052**		**3,206**	
37 Nam Maet-2	4	VTE	163,493	-	95.0	1,721	36.0	4,541	2,820
38 Nam Maet-3	4	VTE	119,763	-	45.0	2,661	38.0	3,152	490
39 Houay Na	4	VTE	41,971	-	44.0	954	31.0	1,354	400
40 Houay Deua	4	VTE	49,120	-	45.0	1,092	36.0	1,364	273
41 Nam Oun	4	XSB	244,093	14,000	70.0	3,487	27.6	8,844	5,357
42 Houay Keo Hae	4	XSB	171,461	16,200	40.0	4,287	39.0	4,396	110
43 Nam Pee	4	XSB	173,338	24,000	43.0	4,031	31.2	5,556	1,525
44 Nam Pui	4	XKH	84,449	-	60.0	1,407	62.0	1,362	(45)
Subtotal for YR4			**1,047,688**		**442.0**		**300.8**		**10,930**
Average Cost/ha						**2,370**		**3,483**	
45 Nam Kouan	5	VTE	141,885	-	45.0	3,153	78.0	1,819	(1,334)
46 Nam Long	5	HPH	171,410	-	80.0	2,143	33.0	5,194	3,052
47 Nam Khek	5	XKH	107,490	-	50.0	2,150	45.0	2,389	239
Subtotal for YR5			**420,785**		**175.0**		**156.0**		**1,957**
Average Cost/ha						**2,404**		**2,697**	
Total			**10,421,666**	**163,700**	**3,719**		**2,679**		
Average Cost						**2,802**		**3,890**	

- = no input, BLX = Borikhamxay, CMI = community-managed irrigation, HPH = Huaphanh, ha = hectare, XKH = Xiengkhouang, XSB = Xaysomboun Special Zone.

[a] Values represent the contracted civil works financed from (1) loan funds, including: (i) cost of nonlocal materials (cement and steel bars) under international shopping contract, (ii) rental contract of heavy equiptment under local competitive bidding, and (iii) construction contracts to companies; and (2) Government's and community contributions for civil works development.

[b] Target irrigated area based on revised plans (Department of Irrigation, Ministry of Agriculture and Forestry [MAF]. 2004. *Project Completion Report. Appendix 13.* Vientiane).

[c] Computed subproject cost per hectare based on target irrigated area.

[d] Actual irrigated area achieved by the project (Department of Irrigation, MAF. 2004. *Final Benefit Monitoring and Evaluation Report.* Vientiane).

[e] Computed subproject cost per hectare based on actual irrigated area.

[f] Computed difference in cost per hectare between targeted and achieved irrigated area.

Source: Department of Irrigation, MAF, Lao PDR.

Loan 1688-LAO: Shifting Cultivation Stabilization Pilot Project

BASIC DATA

TA No.	TA Name	Type	Person-Months	Amount ($)	Approval Date
2779	Shifting Cultivation Stabilization	PPTA	58.0	600,000	15 Apr 1997

Executing Agency: Provincial Government of Huaphanh

Key Project Data ($ million)	**As per ADB Loan Documents**	**Actual**
Total Project Cost	8.8	TBD
ADB Loan Amount/Utilization	5.6	TBD
ADB Loan Amount/Cancellation	–	–

Key Dates	**Expected**	**Actual**
Fact-finding		7–28 May 1998
Appraisal		6–22 Jul 1998
Post-appraisal		25 Jan–12 Feb 1999
Loan negotiations		15–16 Mar 1999
Board approval		11 May 1999
Loan signing		15 Jul 1999
Loan effectiveness	15 Oct 1999	11 Nov 1999
No. of extensions in loan effectiveness – 1	12 Nov 1999	
First disbursement		24 Jan 2000
Project completion	30 Jun 2005	TBD
Loan closing	31 Dec 2005	TBD
No. of extensions in loan closing – 0		
Months (effectiveness to completion)	68.5	TBD

– = not available, PPTA = project preparation technical assistance, TA = technical assistance, TBD = to be determined.

A. Objectives and Scope

1. The Shifting Cultivation Stabilization Pilot Project (SCSPP)[1] was designed in the context of broad sector goals to reduce poverty, increase food production, reduce the production and consumption of opium, and to protect natural resources. The objectives of the SCSPP are to (i) improve the income of upland farmers; and (ii) conserve natural resources through establishment of environmentally sustainable, diversified sedentary farming systems as alternatives to shifting cultivation; and provision of basic rural infrastructure.

2. To achieve these objectives, the project focuses on a developmental process based on (i) the progressive introduction of permanent, diversified, environmentally sustainable, and market-oriented sedentary farming systems that will gradually replace shifting cultivation;[2] and (ii) the introduction of appropriate management of village forests within the framework of land use planning and natural resource constraints. The project was designed to pilot test promising technologies, and to establish appropriate land use planning and land allocation procedures

[1] ADB. 1999. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Shifting Cultivation Stabilization Pilot Project.* Manila. Loan 1688-LAO: *Shifting Cultivation Stabilization Pilot Project*, for $5.6 million, approved on 11 May 1999. The loan became effective on 11 November 1999. The project was originally expected to be completed on 31 December 2005, and the executing agency proposed a 1-year extension to 31 December 2006 to compensate for delayed implementation.

[2] Shifting cultivation is a farming system involving an alternation between land cultivation (cropping) for several years (typically 1–3 years) on cleared land plots and a fallow period (traditionally 10–20 years or more) when soil is rested. Land clearing is normally done using the traditional slash-and-burn method. In recent years, the fallow period has been reduced significantly.

through extensive beneficiary participation. The project framework, as presented in the Report and Recommendation of the President (RRP), has these key performance targets/indicators:

(i) **Goal/Impact Indicators:** (a) the number of poor people in the project area reduced by 40% by 2009; (b) food deficiency resolved by 2005; (c) opium production and consumption reduced to a negligible level by 2005; and (d) soil erosion, forest fires, and forest removal significantly reduced as shifting cultivators adopt sedentary farming systems.

(ii) **Purpose/Outcome Indicators:** (a) household incomes increased by 50% by 2009; (b) shifting cultivation reduced by 600 hectares (ha) by 2005; and (c) equitable and sufficient allocation to villagers for the development of sedentary farming systems in the project area by 2002, and land certificates issued by 2004.

3. The SCSPP has several components. It was designed to support an integrated area development program with rural development initiatives: (i) institutional strengthening and capacity building for land use planning and allocation, and strengthening of agriculture and forestry services; (ii) diversified sedentary farming systems development; (iii) village-based development (including village and community development, small-scale irrigation, water supply and sanitation, rural tracks, and village revolving funds for income generation); and (iv) rural infrastructure development (rural access roads and rural markets).

4. The project area is located in Xam Neua District of Huaphanh Province, covering two subproject areas (Nam Han and Nam Ven) with a total of 52 villages, 2,100 households, and an area of about 70,000 ha. According to the RRP, the project was estimated to cost $8.8 million, financed by (i) the Asian Development Bank (ADB), with a loan of $5.6 million; (ii) the United Nations Office on Drugs and Crime (UNODC),[3] as cofinancier with a parallel grant of $1.3 million; (iii) the Government, $1.8 million, and (iv) the beneficiaries, $0.1 million.

5. The provincial government of Huaphanh (PGH) is the executing agency (EA), in line with the decentralization policy of the Government. This is the first ADB-financed project in the Lao People's Democratic Republic (Lao PDR) with a provincial government as EA. Overall responsibility for project implementation rests with PGH, with coordination functions assigned to (i) the Provincial Committee for Rural Development (PCRD), including the provincial commission for drug control; and (ii) the Central Leading Committee for Rural Development, including the Lao National Commission on Drug Control. The Project Implementation Office (PIO), headed by a project director, reports to PCRD. Two local development centers were established by the SCSPP, one in each subproject area, to provide assistance to villages in connection with the preparation and implementation of (i) village development plans, (ii) on-farm trials and demonstration, (iii) provision of extension services, (iv) training of farmers, and (v) monitoring and progress reporting on the implementation of the village development plans.

[3] UNODC was formerly known as the United Nations Drug Control Programme.

B. Countrywide Contexts

6. The SCSPP was designed as a pilot project to address predominant development issues of nationwide importance related to shifting cultivation. The following country contexts are instrumental for understanding the relevance of the SCSPP as a pilot project to the country.

7. Shifting cultivation has been a traditionally dominant land use system in the uplands of the Lao PDR, particularly in the northern mountainous region. Estimates of shifting cultivation areas vary, but all indicate that its extent is substantial. For example, in 1999, shifting cultivation accounted for 21% of the national rice area (717,600 ha), providing 12% of the country's rice production.[4] It is most prevalent in the Northern Region, which is one of the poorest areas of the country.[5] The Ministry of Agriculture and Forestry reported that the area under shifting cultivation decreased from 249,000 ha in 1990 to 99,000 ha in 2001, with a corresponding decline in the number of people involved, from 210,000 to 99,000 families. The RRP reported that about 128,000 farm families undertook shifting cultivation nationally, and this involved slash-and-burn clearing of about 128,000 ha of land annually for upland rice production. Over the last two decades, the increasing population pressure and the effects of government policies to curb shifting cultivation since the 1990s have shortened fallow periods from 10–20 years to 3–7 years. Shortened fallow reduces time for vegetative regeneration. This has led to increased soil erosion, reduced secondary forests and biodiversity, and reduced soil fertility.

C. Evaluation

8. The Operation Evaluation Mission (OEM) interviewed project staff, consultants, observers, and other stakeholders. It visited SCSPP sites (April 2005), and held separate focus group discussions with a total of 47 farmers (24 males, 23 females) in the Nam Ham and Nam Ven subproject areas in Xam Neua District of Huaphanh Province. Findings are reflected below, supplemented by desk review of project documents and relevant references.

9. **Implementation Progress.** Following its commencement in early 2000, the SCSPP experienced start-up delays. In 2002, it was categorized as a project at risk, and its performance was rated as partly satisfactory.[6] The SCSPP faced several key implementation issues: (i) irregular cashflow and inadequate counterpart funds, (ii) inadequate staff for the PIO and insufficient counterpart staff from the provincial and district agencies, (iii) ADB-financed consultants and UNODC advisors could not provide cohesive and effective support for the PIO,[7] (iv) the PIO did not have adequate understanding of the applicable ADB guidelines, (v) significant delay in the preparation of the baseline socioeconomic survey, and (vi) delayed preparation and implementation of infrastructure development. By June 2002, only 1 of 10 planned land use survey teams had been established. Thus, land use planning and land allocation (LUP/LA) activities were seriously delayed. ADB and UNODC conducted a joint midterm review (Nov–Dec 2002) of the SCSPP. Subsequently, the performance of the project improved, albeit with 20 months of delay in implementation. ADB planned to review the SCSPP

[4] Schiller, J.M., B. Linquist, K. Douangsila, P. Inthapanya, B. Douang Boupha, S. Inthavong, and P. Sengxua. 2001. Constraints to Rice Production Systems in Lao. ACIAR Proceedings 101; Canberra, ACT 2601, pp 3–19.

[5] Pravongviengkham, P. 1998. *The Role of Animal Husbandry and Aquaculture in Improvements of Swidden-Based Livelihood Systems in the Lao PDR.* Unpublished Doctoral Dissertation. Asian Institute of Technology. Bangkok.

[6] ADB. 2002. *Project Performance Reports.* Manila.

[7] The PIO was inexperienced and understaffed, and 3 out of 4 UNODC (formerly UNDCP) advisors left the project. The Team Leader of the ADB-financed consultants and the Chief Technical Advisor of the UNODC team were not coordinating their activities. The Team Leader was replaced in July 2002.

in September 2005, 3 months before its scheduled loan closing date.[8] The last review mission by ADB was conducted more than a year ago in April 2004. The EA had expressed its concerns to the OEM that ADB had changed its designated mission leader several times; since project inception in 2000, ADB has had five project officers administering this project. According to the EA, the frequent changes contributed to perceived discontinuity in ADB's engagement. Serious consideration should be given jointly by ADB and UNODC to extending the implementation period of the project for at least a year to compensate for the start-up delays.

1. Relevance

10. The OEM assesses the SCSPP to be relevant. The project is highly relevant to the country contexts, government policies, and the need to develop suitable and balanced approaches to stabilize shifting cultivation and reduce cultivation and consumption of opium poppy. In 2001, ADB's Country Strategy and Program emphasized that to increase agricultural productivity, ADB assistance would focus on (i) institutional development and policy reform, (ii) crop diversification including livestock and commercialization, (iii) reduction of shifting cultivation and opium poppy cultivation, (iv) rural finance, (v) provision of extension services, and (vi) development initiatives to link rural and urban areas. Consistent with these strategic directions, the SCSPP uses an integrated area development approach with rural development initiatives on several fronts: (i) participatory land use planning and allocation, (ii) delivery of extension services, (iii) diversified sedentary farming systems development, (iv) village development (including irrigation, water supply and sanitation, rural tracks, and village revolving funds), and (v) rural infrastructure development (rural access roads and rural markets). The SCSPP was designed in the context of broad sector goals to reduce poverty, increase food production, reduce the production and consumption of opium, and protect natural resources. However, these goals are conflicting to some extent in the short to medium term. For example, law enforcement efforts to reduce and eradicate opium poppy cultivation without immediate diversification into readily marketable crops can cause serious hardship to farmers, who have relied on opium for cash incomes.

2. Effectiveness

11. At present, the extent to which the SCSPP has achieved its objectives has not been measured systematically. The SCSPP does not maintain a functional monitoring system that allows comparison of key indicators with baseline benchmarks. This situation seriously undermines the value of SCSPP as a pilot project. Consequently, the OEM requested the EA to complete a set of selected indicators. These indicators were derived from various sources, including district statistics (Table A11). Data sets from the benefit monitoring and evaluation (BME) system were largely incomplete for making meaningful comparison of project achievements. Subsequently, the project acquired and collated data from various sources, including project records. Performance trends can be further analyzed with greater confidence in the future once consistent and meaningful indicators are used by the project to benchmark and compare results over several years to allow time for measurable outcomes to emerge. Sustained efforts are required by the EA to improve its monitoring and evaluation function. Nevertheless, qualitative interviews with selected farmers and villagers revealed that the SCSPP had generated positive outcomes on several fronts, discussed below.

[8] ADB. 2005. *Project Performance Report (20 July 2005).* Manila.

Table A11: Basic Socioeconomic Data in Shifting Cultivation Stabilization Pilot Project Area

Item	Unit	Before Project/ Baseline (Year)	2005[a]	Other Data Sources[b]	
A. Population					
1. Population in the Project Area	person	14,717 (1999)	15,086		
2. Households (HH) in the Project Area	number of HH	2,160 (1999)	2,194	2,174	(2005)[c]
3. Poverty Line Indicator of the Government	KN/person/month	15,000 (1995)[d]	83,000[e]	15,218	(1997–1998)[f]
4. HH Classification in the Project Area					
a. Better-off	number of HH	216 (2000)	657		
b. Average	number of HH	703 (2000)	789		
c. Poor	number of HH	1,241 (2000)	748		
B. Rice Sufficiency					
1. With Rice Supply from 10 to 12 months	number of HH	216 (2000)	1,601		
2. 6 < Rice Supply <10 months	number of HH	703 (2000)	593		
3. With Rice Supply < 6 months	number of HH	1,241 (2000)	n.a.		
4. Average Months with Rice	number	7.3 (2000)	10.8	10.4	(2005)[g]
C. Agriculture					
1. Total Area of Paddy Land	hectares	703 (2000)	1,003		
2. Total Area of Upland Cultivation[h]	hectares	1,200 (2000)	564		
3. Total Area of Diversified Crops	hectares	n.a. (2000)	300		
4. HH with Paddy Land	number of HH	1,004 (2000)	1,433		
5. HH with Upland Cultivation	number of HH	1,156 (2000)	761		
6. HH with Diversified Crops	number of HH	n.a. (2000)	429		
7. Area of Paddy Field with Irrigation	hectares	54 (2000)	308	211	(2005)[i]
8. HH Benefitting from Irrigation	number of HH	77 (2000)	364		
9. HH Using Improved Rice Variety	number of HH	n.a. (1999)	110		
D. Livestock					
1. HH with Livestock	number of HH	1,890 (2000)	2,194		
2. Livestock Population					
a. Buffalo and Cattle	heads	3,976 (2000)	7,927	349	(2004)[j]
b. Pigs	heads	4,056 (2000)	5,796	257	(2004)[j]
c. Goats	heads	297 (2000)	893	24	(2004)[j]
d. Chickens	heads	20,498 (2000)	34,720	1,609	(2004)[j]
3. Fishponds	hectares	18 (2000)	45	4,320	(2004)[j]
4. Paddy Field Used for Fish Growing	hectares	409 (2000)	446	n.a.	
E. Household Income					
1. Per Capita Income	KN'000/person/ year	889 (2000)	1,798		
2. Average Income from Lowland Paddy Production[k]	KN'000/HH/year	2,451 (2000)	3,675		
3. Average Income from Upland Production[k]	KN'000/HH/year	1,246 (2000)	1,334		
4. Average Income from Diversified Crop Production[k]	KN'000/HH/year	n.a. (2000)	52		
5. Average Income from NTFP Collection	KN'000/HH/year	356 (2000)	454		
6. With Income from NTFPs[k]	number of HH	2,160 (2000)	2,194		
7. Average Income from Weaving/Handicrafts[k]	KN'000/HH/year	546 (2000)	3,500		
8. Weavers/Handicraft[k]	number of HH	995 (2000)	1,667		
9. Seasonal Off-farm Labor	number of HH	2,735 (2003)[l]	n.a.		

n.a. = not available/no data, NTFP = nontimber forest products, SALT = sloping agricultural land technology.

[a] Data provided by Shifting Cultivation Stabilization Pilot Project (SCSPP) to the Operations Evaluation Mission on 15 July 2005. Figures were sourced from district and project data.

[b] Data collected from various reports of the SCSPP.

[c] Source: Shifting Cultivation Stabilization Pilot Project Progress Report, April - June 2005. Appendix 2c.

[d] The estimated poverty line of KN15,000 per person per month was calculated based on the 350-kilogram rice requirement per person per year.

[e] The estimated poverty line of KN83,000 per person per month was based on the poverty criteria set by the district government.

[f] Average poverty line in the Lao PDR in 1997–1998. Source: Kakwani, N.; Sisouphanhthong, B.; Souksavath, P.; and Dark, B. 2001. *Poverty in Lao PDR*. Asia Pacific Forum on Poverty, Asian Development Bank (ADB), Manila, 5–9 February.

[g] Average month of rice sufficiency of households in the project area. Source: SCSPP Benefit Monitoring and Evaluation, 2005.

[h] The total area of upland cultivation is also equal to the total area of shifting cultivation.

[i] Total paddy area covered by the irrigation scheme constructed by the project.

[j] Number of animal holdings based on the 54 households surveyed in the project area. Source: SCSPP Benefit Monitoring and Evaluation, 2005.

[k] Values were estimated based on the actual income surveyed from the project area.

Continued on next page

Table A11: Basic Socioeconomic Data in Shifting Cultivation Stabilization Pilot Project Area—*continued*

Item	Unit	Before Project/ Baseline (Year)	2005[a]	Other Data Sources[b]	
F. Opium Cultivation					
1. Villages Planting Opium	number of villages	42 (1999)	0[l]		
2. HH Planting Opium	number of HH	1,600 (1999)	0[l]		
3. Total Area of Opium Cultivation in Project Area	hectares	724 (1999)	0[l]		
4. Total Number of Addicts	person	301 (1999)	81		
a. Male		250 (1999)	65		
b. Female		70 (1999)	16		
5. Addicts Treated Inside Project Area	person	n.a. (1999)	222		
6. Addicts Treated from Outside the Project Area	person	n.a. (1999)	338		
7. Price of Opium	KN'000/kilogram	700 (1999)	6,500.0[m]	5,461.0	(2005)[n]
G. Shifting Cultivation					
1. Total Area of Shifting Cultivation	hectares	1,200 (1999)	564		
2. Shifting Cultivators	number of HH	1,156 (1999)	761		
3. Average Fallow Period	years	5.0 (1999)	5.0		
H. Agroforestry Development					
1. HH Adopting Agroforestry/SALT	number of HH	n.a. (1999)	126		
2. Area of Agroforestry Farms	hectares	n.a.	58		
3. Seedling Nurseries Established	unit		10		
4. Seedlings Distributed in the Project Area	unit		170,000		
I. Land Use Planning and Land Allocation					
1. HH with Land Certificate	number of HH	224 (1999)	524		
2. Villages with Land Use Plans	villages	23 (1999)	52		
3. Registered Land Use Maps in the Province	villages	23 (1999)	52		
4. Land Allocation to Villagers	hectares	37 (1999)	163		
5. Village Development Committees Formed	unit	23 (1999)	52		
6. Villages with Regulations on Forest Protection/Conservation	unit	23 (1999)	52		
J. Infrastructure and Village Based Development					
1. Project Villages Accessible by Road	unit	20 (2000)	45		
2. District Roads Constructed by the Project	length in kilometer		55		
3. Rural Tracks Constructed by the Project	length in kilometer		62		
4. HH with Access to Water Supply/Clean Drinking Water in the Project Area	number of HH	600 (2000)	2,194		
5. Water Supply in the Project Villages	villages	16 (2000)	52		
6. Water Supply Installed by the Project	units	n.a. (2000)	47		
7. Villages with Latrines in the Project Area	villages	15 (2000)	44		
8. Latrines Installed by the Project	unit	na (2000)	1,421		
9. Existing Irrigation in the Project Area	unit	5 (2000)	38		
10. Irrigation Constructed by the Project	unit		36		
K. Health and Sanitation					
1. Villages with Access to Health Services	number of HH	38 (2000)	52		
2. Villages with Health Volunteers	villages	13 (2000)	50		
3. Trained/Equipped Midwives	persons	28 (1999)	58		
4. Health Volunteers	persons	26 (1999)	127		
L. Access to Markets					
1. Villages with Access to Markets	villages	19 (2000)	52		
2. Markets in the Project Area	unit		3		
M. Access to Credits					
1. Credit Disbursed from the Project	KN million	19 (1999)[o]	1,337		
2. Savings by Villagers in Microcredit Groups	KN million	11 (1999)	233		
3. Interest to Capital + Other Sources of Capital	KN million	n.a. (1999)	86		
4. Capital Total	KN million	30 (1999)	1,656		
5. Microcredit Groups	number of groups	10 (1999)	56		
6. HH with Access to Credit	number of HH	423 (1999)	1,493		
7. Type of Credit Investments					
a. Weaving	%	60.0	51.0		
b. NTFP	%	1.0	0.0		
c. Livestock Raising	%	5.0	26.0		
d. Agriculture	%	2.0	4.0		
e. Other Services	%	32.0	19.0		
8. Rate of Credit Repayment	%	99.0	99.0		

[l] Total opium eradication in the project area was declared in April of 2005.

[m] Estimate was based on selling price of opium in the project village. Opium is sold KN25,000 per buc (a local measure used for opium). 1 kilogram = 260 buc.

[n] Based on the estimated average price of opium in Lao PDR. Source: 2005. *The United Nations Organization and Drug Control Opium Survey*. Vientiane.

[o] This credit was disbursed by an Australian Agency for International Development project prior to ADB microfinance project.

Sources: Xam Neua District Office, Houaphanh Province, Lao PDR.

12. **Access and Feeder Roads.** A total of 55 kilometers (km) of district roads and 61.5 km of rural tracks were completed in 2004.[9] Almost all villagers interviewed reported that the access roads and rural tracks had generated significant benefits: (i) easier access to markets; (ii) improved access to health and other services; (iii) reduced travel time, with buses now servicing the villages; (iv) creation of off-farm employment opportunities; and (v) flourishing household small-scale industries (such as weaving, which employs mostly women). The impacts of the roads on rural livelihoods were the most frequently cited perceived benefits by the respondents. The roads provide access to villages that were completely isolated and inaccessible in the past. While few vehicles ply these roads, they do allow traders to come to the villages, women to have access to maternal health care in town, and health workers to conduct vaccination programs. They allow extension workers and government personnel to reach locations where opium poppy cultivation was once widespread. Easier access has facilitated the delivery of extension services, law enforcement, and rehabilitation services for opium addicts.

13. **Reduction in Shifting Cultivation.** Interviewed farmers claimed that there had been some reduction in shifting cultivation in the area. This requires confirmation with baseline data and other benchmarks to assess the extent to which shifting cultivation has actually declined. Based on district statistics, the area under shifting cultivation declined from 1,200 ha in 1999 to 565 ha in 2005, and the corresponding number of households involved declined from 1,156 to 761. The development of small-scale irrigation schemes along foothills and valley bottoms by the project has also contributed to the promotion of sedentary farming systems for those who have access to irrigated land.[10] Attempts to diversify crops and promote farming systems (suitable for sloping land) have broadened choices among farmers. However, farmers continue to face serious marketing constraints, which have impeded the uptake of new farming technologies and approaches. The rapid elimination of the opium poppy cultivation does not automatically translate into stabilization of shifting cultivation. Former opium growers were attracted to grow more upland rice for subsistence as they had lost their cash income from opium. District statistics indicated encouraging changes in agriculture as of 2005, which support stabilization efforts (Table A11): (i) diversified crops reaching 300 ha; (ii) irrigated agriculture increased from 54 ha (2000) to 308 ha (2005); (iii) increased use of improved rice varieties; (iv) major increases in livestock, and 16% more households have livestock in 2005 compared with 2000; and (v) rice self-sufficiency increased from an average of 7.3 months in 2000 to 10.8 months in 2005.

14. **Reduction in Opium Poppy Cultivation.** The Government has actively promoted various activities to eradicate opium poppy cultivation, including through law enforcement. There is strong evidence that opium poppy cultivation has declined significantly in the project area. Huaphanh declared itself opium free in 2005, and UNODC nationwide surveys indicated substantial reduction of opium poppy cultivation to almost negligible levels. Several people interviewed by the OEM claimed that opium poppy cultivation had been significantly reduced, if not completely eradicated, through sustained government campaigns. In 1999, the extent of opium poppy cultivation in the project area included 42 villages, 1,600 households, and 724 ha of cropped area. With reduced supply, farm gate prices of opium have increased sharply, indicating severe scarcity of the commodity in the area. Several villagers reported to the OEM

[9] Access roads and rural tracks were constructed in the project area to improve the accessibility of and links among the 52 villages to the provincial main road.

[10] The SCSPP rehabilitated 36 small-scale irrigation schemes covering 308 ha by providing material assistance to the communities to construct small structures such as diversion weirs. The communities actively participated in the improvement of their irrigation systems. As part of the village-based development, the SCSPP also constructed 47 village water supply systems to provide clean water, and 1,421 latrines.

that opium prices had tripled over the last 3 years, and prices reached $350/kg (April 2005) at the farm gate in comparison with district statistics, which reported opium prices reaching KN6.5 million/kg ($630/kg). This increase in price is likely to have had three major effects: (i) allowing remaining producers to make above-normal profits; (ii) causing hardship to addicts; and (iii) possibly causing drug users to use alternative drugs such as amphetamine, leading to serious health problems. [11]

15. **Employment Opportunities.** The project has established 56 microfinance groups in targeted villages, covering 1,493 households. These households have benefited from small loans, allowing them to invest in weaving operations (51%), livestock (26%), and agriculture and other activities (23%). Repayment rates were reported to reach a high average of 99%. Weaving is a profitable household business, generating profits of more than 100% of the costs of the material.[12] Hundreds of girls and women have become active in this household industry. Traders have facilitated the marketing of woven cloth, and some have advanced money to weavers as working capital. Apart from weaving, access to markets has monetized nontimber forest products and fishing, and facilitated livestock trade. Small traders visit the villages regularly to purchase livestock and agricultural commodities, and also to bring goods into the area.

16. Overall, and in the meantime, the OEM assesses the SCSPP as effective. This assessment needs to be further reviewed after project completion and again a few years later based on key indicators to confirm the achievements of the project.

3. Efficiency

17. The SCSPP experienced serious start-up delays, poor coordination among consultants and advisors during its initial years, and other shortcomings that affected the efficiency of process and timeliness of outcomes (such as due to inadequate project staff and counterparts, funding issues, and other institutional capacity constraints).[13] Although access roads and rural tracks were completed in 2004 to provide greater access to markets, alternative agricultural crops will continue to face market challenges in the foreseeable future. Demand constraints can impede sustained adoption of alternative nonrice sedentary farming systems and reduce the immediate financial incentives for farmers to adopt new technologies and approaches.

18. The capacity of PGH to manage a decentralized project such as the SCSPP is limited, as reflected in its slow response to concepts and approaches developed by the project. Pilot initiatives require flexibility and willingness to adopt new approaches, and such commitments in practice could not translate into speedy actions. In the meantime, taking into account the efficiency of process, timeliness of outcomes, and preliminary indicators of outcomes, the OEM assessed the SCSPP as less efficient. This assessment needs to be updated (and supplemented by estimation of economic efficiency) after completion of the project, and several years after completion, when a performance audit of the project may be conducted.

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[11] UNODC reported that opium farm gate prices in March 2005 reached as high as $520/kg, while prices in Huaphanh were reported to have reached $950/kg. Since 1997, abuse and trafficking of amphetamine-type stimulants have posed new dangers to society in the Lao PDR.

[12] For example, five women interviewed by the OEM in Phieng Village claimed that they could each produce two or three pieces of cloth per month on a part-time basis. At an average selling price of KN400,000/piece, these women could make a profit of KN200,000/piece after deducting all material costs. On average, they could earn KN6 million ($600)/year extra income on a part-time basis. Weaving contributed to about 25% of their household cash incomes, while nontimber forest products, fishing, and livestock made up the rest of the household incomes.

[13] Memorandum of Understanding of the Joint Midterm Review Mission dated 6 December 2002.

4. Sustainability

19. **Land Use Planning and Land Allocation.** The sustainability of the SCSPP depends to some extent on the application of the LUP/LA approach that the project developed. Instead of using the normal nine-step land allocation approach, the SCSPP has promoted an enhanced participatory land allocation process covering 10 steps after village boundary delineation and land use zoning.[14] Preceding the land allocation, land use zoning is an activity conducted with villagers within an agreed upon village boundary, allowing (i) LUP staff to understand villagers' views on production and protection zones, and (ii) villagers to understand government policies and programs on land use allocation. This process aims at zoning forest and land use categories, taking into account livelihoods while maintaining the forest cover.[15] This principle allows containment of shifting cultivation by demarcating agricultural zones within which villagers can cultivate their land using forest fallow rotations. Thus, rotational agriculture is permitted and encouraged under this system, contrary to the existing policies, which encourage shorter fallow and attempt to eliminate shifting cultivation in the appearance of stabilization objectives. Villagers are responsible for (i) managing the distribution of land to families within the agricultural zones; and (ii) developing land use agreements to manage agricultural land, and production and protection forest areas. Land allocation is phased in later when villagers have become comfortable with managing their land use zones. The implementation of LUP/LA is instrumental for containing shifting cultivation. While village boundary delineations and land use zoning were completed in all 52 villages by Dec 2003, the effects of the LUP on shifting cultivation and the livelihoods of people will take more time to evolve. The SCSPP needs to undertake a critical self-assessment of the LUP/LA process and implementation and the extent to which this has contributed to more secure land tenure and sedentary farming.

20. **Opium Poppy Cultivation and Crop Diversification.** Huaphanh declared itself free of opium poppy cultivation in 2005. The SCSPP reported that the cultivation of opium poppy has been eradicated. The success of opium eradication depends on whether farmers have truly viable and sustainable alternatives. The SCSPP has contributed to gradual reduction of opium poppy cultivation in the project area. During focus group discussions conducted by the OEM, about half of the interviewed farmers confirmed that if they had not been told to stop cultivating opium poppy by law enforcers and government agents, they would have continued. Farmers viewed opium poppy as a crop that has been cultivated for decades, and abandoning it has not been a simple choice. Traditional use of opium for household consumption for medicinal, social, and other purposes was common. Respondents confirmed that law enforcement and persuasion were key factors for their decision to stop cultivating poppy. Maintaining opium-free farming will pose challenges. Crop diversification can succeed only when there are markets for the new farm products. In the meantime, farmers have continued to show their preference for subsistence farming, to grow glutinous rice and other crops for their food security. The elimination of opium as a source of cash income in the short run can lead to more extensive rice

[14] The nine-step approach covers (i) LUP/LA preparation, (ii) village boundary delineation and land use zoning, (iii) data collection and analysis, (iv) village land use plans, (v) forest and land allocation decisions, (vi) field measurement of agricultural land, (vii) forestland agreements and transfer of rights to villagers, (viii) LUP/LA information storage and agricultural land allocation records, and (ix) monitoring and evaluation. The modified approach used by the SCSPP involves 10 steps: (i) land allocation preparation, (ii) recording details in each village of fields with permanent land development, (iii) village land allocation adjudication and decision, (iv) field location and measurement of agricultural land parcels, (v) preparation of land allocation documents, (vi) transfer of land allocation documents to villagers, (vii) temporary land use certificate storage and record keeping, (viii) digitizing land allocation information for each village, (ix) periodic monitoring of land use and ownership status, and (x) periodic updating of land allocation information.

[15] Source: Progress Report on Land Use Planning and Land Allocation Capacity Building. Report No. 10, June 2004.

farming in the uplands and increase shifting cultivation, especially when households will have to grow their own rice for subsistence, instead of diversifying into other crops for which market is still uncertain.

21. Focus group discussions with villagers confirmed that infrastructure and facilities provided by the SCSPP have improved living conditions through access to health services, improved sanitation, diversified and sedentary farming, job creation, village development, and improved access to markets. Access roads and rural tracks, local development centers, extension services, and other facilities have been maintained by the project. Sustained operation and maintenance of these facilities in the future will require funding from the Government and greater self-help contribution from the communities. This operation and maintenance after project completion may be at risk. The two local development centers established by the SCSPP have served as a parallel structure to PGH's provincial and district agriculture and forestry offices responsible for extension services. While these centers were used to mobilize and deliver extension services to project sites, their sustainability currently depends on project funding. There is a great risk that the services currently provided by these centers cannot be sustained by PGH after completion of the SCSPP, given the costs for their operation and maintenance to serve 53 villages. This assessment of sustainability needs to be updated later, after completion of the project, when the expected effects of the project will have materialized. Overall, and in the meantime, the OEM assesses the sustainability of the SCSPP as less likely.

5. Overall Rating

22. Based on the above performance criteria, the OEM rates the SCSPP as doubtful to succeed (potentially partly successful).[16] The project performance needs to be reassessed after project completion, when more information on achievements, outcomes, and sustainability can be obtained through more diligent monitoring and evaluation by the project of the pilot initiatives. It is likely that the SCSPP can become successful if further initiatives are undertaken during the remaining period of the project, with at least a 1-year extension, to compensate for the initially poor coordination and delays in project implementation. The remaining period should focus on priorities to effect sustained changes in the farming system, ensure secure land tenure, respond to livelihood requirements, and make the project more market oriented. Without market development, and despite good intentions, the aim to develop sedentary farming with diversified crops will become futile. As a pilot project, there is an implicit obligation to identify, assess, and consolidate what the SCSPP has identified as approaches that can be further promoted at the national level. Moreover, the experience, lessons, and policy implications of the SCSPP need to be understood well and synthesized, including the effects of the integrated area development on the stabilization of shifting cultivation. By July 2005, the SCSPP had not established links with other ADB-financed initiatives relevant to finding approaches and methods for improving upland livelihoods in the Lao PDR. The SCSPP and other ADB-financed initiatives on upland agriculture in the Lao PDR have the potential to generate synergy in relation to finding workable approaches and methods for upland agriculture and natural resources:

(i) Japan Fund for Poverty Reduction (JFPR) 9062-LAO: Sustainable Agroforestry Systems for Livelihood Enhancement of the Rural Poor;
(ii) Technical Assistance (TA) 4434-LAO: Poverty Reduction Through Land Tenure Consolidation, Participatory Natural Resources Management, and Local Communities Skills Building Project;

[16] Using the current four-category rating system: highly successful, successful, partly successful, and unsuccessful.

(iii) Loan 1933-LAO: Nam Ngum River Basin Development Sector Project;
(iv) Study on Gender Inequality in Women's Access to Land, Forests, and Water;
(v) JFPR 9034-LAO: Reducing Poverty Among Ethnic Minority Women in the Nam Ngum Basin; and
(vi) TA 4392-LAO: Marketing Support for Organic Produce of Ethnic Minorities.

23. There is a need for clear interface and links among these efforts, to assist them to benefit from each other's experience and to meet their objectives as pilot projects.

24. Several questions relate to the pilot nature of the SCSPP: (i) How can the success of the pilot project and its components be assessed? (ii) How can stakeholders know when project objectives have been achieved? and (iii) What can be extended to other areas with or without modification? It is unfortunate that the SCSPP and its project consultants did not pay adequate attention to the development of a monitoring and evaluation system. As a pilot project, the relevance of the SCSPP has been compromised by the absence of a functioning monitoring and evaluation system that can define the extent to which its pilot initiatives have yielded results. The SCSPP's BME system has several major constraints, failing to provide meaningful measures for several reasons: (i) there are no benchmarks to illustrate before-project conditions, with the first BME survey having been started in March 2003, more than halfway through the planned project period; (ii) household sample surveys were small for statistical significance;[17] (iii) the selection of respondents was not random, and village heads together with better-off households were selected by the project;[18] (iv) BME surveys were not conducted on a regular timeframe, and no logical reasons were provided for this timing;[19] (v) BME indicators changed significantly between surveys, making it impossible to establish trends for key indicators;[20] and (vi) the BME database is held by a consulting company, and the project does not have easy access to this database.

25. Ultimately, the institutional and other impacts of the SCSPP need to be assessed against its expected outcomes and impacts, particularly the extent to which it has (i) reduced poverty, (ii) increased food security, (iii) eliminated opium poppy cultivation, (iv) reduced soil erosion and deforestation, (v) increased household incomes, (vi) reduced or stabilized shifting cultivation, and (vii) developed approaches for LUP/LA that have led to security of tenure and more sedentary farming.[21] The SCSPP needs to take immediate steps to prepare for such assessments. There are doubts whether the project initiatives were truly integrated, apart from the implementation of parallel rural development initiatives in a confined area. In the short term, the multiple goals and objectives of the SCSPP might have been compromised by the effects of the fast elimination of opium poppy cultivation through law enforcement, especially when alternative and sustainable sedentary farming of more diversified crops has yet to emerge. The OEM is of the view that the impacts of the SCSPP cannot be adequately assessed at this time

[17] In 1995, the total number of households in the project was 2,194. The sample of households of the first BME survey (March 2003) included 108 households from 54 villages (two households per village). The samples of households of the second (Nov 2003), third (October 2004), and fourth (Jan 2005) surveys were reduced to 54 households in 18 villages.
[18] The BME report (Dec 2004) indicated that the respondents comprised better-off households (46%) and average households (20%), and the results of the survey were biased.
[19] These may have implications on the validity of the observations. The first survey was conducted from March to May 2003, the second in November 2003, the third in October 2004, and the fourth in January 2005.
[20] The OEM could not extract data from the BME to compare the key indicators over a time period.
[21] Such assessments include the extent to which the EA's or the country's ability have improved because of the SCSPP, in the context of making effective and efficient use of its human, financial, and natural resources in pursuing economic, environmental, and social activities prompted by the SCSPP.

(July 2005). However, based on current performance, the OEM assesses the initial institutional and other impacts of the SCSPP as moderate.

Loan 1788-LAO: Decentralized Irrigation Development and Management Sector Project

BASIC DATA

TA No.	TA Name	Type	Person-Months	Amount ($)	Approval Date
3189-LAO	Preparing the Irrigation Management Transfer Project	PPTA	57.5	824,000	27 April 1999

Executing Agency: Ministry of Agriculture and Forestry (through Department of Irrigation)

Key Project Data ($ million)	**As per ADB Loan Documents**	**Actual**
Total Project Cost	$24.2	TBD
ADB Loan Amount	$15.5	TBD
AFD Grant	$2.7	TBD

Key Dates	**Expected**	**Actual**
Fact-Finding		20 Mar–07 Apr 2000
Appraisal		19 Jun – 06 Jul 2000
Loan Negotiations		11–12 Oct 2000
Board Approval		28 Nov 2000
Loan Signing		16 Feb 2001
Loan Effectiveness		07 May 2001
First Disbursement		10 Oct 2001
Project Completion	Dec 2006	TBD
Loan Closing	30 Jun 2007	TBD
Months (Effectiveness to Completion)	67.5	TBD

PPTA = project preparatory technical assistance, TA = technical assistance, TBD = to be determined.

A. Objectives and Scope

1. **Rationale.** The attainment of self-sufficiency in rice through expansion of irrigated paddy production was a major focus of government policy in the agriculture sector throughout the 1980s and 1990s. From a low base, irrigated agriculture expanded to around 480,000 hectares (ha) in 2004, of which 280,000 ha comprised pump schemes along the Mekong River and its tributaries.[1] Combined with rapid yield gains through the introduction of improved varieties, the Lao People's Democratic Republic (Lao PDR) has now been self-sufficient in rice overall since 1999.[2]

2. At the time of project design, many electric or diesel pump schemes along the Mekong and its tributaries had been poorly maintained and did not function efficiently. Canals were constructed by farmers and were mainly below ground, making irrigation difficult. Government allocation for operation and maintenance (O&M) was largely insufficient due to budgetary constraints, and there was no systematic program for O&M. Existing water users groups (WUGs) did not have sufficient technical and extension support, and many were dysfunctional. Government strategy emphasized transfer of irrigation assets to farmers and the rehabilitation of irrigation systems. A nationwide Irrigation Management Transfer (IMT) program was prepared to promote improved system O&M and reduce the need for government support. The project would assist the Government in implementing the program in provinces with large numbers of pump irrigation systems.

[1] MAF. 2005. *Agricultural Statistics Year Book 2004,* Department of Planning, Vientiane. Other MAF data suggest that the irrigated area is far lower. For example, only 77,000 ha of rice cultivation was irrigated in 2004, compared to 12,000 ha in 1990 as quoted by the International Rice Research Institute.

[2] See Appendix 3: Evaluation Synthesis on Rice in the Lao PDR.

3. **Goal and Objectives.** The overall goal of the Decentralized Irrigation Development Management Sector Project (DIDMSP),[3] as stated in the Report and Recommendation of the President (RRP), is to induce economic growth, promote food security, and reduce poverty through increased agricultural production and productivity in the project area. The project supports the transfer to farmers of the ownership and maintenance of irrigation systems in six provinces (Xayabury, Luangprabang, Vientiane, Vientiane Capital, Borikhamxay, and Savannakhet). The objectives of the project are to establish sustainable irrigated agriculture through the IMT process, and to establish or strengthen water users associations (WUAs) and agricultural extension.

4. The project is (i) assisting irrigators to organize themselves into WUAs, (ii) rehabilitating existing irrigation systems, (iii) providing extension services to farmers to promote appropriate cropping patterns and improve agronomic practices and performance, (iv) enhancing extension capacity to sustain farmer-managed irrigation, and (v) providing support for capacity development of WUAs. Rehabilitation of the irrigation systems is expected to allow improvements in water management and increased cropping, particularly in the dry season. During the wet season, improved irrigation supply will supplement rain-fed paddy production. WUAs will be established with an appropriate legal framework, and trained to undertake administrative, financial, and technical functions.[4] WUA and extension support is cofinanced by Agence Française de Développement (AFD) through a grant of $2.7 million.

5. **Implementation.** Since project inception in 2001, 35 irrigation systems have been rehabilitated: 18 in Batch 1 (2002/03) and 17 in Batch 2 (2003/04). The total command area of these schemes is 9,445 ha, or 94% of the total area of 10,000 ha targeted for rehabilitation. The third batch, which was due for construction in the 2004/05 dry season, has been postponed until 2005/06 and may in fact be cancelled, since little time remains in the project period to design and construct the schemes and establish WUAs. The total irrigable area of the 35 schemes is 8,074 ha, with the balance comprising canals, roads, and high ground. Part of the area on most schemes cannot be irrigated every wet season because of flooding, which varies in severity depending on climatic conditions and river flows. In most areas, wet season irrigation is only supplementary and may be used for nurseries, to finish the crop, or to top up high areas during dry spells. Conversely, part of the area cannot be irrigated in the dry season, since it is too high. DIDMSP staff have commenced a process of zoning, in which the command area of each scheme is classified in relation to its irrigation potential depending on topography, soil type, and water distribution system.

6. Of the total irrigable area of 8,074 ha, a maximum of 7,700 ha can be irrigated in the dry season, and around 7,200 ha in the wet season with supplementary irrigation when necessary (Table A12.1). Based on current estimates, the wet and dry season targets represent an increase of 1,400 ha and 4,300 ha respectively over the before-project baseline. The dry season level may fall significantly once zoning analysis has been completed. Achievement of the dry season target will depend on several factors including WUA management, further scheme upgrading to improve water management and the viability of non-rice cropping. The table includes a ranking of the flood problems experienced during the 2004 wet season.

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[3] (i) ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Decentralized Irrigation Development and Management Sector Project.* Manila.
(ii) Loan 1788-LAO: *Decentralized Irrigation Development and Management Project*, for $15.5 million, approved on 28 November 2000.

[4] Once WUGs have demonstrated their capacity to manage their schemes, they can be converted to formal WUAs.

Table A12.1: Location and Irrigable Areas (hectares)

No	Subproject	Batch No.	Province	Project Area (ha)	Irrigated/Planted Area Before Project DS	Irrigated/Planted Area Before Project WS	Service Area	Irrigable Area DS	Irrigable Area WS	WUG Member-ship	Vill-ages Served	Flood Risk[a]
1	Paksan Tai	1	Borikhamxay	390	210	105	300	300	58	163	7	4
2	Pak Phueng 1	1	Borikhamxay	120	86	75	102	102	102	62	5	4
3	Ban Thouay 1& 2	1	Borikhamxay	270	100	180	270	270	270	204	2	5
4	Lak Km#4	1	Savannakhet	300	100	200	300	300	300	207	5	4
5	Hat Say Soung	1	Savannakhet	397	115	280	339	339	339	309	2	3
6	Kanthachane	1	Savannakhet	200	60	60	120	120	129	70	4	3
7	Lahanam Thong	1	Savannakhet	700	416	600	523	523	523	284	6	5
8	Chom Thong	1	Vientiane Capital	437	210	300	400	400	400	501	5	5
9	Nong Khet	1	Vientiane Capital	150	75	265	150	150	150	168	1	5
10	Hai Thagone	1	Vientiane Capital	400	120	206	216	216	216	137	3	4
11	Dong Nasok	1	Vientiane Capital	150	100	130	150	100	150	115	2	3
12a	Viengkham-Hatha	1	Vientiane	80	11	31	44	44	44	52	3	1
12b	Viengkham-Neua	1	Vientiane	100	34	57	50	50	50	46	1	
13	Vang Mone	1	Vientiane	100	50	50	85	85	85	61	2	1
14	Na Khong	1	Vientiane	300	40	209	300	300	300	85	6	3
15	Viengkham Tai	1	Vientiane	150	40	96	85	85	150	123	2	2
16	Houay Si 2	1	Luangprabang	240	92	284	240	90	240	371	4	
17	Phiang 2	1	Xayabury	295	30	54	295	150	295	371	5	3
18	Houay Nga	2	Borikhamxay	500	43	110	470	470	120	145	2	3
19	Somsanuk	2	Borikhamxay	200	16	225	190	190	190	79	1	5
20	Hong Thong	2	Borikhamxay	200	120	269	190	190	190	155	1	5
21	Houaysai	2	Savannakhet	450	16	120	400	380	400	358	8	
22	Phaleng	2	Savannakhet	120	120	146	113	113	110	136	5	
23	Kangpa-Phon Than	2	Savannakhet	357	280	300	346	346	180	263	4	
24	Thapho	2	Savannakhet	90	32	90	87	87	85	85	1	
25	Lahanum 2	2	Savannakhet	120	50		116	116	60	73	6	5
26	Thin Phia	2	Vientiane Capital	295	200	295	286	286	175	160	1	
27	Thin Thiangtai	2	Vientiane Capital	500	121	300	480	480	310	366	4	4
28	Veun Kham	2	Vientiane Capital	277	255	329	240	240	175	267	2	5
29	Phonkham	2	Vientiane	250	24	100	150	150	200	77	3	
30	Napho Tai	2	Vientiane	150		100	92	92	150	73	1	
31	Lingsan	2	Vientiane	218	15	100	150	150	200	65	1	5
32	Pakcheng	2	Vientiane	250			150	150	250	159	5	
33	Houay Sy 3	2	Luangprabang	212	120	205	185	185	180	100	3	
34	Phiang 1	2	Xayabury	477	3	200	460	460	460	469	6	
	Total			**9,445**	**3,304**	**6,071**	**8,074**	**7,709**	**7,236**	**6,359**	**119**	

DS = dry season, ha = hectare, WS = wet season, WUG = water users group.

[a] Seriousness of flooding in the 2004 wet season is identified—a significantly worse flood season than average. However, the schemes ranked 4 or 5 are likely to experience at least some flooding in most years. Information on flood risk for schemes without a number is not known.

Source: DIDMSP.

7. **Project Costs.** The total cost of project investments by the end of June 2005 is estimated at $14.9 million, including loan disbursements of $11.3 million, farmer contributions in kind (labor and materials) of $690,000, government costs of $316,000, and AFD costs of $2.6 million. As of 30 June 2005, the Asian Development Bank (ADB) loan account balance was $4.2 million, which would be sufficient to construct the remaining planned schemes or to further consolidate the rehabilitation of Batch 1 and 2 schemes to rectify various shortcomings related to the completed rehabilitation works of these schemes. Within the AFD account, project consultants estimated that there would be sufficient funds remaining to complete their consultancy inputs by the end of the project in December 2006, assuming that that AFD will approve the transfer of unspent international costs to additional local consulting inputs.

8. **Cost Overruns.** Ten Batch 1 subprojects experienced cost overruns of more than 10% of the original cost estimates. Various reasons can be cited, including (i) increased earthworks due to changes of canal alignments and structures, (ii) miscalculation or underestimated quantities in the designs, (iii) replacement and repair of pumps due to unforeseen mechanical breakdowns, (iv) inaccurate surveying, and (v) unforeseen site conditions. The Ministry of Agriculture and Forestry (MAF) authorized contractors to undertake additional works, but without the agreement of ADB that cost overruns would be financed under the loan. ADB subsequently approved the cost overruns in July 2005, by which time the contractors had not been paid for more than 2 years.

9. To avoid cost overruns, a decision was made by project management to disallow cost overruns under Batch 2 contracts. Any necessary modifications to the civil works would be funded solely by cost cutting elsewhere in the contract. While this approach succeeded in avoiding overruns, in practice it caused problems, since variations are almost inevitable as site conditions become apparent, and unexpected investment needs are identified.

B. Operational Performance

10. **Cropping.** By July 2005, Batch 1 schemes had completed one wet and two dry season crops following rehabilitation, and Batch 2 schemes one dry season only. A preliminary estimate can thus be made of performance. While the schemes differ greatly in their achievements, overall performance has been disappointing. Wet season paddy production has continued much as before the project, with little supplementary irrigation. Compared with benchmark data, 2004 wet season paddy areas increased on 22 schemes and declined on 6, with the reductions due mainly to flooding. So far there has been no change in wet season paddy yields, which averaged 3.2 t/ha in 2004, the same as the benchmark.

11. Dry season cropping has increased, but by substantially less than expected at appraisal. A key factor so far has been the reluctance of farmers to plant nonrice crops, on which the economic performance of the subprojects depends. Total dry season cropping in 2003/04 was 2,194 ha (out of the 4,000 ha service area for Batch 1), giving a cropping intensity of 55% (Table A12.2). In 2004/05, dry season cropping totaled 2,997 ha for both batches, of which 519 ha comprised diversified crops out of a total irrigable area of 7,684 ha.[5] Dry season paddy yields improved (from 2.8 tons [t]/ha benchmark to 3.1 t/ha), partly attributed to project extension efforts as well as to improved water availability and use of improved rice varieties. Dry season cropping intensity for the overall project amounted to 41% in 2004/05, including 7% for diversified crops, compared with a (highly optimistic) target of 130% based on subproject feasibility studies. Data are summarized in Table A12.3. In the meantime, farmers continue to face problems of input availability, particularly of fertilizers and quality seeds.

[5] For functional irrigation schemes only.

Table A12.2: DIDMSP Subproject Area Benchmarks, Targets, and Actual Areas (hectares)

No.	Subproject	Wet Season Bench-mark	Dry Season Bench-mark	Dry Season Target	Wet Season Target	Dry Season 2003/2004	Wet Season 2004	Dry Season 2004/2005	Wet Season 2005 (Plan)
1	Paksan Tai	58	190	461	58	257	33	241	58
2	Pak Phueng 1	25	60	120	26	115	87	108	87
3	Ban Thouay 1 & 2	160	101	272	160	190	283	112	320
4	Lak Km # 4	250	200	314	250	149	167	64	342
5	Hat Say Soung	397	142	393	385	273	309	185	300
6	Kanthachane	120	20	203	145	28	129	65	123
7	Lahanam Thong	594	442	727	594	262	257	326	523
8	Chomtong	377	207	440	366	187	337	320	437
9	Nong Khet	131	75	153	131	79	250	55	251
10	Hai-Thangone	91	120	403	91	97	143	102	132
11	Dong Nasok[a]	150	104	156	146	46	114	0	115
12a	Hadtha	23	17	{186	73	19	23	4	23
12b	Viengkham Neua	39	39	{		38	41	23	38
13	Vang Mone	23	15	107	19	21	25	3	24
14	Nakhong	250	50	306	250	126	334	22	364
15	Viengkham Tai	96	50	161	120	74	115	59	115
16	Houay Si 2	239	94	233	233	138	274	83	295
17	Piang 2	217	58	286	217	95	313	10	318
18	Houay Nga	56	50	620	120	n.a.	350	93	145
19	Somsanuk	105	13	310	190	n.a.	83	46	83
20	Hong Thong	110	124	235	190	n.a.	251	60	251
21	Houaysai[b]	410	170	450	400	n.a.	0	0	450
22	Phaleng	110	91	158	110	n.a.	120	132	141
23	Kangpa-Phon Than	160	300	436	180	n.a.	302	266	308
24	Thapho	80	38	137	85	n.a.	107	38	92
25	Lahanum 2	60	91	166	60	n.a.	120	94	120
26	Thin Phia	170	82	311	175	n.a.	70	108	212
27	Thin Thiangtai	200	120	580	310	n.a.	583	129	630
28	Veun Kham	95	30	320	175	n.a.	114	26	201
29	Phonkham	61	43	320	240	n.a.	74	57	87
30	Napho Tai	150	15	195	120	n.a.	150	27	92
31	Lingsan	150	35	295	85	n.a.	187	27	315
32	Pakcheng	98	23	292	240	n.a.	100	35	162
33	Houay Sy 3	170	60	250	180	n.a.	176	20	176
34	Phiang 1	400	118	535	400	n.a.	419	57	415
	Total	**5,825**	**3,387**	**10,531**	**6,524**	**2,194[c]**	**6,440**	**2,997**	**7,744**

[a] No production in dry season 2004 due to construction of drainage scheme.
[b] Ongoing construction.
[c] Group 1 schemes only.
Source: DIDMSP.

Table A12.3: Crop Production, DIDMSP, Dry Season 2004/2005

Crop	Planted Area (ha)	% of Service Area (%)	% of DS Diversified Crop (%)	Yield (tons/ha)	Production (tons)
Paddy	2,478.4	34%		3.9	9,715
Peanut	120.4	2%	23%	1.4	174
Mungbean	56.2	1%	11%	0.3	19
Soybeans	19.3	0%	4%	0.6	11
Feed Corn	12.6	0%	2%	2.8	35
Sweet Corn	27.1	0%	5%	2.9	78
Tobacco	39.9	1%	8%	1.1	42
Watermelon	16.6	0%	3%	17.5	292
Vegetables	226.8	3%	44%	14.0	3,176
Total Diversified Crops	518.9	7%			
Total Area	2,997.3	41%			
Service Area for Operable Schemes	7,229.0				

DS = dry season, ha = hectare.

Source: BME Team field survey.

12. The major factor underpinning adequate economic (and financial) performance in the feasibility studies of the subprojects was the expectation that the area of dry season diversified crops and overall cropping intensity would increase significantly. In practice, the area of diversified crops on most schemes (apart from Kantachane) has been low, with farmers continuing to prefer to plant local glutinous rice varieties for home consumption and limited sale. Markets remain limited for most crops, a factor being addressed under the ADB-funded Smallholder Development Project.[6]

13. **Irrigation Service Fees and Electricity Cost.** Irrigation service fees (ISFs) are collected to pay for O&M including the fees paid to WUG management and staff. Electricity costs may be included in the ISF or charged separately. Collection of ISF and the related Community Irrigation Development Fund (CIDF)—which is in effect a renamed Village Development Fund (VDF)—is critical to the operation and survival of the irrigation schemes. MAF agreed to the redefinition of the VDF as CIDF, and to the cancellation for DIDMSP schemes of the 15% of collection that should be paid to the District Finance Office.[7] However, approval of this change has been held up by the Ministry of Finance. The retention of 100% of ISF by the WUGs is desirable to increase members' motivation and ability to maintain their irrigation schemes.

14. Collection performance varies greatly among schemes, from about 25% to 100% of target. It is currently not possible to estimate payment rates precisely, since arrears on electricity costs are rolled over until they are paid. However, data prepared by the project indicated that electricity payments averaged 59% of cost for the 2003/04 dry season crop. ISF and CIDF reached 71% and 45% of the due amount, respectively. For the 2004 wet season crop, electricity payments were higher, but ISF and CIDF lower than for the preceding dry season crop. Several issues were reported in relation to electricity supply and costs. For example, cases were reported of pumps failing to meet their design outputs, thus increasing pumping costs. Some meters did not work, or overcharged. Some schemes did not receive sufficient power to run all their pumps, while others experienced unexpected blackouts or brownouts, which could damage motors. In Ban Thouay, a new factory took power required by the scheme, preventing

[6] ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to the Lao People's Democratic Republic for the Smallholder Development Project.* Manila.

[7] In theory, this payment is to be used for irrigation development in the district. In practice, little is known of its use.

full operation of the irrigation pumps. The level of accumulated debt for some schemes is so high that paying it off from revenue generated from cropping will be difficult or impossible. Outstanding electricity debts can be partly attributed to (i) the responsibility of the farmers, (ii) the electricity company, (iii) government irrigation services, and (iv) district and/or provincial policies. Electricité de Lao (EdL), the project, and the WUGs need to review in detail each case of high payment arrears and develop an appropriate solution.

15. **Maintenance and Deterioration of Facilities.** Under normal circumstances, the need for maintenance for schemes within 3 years of rehabilitation should be limited. However, many schemes have substantial maintenance deficits, particularly for the earthen canals of Batch 1, where construction and/or compaction were inadequate, and slumping and erosion of the bunds has occurred. This is beyond the capacity of the WUGs to fix, and assistance by the project or province will be needed. Other maintenance issues relate to the pumping stations, where particular problems are evident with pump/motor mismatching, flexible hose breakage, and some pontoons. Flexible hoses pose maintenance challenges on many schemes. They are difficult to repair and expensive to replace. Other problems are a lack of capacity to remove pumps and motors, or to service pontoons. Solutions to maintenance problems need to be researched and found by the project or the Department of Irrigation (DOI). A summary of operational issues of Batch 1 schemes is presented in Table A12.4.

Table A12.4: Summary of Batch 1 Construction and Operational Issues

The following issues have been reported on DIDMSP Batch 1 schemes over the first 7 months of 2005. Comments are drawn from the review of DIDMSP subprojects conducted in June 2005 by the consultants; from the technical audit by AFD, which drew on the review; and from operations evaluation mission inspections of seven schemes in April and July 2005. Not all schemes were visited; thus lack of identified problems does not necessarily mean that the scheme is problem free. All schemes visited had one or more serious problems/deficiencies.

Province/Scheme	District	Comments
Year 1 Subprojects		
Borikhamxay		
Paksan Tai	Paksan	Pumps and pontoons in critical condition.
Pak Phueng 1	Paksan	Canal banks constructed of poor soil, inadequately compacted, and eroding Repairs to headworks required. Pumping station reported to be in critical condition—pumps, pontoons, pipes, flexible pipe.
Ban Thouay 1&2	Thaphabat	WUG considers number of tertiary outlets insufficient; siphoning required by many farmers. Problem partly related to farmers not releasing land. Water delivery not timely, WUG cannot enforce water management policy. Inadequate survey; poor canal alignments, offtake elevations. One (of four) pumps underperforming by 50%; flexible hose broken. One head diversion structure needs rebuilding.
Savannakhet		
Lak Km # 4	Champon	Severe damage to concrete-lined canal due to poor construction/compaction.
Hat Say Soung	Saybouli	Serious erosion in main canal, poor compaction, and (possibly) choice of soil. Concrete lining required. Lack of roadway on bund. Poor water distribution; fails to reach tail of canals. Flexible hose broken; replacement not available in Savannakhet. Annual flooding, which will be worsened by future construction of Nam Theun Two hydropower dam, which will discharge into the Se Bang Fai River. Poor access due to lack of surfaced road, exacerbated by annual flooding.

Continued on next page

Table A12.4: Summary of Batch 1 Construction and Operational Issues—*Continued*

Province/Scheme	District	Comments
Kanthachane	Sayphouthong	One (of three) pumps has electrical problem/unserviceable; needs replacing. Wiring old; will need replacement. Main canal concreted; much improved. Erosion of earth canals. Joints in canal lining blocks not adequate. Lack of tertiary canal construction by farmers limits irrigated area in dry season.
Lahanam Thong	Songkhon	Need for new pump. Canal brick/concrete lined—much improved. Poor jointing of concrete canal slabs. Little tertiary canal construction.
Vientiane Capital		
Chomtong	Hatsaifong	Dry season irrigation mainly from 150 tubewells, each irrigating about 0.7 ha. Utilization of river pump system for dry season cropping is declining (to a low level). Difficult for WUG to collect ISF. IMT not possible in this situation. Designed for paddy, with no tertiary canals (paddy to paddy irrigation). Pumps 20% underperforming; two out of six flexible hoses broken. Problems with canal joints pose future risk. Secondary canal embankments eroded due to poor quality soils.
Nong Khet	Pakgum	
Hai-Thangone	Saythani	Main canal second reach unlined and poorly compacted; inappropriate soil leading to erosion problems. Poor concrete quality. Electricity failures cause frequent pump stoppage, leading in turn to breaks in the flexible pipes. Transformer inadequate for three pumps, limiting operation to two.
Dong Nasok	Sikhottabong	
Vientiane Province		
Hadtha Viengkham Neua	Keoudom	Rice irrigation not economic in dry season. High transmission losses in unlined canals on permeable soils; only 10–20% reported to reach tail of irrigation area. No rehabilitation of pump station, which is in very poor condition. Mainline cracked. Cattle damage to canals.
Vang Mone	Phonhong	
Nakhong	Thoulakhom	Poor road drainage. Canal concrete liner too thin; breaking up in a few places. Too few check structures for easy watering. “Illegal” offtake (awaiting approval). Lack of grassing bund leading to erosion into canal and on outer bank. Too few tertiary canals for effective watering.
Viengkham Tai	Viengkham	Some areas not easily reached by canal, leading to overfilling of canals. Each farmer has own tertiary, thus potentially well suited to diversified cropping. One (of two) pumps broken down, with no means to remove. WUG considers pumps are underperforming.
Luangprabang		
Houay Si 2	Luangprabang	Weir constructed apparently with insufficient hydrologic data. Stability of weir laterals questionable, particularly on left bank. Gabions appear to be at risk from floods. Canal rehabilitation/new construction was appropriate except for lack of gates and drop structures; inadequate flood spillways; canal banks too low, requiring reinforcement by farmers.
Xayabury		
Piang 2	Phiang	

AFD = Agence Française de Développement, IMT = irrigation management transfer, ISF = irrigation service fee, WUG = water users group.

[a] 5 = very severe, 4 = severe, 3 = minor, 1 = nil (at least during 2004).

Source: AFD Technical Audit, OEM site inspections.

16. **WUA Development.** All WUGs have become stronger than they were at project inception. The socioeconomic consultant team has spent much effort in supporting the WUGs through training and advice. The Batch 1 schemes are due to attain full IMT, with the establishment of WUAs by the end of 2005. In practice, only a proportion will be ready for this step, while others who feel that their irrigation scheme quality is unsatisfactory may refuse to take on the implied increased responsibility from the IMT process. There remains some ambiguity as to whether scheme ownership will be transferred to the WUAs, with reported differences between the English version of the relevant decree (which infers ownership transfer) and the Lao version (which does not). It is desirable that ownership of the irrigation schemes be transferred to the WUAs as well as management if farmers are to take full responsibility for scheme O&M.

C. Evaluation

1. Relevance

17. At the time of design, the project was highly relevant to both government and ADB objectives. Government policy had established the basis for IMT through the prime ministerial decree of 1998. At this time, responsibility for O&M was effectively handed over to the farmers. While they had sufficient technical capacity for O&M, the WUGs lacked managerial and financial skills. A number of projects had been implemented as pilots to establish the basis for IMT: (i) the Sustainable Irrigated Agriculture Project funded by the Netherlands (1992–1998), and (ii) the Farmer Irrigated Agricultural Training Project (1994–2000). However, it was evident that there would be no spontaneous replication of the outcomes of these projects, and a new project was therefore considered necessary to extend IMT to a larger scale. In terms of the ADB's country strategy at the time of design, the project is considered relevant: (i) the 1996 Country Operational Strategy Study supported commercial crop development (including small-scale irrigation) within a wide-ranging program; and (ii) the 2002–2004 Country Strategy and Program (CSP) introduced a poverty focus into the program, which was to be achieved through sustainable economic growth, inclusive social development, and improved governance. Within the first of these, in the rural sector, ADB planned to support institutional development and policy reform; crop diversification, including livestock and commercialization; reduction of shifting and opium poppy cultivation; and rural finance development. Since the project supports crop diversification, it is relevant in terms of the 2002 CSP.

18. Experience to mid-2005 indicates that the relevance of the DIDMSP to the overall development of IMT has been less than anticipated. The project has not yet succeeded in developing a viable model for IMT that can be replicated using either government or development assistance resources. The high demands of the WUGs for extension support have been largely met by the project. However, the cascade model, with training of trainers at the provincial level to train officers in the districts, who in turn would work with the farmers, has not proved viable. Many valuable lessons have been identified, including issues related to both IMT and the establishment of diversified dry season cropping. Training of district extension officers to work directly with the farmers has proved more successful. The ADB-financed Smallholder Development Project (SDP) reported that it has developed successful farmer-to-farmer training models.

19. The National Growth and Poverty Eradication Strategy (NGPES) is an important statement of government priorities. In retrospect, the project has relatively little linkage to the NGPES, although the project design includes poverty (with more than 30% of poor households among its targeted beneficiaries) among its selection criteria. However, in relative terms, villages with access to irrigated land are usually among the more favored rural communities. None of the

DIDMSP subprojects is located within the 72 poor districts identified by the NGPES. Overall, the Operations Evaluation Mission (OEM) assesses the project as relevant, and this relevance may increase should the project succeed in (i) developing improved models for IMT, and (ii) demonstrating that sustainable IMT can work.

2. Effectiveness

20. Based on project performance up to July 2005, the OEM rates the DIDMSP as less effective. While the project more than met its physical construction targets for its first 3 years, the quality of rehabilitation in many cases was poor, resulting in significant O&M challenges. Crop diversification and cropping intensity have not reached their targets, and the production of additional crops has probably been less than 30% of that envisaged at design. While future gains are expected, irrigation efficiency will decline over time unless maintenance is adequate, making it harder to achieve cropping targets. Based on a recent assessment, project staff estimated (i) that 13 of the 18 Batch 1 subprojects would be sound enough for IMT to occur prior to the end of 2005 as scheduled; and (ii) several schemes would not be able to be transferred by December 2006, or farmers would reject IMT due to substandard rehabilitation. Farmers have always been responsible for scheme O&M apart from major repairs, and have come to view IMT as a mechanism for the Government to pass all responsibility to them. Farmers thus see few benefits and some risks from IMT, and may hesitate to accept the transfer.

3. Efficiency

21. **Efficiency of Process.** The project exceeded its planned rehabilitation area target for the first 2 construction years. However, the rate of rehabilitation exceeded the institutional capacity of either the provincial staff or the district staff to support the project, or of the WUGs to develop their capacity. A number of factors led to this situation:

(i) late appointment of the social development team, with consultants recruited around 7 months after the engineering team commenced; recruitment of the two consultant teams under separate consultancy packages also limited effective coordination;
(ii) poor coordination of the consulting team by the project and the initial team leader, resulting in lack of coherence and in domination of the project by engineering targets;[8] and
(iii) adoption of high physical construction targets in each of the first 2 years, with 94% of the planned project area developed; this front-end loading highlights the engineering focus of the project.

22. Design, construction quality, and construction supervision were often inadequate, resulting in problems with headworks and canals, and a decline in irrigation capacity on many schemes. Some of the government staff of the Irrigation Design and Service Company lacked experience in design and construction supervision. The project team's recommendations for design improvements were often not accepted by project management. The avoidance of cost overruns under all circumstances for the Batch 2 schemes has constrained the ability of the schemes to respond to the needs of irrigators. The generally poor construction quality may be due to a combination of reasons, summarized below.[9] A list of major defects in Batch 1 subproject construction quality is presented in Table A12.4.

[8] A joint review mission (by ADB and AFD) in March 2004 concluded that the team leader had not effectively implemented the IMT aspects of the project, and he was replaced by the consulting company in mid-May 2004.
[9] Other reasons may include payment of unauthorized commissions by contractors, leading to acceptance of substandard works. However, no evidence that this occurred has been found.

(i) use of low quality materials,
(ii) limited involvement of the project consultants in design,
(iii) incompetent construction supervision (variable impact),
(iv) contractors were mobilized for an average of 3 months without signed contracts and thus without payment (under both batches of subprojects),
(v) low contractor capability,
(vi) inadequate topographic survey,
(vii) poor design (for example, underspecification of necessary investment/repair),
(viii) limited capacity of and involvement by WUGs in checking construction quality,
(ix) underbidding by contractors (but unlikely to have occurred),
(x) profit skimming by contractors,
(xi) inadequacy of maintenance funds, and
(xii) lack of maintenance organization or skills.

23. **Economic Performance.** The economic performance of the schemes will be less than expected at appraisal. The ex-ante assessment of the performance of two schemes included in the RRP as case studies (Chom Thong in Vientiane Municipality, and Na Kong in Vientiane Province) was highly optimistic. For example, in Na Kong, dry season cropping intensity with the project was estimated at 126%, while in practice in 2004/05 (its second season after completion) it was 7%. In Chom Thong, the dry season cropping intensities projected in the RRP and actual intensities in 2004/05 are 136% and 80%, respectively; however, the diversified crops (almost half of dry season cropping) with the project are irrigated from shallow wells, and do not use project infrastructure except for groundwater replenishment. RRP estimates of the economic internal rate of return (EIRR) were 22.6% for Na Kong and 24% for Chom Tong. However, in the feasibility studies undertaken as part of the selection process for subprojects, EIRRs were less ambitious, averaging about 14.6% compared with the threshold of 12% specified in the RRP for subproject selection.

24. The OEM reevaluated the economic performance of all Batch 1 and 2 schemes combined, based on data available in July 2005. Since the rehabilitation of Batch 3 schemes is not certain to proceed, Batch 3 is excluded from the evaluation. Costs for the first 6 months of 2005 were doubled to provide an estimate of full-year costs. Costs for 2006, the last year of the project, were assumed to be the same as for 2005, and considered sufficient to complete needed works in the 35 schemes. Local and foreign cost composition was calculated based on appraisal estimates. Local costs were converted to economic costs using a standard conversion factor of 0.9 as used in the project preparatory technical assistance and RRP analyses. Total project cost based on these assumptions in nominal (current) values was estimated at KN165 billion ($15.7 million), and at KN173.5 billion ($16.1 million) in 2005 economic terms. Foreign costs were converted using the G-5 manufacturing value index, and local costs using the Lao PDR gross domestic product deflator. Midyear exchange rates were used.

25. Irrigable and irrigated areas are based on data as reported in Tables A12.1 and A12.2. “Without project” cropping intensity is assumed to decline from its current level of 115% to an estimated 105% as scheme capacity deteriorates further. “With project” cropping intensity is estimated to increase from its present level of 127% to a peak of 150%. Further rehabilitation is projected to commence in year 16, and is estimated to cost 50% of initial capital investment. At appraisal, full rehabilitation was assumed to be required. Project life is taken as 30 years, with no residual value.

26. Dry season cropping is based on peanuts and vegetables. The latter is budgeted as sweet corn, which had the largest area of vegetable crops in the 2004/05 dry season. Areas are

based on the estimated irrigable areas in the wet and dry seasons. Crop yields are projected to increase, from 3 t/ha to 3.4 t/ha for wet season and from 3.5 t/ha to 4.3 t/ha for dry season paddy, due to improved irrigation and the project's extension program. Similar increases are assumed for dry season nonrice crops. Input costs were estimated based on border prices, with labor at the approximate average market value of KN20,000 per day. In the RRP, labor was shadow priced at 77% of its market value. However, there are now alternatives to farming, including seasonal or permanent work in urban areas or in Thailand. Thus, there is no need to shadow price labor. However, the RRP shadow price was tested through sensitivity analysis. Based on the economic prices and costs assumed by the OEM, net economic value of production has fallen from around KN23 billion in 2002, to an estimated level of KN5 billion in 2005 and a steady state level of KN3 billion. The decline is due to a fall in the economic value of paddy, and predicted decline in irrigable area due to scheme deterioration in the absence of the project.

27. With the project, the OEM estimated that paddy production would increase from 27,000 t in 2002 to 39,000 t in 2008. Nonrice dry season production is budgeted to increase to KN5.2 billion per year over the same period, double the without-project level. The net incremental value of production would reach around KN12 billion ($1.1 million) annually. Over the 30-year project life, this generates an EIRR of 2.3%, indicating a low level of economic efficiency. The key reason for the low EIRR is the low profitability of paddy production, and the far lower than predicted level of dry season nonrice cropping. Nonrice crop returns per hectare, and per labor day, are around double paddy levels. Maximizing nonrice cropping could therefore boost farm profitability and overall scheme economic performance. For example, if nonrice cropping area doubled from the budgeted levels to a steady state area of 2,800 ha, the EIRR would increase to 6%. Shadow pricing labor to zero would have the same effect, while a shadow price of 77% of market wage rate would generate an EIRR of 3%.

28. Farm financial performance for a typical 1 ha farm would improve significantly, with a net farm income of KN3.5 million with the project or an increase of 80% from the estimated level without the project. Cropping intensity is estimated at 128% with the project and 105% without the project. Family labor inputs would increase from 96 to 119 days per year, and income per labor day would rise from KN17,500 to KN29,000 per day. A summary of the parameters used for the EIRR calculation is presented in Tables A12.5 to A12.7. The OEM rates the project as less efficient, taking into account efficiency of process and economic performance.

Table A12.5: DIDMSP Investment Costs, Crop Areas, and Incremental Benefits

Item		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Economic Cost (2005 KN)													
Foreign Cost (2005 K)	KN bil	7.8	17.1	63.6	22.4	22.7							133.7
Local Cost (2005 K)	KN bil	3.7	4.6	16.4	7.5	7.5							39.8
Total Investment Cost	KN bil	11.5	21.7	80.1	29.9	30.2							173.5
Dollar Equivalent	$ mil	1.1	2.0	7.4	2.8	2.8							16.1
		2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013>**
Land Use – Without Project													
Wet Season Irrigable	ha	5,617	5,617	5,617	5,617	5,617	5,617	5,617	5,617	5,617	5,617	5,617	5,617
Dry Season Irrigable	ha	3,387	3,387	3,387	3,387	3,387	3,387	3,387	3,387	3,387	3,387	3,387	3,387
Wet Season Rainfed	ha	1,619	1,619	1,619	1,619	1,619	1,619	1,619	1,619	1,619	1,619	1,619	1,619
Total Service Area	ha	8,074	8,074	8,074	8,074	8,074	8,074	8,074	8,074	8,074	8,074	8,074	8,074
Cropped Area	ha	9,370	9,296	9,296	8,915	8,820	8,730	8,644	8,563	8,485	8,485	8,485	8,485
Cropping Intensity	ha	116%	115%	115%	110%	109%	108%	107%	106%	105%	105%	105%	105%
With Project													
Wet Season Irrigable	ha	5,617	5,617	6,486	7,236	7,236	7,236	7,236	7,236	7,236	7,236	7,236	7,236
Dry Season Irrigable	ha	3,387	3,387	5,372	7,709	7,709	7,709	7,709	7,709	7,709	7,709	7,709	7,709
Wet Season Rainfed	ha	1,619	1,619	750									
Total Service Area	ha	8,074	8,074	8,074	8,074	8,074	8,074	8,074	8,074	8,074	8,074	8,074	8,074
Cropped Area	ha	9,370	9,370	9,546	10,234	10,524	10,909	11,343	11,505	11,700	11,933	11,933	11,933
Cropping Intensity	%	116%	116%	118%	127%	130%	135%	140%	142%	145%	148%	148%	148%
Cropped Area – Without Project													
Wet Season Irrigated Paddy	ha	5,617	5,617	5,617	5,336	5,336	5,336	5,336	5,336	5,336	5,336	5,336	5,336
Dry Season Irrigated Paddy	ha	2,074	2,000	2,000	1,900	1,805	1,715	1,629	1,548	1,470	1,470	1,470	1,470
Wet Season Rainfed Paddy	ha	1,679	1,679	1,679	1,679	1,679	1,679	1,679	1,679	1,679	1,679	1,679	1,679
Total	ha	9,370	9,296	9,296	8,915	8,820	8,730	8,644	8,563	8,485	8,485	8,485	8,485
With Project													
Wet Season Irrigated Paddy	ha	5,617	5,617	6,486	7,236	7,236	7,236	7,236	7,236	7,236	7,236	7,236	7,236
Dry Season Irrigated Paddy	ha	2,074	2,074	2,250	2,478	2,726	2,998	3,298	3,298	3,298	3,298	3,298	3,298
Other	ha	1,679	1,679	810	520	562	674	809	971	1,165	1,398	1,398	1,398
Total	ha	9,370	9,370	9,546	10,234	10,524	10,909	11,343	11,505	11,700	11,933	11,933	11,933
Without Project – Crop Yields													
Wet Season Irrigated Paddy	t/ha	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Dry Season Irrigated Paddy	t/ha	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Peanut	t/ha	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Vegetables	t/ha	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Production (tons [t])													
Wet Season Irrigated Paddy	'000 t	16.9	16.9	16.9	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Dry Season Irrigated Paddy	'000 t	7.3	7.0	7.0	6.7	6.3	6.0	5.7	5.4	5.1	5.1	5.1	5.1
Wet Season Rainfed Paddy	'000 t	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Total Paddy Production	'000 t	27.3	27.1	27.1	25.9	25.6	25.2	24.9	24.7	24.4	24.4	24.4	24.4
Maize	'000 t	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vegetables	'000 t	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Value	KN bil	49.0	42.8	40.7	29.9	32.8	29.1	29.5	29.7	28.2	26.6	26.6	26.3
Production costs	KN bil	27.8	27.4	27.5	26.0	25.8	25.6	25.5	25.2	24.9	24.8	24.8	24.8
Net Value of Production	KN bil	21.1	15.4	13.2	3.9	7.0	3.6	4.0	4.5	3.3	1.8	1.8	1.5
With Project – Crop Yields													
Wet Season Irrigated Paddy	t/ha	3.0	3.0	3.0	3.2	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Dry Season Irrigated Paddy	t/ha	3.5	3.5	3.7	3.9	4.1	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Peanut	t/ha	1.3	1.3	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.9	1.9	1.9
Vegetables	t/ha	2.5	2.5	2.5	2.6	2.8	3.0	3.2	3.4	3.4	3.4	3.4	3.4
Production (t)													
Wet Season Paddy	'000 t	16.9	16.9	19.5	23.2	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Dry Season Paddy	'000 t	7.3	7.3	8.3	9.7	11.2	12.9	14.2	14.2	14.2	14.2	14.2	14.2
Rain-fed Paddy	'000 t	3.2	3.2	1.5									
Total Paddy Production	'000 t	27.3	27.3	29.3	32.8	35.8	37.5	38.8	38.8	38.8	38.8	38.8	38.8
Peanut	'000 t	0.0	0.0	0.0	0.3	0.4	0.5	0.6	0.8	1.0	1.2	1.2	1.2
Vegetables	'000 t	0.1	0.1	0.1	0.8	0.9	1.1	1.4	1.8	2.2	2.6	2.6	2.6
Total Value	KN bil	49.0	43.2	43.9	40.0	48.4	46.6	50.1	52.3	51.7	50.7	50.7	50.2
Total Costs	KN bil	27.9	27.6	30.0	32.6	33.7	33.9	35.5	35.9	36.3	36.7	36.7	36.7
Net Value of Production	KN bil	21.1	15.6	13.9	7.4	14.7	12.6	14.6	16.4	15.5	14.0	14.0	13.6
Net Incremental Value	KN bil	0.0	0.1	0.3	2.9	7.5	9.0	10.3	11.8	12.1	12.2	12.2	12.1

bil = billion, ha = hectare, mil = million, t = ton.

Table A12.6: DIDMSP—Financial Budgets for a Typical Farm Without and With the Project

		Without						With					
Item		Wet Season Paddy	Dry Season Paddy	Pea-nut	Vege-tables	Rain-fed Paddy	Farm Total	Wet Season Paddy	Dry Season Paddy	Pea-nut	Vege-tables	Rain-fed Paddy	Farm Total
Total Farm Area	ha						1.00						1.00
Cropped Area	ha	0.7	0.2	0.0	0.0	0.2	1.1	0.9	0.3	0.0	0.1		1.3
Cropping Intensity	%						105%						127%
Farm Output	KN'000	2,369	761	11	23	479	3,164	3,640	1,420	292	342		5,694
Farm Inputs[a]													
Seed	KN'000	99	33	0			132	187	58	6			251
Fertilizer	KN'000	105	29	0	1		135	143	44	9	15		211
Agro-chemicals	KN'000	10	3	0	0		12	13	4	1	2		20
Land Preparation	KN'000	500	138	1	2	100	641	678	209	22	28		936
Total Inputs	KN'000	1,138	327	2	3	100	1,470	1,596	514	43	50		2,204
Net Farm Income	KN'000	1,231	435	9	19	379	1,694	2,044	906	249	292		3,490
Interest	KN'000						18						28
Farm Income	KN'000						1,676						3,463
Family Labor	pd/farm	63	17	0	0	15	96	85	25	4	5		119
Return/Day	KN'000						17						29

pd = person-day.
[a] Excluding family labor.

Table A12.7: DIDMSP Economic Internal Rate of Return (EIRR)
(Constant 2005 KN billion)

Year	Year	Cost[a]	Cost	Benefit	Cash Flow
2002	1	11.5	11.5		(11.5)
2003	2	21.7	21.7	0.1	(21.6)
2004	3	80.1	80.1	0.3	(79.7)
2005	4	29.9	29.9	2.9	(27.0)
2006	5	30.2	30.2	7.5	(22.8)
2007	6			9.0	9.0
2008	7			10.3	10.3
2009	8			11.8	11.8
2010	9			12.1	12.1
2011	10			12.2	12.2
2012	11			12.2	12.2
2013	12			12.1	12.1
2014	13			12.1	12.1
2015	14			12.1	12.1
2016	15			12.1	12.1
2017	16	5.8	5.8	12.1	6.3
2018	17	10.9	10.9	12.1	1.2
2019	18	40.0	40.0	12.1	(28.0)
2020	19	14.9	14.9	12.1	(2.9)
2021	20			12.1	12.1
2031	30			12.1	12.1
					2.3%

[a] 50% of investment cost assumed required for rehabilitation commencing in year 16.

4. Sustainability

29. Sustainability as far as can be assessed to date (July 2005) is variable; but overall, it is assessed by the OEM as **less likely**. The WUGs have found difficulties in collecting ISF. Maintenance of the irrigation schemes is generally weak, with many WUGs unable to repair canals or pumps. Many have high debts to EdL, and, moreover, find difficulty in meeting the electricity costs for each crop. In some cases, electricity metering is deficient; in others (perhaps five schemes in total), the soils are not suitable for dry season paddy production, resulting in excessive electricity charges. Project staff consider that five of the Batch 1 WUGs are weak and unready for full IMT. Over the next few years, some subprojects will probably revert to close to their preproject condition, while others should develop into fully self-sustaining enterprises. The reorganization of the National Agriculture and Forestry Extension Service (NAFES) with a major focus on district level extension services has the potential to improve services to farmers. However, extension services will require adequate budgetary and management support if they are to be effective.

5. Overall Rating

30. Based on performance to date, the OEM rates the project to be doubtful to succeed (potentially partly successful). However, if during the next 5 years, cropping intensity, crop diversification, and WUA capacity can be increased significantly, this performance rating could improve.

D. Key Issues

31. **Diversified Cropping.** The economic viability of DIDMSP schemes was based largely on a major assumption that farms would diversify their crops during the dry season. This has not occurred for a variety of reasons:

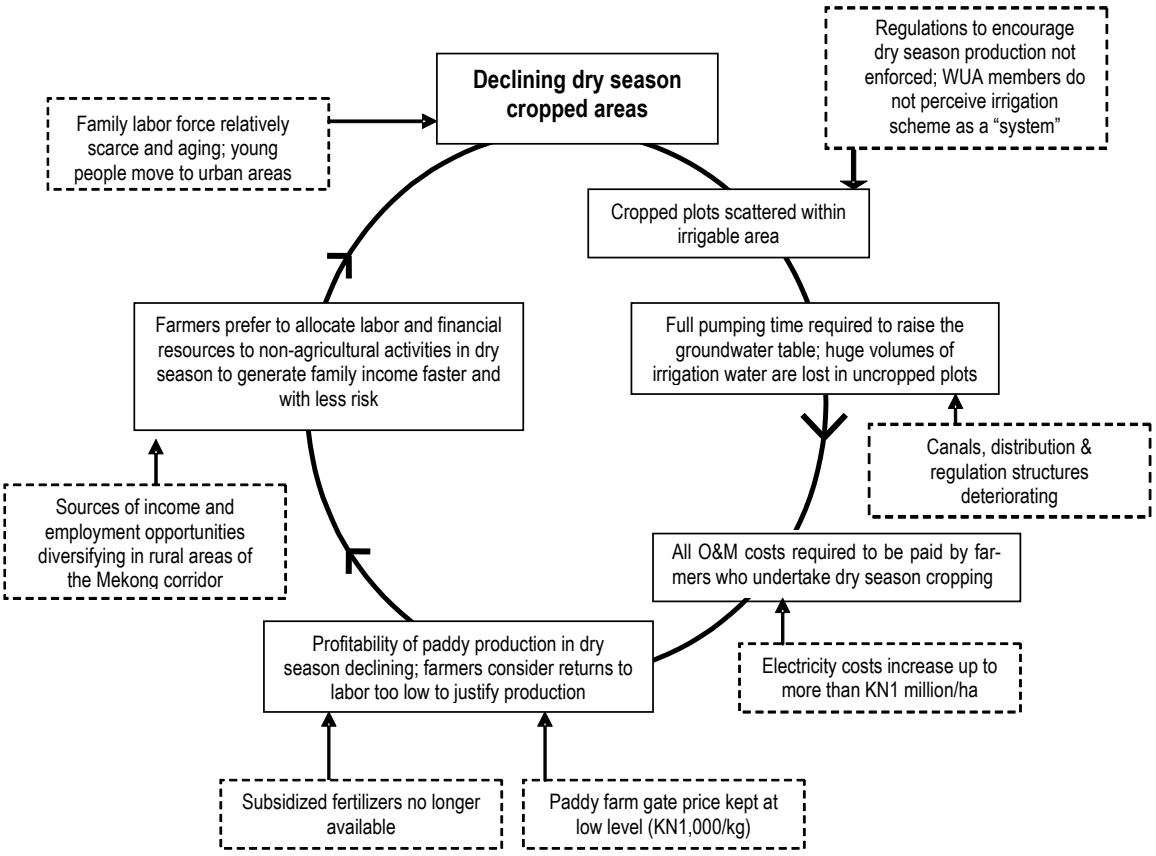
(i) a strong traditional preference for paddy production;
(ii) knowledge by all farmers of paddy production technology;
(iii) improvement in paddy yields due to introduction of improved varieties;
(iv) lack of knowledge of diversified crops and production technology;
(v) lack of sound demonstration and extension programs;
(vi) lack of easy availability of inputs, particularly seeds;
(vii) more difficult weed control;
(viii) inadequate knowledge of defined and secure markets for diversified crops; however, significant markets are available for dry season maize, soybean, peanut, mungbean, and sesame;
(ix) low elevation areas and heavier soils prone to flooding;
(x) layout of schemes (paddy-to-paddy watering), water distribution systems (continuous flow), and in-paddy levels not suitable for diversified cropping; and
(xi) difficulty of interspersing paddy and diversified crops due to varying irrigation needs.

32. These factors were evident at the time of design but were not adequately considered. Assumptions of high returns from diversified cropping were required in order to justify rehabilitation from an economic perspective. It would have been difficult to justify rehabilitation of the irrigation schemes at the level undertaken if cropping had focused on paddy production.

33. Meanwhile, there is potential to increase diversified cropping from its present low base, as discussed below. However, several factors constrain dry season cropping (Figure A12), many

of which were observed by the OEM in Na Kong. There, dry season cropping had declined to a low level due to the high cost of dry season pumping; the allocation of all O&M costs to the few remaining dry season farmers; and the transfer by some farmers to the gravity-based Nam Mang scheme (about 10 kilometers distant) for dry season cropping, where ISF is only KN60,000/ha. In combination, the factors indicated in Figure A12 may severely limit dry season cropping except in schemes where almost universal dry season cropping is undertaken. If project objectives are to be met it will be necessary to break this cycle of constraints, perhaps by imposing basic O&M costs on all landowners within the scheme, regardless of their dry season cropping activities.

Figure A12: Factors Constraining Dry Season Cropping



Source: Modified from BME report.

34. Despite the major constraints highlighted by the cycle, the project has made substantial efforts to improve the situation. Numerous demonstrations have been conducted, some successful. However, others have failed or achieved only limited results, a factor curbing farmers' willingness to adopt new technology or crop varieties. WUGs interviewed by the OEM stated that their members planned to increase diversified cropping for the 2005/06 dry season. The project should consider further support to developing linkages between producers and buyers for the crops and highlight the potential for some integration between the SDP and the DIDMSP. Other steps are discussed under the other key issues below.

35. **Construction Quality and Maintenance of Irrigation Systems**. Review of a number of the DIDMSP irrigation schemes in 2005 (AFD 2005, DIDMSP Evaluation) and the OEM visits to

seven schemes[10] identified that rehabilitation of many if not most schemes has not been satisfactory. Despite improvements from the situation prior to rehabilitation, many schemes are not suited to diversified cropping; canal bund compaction and/or lining was substandard; and pump stations (including electricity metering) have not been adequately rehabilitated. A list of problems in the construction and operation of DIDMSP schemes is included in Table A12.4. It should be noted that not all issues apply to all schemes, and considerable variation is found.

36. In this situation of incomplete rehabilitation, IMT will be difficult on many schemes and impossible on some. A review of all schemes should be conducted by a project team including both engineering and social expertise to assess the quality of the original rehabilitation and future requirements to bring the schemes up to a reasonable operating standard. This should include assessment of pump performance and electricity metering problems. The project should reassess the potential for diversified cropping on each scheme (through the ongoing zoning program) and identify any investment required to meet this potential. This would include investment by WUGs or farmers, for example in relation to tertiary canals, in-field leveling, and drainage. Where agreement can be reached with the WUGs on an overall program, further investment by the project should be considered.

37. **Irrigation Service Fees.** Issues relating to ISFs link to the above two issues. The ISF is intended to pay for scheme O&M costs, including repairs, electricity, and payments to managers and operators of WUAs. For schemes that crop all or almost all of their land in the dry season, this approach is reasonable. However, where dry season cropping is limited, ISFs can rapidly become too high to be affordable, leading to reduced cropping in the subsequent year, which in turn will increase the ISF for the few remaining farmers who seek to undertake dry season cropping. Thus there is a disincentive to crop during dry season. This is a key factor in the cycle portrayed in Figure A12. In the future, it is essential for the viability and survival of the schemes that the ISF system be reviewed and, where necessary, revised. Thus, where irrigation is designed to service an area, maintenance and WUA costs should be charged pro rata on the entire area. Only electricity costs should be charged directly to irrigators. Consequently, ways need to be found to keep the electricity costs affordable. Options include (i) a requirement by the WUA to concentrate cropping in areas close to the head of secondary canals[11] or to the headworks, or (ii) providing some cross-subsidies from overhead ISF contributions. Without addressing these issues, dry season cropping may decline to a low level on several schemes. Issues related to electricity metering and the size of accumulated debts should be reviewed by the project and EdL to find solutions on a case-by-case basis. However, in the future, it is important that WUGs be required to pay their electricity fees, and to escape from the dependency mentality that has resulted from prior government policies. As a major DIDMSP stakeholder, EdL should be invited to join provincial and national steering committees.

38. **IMT in the Future.** The DIDMSP was in part intended as a pilot, to identify a viable mechanism to achieve IMT and to increase the efficiency of other lowland pump irrigation schemes. While it has increased knowledge relating to scheme upgrading, it has not developed an extendable system. A major change in approach will be required by both the Government and aid agencies for the irrigation sector to move forward. The project may review the following suggestions, which are based largely on discussions with DIDMSP staff. In principle, and with the availability of remaining project funds, it may be feasible to design a new mechanism to

[10] The OEM visited seven subprojects: Chom Thong and Nong Khet in Vientiane Province; Ban Thouay 1 & 2 in Borikhamxay Province; Lahanam Thong, Lak Km No. 4, and Hat Say Soung in Savannakhet Province.

[11] This system is undertaken on some small dam schemes in Sri Lanka. It also provides an option for the landless to rent irrigation land that would be otherwise unused during the dry season. Issues relate to management, maintenance of irrigation facilities, residual fertility, fertilizer application, weed management, and (possible) rental, and need to be negotiated between the owner and the user, perhaps with assistance from the WUA.

expand IMT under the project, possibly with an extension of 1–2 years of the project implementation period. This feasibility should be assessed jointly by ADB and AFD. Key aspects of a future program may include

(i) moving towards a participatory, demand-driven approach to rehabilitation; farmers could develop proposals, and demonstrate organizational capacity and motivation to be eligible for government funding; agreement to develop adequate irrigation and drainage management systems would also be a prerequisite;
(ii) defining lower cost options for rehabilitation, with a higher level of farmer participation in survey, design, and construction; this could include the award of contracts to communities/WUGs for construction, supported by training in construction quality management and supervision; it would be desirable for nongovernment organizations (NGOs) to be involved in this process;[12]
(iii) detailed assessment of both the potential and the demand for diversified cropping;
(iv) rehabilitation needs assessment and design undertaken by DOI, DIDMSP, or another project;
(v) establishment of a national IMT fund that would be accessed by eligible subprojects; farmers would pay for part of scheme rehabilitation costs;
(vi) WUG/WUA support and training, possibly through an NGO; and
(vii) application of a two-phased approach, with rehabilitation (phase 2) dependent on meeting a number of criteria in relation to capacity and organization (phase 1).

E. Lessons

39. The OEM has identified a number of lessons from the experience of the DIDMSP:

(i) WUGs can be strengthened and are capable of running small and medium-scale irrigation schemes in the Lao PDR. However, in many cases, ongoing support beyond the 4-year period envisaged by the project will be required.
(ii) It is important to allow sufficient time for softer aspects of irrigation projects (selection, participation, WUG strengthening) before commencing design and construction.
(iii) Simple rehabilitation of existing irrigation structures is unlikely to result in a significant and rapid change in farming system. If farmers in a scheme seek to change to diversified cropping, much more attention should be paid to assessment of soil type, irrigation system design, on-farm water management, and drainage.
(iv) Irrigation system design and development should be participatory. The application of a mainly engineering solution may not allow desired outcomes to be achieved. It is not enough to rehabilitate the main system, even if it is done well, and to ignore water distribution and drainage at the tertiary on-farm level. All schemes proposed for rehabilitation should have zoning plans prepared, and the constraints to diversified cropping should be assessed on a participatory basis.
(v) Overall, project experience highlights the risks of a supply-side approach to development, with assumptions (in this case highly ambitious) about the response of small farmers to system improvement. More attention needs to be paid to

[12] Project consultants consider that cost savings will be difficult to achieve, and that communities lack sufficient capacity. Local NGOs have not yet been fully established in the Lao PDR. However, they are expected to strengthen over time. In the meantime, mass organizations can undertake some of the roles of NGOs in supporting projects.

demand-side constraints to changing cropping patterns, including factors related to markets and marketing.

F. Considerations for Action

40. The project management and MAF should consider the following for improving the performance of the DIDMSP.

(i) Conduct technical reassessment of individual irrigation schemes, including need for rectification of substandard rehabilitation works. Zoning plans for each scheme should be completed. Where physical rehabilitation is deficient, irrigation scheme improvement should be prioritized and conducted using project funds. It will be useful to undertake zoning analysis routinely as part of feasibility assessments for any further schemes proposed for rehabilitation.

(ii) Negotiate with EdL in relation to payment of arrears of electricity charges by WUGs. EdL should be requested to check all meters, replace faulty meters, and identify/eliminate leakage.

(iii) Consider cancellation of Batch 3 schemes and apply the cost savings to upgrading Batch 1 and 2 schemes. In practice, there should be sufficient funds available for completing rehabilitation of the Batch 1 and 2 schemes, assuming an incremental cost of about $100/ha for a total of about $1 million (plus labor contributions by farmers). Remaining project funds may be sufficient to complete the rehabilitation of about 3,000 ha at expected rehabilitation costs. However, the period to project completion is now too short to establish the necessary WUA capacity, and a new approach may be preferable.

(iv) Resolve issues concerning the CIDF/VDF. Since it is difficult for WUGs to collect sufficient funds to meet their various commitments, all irrigation-related funds should be retained by the WUGs, as approved my MAF. A letter from the Ministry of Finance to exclude DIDMSP subprojects from payments to the district agriculture and forestry extension offices (DAFEOs)[13] is required.

(v) Review and redefine the IMT process. In addition to further analysis by project staff and DOI of the establishment of WUAs based on the project-supported WUGs, the role and status of WUAs need to be more clearly defined, particularly in relation to the ownership of irrigation assets.

(vi) Continue and improve the extension program to promote higher value dry season cropping through the DIDMSP's own extension initiatives and through the SDP where appropriate. Higher yielding and specialty rice varieties are also available to increase wet season profitability, which in turn should reduce the need for farmers to grow (uneconomic) glutinous rice crops in the dry season.

(vii) Assess means to support WUGs/WUAs after completion of the project. This will need to focus on the DAFEOs. The question of who will audit the WUA accounts may need to be resolved. The motivation, capacity, and unity of WUAs will be greatly increased if, as part of the IMT process, they can be provided with basic

[13] DAFEO, formerly known as the district agriculture and forestry office, obtained its new name in June 2005 following the reorganization of the national extension services under the NAFES.

office facilities. WUGs with which this was discussed were enthusiastic. The cost was estimated at around $2,500 per scheme, of which about $1,000 could comprise in-kind labor and materials by WUG members.

(viii) Conduct a joint ADB/AFD review as soon as possible to focus on the above and other issues. In particular, the review should assess whether there is potential to develop a new modality for scheme rehabilitation, based on the demand-driven model discussed in para. 38.

Loan 1933-LAO: Nam Ngum River Basin Development Sector Project

BASIC DATA

TA No.	TA Name	Type	Person-Months	Amount ($)	Approval Date
3544-LAO	Preparation of Nam Ngum River Basin Development Project	PPTA	76	$1.015 million	14 Nov 2000

Executing Agency: Water Resources Coordination Committee (for the TA)
Ministry of Agriculture and Forestry (through Department of Planning) (for the Loan)

Key Project Data ($ million)	**As per ADB Loan Documents**	**Actual**
Total Project Cost	$23.0 million	TBD
ADB Loan Amount	$15.0 million	TBD
AFD Grant	$3.8 million	TBD

Key Dates	**Expected**	**Actual**
Fact-Finding		22 May–4June 2002
Appraisal		25 Jul–8 Aug 2002
Loan Negotiations		10–11 Oct 2002
Board Approval		11 Nov 2002
Loan Signing		07 Feb 2003
Loan Effectiveness	07 May 2003	11 Feb 2004
No. of extensions in loan effectiveness – 1	31 Jan 2004	
First Disbursement		08 Mar 2004
Project Completion	30 Sep 2008	TBD
Loan Closing	31 Mar 2009	TBD
No. of extensions in loan closing		
Months (effectiveness to completion)	65	TBD

AFD = Agence Française de Développement, MAF = Ministry of Agriculture and Forestry, PPTA = project preparatory technical assistance, TA = technical assistance, TBD = to be determined.

A. Objectives and Scope

1. The Asian Development Bank (ADB) has been involved in the natural resources sector of the Lao People Democratic Republic (Lao PDR) since 1970. After a long period of support to the irrigation sector, two technical assistance (TA) grants in the late 1990s supported the newly created Water Resources Coordinating Committee (WRCC).[1] According to para. 13 of the Report and Recommendation of the President (RRP) for the Nam Ngum River Basin Development Sector Project (NNRBDSP):[2]

> *The most important institutional problem in the water sector in the Lao PDR is the lack of coordination between key sector agencies. Twelve water agencies (members of WRCC) and a*

[1] (i) ADB. 1998. *Technical Assistance to the Lao People's Democratic Republic for Institutional Strengthening of the Water Resources Coordination Committee (TA 3006-LAO)*. Manila.
(ii) ADB. 1999. *Technical Assistance to the Lao People's Democratic Republic for Implementation of the Water Sector Action Plan (TA 3205-LAO)*. Manila.

[2] ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Nam Ngum River Basin Development Sector Project*. Manila.

further 10 have a direct interest in water resources. Along with agriculture, hydropower has a significant stake in this sector.

2. The goal of the NNRBDSP is "optimal use of water resources, especially in the Nam Ngum River Basin (NNRB)". Immediate objectives are to (i) foster and institutionalize integrated water resources management (IWRM) in the mainstream planning process of the Government at the central and provincial levels, and (ii) support investment interventions in relatively degraded parts of the NNRB to provide sustainable livelihood opportunities for poor and ethnic communities.

3. IWRM seeks to ensure that the water resources of an area (often a river basin) are managed effectively and efficiently. While a seemingly simple concept, in practice it is complex. It not only involves a number of agencies, often with competing or conflicting interests, but also cuts across administrative boundaries. There are 12 major river basins in the Lao PDR, including the NNRB. This basin was selected as the first in which to initiate the concept due to its important existing and planned water sector investments as well as its proximity to Vientiane. The project is the culmination of continuing efforts of the Government over the last several years to establish and strengthen water sector institutions for their closer and more effective coordination. The project provides the first opportunity for central and provincial departments to implement IWRM through hands-on, closely interlinked activities. The project is cofinanced by ADB and Agence Française de Développement (AFD) and implemented by three agencies. It has three technical components (summarized in Table A13.1) and a fourth supporting project management.

Table A13.1: Nam Ngum River Basin Development Sector Project Technical Components

Component Number, Name, and Objective	Implementing Agency	Share of Investment Costs
1. **IWRM and Support for WRCC and the NNRB Committee.** Designed to strengthen the capacity of WRCC to coordinate efforts at the central level and of the (to be created) NNRB Committee at the provincial level.	WRCC under the Science Technology and Environment Agency in the Prime Minister's Office	16%
2. **Reservoir Management, River Basin Modeling, and Support for the Hydropower Office (HPO).** Assisting HPO devise a more effective management regime for the Nam Ngum 1 reservoir to optimize power generation, mitigate floods, and improve water-use efficiency in NNRB.	Ministry of Industry and Handicraft's Department of Electricity through HPO	8%
3. **Watershed Management.** Strengthening the capacity of the Integrated Water Management Unit of the Ministry of Agriculture and Forestry and its other relevant provincial and district departments to increase crop productivity and irrigation efficiency, improve livestock and fishery management, and preserve and restore forest resources. Watershed management activities selected through an integrated water resources planning process at the village, district, and provincial levels—a consultative process facilitated by WRCC and the NNRB Committee—will further embed IWRM in all government tiers.	Department of Planning within MAF	74%

IWRM = integrated water resources management, NNRB = Nam Ngum River Basin, WRCC = Water Resources Coordinating Committee.

Source: ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Nam Ngum River Basin Development Sector Project*. Manila.

B. Project Design

4. Project design followed a project preparation technical assistance (PPTA) conducted in 2001–2002 under TA 3544-LAO: Preparation of Nam Ngum River Basin Development Project. The project was appraised in July/August 2002, with a follow-up mission in September 2002 to finalize component costs and financing plan. It is evident from the final PPTA report that the design process was complicated, with a lack of clarity over much of the design period about the institutional needs and relationships that would affect the project.

5. Institutional factors are central to the success of IWRM projects, requiring that adequate institutional analysis be undertaken during project design.[3] As largely an institutional capacity building and coordination project, the level of institutional analysis conducted during design was a key factor in defining whether the project's institutional arrangements would facilitate or constrain project implementation. In practice, the PPTA did not elaborate on institutional analysis and integration but did state in para. 174:

> ***Government Capacity.*** *There is a lack of capacity and resources at every level of government. Provincial governments and district offices lack any real ability to tackle the enormous problems they face. In agriculture, for example, the Provincial Agricultural and Forestry Office (PAFO) has very limited ability to assist farmers in increasing crop productivity or improving animal health. The capacity to identify and plan irrigation projects is very limited without external technical assistance. Individual forestry officers have to care for on average 100,000 hectares of forest each, an area that would exceed their ability even given sophisticated technology and good transport.*

6. The PPTA thus viewed the project largely as a technical response to technical issues, and did not adequately address the institutional barriers to integrated watershed resources management. Overall, it was assumed that coordination would occur, but the assumptions in the project framework and the limited risk analysis did not identify any significant risk in this area. The only risks identified relate to technical and organizational issues within Component 3 (see PPTA report paras. 479–484). In practice, some of the coordination issues might have been overcome if the lead implementing agency of the project had been WRCC as originally planned.[4] However, such a change would have entailed its own constraints, not least of all the recent establishment of WRCC (August 1997) and its limited capability (PPTA report para. 199).[5] The PPTA's recommendation in relation to lack of capacity and capability in the key river basin institutions was to promote capacity strengthening under each of the three technical components of the project. However, such strengthening would not of itself improve the ability of the institutions to coordinate their activities.

7. The RRP kept the structure recommended by the PPTA, and to some degree improved the project framework from an institutional perspective. For example, the project purpose is

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[3] Lack of adequate institutional analysis has been a chronic problem for all capacity development initiatives in the Lao PDR. A study on capacity development by the Operations Evaluation Department (ADB. 2004. *Capacity Development Assistance of the Asian Development Bank to the Lao PDR.* Manila) provides a framework for analyzing institutions, organizations, and management arrangements. It found that most TAs have not included sound institutional analyses.

[4] The change was suggested by an ADB review mission in November 2001, prior to completion of the draft final PPTA report, and was accepted by WRCC, which, however, until the time of RRP expected to chair the project steering committee. At that time, chairmanship passed to a vice-minister of the Ministry of Agriculture and Forestry.

[5] WRCC is a national authority and advisory body with a mandate to coordinate the planning, management, protection, and monitoring of water resources. It was supported by ADB TA 3006-LAO: Institutional Strengthening of WRCC, during 1998. An ADB Technical Assistance Completion Report in June 2000 rated the TA generally successful.

subject to the assumption that "all relevant water sector agencies coordinate closely." However, despite the potentially serious implications of this assumption for IWRM, it was not discussed in the project document. For example RRP (para. 63) states:

> ***Project Risks**: The WRCC, HPO [Hyrdopower Office], National Agriculture and Forestry Extension Service (NAFES), and IWMU and its provincial and district departments are short of human resources and receive inadequate budgetary allocations. Capacity building will depend on finding these resources, especially for WRCC's secretariat (WRCCS) and HPO, where a significant increase in qualified technical staff is proposed. The investment interventions in agriculture and forestry depend on the capability of the provincial and district staff. The Project will build some aspects of the agencies' capacity, but the success and sustainability of the project interventions will depend largely on the overall ability and willingness of the Government to plan and implement the interventions in cooperation with local authorities and communities.*

8. The RRP correctly identified limited capacity in the three implementing agencies and the need for increased resources and human resources development. However, it did not fully analyze the mechanisms that would be required to improve their coordination once strengthened. The dominant issues were considered by the RRP to relate to lack of resources, rather than to management, integration, and coordination.[6] The level of coordination required for integrated river basin planning and management is substantial, given the diverse stakeholders and issues involved. WRCC as an intersectoral agency is the logical home for such activities, with subcommittees such as the planned NNRB Committee responsible for individual river basins.

9. Overall, the complex design of the project with two levels of objectives and three implementing agencies appears to be a major factor leading to implementation difficulties. The design process should have identified and analyzed in detail the institutional, capacity, and coordination issues faced by the Government, and developed a simpler and less risky design.[7] IWRM is difficult in any circumstances. Complicating it with an area development program to provide livelihood opportunities (based on watersheds rather than districts) is likely to be a significant factor behind implementation challenges, for example where a subwatershed includes parts of two or more districts. While the farmer support activities of Component 3 meet poverty reduction objectives, they may distract the project from its IWRM objectives.

C. Current Status

10. **Startup.** The ADB loan became effective in February 2004. Little activity occurred until the substantially delayed recruitment of consultants in July 2004. Unlike some other cofinanced projects, consultants under both the ADB- and AFD-supported components are from the same consultant consortium,[8] which in principle should make for easier management and coordination. Nevertheless, coordination between the implementing agencies has been relatively weak due to several factors, including the location of the technical components in three different ministries.

11. Project consultants completed a draft inception report in August 2004. This was reviewed by ADB and AFD and discussed at a quadripartite meeting in November 2004. In

[6] The latter factors have been demonstrated in other regional countries such as Viet Nam to be major causes of problems facing integrated river basin planning and management projects.

[7] For example, by ensuring that the NNRB Committee was operating effectively prior to commencement, and focusing Component 3 on catchment rehabilitation and protection, rather than integrated area development and livelihoods.

[8] From Canada, France, and the United States.

general, Components 1 and 2 were supported by the Government, ADB, and AFD. However, the Ministry of Agriculture and Forestry (MAF) sought to change the scope of Component 3 (watershed management) in order to take account of the new orientation of national extension services following the reorganization of the National Agriculture and Forestry Extension Service (NAFES). This change reflects the emphasis placed by the Government on NAFES and the new district agriculture and forestry extension offices (DAFEOs).

12. MAF sought to redirect the project to respond to these changes at the provincial and district levels by increasing the support to be provided through the DAFEOs in the five project provinces.[9] The use of private sector consultants for implementation and extension in the subwatersheds is expected to be reduced. While the Project Steering Committee (PSC) meeting in April 2005 approved the revised inception report, it had not yet been approved by ADB and AFD. Approval was expected by the next scheduled review mission in September 2005. Nevertheless, the Component 3 implementation strategy has not been finalized after the elapse of 43% of the project period. The hiatus between November 2004 and March 2005 caused by replacement of the initial consultant team leader contributed to the delay in finalizing the project approach. Limited ability to take decisions between 6-monthly PSC meetings has been a further factor.

13. **Technical Components.** Component 1 (WRCC) is making slow but steady progress. Working groups have been formed and draft reports prepared in the areas of training, awareness, water sector strategy development, and data and information management. WRCC has recruited a number of staff, bringing the total to 18 (including its two part-time directors). The secretariat has several competent staff, but a significant proportion will require further training to be effective; in some cases, replacement may be necessary. A further seven staff are due to be recruited under the project to bring the total complement to 25. However, it may be desirable to defer staff recruitment until the structure, functions, and workplans for WRCC have been clarified and finalized. There are indications that the Government may consider ministerial reorganization in the area of natural resources, energy, and environment. Since these could significantly affect WRCC, further recruitment or other significant changes for WRCC may be deferred until further clarity emerges. The NNRB Committee has not met and, in fact, has not yet been formally constituted. Considering the major role envisaged for it in project implementation, the membership and tasks of the Committee should be defined in the near future.[10]

14. Training activities have begun, despite delayed approval of the overall project training plan. The plan needs to be approved and implemented soon to ensure that trainees (MSc degrees and others) are qualified in time to play an active role in project implementation.

15. Component 2—the Hydropower Office (HPO)—is relatively straightforward, self-contained, and technical in nature. The first visit of the river basin modeling expert has been completed. A working group has been established including the Lao National Mekong Committee (LNMC), WRCC, MAF, and its Department of Meteorology and Hydrology, which should assist in coordinating work under the component.

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[9] Vientiane Province, Vientiane Municipality, Xiengkhouang Province, Xaysomboun Special Zone, and the small southeastern tip of Luangprabang Province

[10] RRP (para.14) states that "The NNRB Committee was established with assistance from TA 3544-LAO in mid-2001. It has also helped prepare this Project by providing significant stakeholder inputs and identifying potential activities and Project components, through formal workshops and numerous community consultations." Project staff report that it has not met since.

16. Despite delayed startup and the ongoing process to revise Component 3, project implementation is accelerating in the field, with activities under way in numerous villages. In Feuang District, Vientiane Province, with a total of 64 villages, work has commenced in 11 of the planned 27 villages. In total, work has commenced in 50 villages out of a total of 214 in 16 subwatersheds.

17. **Coordination.** As recommended by the RRP, project coordinators have been appointed in each implementing agency with day-to-day responsibility for coordination within and between components. The establishment of a project coordination working group, which meets every month (previously biweekly) has facilitated coordination of project activities. However, coordination and the performance of the Office of the National Project Manager (ONPM) remain weak, and WRCC in particular considers that the project at present lacks adequate direction and coordination. It is desirable that improved systems are put in place, with a possible need to review the capacity, structure and function of different aspects of project management. To date, responsibilities, relationships, and reporting lines in the project are not explicitly clear in practice. The recent appointment of a new accountant in ONPM is helping to improve financial management and control. While ADB procurement procedures are clear and well known, AFD does not seem to have procurement guidelines in place for the project, creating a situation that can lead to delays in presenting and approving payments.

D. Evaluation

1. Relevance

18. Water is one of the Lao PDR's key resources. Hydropower is the country's largest export, while irrigation is a key to the national policy of rice self-sufficiency. Flooding is severe along much of the Mekong floodplain and its tributaries. Interbasin transfers have been controversial, as in the case of the Theun-Hinboun hydropower project.[11] Further large developments are planned, including several (often mutually exclusive) dam sites in the NNRB. While water shortage is not likely to be an issue for the foreseeable future (apart from drought problems in some years), adequate planning and management of the country's water resources are essential. Thus river basin and water resources planning and management are highly relevant to the future development of the country and to the welfare of its people, particularly those impacted by dam projects, either through resettlement or downstream effects.

19. Government policy as reflected in the National Growth and Poverty Eradication Strategy (NGPES) has a strong focus on watershed planning and management. For example, the NGPES states:

> *The Government has adopted an area-focused development approach, which places a high priority on more sustainable land use and the identification and designation of agro-ecological classifications. Forest conservation is integral to this approach. In particular, the river basins and watersheds must be better managed and protected, otherwise the country will lose control of its vast hydrological resources, resulting in flooding or drought, soil erosion and other highly damaging consequences for the agricultural sector and the hundreds of thousands of dependent households.*

[11] A 210-megawatt power station funded by ADB transfers water from Nam Theun to Nam Hinboun with adverse livelihood and environmental impacts that were not adequately addressed during scheme design. ADB. 2002. *Project Performance Audit Report on the Theun-Hinboun Hydropower Project in the Lao People's Democratic Republic*. Manila.

Through its combined integrated catchment management and livelihoods/poverty approach, the project is considered highly relevant to current government development policies and strategies. The project also relates closely to the national policy on water resources prepared with the assistance of ADB in 2000 (footnote 1[ii]). To the extent that the project develops viable coordination systems that can extend to other watersheds, it will be a valuable stepping stone to sound water resources management in the Lao PDR. Conversely, failure to establish IWRM in the NNRB or to strengthen it at the national level through the project may make further development in watershed planning and management more difficult.

20. ADB's water policy was approved by its Board in October 2001, 12 months prior to approval of the NNRBDSP. One of the project purposes (implementation of IWRM in the NNRB) relates directly to the ADB's water policy, while the other (improving the livelihoods of the upland poor) is relevant to ADB's overarching poverty reduction objective. Thus the project objectives are highly relevant to ADB's higher order aims. The project is also consistent with ADB's Country Strategy and Program (CSP, 2001), which includes rural development and sustainable environmental management as two of its four priorities. The project is also relevant to the focus of the CSP on the Northern Region. Overall, the project is highly relevant to government policies and ADB country strategies. However, insofar as design and operational constraints may limit the potential of the project to achieve its objectives, the Operations Evaluation Mission (OEM) rates the project as relevant.

2. Effectiveness

21. The outcome indicators identified in the project framework include (i) effective coordination among water-user agencies established by 2005, and (ii) income of about 10,000 households increased by 60–80% by 2010. To date, progress has been made against the first objective. Interagency working groups have been set up and are functioning. Key documents are under preparation, and project consultants have considered the overall progress under Component 1 to be slightly behind schedule. However the challenges of coordinating among water sector institutions suggest that it will be difficult for the project to meet its objectives by its closing in 2008. Issues relating to consultation, shared decision making, procurement, and reporting have not been resolved, being exacerbated by the sectoral nature of the components. Such issues may worsen after the end of the project, with risks for the IWRM concept, unless early steps are taken to resolve them. Extension of IWRM to other critical watersheds such as Nam Ou, in the pipeline for ADB support, may then be problematic.[12] To overcome these issues, the Government needs to clearly define the role and responsibility of WRCC (and the parallel LNMC), and to consider them in any future reorganization of ministerial responsibilities.

22. In relation to the income-improvement objective, it is too early to evaluate prospects for success. However, the livestock credit activity appears to carry some risks, while extending cropping benefits to the envisaged number of households during the project implementation period will be difficult, particularly given the difficult terrains and physical isolation of many upland communities. The OEM considers that the performance of Components 1 and 3 will need to improve for the project to be effective, while the effectiveness of Component 2 will depend on the quality and use of the model that is intended for managing the dam. To date, and on a preliminary basis, the OEM considers the project as less effective.

[12] Nam Ou River Basin Development Project is listed as a standby loan for 2006 in the Country Strategy and Program Update (2005–2006).

3. Efficiency

23. The implementation process to date is considered by the OEM to have been less efficient. Delays in recruitment; staff changes; difficulties in coordination, management, and operation; and slow approval or non-approval (for example, of the project inception report and training plan) have constrained implementation.[13] It is anticipated that project management and the funding agencies will make major efforts to improve the efficiency of project implementation.

24. It is too early to assess the economic efficiency of the project. In the RRP (Appendix 12), economic impact was assessed through (i) increased hydropower generation based on improved inflow forecasting, estimated at 2% or equivalent to $600,000 annually; and (ii) improved agricultural productivity in the NNRB catchment due to project activities including extension services. According to the RRP, the economic analysis was based on work in its Supplementary Appendixes B (Detailed Financial and Economic Analysis) and H (Detailed Analysis and Implementation Plan for Forest Restoration Activities). However, the OEM could not obtain these supplementary appendixes from either the Mekong Department of ADB, the executing agency, or the project consultants in Vientiane. Therefore, the OEM could not review the ex-ante economic evaluation in detail.[14]

25. The PPTA (Appendix 14, para. 29) assumed flood mitigation benefits of $677,000 per year due to improved dam management, based on reduced flooding on 10,000 hectares. Instead, the RRP chose to base benefits on increased power generation. However, unless dam management is varied to include a flood mitigation objective, it is unlikely that significant benefits will accrue to the project. If flood mitigation management is adopted, power generation is likely to decrease.[15] The modeling being undertaken by HPO can facilitate rational dam management to maximize the combined net benefits from hydropower and flood mitigation. However, this will require a change in approach by HPO.[16] In addition to flood mitigation benefits, improved catchment management can reduce sediment loads and thus increase dam life, which is a significant environmental benefit. Monitoring of sediment loads will be a useful indicator of the success or otherwise of catchment management activities in the medium term. Further analysis of potential benefits should be possible once the HPO model has been developed.

26. It is expected that significant production gains will result from the project's extension efforts. Livelihood improvement benefits were estimated (RRP, Appendix 12, paras. 8–19) on the basis of two typical farm models based on upland and lowland farming systems. Only the upland household budget was available to the OEM due to the unavailability of Supplementary Appendix B of the RRP. For the upland household, farm income with the project was expected to increase from $700 per year without the project to $1,270 with the project. Most of the increase is from nontimber forest products (NTFPs) - $175; fruit - $100; and fodder - $210. Cash

[13] Project staff report that, although there were delays in completion and approval of the training plan, training activities are under way, and the training program will be completed well before project completion.

[14] Of the eight supplementary appendixes mentioned in the RRP, only two (D and E) could be located in ADB Headquarters. None could be located in Vientiane.

[15] According to the RRP (para. 2), storage above the minimum operating head is 4.5 billion cubic meters (m^3) at a water surface of 196 m above sea level, 16 m below full capacity. If the 7 billion m^3 dam is partly emptied prior to the start of the wet season to allow flood water storage, power generation may be reduced for perhaps 2 months each year.

[16] For example, in Viet Nam, the 9.5 billion m^3 Hoa Binh dam is managed by the national electricity company for 10 months each year and by the Ministry of Agriculture and Rural Development (which is responsible for flood control) for about 2 months during the flood season.

income would rise from $50/family/year to $335, though increases in sales of NTFPs (medicinal leaves, shoots, rattan, and bamboo totaling $200), fruits ($100), and livestock ($35). Given the level of project interventions, these expected gains are probably ambitious. While the NTFP increase is feasible, this will largely result from natural forest regeneration rather than replanting by the project. The delay in commencing project activities will also make it difficult to achieve anticipated benefits on schedule.

27. In combination, efficiency of process and expected project economic performance are likely to make the project less efficient, unless implementation efficiency increases significantly during the remaining project period. Careful monitoring is required, particularly of the livestock and reforestation components, since experience in other ADB member countries and in the Lao PDR suggests that livestock development and reforestation carry substantial risks: (i) livestock of nonrepayment of project credit due to associated risks facing animal health, husbandry, and performance; and (ii) protection forest development of poor establishment and maintenance.

4. Sustainability

28. Unless improved coordination can be established soon under the project, the potential for sustainable IWRM will be less likely. Conversely, if the project succeeds in developing viable mechanisms, it is likely that IWRM will be extended to other river basins over time. Keys to sustainability include: (i) development of strong ownership of IWRM and its implementation by the Lao authorities, and (ii) well-established and clearly defined institutional arrangements.

29. The livelihood components require skillful management to be sustainable. The extension subcomponent closely reflects national policies relating to extension development. While the capacity-building initiatives may be sustainable in the project districts following project completion, extension effort is likely to decline to a low level once project financial and management support to the DAFEOs ceases. Sustainability thus hinges on the development of self-funding mechanisms and to some degree on village-based extension linkages. Gains in crop productivity tend to be sustainable, particularly in the lowlands. Once farmers have established the technology and knowledge to produce higher yields and values, they seldom revert to prior practices as long as market mechanisms are effective and necessary inputs are available.

30. Smallholder plantations and protection forests are difficult to maintain, particularly where no payment is available from the project for maintenance. This needs to be carefully monitored and mechanisms/agreements with villages established to promote high seedling survival and adequate maintenance. Since forestry is a key factor in stabilizing the basin's degraded upland areas, the success of this activity is necessary to enhance the project's long-term environmental impact. The planned sharing of forestry benefits (with DAFEOs expected to receive 50% of the eventual sale proceeds of timber from protection forest plantings) may have the potential in the future to underwrite extension efforts, but they will be long term in nature.[17] It is essential that contracts are drawn up with villages or groups involved in forest maintenance, so that the potential division of benefits is transparent and well known.

31. Livestock credit is strongly required by the poor in the Lao PDR. Under the project's livestock credit program, three breeding-age female cattle or 25 poultry are provided to poor

[17] DAFEOs are not revenue-generating units and are not allowed to keep revenues for their operation. They must surrender such revenues to the treasury. It will be necessary to define the basis for the proposed funding mechanism well before revenues are generated under the project.

farmers. In the view of the OEM, the sustainability of the livestock component may be limited, based on the experience of other Lao PDR livestock projects. The size of the credit package for cattle is large, while the reported repayment period of 5 years is long, with no repayments likely within the planned project period. Project funds will therefore not revolve within the project period, and there is a risk that repayments will be low and/or losses high. The use of village credit committees for credit management appears sound, though not without risk.[18]

5. Overall Assessment

32. Taking into account the evaluation criteria of relevance, efficacy, efficiency, and sustainability on implementation progress and major issues observed to date (July 2005), and the above preliminary assessments, the OEM rates the project as doubtful to succeed. However, given its early stage of implementation, the performance of the project can improve with concerted efforts to address the following issues.

E. Key Issues

33. **National Level Water Resources Coordination.** Coordination of agencies is difficult in most countries in the region. In the Lao PDR water resources sector, it is made more complicated by the existence of two parallel institutions with similar mandates—WRCC and LNMC. Since 91% of the Lao PDR's land drains in to the Mekong, LNMC has interests in a high proportion of the country's territory. It is well resourced and supported, particularly following the opening of the new Vientiane headquarters of the Mekong River Commission. The existence of two similar committees can cause confusion and may limit the effectiveness of each. It will be desirable for both committees to reconcile their relative responsibilities in order to reduce overlap and potential conflicts. Ways could be considered to either separate or merge their functions, with the latter tentatively favored, perhaps through the establishment of a joint secretariat. The role of MAF's Integrated Water Management Unit (IWMU) in relation to WRCC and LNMC also needs better definition.

34. The water resources sector may benefit from fundamental reorganization. Issues in relation to WRCC include (i) the level of representation from its member agencies; (ii) its location within the Science, Technology, and Environment Agency, and the chairmanship; and (iii) the part-time leadership of the secretariat. The project, through WRCC and its advisers, should analyze these factors in detail to determine the extent to which change in the structure and function of WRCC is necessary or desirable in order to meet project objectives and its wider objective in the national water sector. For example, the national water sector coordinating body in Viet Nam has high level representation and full-time direction (Box A13). To define whether similar institutional developments may be worthwhile in the Lao PDR will require detailed analysis and consideration by stakeholders. At the least, full-time direction of the WRCC secretariat is likely to be desirable.

[18] This approach is being applied on almost all current ADB projects, in recognition of the failure of the institutional credit program to meet the needs of poor farmers, particularly away from lowland irrigation schemes.

Box A13: Water Sector Policy in Viet Nam

In Viet Nam, improvement of the natural resources management framework has been attempted through establishing a new ministry—the Ministry of Natural Resources and Environment. (MONRE). This took over water policy functions from the Ministry of Agriculture and Rural Development. However, demarcation disputes between the ministries and uncertainties have not yet been fully resolved.

The parallel organization to WRCC in Viet Nam is known as the Water Resources Council, which is intended to coordinate water resources development and resolve conflicts. Its main differences with WRCC include its departmental secretariat within MONRE under a full-time director general, its membership (vice-ministers of relevant ministries), and chairmanship (the senior vice prime minister). These aspects give it substantial authority, which WRCC currently lacks. It is also being strongly supported by an ADB-funded project, prior to which it was not highly active.

35. **Component 1 Consulting Inputs.** The original project design called for a mix of specialist inputs (RRP, Table A11). Subsequent changes in design has increased the input by the deputy team leader/water management specialist at the expense of other important specialists, leading to undue reliance on one team member and delay in the implementation of some activities. There should therefore be a rebalancing of inputs by reallocating a portion of the allocated service duration of the deputy team leader to a new position (water resource planner) who would be able to accelerate implementation of basin-level activities, including preparation of an integrated Nam Ngum River Basin Water Management Plan. This, in turn, would help to operationalize the reservoir modeling tools that are being developed in the project and to address hydropower and other development issues in the basin.

36. **Improved Project Management and Coordination.** The project is currently at risk due largely to management and coordination difficulties, in part caused by its complex implementation arrangements. Steps are required to overcome these issues and to establish a sound management and coordination system, with improved operation of the national project office and its relationships and responsibilities. The PSC could meet more frequently than the present 6-monthly intervals for the next 12 months. Greatly increased delegation to the project implementation units in WRCC and HPO is desirable, in general and particularly with respect to links with AFD, which is funding Components 1 and 2. An attempt was made in 2004 to streamline routine correspondence among WRCC, HPO, and AFD, with copies sent to ONPM. This recommendation needs to be reviewed and acted on as soon as possible to promote efficient project management and prevent communications getting stuck or lost in ONPM. It is also desirable to confirm that WRCC is the approving body for the IWRM aspects of the project. Consideration could also be given to developing an integrated geographic information system (GIS) in the three implementing agencies, building on the base of the GIS being developed by IWMU in MAF. The three implementing agencies are already using common base maps (from the National Geographic Service), which should make integration relatively straightforward.

37. ADB and AFD should maintain a more proactive role in promoting IWRM, which has wide-ranging implications for the development and optimal use of water resources. Experience in regional countries should be reviewed to assess how this can help the Lao PDR overcome coordination and planning problems in the water resources sector. More frequent (perhaps semiannual) joint project reviews are desirable for the next 2 years. The planned delegation of ADB's project administration responsibility from Headquarters to its Lao Resident Mission can facilitate more intensive dialogue with stakeholders and improve project monitoring.

38. **Extension.** The project has a large trial and demonstration program. This should assist in promoting new technology and raising incomes in the project area. Its impact could perhaps be increased by improved promotion. For example, signboards could be placed at each site, giving the trial objective, variety, date of planting, and input use so that villagers will be aware of

the program and can follow its progress. While the DAFEOs can maintain a high level of activity during the project period, it is likely that they will revert to their former low level of activity when project funding ends. In common with other ADB-funded projects, the NNRBSP needs to assess ways in which linkages can be maintained between villages and the extension service. One option is to further develop the village extension worker concept. This could involve selecting one or two suitable village residents (preferably those who have attained a reasonable education level, such as year 12) to act as extension workers.[19]

39. **Role of IWRM.** In the context of the project, IWRM would require that the Nam Ngum water resources and its catchment are managed for the benefit of resource users and of society more generally. Key issues include the management of the Nam Ngum reservoir for both hydropower generation and flood control. For flood mitigation, HPO and Electricité du Lao may need to accept a significant reduction of head and thus power generation for a period prior to the start of and during the flood season. The government would need to consider the resulting loss of revenue, without any corresponding increase in direct revenue from flood benefits.

40. Interbasin transfers often have negative environmental impacts. The model being developed by Component 2 needs to take downstream impacts in the Nam Ngum, Nam Leuk, and Nam Song rivers into account.[20] While the downstream impacts of NNRB interbasin transfers have not attracted criticism on the scale of Theun-Hinboun, there may be significant effects on flooding in the Nam Ngum Basin or reduced flows in the two supplying rivers unless appropriate management practices are put in place. The model should contribute to resolving these issues. Since the NNRB has substantial potential for further hydropower generation, modeling of catchments, river flows, and dams will be very useful in the future, including contributing to sound dam site selection and the establishment of appropriate environmental and social safeguards.

[19] Village extension workers would be paid a small wage and a transport allowance by the village to provide ongoing linkage with the DAFEOs. They would attend a minimum of two extension worker training days per year (organized by the DAFEOs), before the commencement of each cropping season, and would visit the DAFEOs when particular issues or problems arise to seek advice.

[20] The latter diversions transfer up to 60 m^3/second to the Nam Ngum dam.

Loan 1949-LAO: Smallholder Development Project

BASIC DATA

TA No.	TA Name	Type	Person-Months	Amount ($)	Approval Date
3603	Smallholder Development	PPTA	40.0	750,000	20 Dec 2000
4005	Agribusiness Support and Training	ADTA	10.0	250,000	28 Nov 2002

Executing Agency Ministry of Agriculture and Forestry

Key Project Data ($ million)	**As Per ADB Loan Documents**	**Actual**
Total Project Cost	15.20	TBD
ADB Loan Amount/Utilization	12.00	TBD
ADB Loan Amount/Cancellation	—	—

Key Dates	**Expected**	**Actual**
Fact-Finding		6–19 Jul 2002
Loan Negotiations		31 Oct–1 Nov 2002
Board Approval		28 Nov 2002
Loan Signing		7 Feb 2003
Loan Effectiveness	7 May 2003	18 Jun 2003
Number of Extensions in Loan Effectiveness – 1	18 Jun 2003	
First Disbursement		4 Sep 2003
Project Completion	30 Apr 2009	TBD
Loan Closing	31 Oct 2009	TBD
Months (Effectiveness to Completion)	72	TBD

— = not available, ADTA = advisory technical assistance, PPTA = project preparatory technical assistance, TA = technical assistance, TBD = to be determined.

A. Objectives and Scope

1. The purpose of the Smallholder Development Project (SDP)[1] is to promote sustainable commercial smallholder agriculture and associated agribusiness in the Lao People's Democratic Republic (Lao PDR), with the goal of achieving sustained increases in rural incomes and long-term reductions in rural poverty. This purpose will be achieved by (i) increasing production and marketing of diversified, nonrice dry season cash crops, livestock, and fisheries; (ii) improving smallholder access to domestic and international markets and to market information; and (iii) increasing investment in value-adding agribusiness. The SDP covers 16 districts in four provinces (Savannakhet, Champasack, Khammuane, and Vientiane) that are considered to have the greatest potential for commercializing agriculture.

2. The SDP is expected to develop an effective agricultural extension and training mechanism, reaching 54 villages in each project district. A total of 89.5 kilometers (km) of rural

[1] ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to the Lao People's Democratic Republic for the Smallholder Development Project.* Manila.
(i) Loan 1949-LAO (SF): *Smallholder Development Project*, for $12.0 million, approved on 28 November 2002. The loan became effective on 18 June 2003. The project is expected to be completed on 30 April 2009, and the loan account is expected to be closed on 31 October 2009.
(ii) TA 4005-LAO: *Agribusiness Support and Training*, for $250,000, approved on 28 November 2002.

access roads will be upgraded to all-weather standard, and 70.8 km of new feeder roads will be constructed. Six new markets are planned in urban centers. The technical assistance (TA) associated with the SDP aims to provide agribusiness support and training. About 30 agribusiness investors will be trained. Training and capacity building will be provided to farmers, staff of district agriculture and forestry extension offices (DAFEOs),[2] and business people.

3. **Rationale.** The Lao PDR has comparative advantage in the production of hydropower and timber. In relation to the export of agricultural commodities, the country's advantage is less clear. As a landlocked country, and despite continuing efforts to make it more land-linked, distant export markets are relatively difficult and expensive to reach. The country is mainly mountainous, with limited floodplains along the Mekong and its tributaries (as well as the rivers that flow east to Viet Nam). Flooding can constrain wet season agriculture in the floodplains and lower slopes. Dry season agriculture and upland cropping are therefore important, and have developed to some degree, mainly for domestic markets, with production for export largely constrained by a range of market impediments. These impediments can discourage most businesses from operating in the Lao PDR (Box A14). Doing business in the Lao PDR remains difficult in comparison with its neighbors.

4. However, the potential does exist to increase production and exports of agricultural commodities through a range of measures such as extension, market systems development, market information services, and the removal of impediments to production and marketing. Regional markets are large, including Viet Nam, northern and central Thailand, and southern regions of the People's Republic of China (PRC). These markets total around 200 million people according to the Report and Recommendation of the President (RRP). The Lao PDR's comparative advantage in these markets will derive from its potential to produce organic products, and its low labor costs, which should allow it to compete effectively in Thailand and the PRC in particular. Under the Association of Southeast Asian Nations Free Trade Area, markets can increasingly open up to intraregional agricultural exports.

5. While the list of agribusiness impediments is long, the SDP takes an optimistic view of the potential for the Lao PDR agriculture sector. Within its fairly narrow perspective, the SDP will attempt to remove or bypass some of the major impediments and thus act as a catalyst for wider agricultural economic development. In addition to improved extension support (in common with most other Asian Development Bank [ADB]-funded agriculture projects), the SDP is making a substantial effort to attract foreign and local businesses to engage and invest in the sector, such as through contract farming.[3]

[2] DAFEO was formerly known as the district agriculture and forestry office (DAFO) and obtained its new name in June 2005, following the reorganization of the national extension services under the National Agriculture and Forestry Extension Service.

[3] The farmer technology transfer mechanisms of the SDP differ from the extension activities of other projects. The extension approach used by the SDP is direct farmer-to-farmer learning and private sector-driven contract farming. The standard approach of other projects is to channel extension through DAFEOs. This approach has been largely ineffective, because the DAFEO extension workers lack technology, motivation, and resources.

Box A14: Summary of Impediments Facing Commercial Agricultural Development

Subsistence agriculture and paddy production in particular dominate cropping in the Lao PDR. Other annual crops and permanent crops account for only 9% and 8% of cropped area, respectively. This means that commercialization has to start from a low base. Only 28% of households used chemical fertilizers in 1999, and less than one third of households used any form of mechanization. However, mechanization has spread rapidly, with almost all lowland farmers using two-wheeled tractors for cultivation by 2005.

The low intensity and low productivity of Lao PDR agriculture is attributed to (i) risk-averse livelihood strategies of producer households; (ii) limited number of input suppliers; (iii) the lack of information concerning input use created by the absence of viable extension mechanisms, both public and private; (iv) lack of adequate working capital and access to credit; (v) general lack of access to markets because of physical barriers created by poor roads and high transport costs; and (vi) a constrained marketing system wherein a limited number of traders tend to dominate market transactions for produce that moves beyond village boundaries to the subsequent links in the marketing chain.

The Lao PDR has a comparative advantage in livestock production among the neighboring export markets, and there is considerable potential to increase livestock and value-added production for export. Major constraints to the expansion of livestock production include (i) lack of an integrated program of animal health, nutrition, and breeding; and (ii) lack of support services in marketing and market information systems.

The marketing of agricultural products in the Lao PDR tends to be regionally confined, resulting in significant variation in market prices from region to region due to (i) formal and informal regulations that impede free movement of goods; (ii) prohibitive fees and administrative costs; (iii) poor access roads, and an underdeveloped farm-to-market road network; (iv) transportation shortages and high transport costs; (v) limited urban demand; and (vi) interregional transport fees and controls in the Lao PDR.

Other market-distorting practices include (i) price ceilings on some strategic agricultural commodities and livestock in some areas; (ii) state commodity trading and its farm gate price impacts; (iii) export trading monopolies and procedural impositions; (iv) restrictions on trade and marketing; (v) excessive regulation of the livestock sector; (vi) nontariff barriers affecting livestock and other sectors; (vii) absence of transparency at border check points; (viii) foreign business licensing procedures; (ix) restrictions imposed on the movement or sale of agricultural commodities, livestock, or processed products in a number of provinces; (x) lack of transparent written information on the terms and requirements of operating a business, licensing procedures, and conditions and restrictions on reselling the business; and (xi) government-owned or abetted monopsonies and monopolies operating for a number of commodities in domestic markets.

The present operations of Lao PDR agribusinesses tend to be constrained by (i) shortage of both investment and working capital; (ii) shortage of technical skills; (iii) insufficient raw material supply; (iv) heavy dependence on imported raw materials and managerial expertise; (v) lack of production, trade, management, and market experience; (vi) limited understanding of existing markets; (vii) low local demand for diversified food commodities; (viii) absence of local processing facilities capable of absorbing large quantities of produce; (ix) low level of production and management technology; (x) limited number of agricultural commodity traders; and (xi) weak commercial networks throughout the country.

The Lao PDR is also not considered a safe place to invest by many foreign companies, which might otherwise be keen to invest in agribusiness. Impediments include (i) risks imposed by the uncertain legal environment; (ii) difficulties with contract enforcement; (iii) high transaction costs for business registrations, export licenses, and other administrative processes; (iv) weak, sometimes contradictory, and often opaque regulatory and legal framework, which imposes extra burdens; (v) foreign and foreign joint-venture firms not being permitted to purchase land for business operations; and (vi) market-restraining regulations and practices and nontariff barriers and other border irregularities.

While the legal framework for the operation of commercial businesses has been developed, uncertainty persists. Several factors seriously hinder sound lending by banks and discourage foreign investors and foreign banks: (i) lack of dissemination of legislation, (ii) limits on judicial capacity, (iii) incomplete repeal of legislation that is technically no longer in force, (iv) overlap between laws and between decrees, (v) uncertainty of title registration procedures, (vi) incomplete land titling and associated high transaction costs, and (vii) time-consuming legal processes in relation to contract enforcement and debt recovery.

Source: Inception Report, Smallholder Development Project. January 2005.

6. **Current Status.** ADB fielded an inception mission from 16 to 24 September 2004. The SDP's Inception Report (dated 14 January 2005), a well-prepared document, elaborates the operating environment affecting the SDP and discusses the objectives, design logic, components, and activities in detail. Since then, the project has made good progress in most components, with links developed with several entrepreneurs who are interested in establishing or expanding businesses in the agriculture sector. Trials and demonstrations have commenced in a number of project districts. Agronomic trials and seed multiplication have commenced in 16 villages in the six districts in Savannakhet. Since the target is to reach 54 villages per district by 2009, a rapid acceleration of the program will be required. By July 2005, the project road alignments had been selected and preparation for the road design was under way. The involvement of the International Labour Organisation in design and construction supervision of one of the roads is innovative, and this arrangement can reduce opportunities for rent seeking by stakeholders. Business plans and outline credit proposals have been prepared. However, as in the case of a $19 million proposal to the International Finance Corporation (IFC) for a soybean contract farming and processing venture, additional work will be required to improve the proposal to meet the requirements of financial institutions (such as IFC). Ten other agribusiness ventures are under consideration, and there appears to be substantial interest in contract farming, partly catalyzed and stimulated by the project.

B. Evaluation

1. Relevance

7. **Government Policy and Strategy.** The SDP is responding to the Government's Strategic Vision for the Agriculture Sector (1999), which focuses on (i) increasing rural income by developing market-oriented agriculture and by changing public institutions and policies to better serve this aim; (ii) recognizing the preeminent role of the private sector and working to improve the business and investment environment; (iii) achieving a better balance in investments in the agriculture sector; (iv) addressing the respective opportunities and constraints of the country's upland and lowland farming systems, and communities; (v) improving environmental management of the country's natural resources; and (vi) improving and sustaining investments made in supporting infrastructure (primarily irrigation, rural roads, and postharvest handling. The agriculture strategy study[4] has demonstrated that, for a range of crops (including rice, maize, peanut, sugarcane, and coffee), the country's production is competitive in the region, and with improved technology it could be among the world's low-cost producers of several commodities. The Government has confirmed its commitment to trade liberalization. In this context, the Government supported the promotion of market-oriented diversified agriculture as key to improving farmer livelihood and expansion of the nation's economy (Inception Report).

8. Many aspects of the Strategic Vision (1999) are now reflected in the National Growth and Poverty Eradication Strategy (NGPES),[5] which outlines 10 strategic priorities. Of these, the SDP can make a direct contribution to six: (i) develop and modernize social and economic infrastructure in order to facilitate economic development in each region of the country and to accelerate the Lao PDR's regional and international economic integration; (ii) promote industries

[4] TA 2883-LAO: Agriculture Strategy Study, for $600,000, approved on 30 September 1997.

[5] The NGPES is the strategic framework under which all of the Government's future growth and poverty eradication programs will be developed and implemented. The NGPES is the result of a process that started in 1996 when the 6th Party Congress defined the long-term development objective as freeing the country from the status of least-developed country by 2020.

utilizing domestic natural resources, and actively promote small and medium enterprises (SMEs); (iii) develop and promote all economic sectors, particularly the private sector, including foreign direct investment in order to expand business opportunities, placing emphasis on export-oriented sectors that have a comparative advantage; (iv) enhance market linkages and trade facilitation; (v) strengthen existing legal and regulatory frameworks; and (vi) promote economic cooperation with all partners and countries.

9. **Country Strategy and Program (CSP) and Priorities of ADB.** The CSP (August 2001) recommended that ADB interventions over the planning period focus on poverty reduction by broadening community participation and opportunities. The SDP falls squarely on the first of the "pillars" supporting this objective: "sustainable, strong economic growth is essential for poverty reduction, as is targeting development assistance to address the main sources of and constraints to broad-based growth, as well as the main roots of poverty." The SDP links closely to three of the four thematic priorities required to realize the strategic goal of poverty reduction: (i) rural development and market linkages, (ii) human resource development, (iii) sustainable environmental management, and (iv) private sector development and regional integration. Of these, only sustainable environmental management is outside the direct purview of the SDP.

10. While the SDP can make a significant contribution to the Lao PDR's economic development, it is less relevant to the poverty and geographic focus of ADB in the Northern Region. The SDP focuses on the central and southern Mekong floodplain provinces. It will have little impact on the northern mountain provinces. However, the SDP is relevant to the Greater Mekong Subregion (GMS) East-West Economic Corridor in Savannakhet Province, and it can benefit from various initiatives under the subregional cooperation program with neighboring countries in the GMS. While the project title refers to smallholders in practice it relates to commercial agriculture and will work mainly with farmers who have the capacity to grow crops surplus to their subsistence needs. Project staff gave an "oil spot" analogy to the project, implying that with steady outwards diffusion from the central spot of project intervention (as opposed to the more conventional trickle down diffusion), the SDP would be able to act as a change agent. Of the project's 16 districts, 4 are among the 47 poorest districts identified by the NGPES, and construction of roads will improve access to poor areas. Thus, the SDP is relevant and responsive to ADB's country strategy and the Government's development strategies.

11. **Project Scope.** The SDP's planned smallholder support, market intelligence, market development, and extension activities are highly relevant to the long-term transformation of the agriculture sector (particularly the crop subsector). While it is recognized that improvement in the marketing and operating environment will take time, and require strong commitment by the Lao PDR government, the SDP can potentially make a significant contribution.

12. The project scope and geographic focus are sound, based on analysis conducted by the project preparation technical assistance (PPTA) and at appraisal. Analyses included beneficiary needs and perceptions, market impediments, and potential. The SDP built on previous ADB TAs[6] and included a detailed review of marketing chains, market opportunities, and comparative advantage of Lao products. However, in common with other ADB-financed agriculture projects in the Lao PDR, the level of risk analysis was limited. Apart from a possible lack of credit

[6] Previous ADB support to the agriculture sector included Loan 965-LAO (SF): Agriculture Program, for $20 million, approved on 3 August 1989; Loan 1180-LAO (SF): Second Agriculture Program, for $30 million, approved on 8 October 1992; TA 1745-LAO: Institutional Development and Strengthening of the Ministry of Agriculture and Forestry, for $410,000, approved on 8 October 1992; TA 2333-LAO: Institutional Development and Strengthening of the Ministry of Agriculture and Forestry (Phase II), for $597,000, approved on 22 May 1995; and TA 2883-LAO: Agriculture Strategy Study, for $600,000, approved on 30 September 1997.

financing of farm production through the Agriculture Promotion Bank (APB), as identified in both the PPTA and the RRP as a significant risk, risk assessment focused on the sensitivity of the economic internal rate of return (EIRR) to unmet assumptions of production increases, rather than linking risk assessment directly with the assumptions of the project framework.

13. The road development proposed under the rural infrastructure component is not strictly necessary for the achievement of the SDP's immediate objectives. The road development appears to have been added to the project for two main reasons: (i) to increase investment funds for the SDP; and (ii) to link the project with relatively poor areas, in order to give the SDP more of a poverty focus. While these are less relevant to the overall project objectives, and will make less contribution to commercializing agriculture than the smallholder support components (farmer support services, agribusiness, and marketing components), roads are a valuable asset to rural communities and are valued by them. Improved roads are valuable aids to marketing. With the increasing adoption of high-yielding rice varieties in the districts of the lower Mekong, roads will assist in promoting demand for and marketing of surplus paddy. Project staff considered that the benefits of the Champasack road (14-A) may consequently be higher than estimated at appraisal. The development of rural markets should also benefit the rural and urban communities that they serve.

14. The SDP has potential links to other ADB-funded interventions, particularly the Decentralized Irrigation Development and Management Sector Project (DIDMSP)[7] and the Nam Ngum River Basin Development Sector Project (NNRBDSP).[8] Market uncertainty is one of the key factors constraining the development of diversified cropping under the DIDMSP, which has reduced the economic viability and sustainability of the DIDMSP. There is a strong case for the SDP to link up with DIDMSP schemes and support the development of contract farming and other agribusiness approaches that can transform the DIDMSP from a supply-driven initiative to a demand-driven approach. While the SDP can initially focus on the DIDMSP, there are several hundred other irrigation schemes that can potentially benefit from the SDP and its effects. The SDP targets irrigation schemes within its four provinces and 16 districts and can work directly with two DIDMSP schemes in Vientiane and nine in Savannakhet. DIDMSP staff will need to liaise with the SDP to define ways of extending some of the benefits from the SDP to other DIDMSP provinces. Overall, the Operations Evaluation Mission (OEM) assesses the SDP to be relevant.

2. Effectiveness

15. Expected outcomes of the SDP focus on the anticipated increase in farm income that will result from project activities. RRP targets include an average 30% increase in income per household by project completion (from a base of around $300 in Khammuane and Savannakhet, and $400 plus in Champasack and Vientiane) for a total of 54,000 smallholder households. Given the low crop yields prevailing in the project area, the predicted yield and

[7] ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Decentralized Irrigation Development and Management Sector Project.* Manila. This project aims to (i) assist irrigators to organize themselves into water users associations (WUAs), (ii) rehabilitate existing irrigation systems, (iii) provide extension services to farmers, (iv) enhance extension capacity to sustain farmer-managed irrigation, and (v) provide support for capacity development of WUAs.

[8] ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Lao People's Democratic Republic for the Nam Ngum River Basin Development Sector Project.* Manila. This project aims to (i) foster and institutionalize integrated water resources management in the mainstream management process of the Government at the central, provincial, and district levels; and (ii) support investment interventions in relatively degraded parts of Nam Ngum River Basin to ensure sustainable watershed management and to provide livelihood opportunities for the poor and ethnic groups.

income gains are possible. However, yield gains due to the project need to be separated from any general increase in productivity over the period. This distinction will require the monitoring of selected control areas, probably using secondary data. The project's approach to benefit monitoring and evaluation needs to take this into account. Production and income gains are highly dependent on the contract farming approach being promoted.[9] At the time of the OEM (July 2005), project staff were optimistic that several opportunities would materialize in the near future.[10]

16. There is some uncertainty in relation to the number of beneficiaries and their sources of benefits. The RRP includes an estimate of 40,000 households in the summary, as estimated by the PPTA (out of a total of 145,000), but estimates 54,000 in its project framework. The project now estimates a total beneficiary population of about 50,000 households (an adoption rate of about 30% of households over 60% of the land area). These estimates relate only to enhanced agricultural productivity, and not to households benefiting from the road component. Benefit analysis of the latter is deficient in both the PPTA and RRP, despite the fact that the rural infrastructure component accounts for 42% of estimated project investment costs. The RRP does not provide estimates on the population served by the roads, traffic growth, and marketing benefits from these roads. Nevertheless, road investments have been demonstrated to generate high economic and social benefits in the Lao PDR.[11]

17. The Lao PDR's increased integration with regional and world markets is multifaceted, and can be expected to influence conditions in the agriculture and natural resources sector. Given that agriculture's share is still close to 50% of total gross domestic product, the potential for economic growth through increased agricultural trade is considerable. The openness of the sector (as measured by the sum of the value of agricultural imports and exports to agricultural GDP) is among the lowest in the region (at 0.09).[12]

18. The main threat to agricultural production gains (and thus to the effectiveness of the project) is the shortage of production credit to help project partners expand their cultivation of high-value crops. APB has limited capacity and has been incurring large losses due to a high rate of nonperforming loans arising primarily from its directed, subsidized lending portfolio. APB is currently undergoing a major restructuring process to clean up its portfolio and transform it into a market-oriented rural finance institution. While undergoing this transformation, its ability to extend credit to commercial agribusinesses will be limited but is expected to grow. Other banks have expressed limited interest in financing agricultural production. Contract farming partners are expected by the project to provide seasonal credit for input supply to their clients. The unavailability of rural credit highlights the more general problem with production financing in the Lao PDR. This will probably not be resolved until the Government takes a more relaxed approach to registering and allowing local as well as international nongovernment organizations (NGOs) to serve as microfinance partners. While a failure of the contract farming approach to demonstrate sustainable gains would put project objectives at risk, the future for this approach appears promising. In the meantime, the OEM assesses the SDP as effective on a preliminary basis.

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[9] Project staff expect that improvements in wet season commercial rice yields will also have a major impact on production and income, with gross margins expected to increase from about $200/hectare to $700/hectare.

[10] For example, a contract to supply food to the labor force of the Nam Theun 2 dam construction was likely to be signed. An average workforce of 12,000 need food supply for at least 3 years. A large soybean contract farming entrepreneur may also expand to the south from his current base in Luangprabang, with a potential investment of around $12 million for processing facilities and working capital.

[11] For example, the 2004 RRP for the Roads for Rural Development Project estimated the EIRR at 17%.

[12] World Bank. 2004. *Country Economic Memorandum – Realizing the Development Potential of Lao PDR*. Vientiane.

3. Efficiency

19. Efficiency of process has been limited to date. Delays have been experienced in obtaining financial approvals from several government agencies. Inadequate familiarity with ADB guidelines and procedures has also constrained project management. While within these limits the project has made some progress, with activities ongoing in several areas, there has been a serious mismatch between the first 3 months of TA grant inputs and the availability of funding for training activities (TA 4005-LAO). The failure to gain approval for project staff to attend a recent major agricultural marketing workshop in Luangprabang (on the grounds that the workshop location was outside the project area) suggests a bureaucratic approach to management despite the short lead time to make the decision. In the future, project management should take all relevant opportunities to promote the SDP, which has the potential to provide spin-off benefits to all provinces.

20. The Ministry of Agriculture and Forestry (MAF), through the Office of the National Project Director established in the National Agriculture and Forestry Extension Services (NAFES), is implementing the SDP through a number of implementation units. Market intelligence activities are undertaken through the Ministry of Commerce (MOC), which also provides counterparts for the TA on Agribusiness Support and Training (TA 4005-LAO). This division of responsibilities has the potential to reduce the efficiency of process to some degree. The market intelligence system will be implemented jointly by MOC and MAF. MOC will supply intelligence on regional and international markets, while MAF will address domestic market intelligence. It is essential that both agencies, and particularly MAF, provide adequate resources to institutionalize and operate the planned market information system. Within MAF, this system may assist in promoting more demand-driven approaches to production among NAFES and associated provincial-level agricultural staff. Counterpart arrangements are generally weak, a common problem in the Lao PDR that reflects (i) staffing constraints in government ministries and departments; (ii) a lack of effort by some consultants to develop strong rapport with counterparts, often because of the perceived priority to complete their technical terms of reference; and (iii) the use of consultants for capacity substitution rather than for capacity development. Despite these problems and the administrative issues mentioned above, the OEM tentatively assesses the SDP as efficient. However, it is essential that the project streamline its administrative and management processes to underwrite the required rapid expansion of provincial level activities.

21. The OEM considers that reestimating the EIRR at this stage (July 2005) of the project's life is not necessary. Ex-ante EIRR of the SDP is estimated at 20%.

4. Sustainability

22. Sustainability of the SDP's smallholder support activities will be promoted by the demand-driven nature of market development. This contrasts with the technology and supply orientation of other projects (such as the DIDMSP). However, the willingness of businesses (particularly foreign-owned) to stay and/or expand in the Lao PDR will largely be a function of government policies and practices and of the investment climate. If the Government makes serious efforts to improve the investment environment and reduce impediments to production and trade, it is quite likely that the expected outcomes of the SDP will be realized and sustained. Conversely, if sustained improvement is not made in the investment climate, many existing businesses may find their profits insufficient to remain in the market. As indicated by the Inception Report, in the past, "some investors, particularly Thai companies that have more

mobility, have preferred to simply depart without formally shutting down operations." It will be essential for the Government to take steps to minimize the risk of this happening to existing enterprises with assistance from the project or independently through other initiatives.

23. The road alignments to be upgraded or constructed under the SDP have been selected and await approval. Past investments in rural roads in the Lao PDR have often not proved highly sustainable. A recent study found only 38% of the local road network to be in maintainable condition, while the proportions of district and rural roads in maintainable condition were even lower.[13] Heavy investments in the improvement of road infrastructure in the past focused on new construction and rehabilitation, and paid less attention to road maintenance. For example, a road upgraded from Highway 13 to the Mekong River east of the Nam Ngum bridge in the 1990s under the ADB-financed Industrial Tree Plantation Project has not subsequently received adequate maintenance.[14] In relation to the SDP roads, sustainability will require that design be adequate to promote road life (with adequate sub-base development, gravel depth, road camber, and all forms of drainage). Maintenance systems, including participatory maintenance, will need to be put in place during the project to the extent possible.

5. Overall Assessment

24. Based on progress to date and information available to the OEM, the SDP is likely to succeed.

C. Key Issues

25. The SDP is not designed to have much institutional impact. To some degree, it will strengthen the provincial agriculture and forestry offices and DAFEOs, and will increase their awareness of the need for market-driven diversified cropping. Contract farming, conversely, may compete with government extension services, through the establishment of private extension services using parallel structures that involve government extension staff. In principle, the extension system supported by contract farming in some districts can liberate provincial resources to work in other districts and areas. However, contract farming extension workers cannot replace government extension. Other aspects of extension, e.g., livestock, rice, and fish, will still have to be provided by government staff to the extent that they are able with their limited resources and capacity. In some ways, a parallel extension system may worsen extension capacity in the provinces because of potential jealousy and tension between the contract extension workers, with their resources, transport, and higher salaries, and government workers without. Nevertheless, any negative impact will be limited by the existing weakness of the government extension system, which is dependent on project funding for most field activity. The project and the provincial governments will nonetheless need to avoid negative institutional impacts.

26. The environmental impact of the SDP is expected to be minor. The main focus of the project's Initial Environment Examination was on the road construction component, which it considered would have little negative impact. Intensification of agriculture will require greater use of chemicals and fertilizers, and the project should take steps to ensure that environmental

[13] ILO. 2004. *Review of Rural Roads Maintenance in Lao PDR: Current Status, Issues and Options.* Vientiane

[14] ADB. 1993. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grants to the Lao People's Democratic Republic for the Industrial Tree Plantation Project.* Manila. As a result the surface has deteriorated in many areas, with loss of the gravel layer and significant erosion. Road design appears not to have allowed for adequate surface or side drainage, and there also appear to be insufficient culverts for flood drainage.

damage is minimized, such as through promoting integrated pest management and organic farming where appropriate.

27. The project experience highlights the need to take a market-driven approach to agricultural development. Its recognition that all nonsubsistence production must be geared towards its market separates this project from most other ADB-financed interventions in the agriculture and natural resources sector in the Lao PDR. Other projects are often supply driven. For example, irrigation projects such as the DIDMSP and the ADB-financed Community-Managed Irrigation Sector Project assume that if irrigation water supply improves, then increased diversified crop production will result. The extent of market impediments in the Lao PDR and the negative impact they have on agricultural production and marketing is a major issue that can be drawn from the SDP.

28. **Linking the SDP with Other ADB-financed Agriculture Sector Projects.** There are a number of areas where linkage to other ADB-financed projects (such as the DIDMSP and NNRBDSP) will be valuable. In particular, the potential of the SDP to contribute to commercialization of agriculture in the 35 irrigation schemes of the DIDMSP (or at least the 11 schemes in SDP districts) could be critical to the economic success or failure of the DIDMSP. To date, little diversified cropping has occurred in many subprojects. This is due in part to the paddy orientation of irrigation design, but is also due to the lack of a demand-driven approach to crop diversification. If the SDP can act as an agent of change to introduce reliable contract farming partners to selected DIDMSP schemes, it could lead to a fundamental change in their farming systems. For example, the change in Kantachane after the introduction of peanut farming has been remarkable.

29. Within SDP districts, in addition to the DIDMSP schemes there are several hundred irrigation schemes that have the potential to benefit. Mechanisms should be found to extend the SDP approaches to all suitable schemes over time, probably through contract farming supported by DAFEOs that become administratively and financially linked to the contract farming operations.

30. Links and coordination may also be developed with various rural finance initiatives that ADB is supporting, including TA 3413-LAO: Rural Finance Development, and the forthcoming Rural Finance Sector Development Program Loan. The scope of such coordination may include, but not necessarily be limited to (i) working with local branches of APB to help identify profitable businesses worthy of credit, and (ii) supporting the establishment and operations of demand-driven microfinance institutions in the SDP project areas. For example, under TA 3413-LAO, two savings and credit unions were intentionally created in the SDP project areas of Savannakhet and Phon Hong (Vientiane Province) to support and complement SDP activities.

31. **Market Impediments Study.** The focus of the SDP on alleviating production and marketing impediments is valuable. However, it will have little long-term impact unless the overall investment and operating climate of the country improves. A study of SME development may be highly appropriate to cover all aspects of the policy and legal environment, market and operational impediments, and ways to improve the business climate. If the Government strongly supports this study, it can have a significant impact on improving the agribusiness environment, and thus on the impact of the SDP. A number of recent prime ministerial decrees have been designed to improve the enabling environment for conducting agribusiness. However, many of these are largely ignored at the local level. In practice, it may be practical to limit the scope of the study to agricultural trade and agribusiness establishment and operation. A regional study may also be considered for the GMS countries. The economic cooperation strategy plan of

action forum (which links the Lao PDR, Thailand, Cambodia, and Myanmar) is conducting a number of relevant studies that need to be reviewed prior to commissioning further work.

The Lao PDR: Summary Review of Selected Technical Assistance Performance

	Title, Date, Executing Agency, and TA Cost Financed by ADB	Objectives and Scope	Summary Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
1	**TA 3006-LAO: Institutional Strengthening of the Water Resources Coordination Committee** Implementing agency: WRCC Approval to completion: Apr 1998–Jun 1999 Actual cost: $0.26 million	**Objectives** To assist the Government in (i) building WRCC's capacity to improve interagency coordination in the water sector, (ii) strengthening WRCC's capacity to integrate water resources planning and management; and (iii) preparing a national water sector strategy and action plan (SAP) for the sustainable development of the country's water resources **Scope** (i) Facilitate the adaptation of the WRCC mandate through consultative processes involving stakeholders in the water sector; (ii) refine the National Water Sector Profile (NWSP) by analyzing all aspects related to water use and management; and (iii) formulate the SAP, which will lead to formulation of water sector development projects for consideration by aid agencies	Recommendations: (i) future work should be both consultative and cooperative; (ii) good translation of all important documents and meetings is required; (iii) care is needed to maintain coordination between aid agencies, to avoid duplication and subsequent confusion among agency staff; (iv) watershed management coordination committees should be established within guidelines drawn up by WRCC; (v) the WRCC secretariat will have a major role and will need to develop clear ideas about its tasks, communicate these to relevant agencies, and reach agreement on responsibilities; (vi) further capacity building is required to allow the the Lao PDR to interact effectively at a technical level with delegates from other member countries of the Mekong River Commission; (vii) capacity building is needed on several fronts, covering technical issues (assessment and planning of water resources, environmental assessment and management, community education, and involvement in water resources management), administrative procedures, and English language skills; (viii) improved information collection and management is needed including socioeconomic data (to allow trade-offs to be assessed); (ix) information is required on groundwater resources and use; and (x) the current strategy of significant subsidy to some subsectors (such as low electricity charges and government-financed operation and maintenance) requires review.	The TA was **relevant**. It was fully in line with the recommendations of the NWSP, prepared in 1997 with ADB assistance. The TA assisted in establishing the framework for water resources management and improved WRCC capacity. The TA was **effective**. It achieved its immediate objectives of establishing the mandate for WRCC and strengthening the WRCC secretariat, and prepared a water sector strategy and draft action plan. The TA recognized that further support would be required for the WRCC to become fully effective and outlined the resources considered necessary for this. The delivery of the TA was **efficient**.	The sustainability of TA outcomes is rated as **less likely**, particularly considering the limited availability of human, institutional, financial, and other resources to implement the recommendations. The TA did not identify adequately the substantial institutional constraints to establishment of WRCC as an effective institution. Institutional impacts were **moderate**. **Rating:** The TCR evaluated the TA as generally successful. The OEM rates this TA as **successful.**

ADB = Asian Development Bank, Lao PDR = Lao People's Democratic Republic, NWSP = National Water Sector Profile, OEM = Operations Evaluation Mission, SAP = Strategy and Action Plan, TA = technical Assistance, TCR = technical assistance completion report, WRCC = Water Resources Coordination Committee.

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2	**TA 3205-LAO: Implementation of the Water Sector Action Plan** Implementing agency: WRCC Approval to completion: June 1999–Nov 2000 Actual cost: $0.26 million	**Objective** To promote sustainable water resources management by developing the policy and institutional capacity necessary to introduce integrated water resources management (IWRM) in selected river basins. **Scope** Based on the national water sector profile and the strategy and action plan, WRCC sought to prepare a national water policy. Areas in which policies were required included (i) institutional responsibilities and linkages, (ii) coordination arrangements among water sector agencies, (iii) financing and cost recovery for water resources management, (iv) water resources information systems, and (v) capacity building. The water policy would be an important and low-cost instrument to influence the protection, development, and management of water resources at the national, river basin, provincial, and community levels. The TA would also strengthen the capacity of the WRCC secretariat to carry out its mandate. The TA was extended in March 2000 to include preparation of a draft decree to assist in implementing the Water Resources Law of 1996.	The TA appears to have developed few technical recommendations beyond those implicit in the water policy. The "recommendations" section of the TA Final Report includes a list of activities that were considered necessary for the further development of capacity and awareness in the water resources area. The TA final report indicated that (i) there is considerable further work required to develop policy, law, and regulations to implement integrated river basin man-agement in the country; (ii) the capacities of each of the agencies to implement the policy, law, and regulations need further building; (iii) while some agencies have the capability to implement water resource development projects, there is little or no capacity to implement water resource management; (iv) building this capacity, which is essential for the sustainability of both existing and future water resource developments in the Lao PDR, will require ongoing support from international agencies; and (v) support will need to have regard for creating the required technical, institutional, and financial bases for ongoing water resource management.	The TA was **relevant** in the context of the Water Sector Strategy and Action plan developed under TA 3006-LAO. However, there is some indication that developments in water resources management are aid-driven and not fully owned by the Government. The TA was **less effective** against its optimistic objectives. The capacity to introduce IWRM was not established, and it still does not fully exist in Lao water resources sector institutions. [1] However, the draft decree led directly to the Decree to Implement the Water Law (2001), which has clarified roles and responsibilities in the water resources management sector. The delivery of the TA was **efficient**. A detailed consultation process was adopted. This has been successful in familiarizing stakeholders at various levels with the institutional and policy requirements of IWRM.	Sustainability is rated as **likely.** The water policy and decree developed as a result of the TA will continue to be relevant, and will assist stakeholders in rational development and management of the nation's water resources. Institutional impacts were **moderate**. Although the policy statement and decree have assisted in defining a role for WRCC, its capacity to fulfill its mandate remains limited, 5 years after the TA. The TA highlights the necessarily long-term nature of institutional strengthening. **Rating:** The TCR rated this TA as generally successful. The OEM rates this TA as **successful.**

ADB = Asian Development Bank, IWRM = integrated water resources management, Lao PDR = Lao People's Democratic Republic, OEM = Operations Evaluation Mission, TA = technical assistance, TCR = technical assistance completion report, WRCC = Water Resources Coordination Committee.

[1] Many issues in the Law, particularly the roles and responsibilities of various agencies for specific activities such as water allocation and the process for licensing water users, need to be developed. There is an urgent need for the development of further legislation or decrees for subsectoral activities, as well as the necessary legal documents to accompany the Law and make it effective. Source: P. Nonthaxay and S. Souvannalath. 2004. *Water Resources Management in Lao PDR*, 30th Water, Engineering and Development Centre International Conference, Vientiane.

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3	**TA 4005-LAO: Agribusiness Support and Training** Accompanying SDP (Loan 1949-LAO) Approval to completion: Nov 2002–Apr 2007 Inception: May 2005; fielding of consultant: Apr 2005 Ministry of Agriculture and Forestry (MAF); Implementing agency: NAFES Estimated cost: $0.25 million	**Objectives** To (i) identify viable and strategic agribusinesses and potential investors and assist them in establishing their businesses; (ii) train potential investors in market analysis, business plan preparation, feasibility studies, and loan applications from commercial banks; (iii) train potential investors in agroprocessing in the Mekong Institute or other suitable institutes; and (iv) raise awareness of business opportunities by conducting study tours for potential local investors/ entrepreneurs to businesses around the region. **Scope** The TA will facilitate agribusiness development by providing training and development support to agribusiness candidates in SDP provinces. Potential agribusiness investors supported by the TA will include enterprising business people with entrepreneurial ideas and strong interest in receiving assistance. They will develop niche markets for Lao products with clear comparative advantage where unique products have the potential to generate above-normal returns and import substitutes (e.g., organic produce, nontimber forest products, and animal feed). The TA will provide assistance, varying from $10,000 to $30,000, to small-scale agribusinesses operated totally by the private sector. Agribusinesses supported by the TA will receive training in business plan and feasibility study preparation, in marketing studies, as well as in applying for credit financing. The TA will provide funding for agribusiness management and process training at the Mekong Institute/Khon Kaen University in Thailand and sponsor study tours to selected Thai agribusinesses as an adjunct to the formal training program.	This TA commenced in April 2005. No recommendations have been developed by the consultant as yet, though training materials for businesses and commercial bank staff have been prepared. Little training has so far been delivered (after 3 months of the planned 10 months of the TA) due partly to difficulties in obtaining disbursement approval for training activities. Improved management systems for the TA (and its parent project) are required. Until these issues have been fully resolved, it will not be desirable for the TA consultant to return to the Lao PDR. Apart from supporting businesses and some DAFEOs, the project is not designed to have significant institutional impacts. Given the weakness of the Government in business support, ways of institutionalizing TA approaches and systems should be considered. At the least, counterpart arrangements should be improved, such that the TA will not be used as capacity substitution, but will rather be targeted for developing domestic institutional capacity.	The TA is rated as **relevant**. While the concept of the TA is highly relevant to the objectives of the SDP, the TA is underfunded. There is limited funding available for field activities, and no domestic consultant is funded under the TA. No full-time counterpart has been assigned by MAF or by the Ministry of Commerce (which is handling the information systems and business linkages part of SDP). The funding issues referred to in the recommendations column, unless addressed, are currently jeopardizing (and will continue to do so) the effectiveness and efficiency of the TA.	It is too early to assess and define the sustainability and impacts of this TA. However, to the extent that the TA is assisting viable businesses to become established, its effects are likely to be sustainable among the private enterprises. The lack of mechanisms to support institutionalization may limit the impact of the TA unless corrected. **Rating:** Unrated. The OEM considers this TA too early to assess its full performance.

ADB = Asian Development Bank, DAFEO = district agriculture and forestry extension office, Lao PDR = Lao People's Democratic Republic, MAF = Ministry of Agriculture and Forestry, NAFES = National Agriculture and Forestry Extension Service, OEM = Operations Evaluation Mission, SDP = Smallholder Development Project, TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
4	**TA 4339-LAO: Study of Gender Inequality in Women's Access to Land, Forests, and Water** Approval to completion: May 2004–June 2006 Consultants were fielded in March 2005 Ministry of Agriculture and Forestry Budgeted cost: $0.25 million	**Objectives** This TA supports the Nam Ngum River Basin Sector Development Project (NNRBSDP). The objectives of the TA are to (i) increase awareness—within government agencies and communities—of the extent and impacts on poverty and of prevalent gender inequality in access to land, forests, and water resources among ethnic minority communities in the Nam Ngum River Basin; (ii) design solutions to address the issues of gender inequality and poverty among these communities; and (iii) institutionalize gender-responsive programs within government agencies that can help to address the issues of gender inequality and poverty. **Scope** The scope of the Project includes (i) in the first phase, an ethnographic study of gender issues, primarily in terms of ethnic minorities' rights and access to land and related issues of access to forest and water resources; and (ii) in the second phase, preparation and implementation of a detailed strategy to improve gender outcomes in the counterpart project. The ethnographic study to be done in the first phase will address (i) gender patterns of resource allocation, management, and rights under the customary laws of ethnic minority communities living in the Nam Ngum Basin; (ii) the impacts on women's rights of state laws and policies of relocation, stabilization of shifting cultivation, land-use planning and land allocation, forest demarcation, and water resource allocation and management, (iii) analysis of the factors responsible for gender gaps in delivery of government services and programs, particularly to ethnic minority women; and (iv) recommendations to close these gaps.	This TA commenced in March 2005. Major recommendations: none to date	The TA builds on the substantial work undertaken in the Northern Region Gender Development Strategy, and will promote gender equality under the NNRBSDP. To the extent that the TA is able to institutionalize its recommended systems, it has the potential to influence consideration of gender issues in other Lao PDR projects. The TA is **highly relevant** to both ADB's policy on gender and development (1998) and the Government's gender policy. The TA provides an opportunity to assist government agencies and projects to operationalize their strategies. In practice, the relevance of the TA will depend largely on the extent to which it is able to develop ownership of its approaches and recommendations. The TA is ambitious in relation to its limited resources. It seeks to assist 50% of the minority women in the Nam Ngum River Basin to participate in village meetings and attend training courses. The TA may have difficulties to achieving this target. The performance indicators and targets of the TA framework need to be refined to reflect the feasibility of these targets based on available resources.	**Rating:** Unrated. The OEM considers this TA too early to assess its full performance.

ADB = Asian Development Bank, Lao PDR = Lao People's Democratic Republic, NNRBSDP = Nam Ngum River Basin Sector Development Project, OEM = Operations Evaluation Mission, TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Recommendations	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
5	**TA 4392-LAO: Marketing Support for Organic Produce of Ethnic Minorities** Approval to completion: Sep 2004 to Sep 2007 National Steering Committee for Commodity Production under Ministry of Commerce Estimated cost: $0.6 million	**Objectives** To generate alternative income-generating opportunities for ethnic minority farmers in rural villages by addressing their primary marketing constraints. Expected outputs include (i) establishment of production groups and development of trade linkages with "fair trade" markets; (ii) increased production of crops that have identified markets under contract-farming arrangements, and identification of alternative markets for agroforestry products; and (iii) evaluation of the impacts of project activities. **Scope** Project activities will focus on marketing and related support for creating business linkages between selected poor ethnic minority communities and identified alternative markets, and aim to fill in the technical, managerial, and social shortfalls to complete every stage of the concerned value chain from production through sales for each selected product. The project comprises three components: (i) production grouping and developing business linkages to "fair trade" markets (component A); (ii) expanding contract-farming arrangements, which will secure continuous income-earning opportunities over the long term (component B); and (iii) evaluating the development impact (component C). Ethnic minority communities will be selected based on (i) poverty status of potential beneficiaries, (ii) willingness to participate in project activities over the long term, (iii) marketability of their skills and their knowledge of nontimber forest products (NTFP) and handicraft production, and (iv) expected development impacts.	Inception reports: The consultants undertook a brief inception mission in July 2005 and identified a number of possible handicraft products for local manufacture and export. Apart from identifying possible products and partners, their report contains few recommendations, though it suggests that speeding up export documentation procedures is required to promote small handicraft export businesses. Other consultants completed an inception report in June 2005. The company is looking at a number of possible organic crops including maize, sesame, indigo, pigeon pea, and soybean. The report proposes a continuation of the consultants' program, including the establishment / development of farmer groups and further product development and promotion.	The TA is **relevant**. The concept of improving ethnic minority areas through the development of markets for NTFPs and other products is sound, including organic production. However, the TA needs to be clearer on what it can itself achieve (linkages, awareness, etc.)— i.e., the project outputs—and what the farmers can achieve with help from the project and other stakeholders—i.e., the project outcomes. While the northern region of the Lao PDR should have strong comparative advantage in relation to NTFPs (with extensive forest cover, skilled forest gatherers, and low labor costs), the same does not appear to be true for cash cropping. Further review may thus be needed of the emphasis to be placed on contract farming. The planned "pesticide free" zones of Luang Prabang and Vang Vieng district in Vientiane Province may offer some potential for specialty crops, however. One TA with 36 months of consulting inputs over 3 years may not likely be sufficient to establish organic farming on a significant scale in the (minimum) 25 villages planned as project partners.[2]	**Rating:** Unrated The OEM considers this TA too early to assess its full performance.

ADB = Asian Development Bank, Lao PDR = Lao People's Democratic Republic, NTFPs = nontimber forest products, OEM = Operations Evaluation Mission, TA = technical assistance.

[2] See, for example, paras. 31 and 32 of IFAD. 2005. *Organic Agriculture and Poverty Reduction in Asia: China and India Focus.* Rome.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Planned Activities	Relevance and Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
6	**TA 4406-LAO: Capacity Building for Smallholder Livestock Systems** Approval to completion: Oct 2004 to Dec 2006 As of July 2005, the TA had not commenced National Agriculture and Forestry Research Institute Estimated cost: $0.55 million	**Objectives** The objective of the TA is to strengthen the capacity of field officers to work with poor farmers in adapting and adopting technical and management options for improving smallholder livestock systems. Field officers should be able to better respond to the variations between and within villages. Farmers should have an improved understanding of the choices available to increase livestock productivity. **Scope** Expected outputs are (i) upgraded capacity of MAF at the national, provincial, and district levels through further field application of participatory methods introduced by other projects; in the process, the number of field staff with experience working with disadvantaged groups—women and ethnic minorities—will increase; (ii) expanded and improved Forage and Livestock System Project approach to reach and involve poor farmers, particularly women and ethnic minorities, to address livestock-raising issues; and (iii) improved understanding of traditional practices in livestock raising.	**Planned Activities** (i) Build the capacity for participatory methods to encourage adaptation and adoption of technical and management options for improving livestock productivity. (ii) Strengthen national and provincial technical support skills in the livestock sector. (iii) Develop a systematic approach to reach and involve farmers including women and ethnic minorities. (iv) Document the experience and lessons learned, for incorporation in the ensuing Participatory Livestock Development Project (PLDP). It was further agreed at the tripartite meeting (2005) for the PLDP project preparatory TA (PPTA) that this TA would also attend to the establishment of starter nurseries that would be used to provide the planting material needed for the first year's activities of the PLDP. Both projects will share a common steering committee.	The TA is **relevant**. While it had been intended to operate in parallel with the PLDP PPTA, its late implementation is not necessarily a disadvantage, and deferral until the PLDP is approved is in practice logical. TA activities can help PLDP achieve its early objectives through laying the groundwork for improved extension support through the district agriculture and forestry extension office in three PLDP provinces.	**Rating:** Unrated. The TA has not commenced (July 2005).

ADB = Asian Development Bank, MAF = Ministry of Agriculture and Forestry, PLDP = Participatory Livestock Development Project, PPTA = project preparatory technical assistance, TA = technical assistance.

Lao PDR: Summary Review of Selected Regional Technical Assistance Performance in the Context of the Lao PDR

	Title, Date, Executing Agency, and TA Cost Financed by ADB	Objectives and Scope	Summary Outcomes and Recommendations	Relevance, Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
Vegetable Research					
1	**RETA 5582: Workshop on Vegetable Research and Development in Cambodia, Lao PDR, and Viet Nam** Approval to completion: Jun 1994–Apr 1995 AVRDC **Lao PDR** National Agricultural Research and Seed Multiplication Center, Ministry of Agriculture and Forestry Actual cost: $71,000	**Objectives:** (i) study the current status of vegetable production, identify major constraints to increased production, and assess the research needs and capabilities of the research institutions in Cambodia, Lao PDR, and Viet Nam; and (ii) organize a workshop in AVRDC headquarters to discuss approaches to increase vegetable production through collaborative research, training, and information exchange, and the development of a detailed joint proposal that could lead to financing by international sources.	On the basis of the workshop and agreement reached among three participating countries, AVRDC requested ADB's assistance to establish a Vegetable Research Network including Cambodia, Lao PDR, and Viet Nam under a RETA. The three countries recommended that support focus on institutional strengthening through training, improved vegetable seed production technology, exchange and evaluation of elite vegetable varieties, and development of national statistics on vegetables.	The workshop was **relevant**. It established the direction of Lao PDR's vegetable research and development program to support national objectives to ensure food security, diversify farming systems towards market-oriented agricultural production, and improve rural livelihoods. The workshop was **effective** in developing an understanding of the constraints and opportunities of vegetable production and research in the three countries. It led to the formulation of recommendations to improve vegetable research programs in the Lao PDR. A major outcome of the workshop was a memorandum of understanding (MOU) to establish a collaborative vegetable research network for Cambodia, Lao PDR, and Viet Nam (CLVNET), signed by the country representatives. A project proposal was developed that generated support from ADB and AVRDC under RETA 5680: Establishment of a Vegetable Research Network in Cambodia, Lao PDR, and Viet Nam (approved in 1996). Overall, the TA was **efficient**. A profile of the status of vegetable production and research in the Lao PDR was prepared and used as the basis of discussion in the workshop. The workshop was well organized and attended by high-level officials. Submission of the workshop proceedings and final report was delayed by 2 months due to the time needed to receive comments from the participating countries.	Sustainability of the TA outcomes was **likely.** The Department of Agriculture and Extension fully supported the TA recommendations and MOU to establish CLVNET. The TA outcomes were further enhanced by RETA 5680. Further support for funding from ADB and AVRDC was obtained. The institutional development impact was **significant**. Through the TA, increased interest by officials and national agricultural research system led to recognition of the importance of strengthening domestic research in vegetable production. **Rating:** The TCR rated this RETA as **generally successful**. In the context of the Lao PDR, the OEM rates the TA as **successful**.

ADB = Asian Development Bank; AVRDC = Asian Vegetable Research and Development Center; CLVNET = Collaborative Vegetable Research Network for Cambodia, Lao PDR, and Viet Nam; Lao PDR = Lao People's Democratic Republic; MOU = memorandum of understanding; OEM = Operations Evaluation Mission; RETA = regional technical assistance; TA = technical assistance; TCR = technical assistance completion report.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objectives and Scope	Summary Outcomes and Recommendations	Relevance, Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
2	**RETA 5680: Establishment of a Vegetable Research Network in Cambodia, Lao PDR, and Viet Nam** Approval to completion: Apr 1996–Nov 2000 **Lao PDR** National Agricultural Research and Seed Multiplication Center, Ministry of Agriculture and Forestry Actual cost: $600,000	**Objectives:** (i) upgrade the national agricultural research system (NARS) by providing improved germplasm of vegetable crops, and improve the network's adaptive research technologies in order to accelerate development of improved vegetable varieties; (ii) strengthen the research capability of researchers in crop management practices including integrated pest management (IPM); and (iii) establish databases in each country by conducting surveys on production, marketing, and consumption of vegetables. **Scope:** (i) provision and evaluation of improved varieties from AVRDC suitable for the participating countries; (ii) training of research and extension specialists; (iii) training and provision of equipment and supplies for IPM packages; (iv) national surveys on vegetable production, marketing, and consumption to establish reliable vegetable information databases; and (v) exchange of information, germplasm, and technology among the three countries.	Varietal selection of promising vegetables was carried out, and results were agreed on with the National Agriculture and Forestry Research Institute (NAFRI) for further on-farm trials. **Recommendations** (i) Promising cultivars and technologies identified at the research stations need to be further tested on farmers' fields. (ii) AVRDC should provide training on vegetable seed multiplication for farmers to produce good quality seeds locally. (iii) Further trials are needed to refine IPM technologies for the control of pests and diseases on farmers' fields. Financing of a second-phase was recommended to continue the momentum gained by the TA. Measures to minimize risks due to high staff turnover in research organizations during implementation should be discussed and incorporated in the design of the second phase.	The TA was fundamental in building up the research and institutional capacities to improve national vegetable productivity and production. It was **relevant** in supporting the country's development objectives in agriculture, which aimed to promote farming system diversification, strengthen rudimentary services in agricultural research, and assist small-scale farmers to increase income and improve rural livelihoods. The three objectives of the TA were achieved as envisaged. Local scientists/researchers were trained, and they carried out small research station trials of selected vegetable germplasm from AVRDC. Several vegetable species were evaluated for local adaptability and improved productivity. The TA was **effective** in undertaking station trials; promising vegetables were identified; and results were reported to NAFRI for further on-farm trials. Local capacity was improved, and vegetable production technologies were made available through regional networking and AVRDC support. The database was established through the assistance of a consultant, but local capacity has yet to be strengthened on this aspect. The delivery of the TA was **less efficient**. The staff capacity of government agencies was not fully evaluated prior to TA implementation. Delay in implementation was experienced due to high staff turnover leading to a 1-year extension to the TA. Although the training target was met, funds from other projects were needed to ensure TA implementation. NARS counterparts in terms of network facilities and support were inadequate, largely due to financial constraints in the Lao PDR.	The TCR reported that the sustainability of TA outcomes may be uncertain due to high staff turnover, a common constraint in the Lao PDR. However, to address the issue, close coordination with AVRDC was established, and consultants were mobilized to assist. The TA outcomes were **likely** to be sustained with further support through a second phase (RETA 6011). According to the Deputy Director of the Horticulture Research Center, the TA's impact was mainly the improvement of technical skills and capacities of local researchers. In the absence of training support in the country, the researchers benefited greatly from the training, intercountry networking, access to new research techniques, and technologies introduced by the TA. The impact of the TA is rated **significant.** **Rating:** The TCR rated the overall TA as generally successful. In the context of the Lao PDR, the OEM rates the TA as **successful.**

ADB = Asian Development Bank, AVRDC = Asian Vegetable Research and Development Center, IPM = integrated pest management, Lao PDR = Lao Peoples' Democratic Republic, NAFRI = National Agriculture and Forestry Research Institute, NARS = national agricultural research system, OEM = Operations Evaluation Mission, TA = technical assistance, TCR = technical assistance completion report.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objective and Scope	Summary Outcomes and Recommendations	Relevance, Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
3	**RETA 6011: Strengthening the Collaborative Vegetable Research Network in Cambodia, Lao People's Democratic Republic, and Viet Nam (Phase II)** Approval to completion: Dec 2001–Oct 2005 **Lao PDR** National Agricultural Research and Seed Multiplication Center, Ministry of Agriculture and Forestry Budgeted cost: $650,000	**Objective:** To improve the productivity of vegetables in participating countries. **Scope:** (i) germplasm evaluation, field verification, and technology development; (ii) IPM for diamondback moth on cruciferous vegetables; (iii) seed production technologies and multiplication involving public-private partnerships; and (iv) capacity building, information exchange, technology transfer, and impact assessment	Four vegetable varieties (hot chili VV001, tomato CLN2413D, soybean G8586, and cucumber HHRC001) have been accepted by farmers. Various technologies such as biopesticides, pruning of hot chili, mulching for green onion, net-tunnel for green mustard, and grafting tomato were successfully demonstrated in three provinces. Multiplication of seed for nine promising varieties of vegetables has been conducted in the Lao PDR. On-farm vegetable trials reached three locations in the Lao PDR, demonstrating from 15% to 35% increase in yield. **Recommendations:** A further phase of the RETA was proposed during the midterm workshop in 2004. The next phase would focus on (i) safeguarding biodiversity of major indigenous vegetables in targeted countries to support further research and production; (ii) assessment of the nutritional value of selected accessions of indigenous vegetables; (iii) building a wider stakeholder base and capacity; (iv) testing, scaling-up, and dissemination of technologies that have been developed and tested in the first phase; and (v) assessing potential social, economic, and environmental impacts of improved varieties of indigenous vegetables. By July 2005, there was no follow-up by ADB to this proposed phase. A member of the Steering Committee recommended that (i) trials should be suspended unless trial design in the Lao PDR gets approval of AVRDC's-Asian Regional Center in Taipei,China for appropriate statistical design; (ii) links with the private sector should be strengthened; and (iii) emphasis should be placed on socioeconomic assessments and impact evaluations.	The TA is important in continuing the results achieved by the previous RETA: 5680. This second phase TA is **relevant** in meeting the country's agricultural strategy to promote diversified crops to improve rural incomes and livelihoods. The TA to date has achieved three of its four project scopes: (i) on-farm trials of promising varieties were conducted, (ii) IPM trials have been established in three provinces, and (iii) in-country training and a workshop were conducted. The TA has not firmly established public-private partnerships in seed production, as seed regulations in the country have yet to be improved through the support of this TA. The TA is rated **less effective** because results of the research remained mostly on-station and the attribution of improved vegetable production within project sites has not yet been established. Lack of a reliable baseline was a constraint in defining impacts. AVRDC conducted more training and workshops than were required. The Lao PDR participated in all 12 training activities on various vegetable production technologies, and conducted two in-country training activities and three farmers' field days. No evaluation has been made of the training, whether it has been effective in the dissemination of the promoted technology. Dissemination of the vegetable varieties outside the project has been slow, No linkage was made to the private sector. Training activities were not documented. The TA started its baseline survey halfway through the project, which precluded establishment of a control group of farmers for whom results and benefits could be monitored. The TA is rated **less efficient**.	The results achieved by this TA face difficulties in the absence of external funding to continue dissemination of the TA results. Lack of budgetary support from the Government is a major constraint. Also, few technical staff are involved. To date, there have been few public-private partnerships established. The sustainability of the TA is **unlikely** due to these key factors. Collaboration has been established among the district and provincial research and extension agencies involved in the TA, representing a **significant** institutional impact. In the context of the Lao PDR, the OEM rates the TA as **partly successful**.

ADB = Asian Development Bank, AVRDC = Asian Vegetable Research and Development Center, IPM = integrated pest management, Lao PDR = Lao People's Democratic Republic, OEM = Operations Evaluation Mission, RETA = regional technical assistance, TA = technical assistance.

	Title, Date, Executing Agency, TA Cost Financed by ADB	Objectives and Scope	Summary Outcomes and Recommendations	Relevance, Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
Livestock Research					
4	**RETA 5866: Developing Sustainable Forage Technologies for Resource-poor Upland Farmers in Asia** Approval to completion: Oct 1999–Jul 2003 **Lao PDR** National Agriculture and Forestry Research Institute, (NAFRI), Vientiane People's Republic of China, Indonesia, Philippines, Thailand, Viet Nam Actual cost: $1,200,000	**Objectives:** (i) develop sustainable forage technologies for resource-poor farmers in upland farming systems in Asia, and (ii) strengthen the capacity of national agricultural research systems (NARS) in the developing member countries to develop and deliver these technologies to farmers. **Scope**: (i) development and testing with farmers of forage technologies for upland farming systems, (ii) extension of forage technologies using participatory approaches for scaling up, (iii) establishment and operation of local seed and planting material multiplication systems, (iv) strengthening of capacity in developing and disseminating forage technologies using participatory approaches, and (v) establishment of network communications and sharing of information among NARSs and in the region.	**Recommendations**: Actions initiated under the TA were recommended for development and dissemination for scaling-up by other ongoing or planned agriculture and livestock projects. During the TA's final country meeting in Hainan,PRC in 2002, country delegates recommended that there was a need to (i) introduce integration of forages with other feed materials; (ii) introduce project monitoring and evaluation at the village level, on the scaling up of seed multiplication systems, and improvement of extension methods in order to identify impact on income generation and poverty reduction; (iii) better understand livestock production and marketing constraints and opportunities; (iv) strengthen linkages and integration with other projects for greater impacts; and (v) institutionalize the use of participatory processes more widely within government institutions.	At the time of the TA, livestock still remained among the least prioritized subsectors in the Department of Agriculture. The TA was **relevant** with respect to overall country development priorities at the time, for example, in relation to the Government's 1999 Agriculture Strategy, which strongly supported livestock development. In general, the TA was **effective.** The contribution of the TA to the Lao PDR was limited to the conduct of small forage trials and capacity building. Research activities were reduced greatly during the last year of the TA due to constraints in network coordination. However, TA objectives were generally met through the partnership built by the International Center for Tropical Agriculture (CIAT) with the on-going Forages and Livestock Systems Project (FLSP) funded by AusAID and comanaged by CIAT. Research activities in the Lao PDR were interrupted during the last year of the TA. A country work plan was not developed for 2003, which resulted in withdrawal of research funds and decreased activities. CIAT, the implementing agency of the TA, continued the network in the Lao PDR through the FLSP. The TA was **less efficient.**	The TA was greatly constrained by the lack of a local collaborator in the Lao PDR. Too many projects working with the same institutions often result in competition among projects for staff, and smaller projects are less likely to be prioritized for adequate staffing. On the positive side, sustainability of the TA is **likely** due to the development of complementing livestock activities in the country. The design of a new project proposed for funding by ADB –the Participatory Livestock Development Project, in 2004/05, was based on the experience of the TA and the FLSP. Activities in the Lao PDR were too limited to lead to major impacts. However, in terms of institutional development, the TA contributed in (i) building up local capacities in terms of technical and working methodology extension to effectively work with farmers, and (ii) defining improved forage technologies. NAFRI research and extension have taken up the approach and participatory extension process introduced by the TA. The TA impact in the Lao PDR is **significant** despite its limited scope**.** **Rating:** TCR rated the TA **highly successful**. In the context of the Lao PDR, the OEM downgrades the TA rating to **successful**.

ADB = Asian Development Bank, AUSAID = Australian Government Aid Program, CIAT = International Center for Tropical Agriculture , FLSP = Forages and Livestock Systems Project, Lao PDR = Lao People's Democratic Republic, NAFRI = National Agriculture and Forestry Research Institute, NARS = national agricultural research system, OEM = Operations Evaluation Mission, PLDP = proposed Livestock Development Project, PPTA = Preparatory Project Technical Assistance, PRC = People's Republic of China, TA = technical assistance, TCR = TA completion report.

	Title, Date, Executing Agency, and TA Cost Financed by ADB	Objectives and Scope	Summary Outcomes and Recommendations	Relevance, Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
5	**RETA 6067: Improving Livelihoods of Upland Farmers Using Participatory Approaches to Develop More Efficient Livestock Systems** Approval to completion: Dec 2002–Jun 2006 **Lao PDR** National Agriculture and Forestry Research Institute (NAFRI), Vientiane People's Republic of China, Indonesia, Philippines, Thailand, Viet Nam, Cambodia Budgeted cost: $950,000	**Objectives:** (i) improve the sustainable livelihood of small farmers through intensification of crop-livestock systems, using farmer participatory approaches to improve and deliver improved forage and feed technologies; and (ii) improve delivery mechanisms in participating DMCs for dissemination of improved forage and feed technologies; **Scope:** The TA includes (i) developing integrated feeding systems for livestock that optimize use of improved and indigenous fodders, crop residues, and farm labor; (ii) defining improved methods to develop forage feed systems and extend them to new farmers optimizing the use of M&E for feedback to others in the community; (iii) establishing increased capacity at different levels to expand the use of improved forage and feed systems and respond to local needs; (iv) comparison of development opportunities and market, and logistical constraints for intensification of smallholder livestock systems between sites in the five countries; and (v) improved regional interaction and linkages with national and externally funded development projects that ensure synergistic and multiplier effects.	The TA has effectively carried out small on-farm trials on goat production improvement technologies. Results have been demonstrated and adopted by small-scale goat farmers in three districts in Savannakhet. Dissemination of results has continued by the provincial and district extension offices and NAFRI. Market links between farmers and traders were strengthened. Farmers have started improving goat production systems to meet the requirements of the Vietnamese market. Informal contracts between farmers and traders were established. **Recommendation:** Longer term investment in research and development is needed to ensure that the benefits of the research are fully appreciated and taken up for the development of the sector. As for the initiatives started by the TA in Savannakhet, it is important to find a strong development partner to apply the promising results and extend adoption to a larger area involving more farmers.	This TA follows the ADB-financed RETA 5866. The TA is **relevant** to (i) the Government's vision and priority program in agriculture for 2020 to ensure food security and accelerate market orientation of agriculture; and (ii) ADB's country strategy and program, which emphasizes diversification and commercialization of agriculture. The major role of the Lao PDR in the TA is mostly on regional networking and limited activities on testing production systems and market improvements on goats. However, the TA has been **effective** in building up the capacity of the institution, dissemination, and development of goat production technologies in the country through a "champion" network collaborator. Improved market awareness and improved goat production systems have been recognized by NAFRI as an important potential strategy for livestock development in the country. The Lao PDR effectively led and managed the regional work of the TA in Viet Nam, Cambodia, and Thailand. The limited activities of the TA in Savannakhet have resulted to promising results that gained recognition from NAFRI for scaling-up in other provinces and districts. The market study methodology and approaches on goats have been with local institutions and among network members. On this aspect, the TA has been **efficient**.	The dependence of the institution on a single "champion" collaborator may pose future sustainability issues for the TA. Capacity development in the country is still crucial. However, the sustainability of the TA is **likely**, as NAFRI recognizes this issue and started establishing closer collaboration and training of provincial and district staff on the extension methods developed through this TA. Practical lessons and strategies developed under this TA have been taken up in the design of the proposed Participatory Livestock Development Project, a loan project being prepared for ADB financing. The institutional impacts of the TA have been **significant** in terms of increased local capacity and stronger extension network among the district and provincial livestock extension. Methodologies developed by the TA in the Lao PDR have been extended in Viet Nam. **Rating:** **(potentially successful)** Overall, the OEM rates this TA as likely to **succeed** in the context of the Lao PDR.

ADB = Asian Development Bank, CIAT = International Center for Tropical Agriculture, DMC = developing member country, Lao PDR = Lao People's Democratic Republic, M&E = monitoring and evaluation, NAFRI = National Agriculture and Forestry Research Institute, OEM = Operations Evaluation Mission, PLDP = Participatory Livestock Development Project, TA = technical assistance.

Title, Date, Executing Agency, and TA Cost Financed by ADB		Objective and Scope	Summary Outcomes and Recommendations	Relevance, Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
6	**RETA 6192: Transboundary Animal Disease Control in the Greater Mekong Subregion** Approval to completion: Oct 2004–Sep 2006 Cambodia, PRC, Lao PDR, Thailand, and Viet Nam ASEAN Working Group on Livestock: ADB/FAO/JICA/OIE Project Management: FAO Regional Office for Asia/ILRI/OIE/VSF Budgeted cost: $1.0 million	**Objective:** Control transboundary animal diseases in the Greater Mekong Subregion (GMS) to enhance food security, safety, and international trade in livestock and livestock products. The scope of the TA includes (i) a Regional Cooperation Framework adopted under the Association of Southeast Asian Nations; and (ii) upgrading regional and national diagnostic laboratories, and building their capacity.	By July 2005, the TA started mobilizing consultants. A memorandum of understanding for cooperation to prevent and control transboundary animal diseases in the GMS was signed (5 July 2005).	The Lao Government has recognized the importance of livestock development as a strategy for poverty reduction in the country. Cross-border trade in livestock contributes more than $25 million to the Lao economy. Transboundary diseases are a major constraint to trade, because they cause animal mortality, are a threat to smallholder livelihood, drain public sector resources, restrict cross-boundary trade, and hinder efforts to reduce poverty. Controlling such diseases is a strong incentive for regional cooperation that makes this TA **highly relevant** for the Lao PDR.	The TA has just commenced, and its performance cannot be rated as of this time (July 2005).

ADB = Asian Development Bank, FAO = Food and Agriculture Organization, GMS = Greater Mekong Subregion, ILRI = International Livestock Research Institute, JICA = Japan International Cooperation Agency, OIE = Office International des Epizooties, PDR = People's Democratic Republic, PRC = People's Republic of China, TA = technical assistance, VSF = Veterinaires sans Frontieres.

Title, Date & Executing Agency and TA Cost Financed by ADB		Objective and Scope	Summary Outcomes and Recommendations	Relevance, Effectiveness of Recommendations, and Efficiency of Process	Sustainability, Impacts, and Performance Rating
Rice Research					
7	**RETA 6136: Integrating and Mobilizing Rice Knowledge to Improve and Stabilize Crop Productivity to Achieve Household Food Security in Diverse and Less Favorable Rain-fed Areas of Asia** Approval to completion: Nov 2003–Jan 2007 Cost: $900,000	**Objective**: Improve food security and livelihoods of predominantly rice-growing farmers living in unfavorable rain-fed areas in monsoon Asia. Specific aims for Working Group 4 (which includes the Lao PDR) are to (i) improve the productivity of rotational upland systems, including the management of shortened fallow periods; (ii) increase lowland rice productivity to relieve intensification pressure on the slopes; (iii) develop stable, permanent land use systems in the uplands; and (iv) conduct policy analyses and dialogues with decision makers to guide policy reforms.	Promising varieties suitable for short fallows (Nok and Nakhinsoung) and intensively cropped upland-based systems (Laboun and Chao Mad) have been identified and selected by farmers for adoption. Integrated rice-crop systems were established to provide farming system options for farmers to improve food availability, resource management, and income. Strong partnerships among other centers were established to maximize impacts. **Recommendations:** (i) rice varieties should undergo further trials to evaluate performance under less than favorable conditions; (ii) need for participatory evaluation on the black rice varieties suited for high-quality niche markets; (iii) multiplication of promising seed varieties on-station, off-farm and by contract growers; farmers also need training in seed production to ensure seed supply; and (iv) conduct socioeconomic studies to fully characterize farming systems and household livelihood strategy for upland rice production.	Rice is the single most important crop in Lao PDR. The TA is **highly relevant** for the country's area-based upland development strategy. The TA complements the ongoing Integrated Upland Agriculture Research Project (IUARP) initiatives of NAFRI. The TA contributes to the Government's program for food security, poverty reduction, and stabilization of shifting cultivation by 2010 and the Northern Region Development Strategy for the Lao PDR. The TA is **effective** in involving a wide range of stakeholders in rice varietal trials. The TA is delivering results by identifying promising rice varieties for short fallows and intensively cropped upland based system. Signals for up-scaling and adoption are promising based on farmer participation. Policy analysis and reforms on upland agriculture are yet to be established. In its first 2 years, the TA has involved more than 500 farmers in a participatory evaluation of upland rice. Evaluation trials have been conducted in 64 locations in Luang Prabang Province. Linkages with other partners were established to maximize results. Results were achieved on a timely manner and the TA is assessed as **efficient**.	The sustainability of the TA is **likely** due to (i) the high priority given by the Government to rice program development; (ii) the TA's activities complementing ongoing activities of the IUARP of NAFRI and other research centers; and (ii) the TA has implemented a useful farmer-led participatory evaluation in the trials, which should increase adoption of the farmer-selected rice varieties. Impacts achieved by the TA have been **significant** in increasing the capacity of farmers to evaluate and test promising varieties. Farmers have been willing to contribute resources for the trials. Extension capacity has become more participatory. In the context of the Lao PDR, the OEM rates the TA as likely to succeed **(potentially successful).**

ADB = Asian Development Bank, IUARP = Integrated Upland Agriculture Research Project, Lao PDR = Lao People's Democratic Republic, NAFRI = National Agriculture and Forestry Research Institute, NARES = National Agriculture Research and Extension Systems, OEM = Operations Evaluation Mission , TA = technical assistance.

SELECTED AGRICULTURAL STATISTICS

Table A17.1: Agricultural Crop Production[a]

(1981–1995, in metric tons)

Item	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1. Paddy	1,449,301	1,207,156	1,003,389	1,404,100	1,507,500	1,223,830	1,502,361	1,250,630	1,577,023	1,417,829
2. Vegetables, Fresh	35,000	40,000	68,500	65,707	60,700	51,225	76,000	125,126	156,400	55,700
3. Sugar Cane	73,328	112,853	107,091	126,047	111,900	80,491	94,416	89,555	65,141	61,300
4. Sweet Potato	65,462	120,106	187,242	159,860	162,700	132,080	105,085	112,868	159,501	99,227
5. Maize	41,680	35,725	50,822	43,854	81,900	68,575	58,699	47,620	55,788	48,300
6. Watermelon	0	0	0	0	0	0	0	0	0	0
7. Cassava	70,000	65,000	60,000	62,000	65,000	66,000	67,000	68,000	68,000	68,500
8. Banana	12,000	12,000	13,000	13,000	14,000	14,500	15,000	15,500	16,500	16,500
9. Fruit, Fresh	22,000	24,000	26,000	28,000	30,000	31,000	33,000	35,000	37,000	34,000
10. Potato	35,000	28,000	25,000	28,000	30,000	33,000	35,000	34,000	32,000	31,000
11. Pineapple	36,000	32,000	28,000	30,000	32,000	32,000	33,000	34,000	30,000	31,000
12. Cantaloupe/Melon	32,000	28,000	25,000	28,000	30,000	32,000	33,000	33,000	34,000	31,000
13. Tobacco (leaves)	8,400	14,840	17,910	20,100	34,130	30,140	30,560	22,100	20,800	16,000
14. Coffee, Green	4,711	5,312	7,829	5,413	5,300	8,017	6,582	7,622	9,035	8,576
15. Oranges	23,000	20,000	18,000	20,000	21,000	22,000	22,000	22,000	24,000	20,000
16. Groundnut in Shell	5,010	6,310	4,505	5,921	8,000	5,626	6,759	5,279	4,636	8,443

[a] Presents production of the 16 most important agricultural crops in Lao PDR based from FAO ranking (ranked by value) for 2004.

Source: FAOSTAT Data, Internet Website, 2005.

Continued on next page

Table A17.1: Agricultural Crop Production[a] in the Lao People's Democratic Republic—*Continued*

(1996–2004, in metric tons)

Crop	1996	1997	1998	1999	2000	2001	2002	2003	2004
1. Paddy	1,413,200	1,660,000	1,674,500	2,102,815	2,201,800	2,334,700	2,416,500	2,375,100	2,529,000
2. Vegetables, Fresh	86,700	100,000	117,300	236,000	636,000	630,649	762,540	662,678	650,000
3. Sugar Cane	87,060	95,000	170,200	173,600	296,960	208,850	222,036	308,417	223,300
4. Sweet Potato	92,499	94,000	107,900	80,600	117,500	100,761	193,615	150,439	194,000
5. Maize	76,600	78,300	109,900	96,110	117,000	111,869	124,122	143,178	203,500
6. Watermelon	0	0	0	0	0	4,310	82,945	84,350	85,000
7. Cassava	70,000	70,000	70,000	71,000	71,000	71,000	82,947	83,000	55,500
8. Banana	22,000	26,000	29,000	35,000	37,000	46,000	53,000	55,000	46,000
9. Fruit, Fresh	35,000	36,000	36,000	36,000	38,000	38,000	38,000	38,000	38,000
10. Potato	33,000	33,000	33,000	33,000	33,000	34,000	35,000	36,000	36,000
11. Pineapple	32,000	33,000	34,000	34,000	35,000	35,000	36,000	36,000	36,000
12. Cantaloupe/Melon	31,000	32,000	33,000	33,000	34,500	33,000	33,000	36,000	36,000
13. Tobacco (leaves)	26,000	28,000	25,600	23,350	39,926	30,081	27,497	25,713	33,000
14. Coffee, Green	10,020	12,300	16,999	17,530	23,500	25,796	32,197	22,218	23,100
15. Orange	22,000	25,000	28,000	28,000	29,000	28,000	29,000	28,000	28,000
16. Groundnut in Shell	11,857	12,000	15,000	12,950	13,201	16,779	16,377	16,019	16,500

[a] Presents production of the 16 most important agricultural crops in the Lao PDR based from FAO ranking (ranked by value) for 2004.

Source: FAOSTAT Data, Internet Website, 2005.

Table A17.2: Animal Production in the Lao People's Democratic Republic

(1981 - 2004)

Item	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Live Animal Stocks												
Buffalo (head)	879,580	897,200	916,000	936,760	939,390	980,100	1,027,600	1,040,730	1,026,155	1,071,757	1,099,500	1,130,300
Cattle (head)	454,970	472,700	486,000	547,000	626,510	646,364	702,630	764,097	816,526	841,900	899,100	993,000
Chicken ('000)	5,538	5,760	6,704	7,202	6,471	6,360	7,962	6,869	8,250	7,884	8,029	8,906
Duck ('000)	220	230	240	250	260	270	275	280	295	340	390	450
Geese ('000)	55	58	60	63	65	68	72	74	75	77	78	80
Goat (head)	54,000	56,200	60,000	62,995	81,540	74,437	82,378	89,197	105,157	139,410	116,800	104,100
Pig (head)	1,176,000	1,223,000	1,300,000	1,359,748	1,189,760	1,279,674	1,419,570	1,267,885	1,349,978	1,372,100	1,468,600	1,560,543
Meat and Animal Products (mt)												
Buffalo Meat	7,590	7,700	8,030	8,800	9,680	10,450	10,560	8,250	8,250	8,250	9,900	10,230
Pig Meat	18,000	18,400	19,500	20,400	17,800	19,200	21,200	19,050	20,600	20,860	21,860	22,572
Goat Meat	112	126	140	154	193	182	196	210	251	332	279	245
Chicken Meat	4,400	4,592	5,320	5,756	5,160	5,080	6,360	5,492	6,596	6,304	6,684	7,120
Duck Meat	263	278	285	300	323	330	345	360	383	450	525	600
Goose Meat	120	130	138	145	150	160	173	180	188	193	200	200
Hen Eggs	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000

Item	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Live Animal Stocks												
Buffalo (head)	1,134,200	1,168,230	1,191,410	1,211,700	1,223,800	1,092,700	1,008,000	1,028,000	1,051,400	1,089,400	1,111,000	1,111,500
Cattle (head)	1,019,800	1,081,100	1,145,870	1,186,000	1,227,500	1,126,600	1,000,000	1,100,000	1,216,600	1,207,700	1,244,000	1,248,800
Chicken ('000)	10,091	10,697	11,338	11,656	11,947	12,176	12,353	13,095	14,063	15,274	19,474	14,000
Duck ('000)	500	560	630	890	960	1,040	1,351	1,700	1,700	1,700	2,600	3,000
Geese ('000)	85	85	90	85	85	85	85	90	93	95	100	100
Goat (head)	125,700	141,800	152,930	159,000	165,000	122,100	112,400	121,400	124,200	127,500	137,000	139,400
Pig (head)	1,624,670	1,673,390	1,723,590	1,772,000	1,813,000	1,432,100	1,320,000	1,425,000	1,425,900	1,416,400	1,655,000	1,728,600
Meat and Animal Products (mt)												
Buffalo Meat	10,483	10,516	15,129	15,846	16,116	16,439	19,200	16,600	17,000	17,350	18,300	18,425
Pig Meat	24,580	25,580	28,816	29,608	30,514	31,427	31,600	27,650	31,550	31,550	35,500	27,160
Goat Meat	287	315	314	364	378	409	441	430	480	490	528	497
Chicken Meat	8,068	8,552	9,064	9,320	9,520	9,680	8,960	9,700	11,100	11,070	14,400	11,200
Duck Meat	675	750	850	1,200	1,300	1,400	1,700	2,000	2,000	2,000	3,150	3,200
Goose Meat	213	213	225	213	213	213	213	225	233	238	250	250
Hen Eggs	4,100	4,300	4,500	5,800	6,600	7,600	8,500	10,000	11,500	12,600	12,800	12,000

mt = metric ton.

Source: Food and Agriculture Organization Statistics Database (FAOSTAT), 2005.

Table A17.3: Land Use in the Lao People's Democratic Republic

(1981 - 2004)

Item	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
A. Land											
1. Total Area ('000/ha)	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0
2. Land Area ('000/ha)	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0
Agricultural Area	1,609.0	1,617.0	1,620.0	1,630.0	1,635.0	1,638.0	1,640.0	1,650.0	1,652.0	1,660.0	1,662.0
Arable & Permanent Crops	809.0	817.0	820.0	830.0	835.0	838.0	840.0	850.0	852.0	860.0	862.0
Arable Land	780.0	785.0	785.0	790.0	792.0	793.0	793.0	795.0	795.0	799.0	799.0
Permanent Crops	29.0	32.0	35.0	40.0	43.0	45.0	47.0	55.0	57.0	61.0	63.0
Permanent Pasture	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0
Forests and Woodland	13,450.0	13,182.0	13,100.0	13,010.0	12,930.0	12,850.0	12,770.0	12,690.0	12,612.0	12,600.0	12,600.0
All Other Land	8,021.0	8,281.0	8,360.0	8,440.0	8,515.0	8,592.0	8,670.0	8,740.0	8,816.0	8,820.0	8,818.0
Nonarable & Nonpermanent	22,271.0	22,263.0	22,260.0	22,250.0	22,245.0	22,242.0	22,240.0	22,230.0	22,228.0	22,220.0	22,218.0
3. Irrigated Area ('000/ha)	116.0	118.0	118.0	118.0	119.0	120.0	120.0	125.0	130.0	135.0	140.0
Percentage of Agricultural Area	7.2	7.3	7.3	7.2	7.3	7.3	7.3	7.6	7.9	8.1	8.4

Item - *continued*	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
A. Land											
1. Total Area ('000/ha)	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0	23,680.0
2. Land Area ('000/ha)	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0	23,080.0
Agricultural Area	1,664.0	1,665.0	1,690.0	1,700.0	1,700.0	1,756.0	1,780.0	1,805.0	1,836.0	1,839.0	1,879.0
Arable & Permanent Crops	864.0	865.0	890.0	900.0	900.0	930.0	940.0	955.0	958.0	961.0	1,001.0
Arable Land	799.0	799.0	822.0	828.0	824.0	854.0	862.0	875.0	877.0	880.0	920.0
Permanent Crops	65.0	66.0	68.0	72.0	76.0	76.0	78.0	80.0	81.0	81.0	81.0
Permanent Pasture	800.0	800.0	800.0	800.0	800.0	826.0	840.0	850.0	878.0	878.0	878.0
Forests and Woodland	12,580.0	12,550.0	12,550.0	-	-	-	-	-	-	-	-
All Other Land	8,836.0	8,865.0	8,840.0	-	-	-	-	-	-	-	-
Nonarable & Nonpermanent	22,216.0	22,215.0	22,190.0	22,180.0	22,180.0	22,150.0	22,140.0	22,125.0	22,122.0	22,119.0	22,079.0
3. Irrigated Area ('000/ha)	145.0	150.0	155.0	155.0	156.0	164.0	168.0	172.0	175.0	175.0	175.0
Percentage of Agricultural Area	8.7	9.0	9.2	9.1	9.2	9.3	9.4	9.5	9.5	9.5	9.3

- = no data, ha = hectare.

Source: FAOSTAT Data, Internet Website, 2005.

Table A17.4: Temporary Weirs and Irrigated Area in the Lao People's Democratic Republic

Region/Province	Number of Schemes				Total Irrigated Area (ha)			
	2000	2001	2002	2004	2000	2001	2002	2004
Northern	**10,087**	**9,964**	**12,746**	**13,936**	**54,315**	**40,954**	**35,052**	**33,768**
Phongsaly	360	360	3,688	3,727	5,478	4,100	5,006	3,389
Luangnamtha	219	219	169	169	5,032	3,800	3,220	2,828
Oudomxay	1,486	1,504	1,493	1,707	5,457	4,549	4,407	5,794
Bokeo	1,265	1,265	1,165	1,265	3,879	3,350	2,403	4,397
Luangprabang	2,144	2,000	1,850	1,850	11,135	6,360	6,360	5,450
Huaphanh	2,683	2,686	2,451	2,657	8,761	8,045	2,856	4,159
Xayabury	1,930	1,930	1,930	2,561	14,573	10,750	10,800	7,751
Central	**4,818**	**4,428**	**4,840**	**4,840**	**35,080**	**39,464**	**28,921**	**32,678**
Vientiane Municipality	2,500	2,500	2,500	2,500	10,534	9,365	9,365	11,048
Xiengkhouang	1,457	1,457	1,457	1,457	5,272	4,250	3,650	4,143
Vientiane	252	240	274	274	7,224	17,543	10,891	13,362
Borikhamxay	231	231	231	231	7,318	3,665	2,970	3,040
Khammuane	-	-	-	-	890	770	770	465
Savannakhet	-	-	-	-	2,542	2,621	475	-
Xaysomboun	378	378	378	378	1,300	1,250	800	620
Southern	**17**	**17**	**18**	**18**	**11,337**	**9,688**	**9,618**	**11,682**
Saravane	6	6	6	6	53	53	58	7
Sekong	-	-	-	-	3,522	2,050	2,050	1,845
Champasack	1	1	2	2	7,562	7,200	7,350	9,700
Attapeu	10	10	10	10	200	385	160	130
Grand Total	**14,922**	**14,409**	**17,604**	**18,794**	**100,732**	**90,106**	**73,591**	**78,128**

- = not available, ha = hectare.

Note: 2003 data are not available.

Sources: Agricultural Statistics Year Book (2003 and 2004). Department of Planning, Ministry of Agriculture and Forestry. Vientiane.
Available: <http://www.agrostat_moa.gov.la/>.

Table A17.5: Gate and Dike Irrigation and Irrigated Area in the Lao People's Democratic Republic

Region/Province	Number of Schemes				Total Irrigated Area (ha)			
	2000	2001	2002	2004	2000	2001	2002	2004
Northern	**14**	**14**	**14**	**12**	**875**	**845**	**838**	**524**
Phongsaly	0	0	0	0	0	0	0	0
Luangnamtha	2	2	2	2	143	143	129	128
Oudomxay	7	7	7	5	563	538	538	185
Bokeo	2	2	2	2	75	75	75	71
Luangprabang	0	0	0	0	0	0	0	0
Huaphanh	0	0	0	0	0	0	0	0
Xayabury	3	3	3	3	94	89	96	140
Central	**42**	**47**	**49**	**51**	**4,990**	**7,624**	**11,102**	**10,622**
Vientiane Municipality	2	4	4	4	470	2,090	2,080	2,080
Xiengkhouang	1	1	1	1	150	120	120	105
Vientiane	3	6	6	6	291	1,075	1,125	1,124
Borikhamxay	2	2	2	2	2,000	2,350	1,950	1,950
Khammuane	10	10	10	10	370	230	210	210
Savannakhet	23	23	26	27	1,684	1,734	5,617	5,138
Xaysomboun	1	1	0	1	25	25	0	15
Southern	**4**	**4**	**6**	**6**	**754**	**499**	**1,274**	**1,187**
Saravane	0	0	0	0	0	0	0	0
Sekong	4	4	4	4	754	499	654	567
Champasack	0	0	0		0	0	0	0
Attapeu	0	0	2	2	0	0	620	620
Grand Total	**60**	**65**	**69**	**69**	**6,619**	**8,968**	**13,214**	**12,333**

ha = hectare.

Note: 2003 data are not available.

Sources: Agricultural Statistics Year Book (2003 and 2004). Department of Planning, Ministry of Agriculture and Forestry. Vientiane.

Available: <http://www.agrostat_moa.gov.la/>.

Table A17.6: Pump Irrigation Schemes and Irrigated Area in the Lao People's Democratic Republic

Region/Province	Number of Schemes				Total Irrigated Area (ha)			
	2000	2001	2002	2004	2000	2001	2002	2004
Northern	**804**	**885**	**954**	**855**	**8,304**	**9,334**	**10,237**	**8,846**
Phongsaly	32	32	33	33	125	209	182	128
Luangnamtha	40	40	57	57	2,005	2,110	2,270	2,320
Oudomxay	89	89	123	107	1,090	1,202	1,215	733
Bokeo	106	186	186	106	180	800	600	531
Luangprabang	132	132	132	126	2,216	1,794	1,796	1,570
Huaphanh	82	82	94	97	393	800	1,136	699
Xayabury	323	324	329	329	2,295	2,419	3,038	2,865
Central	**778**	**808**	**757**	**1,602**	**199,382**	**204,369**	**227,191**	**218,757**
Vientiane Municipality	89	99	99	99	47,075	56,579	56,924	57,164
Xiengkhouang	32	32	32	32	307	490	580	740
Vientiane	78	134	90	90	24,999	25,700	26,665	29,051
Borikhamxay	158	159	159	159	20,701	22,991	22,693	24,560
Khammuane	176	181	191	191	38,257	35,792	43,416	36,159
Savannakhet	158	167	166	1,011	67,307	62,392	76,382	70,343
Xaysomboun	87	36	20	20	736	425	531	740
Southern	**1,724**	**1,742**	**2,117**	**2,071**	**70,910**	**82,144**	**74,948**	**51,926**
Saravane	237	238	238	250	16,895	16,094	18,477	21,391
Sekong	2	2	2	2	700	580	600	580
Champasack	1,274	1,291	1,660	1,602	47,355	60,445	49,682	24,697
Attapeu	211	211	217	217	5,960	5,025	6,189	5,258
Grand Total	**3,306**	**3,435**	**3,828**	**4,528**	**278,596**	**295,847**	**312,376**	**279,529**

ha = hectare.

Note: 2003 data are not available.

Sources: Agricultural Statistics Year Book (2003 and 2004). Department of Planning, Ministry of Agriculture and Forestry. Vientiane.
Available: <http://www.agrostat_moa.gov.la/>.