

## ***10. Irrigation***

## **Project No. IR-1**

### 1. Title of Project/Program

Community Managed Irrigation Sector Project-2 (CMISP-2) (Northern Community Managed Irrigation Sector Project)

### 2. Location

Prioritized CMI schemes in the six northern provinces as stated below:

Louangphrabang, Xaignabouri, Phongsali, Bokeo, Louangnamtha and Oudomxai Province

### 3. Objectives

The Project aims to (i) increase food security and income of farm families through supporting the development of community managed small-scale irrigation schemes, (ii) improve watersheds by stabilizing shifting cultivation and promoting tree planting in the Northern part of the country. The Project will be implemented through Irrigation Management Transfer (IMT) process.

### 4. Project/Program Description

Farmers in Lao have been traditionally irrigating their fields using primitive weirs constructed from timber, rock, or soil. Those areas recently occupy approximately 30% of the total irrigation area of the country. However the structures are fragile and have to be repaired before every wet season, causing heavy work for farmer and deforestation in the surrounding area. Community Managed Irrigation Sector Project (CMISP) was originally formulated in special Technical Assistance (TA) of Project Preparation conducted during Strengthening and Restructuring of Irrigation Development Project (SRIDP) phases. CMISP has been implemented since 1997 with assistance from the Asian Development Bank (ADB) covering 44 sub-project sites located in the northwest regions of the country such as Houaphan, Vientiane Province, Borikhamxai, Xaisomboun S/R, and Xiangkhouang with a total area of 3,500 ha. The concept of CMISP is basically community-based and relies on significant community participation from planning through implementation to operation and maintenance. The project has been contributing to increased agricultural production as well as strengthening Water Users' Association (WUA) through community participation. The progress of the project reached 87 % as of the end of June 2001.

In succession of this "Phase-I" project, the proposed project herein is to develop a CMI project located in the northern mountainous areas of Louangphrabang, Xaignabouri, Phongsali, Bokeo, Louangnamtha and Oudomxai Province, which face high incidences

of absolute poverty, limited irrigation and a high degree of shifting cultivation. The project is to raise living standards by providing construction services, rehabilitation of irrigation facilities, rural infrastructure and district feeder roads with the active beneficiary participation. The Project would adopt government present key policy of IMT.

The Consultant Team will be stationed at the Central Project Office in Vientiane Municipality to provide assistance for the establishment of systems and procedures for Project Planning, implementation, supervision, operation and maintenance and benefit, monitoring and evaluation (BME) and staff training as conducted during the “Phase-I” project

## 5. Project Components

The main components of project activities are itemized as follows:

- (1) Select priority projects from respective Province
- (2) Mobilize community to project activities
- (3) Rehabilitate and develop community managed irrigation schemes
- (4) Construct rural infrastructure including rural water supplies and district feeder roads
- (5) Institutional and financial support including setting up of Village Development Fund (VDF) for CMI development
- (6) Stabilize shifting cultivation and protection of watershed
- (7) Support for income generating activities

## 6. Project Costs

The project cost is estimated at about US\$ 23.1 million based on data from CMI-I.

(Unit: US\$ 1000)

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total
Capital cost	2,478	3,400	4,248	3,400	3,400	16,925
Recurrent Cost	1,214	1,235	1,273	1,235	1,235	6,192
Total	3,692	4,635	5,521	4,635	4,635	23,117

## 7. Implementing Agency

The implementing agency for the project will be the Department of Irrigation (DOI) of the Ministry of Agriculture and Forestry (MAF).

## 8. Organizational and Staffing Requirements

The Office of the National Project Director (NPD) is to be established in DOI, Vientiane to be responsible for overall coordination of the implementation of the

Project at the national level. Additionally, actual implementation of the Project will be the responsibility of the provincial project office established in each province. The staff required for the Project at the national level and in each PAFO will be as follows:

Province	Present Staff No. (CMI-I)	Proposed Staff No.	Balance
1. Vientiane Mun.	12	12	0
2. Louangphrabang	0	8	-8
3. Xaignabouri	0	8	-8
4. Phongsali	0	8	-8
5. Bokeo	0	8	-8
6. Louangnamtha	0	8	-8
7. Oudomxai	0	8	-8
Total	12	52	-40

#### 9. Implementation Schedule

The project is to be implemented over 5 years. During this period, 50 CMI schemes with a total area of 4,000 ha will be selected and implemented.

#### 10. Lessons Learnt and How Incorporated into Proposed Project

- (1) Some of the sub-project selection criteria adopted in CMI-I were too uncompromising and did not match with the actual conditions of the project. The criteria should be carefully re-established taking the existing conditions into consideration.
- (2) To adopt IMT for the Project, the capability of WUA and condition of each CMI schemes should carefully be assessed to clarify, to what extent IMT can be applied to each scheme.

#### 11. Expected Benefit

- (1) Food security in the targeted area will be achieved and maintained through the increase of agricultural production.
- (2) The livelihood of beneficiaries, approximately 5,000 families, in northern area will be improved through the increase of agricultural production and improvement of social accessibility.
- (3) Condition of watersheds will be improved by reducing shifting cultivation and promoting tree planting.
- (4) Targeted CMI schemes will be well operated and maintained by WUA under IMT.

#### 12. Assessment of Possible Problems and Bottlenecks in Implementation

- (1) Shortage of capable staff in PAFO will prevent the project progress if the Government cannot assign the required number of staff

### 13. Assessment of Natural and Social Environment

#### (1) Natural environment:

Negative impacts, although very small, are expected when land and water are developed, e.g. changes in land use and flow of surface water,

#### (2) Social environment:

Positive impacts are expected from improved rural accessibility, and negative impacts will possibly be found by;

- (i) Partial rehabilitation and development of irrigation facilities that will cause conflict between village societies and
- (ii) Rapid and forced introduction of IMT may create a misunderstanding of IMT and inconsistency between farmers' society and the Government.

### 14. Special Arrangements

A Project Steering Committee will be established and chaired by the Vice-Minister of MAF with the National Project Director as Member-Secretary. Members will include representatives from relevant organizations as listed below;

- Representative of the Cabinet Office of MAF
- State Planning Committee
- Committee for Investment and Cooperation
- Ministry of Finance
- The Bank of Lao
- Vice-Governors of respective provinces
- Lao Women's Union

## **Project No. IR-4**

### 1. Title of Project/Program

Technical Assistance (TA) on Accelerated IMT Development

### 2. Location

Nationwide

### 3. Objectives

This TA aims to (i) establish a database of existing irrigation schemes, (ii) establish a database of potential community-managed irrigation schemes and (iii) compile and provide the necessary information and recommendations for accelerating and supporting nationwide Irrigation Management Transfer (IMT) process.

### 4. Project/Program Description

Since 1990s, the Government policies and strategies for the Agricultural Sector and Irrigation Sub-sector have been emphasizing the importance of irrigation and supporting the transfer of irrigation management from the Government to each Water Users' Association (WUA). Encouraged by the Sustainable Irrigated Agriculture Project (SIRAP) experience, the Government issued an order of the Prime Minister No. 26/PM on full transfer of irrigation projects to community organizations dated December 18, 1998. For promoting IMT, the Decentralized Irrigation Development and Management Project (DIDMP), supported by ADB & France and the Agricultural Development Project (ADP) funded by the WB are expected to be commenced from 2001 adopting this IMT policy of prioritized pilot scheme. If properly effected, IMT will surely help to reduce liabilities for O&M by placing this responsibility in the hands of the WUA. While the Government is committed IMT and past and on-going project provide relevant guidance, there is still weak managerial and technical capacity for both government and WUA. In addition, at present, there are no extensive detailed data covering all the irrigation activities nationwide such as actual irrigation area, conditions of the facilities, WUG activities and capabilities, potential of future development, etc. to strategically progress IMT.

Taking this situation into consideration, the proposed TA aims to formulate a framework and strategy to proceed nationwide IMT. This TA includes mainly (i) to establish a database of existing irrigation schemes, (ii) to establish a database of potential community managed irrigation schemes and (iii) to review existing IMT policy and provide the necessary information and recommendations for accelerating and supporting IMT process for the future.

## 5. Project Components

The main components of project activities are itemized as follows:

- (1) Review of past and on-going IMT supporting project, eg. SIRAP, Decentralized Irrigation Development and Management Project (DIDMP), Agricultural Development Project (ADP) and etc., from the view point of the management systems including Operation & Maintenance (O&M), capability of Water Users' Association (WUA), education and training of WUA members, IMT process and Village Development Fund (VDF) management and etc.
- (2) Inventory of existing irrigation schemes covering natural and human resources conditions, constraints and needs for improvement in agricultural production, irrigation area, facility conditions, farmers' organization activities, rehabilitation needs and costs and other necessary information
- (3) Inventory of potential community managed irrigation schemes covering natural and human resources conditions, agricultural production, irrigable area, development needs and costs and other necessary information
- (4) Processing of collected data using both database and GIS software for easy clarification of existing conditions and future planning
- (5) Prioritization of existing schemes to be rehabilitated and improved and potential schemes to be newly developed and then prepare short, medium and long-term implementation programs

## 6. Project Costs

US\$ 2.4 million will be required.

(Unit: US\$ 1000)

	Yr 1	Yr 2	Yr 3	Total
Capital cost	840	760	570	2,169
Recurrent Cost	77	74	69	220
Total	916	834	638	2,389

## 7. Implementing Agency

The implementing agency for the project will be the Department of Irrigation (DOI) of the Ministry of Agriculture and Forestry (MAF) with assistance from PAFO in each province.

## 8. Organizational and Staffing Requirements

The TA should be conducted with a leading part taken by Operation and Maintenance (O&M) Division of DOI, MAF for overall coordination at national level. In Province level, 1 staff should be assigned to temporarily take charge of this TA from each

PAFSO as tabulated below:

Province	Present Staff No.	Proposed Staff No.	Balance
1. Vientiane Mun. (MAF Central office)	9 (O&M Division)	4	5
2. Each Province	0	1 from each province	-17
Total	9	21	-12

#### 9. Implementation Schedule

TA will be conducted over 3 years.

#### 10. Lessons Learnt and How Incorporated into Proposed Project

- (1) As mentioned in paragraph 4, several projects have been implemented or are being implemented. It is important to coordinate with those projects to extract useful experience and information to be reflected in this TA.
- (2) IMT is potentially sensitive and there may be opposition to it by WUA if it is not introduced carefully. Therefore the capability of farmers and WUA should be carefully assessed from existing data, survey and analysis conducted under this TA to assess to what extent IMT can be applied to each scheme in the future.

#### 11. Expected Benefit

- (1) A database of existing irrigation schemes will be compiled that includes information necessary to proceed IMT such as natural and human resources conditions, constraints and needs, irrigation activities, facility conditions, necessity of rehabilitation and its cost, farmers' organization activities, etc. .
- (2) Database of potential CMI schemes will be compiled.
- (3) Review and recommendation for management system including O&M, capacity building of WUA, education and training of WUA members, IMT process and VDF management will be made.
- (4) Short, medium and long term implementation programs and prioritization for rehabilitation and new development of irrigation schemes will be prepared.

#### 12. Assessment of Possible Problems and Bottlenecks in Implementation

- (1) Shortage of capable staff in PAFO will prevent the TA progress, if the Government could not assign required number of staff
- (2) Lack of understanding of IMT by farmers will create difficulty in acquiring cooperation from them to implement TA

#### 13. Assessment of Natural and Social Environment

- (1) Natural environment:



None

(2) Social environment:

Negative impacts will possibly be caused by sudden introduction of IMT, which could create a misunderstanding of IMT and damage the relationship between farmers' society and the Government.

14. Special Arrangements

A Project Steering Committee will be established and chaired by the Vice-Minister of MAF with National Project Director as Member-Secretary. Members will include representatives from relevant organizations as listed below;

- Representative of the Cabinet Office of MAF
- State Planning Committee
- Committee for Investment and Cooperation
- Department of Foreign Currency Affairs of the Ministry of Finance
- The Bank of Lao
- Vice-Governors of respective provinces
- Lao Women's Union

**TERMS OF REFERENCE  
FOR  
TECHNICAL ASSISTANCE (TA)  
ON  
ACCELERATED IMT DEVELOPMENT  
IN  
THE LAO PEOPLE'S DEMOCRATIC REPUBLIC**

1. Background and Justification

Agriculture is the main economic activity in Lao PDR and covers a wide range of activities from subsistence farming to agriculture related industries. In 1999, agriculture accounted for 53 % of GDP. Rice farming is by far the single most important national economic activity accounting for 20 % of national GDP and 53 % of agricultural GDP. Livestock as part of the family obtains basic food from livestock rearing and from gathering forest products. Approximately 620,000 farm families are dependent on agriculture of which 492,000 are reliant on subsistence agriculture. So the link between agriculture and the rural area is very close. But rural areas are seriously handicapped by the lack of basic facilities such as access to markets, schools and health facilities.

Agriculture would continue to be of significant important to the Lao economy for many years to come although its relative share in GDP is likely to gradually decline from the present relatively high level. Agriculture productivity has suffered from long period of under investment. Access to improved farming methods and post harvest technologies have been limited and just recently have investments by government and donors in irrigation enabled any extensive dry season cultivation. There are also sharp differences in resource endowment and growth in the agricultural sector. The central and southern regions along the Mekong River and its major tributaries are irrigable and have fertile soils and relatively stable monsoon climate. In most recent years, these areas In contrast the mountainous and rugged northern areas as limited irrigable land, poor soils and moist to subtropical climate and it experiences chronic rice deficiencies and is supplied by China and Thailand. These geographical differences lead to different farming systems and given the overall development objectives of improving rice cultivation as well as commercial crops, livestock and fisheries. The Action Plan takes account of these differences and caters to the varied regional needs.

At the same time, agricultural development is very closely interwoven with rural development and it is not possible to pursue a goal of agricultural development without

some basic prerequisites for rural development. Many obstacles stand in the way of developing and expanding agricultural exports such as the poor market access and the absence of established distribution networks. A rural development action plan should therefore need to synchronize with the agricultural development plan with a program for removal of constraints such as the lack of infrastructure, limited human resource capacity, poor agricultural support and delivery services, easy access to inputs and markets and the lack of medium and short term credit.

The Government has been investing considerable resources in developing irrigation schemes throughout the country particularly National Pump Installation Management Project (NPIMP) implemented since 1997 by the Government. The irrigation area is tabulated as shown. As a result, irrigation area has been boosted up and thus the government declared food self-sufficiency in 2000.

<b>Irrigation Area</b> Unit: 1,000 ha			
Year	Wet Season	Dry Season	Total
1991	136	16	152
1992	138	18	156
1993	140	20	160
1994	145	22	167
1995	150	26	176
1996	156	29	185
1997	164	44	208
1998	217	75	292
1999	255	128	383
2000	295	197	492

Source : DOI, MAF

Since 1990s, the Government policies and strategies for the Agricultural Sector and Irrigation Sub-sector have been emphasizing the importance of irrigation and supporting the transfer of irrigation management from the Government to each Water Users' Association (WUA). Encouraged by the Sustainable Irrigated Agriculture Project (SIRAP) experience, the Government issued an order of the Prime Minister No. 26/PM dated December 18, 1998 on full transfer of irrigation projects to community organizations. For promoting IMT, the Decentralized Irrigation Development and Management Project (DIDMP), supported by ADB & France and the Agricultural Development Project (ADP) funded by the WB are expected to be commenced from 2001 adopting this IMT policy at prioritized pilot scheme. If properly effected, IMT will surely help to reduce liabilities for O&M by placing this responsibility in the hands of the WUA. While the Government is committed IMT and past and on-going project provide relevant guidance, there is still weak managerial and technical capacity for both government and WUA in covering all the irrigation activities nationwide such as actual irrigation area, conditions of the facilities, WUG activities and capabilities, potential of future development, etc. to strategically progress IMT.

## 2. Objective of the Technical Assistance

The objectives of the TA are to elaborate a framework and strategy to proceed nationwide IMT by reviewing past and on-going IMT policy & projects and providing necessary information and recommendations for accelerating and supporting IMT

process in Lao PDR.

### 3. Study Area

The Study Area covers overall the countries; thus 16 provinces, 1 municipality and 1 special zone.

### 4. Scope of Work

The scope of the proposed TA will develop a framework and strategy for nationwide IMT and will prepare general implementation plans for proceeding IMT. The TA will cover:

- 1) Reviewing past and on-going IMT supporting project
- 2) Inventory of existing irrigation schemes
- 3) Inventory of potential community managed irrigation schemes
- 4) Processing collected data using both database and GIS software
- 5) Prioritizing irrigation schemes to be rehabilitated and improved and potential schemes to be newly developed
- 6) Preparing short, medium and long-term implementation programs
- 7) Preparing IMT implementation manual

The TA will be carried out for a total period of twenty four (24) months in the following three stages.

- (1) Stage-I : Organizing workshop, site reconnaissance, database construction, and classification and grouping of the irrigation schemes
- (2) Stage-II : Organizing workshop, field survey of model irrigation schemes, reviewing the law, regulation and decree related with IMT and preparing proposals for IMT implementation
- (3) Stage-III : Organizing workshop, preparing short, middle and long-term implementation program and preparing IMT implementation manual

The tentative working schedule for the TA is shown in Figure 1.

#### 4.1 Stage-I

- (1) Organizing Central Workshop-1 at Vientiane
- (2) Organizing Provincial Workshop-1 (North, Central and Southern part)
- (3) Reviewing past and existing IMT-related projects such as SIRAP, FIAT, DIDMP, ADP and etc.
- (4) Conducting socio-economic survey covering all the irrigation schemes in the country

- (5) Reviewing technical and operational aspects of irrigation schemes including the location, irrigation type, irrigation area, cropping pattern, rehabilitation necessity and its items, cost, farmers' intention and etc.
- (6) Reviewing government budget at national and provincial levels relevant in the context of IMT planning
- (7) Reviewing human resources that may play a role in the context of the envisaged IMT program and in irrigated agriculture in general
- (8) Reviewing social and cultural aspects that may relate to WUAs and IMT
- (9) Constructing database and processing the data, to be obtained through the study listed above, using both database and GIS software
- (10) Organizing Central Workshop-2 at Vientiane
- (11) Preparing Progress Report (1)
- (12) Classification and grouping of existing schemes to be rehabilitated and new schemes to be developed

#### 4.2 Stage-II

- (1) Organizing Provincial Workshop (2) (Northern, Central and Southern Region)
- (2) Field surveying of model irrigation schemes in the country
- (3) Reviewing relevant institutional and organizational aspects including all decrees, regulation directives and guidelines issued so far and to be issued soon by the Government that relate to IMT
- (4) Upgrading the database and GIS constructed in Stage-I
- (5) Preparing Progress Report (2)
- (6) Clarifying the legal, administrative and institutional framework for the implementation of IMT
- (6) Preparing proposals for decrees, regulation directives and guidelines for smooth implementation of IMT
- (7) Preparation of Interim Report

#### 4.3 Stage-III

- (1) Organizing Provincial Workshop (3) (Northern, Central and Southern Region)
- (2) Finalization of database and GIS
- (3) Identifying criteria that reflect the various aspects relevant to preparation and execution of IMT
- (4) Prioritizing existing schemes to be rehabilitated and potential schemes to be newly developed
- (5) Preparing IMT implementation manual including capacity building plan of WUAs and management of Village Development Fund (VDF)

- (6) Preparing short, medium and long-term IMT implementation schedule including financing plan
- (7) Conclusion and recommendation
- (8) Preparing Draft Final Report
- (9) Organizing Central Workshop (3) at Vientiane
- (10) Preparing Final Report

#### 5. Transfer of Technology

Throughout the course of TA, transfer of technology and training will be provided to counterpart experts. The transfer of technology will be carried out in the form of on-the-job training and seminar during the course of TA. In addition to the above transfer of technology, overseas training will also be programmed.

#### 6. Expected Major Outputs of the Study

The major outputs of the Study are expected to be: (i) compilation of database including the information of both existing and potential irrigation schemes to be rehabilitated and newly developed, (ii) compilation of policy framework in the context of IMT and (iii) formulation of implementation schedule of IMT with the priority order. This TA result will be compiled in the following reports, which will be submitted to the Government of Lao PDR.

- (1) Inception Report : At the commencement of the Stage-I Study
- (2) Progress Report (1) : At the end of Stage-I Study period (within seven (7) months from the commencement of the Study)
- (3) Progress Report (2) : Within fourteen (14) months from the commencement of the Study)
- (4) Interim Report : At the end of Stage-II Study period Within sixteen (16) months from the commencement of the Study
- (5) Progress Report (3) : Within twenty one (21) months from the commencement of the Study
- (6) Draft Final Report : Within twenty two (22) months from the commencement of the Study
- (7) Final Report : At the end of Stage-III Study period (within twenty four (24) months from the commencement of the Study)

The Government of Lao PDR intends to promote the implementation of the development plans to be given in the reports after thorough deliberation of the plan within the Government.

## 7. Expert Inputs

The required foreign and local experts for the execution of the TA are assessed as follows:

### Foreign Expert

- Team Leader / Irrigation Institution Expert
- Irrigation Engineer
- Agricultural Economist
- Community Development
- Sociologist
- GIS and Database Expert
- Others as required

### Local Expert

- Co-team Leader
- Irrigation Engineer-1
- Irrigation Engineer-2
- Agronomist / Extension Expert
- Agricultural Economist
- GIS and Database Expert
- Others as required

## 8. Undertakings of the Government of Lao PDR

In order to facilitate a smooth and efficient conduct of the TA, the Government of Lao PDR shall take necessary measures mentioned below:

- (a) To facilitate the safety of the TA Team
- (b) To permit the members of the TA Team to enter, leave and sojourn in the State for the duration of their assignment therein, and exempt them from alien registration requirement and consular fees in accordance with existing regulation and laws;
- (c) To exempt the members of the TA Team from taxes, duties and any other charges on equipment, machinery and other materials brought into and out of the State for the execution of the TA in accordance with existing regulations and laws;
- (d) To exempt the members of the TA Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the TA Team for their services in connection with the implementation of the TA in accordance with existing regulations and laws;

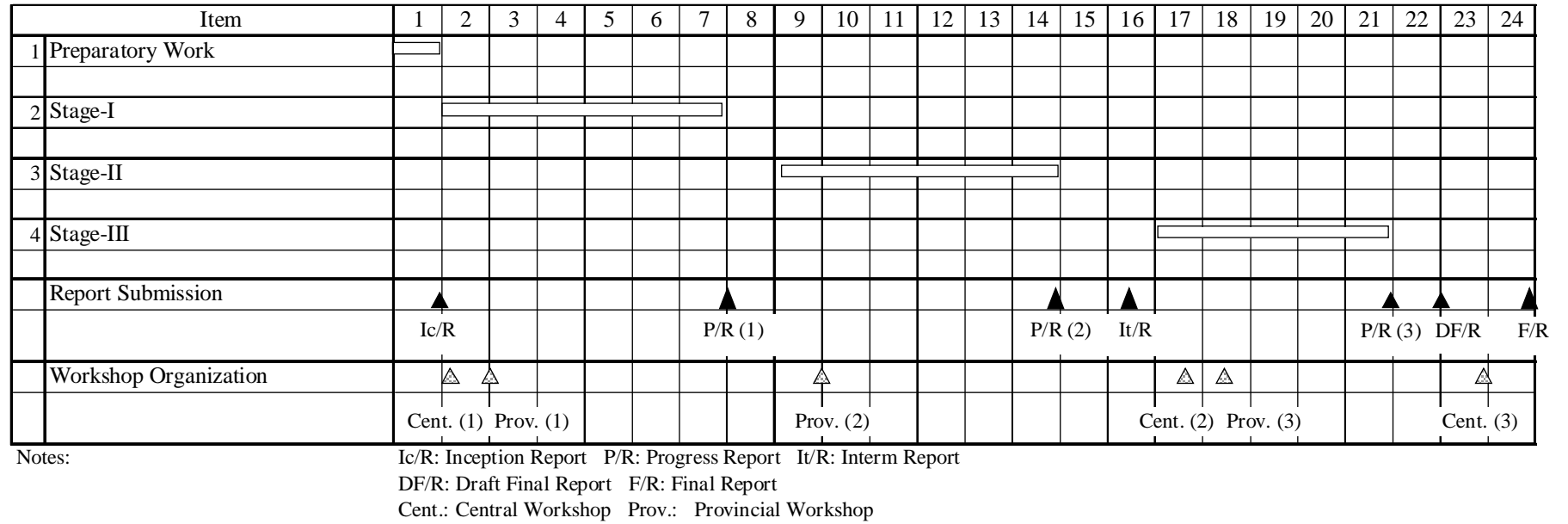
- (e) To facilitate the necessary facilities to the TA Team for remittance as well as utilization of the funds introduced in the State from Japan in connection with the implementation of the TA;
- (f) To secure permission or entry into all the areas required for the conduct of the TA;
- (h) To secure permission for the TA Team to take all data, documents and necessary materials related to the Study out of the State;
- (i) To provide logistic support including office space with appurtenant furniture and facilities, cleaning and guard;
- (j) To provide medical services as needed. Its expenses will be chargeable to the member of the TA Team.

The Government of Lao PDR shall bear claims, if any arises against member(s) of the TA Team resulting from, occurring in the course of or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the member of the TA Team.

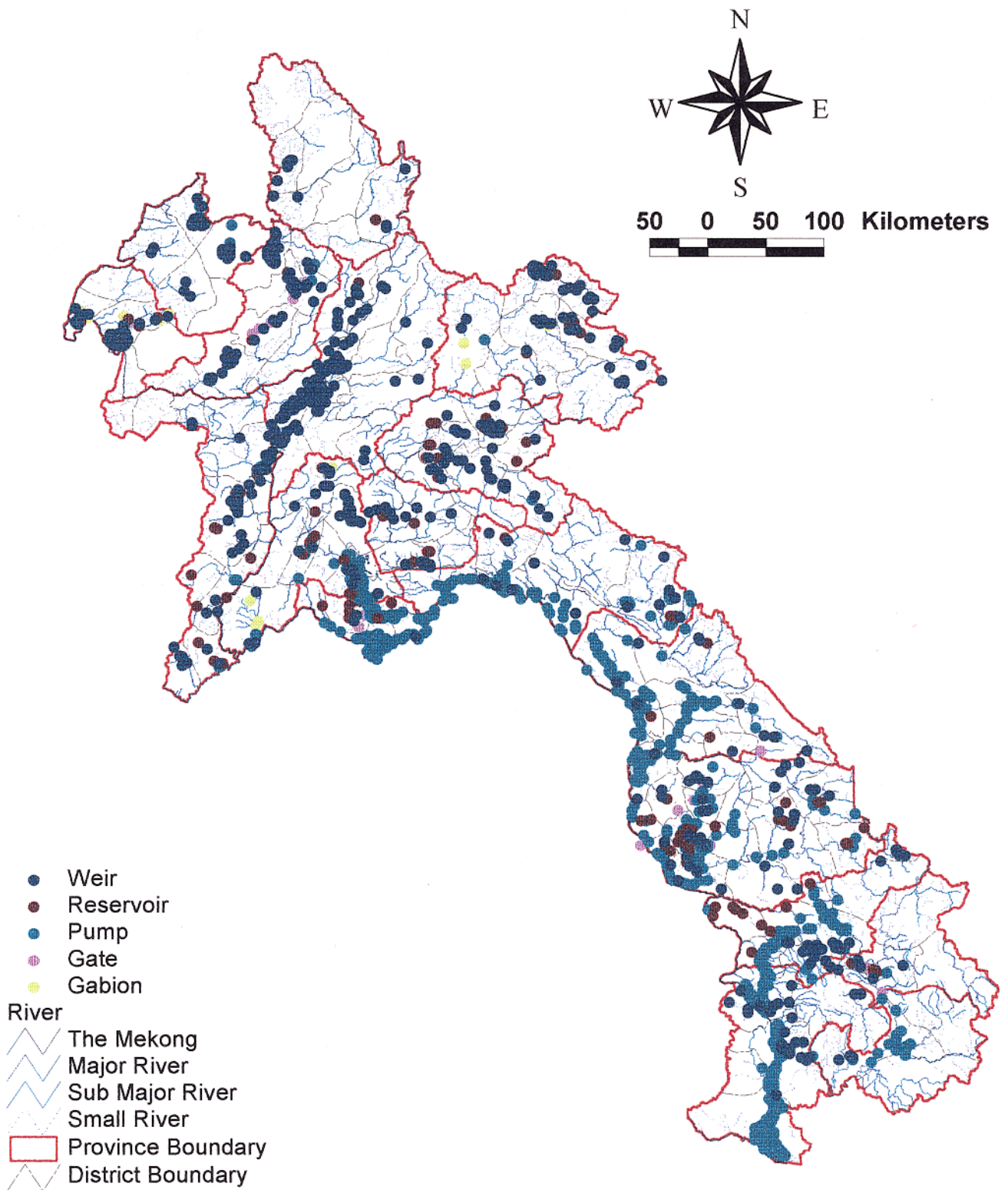
The Implementing Agency shall act as counterpart agency to the TA Team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the TA.

The Government of Lao PDR assured that the matters referred in this form will be ensured for a smooth conduct of the TA by the Team.





**Figure 1 Tentative Work Schedule**



## Location of Irrigation Schemes

## **Project No. IR-5**

### 1. Title of Project/Program

Community Managed Small-scale Irrigation and Management Project

### 2. Location

Nationwide

### 3. Objectives

The Project aims to (i) assist communities to manage, operate and maintain the irrigation facilities and the system, (ii) increase agricultural productivity by encouraging crop diversification and thereby increase overall agricultural production on a sustainable basis, (iii) increase food security and income, (iv) improve watersheds by reducing shifting cultivation. The Project involves introduction of small-scale irrigation and promoting tree planting as well as management strengthening in mountainous areas and other potential areas together with assisting IMT process.

### 4. Project/Program Description

Developing CMI schemes, including small-scale irrigation schemes, is identified as one of the effective measures to ensure food security as well as stabilize shifting cultivation in the country. On the one hand, through a series of projects implemented in the 1990s, Government policy adopted “IMT”, which is to transfer ownership and other necessary costs to beneficiary farmers and reduce government subsidies to the irrigation sector. Several projects/programs are being implemented on this basis such as the Decentralized Irrigation Development and Management Project (DIDMP) and the Agricultural Development Project (ADP) to rehabilitate and develop small-scale irrigation schemes through utilizing IMT process in pilot schemes. However a very limited percentage of the overall irrigation area of the country is covered by such schemes.

The Project proposed herein is to rehabilitate and develop small-scale community managed irrigation schemes by effectively assisting irrigation management transferred from Government to WUAs throughout the country. The project will be implemented in a strategic manner based on the information, recommendations and prioritization provided by IR-4 “Technical Assistance (TA) on Accelerated IMT Development”. This project will comprise capacity building including WUAs, PAFO and DAFO staffs, assistance of WUAs to organize themselves with rehabilitation and upgrading of irrigation schemes on a community participation basis. The target is to cover the whole country, which will be an irrigation area of approximately 10,000 ha in total and to be implemented in three phases.

The Consultant Team will be stationed at the Central Project Office in Vientiane Municipality to provide assistance for the establishment of systems and procedures for Project Planning, implementation, supervision, operation and maintenance and benefit, monitoring and evaluation (BME) and staff training.

## 5. Project Components

The main components of project activities are itemized as follows:

- (1) Assisting WUAs to organize themselves to participate in the rehabilitation or new construction and O&M of irrigation systems
- (2) Provide appropriate extension services to farmers
- (3) Rehabilitation of existing schemes in cooperation with WUA
- (4) Construction of new irrigation schemes on a community participation basis
- (5) Assisting the implementation of IMT
- (6) Promote capacity building of PAFOs and DAFOs
- (7) Support the establishment of VDF for cost recovery

## 6. Project Costs

About US\$ 22.6 million will be required for Phase-I.

(Unit: US\$ 1000)

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Total
Capital cost	2,522	2,585	2,553	2,490	2,490	2,873	2,873	18,386
Recurrent Cost	595	597	596	594	594	606	606	4,187
Total	3,116	3,181	3,149	3,084	3,084	3,479	3,479	22,573

## 7. Implementing Agency

The implementing agency for the project will be the Department of Irrigation (DOI) of the Ministry of Agriculture and Forestry (MAF).

## 8. Organizational and Staffing Requirements

The Office of the National Project Director (NPD) is to be established in DOI, MAF, Vientiane to be responsible for overall coordination of the implementation of the Project at the national level. Additionally actual implementation of the Project will be taken charge of by provincial project office established in each province. The staff required for the Project at national level and in each PAFO will be as follows:

Province	Present Staff No.	Proposed Staff No.	Balance
1. Vientiane Mun.	0	12	0
2. Each Province (17 provinces)	0	8 in each province	-136
Total	12	52	-40

## 9. Implementation Schedule

The project is to be implemented over 15 years in three phases as stated below;

Phase-I (7 years)	Target area should basically be selected from G-1, G-2 and G-8.
Phase-II (4 years)	Target area should basically be selected from G-3, G-4, G-6, G-9
Phase-III (4 years)	Target area should basically be selected from G-5, G-7, G-9 and G-10)

However the detailed implementation schedule will be determined through “Technical Assistance (TA) on Accelerated IMT Development” proposed as IR-4.

## 10. Lessons Learnt and How Incorporated into Proposed Project

- (1) IMT process is in initial stages and the strategy to be formulated in IR-4 “Technical Assistance (TA) on Accelerated IMT Development” should be carefully considered.
- (2) A Useful lesson will be extracted from on-going IMT project as stated in Paragraph 4.

## 11. Expected Benefit

- (1) Approximately 100,000 ha of irrigation scheme is to be rehabilitated and developed and O&M system will be well established under IMT policy
- (2) The food security in the targeted area will be maintained through the increase of agricultural production.
- (3) The livelihood of beneficiaries will be improved through the increase of agricultural production and improvement of social accessibility.
- (4) Condition of watersheds will be improved by reducing shifting cultivation and promoting tree planting.

## 12. Assessment of Possible Problems and Bottlenecks in Implementation

- (1) Shortage of capable staff in PAFO 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, are expected when land and water are developed, e.g. changes in land use and flow of surface water,

(2) Social environment:

Positive impacts are expected from improved rural accessibility

Negative impacts will possibly be found by (i) partial rehabilitation of irrigation facilities that cause the conflict among village societies and (ii) rapid introduction of IMT may create misunderstanding of IMT and inconsistency between farmers' society and the Government.

14. Special Arrangements

A Project Steering Committee will be established and chaired by the Vice-Minister of MAF with National Project Director as Member-Secretary. Members will include representative from relevant organization as listed below;

- Representative of the Cabinet Office of MAF
- State Planning Committee
- Committee for Investment and Cooperation
- Ministry of Finance
- The Bank of Lao
- Vice-Governors of respective provinces
- Lao Women's Union

## **Project No. IR-11**

1. Title of Project/Program

Flood Disaster Mitigation

2. Location

Flood-prone area along tributaries of Mekong River as stated below:

Vientiane, Borikhamxai, Khammouan, Savannakhet, Saravan and Champasak

3. Objectives

The Project aims to secure agricultural production and properties in flood-prone areas along tributaries of the Mekong River from wet season flooding.

4. Project/Program Description

The low lying lands along the Mekong River and its tributaries suffer flood and inundation damages more or less every wet season. Though the floods provide a positive impact to natural systems such as enhancing soil fertility, adverse effects are widely observed such as damage to agricultural production, housing and health, together with loss of life and infrastructure including irrigation facilities.

The DOI, that is responsible for monitoring flood and inundation gives an information on paddy fields affected by floods in 2000 as shown in the table at right. Since 1996, the Mekong River Commission Secretariat (MRC) in collaboration with FAO has been collecting flood data of the Mekong River and its tributaries as a regional cooperation program in the Mekong River Basin. Countries along the Mekong River have joined this program and the DOI is the counterpart in Lao. The results of flood monitoring indicate that the length of river courses bringing about flooding along the Mekong River and its tributaries within Lao is 150 km and 150 km respectively.

The EU implemented the “Vientiane Plain Flood Protection Project (Urgent Phase)” to protect the corridor through the city area from flooding. The Project has already been completed and the constructed dike and related facilities are contributing to mitigate flood disaster and to protect city properties including residential areas and agricultural

**Flood Area and Loss in 2000**

Unit: ha

Municipality/Province	Total Area	Paddy field affected by flood	
		Affected	Lost
Vientiane province	37,500	300	150
Vientiane municipality	48,500	1,000	300
Bolikhamsay	25,282	3,546	1,500
Khammouane	48,112	22,080	20,840
Savannakhet	105,000	18,920	15,000
Champasack	84,530	22,730	17,270
Salavanh	47,716	4,462	1,000
Attapeu	12,500	1,200	500
	<b>409,140</b>	<b>74,238</b>	<b>56,560</b>

Remarks: The Area includes both irrigated field and rainfed field.

Data Source: Flood Management Unit, DOI,MAF

assets from Mekong River flooding.

Efforts have also been made in flood-prone areas of other central-southern provinces to construct flood protection facilities, such as flood protection dike and flood control gate by PAFO and the farmers. However those are not enough to mitigate flooding and it should be urgently considered to find substantial measures for this area.

The project proposed herein is to mitigate flood damage especially in the aforesaid area to secure land and property and thus secure and increase agricultural production in the areas along the tributaries of the Mekong. The project comprises Technical Assistance (TA), Detail Design and Implementation, namely detail monitoring and assessment of flood damage, planning of flood mitigation measures, construction, rehabilitation and upgrading of flood protection facilities.

## 5. Project Components

The main components of project activities are itemized as follows:

- (1) Detail assessment of damaged area by wet season flooding
- (2) Selection of priority area
- (3) Planning of flood mitigation measures such as flood protection dike, flood control gate, drainage pump and other conceivable effective measures
- (4) Rehabilitation and upgrading of flood protection facilities
- (5) Rehabilitation and upgrading of existing river observatory system

## 6. Project Costs

US \$ 17.9 million will be required for this project.

(Unit: US\$ 1000)

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Total
Capital cost	900	500	2,905	2,695	2,827	2,827	2,195	2,195	17,044
Recurrent Cost	45	25	149	142	136	136	117	117	868
Total	945	525	3,054	2,837	2,963	2,963	2,312	2,312	17,912

## 7. Implementing Agency

The implementing agency for the project will be the Department of Irrigation (DOI) of the Ministry of Agriculture and Forestry (MAF).

## 8. Organizational and Staffing Requirements

The Office of the National Project Director (NPD) is to be established in DOI, MAF, Vientiane to be responsible for overall coordination of the implementation of the Project at the national level. Additionally, actual implementation of the Project will be taken charge of by provincial project office established in each province. The staff



required for the Project at the national level and in each PAFO will be as follows:

Province	Present Staff No.	Proposed Staff No.	Balance
1. MAF central Office	3 (Staff of Flood Management Unit of DOI)	6	-3
2. Vientiane Mun.	3	3	0
3. Borikhamxai	0	2	-3
4. Khammouan	0	2	-3
5. Savannakhet	0	2	-3
6. Saravan	0	2	-3
7. Champasak	0	2	-3
Total	6	24	-18

#### 9. Implementation Schedule

TA for the study will be implemented over a 1-year period. In succession, the detailed design (D/D) and construction works will be implemented over a 7-year period.

#### 10. Lessons Learnt and How Incorporated into Proposed Project

Previously there was no substantial flood protection project implemented along the Mekong tributaries. It is therefore recommended to carefully assess flood damage as well as the implementation capacity of each provincial office before the commencement of the Project during TA.

#### 11. Expected Benefit

Out of the 150 km of river course of the Mekong tributaries that have been leading to flooding in the wet season, 75 km will be provided with stable flood dikes and appurtenant facilities to protect surrounding areas from flooding.

#### 12. Assessment of Possible Problems and Bottlenecks in Implementation

- (1) Shortage of capable staff in MAF head office and PAFO will prevent the project progress, if the Government could not assign the required number of staff

#### 13. Assessment of Natural and Social Environment

- (1) Natural environment:

Negative impacts will be found if the flood protection dike causes other areas, to some extent, to be affected by flooding instead. The plan and design should carefully be prepared.

- (2) Social environment:

Negative impacts may be found in case that resettlement is necessary by the Project.

#### 14. Special Arrangements

A Project Steering Committee will be established and chaired by the Vice-Minister of MAF with National Project Director as Member-Secretary. Members will include representative from relevant organization as listed below;

- Committee for Planning and Cooperation
- Cabinet of Finance, Planning and Cooperation
- Ministry of Communication, Transport, Post and Construction
- Ministry of Industry and Handicraft
- Vice-Governors of respective provinces

**TERMS OF REFERENCE  
FOR  
TECHNICAL ASSISTANCE (TA)  
ON  
FLOOD DISASTER MITIGATION  
IN  
THE LAO PEOPLE'S DEMOCRATIC REPUBLIC**

1. Background and Justification

The Mekong River is estimated to be 4,800 km long, the longest river in South-East Asia and the twelfth longest in the world. The river source is at some 5,000 m elevation in the Tanghla Shan Mountains of the Tibetan Plateau in China. The catchment area is almost 800,000 km<sup>2</sup> and it is ranked twenty-first in the world. In terms of average annual runoff, it is estimated by the Mekong River Commission Secretariat (MRC) to be 475,000 million m<sup>3</sup> or about 15,000 m<sup>3</sup>/sec which is ranked eighth in the world. In the wet season, May to September, the river discharges an enormous volume of water and the maximum discharge can be 50 times as the minimum discharge.

The seasonal pattern of flow in the Mekong River is influenced by snowmelt in the headwater catchment in China, but predominantly reflects the monsoon rainfall. River flows drop slowly during the early months of the year, generally reaching a minimum in March or April before the water level is rising rapidly to the peak which almost always occurs in August or early September. Following the peak the recession is usually quite rapid.

The low-lying lands along the Mekong River and its tributaries suffer flood and inundation damages more or less every wet season. Though the floods provide a positive impact to natural systems such as enhancing soil fertility, adverse effects are widely observed such as damage to agricultural production, housing and health, together with loss of life and infrastructure including irrigation facilities. The DOI, that is responsible

**Flood Area and Loss in 2000**

Unit: ha

Municipality/Province	Total Area	Paddy field affected by flood	
		Affected	Lost
Vientiane province	37,500	300	150
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	<b>409,140</b>	<b>74,238</b>	<b>56,560</b>

Remarks: The Area includes both irrigated field and rainfed field.

Data Source: Flood Management Unit, DOI,MAF

for monitoring flood and inundation, gives an information on paddy fields affected by floods in 2000 as shown in the table. Since 1996, MRC in collaboration with FAO has been collecting flood data of the Mekong River and its tributaries as a regional cooperation program in the Mekong River Basin. Countries along the Mekong River have joined this program and the DOI is the counterpart in Lao PDR. The results of flood monitoring indicate that the length of river courses bringing about flooding along the Mekong River and its tributaries within Lao PDR is 150 km and 150 km respectively.

The Vientiane Municipality implemented the “Vientiane Plain Flood Protection Project (Urgent Phase)” in 1995 to 1997 with assistance from EU. The Project rehabilitated and strengthened the flood protection dike of 46 km in length along the Mekong River between Kaolieo and Chinaimo. This protection dike is well functioning to protect the city from floods from the Mekong River since 1997. However, areas along Mekong tributaries in other Provinces lack even primitive flood protection facilities. Actions are required for flood mitigation, damage and disaster management in these areas, following the above MRC’s strategy study.

## 2. Objective of the Project

The objectives of the Project is to formulate strategic and comprehensive flood mitigation plans to secure agricultural production and properties in flood-prone areas along the tributaries of Mekong River from wet season flooding.

## 3. Project Area

The Project Area covers flood-prone area along tributaries of Mekong River in central and southern six (6) Provinces, namely Vientiane, Borikhamxai, Khammouan, Savannakhet, Saravan and Champasak.

## 4. Scope of Work

The scope of the proposed TA is to assist government to formulate strategic and comprehensive flood mitigation and management plans along the tributaries of Mekong River.

The TA will cover:

- 1) Master Plan Study for flood mitigation and management of Mekong tributaries
- 2) Feasibility Study for priority areas to be selected in the course of the Master Plan Study
- 3) Preparing implementation schedule

The TA will be carried out for eighteen (18) months in the following two stages.

- (1) Stage-I : Reviewing the existing data, organizing workshop, assessment of damaged areas, preparing Mekong and its tributaries profile and action agenda, identifying criteria, preliminary evaluation and prioritization, preparation of Progress Report (1) and Interim Report
- (2) Stage-II : Mapping for priority areas, organizing workshop, feasibility study on prioritized areas, integrated evaluation in terms of economy, finance, social impact, environmental aspect and etc., preparing of implementation plans, preparing Progress Report (2), Draft Final Report and Final Report

The tentative working schedule for the TA is shown in Figure-I.

#### 4.1 Stage-I: Master Plan Study

- (1) Preparatory work including reviewing the existing data and preparing Inception Report
- (2) Organizing workshop
- (3) Preparing Mekong and its Tributaries profile and Action Agenda including inventory survey and detail assessment of damaged area by wet season flooding
- (4) Preparing flood mitigation and management Action Plan
- (5) Identifying the criteria that reflect the various aspect
- (6) Preliminary evaluation and area prioritization
- (7) Preparing of Progress Report (1)
- (8) Preparing Interim Report

#### 4.2 Stage-II: Feasibility Study

- (1) Conducting aerial photo shooting, ground control survey and mapping for prioritized areas selected in Stage-I
- (2) Feasibility Study on specific prioritized project
- (3) Integrated evaluation by i) economic and financial analysis, ii) poverty and social analysis, iii) environmental assessment and etc.
- (4) Preparation of Mekong tributaries flood mitigation and management implementation plans
- (5) Conclusion and recommendation
- (6) Preparing Progress Report (2)
- (7) Preparing Draft Final Report
- (9) Preparing Final Report

## 5. Transfer of Technology

Throughout the course of TA, transfer of technology and training will be provided to counterpart experts. The transfer of technology will be carried out in the form of on-the-job training and seminar during the course of TA. In addition to the above transfer of technology, overseas training will also be programmed.

## 6. Expected Major Outputs of the Study

The major outputs of TA are expected to be: (i) formulation of master plan for the Study area, (ii) formulation of feasibility study with the priority order, (iii) project evaluation from the point of view of economic, financial social and environmental aspect and (iv) implementation plans. TA results will be compiled in the following reports, which will be submitted to the Government of Lao PDR.

- |     |                     |   |   |
|-----|---------------------|---|---|
| (1) | Inception Report    | : | At the commencement of the TA   |
| (2) | Progress Report (1) | : | Within six (6) months from the commencement of the TA                         |
| (3) | Interim Report      | : | At the end of Stage-I within eight (8) months from the commencement of the TA |
| (4) | Progress Report (2) | : | Within fifteen (15) months from the commencement of the TA                    |
| (3) | Draft Final Report  | : | Within seventeen (17) months (11) from the commencement of the TA             |
| (4) | Final Report        | : | Within eighteen (18) months from the commencement of the TA                   |

The Government of Lao PDR intends to promote the implementation of the development plans to be given in the reports after thorough deliberation of the plan within the Government. The tentative working schedule is shown in Figure 1.

## 7. Expert Inputs

The required foreign and domestic experts for the execution of the Project are assessed as follows:

### Foreign Expert

- Team Leader/Irrigation Engineer
- Irrigation Engineer
- River Engineer
- Design Engineer
- Agronomist/Agricultural Economist
- Sociologist
- Community Development Expert

- Gate Engineer
- Pump Engineer
- Environment Expert
- Aerial Photo Shooting / Ground Control Survey / Mapping Expert
- Others as required

Local Expert

- Co-team Leader
- Irrigation Engineer
- River Engineer
- Design Engineer
- Agronomist/Agricultural Economist
- Meteo-hydrologist
- Gate Engineer
- Pump Engineer
- Others as required

8. Undertakings of the Government of Lao PDR

In order to facilitate a smooth and efficient conduct of the TA, the Government of Lao PDR shall take necessary measures mentioned below:

- (a) To facilitate the safety of the TA Team
- (b) To permit the members of the TA Team to enter, leave and sojourn in the State for the duration of their assignment therein, and exempt them from alien registration requirement and consular fees in accordance with existing regulation and laws;
- (c) To exempt the members of the TA Team from taxes, duties and any other charges on equipment, machinery and other materials brought into and out of the State for the execution of the TA in accordance with existing regulations and laws;
- (d) To exempt the members of the TA Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the TA Team for their services in connection with the implementation of the TA in accordance with existing regulations and laws;
- (e) To facilitate the necessary facilities to the TA Team for remittance as well as utilization of the funds introduces in the State from Japan in connection with the implementation of the TA;
- (f) To secure permission or entry into all the areas required for the conduct of the TA;
- (h) To secure permission for the TA Team to take all data, documents and necessary materials related to the Study out of the State;

- (i) To provide logistic support including office space with appurtenant furniture and facilities, cleaning and guard;
- (j) To provide medical services as needed. Its expenses will be chargeable to the member of the TA Team.

The Government of Lao PDR shall bear claims, if any arises against member(s) of the TA Team resulting from, occurring in the course of or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the member of the TA Team.

The Implementing Agency shall act as counterpart agency to the TA Team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the TA.

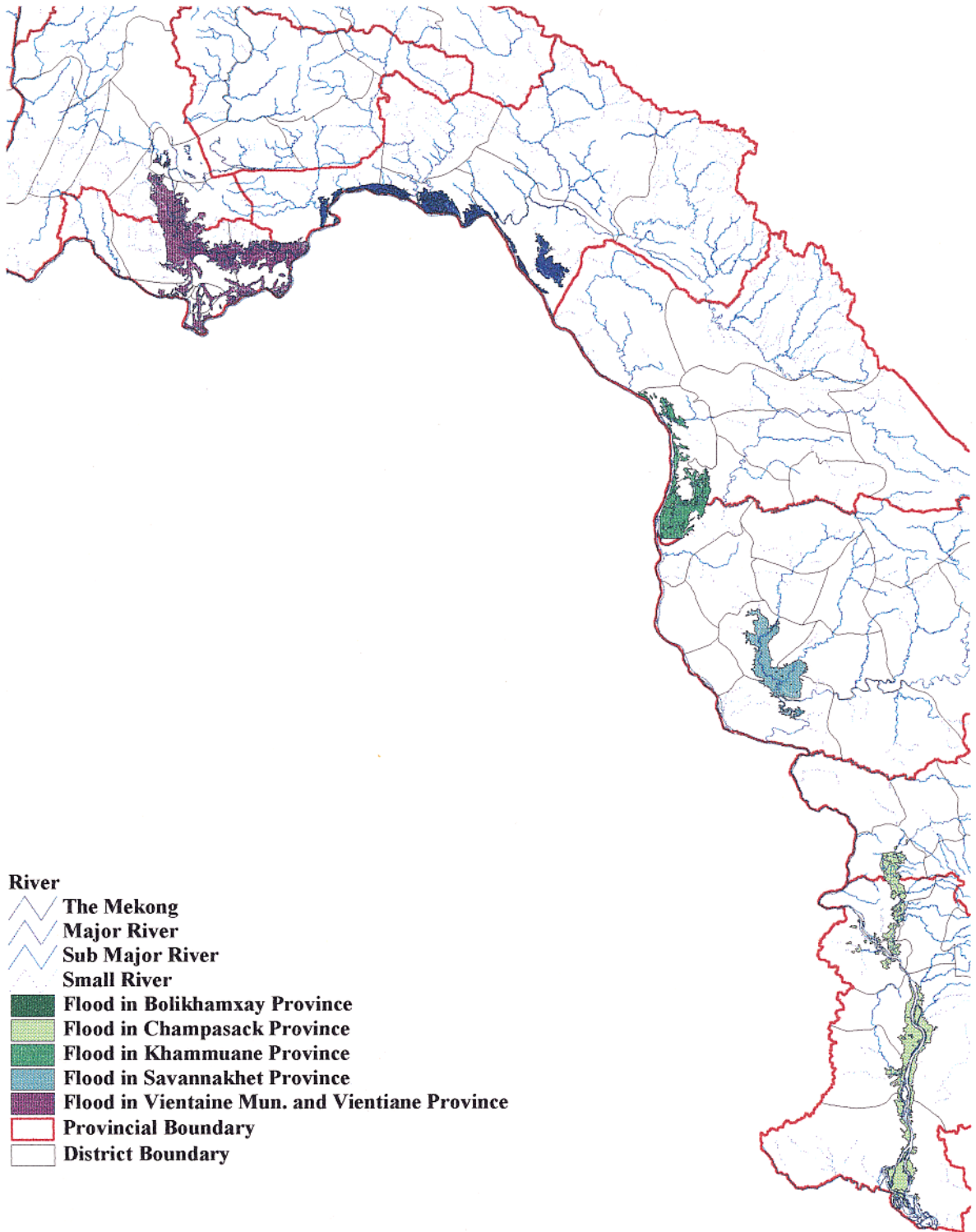
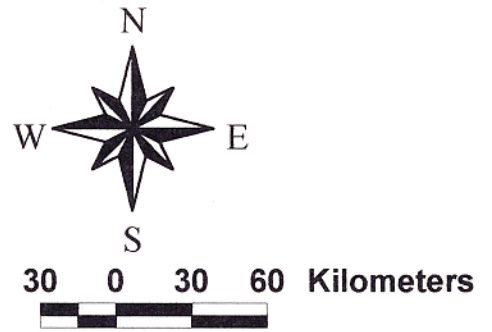
The Government of Lao PDR assured that the matters referred in this form will be ensured for a smooth conduct of the TA by the Team.



Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 Preparatory Work																		
2 Stage-I (Master Plan Study)																		
3 Stage-II (Feasibility Study)																		
Report Submission																		
Workshop																		

Notes: Ic/R: Inception Report P/R: Progress Report It/R: Interm Report  
DF/R: Draft Final Report F/R: Final Report

**Figure 1 Tentative Work Schedule**



- River**
- The Mekong
  - Major River
  - Sub Major River
  - Small River
- Flood in Bolikhamxay Province
  - Flood in Champasack Province
  - Flood in Khammuane Province
  - Flood in Savannakhet Province
  - Flood in Vientaine Mun. and Vientiane Province
  - Provincial Boundary
  - District Boundary

Data Source: Department of Irrigation (DOI), Ministry of Agriculture and Forestry (MAF)

## Flood-prone Area along Mekong River

## ***11. Result of Priority by Scoring Evaluation***

## Result of Priority by Scoring Evaluation (1/4)

SCORE OF PROJECTS AND PROGRAMS		Direct Impact on Value Added (GDP) (1)	Implementing Capacity of Agencies (2)	Relative Project Costs and Timing of outputs (3)	Emphasis on Investment Deepening e.g Trainer Training, extension, breeder seed etc. (4)	Subsector imbalance & high return (<3 in 1) (5)	Project to Project Interdependency (6)	Employment Creation/ Rural Development (7)	Total Score	Total Score (Item.4 x 2)	Result of Priority by Scoring Evaluation
<b>1. Land and Water Resource</b>											
LW-1	Strengthening Land Use Planning (LUP) & Land Allocation (LA) and Land Titling in Rural Area	2	2	2	4	0	4	4	18	22	4
LW-3	Watershed Management Program	2	2	2	2	0	2	3	13	15	4
LW-4	Agro-Zone Classification, Land Management and Farming Systems Development	1	4	1	3	0	3	2	14	17	4
LW-7	Rehabilitation and Expansion of Meteo-hydrological Station for Agriculture Development and Flood Control	1	1	1	3	0	4	1	11	14	4
<b>2. Institutions and Organization</b>											
IO-1	Institutional Development and Strengthening of MAF										
1.1	Strengthening of MAF Management and Administration	3	2	3	4	1	4	1	18	22	4
1.2	Strengthening of MAF Planning and Statistical Capacity	4	2	4	3	1	3	1	18	21	4
1.3	Strengthening of MAF Human Resource Management	3	2	2	4	1	4	1	17	21	4
IO-4	NAFRI Strengthening Program										
4.1	NAFRI Institutional Strengthening and Restructuring Project	1	4	2	5	0	3	1	16	21	4
4.2	NAFRI Staff Capacity Building Project	1	4	2	4	0	4	1	16	20	4
4.3	NAFRI Research Upgrading Project	1	3	3	4	0	4	1	16	20	4
IO-6	Plant Quarantine Strengthening Project	3	1	3	2	0	2	2	13	15	4
<b>3. Human Resource Development</b>											
HR-1	Strengthening Agriculture & Forestry Extension Services	2	1	1	4	0	4	2	14	18	4
HR-2	Development of District In-Service Training and Farmer Training in Agriculture and Forestry	2	2	2	5	0	4	3	18	23	4
HR-3	Strengthening Agriculture and Forestry Technical Education Capacity	2	2	2	5	0	4	2	17	22	4
HR-4	Irrigation Technician School Improvement Project	3	3	3	4	1	3	2	19	23	4

## Result of Priority by Scoring Evaluation (2/4)

SCORE OF PROJECTS AND PROGRAMS		Direct Impact on Value Added (GDP) (1)	Implementing Capacity of Agencies (2)	Relative Project Costs and Timing of outputs (3)	Emphasis on Investment Deepening e.g Trainer Training, extension, breeder seed etc. (4)	Subsector imbalance & high return (<3 in 1) (5)	Project to Project Interdependency (6)	Employment Creation/ Rural Development (7)	Total Score	Total Score (Item.4 x 2)	Result of Priority by Scoring Evaluation
HR-6	Program for Strengthening the Capacity of University Education in Agriculture and Forestry	1	3	1	4	0	4	2	15	19	4
<b>4. Crop; Extension and Research</b>											
AC-1	Rice Seed Multiplication Improvement Project	4	3	5	4	4	2	3	25	29	1
AC-3	Integrated Upland Agricultural Research Project	3	2	2	3	4	4	4	22	25	4
AC-4	Crop Diversification Program	3	2	4	3	5	4	4	25	28	2
AC-5	Outer City Horticulture Promotion Program	4	3	4	3	5	4	3	26	29	1
AC-7	Export Oriented Crop Promotion Program	3	1	4	3	5	3	3	22	25	3
AC-8	Fruit Crops Promotion Program in Northern Region	3	1	2	3	5	3	4	21	24	4
AC-9	Fruit Crops promotion in Southern Region	3	1	2	3	5	3	4	21	24	4
AC-10	Sericulture Development Project	4	3	3	3	4	2	5	24	27	2
AC-12	Farming Technology Dissemination Project	2	2	2	4	5	4	1	20	24	4
AC-14	Coffee Cultivation Technology Research Program	4	4	4	3	4	1	2	22	25	3
AC-15	Vegetable Cultivation Technology Research Program	3	3	3	3	5	4	2	23	26	2
AC-16	Fruit Cultivation Technology Research Program	3	3	2	3	5	4	3	23	26	2
AC-21	Basic Seed Production Technology Development Project	4	1	3	4	5	5	2	24	28	1
AC-22	Upland Crop Cultivation Technology Research Program	3	3	3	3	4	4	2	22	25	3
<b>5. Livestock and Fisheries</b>											
LF-2	Animal Health Improvement Program	5	2	5	4	5	3	4	28	32	1
LF-5	Livestock Productivity Enhancement Program	3	2	2	2	5	2	3	19	21	4
LF-6	National Animal Health Center Improvement	4	2	3	3	5	3	3	23	26	1
LF-10	Aquaculture Improvement and Extension Project	5	2	4	5	5	4	4	29	34	1
LF-11	Fish Seed Center Rehabilitation/Expansion Project	5	3	4	4	5	4	4	29	33	1

### Result of Priority by Scoring Evaluation (3/4)

SCORE OF PROJECTS AND PROGRAMS		Direct Impact on Value Added (GDP) (1)	Implementing Capacity of Agencies (2)	Relative Project Costs and Timing of outputs (3)	Emphasis on Investment Deepening e.g Trainer Training, extension, breeder seed etc. (4)	Subsector imbalance & high return (<3 in 1) (5)	Project to Project Interdependency (6)	Employment Creation/ Rural Development (7)	Total Score	Total Score (Item.4 x 2)	Result of Priority by Scoring Evaluation
LF-12	Rural Aquacultural Development Project	5	3	4	3	5	3	5	28	31	1
<b>6. Stabilization of Shifting Cultivation</b>											
SC-1	Stabilisation of Shifting Cultivation (Outside NBCA Area)										
1.1	Stabilisation of Shifting Cultivation in Southern Region	3	3	3	2	1	3	5	20	22	4
1.2	Stabilisation of Shifting Cultivation in Northern Region	3	4	3	2	1	3	5	21	23	4
1.3	Upland Development and Poverty Alleviation Program	2	4	3	2	0	3	5	19	21	4
SC-2	Stabilisation of Shifting Cultivation in NBCAs	2	4	2	2	0	3	4	17	19	4
SC-3	On-Farm Agroforestry Adaptive Research for Sustainable Upland Farming Systems	4	4	4	4	1	4	4	25	29	2
SC-4	Research Project on Sustainable Management and Utilization of NTFPs	5	4	4	4	1	4	5	27	31	1
<b>7. Marketing</b>											
MR-2	Agricultural Commodity Market Intelligence Project	3	2	2	4	4	4	3	22	26	3
MR-4	Agricultural Products Grade and Classification Project	1	1	2	3	0	2	1	10	13	4
MR-7	Study of Export Potential and Input Import of Agricultural Commodities	1	3	2	2	0	3	1	12	14	4
MR-8	Processing and Marketing of NTFPs	4	3	4	3	3	4	4	25	28	1
MR-9	Wholesale Market Development Project	3	3	4	3	2	2	2	19	22	4
<b>8. Rural Finance</b>											
RF-1	In-service Training of SOCB Staff and Expansion of the Training Center	3	2	3	4	1	5	2	20	24	4
RF-2	SOCB Operational Performance and Extension of Rural Banking	3	2	3	3	1	5	2	19	22	4
RF-8	Expansion of Credit to Farmer Groups by APB	4	2	4	3	2	3	4	22	25	3
RF-9	APB Restructuring and Reorganization on the Recommendations of Diagnostic Study	3	1	4	3	2	4	3	20	23	4

### Result of Priority by Scoring Evaluation (4/4)

SCORE OF PROJECTS AND PROGRAMS		Direct Impact on Value Added (GDP) (1)	Implementing Capacity of Agencies (2)	Relative Project Costs and Timing of outputs (3)	Emphasis on Investment Deepening e.g Trainer Training, extension, breeder seed etc. (4)	Subsector imbalance & high return (<3 in 1) (5)	Project to Project Inter-dependency (6)	Employment Creation/ Rural Development (7)	Total Score	Total Score (Item.4 x 2)	Result of Priority by Scoring Evaluation
RF-11	Expansion of Microfinance Activities	4	2	5	3	4	5	5	28	31	1
<b>9. Rural Development</b>											
RD-1	Village-led Agriculture Development Initiative in Remote Rural Area (VADIRRA)	4	2	2	3	3	2	5	21	24	4
RD-3	Integrated Agriculture and Rural Development in Boloven Plateau	4	2	3	3	3	3	3	21	24	4
RD-4	Area-Based Integrated Rural Development Program	3	2	2	3	2	2	4	18	21	4
<b>10. Irrigation</b>											
IR-1	Community Managed Irrigation Sector Project-2 (CMISP-2)	5	4	1	2	1	3	4	20	22	4
IR-4	TA for Accelerated Irrigation Management Transfer	4	3	2	4	1	4	3	21	25	4
IR-5	Community Managed Small Scale Irrigation Management Project	5	3	2	3	1	3	5	22	25	3
IR-11	Flood Disaster Mitigation	4	3	3	3	1	3	2	19	22	4