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Ministry of Agriculture
Lao People's Democratic

**MASTER PLAN STUDY
ON
INTEGRATED AGRICULTURAL DEVELOPMENT
IN
LAO PEOPLE'S DEMOCRATIC REPUBLIC**

**VOLUME II
PROFILES FOR PRIORITY
PROJECTS AND PROGRAMS**

OCTOBER 2001

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Currency Equivalent
(As of 29th December 2000)
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Fiscal Year of Lao PDR
October 1 - September 30

ABBREVIATIONS

| | | |
|--------|---|---|
| ACG | : | Agricultural Credit Group |
| ADB | : | Asian Development Bank |
| AEA | : | Agricultural Extension Agency, MAF |
| AEZ | : | Agro-ecological Zone |
| AFTA | : | ASEAN Free Trade Area |
| APB | : | Agricultural Promotion Bank |
| APG | : | Agricultural Production Group |
| ASEAN | : | Association of South East Asian Nations |
| AUSAID | : | Australian Agency for International Development |
| BCEL | : | Banque Commerciale pour Exterior de Laos |
| BOL | : | Bank of Lao PDR |
| CEPT | : | Common Effective Preferential Tariff |
| CPC | : | Committee for Planning and Cooperation |
| CPI | : | Consumer Price Index |
| CIF | : | Cost, Insurance and Freight |
| CLRDC | : | Central Leading Rural Development Committee |
| DAA | : | District Administration Authority |
| DOA | : | Department of Agriculture |
| DAFO | : | District Agriculture and Forestry Office |
| DCTPC | : | Department of Communication, Transport, Post and Construction |
| DOI | : | Department of Irrigation |
| DOLF | : | Department of Livestock and Fisheries |
| DMH | : | Department of Meteorology and Hydrology |
| EDL | : | Electricite du Laos |
| EIA | : | Environmental Impact Assessment |
| FAO | : | Food and Agriculture Organization |
| FDI | : | Foreign Direct Investment |
| FESW | : | Farming System Extension Worker |
| FIAT | : | Farmers Irrigated Agriculture Training Project |
| F/S | : | Feasibility Study |
| FOB | : | Free on Board |
| FSC | : | Food Supply Company |
| GDP | : | Gross Domestic Product |
| GEL | : | General Exemption List/CEPT |
| GIS | : | Geographic Information System |
| GMS | : | Greater Mekong Sub-region |
| GNP | : | Gross National Product |
| GOL | : | Government of Lao PDR or expressed as “the Government” |
| HRD | : | Human Resources Development |
| HYV | : | High Yielding Variety |
| IBRD | : | International Bank for Reconstruction and Development (WB) |
| IDA | : | International Development Association |
| IEE | : | Initial Environmental Examination |
| IL | : | Inclusion List/CEPT |
| ILO | : | International Labor Organization |
| IMF | : | International Monetary Fund |
| IMR | : | Infant Mortality Rate |
| IMT | : | Irrigation Management Transfer |
| IPM | : | Integrated Pest Management |
| IRD | : | Integrated Rural Development |

| | | |
|------------------|---|---|
| IRRI | : | International Rice Research Institute |
| ISF | : | Irrigation Service Fee |
| JICA | : | Japan International Cooperation Agency |
| KR-II | : | Kennedy Round II |
| Lao PDR | : | Lao People's Democratic Republic |
| Lao-IRRI | : | Lao-International Rice Research Institute |
| LECS | : | Lao Expenditure and Consumption Survey |
| LLDC | : | Least Development Country |
| LNFC | : | Lao Front for National Construction |
| LSFP | : | Lao-Swedish Forestry Program |
| LWU | : | Lao Women Union |
| LYRU | : | Lao Youth Revolutionary Union |
| MAF | : | Ministry of Agriculture and Forestry |
| MCTPC | : | Ministry of Communication Transport Post and Construction |
| M/M | : | Minutes of Meeting |
| M/P | : | Master Plan |
| MOF | : | Ministry of Finance |
| MOIH | : | Ministry of Industry and Handicraft |
| NAFES | : | National Agriculture and Forestry Extension Services |
| NAFRI | : | National Agriculture and Forestry Research Institute |
| NBCA | : | National Biodiversity Conservation Area |
| NEM | : | New Economic Mechanism |
| NGO | : | Non-Governmental Organization |
| NRRP | : | National Rice Research Program |
| NT2 | : | Nam Theun 2 (Hydropower Project) |
| NUOL | : | National University of Laos |
| ODA | : | Official Development Assistance |
| OJT | : | On-the Job Training |
| O&M | : | Operations and Maintenance |
| OPEC | : | Organization of Petroleum Exporting Countries |
| PAFS | : | Provincial Agriculture and Forestry Services |
| PIP | : | Public Investment Plan / Program |
| PIS | : | Provincial Irrigation Section |
| PMO | : | Prime Minister's Office |
| SEDP | : | Socio-Economic Development Plan |
| SIDA | : | Swedish International Development Authority |
| SIRAP | : | Sustainable Irrigated Agriculture Project |
| SL | : | Sensitive List/CEPT |
| SMS | : | Subject Matter Specialist |
| SOCB | : | State-Owned Commercial Bank |
| SOE | : | State-Owned Enterprise |
| SPC | : | State Planning Committee |
| STEA | : | Science, Technology and Environmental Agency |
| Strategic Vision | : | The Government's Strategic Vision for the Agricultural Sector |
| S/W | : | Scope of Works |
| TA | : | Technical Assistance |
| TEL | : | Temporary Exclusion List/CEPT |
| TOT | : | Trainer of Training |
| UNCDF | : | United Nations Capital Development Fund |
| UNDCP | : | United Nations Drug Control Programme |
| UNDP | : | United Nations Development Programme |
| UXO | : | Unexploded Ordnance |
| UXO LAO | : | Lao National UXO Programme |
| VARDP | : | Vientiane Agricultural and Rural Development Project |
| VDF | : | Village Development Fund (under IMT) |
| Vision 2020 | : | Vision on Agricultural-Forestry Development until Year 2020 |
| VVW | : | Village Veterinary Worker |
| WB | : | World Bank (see IBRD) |
| WTO | : | World Trade Organization |
| WUA/ WUG | : | Water Users Association/ Water Users Group |

MEASUREMENT UNITS

Extent

cm² = Square-centimeter (1.0 cm x 1.0 cm)
m² = Square-meter (1.0 m x 1.0 m)
km² = Square-kilometers (1.0 Km x 1.0 Km)
a. = Acre or Acres (100 m² or 0.1 ha.)
ha. = Hectare (10,000 m²)
ac = Acre (4,046.8 m² or 0.40468 ha.)

Length

mm = Millimeters
cm = Centimeters (cm = 10 mm)
m = Meters (m = 100 cm)
km = Kilometers (Km = 1,000 m)

Currency

US\$ = United State Dollars
US\$1.0 = J¥114 = Kip.8,220
(as of 29th December 2000)
J¥ = Japanese Yen
Kip = Laotian Kip

Volume

cm³ = Cubic-centimeter
(1.0 cm x 1.0 cm x 1.0 cm or
1.0 m-lit.)
m³ = Cubic-meter
(1.0 m x 1.0 m x 1.0 m or
1.0 k-lit.)
lit. = Liter (1,000 cm³)
MCM= Million Cubic Meter

Weight

gr. = Grams
Kg = Kilograms (1,000 gr.)
ton = Metric tonne (1,000 Kg)

Time

sec. = Seconds
min. = Minutes (60 sec.)
hr. = Hours (60 min.)

1. Land and Water Resources Development

Project No. LW-1

1. Title of Project/Program

Strengthening Land Use Planning (LUP) & Land Allocation (LA) and Land Titling in Rural Area

2. Location

Rural areas, nationwide

3. Objectives

There are two major objectives; 1) to secure village livelihood with regard to agricultural land use through evaluation of outcomes of ongoing and past LUP/LA, 2) to strengthen the existing system of LUP/LA through the synthesis of macro-level planning based on national development goals and micro-level planning reflecting the needs for local area development.

4. Project/Program Description

LUP/LA results in the delineation of village boundaries, village forest-land use zones and the allocation of agricultural land parcels to families within the agricultural zone. It is reported that LUP/LA has completed in some 6,000 to 7,000 rural villages. The level of completion varies; only LUP has been completed in some villages, and LA to individual households has completed in others.

As stated in the Government's Strategic Vision for Agricultural Sector, the Government recognizes that the implementation of an effective LUP/LA system by local governments will depend critically on the national government support in extending existing field tested methodologies, providing equipment, training, and an operational budget. Likewise, though the government is showing commitment to complete the LUP/LA nationwide by the year 2005, this ongoing national program is facing some difficulties. These are due to the extremely diverse ethnic and physical environment, weak socio-economic and physical infrastructure as well as difficult communications in rural areas. The existing problems are as follows.

- 1) Lack of an implementation plan at national and provincial levels.
- 2) Lack of adequate coordination (networking) among relevant government agencies.
- 3) Limited staff capacity and lack of staff training program.
- 4) Budget is not disbursed regularly.
- 5) Procedure for LUP/LA information storage is weak.
- 6) Participatory monitoring & evaluation is not appropriately carried out.

The Land Use Planning sub-program of Lao Swedish Forestry Program (LSFP), completed in 2001, has provided support with the development of LUP/LA procedures, methods and practices, and the 8-step Participatory LUP/LA Model has been developed. Through a series of field test, at present, it is recommended to improve the model by

strengthening the village land use plans, LUP/LA information storage, and LA record keeping. In addition, the LUP model for NBCA has been explored as well as other method development in lowland and in upland. These working principles should be adopted and maintained to strengthen research and development and ensure the quality of LUP/LA. In the meantime, in the villages where LUP/LA has been completed, in shifting cultivation areas, the farmers' access to agricultural lands was reduced after LA resulting in insecure livelihood. Thus, the village with LUP/LA should be adequately monitored and evaluated in order to solve this problem to secure the livelihood. Likewise, even if LUP/LA activities are finalized, a logical development would be the preparation and finalization of land registration and titling. This is a pilot phase with World Bank project. This would also necessitate information storage facilities. This issue also needs to be addressed.

To overcome the above issues, the following actions will be required.

- 1) Clarification and networking of the roles of relevant government institutions in order to make a clear and firm institutional setting as well as to share current knowledge and experiences.
- 2) Review and evaluation of the past LUP/LA exercises in order to plan and implement the follow-up activities.
- 3) Strengthening of capacity of data/information collection and analysis and planning capacity.
- 4) LUP/LA procedure refinement based on field testing at the village level (underway by NAFRI).
- 5) Refinement of information (land documents) storage procedure especially at the provincial and district levels.
- 6) Refinement of M & E procedure with regard to LUP/LA impacts, staff adoption of LUP/LA procedures, and village committee capability in land use management.

5. Project Components

The two sub-projects compose the Project that are comprised of a number of activities which should be paralleled and consolidated.

- (1) Evaluation and follow-up activities in the villages with LUP/LA
 - 1) Data collection and analysis on past LUP/LA, and selection of pilot 10 to 15 villages for follow-up activities
 - 2) Planning of follow-up activities
 - 3) Implementation of follow-up activities
 - 4) Evaluation of follow-up activities
 - 5) Strategy development for the extension of follow-up activities nation-wide
- (2) Quality improvement in LUP/LA
 - 1) Development of long-term National Implementation Plan for LA/LUP and Land Registration & Titling

- 2) Refinement of methodologies through field testing
- 3) Extension of field tested methodologies
- 4) Improvement and extension of participatory M & E
- 5) Refinement of LUP/LA information system
- 6) Staff training

6. Project Costs

Total project costs are estimated as follows.

(Unit: US\$ 1000)

| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Total |
|----------------|------|------|------|------|------|-------|
| Capital cost | 796 | 490 | 490 | 490 | 490 | 2,755 |
| Recurrent cost | 147 | 138 | 138 | 138 | 138 | 701 |
| Total | 944 | 628 | 628 | 628 | 628 | 3,456 |

7. Implementing Agency

Shifting Cultivation Stabilization Program, DOF, MAF.

8. Organizational and Staffing Requirements

This program will be implemented under the present organizational framework.

| Agency | Present Staff No. | Proposed Staff No. | Balance |
|--|-------------------|--------------------|---------|
| 1. Shifting Cultivation Stabilization Program, DOF | 18 | 18 | 0 |
| 2. Forest Inventory & Planning Center, NAFRI | 5 | 5 | 0 |
| Total | 23 | 23 | 0 |

9. Implementation Schedule

The project period will be 5 years.

10. Lessons Learnt

SIDA-LSFP has developed and tested a number of methodologies, and experiences have been accumulated; the impact of population growth on land use should be considered, and the implication of land tax on sustainable land use should be examined. Also, to secure the women's status, it is reasonable to put the name of both the husband and wife on the Land Use Certificates. All these factors should be incorporated into project component as specific activities.

11. Expected Benefit

- (1) Quality of LUP/LA would be improved.
- (2) More sustainable land use would be realized in rural areas.
- (3) Villagers would feel secure with well-managed land documents.
- (4) Land registration and titling will be easier to achieve.

12. Assessment of Possible Problems and Bottlenecks in Implementation

- (1) This Project is characterized by its nature requiring long term commitment by the government. After the completion of the Project, the Government is expected to continue the LUP/LA activities to achieve the Government's goal.
- (2) Also, the Project will require recurrent budget, thus, consistent budget flow is indispensable by local budget. The Project itself would not cover all areas.

13. Assessment of Natural and Social Environment

- (1) The project will have positive impacts the on natural environment through the establishment of local-based LUP/LA, resulting in sustainable natural resource use in rural areas.
- (2) The project will have positive impacts on social environment through the linkage with livelihood improvement activities. However it will still be necessary to monitor and evaluate the gender perspective in land use change and the consequent changes in cropping and labor pattern.

14. Special Arrangements

Nil.

Project No. LW-3

1. Title of Project/Program

Watershed Management Program

2. Location

Nationwide, but especially along the eastern border with Vietnam. There will be a screening of all proposed and on-going projects. From this there will be a selection of catchment or sub-catchment areas not covered under the shifting cultivation stabilization, hydropower, land allocation or other related programs.

(1) Phase 1 (4 years); only about two new catchments/sub-catchments.

(2) Phase 2 (5 years); about ten new catchments/sub-catchments.

3. Objectives

To sustain water resources for water related economic and social activities; to protect people, their property and lands from floods and soil erosion; and to maintain sustainable agricultural production in all areas.

4. Project/Program Description

There are sixty-four main watersheds in Laos (Annex 1), of which 24 cover areas more than one-quarter million hectares each or over 20 million ha. in total (85% of the land area). Within these watersheds there are hundreds of sub-watersheds and about one thousand rivers and streams. Protecting the headwaters of these catchment areas is necessary for flood control and erosion mitigation, to ensure an even supply of water for fishery development and irrigation and to improve the management of the land for arable agriculture, grazing and non-timber forest products. This program is formulated based in part on the draft paper on Integrated Watershed Management (Lao-Danida NR&EP May 2001). Already there are various on-going watershed management initiative especially for two hydropower schemes, namely the Nam Ngum covering 1.7 million ha. and the Nakai-Nam Theun covering 0.4 million ha. (part of the Nam Kading Watershed [1.5 million ha.]). These projects are now under implementation through the Asian Development Bank and the World Bank respectively. In addition, there are the various initiatives in the twenty (20) National Biodiversity Conservation Areas (NBCA). Thus, there is considerable overlap between this program and other proposed programs, especially the 'Stabilization of Shifting Cultivation Initiatives,' both inside and outside NBCA's.

The proposed program will work in parallel with such programs and reinforce them rather than be competitors. It will only be pursued in catchments/watershed areas where similar activities are not ongoing or planned. However, it is proposed that the program should be implemented by building on the on-going programs as follows:

- 1) Improving the skills of the existing district, provincial and land allocation staff. In part this can be achieved by using existing watershed projects to train district

- (and provincial) level staff from areas where watershed management is required.
- 2) Pursuing a coordinated non-sectorial approach to development planning. This entails incorporating arable and pastoral agriculture into the whole issue of environmental protection and land use planning. This latter should emphasize the participatory approach, otherwise few concrete results may be achieved.
 - 3) Recognizing MAF's mandate for overall watershed management, but incorporating the views of other ministries and agencies and delegating responsibilities, where appropriate to the Water Resources Coordinating Committee and to the Provincial Government.
 - 4) Recognizing that successful watershed planning starts from village level participatory land use planning and allocation. This underpins the Integrated Watershed Management (IWM) process, since land use planning and land allocation have a direct bearing on water use and erosion control.
 - 5) Harmonizing individual village plans to a village cluster, which correspond to a sub-catchment/individual catchment. This is the IWM building block. IWM should include land use planning, land allocation, management, socio-economic interventions and enterprise development.

5. Project Components

The project components summarized below consist of listing watersheds, training personnel, undertaking projects and monitoring and evaluation. Specific projects will only be proposed after a priority assessment and when there are sufficient trained personnel to undertake such initiatives, hence the emphasis on (on the job) training.

- (1) List all watersheds and sub-watersheds throughout the country, prioritizing them into high, medium and low for protection and use purposes and listing on-going or proposed projects for each watershed. From such a list, which should be updated annually, an action plan can be formulated.
- (2) Train/retrain the District/Provincial MAF staff and SMS. This should include on the job training (OJT) on watershed projects, land use and watershed management planning and land allocation, project planning, monitoring & evaluation, etc. Field allowances will be provided for OJT etc.
- (3) Project will be chosen from the prioritized list. These will be phased in slowly, depending on the prioritization and trained personnel. It is envisaged that one or two projects will start in initial stage and there will be a gradual build-up to about twelve projects in later stage. Of course, most watershed activities will occur through other initiatives.
- (4) Monitoring and evaluation of projects and other watershed initiatives must be an integral part of this program. Such M & E will provide indicators as to the success or otherwise of the program and allow timely changes of direction if and when required.
- (5) MAF staff will undertake most of the program but some national and international

consultancy services may be required initially. The components of the program should include: land planning according to crop suitability based on soil, slope and rainfall etc.; land division according to needs and government regulations; management interventions such as mixed/rotational cropping, perennial crops, agro-forestry, small-scale irrigation, soil stabilization; socio-economic interventions – schools, health centers, roads etc.; and enterprise development including loan facilitation.

6. Project Costs

This is a very tentative estimate assuming that a standard cost is about US\$ 2.5 million per project, and each project requires a lifetime of five years. The anticipated project cost will be thus about US\$ 30 million, if 12 projects are started within 9 years. However, it is assumed that one watershed project will be started in 3rd year and one in 4th year. After that, ten projects will be started in 5th to 9th year. Therefore, only four projects will have completed 5-year of project life during 9-year period, and other 8 projects will not be completed during this period. For these 8 projects, therefore, only a part of project cost will be required in 6th to 9th year. In addition to the above project cost, a total of about US\$ 1.4 million of program cost will be required during 9-year period for watershed assessments, training, drafting project proposals and monitoring and evaluation. As a whole, the project cost is estimated to be about US\$ 24.7 million as shown in the table below.

(Unit: US\$ 1000)

| | Phase I | | | | Phase II | | | | | Total |
|----------------|---------|------|------|-------|----------|-------|-------|-------|-------|--------|
| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Yr 6 | Yr 7 | Yr 8 | Yr 9 | |
| Capital cost | 200 | 150 | 595 | 1,025 | 1,885 | 2,675 | 3,200 | 3,495 | 3,625 | 16,850 |
| Recurrent cost | 10 | 8 | 237 | 396 | 715 | 1,177 | 1,559 | 1,787 | 1,937 | 7,826 |
| Total | 210 | 158 | 832 | 1,421 | 2,600 | 3,852 | 4,759 | 5,282 | 5,562 | 24,676 |

7. Implementing Agency

MAF is the implementing agency. At the Central Level its role will be advisory and the Provinces and Districts will implement the projects in their localities. However, Non-MAF provincial/district staff may undertake some implementation.

8. Organizational and Staffing Requirements

This program will be implemented under the present organizational framework. Already there are 142 teams of at least three people, one team per district, undertaking land allocation. These people will be used to undertake land-use planning and allocation in watershed areas. Specialized teams in each region may be required to assist the field staff and to undertake independent monitoring.

| Province | Present Staff No. | Proposed Staff No. | Balance |
|-----------------------------|-------------------|--------------------|---------|
| Sum 2 – 18 (133 districts). | 399 – 532 | 0 | + 0 |
| Specialized staff | 17 - 34 | 0 | + 0 |
| Total | 416 - 566 | 0 | + 0 |

Note. There are 2.5 years of International and 15 years National TA's per project.

9. Implementation Schedule

The program will be implemented giving the priority to upland areas where erosion is a problem due to forest encroachment and poor land-use practices. Most of these areas are in the East along the border with Viet Nam.

- (1) Phase 1 (4 years); About 2 watersheds will be selected. Two possible candidate could be the headwaters of the Xe Bang Fai and Xe Bang Heing in Khammouan and Savanakhet provinces respectively.
- (2) Phase 2 (5 years); Depending on the 'Action Plan' in 5 (1) above, up to 10 projects could be started in this phase.

10. Lessons learnt and how to incorporate them into the Proposed Project

See paragraph. 4 above. Also, the Lao-Danida Integrated Watershed Management concepts and practices draft document, has many useful insights that can be incorporated into the proposed program.

11. Expected Benefits

- (1) Improved watershed management that will bring positive downstream benefits especially to arable agriculture by reducing the incidence of flash flooding and improving the availability of water in the dry season. Upland livelihoods will also be enhanced through improved and sustainable land-use practices.
- (2) The specific beneficiaries in Phase 1 and 2 will be the people in the catchment areas of up to 12 rivers.

12. Assessment of Possible Problems and Bottlenecks in Implementation

- (1) Insufficient funding to send the staff into the field.
- (2) Shortage of trained staff in PRDOs will prevent the project's progress, if the Government could not assign the required number of staff.

13. Assessment of Natural and Social Environment

- (1) Natural environment. There should be positive impacts through reduction of erosion and a more even flow of water year round.
- (2) Socio-economic conditions. There should be a positive impact because of increased and sustainable crop yields due to a reduction of flash flooding, inundation with coarse materials and improved upland land-use practices.

14. Special Arrangements
None.

Annex I: Watersheds/River Basins in Lao PDR by size.

| Rank | Name | Area km ² |
|------|----------------|-------------------------|
| 1 | Nam Ou | 24,637 |
| 2 | Se Kong | 22,563 |
| 3 | Se Bang Hieng | 19,223 |
| 4 | Nam Ngum | 16,906 |
| 5 | Nam Cadinh | 14,820 |
| 6 | Se Bang Fai | 10,345 |
| 7 | Nam Tha | 8,917 |
| 8 | Nam Khan | 7,490 |
| 9 | Se Done | 7,229 |
| 10 | Nam Neun * | 6,882 |
| 11 | Nam Suong | 6,578 |
| 12 | Nam Ma 1 * | 6,178 |
| 13 | Nam Xam * | 4,577 |
| 14 | Nam Nhiep | 4,577 |
| 15 | Nam Phuong | 4,139 |
| 16 | Huai Khammouan | 3,762 |
| 17 | Se Bang Nouan | 3,048 |
| 18 | Nam Houng | 2,872 |
| 19 | Nam Pho | 2,855 |
| 20 | Nam Sing | 2,681 |
| 21 | Nam Hinboun | 2,529 |
| 22 | Huai Som Pak | 2,516 |
| 23 | Nam Nuao | 2,287 |
| 24 | Nam Mo * | 2,250 |
| 25 | Nam Sane | 2,226 |
| 26 | Huai Tomo | 2,220 |
| 27 | Nam Beng | 2,131 |
| 28 | Nam Phoul | 2,095 |
| 29 | Nam Nhiam | 1,969 |
| 30 | Nam Heung | 1,888 |
| 31 | Nam Mang | 1,836 |
| 32 | Nam Ngeun | 1,819 |

| Rank | Name | Area km ² |
|------|------------------------|-------------------------|
| 33 | Tonle Repon | 1,551 |
| 34 | Nam Tam | 1,548 |
| 35 | Nam Khop | 1,521 |
| 36 | Nam Ngaou | 1,495 |
| 37 | Nam Sang | 1,290 |
| 38 | Nam Meuk * | 1,164 |
| 39 | Nam Ma | 1,141 |
| 40 | Nam Mi | 1,032 |
| 41 | Nam Nago | 1,008 |
| 42 | H. Ma Hiao | 990 |
| 43 | Nam Mang Ngai | 944 |
| 44 | Nam Thon | 838 |
| 45 | B. Khai San | 778 |
| 46 | Huai Bang Lieng | 695 |
| 47 | Nam Phone | 664 |
| 48 | Nam Keung | 633 |
| 49 | Nam Luong * | 629 |
| 50 | Hoaag Hua | 626 |
| 51 | Nam Niam * | 625 |
| 52 | Nam Kai | 602 |
| 53 | Nam Ton | 587 |
| 54 | Phu Luong Yot Huai Dua | 491 |
| 55 | Nam Ngam | 489 |
| 56 | Muang Liep | 488 |
| 57 | Nam Kadun | 456 |
| 58 | Nam Thong * | 455 |
| 59 | Nam Sim | 344 |
| 60 | Nam Nhah | 316 |
| 61 | H. Sophay | 186 |
| 62 | B. Nam Song | 138 |
| 63 | Prek Mun | 112 |
| 64 | Nam Tham * | 42 |

Note The nine (9) Watersheds marked with * do not flow into the Mekong, but flow into Vietnam.

Project No. LW-4

1. Title of Project/Program

Agro-Zone Classification, Land Management and Farming Systems Development.

2. Location

Vientiane (NAFRI).

3. Objectives

The objectives of this project are to:

- (1) Develop an agro-zone classification map.
- (2) Assist with land use planning including cropping patterns.
- (3) Use remote sensing to help with land classification and land use.

4. Project/Program Description

The proposed project will be situated in the Soil Survey and Land Classification Center (SSLCC) of the National Agricultural and Forestry Research Center (NAFRI) in Vientiane, but it will work closely with the Information Management, Policy and Strategy Planning Division (IMPSPD) of NAFRI. Already, the SSLCC is working on land classification maps and crop suitability maps for specific areas of Laos. This project will enable the Center to extend the mapping capability to the whole country, especially in areas where agriculture is practised or where there is potential for agricultural expansion. An outcome of this initiative will be the production of various types of maps for the whole country including land classification, crop suitability, and agro-zoning.

At present, there are conflict amongst land use area data obtained by different methods agricultural censuses, district/provincial statistics and photo interpretation using GIS technology. The land use information from GIS gives considerably higher figures for areas under lowland and upland arable agriculture than does either the agricultural census data or the figures derived from information supplied by the districts/provinces. Also, there are significant differences in yield between official figures and field measurements. The use of accurate area and yield figures is essential for planning purposes. Therefore, this project will help with the frequent updating of land use maps for the whole country and will use this information to try and consolidate it with agricultural census data etc. The project will work closely with the planning department of MAF.

Again, aerial photographs can be used for Land Use Planning and Allocation (see LWpp1), the Watershed Catchment Management Program (see LWpp2). All these activities will lead to the documentation of existing land uses and planning for improved and sustainable land use practices.

5. Project Components

The project components are summarized below. They consist of: preparing GIS land-use maps for the whole country; assisting NAFRI prepare land capability data; providing detailed aerial photograph interpretation for village land allocation, NBCA/Watershed boundaries etc. and for land use planning; training personnel; comparing land use statistics from various sources; and monitoring & evaluation.

- (1) Prepare GIS maps for the whole country, backed up by ground truthing. Publish information of land use by district, province, region and country. Compare data with previous GIS information and with information collected from agricultural census data etc. Provide each province with data, maps etc.
- (2) Prepare land capability maps, giving land and crop classification, suggested agro-zoning, soil types and slope. Send specific maps to districts, provinces, projects and other interested parties. Put data on the WWW.
- (3) Prepare aerial photograph interpretation for detailed land allocation for villages, watersheds, NBCA's, projects and other requested proposals.
- (4) Work together with IMPSPD (NAFRI) and the Planning Department at MAF to consolidate land use figures. If necessary, send teams into the field to check the land-use and production statistics.
- (5) Train/retrain staff in remote sensing, ground truthing, mapping and data use.
- (6) Make a list of available maps and other data and post it on the WWW.

6. Project Costs

Initially, it is envisaged that this project will run for five years. NAFRI already has some equipment, but provision has been made for some new equipment. Additional staff will be required for photo-interpretation and mapping; these will be in the form of short term national consultants. In addition, the equivalent of one full time international consultant for five years is budgeted. The total cost for five years is estimated at about US\$ 3.2 million. A tentative breakdown of the project costs is as shown below.

(Unit: US\$ 1000)

| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Total |
|----------------|------|------|------|------|------|-------|
| Capital cost | 610 | 510 | 260 | 260 | 260 | 1,900 |
| Recurrent cost | 276 | 273 | 265 | 265 | 214 | 1,293 |
| Total | 886 | 783 | 525 | 525 | 474 | 3,193 |

7. Implementing Agency

NAFRI is the implementing agency, but some of the implementation may be undertaken by Non-NAFRI agencies.

8. Organizational and Staffing Requirements

This program will be implemented under the present organizational framework. There are

32 staff in SSLCC and 8 staff in IMPSPD. An assessment of staff requirements should be undertaken, but it is envisaged that National Consultants staff can be hired on an as needed basis if and when required. It is estimated that one Full time International TA will be required for 5 years.

| Vientiane Municipality | Present Staff No. | Proposed Staff No. | Balance |
|------------------------|-------------------|--------------------|---------|
| NAFRI (SSLCC) | 32 | 0 | + 0 |
| NAFRI (IMPSPD) | 8 | 0 | + 0 |
| Total | 40 | 0 | + 0 |

Note. There are an estimated 5 years of International & 7.5 years National TA's.

9. Implementation Schedule

The project should start as soon as possible and supply backstop support to other existing and new projects, especially crop development, land registration, stabilization of shifting cultivation and watershed management.

10. Lessons learnt and how to incorporate them into the Proposed Project

See paragraph. 4 above. Also, there is a draft proposal by SIDA to compile a Master Plan in Land Use Planning. If this becomes a project then there should be close cooperation with this initiative.

11. Expected Benefits

- (3) Improved land use planning and land allocation especially for arable agriculture.
- (4) Better and consistent data collection, leading to improved planning.
- (5) MAF District/Provincial offices provided with up to date maps and information.

12. Assessment of Possible Problems and Bottlenecks in Implementation

- (1) Shortage of trained staff due to other commitments.

13. Assessment of Natural and Social Environment

- (3) Natural environment. There should be positive impacts through proper and appropriate land use.
- (4) Socio-economic conditions. There should be a positive impact because of better land allocation and fewer disputes between villagers etc.

14. Special Arrangements

None.

Project No. LW-07

1. Title of Project/Program

Rehabilitation and Expansion of Meteo-hydrological Stations for Agriculture Development and Flood Control

2. Location

The project will cover different areas based on their agricultural role in two phases:

- (1) Phase I (5 years): The 7 plains of Vientiane, Bvolikhamxay, Khammouan, Savannakhet, Saravan, Champasak, and Attapu
The Department of Meteorology and Hydrology (DMH) at Vientiane will also be included in this phase
- (2) Phase II (5 years): Other river basins

3. Objectives

To strengthen weather forecast for agriculture development to increase food crop production and flood forecast to mitigate agricultural damage in order to attain the goals of agriculture development strategies of the MAF in the year of 2020.

4. Project/Program Description

DMH has a nationwide meteo-hydrological observatory network mentioned below and provides weather and flood forecast services to customers. Most of meteo-hydrology stations have been constructed by the DMH and managed under the each Provincial Agriculture and Forestry Service Office. The number of meteo-hydrological stations and other related facilities are as follows;

| | |
|------------------------------------|--------------|
| Main meteo-hydrology stations | 21 stations |
| Secondary meteo-hydrology stations | 29 stations |
| Rain gauge stations | 102 stations |
| Staff gauges stations | 60 stations |
| Gauging stations | 67 stations |

However, observation activities of each meteo-hydrological station have suffered from poor station management and lack of qualified staff, shortfall of operation budget, lack of transportation and deterioration of meteo-hydrology instrument/equipment and observatory facilities. In addition, there is a lack of reliability of data obtained by existing meteo-hydrological stations because there are no facilities for calibration of meteo-hydrological instrument/equipment in the country and a lack of qualified technicians for calibration.

Water allocation and management of the Mekong River has been discussed among neighboring countries under the Mekong River Commission Secretariat (MRC). Strengthening of meteo-hydrological observation in each tributary of the Mekong River has been strongly emphasized in order to support water management activities of the river. The DMH has been considering upgrading meteo-hydrological observation activities in

the country in collaboration with MRC and neighboring countries. The DMH has already implemented one rehabilitation program since 2000 using JICA funds. Slope gauge stations at 11 locations and rain gauge stations at 15 locations were constructed throughout the country along with the installation of an automatic recording system. It has been partially operational since June 2001 with installation of the transceiver communication system.

The proposed program will have the 2-Phase implementations such as the first implementation in higher priority regions (the 7 plains), meteo-hydrological laboratory construction in DMH, Vientiane and the second implementation in other regions.

The major project components will be rehabilitation of facilities of meteo-hydrology station including renewal of some observatory instrument/equipment, providing a modernized system of data collection, upgrading of the data transfer system, and construction of a meteo-hydrological laboratory. Furthermore, it is proposed that new meteo-hydrology stations will be constructed to add into the existing observation network. The proposed program includes capacity building of staff of Provincial Meteo-hydrology Office. As another important component, consultant services will also be provided in order to ensure the successful project implementation. A consultant team will be stationed at DMH in Vientiane. The team will assist the DMH and Provincial Meteo-hydrology Office in site selection, planning, design, and construction supervision of observatory facilities. The consultant team will also assist in operation of data transferring and compilation. The consultant team will provide this assistance by traveling to each province.

5. Project Components

Phase-I Rehabilitation and Expansion of Meteo-hydrological Stations and Agro-meteorological Stations in the 7 plains of Vientiane, Borikhamxay, Khammouane, Savannakhet, Saravanh, Champasak and Attapu

Construction of Meteo-hydrological laboratory in DMH, Vientiane

The proposed program covers rehabilitation works of the following existing stations and construction of new stations in the 7 plains.

| <u>Description</u> | <u>Rehabilitation</u> | <u>New Construction</u> |
|------------------------------------|-----------------------|-------------------------|
| Main meteo-hydrology stations | 11 stations | 0 station |
| Secondary meteo-hydrology stations | 17 stations | 6 stations |
| Rain gauge stations | 73 stations | 21 stations |
| Staff gauges stations | 25 stations | 16 stations |
| Gauging stations | 38 stations | 12 stations |

Main components of the program are proposed as follows.

- (1) Rehabilitation of meteo-hydrology stations including agro-meteorology stations and renewal of instrument/equipment,
- (2) Construction of new meteo-hydrology stations including agro-meteorology stations in order to strengthen observatory network,

- (3) Provision of modernized communication equipment in order to strengthen data transferring and communication,
- (4) Provision of computer and LAN system to upgrade data collection / transferring / compilation / filling and analysis,
- (5) Improvement of weather and flood forecast systems
- (6) Construction of facilities for calibration of hydrological instrument/equipment and equipment test room.
- (7) Institutional improvement of operation and management
- (8) Training of staff in DMH and Provincial Meteo-hydrology Office through participatory survey, planning, supervision of construction and overseas training
- (9) Preparation of educational program for staff of DMH and Provincial Meteo-hydrology Office

Phase-II Nationwide Expansion of Meteo-hydrological Station Networks in other regions

The proposed program is to expand rehabilitation and construction of meteo-hydrological stations in other regions in nation-wide level.

| <u>Description</u> | <u>Rehabilitation</u> | <u>New Construction</u> |
|------------------------------------|-----------------------|-------------------------|
| Main meteo-hydrology stations | 10 stations | 0 station |
| Secondary meteo-hydrology stations | 12 stations | 3 stations |
| Rain gauge stations | 29 stations | 75 stations |
| Staff gauges stations | 35 stations | 29 stations |
| Gauging stations | 29 stations | 21 stations |

Main components of the program are the same as the ones of the Phase-I implementation except for component (5) (Component (5) is to be implemented within Phase-I).

6. Project Costs

In total, US\$15.35 million is required for this Project.

Phase-I US\$ 9.81 million

Phase-II US\$ 5.54 million

The annual cost and the breakdown is tabulated as follows;

(Unit: US\$ 1000)

| | Phase I | | | | | Phase II | | | | | Total |
|----------------|---------|-------|-------|-------|-------|----------|-------|-------|-------|-------|--------|
| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Yr 6 | Yr 7 | Yr 8 | Yr 9 | Yr 10 | |
| Capital cost | 1,445 | 1,445 | 1,445 | 1,445 | 1,445 | 935 | 935 | 935 | 935 | 935 | 11,900 |
| Recurrent cost | 517 | 517 | 517 | 517 | 517 | 172 | 172 | 172 | 172 | 172 | 3,447 |
| Total | 1,962 | 1,962 | 1,962 | 1,962 | 1,962 | 1,107 | 1,107 | 1,107 | 1,107 | 1,107 | 15,347 |

This cost is estimated based on that in the Rehabilitation and Construction Programs of the 15 Meteo-hydrology stations funded by JICA in 2000 to 2001.

7. Implementing Agency

DMH, Ministry of Agriculture and Forestry in corporation with the each Provincial Agriculture and Forestry Service Office (PAFSO).

8. Organizational and Staffing Requirements

This program will be implemented under the present organizational framework. However, additional staff will be required in each PAFSO as follows:

| No. | Province | Present Staff No. | Proposed Staff No. | Balance |
|-------|-----------------------|-------------------|--------------------|---------|
| 1 | DMH,MAF | 79 | 94 | -15 |
| 2 | Phonsali | 5 | 13 | -8 |
| 3 | Luang NamTha | 5 | 13 | -8 |
| 4 | Oudomxay | 5 | 12 | -7 |
| 5 | Bokeo | 4 | 12 | -8 |
| 6 | Luang Prabang | 9 | 16 | -7 |
| 7 | Houaphan | 9 | 17 | -8 |
| 8 | Xieng Khouang | 7 | 14 | -7 |
| 9 | Sayabouli | 9 | 15 | -6 |
| 10 | Saisombun | 2 | 10 | -8 |
| 11 | Vientiane | 10 | 16 | -6 |
| 12 | Vientiane Municipalit | 5 | 10 | -5 |
| 13 | Borikhamsay | 6 | 13 | -7 |
| 14 | Khammouane | 7 | 15 | -8 |
| 15 | Savannakhet | 19 | 26 | -7 |
| 16 | Saravane | 12 | 20 | -8 |
| 17 | Sekong | 3 | 11 | -8 |
| 18 | Champasak | 22 | 29 | -7 |
| 19 | Attapue | 6 | 13 | -7 |
| Total | | 145 | 369 | -130 |

9. Implementation Schedule

The Project is divided into 2 phases as shown below;

Phase-I 5 years The seven major plains and DMH in Vientiane

Phase-II 5 years Other river basin

10. Lessons Learnt and How Incorporated into Proposed Project

JICA has been assisting to construct meteo-hydrological observatory system since 1990s. The staff are trained gradually and will be taking and important role in this Project.

11. Expected Benefit

- (1) Improvements of data supply for public services, water resources development and agriculture development in nationwide, mitigation of flood damage, aviation operation.
- (2) Improvement of water management and/or water use of Mekong River in

collaboration with MRC

- (3) Improved weather and flood forecast services to agricultural activities in rural areas that will increase crop production and mitigate flood damage concerned agriculture and marketing.
- (4) Upgrading the capacity and technology of staff of DMH, Provincial Meteorology Office and other institutes in the country
- (5) Beneficiaries in the Phase I will be 35.3 % of total population, and 65.7 % in the Phase II.

12. Assessment of Possible Problems and Bottlenecks in Implementation

- (1) Agriculture development strategies of Provincial Agriculture and Forestry Service Office (PAFSO) will bring bias in the development,
- (2) Shortage of capable staff in PAFSO will prevent the project progress, if the Government could not assign required number of staff.

13. Assessment of Natural and Social Environment

- (1) Natural environment: Negative impacts, although it will be very small, are expected when land is developed, e.g. construction of new meteorology stations in rural area,
- (2) Social environment: Positive impacts are expected from improved weather and flood forecast.

14. Special Arrangements

None

2. *Institutions and Organization*

Project No. IO-1

1. Title of Project/Program

Institutional Development and Strengthening of the Ministry of Agriculture and Forestry.

2. Location

Ministry of Agriculture and Forestry and nation wide.

3. Objective

To restructure and strengthen the administration, management and planning capacity of MAF departments and agencies, and provincial and district agriculture and forestry services in relation to decentralization and market economy policies.

4. Project/Program Description

The proposed project will strengthen the capacity of MAF with regards to management, planning, research coordination, aid coordination and implementation, and to support MAF to respond to farmers' diversified needs in the evolving market economy. The project immediate objectives are to strengthen administration and management procedures, planning and statistical capacity, and human resource management capacity of the department and agencies from central level to district level.

At central level, the project will support MAF cabinet, the Department of Planning, the Department of Personnel, NAFRI and all Technical Departments' Administration Division in improving their administration and management procedures. This will be done through the development of horizontal/vertical integration and planning and management system and in-service training of staff. Technical assistance will be provided to study and develop the procedures and systems, which would be simple and more appropriate to support the need of the provinces and districts and of the farmers' communities. The procedures would also contain budgeting and financial as well as auditing and control procedures.

The project will extend its activities to the provincial level after the elaboration of standard administration procedures, planning and statistics systems, and human resource development systems for MAF. It is important that the procedures and systems are workable and tested at PAFS and DAFO level. In relation to decentralization there is a significant need to strengthen the budgeting and financial management capacity of PAFS and DAFO staff as well as their capacity for planning and management of development projects as most future projects would be implemented under those institutions. In view of the large areas and the number of

institutions covered by the project, a staged approach will be developed and institutional support would be provided from MAF to first priority provinces and later replicate those activities to second priority provinces.

In-service training program will be elaborated based on the findings of the technical assistance. The training process will be developed upon the concept of Master Trainers and Provincial Trainers, which will be elaborated under the “Strengthening Agriculture and Forestry Extension Training Project”. Therefore it will be incorporated into the Regional Agriculture and Forestry Training Center (RAFECT) training program.

5. Project Components

The component of the project is divided into 3 main components and 14 sub-components as follows.

Component 1: Strengthening administration and management procedures of MAF

- (1) Technical assistance for strengthening administration and management procedures of MAF departments and related agencies (planning, monitoring and evaluation, reporting).
- (2) Establishment of improved administration and management procedures for MAF departments and related agencies including PAFS and DAFO.
- (3) Elaboration and implementation of in-service training course and study tours of staff in related administration and management subjects.

Component 2: Strengthening Planning and Statistical Capacity of MAF

- (4) Technical assistance for strengthening bottom-up planning and statistical capacity of MAF Departments and related agencies including PAFS and DAFO.
- (5) Develop a bottom-up planning and management information system from DAFO to MAF.
- (6) Introduce new technology for statistical collection of data (sample surveys, objective yield survey, use of remote sensing information).
- (7) Develop an early warning information system.
- (8) Provision of IT equipment and materials for planning and statistics
- (9) Elaboration and implementation of in-service training and study tours of staff in relevant technical subjects and statistical collection and data base use.

Component 3: Strengthening Human Resource Development Planning of MAF

- (10) Technical assistance for strengthening human resource development planning of MAF Departments and related agencies including PAFS and DAFO (job

description, personnel data base, career development, training need assessment, in-service training of personnel).

- (11) Establishment of Human Resource Development Center (HRDC) at MAF for planning and monitoring human resource development activities.
- (12) Improve the existing personnel data-base of the Department of Personnel
- (13) Elaborate job description for all position of MAF's department and agencies
- (14) Develop career development plans for each department and agencies
- (15) Elaborate training need assessment for each department and agencies

Elaboration and implementation of in-service training and study tours of staff in relevant technical subjects related to human resource development.

6. Project Costs

The total project cost is estimated at about US\$ 4.6 million as shown in the table below.

(Unit: US\$ 1000)

| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Yr 6 | Total |
|----------------|------------|--------------|------------|------------|------------|------------|--------------|
| Capital cost | 225 | 1,035 | 290 | 225 | 75 | 90 | 1,940 |
| Recurrent cost | 11 | 570 | 538 | 536 | 531 | 532 | 2,717 |
| Total | 236 | 1,605 | 828 | 761 | 606 | 622 | 4,657 |

7. Implementing Agency

The implementing agencies will be MAF (Department of Planning and Department of Personnel) and DAFO.

8. Organization and Staffing Requirements

The project will be implemented under the existing institutional framework of MAF.

The project staff requirement is as follows:

| | Total | | MAF | | PAFS | | DAFO | |
|--|------------|------------|----------|-----------|-----------|-----------|------------|------------|
| | Present | Proposed | Present | Proposed | Present | Proposed | Present | Proposed |
| Strengthening Administration and Management | | | | | | | | |
| 1. Project Director/Coordinator | 0 | 2 | 1 | 1 | 0 | 1 | 0 | 0 |
| 2. Assistant project Dir. | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 3. Regulatory Staff administration | 161 | 358 | 20 | 40 | 18 | 36 | 141 | 282 |
| 4. Support staff | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 |
| Subtotal | 161 | 363 | 0 | 44 | 18 | 37 | 141 | 282 |
| Strengthening Planning and Statistical Capacity | | | | | | | | |
| 1. Project Director/Coordinator | 0 | 2 | 1 | 1 | 0 | 1 | 0 | 0 |
| 2. Assistant project Dir. | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 3. Regulatory Staff Planning | 165 | 217 | 24 | 40 | 36 | 36 | 141 | 141 |

| | | | | | | | | |
|------------------------------------|------------|------------|------------|------------|-----------|------------|------------|------------|
| 4. Regulatory Staff Statistics | 0 | 217 | 4 | 40 | 0 | 36 | 0 | 141 |
| 5. Support staff | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 |
| Subtotal | 165 | 439 | 0 | 84 | 36 | 73 | 141 | 282 |
| Strengthening HRD Planning | | | | | | | | |
| 1. Project Director/Coordinator | 1 | 2 | 1 | 1 | 0 | 1 | 0 | 0 |
| 2. Assistant project Dir. | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 3. Regulatory Staff administration | 1 | 37 | 0 | 0 | 36 | 36 | 1 | 1 |
| 4. Support staff | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 3 |
| Subtotal | 3 | 45 | 0 | 3 | 36 | 37 | 2 | 5 |
| Total Staffing | 329 | 847 | 0 | 131 | 90 | 147 | 284 | 569 |
| Balance | 518 | | 131 | | 57 | | 285 | |

9. Implementation Schedule

The project will be implemented over a period of 6 years according to the attached schedule.

Implementation Schedule

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|--|--------|--------|--------|--------|--------|--------|
| 1 Strengthening administration & management | | | | | | |
| International Expert Institutional Development | ■ | | | | | |
| Regional Expert Training | ■ | ■ | | | | |
| Local Expert Training | ■ | ■ | ■ | ■ | ■ | ■ |
| Institutional development | ■ | ■ | | | | |
| Curriculum development | | ■ | ■ | | | |
| Training MAF Staff (Trainers) | | ■ | ■ | ■ | ■ | |
| Training PAFS Staff | | | ■ | ■ | ■ | ■ |
| Training DAFO staff | | | ■ | ■ | ■ | ■ |
| 2 Strengthening Planning and Statistical Capacity | | | | | | |
| International Expert Planning & Statistical Development | ■ | | | | | |
| Regional Statistic | ■ | ■ | | | | |
| Local Expert Statistic programming | | ■ | ■ | | | |
| Local Expert Training | | ■ | ■ | ■ | ■ | ■ |
| Institutional development | | ■ | ■ | | | |
| Curriculum development | | ■ | ■ | | | |
| Training MAF Staff (Trainers) | | | ■ | ■ | ■ | ■ |
| Training PAFS Staff | | | ■ | ■ | ■ | ■ |
| Training DAFO staff | | | ■ | ■ | ■ | ■ |
| 3 Strengthening HRD Planning | | | | | | |
| International Expert Planning & Statistical Development | | ■ | | | | |
| Regional HRD | | ■ | ■ | | | |
| Local Expert HRD & Training | | ■ | ■ | ■ | ■ | ■ |
| Institutional development, establishment of HRD Center | | ■ | ■ | | | |
| Curriculum development | | ■ | ■ | | | |
| Training MAF Staff (Trainers) | | | ■ | ■ | ■ | ■ |
| Training PAFS Staff | | | ■ | ■ | ■ | ■ |
| Training DAFO staff | | | ■ | ■ | ■ | ■ |

10 Lessons learnt and how they are incorporated in the proposed project

ADB financed a series of Technical Assistance (TA) projects for developing and strengthening MAF as an institution. The projects are TA 1745-LAO (Phase I) and TA 2333-LAO (Phase II): Institutional Development and Strengthening of Ministry of Agriculture and Forestry". Both TA were implemented from 1993 to 1996. The projects emphasized the development of MAF institutional efficiency level with major inputs to strengthening the Ministry's planning systems. The project components consisted of the development of planning knowledge and skills through in-service

training of Ministry to the line departments and to the provincial agriculture and forestry services. Technical assistance, systems development and hardware inputs were developed through three major areas¹; sector planning, institutional development, human resources development planning components.

The Lao-Swedish Forestry Development Program implemented a sub-program for the institutional strengthening and human resource development for the forestry sector. The main objective of the human resource development is “to strengthen the competence and capacity of the staff to handle the forestry sector with objective to improve productivity and sustainable use of forest and agriculture land in combination with conservation and protection of target areas”. The objectives of the project comprise of: (1) support to the legal framework, (2) human resource development, (3) planning, budgeting and finance management, DAFO management system, (4) research management including support to library and information center, and (5) support to program management.

Lessons from both projects would be used by the project.

11. Expected Benefit

The project expects to increase the organizational and operational planning of MAF and its related agencies by 30%. The output of the project will be in form of:

- Institutional strengthening of MAF’s Cabinet
- Institutional strengthening of Department of Planning
- Institutional strengthening of Department of Personnel
- Institutional strengthening of the Administration Division of all Technical Departments
- Institutional strengthening of PAFS and Administration Section
- Institutional strengthening of DAFO and Administration Unit.
- Established in-service training program for Department staff, PAFS staff and DAFO staff
- About 20 Master trainers in the field of Organization and Planning.
- About 160 department staff trained and mobilized
- About 145 PAFS staff trained and mobilized
- About 846 DAFO staff trained and mobilized

¹ Quoted from: TA 2333-LAO: Institutional Development and Strengthening of Ministry of Agriculture and Forestry (Phase2), Final Report, 25 September 1996. Lao People’s Democratic Republic, Ministry of Agriculture and Forestry, Cargill Technical Services.

12 Assessment of Possible Problems and Bottlenecks in Implementation

Availability of staff

It is important that qualified counterparts who have English speaking and writing capacity are assigned to each expert.

The assignment of district staff to the DAFO's Administration Unit for the different planning, statistical, and personnel development functions of the unit is a prerequisite for the implementation of the project. Additional staff would be assigned from the province to the districts especially for the ones that are lacking personnel.

Availability of Government budget for recurrent expenditures

The project will be implemented through the existing government institution. Aside from the availability of the staff assigned to the technical assistance project, the project shall be allocated enough government funds to cover the recurrent expenditures which are needed for the operation of the NAFEA and of the PETU and DEU. The lack of local budget will hamper the mobility and motivation of the government staff.

13 Assessment of Natural and Social Environment

Natural and social environment will be considered in the establishment of administration management procedures and systems.

14. Special Arrangement.

It is a prerequisite that all in-service training is conducted and programmed under RAFETC. Therefore, a coordination committee would be established between MAF's Department, the 3 RAFETC and provinces covered by the extension and training centers.

Project No. IO-4

1. Title of Project/Program

NAFRI Strengthening Program

2. Location

NAFRI Research Centers located in Vientiane Municipality, Champasak Province, and Louangphrabang Province

3. Objectives

To develop an efficient and effective agriculture and rural farming research system through institutional strengthening, staff capacity building and research facility upgrading.

4. Project/Program Description

The National Agriculture and Forestry Research Institute (NAFRI) was established in June 1999 to centralize and coordinate research activities against the limited physical, human and financial resources. The role of NAFRI is to undertake technical research on agriculture and forestry. NAFRI has three divisions, nine centers and one project unit (agriculture and forestry machinery). It focuses mainly on research for rice, forestry and aquatic resources through donor assistance, i.e. the Lao-IRRI Project, the Lao-Sweden Forestry Program, and DANIDA Fishery Research Project. The research work in other fields like horticulture, livestock and inland fishery, that show high growth potential in Lao PDR, are relatively weak. The research facilities and skills are also limited for work in these fields.

The current number of staff in NAFRI is 356, of whom 8 have Ph.D'-s, 33 have master degrees, 43 have bachelor degrees, and 205 are technical or vocational graduates. An increase of trained and qualified staff with postgraduate qualification and upgrading of skills is needed to develop adaptive technology for many sub-sectors. Moreover, many of the existing qualified staff, especially postgraduates are appointed to administrative positions rather than research positions.

The proposed program consists of three projects, namely; (i) NAFRI Institutional Strengthening and Restructuring Project, (ii) NAFRI Staff Capacity Building Project, and (iii) NAFRI Research Upgrading Project. In the NAFRI Institutional Strengthening and Restructuring Project, technical assistance would be provided for research planning, monitoring & evaluation, and coordination amongst research fields. In addition, information management systems will be established, including IT networks and research databases to enhance research efficiency.

In the NAFRI Staff Capacity Building Project, a comprehensive training program will be established and various training programs including in-service training, in-country educational course and overseas training will be provided to upgrade the research capacity of NAFRI.

In the NAFRI Research Upgrading Project, existing research facilities and equipment will be assessed and necessary upgrading will be proposed through technical assistance. Based on evaluation and study results, the rehabilitation, improvement and supply of facilities will be made, including installation of equipment.

5. Project Components

NAFRI Institutional Strengthening and Restructuring Project

- (1) Installation of IT network and database system to develop knowledge management system.
- (2) Technical assistance for research coordination and management system, research planning including selection and prioritization of various research programs, establishment of monitoring and evaluation (M & E) system for research activities, strengthening of linkage with research institutes in other neighboring countries.
- (3) Technical training on IT network as well as research management, research planning and M&E system.

NAFRI Staff Capacity Building Project

- (1) Technical assistance for establishment of training programs for in-service training, in-country training course, and overseas training in specific fields.
- (2) Implementation of the above training programs.
- (3) Monitoring and evaluation of training programs.
- (4) Establishment of personal database for management of personal history of NAFRI staff.

NAFRI Research Upgrading Project

- (1) Technical assistance for inventory and assessment of research facilities and equipment, establishment of preliminary rehabilitation plan.
- (2) Consultancy service on rehabilitation plan, design, cost estimation as well as preparation of tender documents.
- (3) Rehabilitation of facilities and installation of equipment.

6. Project Costs

The project cost is estimated at about US\$ 6.2 million for all the components as shown in the table below.

(Unit: US\$ 1000)

| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Total |
|----------------|-------|-------|-------|------|------|-------|
| Capital cost | 1,125 | 1,530 | 880 | 180 | 180 | 3,895 |
| Recurrent cost | 466 | 479 | 459 | 438 | 438 | 2,280 |
| Total | 1,591 | 2,009 | 1,339 | 618 | 618 | 6,175 |

7. Implementing Agency

The National Agriculture and Forestry Research Institute (NAFRI), Ministry of Agriculture and Forestry

8. Organizational and Staffing Requirements

This program will be implemented under the NAFRI and additional staff will not be required.

| | Key Counterpart | Coordinator of Each Center* | Total |
|--|-----------------|-----------------------------|-------|
| 1. Institutional Strengthening and Restructuring Project | 3 | 10 | 13 |
| 2. Staff Capacity Building Project | 2 | - | 2 |
| 3. Research Upgrading Project | 3 | 10 | 13 |
| Total | 8 | 10 | 28 |

Note: The coordinator of each center is part-time counterpart and works as necessary only.

9. Implementation Schedule

The program will be implemented in each project base as follows:

- (1) NAFRI Institutional Strengthening and Restructuring Project: 3 Years
 - First Year; Plan, design and training to counterpart staff
 - Second Year; Installation of IT system and training to other staff
 - Third Year; Overall training and following up IT system
- (2) NAFRI Staff Capacity Building Project: 5 Years
 - First Year; Establishment of training program and schedule, taking necessary arrangement and establishment of personnel database
 - Second to Fifth Year; Implementation of training program and M&E of training program
- (3) NAFRI Research Upgrading Project: 3 Years
 - First Year; Plan, design and preparation of tender document

| | |
|--------------|--|
| Second Year; | Installation of equipment and rehabilitation of facility |
| Third Year; | Installation of equipment and rehabilitation of facility |

10. Lessons Learnt and How Incorporated into Proposed Project

Many staff receiving training program leave for appointment of new positions or new jobs in the private sector. The agreement on continuation of present position or job will be made to both NAFRI and trainee prior to commencement of training program.

11. Expected Benefit

- (1) Research efficiency is enhanced and research quality is drastically improved.
- (2) Direct beneficiaries are around 360 NAFRI staff. In addition, many farmers get indirect benefits through the adaptive technologies to be developed by NAFRI.

12. Assessment of Possible Problems and Bottlenecks in Implementation

- (1) Shortage of government counterpart budget for operation and maintenance of the IT system, equipment and rehabilitated facilities.
- (2) Trained staff may leave NAFRI for assignment of new position or new jobs.

13. Assessment of Natural and Social Environment

- (1) Natural environment: Small negative impacts are expected in the rehabilitation of research facilities.
- (2) Social environment: No impacts are expected.

14. Special Arrangements

If donor(s) agree, three projects will be commenced according to the following schedule to increase project impact and efficiency.

- (1) NAFRI Institutional Strengthening and Restructuring Project is commenced in the first year.
- (2) NAFRI Staff Capacity Building Project is commenced in the first or second year.
- (3) NAFRI Research Upgrading Project is commenced in the second or third year.

Project No. IO-6

1. Title of Project/Program

Plant Quarantine Strengthening Project

2. Location

Nationwide

3. Objectives

To enhance confidence in the country's agricultural export products export and secure crop protection in Lao PDR through strengthening of plant quarantine system.

4. Project/Program Description

Agricultural market in Lao PDR is limited and subsistence farming is widely practiced. Under this condition, although there is potential for producing various agricultural products, commercial production is limited due to the small size of the domestic market. Meanwhile, more potential exists for expansion of agricultural products to the international market. For agricultural export, one of the most important issues is the establishment of plant quarantine regulations and their enforcement. A large number of importers in neighboring countries require reliable phytosanitary certificates issued by the exporter. Thus, expansion of agricultural exports necessitates establishing a scientific inspection system. On the other hand, most agricultural products imported are not checked properly in terms of plant protection presenting the risk that crop production could be damaged through diseases and insects originated from other countries.

Currently there are seven check points with 14 staff nation wide for inspection of export and import items and issuing phytosanitary certificates. However, technical capacity of the staff is limited, and there is no expertise in the fields of bacterial pathology, fungal pathology, virology, entomology including nematology, and weed science, which all have critical importance in plant quarantine. Inspection is mainly relying on visual inspection only, and no reliable scientific inspection is executed. Inspection equipment, inspection room, and laboratory are established only at the Friendship Bridge near Vientiane. Under these conditions, it is almost impossible to issue reliable inspection certificates. Therefore, it is urgently required to renovate the current inspection system in order to obtain the confidence of agricultural importers and to protect crops from the diseases and insects of other countries.

In phase I of this proposed project, three checking posts, Friendship Bridge (Vientiane), Tha Heua (Savannakhet), and Vang Tao (Champasak), all on at the border with

Thailand, are targeted as priority, since their handling volume is considered relatively large. In order to strengthen the inspection system, inspection facility and equipment will be renovated and staff training will be implemented. In the phase II, the remaining four inspection posts, together with a post currently being planned for Vientiane International Airport, will be targeted for capacity to strengthening. Additionally in phase II, six new inspection posts will be established on the borders with Myanmar-, and Cambodia, where inspection are absent at present.

5. Project Component

Phase The three existing posts at Friendship Bridge, Tha Heua, and Vang Tao check posts

- (1) Technical assistance for strengthening plant quarantine system and review of existing regulations and strengthening plant quarantine system,
- (2) Rehabilitation of inspection points, laboratory, and equipment.
- (3) Implementation of training of plant quarantine inspection staff.

Phase for 10 posts including three existing posts, one planned post and six new posts

- (1) Technical assistance for strengthening plant quarantine system.
- (2) Rehabilitation of inspection points, laboratory, and equipment.
- (3) Establishment of six new inspection posts at the border with Myanmar, Cambodia.
- (4) Training of plant quarantine inspection staff.
- (5) Project Cost

6. Project Cost

Total project cost is US\$ 7.8 million consists of US\$ 2.4 million for phase I and US\$ 5.4 million for phase II as shown in the table below.

(Unit: US\$ 1000)

| | Phase I | | | | | Phase II | | | Total |
|----------------|---------|------|------|------|------|----------|-------|-------|-------|
| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Yr 6 | Yr 7 | Yr 8 | |
| Capital cost | 180 | 500 | 550 | 475 | 75 | 800 | 1,300 | 1,300 | 5,180 |
| Recurrent cost | 57 | 170 | 171 | 117 | 105 | 148 | 935 | 935 | 2,638 |
| Total | 237 | 670 | 721 | 592 | 180 | 948 | 2,235 | 2,235 | 7,818 |

7. Implementing Agency

National Plant Protection Organization (NPPO)/DOA

8. Organizational and Staffing Requirements

| Component | Present Staff No. | Proposed Staff No, | Balance |
|---------------------------|-------------------|--------------------|---------|
| Quarantine Staff-Phase I | 9 | 15 | 6 |
| Quarantine Staff-Phase II | 5 | 50 | 45 |
| Total | 14 | 65 | 51 |

9. Implementation Schedule

Phase : 5 years

- (1) 1st Year: Preparatory works and design of rehabilitation
- (2) 2nd - 3rd Year: Rehabilitation of inspection points, laboratory, and equipment
- (3) 2nd - 5th Year: Training of plant quarantine inspection staff

Phase II: 3 years

- (1) 1st Year: Preparatory works and design of rehabilitation and new establishment
- (2) 2nd - 3rd Year: Rehabilitation and new establishment of inspection points, laboratory, and equipment
- (3) 2nd - 3rd Year: Training of plant quarantine inspection staff

10. Lessons Learnt

It is observed in the other donor-assisted projects that many staff receiving training leave the project for appointment to new positions or new jobs in the private sector. An agreement on continuation of present position or job will be made to both DOA and trainee prior to commencement of the training program.

11. Expected Benefit

- (1) Plant quarantine for export and import of agricultural products is carried out properly.
- (2) As a result of above item (1), agricultural export market will be expanded through enhancement of the confidence of agricultural importers.
- (3) As a result of above item (1), crops are protected from the insects or disease originated in other countries

12. Assessment of Possible problems and Bottlenecks in Implementation

- (1) Shortage of government counterpart budget for operation and maintenance of the project
- (2) Trained staff may leave the project for assignment of new position or new jobs.

13. Assessment of Natural and Social Environment

(1) Natural environment: No impacts are expected.

(2) Social environment: No impacts are expected.

14. Special Arrangement

None.

3. Human Resources Development

Project No. HR-1

1. Title of Project/Program

Strengthening Agricultural and Forestry Extension Services

2. Location

MAF, nationwide in rural areas

3. Objective

The objective of the project is to strengthen agricultural and forestry extension services through institutional strengthening of MAF at district, provincial and central levels.

4. Project/Program Description

Drawing upon the experience of the past and ongoing agricultural extension projects, the project is described as follows.

At the central level, a National Agriculture and Forestry Extension Agency (NAFEA) will be established to coordinate, plan and implement all agricultural extension activities within the mandate of MAF. Technical assistance will be provided to NAFEA to organize and institutionalize the agency's function and activities from central to provincial and district level. A Central Extension Training Unit (CETU) attached to NAFEA will be established. An Agricultural Extension Adviser will assist CETU. CETU will coordinate the implementation of agricultural and forestry in all provinces, drawing upon experts and resource persons available in the various departments of MAF (DOA, DOLF, DOI, DOF, DOMH, DOP and NAFRI). CETU will be responsible for preparing training and extension plans in collaboration with PAFS and Agriculture and Forestry Extension Training Centers (AFETCs).

At the provincial level, Provincial Extension Training Unit (PETU) will be established within PAFS. It will comprise 8 to 10 staff assigned from various existing sectors (crops, livestock/fisheries, forestry and irrigation). The role of the PETU will be to coordinate the extension programs of the districts within the province and to organize the training of the district staff. The PETU staff will receive training on extension from the CETU and AFETC and will be responsible for training staff of DAFO. PETU will also have responsibility for planning and monitoring extensions programs, coordinating input supplies with suppliers, credit institutions and markets, and diffusing information and messages through the mass media.

At the district level, the project will develop and implement a training program, which aims to upgrade the technical knowledge and extension skills of DAFO technical staff. The project will target 4 to 15 staff per district (depending on the size of the district) to enable them to become effective generalist for extension

works so-called Farming System Extension Workers (FSEW). In coordination with the AFETC project, the FSEW will be trained in the mix of technical skills needed to support the farming systems in each area. They will be assigned to take responsibility for specific villages each year and will develop work programs in a participatory manner with farmers, including extension messages to be demonstrated through field plots and regular visits to the villages according to cropping calendar prepared for each season. In addition to their strictly extension role, FSEW is also expected to act as facilitators helping villagers to identify needs and formulate financing proposals under the national rural development program or under donor assistance projects.

Following the experience and methodology of the Pilot Extension Project (PEP) in agricultural extension, the project will adopt a participatory demand driven approach to deliver extension services.

5. Project Components

The project will contain the following components.

- (1) Technical assistance for the organization and institutionalization of NAFEA. One Agricultural Extension Institution Development Adviser for one year.
- (2) Technical assistance for supporting Extension and Training of NAFEA, PAFS and DAFO. One Agricultural Extension Adviser for 3 years.
- (3) Training of Provincial Extension and Training Staff in Extension methodology including development of training material and training aids.
- (4) Training of FSEW including development of training material and training aids
- (5) Development and implementation of district agricultural extension projects.
- (6) Development of CETU/NAFEA capacity including material, equipment, improvement of facilities.
- (7) Development of PETU capacity including material, equipment, improvement of facilities
- (8) Development of District Extension Unit capacity including material, equipment, improvement of facilities.
- (9) Development of District Priority Extension Field Areas.

The project components for strengthening PETU and DEU services will be divided into 6 geographic and administrative regions in relation to geographical and ecological conditions and the distribution of PAFS and DAFO staff and also to facilitate the implementation of the project. The 6 regions are:

- a. Southern Region covering Champasak, Xekong and Attapu provinces,
- b. Central South Region covering Khammouane, Savannakhet and Saravan provinces,

- c. Central North Region covering Vientiane Province, Vientiane Municipality and Borikhamxai province,
- d. North West Region covering Xaignabouri, Louangphrabang and Oudomxai provinces,
- e. North East Region covering Xaisomboun special zone, Xiangkhouang and Houaphan provinces, and
- f. Northern region covering Bokeo, Louangnamtha and Phongsaly provinces.

6. Project Costs

The total project cost is estimated at about US\$ 5.6 million as shown in the table below.

(Unit: US\$ 1000)

| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Yr 6 | Total |
|----------------|------|------|-------|-------|-------|-------|-------|
| Capital cost | 390 | 500 | 265 | 25 | 0 | 0 | 1,180 |
| Recurrent cost | 141 | 186 | 1,039 | 1,032 | 1,000 | 1,000 | 4,398 |
| Total | 531 | 686 | 1,304 | 1,057 | 1,000 | 1,000 | 5,578 |

7. Implementing Agency

MAF by NAFEA is the implementing agency.

8. Organization and Staffing Requirements

The staffing requirement is divided into central, provincial and district staff as follows.

| | Total Staff | | CETU | | PETU | | DEU | |
|------------------------------|-------------|----------|---------|----------|---------|----------|---------|----------|
| | Present | Proposed | Present | Proposed | Present | Proposed | Present | Proposed |
| NAFEA/CETU | | | | | | | | |
| Project Director/Coordinator | 0 | 1 | 0 | 1 | | | | |
| Assitant Director | 0 | 1 | 0 | 1 | | | | |
| CETU staff | 0 | 20 | 0 | 20 | | | | |
| Support staff | 0 | 3 | 0 | 3 | | | | |
| PETU/DEU | | | | | | | | |
| Southern Region | | | | | | | | |
| Champassak | 502 | 98 | | | 225 | 10 | 277 | 88 |
| Sekong | 151 | 29 | | | 80 | 4 | 71 | 25 |
| Attapeu | 124 | 30 | | | 73 | 6 | 51 | 24 |
| Central South Region | | | | | | | | |
| Khammouane | 495 | 88 | | | 216 | 10 | 279 | 78 |
| Savannakhet | 833 | 160 | | | 248 | 16 | 585 | 144 |
| Saravane | 300 | 76 | | | 103 | 8 | 197 | 68 |
| Central North Region | | | | | | | | |
| Vientiane Prov. | 319 | 64 | | | 153 | 12 | 166 | 52 |
| Bolikhamxay | 280 | 47 | | | 159 | 6 | 121 | 41 |
| Vientiane Mun. | 238 | 48 | | | 98 | 10 | 140 | 38 |
| North West Region | | | | | | | | |
| Sayaboury | 260 | 68 | | | 70 | 10 | 190 | 58 |
| Louangprabang | 334 | 120 | | | 97 | 12 | 237 | 108 |
| Oudomxay | 151 | 76 | | | 82 | 8 | 69 | 68 |
| North East Region | | | | | | | | |
| Xaisomboun | 106 | 17 | | | 42 | 4 | 64 | 13 |
| Xiengkhouang | 159 | 61 | | | 97 | 8 | 62 | 53 |
| Houaphan | 170 | 82 | | | 96 | 8 | 74 | 74 |
| Northern Region | | | | | | | | |
| Bokeo | 135 | 44 | | | 70 | 6 | 65 | 38 |
| Louangnamtha | 134 | 45 | | | 92 | 6 | 42 | 39 |
| Phongsaly | 94 | 61 | | | 45 | 8 | 49 | 53 |
| Total | 4785 | 1239 | 0 | 25 | 2046 | 152 | 2739 | 1062 |
| Balance | | | 25 | | | | | |

Staff consists of 20 CETU trainers, 152 SMS PETU trainers and 1062 FSEW for the project. Incremented staff is calculated at 25 persons.

9. Implementation Schedule

The project will be implemented in two phases within a period of 6 years. The following implementation schedule is as follows.

| Implementation Schedule | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|-------------------------|--|--------|--------|--------|--------|--------|--------|
| 1 | Strengthening NAFEA | | | | | | |
| | International Expert | ■ | ■ | | | | |
| | Local Expert | ■ | ■ | | | | |
| | Facilities Improvement | | ■ | | | | |
| 2 | Support to Extension and Training NAFEA | | | | | | |
| | International Expert | | ■ | ■ | ■ | | |
| | Local Expert | | ■ | ■ | ■ | | |
| | Development of Curriculum for CETU and PETU training | | ■ | ■ | ■ | | |
| | Development of training materials and aids | | ■ | ■ | ■ | | |
| 4 | Training CETU | | | | | | |
| | Overseas Scholarships | | ■ | ■ | ■ | | |
| | Short term Training | | ■ | ■ | ■ | ■ | ■ |
| 5 | Training PETU and DEU | | | | | | |
| | Short term Training | | ■ | ■ | ■ | ■ | ■ |
| 5 | Strengthening PETU and DEU | | | | | | |
| | Southern Region | | | ■ | ■ | ■ | ■ |
| | Central South Region | | | ■ | ■ | ■ | ■ |
| | Central North Region | | | ■ | ■ | ■ | ■ |
| | North West Region | | | ■ | ■ | ■ | ■ |
| | North East Region | | | ■ | ■ | ■ | ■ |
| | Northern Region | | | ■ | ■ | ■ | ■ |

10. Lessons learnt and how they are incorporated in the proposed project

The Pilot Extension Project (PEP) was launched in 1996 with funding from the Swiss Development Corporation (SDC) and supported by technical assistance from Novartis Foundation an international NGO. PEP entailed structural adjustments within the District Agriculture and Forestry Offices (DAFOs) to enable them to become more effective extension agents.

In the upland agro-ecological zone, the experience of integrated agricultural extension could be extracted from the extension component of the Lao Swedish Forestry Program's Participatory Village Development and Sustainable Land Use System.

Specific lessons could also be learnt from sub-sector based agricultural extension activities such as.

In the research sub-sector, Lao IRRI Research and Training Project has established a rice extension network in Lao PDR.

In the livestock and fisheries sub-sector lessons could be taken from the European Union financed Strengthening of Livestock Services and Extension Activities, from the Aquaculture Development Project financed by FAO/UNDP, and the JICA financed Fisheries Development Project.

All projects specified above have adopted a participatory village development approach in extension, which aims to develop agricultural activities according to the needs of the villagers. However, there have been different processes and methodologies implemented by the different projects. One component of this technical assistance will be to analyze each approach, system and methodology currently applied by the projects and to find alternative to integrate and formulate a national agricultural extension system which could function by its own after the completion of donor assistance.

11. Expected Benefit

The output of the project will be in the form of:

- a. Institutional strengthening of NAFEA,
- b. Institutional strengthening of PAFS-PETU,
- c. Institutional strengthening of DAFO-DEU,
- d. Established training and extension program for CETU Trainers and SMS PETU Trainers,
- e. About 20 CETU trainers trained and mobilized,
- f. About 152 PETU SMS trainers trained and mobilized,
- g. Established training and extension program for DAFO-FSEW, and
- h. About 1,062 FSEW trained and mobilized (in coordination with the AFETC project).

12. Assessment of Possible Problems and Bottlenecks in Implementation

Availability of staff

It is important that qualified counterparts who have English speaking and writing capacity are assigned to each expert.

The assignment of FSEWs to the DAFO's Extension Unit is a prerequisite for the implementation of the project. Additional staff would be assigned from the province to the districts especially to those that are lacking personnel.

Availability of Government budget for recurrent expenditures

The project will be implemented through the existing government institution. Aside from the availability of the staff assigned to the technical assistance project, the project shall be allocated enough government funds to cover the recurrent expenditures needed for the operation of the NAFEA and of the PETU and DEU. The lack of local budget will hamper the mobility and motivation of the government staff.

13. Assessment of Natural and Social Environment

An assessment of natural and social environment will be conducted during the elaboration of the national extension program for specific agricultural products.

14. Special Arrangement.

During the establishment stage of the NAFEA an agricultural extension working group that consist of representative from each technical department, the Department of Planning, and the Department of Personnel will be established to work with the experts.

Project No. HR-2

1. Title of Project/Program

District In-service Training and Farmer Training in Agriculture and Forestry.

2. Location

The project is located in three Regional Agriculture and Forestry Extension Training Centers (RAFETCs) and three Farmers Vocational Schools (FVSs) located throughout the country as below.

- a. Northern Regional Agriculture and Forestry Training Center, Xieng Ngeun District, Louangphrabang Province.
- b. Central Regional Agriculture and Forestry Training Center, Pakcheng-Phonhong District, Vientiane Province.
- c. Southern Regional Agriculture and Forestry Training Center, Xepon District, Savannakhet Province.
- d. Louangnamtha FVS, Namtha or Muong Sing District (to be specified later)
- e. Houaphan FVS, Hiem or Viengxay District (to be specified later)
- f. Champasak FVS, Pakxong or Bachiang District (to be specified later)

3. Objectives

To strengthen agricultural and forestry extension services at district and village levels by developing and strengthening the capacity of Regional Agriculture and Forestry Extension Training Centers (RAFETCs), and by providing vocational training in agriculture and forestry to farmers' communities.

4. Project/Program Description

The proposed project will support to develop and strengthen the national agricultural and forestry extension services through the establishment of RAFETCs and FVSs in which training is provided for district extension agents as well as for farmers.

Agricultural extension will be developed under MAF national program with the establishment of the National Agriculture and Forestry Extension Agencies and its related agencies at provincial and district levels. In each district, a District Extension Unit (DEU) will be established and district extension agents will be assigned in each DEU. The district extension agents will be trained in two basic areas: implementation of village development and technical training of farmers. They are expected to be farming system generalists. This will enforces the concept of the farming as a total system, rather than the farming as an unrelated series of production activities. The Village Development Planning Training Program of the RAFETC will establish the basis for developing the extension methodology for strengthening agricultural and forestry extension services.

One strategy for the development of extension service capacity will be to develop a financially self-sustaining market oriented extension system. Therefore, the concept of the RAFETC-FVS would be to develop self-financed centers, which would regenerate their incomes through training fees and services. However, this concept is difficult to implement specially in the least developed areas, which are still under subsistence economy.

The project will develop a staged approach for the development and implementation of the project's activities. Programs will build on existing training facilities and human resources available at MAF and PAFS. The development scenario will be to develop three RAFTECs and six Farmers Vocational Schools following six geo-ecological regions in the first and second phase and to develop one FVS for each province in the later stage.

Phase 1 of the project will be to develop and strengthen three RAFETCs and three FVS in Louangphrabang (Xieng Nguen AFETC), in Vientiane Province (Hinheup-Pakcheng VARDP) and in Savannakhet (Xepon AFETC). Phase 2 will expand the FVS concept into three other regions by developing and strengthening three FVSs in Louangnamtha (Namtha-Muong Sing), Houaphan (Muong Hiem) and Champassak (Paksong). Phase 3 will be to develop Provincial Farmers Vocational Schools in 11 remaining provinces.

According to a primary staff needs assessment the three RAFETC will cover a large range of provinces and will target the training of DAFO staff specified in the table below.

Staffing DAFO and RAFETC area covered.

| AFETC | Provinces | Number of District | DAFO Staff (Planned) | | |
|----------------|---------------------|--------------------|---|-------------|-------------|
| | | | Administratio n Regulatory Function | FSEW | Total |
| Louangphrabang | 1. Bokeo | 6 | 83 | 38 | 121 |
| | 2. Louangnamtha | 5 | 61 | 39 | 100 |
| | 3. Phongsali | 7 | 86 | 53 | 139 |
| | 4. Xaignabouri | 10 | 166 | 58 | 224 |
| | 5. Louangprabang | 11 | 160 | 108 | 268 |
| | 6. Oudomxai | 7 | 83 | 68 | 151 |
| | | 46 | 639 | 364 | 1003 |
| Vientiane | 1. Huaphan | 8 | 97 | 74 | 171 |
| | 2. Xiangkhouang | 7 | 92 | 53 | 135 |
| | 3. Xaisomboun Z | 3 | 35 | 13 | 48 |
| | 4. Vientiane | 12 | 147 | 52 | 199 |
| | 5. Vientiane Mun. | 9 | 124 | 38 | 162 |
| | 6. Bolikhamxai | 6 | 99 | 41 | 140 |
| | | 45 | 594 | 271 | 855 |
| Savannakhet | 1. Khammouan | 9 | 147 | 78 | 225 |
| | 2. Savannakhet | 15 | 245 | 144 | 389 |
| | 3. Saravan | 8 | 132 | 68 | 200 |
| | 4. Champassak | 10 | 163 | 88 | 251 |
| | 5. Sekong | 4 | 62 | 25 | 87 |
| | 6. Attapu | 5 | 78 | 24 | 102 |
| | | 43 | 827 | 427 | 1254 |
| Total | 18 Provinces | 134 | 2060 | 1062 | 3112 |

The number of FSEW is based on the number of villages and households to be visited. The ratio of FSEW is about 5-12 villages for the northern and least developed districts and about 10-15 villages for the central and southern provinces. About 1,062 FSEW position will be created and those persons will be

trained under the training program as specified earlier.

The capacity of DAFO regulatory functions will build on the training program elaborated under the 'Institutional development and strengthening of MAF'. About 2,060 DAFO staff will receive this regulatory training program.

The training of FSEW is taken as a priority and would start as soon as the training curriculum is completed. The FSEW training will consist of two modules; (i) Village Development Planning Module (4 weeks) and FSEW Generalists Module (4 weeks). The two modules will form a training course for 2 months including 2 weeks of field practice in the village and RAFETC focal area. Training of FSEW will be conducted over a period of 2-3 years depending on each RAFETC (six training courses per year with 25 persons per course). FSEW Refresher Courses would be initiated 3 years after the completion of the initial FSEW training.









The training of DAFO Regulatory Staff would start at a later stage and will consist of two modules; (i) DAFO Management, Planning and Statistics, and (ii) DAFO Regulatory Function, which will cover specific subjects for crops, livestock-veterinary, forestry, and irrigation. The training course will be for six weeks and would be conducted over a period of 3-4 years depending on each RAFETC (eight training courses per year with 25 trainees per course). DAFO Regulatory Staff Refreshers Courses would be initiated 3 years after the completion of the initial DAFO training.

In addition to the above training, a number of special technical training courses will be provided by the RAFETC to both DAFO Regulatory and FSEW staff. The special course will be designed in relation to new discovery and applied research results from NAFRI and other regional and international research institutions. A regular calendar for each topic (crops, livestock-fishery-veterinary, forestry, agro-forestry, irrigation-water resource management, agro-processing, marketing) would be established by each RAFETC. It is difficult to estimate the number of special courses to be established at the current stage of the project, but the minimum target will be four courses per year per RAFETC.

Training of farmer will be one of the main activities of the RAFETC, the short training courses for farmers would be tailored according to needs in each locality. However, a regular farm management course that includes basic knowledge in crops and livestock production would be established. Special courses for farmers would also be established and would cover different topics (rice, crops, cattle-ruminant, poultry, fishery, agro-forestry, management of non-timber forest products, agro-processing, marketing, etc) and the need of the different locality.

A tentative training calendar for the above mentioned training courses is shown in the table as below.

RAFETC Training Calendar and Trainees Intake

| Training Activities | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 |
|---|---|--------|--------|--------|--------|--------|--------|--------|--------|
| Curriculum dev. FSEW G TN Training 6 batches FSEW |  (LP RAFETC 15 batches x 25 persons =375 FSEWs) (VTE RAFETC 12 batches x 25 persons = 300 FSEWs) (SVK RAFETC 18 batches x 25 persons = 450 FSEWs) | | | | | | | | |
| Refresher courses FSEW |  (LP RAFETC 4 batches x 25 persons =100 FSEWs per year on 3 years rotation basis) (VTE RAFETC 4 batches x 25 persons =100 FSEWs per year on 3 years rotation basis)) (SVK RAFETC 5 batches x 25 persons =125 FSEWs per year on 3 years rotation basis)) | | | | | | | | |
| Curriculum dev. DAFO Reg. TN Training DAFO Regulatory TN |  (LP RAFETC 25 batches x 25 persons =625 persons) (VTE RAFETC 24 batches x 25 persons = 600 persons) (SVK RAFETC 33 batches x 25 persons = 825 persons) | | | | | | | | |
| Refresher courses DAFO Reg. TN |  (LP RAFETC 8 batches x 25 persons =200 persons per year on 3 years rotation basis) (VTE RAFETC 8 batches x 25 persons =200 persons per year on 3 years rotation basis) (SVK RAFETC 11 batches x 25 persons =275 persons per year on 3 years rotation basis) | | | | | | | | |
| Special Agriculture Courses for DAFO |  (LP RAFETC about 4 training courses x 25 persons =100 persons per year) (VTE RAFETC about 4 training courses x 25 persons =100 persons per year) (SVK RAFETC about 4 training courses x 25 persons =100 persons per year) | | | | | | | | |
| Curriculum dev. Farmer Training Training of Farmers |   (LP RAFETC about 8 batches x 25 persons =200 farmers per year) (VTE RAFETC about 10 batches x 25 persons =250 farmers per year) (SVK RAFETC about 10 batches x 25 persons =250 farmers per year) | | | | | | | | |
| Special Agriculture Courses for Farmers |  (LP RAFETC about 4 training courses x 25 persons =100 persons per year) (VTE RAFETC about 4 training courses x 25 persons =100 persons per year) (SVK RAFETC about 4 training courses x 25 persons =100 persons per year) | | | | | | | | |

5. Project Components

- (1) Technical assistance for the development of training and extension program of the RAFETCs and FVSs.
- (2) Technical assistance for the development of curricula and training materials for the RAFETCs and FVSs.
- (3) Establishment of Model Extension Field Areas for RAFETCs.
- (4) Improvement and establishment of RAFETCs' facilities
- (5) Establishment of FVS facilities and field practices farms.
- (6) Training of FSEW and District staff
- (7) Training of farmers

6. Project Costs

The total project cost is estimated at US\$ 13.4 million as given in the table below. The cost is covering only the Phase 1 and 2.

(Unit: US\$ 1000)

| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Yr 6 | Yr 7 | Yr 8 | Yr 9 | Total |
|----------------|------|-------|-------|-------|-------|-------|-------|-------|------|--------|
| Capital cost | 150 | 1,200 | 1,280 | 1,060 | 860 | 660 | 1,560 | 60 | 30 | 6,860 |
| Recurrent cost | 56 | 860 | 780 | 1,000 | 788 | 679 | 294 | 1,485 | 588 | 6,530 |
| Total | 206 | 2,060 | 2,060 | 2,060 | 1,648 | 1,339 | 1,854 | 1,545 | 618 | 13,390 |

7. Implementing Agency

The Implementing agency will be MAF by the NAFEA, the six RAFETCs and three provincial FVSs headed by their Directors.

8. Organization and Staffing Requirements

The project will be implemented under the existing institutional framework of MAF and of the RAFETCs. One Working Groups will be established for curricula and training aid development. Staff from the different MAF's Technical Department and from PAFS will join the working group.

The project staff requirement is as follows:

| | Total | | MAF/PAFS | | 3 RAFTEC (Phase 1) | | 3 FVS (Phase 2) | |
|---|-----------|------------|-----------|-----------|--------------------|------------|-----------------|-----------|
| | Present | Proposed | Present | Proposed | Present | Proposed | Present | Proposed |
| Training and Extension Program Development | | | | | | | | |
| 1 Project Director/Coordinator | 0 | 1 | 0 | 1 | 0 | 0 | | |
| 2 Assistant project Dir. | 0 | 1 | 0 | 1 | 0 | 0 | | |
| 4 Curricula working group | 0 | 6 | 0 | 6 | 0 | 6 | | |
| 5 Support staff | 0 | 3 | 0 | 3 | 0 | 0 | | |
| Subtotal | 0 | 11 | 0 | 11 | 0 | 6 | 0 | 0 |
| Facilities Development | | | | | | | | |
| 1 Project Director | 1 | 6 | 0 | 0 | 1 | 3 | 0 | 3 |
| 2 Assistant project Dir. | 1 | 6 | 0 | 0 | 1 | 3 | 0 | 3 |
| 3 Administrative staff | 6 | 36 | 0 | 0 | 6 | 18 | 0 | 18 |
| 3 Trainers | 48 | 90 | 0 | 0 | 48 | 90 | 0 | 45 |
| Subtotal | 56 | 138 | 0 | 0 | 56 | 114 | 0 | 69 |
| Total Staffing | 56 | 149 | 0 | 11 | 56 | 120 | 0 | 69 |
| Balance | 93 | | 11 | | 64 | | 69 | |

9. Implementation Schedule

The project will be implemented in two phases within a period of 9 years. The following implementation schedule is as below.

| Implementation Schedule | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 |
|-------------------------|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 | Project inception and mobilization | ■ | | | | | | | | |
| 2 | Curriculum Development (Phase 1) | | ■ | ■ | ■ | | | | | |
| | International Training & Extension Expert | | ■ | ■ | ■ | | | | | |
| | Regional Training and Extension Expert | | ■ | ■ | ■ | | | | | |
| | National Training and Extension Expert | | ■ | ■ | ■ | | | | | |
| 3 | Facility Improvement RAFETC-FVS (Phase 1) | | ■ | ■ | ■ | | | | | |
| 4 | Training DAFO Staff in RAFETC | | ■ | ■ | ■ | | | | | |
| 5 | Training Farmers in RAFETC | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | Establishment and development of 3 FVS (phase 2) | | | | | ■ | ■ | ■ | ■ | ■ |
| 6 | Facility Improvement FVS | | | | | ■ | ■ | ■ | ■ | ■ |
| 7 | Training Farmers in RAFETC | | | | | ■ | ■ | ■ | ■ | ■ |

10. Lessons learnt and how they are incorporated in the proposed project

The Pilot Extension Project (PEP) was launched in 1996 with funding from the Swiss Development Corporation (SDC) and supported by technical assistance from Novartis Foundation an international NGO. PEP entailed structural adjustments within the District Agriculture and Forestry Offices (DAFOs) to enable them to become more effective extension agents. Extension Training Units were established at the Provincial levels and linked to the national Agriculture Extension Agency, with expectation that these will continue to operate even after the project is completed. Part of the PEP methodology was the conversion of the district technical specialist into a generalist, with a specific geographical area of responsibility. A series of training courses was developed by PEP on communication and facilitation, on leadership for managers, on extension concepts and methodology and on group development for agricultural group besides WUG. The PEP curriculum would be further developed under this project.

In the upland agro-ecological zone, the experience of integrated agricultural extension could be extracted from the extension component of the Lao Swedish Forestry Program's Participatory Village Development and Sustainable Land Use

System. The objective of the system is to provide the agriculture and forestry sectors with approaches, procedures and methods for implementing participatory village development and addressing sustainable land use. A curriculum for village development and sustainable land use was elaborated based on field experiences during method development work in target areas. Training materials were also developed for land use planning and for agricultural and forestry extension. Lessons could be learnt and incorporated into the activities of the RAFETCs especially in the elaboration the curriculum for Village Development Planning Training Module.

Under the Ministry of Education there is the Lao-German Basis Program funded by GTZ (GTZ/BAFIS) that is providing vocational training. The project components consist of the development of trainers, training materials and curriculum development for Non Formal Education Development Centers (NFEDC) which will be established all over the country¹. The BAFIS/GTZ project has established a comprehensive process for the development of non-formal vocational training in relation to the demand of the local community. The process involves training need assessment and a labor market survey of the community, and design of training program for the target group. One logical practice will be to coordinate the future activities of the FVS with the activities of the NFEDC.

11. Expected Benefit

The output of the project will be the form of:

- a. 3 existing Training Centers reinstated into RAFETC under the national agricultural and forestry extension program,
- b. Curricula and training aids developed for FSEW and DAFO Regulatory Staff training,
- c. Curricula and training aids developed for farmer training,
- d. Facilities of 3 RAFETCs improved,
- e. Facilities of 6 FVS improved (3 incorporated into the 3 RAFETC),
- f. 1125 FSEW trained under the FSEW Training Courses,
- g. 2050 DAFO Regulatory Staff trained under DAFO Regulatory Training Courses,
- h. 1500 DAFO Staff trained under the Agriculture Special Courses,
- i. 4900 Farmers trained under the Regular Farmer Training Program of AFETC-FVS,
- j. 1800 Farmers trained under the Special Farmer Training Program of AFETC-FVS,
- k. 3500 Farmers trained under Regular Farmer Training Program of 3 FVS (Phase 2 2006-2007), and

¹ The project has presently established 4 Regional NFEC (Vientiane, Louangprabang, Pakse, and Houaphan) by providing local subsidies funds (called revolving funds) that is used in connection with the centers' income-generating activities.

1. 1500 Farmers trained under the Special Farmer Training Program of 3 FVS (Phase 2 2006-2007).

12. Assessment of Possible Problems and Bottlenecks in Implementation

Availability of staff

It is important that qualified counterparts who have English speaking and writing capacity are assigned to each expert.

Availability of Government budget for recurrent expenditures

The project will be implemented through the existing government institution. Aside from the availability of the staff assigned to the technical assistance project, the project shall be allocated enough government funds to covers the recurrent expenditures which are needed for the operation of the RAFETC and FVS.

13. Assessment of Natural and Social Environment

In the establishment of the RAFTEC and FVS, an assessment of natural and social environment will be conducted.

14. Special Arrangement.

No special arrangement would be needed for the project.

**TERMS OF REFERENCE
FOR
THE DISTRICT IN-SERVICE TRAINING AND FARMER TRAINING
IN AGRICULTURE AND FORESTRY
IN
THE LAO PEOPLE’S DEMOCRATIC REPUBLIC**

1. Background and Justification

MAF is in the process to improve public agricultural extension through the establishment of the National Agriculture and Forestry Extension Agency (NAFEA) and additional institutional improvement at provincial level by adding Provincial Extension and Training Units (PETU) and District Extension Units (DEU) in the structure of PAFS and DAFO.

Strengthening DAFO’s administrative, regulatory and extension function is a priority for the improvement of the present agricultural extension system and for building up the capacity of farmers’ communities. This will be achieved through in-service training of district staff at Regional Agriculture and Forestry Extension Training Centers (RAFETCs) and through training of farmers at Provincial Farmers’ Vocational Schools.

A project profile for District In-service Training and Farmer Training in Agriculture and Forestry was elaborated with the objective to strengthen agricultural extension services at district and village levels by developing and strengthening the capacity of RAFETCs, and by providing vocational training in agriculture and forestry to farmers’ communities. The project will be implemented by MAF with the technical assistance specified in following.

2. Objective of the Technical Assistance

The Technical Assistance aims to support the establishment and implementation of In-service Training Programs for staff of 142 districts in Lao PDR, which is linked with the development extension and training program for farmers’ communities in the respective districts. Training of district staff will be conducted at classrooms at the RAFETC and on the job at Selected Extension Field Areas based on the approach and methodology developed by the Pilot Extension Project (PEP). Training of farmers will be done through the implementation of extension programs in the Selected Extension Field Areas and through formal training at the Farmer Vocational schools.

The Technical Assistance would also provide necessary support in term of management during the preparation, implementation and evaluation of the project. At the completion of the project, the technical assistance should be able to present important lessons learned and sound recommendations for fine tuning the

project's strategic approach, implementation design and feature to sustain the follow-up or replication of the development objectives and activities after the completion of the project.

3. Scope of Work

The technical assistance will be to develop training and extension programs of the 3 RAFETCs and 6 proposed FVS. The assistance will also cover development of curricula and training materials for administration/regulatory training, FSEW training and farmer training and the development of model Selected Extension Field Areas. The work will involve the assistance to training of trainers, training of district staff and training of farmers.

Aside from the above technical work, the consultant shall assist in the bidding and supervision of the construction of RAFETCs and FVSs facilities required by the project. As well as to ensure the operation of the RAFETCs and FVSs and will establish the necessary steps to further expand the training and extension program.

The technical assistance will ensure the well functioning of the project and the capacity building through transfer of knowledge and training of counterpart staff for the agencies involved in the project.

4. Specific Tasks

Pursuing the scope of work defined above, the technical assistance will follow the specific tasks for each main project components as below.

- (1) Development of training and extension program for DAFO under RAFETCs and FVSs.
 - To survey and review agricultural extension and training operation under MAF, PAFS and DAFO. This will include a staff demand analysis and training need assessment (TNA) for DAFO.
 - To survey and review agricultural extension and training models under donor assistance programs and their incorporation to the daily operation of MAF line agencies.
 - To survey and review the status and capacity of existing training institutions. This will include the review of academic training capacity of each institution, capacity of trainers and status of training facilities.
 - Base on findings from above survey and reviews to develop a training and extension approach, methodology and implementation process for the in-service training of DAFO staff.
 - To elaborate a development plan for each RAFETC and FVS. This will include development of curricula and training materials, upgrading of trainers, improvement of facilities including model farm facilities.

- (2) Development of curricula and training materials for the RAFECTs and FVSs
 - To develop curriculum and training material for DAFO administration and management technical in-service training base on training need assessment of each region. This will include subjects such as administration and Management, human resource development, finance accounting, bottom-up planning, statistics, MIS, etc.
 - To develop curriculum and training material for DAFO regulatory technical in-service training base on training need assessment of each region. This will include subjects related to the regulatory function for forestry, wild life, crops, livestock, veterinary, fisheries, hydrology, meteorology and irrigation.
 - To develop curriculum and training material for DAFO extension and training in-service training base on training need assessment of each region. This will include subject such as Training of Trainers (ToT), communication skills, how to facilitate and work with farmers, participatory rural analysis (PRA), community development planning, elaboration of seasonal production plans, irrigation water management, integrated pest management (IPM), integrated farming and crop diversification, etc.
- (3) Establishment of Model Extension Field Areas for RAFETCs.
 - To select areas that will be used as model extension field areas and training laboratories for the in-service on the job training of DAFO staff.
 - To establish development program for the selected model extension areas. This will comprise of village development program and areas based development programs related to the different development potential and the natural resources of each region.
- (4) Improvement and establishment of RAFETCs and FVSs facilities
 - To assist in the revision of site plans, building drawing such as classrooms, dormitory and other service facilities including structuring design and cost calculations.
 - To assist in the elaboration in tender documents for construction works and in the pre-qualification, tendering and contract.
 - To assist in the control and evaluation of construction and rehabilitation work done by contractor(s).
 - To assist in the elaboration of plan for the procurement of equipment and materials (quality and quantity).

- (5) Implementation of training program for trainers, DAFO staff and farmers
- To assist in the implementation of training programs for up-grading of teachers
 - To assist in the implementation of training programs for in-service training of DAFO staff
 - To assist in the implementation of training and extension program for farmers.

(6) Project operation, monitoring and evaluation.

A project operation, monitoring and evaluation system, which involve capacity building of the local institution will be elaborated for implementation of the project. The technical assistance task will be:

- To ensure that outputs, outcomes and impacts emerging at each steps of the project implementation have been realized towards achieving the implementation progress and development objectives. Therefore, proper monitoring and evaluation will be conducted in relevance with the scope and work schedule of the project.
- To ensure the correct utilization of project funds including those from the local contribution through the implementation of the Project's Financial Regulations.
- To ensure the correct operation and utilization of project's facilities, equipment and materials during the overall duration of the project.

Assistance to the overall project management by the team leader will be:

- To assist the Project Director/Coordinator in the overall project management and coordination among government agencies.
- To assist the Project Director/Coordinator for the preparation of annual implementation program and budget arrangement.
- To assist the Project Director/Coordinator for monitoring the work progress of each sub-project components.
- To assist the Project Director/Coordinator for the preparation of regular progress reports.

(7) Reporting

The following reports shall be prepared and provided.

(a) Inception report

To be submitted by the end of the third month after the commencement of the technical assistance services. The report will contains overall work schedule, work plan, administrative arrangement, results the review of existing data/ information during

the inception period.

(b) Monthly progress report

To be submitted at a monthly interval, which contains mobilization reports, man-months consumed, summary of work progress during the reporting month, problems encountered and its solutions, deviation from the original work schedule, and anticipated services, program and schedule of works for the next month.

(c) Quarterly progress report

To be submitted at three month interval, which gives a summary of the consultant's activities, work progress during the reporting period, problems encountered and its solutions, deviation from the original work schedule, and anticipated services, program and schedule of works for the next quarterly period.

(d) Annual report

To be submitted at the annual assignment, which gives a summary of the consultant's activities, work progress during the reporting period, problems encountered and its solutions, deviation from the original work schedule, and anticipated services, program and schedule of works for the next year.

(e) Completion report.

To be submitted, upon completion of all services, giving all aspects related to the project management and the project works.

(f) Project management formulation report

To be prepared for reporting the current formulation status of the project management. The report will comprise of a summary of the project management system and implementation, including guideline with checklist for sub-project identification and reporting format.

(g) Specific technical reports

After the completion of each long term and/or short term assignment each individual expert will submit his/her individual technical report/note on the technical support implemented and accomplished during the period assigned to work with the project.

In addition to the individual technical reports, the following technical report will be provided as result of technical group work.

- Strengthening the Capacity of District Agriculture and Forestry through in-service training in Lao PDR.
- Farmer Vocational Schools and Farmer Participatory Training and Extension Development in Lao PDR.

5. Expertise Requirements

A team of consultants, which may be an academic or research organization, or an independent consulting firm, will be engaged to undertake the consulting services as specified above. This would include international, regional and local expertise in following.

- (1) Institutional and Training Specialist (International) for a total of 24 man/months to assist in the development of training and extension program for DAFO and in the program set-up.
- (2) Agricultural Training and Extension Specialist (Regional) for a total of 24 man/month to assist in the development of curricula and training materials and in the development of Model Extension Field Areas.
- (3) Agricultural Training and Extension Specialist (Local) for a total of 96 man/month to assist in the development of curricula and training material, in the development of Model Extension Field Areas, in the follow-up of training implementation, and in the replication of the training and extension model to other provinces
- (4) Unspecified Backstopping Expertise to be specified in the current of the project implementation. This will include 3 man/month international, 3 man/month regional and 12 man/month local.

6. Time Frame

The time frame of the project (Phase 1) as well as of the technical assistance is of 5 years. The following time frame is tentatively proposed for the mandate of the consultant team.

| Time Frame | | m/m | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|------------|--|-----|--------|--------|--------|--------|--------|--------|
| 1 | International | | | | | | | |
| | Institutional and Training | 24 | ■ | ■ | ■ | | | |
| 2 | Regional | | | | | | | |
| | Agricultural Training and Extension | 24 | ■ | ■ | ■ | | | |
| 3 | Local | | | | | | | |
| | Agricultural Training and Extension | 96 | ■ | ■ | ■ | ■ | ■ | ■ |
| 4 | Unspecified Backstopping Expert | | | | | | | |
| | International | 3 | | | | | | |
| | Regional | 3 | | | | | | |
| | Local | 12 | | | | | | |

Project No. HR-4

1. Title of Project/Program

Strengthening the Capacity of Technical Education in Agriculture and Forestry

2. Location

The project is located in 4 schools located throughout the country as below.

- a. Louangphrabang Agriculture and Forestry Technician School, Pakxoueng District, Louangphrabang Province.
- b. Borikhamxai Agriculture and Forestry Technician School, Bolikhan District, Borikhamxai Province.
- c. Savannakhet Agriculture and Forestry Technician School, Khanthaboury District, Savannakhet Province.
- d. Champassak Agriculture and Forestry Technician School, Pakse District, Champasak Province.

3. Objective

To upgrade the quality of agriculture and forestry technician education through the improvement of curricula and syllabi and the improvement of 4 existing Agriculture and Forestry Technician Schools' facilities.

4. Project/Program Description

The new vision and objective of agriculture and forestry technical education is to provide a 3-year agriculture technical education for future agricultural extension workers and farm technicians. The curriculum of the AFTS will be developed to educate technicians in the field of crops, livestock, fisheries, veterinary, forestry and irrigated agriculture. Emphasis will be made on practical and market-oriented agricultural education especially in Nakae and Pakse schools.

The proposed project will enhance the restructuring of the schools academic program and improve the school facilities in order to develop agriculture and forestry technical education under the agriculture sector vision. The major component of the project will be to develop a uniform curriculum for the four technician schools that will covers four major subjects such as crops, livestock/fisheries/veterinary, forestry and irrigation. Irrigation will be introduced as a major subject with focus on survey and design of micro irrigation, irrigated agriculture, operation and maintenance of irrigation system and on water users group development.

The development of the new curriculum will be followed by; the development of lecture notes and text books for the new major subjects; the development of botanical laboratory, veterinary laboratory, soil laboratory, and other laboratories specified in the curricula and syllabi; and the development tools, equipment and teaching aids.

The development of school farms will be one feature for the new practical and

market oriented curriculum. The development of school farms will include the construction of training facilities, irrigation systems, livestock pastoral areas, fish culture, agro-forestry fruit tree orchards, pig farms, poultry farms etc. depending on the location. The farm will also serve as schools for farmers.

A teacher/trainer upgrading program will be initiated in order to upgrade the teaching capacity and the educational level of the teachers and trainers required under the new curriculum. The program will include overseas training scholarships for teachers/trainers and long term and short term training at NUOL and in the form of On the Job Training OTJ at the schools. The major subjects identified are; teaching methods and practices, training of trainers, the use of teaching and training materials and equipment, laboratory work, farm work, and other specific technical subjects.

The existing facilities of the schools will be improved to meet the standard and number of students. The estimated intake of students and number of student in campus for each school is given in the following table.

| | Name of AFTS | Yearly Intake of student from 2001 to 2010 | | | Total Student in Campus |
|---|----------------|--|------------------------|----------------------|-------------------------|
| | | MAF Scholarship | Individual Scholarship | Total student Intake | |
| 1 | Pakxueng AFTS | 40 | 60 | 100 | 300 |
| 2 | Muong Mai AFTS | 40 | 80 | 120 | 360 |
| 3 | Nakae | 40 | 60 | 100 | 300 |
| 4 | Pakse AFTS | 40 | 90 | 130 | 390 |
| | Total | 160 | 290 | 450 | 1,350 |

According to the Human Resource Assessment made by MAF, about 160 students per year would be recruited by MAF for its departments, PAFS and DAFO. The remaining students would obtain work in the private and communal sectors as well as returning to their parent's farms. The school fee of the school will be adjusted to cover the costs of education and to sustain the quality of education. It is also anticipated that the school will regenerate additional revenue from the school farm activities to cover part of its operational costs.

5. Project Components

Summarized from the project description the project will contain the following components.

- a. Technical assistance for curriculum development,
- b. Technical assistance for lecture notes and text books development,
- c. Technical assistance for school facilities development,
- d. Overseas scholarships for teachers and trainers,
- e. Training of teachers and trainers,
- f. Production of lecture notes and text books,
- g. Improvement of school facilities,
- h. Provision of new school equipment and vehicles, and
- i. Establishment of school farms for field practice.

6. Project Costs

The total project cost is estimated at about US\$ 14.1 million as shown in the table below.

(Unit: US\$ 1000)

| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Yr 6 | Total |
|----------------|-------|-------|-------|-------|-------|-------|--------|
| Capital cost | 430 | 1,520 | 1,790 | 2,190 | 1,000 | 1,350 | 8,280 |
| Recurrent cost | 579 | 973 | 1,290 | 1,302 | 957 | 710 | 5,810 |
| Total | 1,009 | 2,493 | 3,080 | 3,492 | 1,957 | 2,060 | 14,090 |

7. Implementing Agency

The implementing agencies will be MAF through the Department of Personnel, and the four AFTS headed by their principal.

8. Organization and Staffing Requirements

The project will be implemented under the existing institutional framework of MAF and of the AFTS. Two Working Groups, which will consist of teachers representatives from each major subject (crops, livestock, forestry, irrigation) will be established for curriculum and text book development. Professors at the Faculty of Agriculture, Faculty of Forestry and Department of Irrigation Engineering at NUOL will also be invited to join the working groups. The project staff requirement is as follows:

| | Total | | MAF/NUOL | | Pakxueung | | Muong Mai | | Nakae | | Pakse | |
|--|------------|------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Pres | Prop. | Pres | Prop. | Pres | Prop. | Pres | Prop. | Pres | Prop. | Pres | Prop. |
| Curriculum Development & Teachers Upgrading | | | | | | | | | | | | |
| 1 Project Director/Coordinator | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 Assistant project Dir. | 4 | 4 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 3 Curriculum & textbook dev. | 4 | 4 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 4 Curriculum working group | 7 | 20 | 0 | 4 | 2 | 4 | 1 | 4 | 2 | 4 | 2 | 4 |
| 5 Textbook working group | 7 | 20 | 0 | 4 | 2 | 4 | 1 | 4 | 2 | 4 | 2 | 4 |
| 6 Teachers & Trainers | 108 | 180 | 0 | 0 | 35 | 45 | 25 | 45 | 18 | 45 | 30 | 45 |
| 7 Support staff | 0 | 14 | 0 | 2 | 0 | 3 | 0 | 3 | 0 | 3 | 0 | 3 |
| Subtotal | 131 | 243 | 0 | 11 | 41 | 58 | 29 | 58 | 24 | 58 | 36 | 58 |
| School Facilities and School Farms Development | | | | | | | | | | | | |
| 1 Project Director | 4 | 4 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 Assistant project Dir. | 4 | 8 | 0 | 0 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 3 Support staff | 0 | 12 | 0 | 0 | | 3 | | 3 | | 3 | | 3 |
| Subtotal | 8 | 24 | 0 | 0 | 2 | 6 | 2 | 6 | 2 | 6 | 2 | 6 |
| Total Staffing | 139 | 267 | 0 | 11 | 43 | 64 | 31 | 64 | 26 | 64 | 38 | 64 |
| Balance | | 128 | | 11 | | 21 | | 33 | | 38 | | 26 |

9. Implementation Schedule

The project will be implemented within a period of 6 years, with the approach being to develop the curriculum ahead of school improvement. The following implementation schedule is proposed.

| Implementation Schedule | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|-------------------------|---|--------|--------|--------|--------|--------|--------|
| 1 | Curriculum development | | | | | | |
| | International Expert | ■ | ■ | | | | |
| | Regional Expert | ■ | ■ | ■ | | | |
| | Local Expert | ■ | ■ | ■ | | | |
| 2 | Text books & lecture notes development | | | | | | |
| | Regional Expert | | | | ■ | ■ | ■ |
| | Local Expert | | | | ■ | ■ | ■ |
| | Production of about 80 text books and Lecture notes | | | | ■ | ■ | ■ |
| 3 | Teacher Upgrading | | | | | | |
| | Overseas scholarships for teachers and trainers | ● | ● | ● | ● | ● | ● |
| | Shortterm training for teachers and trainers | ● | ● | ● | ● | ● | ● |
| 4 | Facilities improvement Pakxueg AFTS | | | | | | |
| | School facilities improvement | | ■ | ■ | ■ | | |
| | School farm | | ■ | ■ | ■ | | |
| 5 | Facilities improvement Muong Mai AFTS | | | | | | |
| | School facilities improvement | | | ■ | ■ | ■ | |
| | School farm | | | ■ | ■ | ■ | |
| 6 | Facilities improvement Nakae AFTS | | | | | | |
| | School facilities improvement | | | | ■ | ■ | ■ |
| | School farm | | | | ■ | ■ | ■ |
| 7 | Facilities improvement Pakse AFTS | | | | | | |
| | School facilities improvement | | ■ | ■ | ■ | | |
| | School farm | | ■ | ■ | ■ | | |

10. Lessons learnt and how they are incorporated in the Proposed Project

Development of school academic program through practical training and the development of “Practice Farm”.

Practical training is important in agricultural education and training. There are many sound examples in the world that could be adapted for the development of the AFTS. One is at the “Rajamangala Institute of Technology Campus in Kalasin, Thailand.

The Rajamangala institute is providing courses for both diploma and degree levels in the area of vocational and technological education. The institute offers full-time courses as follows. (i) Diploma course (2 years) for year 12 graduates, (ii) Degree courses (2 years) for vocational diploma graduates, and (iii) Degree program (4 years) for year 12-graduates. The major subjects are crop science, animal science, food science and technology, horticultural science, marketing and management. The institute also owns 160 ha of “Practice Farm” which is giving practical classes to students and training courses to farmers. It is proposed to study the Rajamangala Institute of Technology development model and join the academic cooperation and exchange program of the institute.

Development of curriculum and text books

Since 1991, CIDSE² has supported the agriculture schools in raising the level of education of students by helping the schools to improve their curricula and through increasing teachers’ capacity to carry out their work. These efforts have taken place through two projects; the “Curriculum Development and in-service Training for Teaching Staff in the Secondary Agriculture Schools of Lao PDR” from 1991 to 1994, and the “Promotion of Sustainable Agriculture in Secondary Agricultural Schools” from 1996 to 2000. The lessons gained from the implementation of the two projects will serve as a base for curriculum

² CIDSE: Cooperation Internationale pour le Development et la Solidarite.

development for the crops and livestock sciences as well as for building the capacity of teachers and extending the school activities to farmer training.

11. Expected Benefit

The output of the project will be in the form of new curricula and syllabuses, which would be operational from the school year 2004/2005. The students will be provided with better education due to improved teaching capacity and quality and improved facilities. Other benefits from the project will be:

- a. From year 2007, about 440 students per year will hold a diploma of Agriculture and Forestry Technical Education accredited by MAF and the Ministry of Education.
- b. 40 teachers will benefit from the overseas scholarships
- c. about 180 teachers will benefit from the short term teachers upgrading program
- d. about 200 government staff a year will benefit from refreshment courses at the school farm
- e. about 400 farmers a year will benefit from the farmer training and extension activities of the school farm.
- f. Students and teachers will benefit better school facilities.

12. Assessment of Possible Problems and Bottlenecks in Implementation

Size of the project

The project covers a large area, needs a large amount of funds, and has many components. The project would be rather difficult to manage and to implement if it is managed by one project organization. Therefore it is preferred to divide the project into many subprojects which will enable better management and implementation capacity and fit the funding requirement of potential donors (including NGOs).

Availability of staff

The project will emphasize the upgrading of teachers through overseas scholarships and short-term training. There is a risk that the people sent abroad under the scholarship program will not be assigned to work at the schools after they have completed their studies.

It is also important that qualified teachers and resource persons are assigned to the curriculum and textbook development working groups. The member of the working group shall also be available for the whole period of the project.

Availability of Government budget for recurrent expenditures

The project will be implemented through the existing government institution. Aside from the availability of staff assigned to the project, the project shall be allocated enough government funds to covers the recurrent expenditures which are needed for the operation of the schools. The lack of local budget will hamper

the mobility and motivation of the government staff.

13. Assessment of Natural and Social Environment

Despite the orientation of the new curriculum towards the market, awareness of the natural and social environment will be taught, especially for the use of organic materials for fertilizing and plant disease protection. Organic farming has already been introduced in the curriculum developed with the support of the CIDSE project and should be further emphasized.

14. Special Arrangement

There are no special arrangement needed aside from the establishment of the working groups for curriculum and textbooks.

Project No. HR-5

1. Title of Project/Program

Irrigation Technician School Improvement Project.

2. Location

Irrigation Technician School and Training Center, Tha Ngone, Vientiane Municipality.

3. Objective

To develop irrigation technician education and training through the improvement of curricula and syllabi and the improvement of the existing Tha Ngone Irrigation Technician Schools' facilities.

4. Project/Program Description

Since the establishment of the Lao PDR technical education in agriculture and forestry is placed under the responsibility of the Ministry of Agriculture and Forestry (MAF). Irrigation technicians were educated at the Tadthong Irrigation College. Following the restructuring of the Lao education program and the establishment of the National University of Laos (NUOL) in 1995, The Tadthong college was transferred to NUOL and formed Department of Irrigation Engineering under the Faculty of Architecture and Engineering.

Since 1996, the Government of Lao PDR has implemented a number of irrigation priority programs, that have been able to almost double the country's irrigated areas from 156,000 ha in 1996 to 295,000 ha in 2000. This drastic change has an impact on the limited number of irrigation technicians that are presently available in the provinces and districts. The need for irrigation technicians is also found in the private sector in terms of construction and mechanical installation and operation and in the communal sector (water users' organization) in term of water management, irrigation system operation and maintenance, and mechanical operation and maintenance. The need of technician increased furthermore when NUOL decided to stop irrigation technical education to concentrate on the NUOL's bachelor program. By considering the need to educate and train more irrigation technicians, MAF decided to establish the Tha Ngone Irrigation Training Center under the Department of Irrigation. The training center was later turned into an Irrigation Technician School in 1999.

The proposed project will develop the schools academic program and improve the school facilities in order to develop irrigation technical education under the agriculture sector vision. The major component of the project will be to develop a comprehensive curriculum for the school. A 3-year curriculum will be developed and will contain major subjects such as; survey and design of small scale irrigation system, soil mechanics, construction engineering, machinery operation,

maintenance and repair, water management, water users organization, extension methodology and practice as well as fundamental sciences such mathematics and physics etc. Crop sciences, livestock and fisheries will also be taught as minor subjects.

The development of the new curriculum will be followed by; the development of lecture notes and text books for the new major subjects; the development laboratories specified in the curricula and syllabi; the development tools, equipment and teaching aids; and the development of mechanical workshop and school farms. The development of school farms will include the construction of training facilities, irrigation system, on farm water management systems, livestock pastoral areas, fish culture, pig farms, poultry farms etc. The farm will also serve as schools for farmers.

A teacher/trainer upgrading program will be initiated in order to upgrade the teaching capacity and the educational level of the teachers and trainers required under the new curriculum. The program will include overseas training scholarships for teachers/trainers and long term and short term training at NUOL and in the form of On the Job Training OTJ at the schools. The major subjects identified are; teaching methods and practices, training of trainers, the use of teaching and training materials and equipment, laboratory work, workshop work, farm work, and other specific technical subjects.

The existing facilities of the schools will be improved to meet the standard and number of students. The estimated intake of students and number of student in campus from 2001 to 2010 is given in following.

Yearly Intake of student:

| | |
|-------------------------|--------------|
| MAF scholarship | 40 students |
| Individual scholarship | 50 students |
| Total intake of student | 90 students |
| Total student in campus | 270 students |

According to the Human Resource Assessment made by MAF, about 40 students per year would be recruited by MAF for its departments, PAFS and DAFO. The remaining students would obtain work in the private and communal sectors. The school fee of the school will be adjusted to cover the costs of education and to sustain the quality of education. It is also anticipated that the school will generate additional revenue from the school workshop and farm activities to cover part of its operational costs.

5. Project Components

Summarized from the project description the project will contain the following components.

- a. Technical assistance for curriculum development

- b. Technical assistance for lecture notes and text books development
- c. Technical assistance for school facilities development
- d. Overseas scholarships for teachers and trainers
- e. Training of teachers and trainers
- f. Production of lecture notes and text books
- g. Improvement of school facilities
- h. Establishment of school mechanical workshop
- i. Establishment of school practice farms.

6. Project Costs

The total project cost is estimated to 3,361,000 US\$. Breakdown of the costs is given in the table as below.

(Unit: US\$ 1000)

| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Total |
|----------------|------------|------------|------------|--------------|------------|--------------|
| Capital cost | 390 | 796 | 656 | 802 | 300 | 2,944 |
| Recurrent cost | 12 | 136 | 194 | 198 | 183 | 723 |
| Total | 402 | 932 | 850 | 1,000 | 483 | 3,667 |

7. Implementing Agency

The implementing agencies will be MAF by its Department of Personnel and the Tha Ngone Irrigation Technician School headed by their principal.

8. Organization and Staffing Requirements

The project will be implemented under the existing institutional framework of MAF and of the school. Two Working Groups will be established for curriculum and textbooks development. Professors at the Department of Irrigation Engineering NUOL will be also invited to join the working groups.

The project staff requirement is as follows:

| | | Total | | MAF/NUOL | | TA Ngone | |
|---|------------------------------|-----------|-----------|----------|----------|----------|-----------|
| | | Present | Proposed | Present | Proposed | Present | Proposed |
| Curriculum Development & Teachers Upgrading | | | | | | | |
| 1 | Project Director/Coordinator | 1 | 1 | 1 | 1 | 0 | 0 |
| 2 | Assistant project Dir. | 1 | 1 | 0 | 0 | 1 | 1 |
| 3 | Curriculum & textbook dev. | 1 | 1 | 0 | 0 | 1 | 1 |
| 4 | Curriculum working group | 2 | 4 | 0 | 2 | 2 | 2 |
| 5 | Textbook working group | 2 | 4 | 0 | 2 | 2 | 2 |
| 6 | Support staff | 0 | 5 | 0 | 2 | 0 | 3 |
| | Subtotal | 7 | 16 | 0 | 7 | 6 | 9 |
| School Facilities, Workshop and Farm Development | | | | | | | |
| 1 | Project Director | 1 | 1 | 0 | 0 | 1 | 1 |
| 2 | Assistant project Dir. | 1 | 2 | 0 | 0 | 1 | 2 |
| 3 | Support staff | 0 | 2 | 0 | 0 | | 2 |
| | Subtotal | 2 | 5 | 0 | 0 | 2 | 5 |
| | Total Staffing | 9 | 21 | 0 | 7 | 8 | 14 |
| | Balance | 12 | | 7 | | 6 | |

extension activities of the school farm.

- f. Students and teachers will benefit better school facilities.

12. Assessment of Possible Problems and Bottlenecks in Implementation

Availability of staff

The project will emphasize the upgrading of teachers through overseas scholarships and short term training, there is a risk that the people sent abroad under the scholarship program will not be assigned to work at the schools after they have completed their studies.

It is also important that qualified teachers and resource persons are assigned to the curriculum and textbooks development working groups. The member of the working group shall also be available for the whole period of the project.

Availability of Government budget for recurrent expenditures

The project will be implemented through the existing government institution. Aside from the availability of the staff assigned to the project, the project shall be allocated enough government funds to cover the recurrent expenditures which are needed for the operation of the schools. The lack of local budget will hamper the mobility and motivation of the government staff.

13. Assessment of Natural and Social Environment

Despite the orientation of the new curriculum towards the market, awareness of the natural and social environment will be taught in the school.

14. Special Arrangement.

There are no special arrangements needed aside from the establishment of the working groups for curriculum and textbooks.

Project No. HR-6

1. Title of Project/Program

Program for Strengthening the Capacity of University Education in Agriculture and Forestry.

2. Location

The project is located in two Faculties and one department of the National University of Laos (NUOL) located as below.

- a. Faculty of Agriculture, Nabong, Vientiane Municipality
- b. Faculty of Forestry, Dongdok, Vientiane Municipality
- c. Department of Irrigation Engineering, Faculty of Architecture and Engineering, Tadthong, Vientiane Municipality.

3. Objective

To upgrade the quality of Agriculture and Forestry University education through the improvement of curricula and syllabi and the improvement of related faculties and departments of NUOL, and develop formal training and education in agriculture and forestry for future Subject Matter Specialists (SMS).

4. Project/Program Description

Following the establishment of the National University of Laos (NUOL) in June 1995, the School of Irrigation Tadthong, the Dongdok Forestry College, and the Nabong Agriculture College were transferred from MAF to NUOL. The three institutions now form the Department of Irrigation Engineering of the Faculty of Architecture and Engineering, the Faculty of Forestry and the Faculty of Agriculture respectively. The academic programs of the faculties have been developed recently and consists of two years of foundation studies at the School of Foundation Studies at Dongdok followed by three years of professional bachelor degree study at the faculties.

The Faculty of Agriculture is conducting two academic programs. The first program is following the bachelor program of NUOL under the Department of Crop Sciences and the Department of Livestock sciences. The second program is a Higher Technician Diploma in Agriculture with crops and livestock as the two major subjects (4 years education from upper-secondary graduation).

The Faculty of Forestry was established recently by up-grading the Department of Forestry Science into a Faculty. The Faculty is conducting two academic programs. The first program is a B.Sc. Forestry with Major Subject in Forest Management, Watershed Management and Land Use Planning, and Wood Industry and Forestry Policies under the NUOL academic program. The second program is a Higher Technician Diploma in Forestry (4 years education from upper-secondary graduation).

The Department of Irrigation Engineering is conducting three academic programs. The first program is following the bachelor program of NUOL (5 years education with 2

years of foundation studies and 3 years professional studies). The second program is a Higher Diploma in Irrigation Engineering (4 years education from upper-secondary graduation). The third program is the continuation and termination of the 3 years irrigation technician program (two batches of students remain from the academic year 2000-2001). Aside from those regular programs, the department is providing special higher diploma program outside office hours. In comparison with the two other faculties the Department has not got any external assistance to support its transition from technician level to university level education.

The proposed project will be the continuation of on-going projects at Nabong and Dongdok faculties, the development of pedagogic capacity of the Tadthong Department, and the development of bridging and pre-master courses for the formation of SMS for MAF in following.

- (1) The development of the Nabong Faculty of Agriculture Sub-project will be the continuation and follow-up of the “Projet de Transformation de l’Ecole Supérieur d’Agriculture de Nabong en Faculte d’Agriculture (PTEF)” (Phase 1 1997-2001) and the “Projet d’Appui a la Faculte d’Agriculture de Nabong (PAFA) (Phase 2 of PTEF 2001-2004). The second development phase (starting 2005) will be to establish and organize two additional departments, the Department of Fisheries and the Department of Agriculture Processing in the Faculty, and to develop master degree in the field of crop and livestock sciences. Master degrees for other major subjects will be established beyond 2010.
- (2) The development of the Dongdok Faculty of Forestry will be a follow up of the German funded Promotion of Forestry Education project (PROFEP). The second development phase (starting 2005) will be to establish a master degree in forestry watershed management and land use planning.
- (3) In Tadthong Department of Irrigation Engineering emphasis will be made in the development of curricula, pedagogic capacity and human resource. Due to the academic level and shortage of graduate staff it is anticipated that the master degree in irrigation engineering would be established later in 2008.
- (4) In relation to the formation of SMS for MAF a Special Pre-Master program will be established for crop and livestock sciences at Nabong. This special program will be made with the coordination of Kasetsart University in Thailand and other relevant universities and institutions in the region such as the Asian Institute of Technology (AIT), the Institut National Agronomic (INA) Paris Grignon in France, and the Cantho University in Southern Vietnam. Lecturers from those relevant institutions would be invited to join the program.
- (5) An up-grading program for Higher Technician to the B. Sc. Program will be established in order to up-grade the staff at MAF and PAFS. This bridging program would be short (1.6 months) and would allow a large number of Higher Diploma graduate at MAF, PAFS and DAFO to pursue further university education.

- (6) A human resource development and pedagogic development program similar to PROFEP and PTEF will be established for the above new programs.
- (7) The existing facilities of the faculty and department will be improved to meet the standard and number of students required. The estimated intake of students and number of student on campus is given in the following table.

| | | Yearly Intake of student from 2001 to 2010 | | | Total Student in Campus |
|--|---|--|------------|-------------------|-------------------------|
| | | Higher Diploma | B.Sc. | M.Sc. (from 2005) | |
| Nabong Faculty of Agriculture | | | | | |
| 1 | Dept. Crop sciences | 40 | 30 | 10 | 80 |
| 2 | Dept of Livestock | 40 | 30 | 10 | 80 |
| 3 | Dept of Fisheries (from 2005) | 40 | 30 | | 70 |
| 4 | Dept of Agric. Processing (from 2005) | 40 | 30 | | 70 |
| 5 | Up-grading Course (HD to B.Sc.) | | 30 | | 30 |
| 6 | Pre-Master Course | | | 10 | 10 |
| | Total | 160 | 160 | 30 | 340 |
| Dongdok Forestry Institute | | | | | |
| 1 | Dept of Forest Management | 20 | 20 | 10 | 50 |
| 2 | Dept of Watershed Man. and Land Use | 20 | 20 | 10 | 50 |
| 3 | Dept of Wood Industry and Forestry Policy | 20 | 20 | | 40 |
| 4 | Up-grading Course (HD to B.Sc.) | | 30 | | 30 |
| 5 | Pre-Master Course | | | 10 | 10 |
| | Total | 60 | 90 | 30 | 180 |
| Tadthong Department of Irrigation Engineering | | | | | |
| 1 | Regular Program | 100 | 50 | 20 | 170 |
| 2 | Special program | 90 | | | 90 |
| 3 | Up-grading Course (HD to B.Sc.) | | 30 | | 30 |
| 4 | Pre-Master Course | | | 10 | 10 |
| | Total | 190 | 80 | 30 | 300 |

5. Project Components

Summarized from the project description the project will contain the following components.

- a. Technical assistance for curriculum development
- b. Technical assistance for lecture notes and text books development
- c. Technical assistance for school facilities development
- d. Overseas scholarships for lectures and trainers
- e. Training of lectures and trainers
- f. Production of lecture notes and text books
- g. Improvement of faculty and department facilities
- h. Provision of new equipment and vehicles
- i. Establishment practice and research field areas.

6. Project Costs

The total project cost is estimated at US\$ 15.8 million as shown in the table below.

(Unit: US\$ 1000)

| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Yr 6 | Total |
|----------------|------|-------|-------|-------|-------|------|--------|
| Capital cost | 300 | 2,360 | 4,360 | 3,360 | 2,360 | 360 | 13,100 |
| Recurrent cost | 102 | 431 | 594 | 564 | 534 | 474 | 2,700 |
| Total | 402 | 2,791 | 4,954 | 3,924 | 2,894 | 834 | 15,800 |

7. Implementing Agency

The implementing agencies will be the Ministry of Education (MOE), NUOL at its related faculties and departments.

8. Organization and Staffing Requirements

The project will be implemented under the existing institutional framework of MOE and of the three faculties and department. The project staff requirement is as follows:

| | Total | | NUOL | | Nabong | | Dongdok | | Tadthong | | |
|--|------------------------------|------------|------------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Pres | Prop. | Pres | Prop. | Pres | Prop. | Pres | Prop. | Pres | Prop. | |
| Curriculum Development & Teachers Upgrading | | | | | | | | | | | |
| 1 | Project Director/Coordinator | 0 | 4 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 2 | Assistant project Dir. | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| 3 | Phd. Level lecturer | 5 | 22 | 0 | 0 | 1 | 6 | 4 | 12 | 0 | 4 |
| 4 | MScLevel lecturer | 28 | 40 | 0 | 0 | 12 | 16 | 15 | 12 | 1 | 12 |
| 5 | BSc and HD Level lecturer | 80 | 58 | 0 | 0 | 14 | 19 | 26 | 21 | 40 | 18 |
| 6 | Support staff | 0 | 18 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 6 |
| Total Staffing | | 113 | 145 | 0 | 1 | 27 | 49 | 45 | 53 | 41 | 42 |
| Balance | | 32 | | 1 | | 22 | | 8 | | 1 | |

9. Implementation Schedule

The project will be implemented within a period of 6 years. The implementation schedule is as follows.

Implementation Schedule

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|--------|--------|--------|--------|--------|--------|
| 1 Nabong Faculty of Agriculture | | | | | | |
| Establishment of Department of Fisheries | | | | | | |
| Establishment of Department of Agro Processing | | | | | | |
| Establishment of master program | | | | | | |
| Establishment of BSc bridging program | | | | | | |
| Improvement of facilities | | | | | | |
| 2 Dongdok Faculty of Forestry | | | | | | |
| Establishment of master program | | | | | | |
| Establishment of BSc Bridging Program | | | | | | |
| Improvement of facilities | | | | | | |
| 3 Tadthong Department of Irrigation Eng. | | | | | | |
| Curricula and pedagogic development | | | | | | |
| Establishment of master program | | | | | | |
| Establishment of BSc Bridging Program | | | | | | |
| Improvement of Facilities | | | | | | |

10. Lessons learnt and how they are incorporated in the Proposed Project

Projet de Transformation de l'Ecole Supérieur d'Agriculture de Nabong en Faculte d'Agriculture (PTEF)

Since 1997, the "Projet de Transformation de l'Ecole Supérieur d'Agriculture de

Nabong en Faculte d'Agriculture (PTEF)" has supported the transition of the Nabong Agriculture College to become an Agriculture Faculty. The project is funded by the French Government through the Caisse Francaise pour le Development (CFD).

PTEF objectives and activities were to up-grade the former Nabong Agriculture Superior School to a faculty of agriculture through development of human resources, scientific environment, and logistics and communication. The project strengthened the newly established faculty in the establishment and implementation of its pedagogic program and organization with the objective to form polyvalent engineers in agriculture.

The prolongation of the project (PAFA) will permit the faculty to achieve the establishment and organization of its pedagogic program for both professional and technical formation by consolidating the establishment of the 3 academic year professional B.Sc. of the faculty.

The Promotion of Forestry Education Project (PROFEP)

Since 1994 the faculty received assistance from the German Agency for Technical Cooperation (GTZ) and the German Development Bank (KfW) to promote its academic program and facilities. The Promotion of Forestry Education Project (PROFEP) objective is to assist the faculty in education, training and upgrading of forestry students and academic instructors. The project components consist of the development of educational framework for B.Sc. in Forestry, Human resource development through knowledge enhancement practical training in forest management and applied research, and institutional building and organizational development. The project is at its 3rd phase (2000-2003) and a fourth phase which is presently under consideration.

11. Expected Benefit

The output of the program will be in the form of improved curricula for the B.Sc. and Higher Diploma level, human resource development, master degree programs The MAF and SMS would be developed through the B.Sc. Up-grading program and master degree program.

12. Assessment of Possible Problems and Bottlenecks in Implementation

Size of the project

The project covers a large area, needs a large amount of funds, and has many components. The project would be rather difficult to manage and to implement if it is managed by one organization. Therefore it is preferred to divide the project into many sub-projects and components which will enable better management and implementation capacity and fit the funding requirement of potential donors (including NGOs).

Availability of staff

The project will emphasize the upgrading of lecturers through overseas scholarships

and short term training, there is a risk that the people sent abroad under the scholarship program will not be assigned to work at the schools after they have completed their studies.

Availability of Government budget for recurrent expenditures

The project will be implemented through the existing government institution. Aside from the availability of the staff assigned to the project, the project shall be allocated enough government funds to cover the recurrent expenditures are needed for the operation of the schools. The lack of local budget will hamper the mobility and motivation of the government staff.

13. Assessment of Natural and Social Environment

The objective of the program is to upgrade the university level training in agriculture and forestry, land management etc. Environmental training should be part of the program. Thus, this program should have positive environmental effects.

14. Special Arrangement

There need to be coordination between MOE and MAF concerning the establishment of the proposed B.Sc. bridging and pre-master program. It is recommended to establish a joint committee for these components.