



LAO PEOPLE'S DEMOCRATIC REPUBLIC  
PEACE INDEPENDENCE DEMOCRACY UNITY PROSPERITY

**FINAL**

**LAO NATIONAL INDICATIVE PLAN (2011-2015)  
FOR IMPLEMENTATION OF THE IWRM-BASED  
BASIN DEVELOPMENT STRATEGY**

DECEMBER 2012

## TABLE OF CONTENTS

<b>LIST OF TABLES .....</b>	<b>ii</b>
<b>LIST OF FIGURES.....</b>	<b>ii</b>
<b>LIST OF APPENDICES .....</b>	<b>ii</b>
<b>LIST OF ACRONYMS.....</b>	<b>iii</b>
<b>EXECUTIVE SUMMARY.....</b>	<b>v</b>
<b>1.0 INTRODUCTION.....</b>	<b>1</b>
<b>2.0 BACKGROUND .....</b>	<b>3</b>
<b>2.1 IMPORTANCE OF MEKONG RIVER WATER RESOURCE MANAGEMENT IN LAO PDR .....</b>	<b>6</b>
<b>2.2 THE IWRM-BASED BASIN DEVELOPMENT STRATEGY (BDS).....</b>	<b>8</b>
<b>2.3 CHALLENGES AND OPPORTUNITIES .....</b>	<b>9</b>
<b>3.0 GOALS, OBJECTIVES AND FOCUS AREAS OF THE LAO NATIONAL INDICATIVE PLAN .....</b>	<b>11</b>
<b>3.1 GOALS .....</b>	<b>11</b>
<b>3.2 OBJECTIVES .....</b>	<b>11</b>
<b>3.3 FOCUS AREAS .....</b>	<b>12</b>
3.3.1 Sustainable Agriculture and Fisheries Development for Food Security and Poverty Reduction .....	12
3.3.2 Energy and Sustainable Hydropower Development.....	14
3.3.3 Natural Resources Management, Particularly Water Resources Management .....	16
3.3.4 Climate Change Adaptation and Mitigation .....	18
3.3.5 Data and Information Management, and Filling Knowledge Gaps (Research and Development).....	20
3.3.6 Human Resource Development for Natural Resources Management, and Environmental Monitoring and Evaluation.....	22
<b>4.0 PROPOSED NIP PROJECTS.....</b>	<b>23</b>
<b>5.0 LAO NIP IMPLEMENTATION AND MONITORING .....</b>	<b>31</b>
<b>5.1 NIP IMPLEMENTATION MECHANISM.....</b>	<b>31</b>
<b>5.2 INSTITUTIONAL FRAMEWORK .....</b>	<b>31</b>
<b>5.3 MONITORING AND EVALUATION .....</b>	<b>32</b>
<b>5.4 RISK MANAGEMENT AND MITIGATION.....</b>	<b>32</b>
<b>6.0 REFERENCES.....</b>	<b>34</b>

## LIST OF TABLES

Table 1	Proposed Projects under the National Indicative Plan for Lao PDR 2011 – 2015. ....	24
Table 2	Lao NIP Projects, with Estimated Budget, Secured Funding and Budget Gaps. ....	27
Table 3	Linkages between Lao Policies and Legislation (Driving Forces), BDS Strategic Priorities, Lao NIP Focus Areas and Proposed Projects under the Lao NIP.....	28
Table 4	Potential risks associated with NIP implementation, with likelihood of occurrence and mitigation measures proposed to address the risk.....	33

## LIST OF FIGURES

Figure 1	Lao PDR's location in the Mekong River Basin.....	7
----------	---	---

## LIST OF APPENDICES

Appendix A1	Lao NIP Development Organization & Methodology
Appendix A2	Proposed Projects in the NIP
Appendix A3	Project Identification Notes (PINs)

## LIST OF ACRONYMS

<b>ADB</b>	Asian Development Bank
<b>ASEAN</b>	Association of South East Asian Nations
<b>BDP</b>	Basin Development Plan
<b>BDS</b>	Basin Development Strategy
<b>DESIA</b>	Department of Environmental and Social Impact Assessment
<b>DLF</b>	Department of Livestock and Fisheries
<b>DMH</b>	Department of Meteorology and Hydrology
<b>DOI</b>	Department of Irrigation
<b>DOW</b>	Department of Waterways
<b>EIA</b>	Environmental Impact Assessment
<b>ESIA</b>	Environmental and Social Impact Assessment
<b>GMS</b>	Greater Mekong Sub-region
<b>GoL</b>	Government of Lao PDR
<b>IPP</b>	Independent Power Plant
<b>IWRM</b>	Integrated Water Resources Management
<b>LA</b>	Line Agencies
<b>LARReC</b>	Living Aquatic Resources Research Center
<b>LDC</b>	Least Developed Country
<b>LMB</b>	Lower Mekong Basin
<b>LNMC</b>	Lao National Mekong Committee
<b>LNMCs</b>	Lao National Mekong Committee Secretariat
<b>MAF</b>	Ministry of Agriculture and Forestry
<b>MCIT</b>	Ministry of Culture, Information and Tourism
<b>MDG</b>	Millennium Development Goal
<b>MEM</b>	Ministry of Energy and Mines
<b>MLSW</b>	Ministry of Labor and Social Welfare
<b>MONRE</b>	Ministry of Natural Resources and Environment
<b>MPI</b>	Ministry of Planning and Investment
<b>MPWT</b>	Ministry of Public Works and Transport
<b>MRC</b>	Mekong River Commission
<b>MRCS</b>	Mekong River Commission Secretariat
<b>MRB</b>	Mekong River Basin
<b>NADC</b>	National Aquaculture Development Center

<b>NAFRI</b>	National Agriculture and Forestry Research Institute
<b>NGPES</b>	National Growth and Poverty Eradication Strategy
<b>NIP</b>	National Indicative Plan
<b>NIPIC</b>	National Indicative Plan Implementation Committee
<b>NMCS</b>	National Mekong Committee Secretariat
<b>NREI</b>	Natural Resources and Environment Institute
<b>NSEDP</b>	National Socio-Economic Development Plan
<b>NUOL</b>	National University of Laos
<b>PAFO</b>	Provincial Agriculture and Forestry Offices
<b>PNPCA</b>	MRC Procedures and Guidelines for Notification, Prior Consultation and Agreement
<b>PWQ</b>	MRC Procedures and Guidelines for Water Quality
<b>RAP</b>	Regional Action Plan
<b>RBC</b>	River Basin Committee
<b>SDC</b>	Swiss Agency for Development and Cooperation
<b>SMEs</b>	Small and Medium Enterprises
<b>UNDP</b>	United Nations Development Programme
<b>UNEF</b>	United Nations Emergency Force
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>AusAID</b>	Australian Government Overseas Aid Program
<b>WB</b>	World Bank
<b>WREA</b>	Water Resources and Environment Administration
<b>WTO</b>	World Trade Organization

# EXECUTIVE SUMMARY

## Introduction

The Final Draft Lao PDR National Indicative Plan (NIP) provides a detailed work plan for implementing the agreed Mekong River Commission's *IWRM-Based Basin Development Strategy* (BDS), and to meet the needs of the national socio-economic development policies, plans and strategies. The NIP includes a summary of activities currently being implemented by the Government of Lao PDR (GoL) under its current national plans, and also includes additional activities proposed to be implemented under the BDS. The main objective of the NIP is to focus on areas, programmes and projects that Lao PDR would like to implement between the period 2011-2015, related to IWRM and natural resource development in the country.

The ultimate goal of the GoL is to emerge from Least Developed Country status by the year 2020. In order to achieve this goal, in the Seventh Five-year NSEDP 2011-2015, the GoL lays out a roadmap for the development objectives, goals, priorities and plans. During the period of 2011-2015, the main objectives are to maintain economic growth, achieve the Millennium Development Goals (MDGs), and ensure sustainable development, political stability, equity and social order.

A number of guidelines highlighted in the Five-year NSEDP related to the Lao NIP include the following: developing a strong and stable macroeconomic foundation; applying modern science and technology; reducing poverty and improving human development; protecting the environment and planning for mitigating climate change, especially preserving and enhancing forest cover and conserving and managing water resources; working on the comparative advantages of different sectors; and, finding ways to boost rural development.

The Lao NIP was developed through a participatory consultation process with all relevant line agencies (LAs) and other key stakeholders in Lao PDR, and was designed in a manner consistent with the objectives of the NSEDP 2011-2015. Included in the NIP is a list of Priority Focus Areas, which were developed through consultation with Lao stakeholders, and which follow the Strategic Priorities for Basin Development and Management listed in the BDS. From these Priority Focus Areas, a list of projects has been developed for implementation between 2012-2015; these projects will form the basis for implementation of the NIP.

## Importance of Mekong River Water Resource Management in Lao PDR

Lao PDR is rich in water and other natural resources, which are considered the key to future economic development plans for the country. More than 90% of the total area of the country is located in the Mekong River basin, making Lao address Mekong River water management characteristically different than other Mekong riparian countries.

The water resources and topography of Lao PDR give it great potential for hydropower development, an important part of the GoL's national socio-economic development strategy. Water resources are also valuable for other economic sectors such as the irrigation, rural and urban water supply, fisheries, tourism, mining, industry, transportation (navigation) and others.

Development of multi-purpose hydropower is needed for the GoL to meet its goal of reducing poverty and ensuring food security through the expansion of irrigated agriculture. Better water management and use will also help with flood and drought management protection, and to assist the country to address issues related to climate change and environmental protection. Each of these important issues are addressed in the projects outlined in the Final Draft NIP.

## **The IWRM-based Basin Development Strategy (BDS)**

Following the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin signed in 1995, the BDS was developed and approved by the MRC Member Countries in 2011, to be implemented with their cooperation. The BDS identified four key **development opportunities** and associated risks including:

- Considerable potential for further hydropower development in tributaries, particularly in Lao PDR and Cambodia, requiring harmonized social and environmental standards to ensure sustainability;
- Major potential to expand and intensify irrigated agriculture production to increase food security;
- Potential for some mainstream hydropower development; and
- Potential for other priority water-related development (e.g., fisheries, navigation, flood and drought management, tourism, and environment and ecosystem management), as well as those beyond the water sector (e.g., other power generation options).

Furthermore, the Strategy identified the following seven (7) **strategic development priorities** including:

- Opportunities and risks of current development (to 2015) addressed, including coordination between LMB countries and cooperation with China achieved, to ensure: increased dry season river flows; agreement on the maintenance of flows on the LMB mainstream implemented; and, risks of committed projects managed;
- Irrigated agriculture for food security and poverty alleviation expanded and intensified;
- Environmental and social sustainability of hydropower development greatly enhanced;
- Essential knowledge acquired to address uncertainty and minimize risks of identified development opportunities;
- Options for sharing development benefits and risks identified;
- Climate change adaptation strategy prepared and its implementation initiated; and
- Basin planning considerations integrated into national planning and regulatory systems.

In addition, the BDS identified five further **basin management priorities** including:

- Basin objectives and management strategies defined for water-related sectors;
- National-level basic water resources management processes strengthened;
- Basin-level water resources and related management processes strengthened;
- Rigorous basin-wide environmental and social objectives and baseline indicators defined; and
- Water resources management capacity building programme implemented, linked to MRC's overall initiatives and complementary to national capacity building activities.

Following the adoption of the BDS by all MRC member countries in 2011, Lao PDR is responsible for developing and implementing the NIP to address the needs for incorporating IWRM principles in future development activities. More details on objectives, methodologies, organization structure and process of NIP development are described in the sections below.

## **Challenges and Opportunities**

Given the extent of the development of the country with respect to natural wealth, it is imperative for Lao PDR to provide measures to protect this endowment to ensure the sustainability of the resource and the continued provision of ecosystem services to the population, especially those most heavily reliant to it.

At present, there is a Draft National Water Resources Policy and Draft National Water Resources Strategy and Action Plan for the Years 2011 to 2015. The Water Law is currently being revised. With the establishment of the Ministry of Natural Resources and Environment in 2011, there have been significant improvements in coordinating water, land, and forestry resource management. There is now a mechanism for coordinating and integrating water sector management and socio-economic development planning with river basin management (e.g., RBCs), for the effective implementation of the Water Resources Policy and Water Resources Strategy and Action Plan.

As water resource development increases across the country, there will be a number of challenges to be addressed, including ensuring adequate water quality in Vientiane Capital City and other populated areas. Development of irrigated agriculture and industry (including hydropower), will require careful management and monitoring of water use throughout the country. Dredging and extraction of sand, gravel and other mineral resources from the Mekong River and its tributaries has become an issue of increasing concern in recent years.

Potential impacts of developments on water quantity and quality, human health and the natural environment are key concerns of the Government of Lao PDR, and significant investment in water protection measures will be required. Protection of critical ecosystems and species, including the Mekong Giant Catfish (*Pangasianodon gigas*) and the Irawaddy dolphin (*Orcaella brevirostris*), among others, need to be carefully considered in water resource development planning. Effective mitigation measures to minimize transboundary impacts must to be incorporated in all future water resource development plans, for all countries in the Mekong Basin. Finally, floods and drought can



have serious negative impacts and may, in fact, increase under the impacts of climate change. These need to be carefully managed and monitored, and systems need to be in place to ensure there is sufficient technical and management capacity at all levels of government. This will become increasingly more crucial as national government agencies decentralize management authority to provincial, district and village level authorities.

Therefore, it is necessary to develop the roles and responsibilities, and raise the capacity, of GoL agencies which are involved in water resource management. Appropriate plans and planning tools are needed to guide both public and private sector investment activities and to balance economic development with protection of the environment, eradication of poverty and other social development objectives.

Government agencies, other organizations and the public need a greater awareness and understanding of the significance of water, priority areas in water management and the Government's direction and decisions. There is a general need for improved coordination of investments and developments between different ministries, and procedures for screening and evaluation of investment proposals requires strengthening. Furthermore, improved monitoring and management systems for assessing environmental impacts of proposed developments, and enforcement of environmental and water resource policies, laws and regulations are essential to future sustainable development. Capacity building, particularly at the provincial and district levels, is critical in this regard. Each of these important issues is addressed under the Lao NIP.

## **Goals, Objectives and Focus Areas of the Lao National Indicative Plan**

### Goals:

The ultimate goals of the Lao NIP are as follows:

1. To promote effective water resources management (and natural resource management in general) to help Lao PDR meet its national socio-economic development goals by 2015; and
2. To contribute to the national objectives of sustainable development of water and natural resources in the Mekong River Basin and to ensure effective transboundary cooperation with Member Countries.

### Objectives:

The overall objectives of the Lao NIP are:

1. To provide a mechanism for Lao PDR to address the main challenges and opportunities in water resource development and management by 2015;
2. Ensure transboundary issues are addressed in a collaborative manner with concerned Member Countries;
3. To promote development of the agriculture and fisheries sectors to ensure food security for the local population;
4. To ensure sustainable development of the hydropower sector;

5. To develop effective management and monitoring systems for overall water use and to protect water quality;
6. To improve navigation in the Mekong waterway throughout the country;
7. To apply the IWRM based approach into river basin management in the country by establishing RBCs in the Nam Ngum, Nam Theun- Kading, Xe Bang Fay-Xe Bang Hieng, Nam Ou, and Sekong Rivers by 2015;
8. To establish an effective Early Warning system and disaster risk management plan at the national, provincial, district and village level; and
9. To strengthen coordination, monitoring and evaluation systems for water resource management at the national, provincial, district and village level.

#### Focus Areas:

The Lao NIP has been structured according to six (6) key focus areas, as follows:

1. Sustainable agriculture and fisheries development for food security and poverty reduction;
2. Energy and sustainable hydropower development;
3. Natural resource management, particularly water resources management;
4. Climate change adaptation and mitigation;
5. Data and information management, and filling knowledge gaps (research and development); and
6. Human resource development for natural resources management and environmental monitoring and evaluation.

Each of these focus areas is directly linked to the main goals of the NSEDP (2011-2015), sector policies and strategies, as well as the Strategic Priorities and Actions listed in the BDS. Gender mainstreaming will be incorporated into all of the projects and activities, as well as training and capacity building on the importance of gender equality in all sectors.

#### **Lao NIP Projects**

The NIP includes a list of projects to collectively address the development priorities of the GoL, and also the Strategic Priorities listed in the BDS. Key information about each project has been summarised in a series of tables and in Appendix A2. The summary of estimated budget, secured funding and budget gaps for each focus area is presented in the table below. Lao NIP Projects are classified under 3 categories: (a) priority projects; (b) new projects; and (c) on-going projects with secured funding. Priority projects have been detailed in Project Identification Note (PINs) by the respective GoL Ministries as part of the project development process to secure funding and ensure effective implementation.

## Lao NIP Projects, with Estimated Budget, Secured Funding and Budget Gaps.

Focus Area	Number of projects	Estimated Budget	Secured funding	Budget Gap
1. Sustainable agriculture and fisheries development for food security and poverty reduction	6	\$10,102,000	1 (\$6,152,000)	\$3,950,000
2. Energy and Sustainable Hydropower Development	7	\$21,330,000	5 (\$5,830,000)	\$15,500,000
3. Natural resource management, particularly water resources management	7	\$140,650,000	3 (\$58,800,000)	\$81,850,000
4. Climate change adaptation and mitigation	4	\$72,090,000	3 (\$71,500,000)	\$590,000
5. Data and information management, and filling knowledge gaps (research and development)	14	\$116,980,000	1 (\$1,580,000)	\$115,400,000
6. Human resource development for natural resources management, and environmental monitoring and evaluation	5	\$8,000,000	0	\$8,000,000
<b>Total</b>	<b>43</b>	<b>\$369,152,000</b>	<b>\$143,862,000</b>	<b>\$225,290,000</b>

## Lao NIP Implementation and Monitoring

Implementation of the NIP will be conducted by GoL's concerned organizations/agencies using existing national budget whenever possible. NIP development projects will be implemented through existing sectoral and national socio-economic development strategies and plans. Technical and financial assistance from foreign donors and international organizations will be required to fund additional projects which have been identified under the NIP.

To implement the NIP efficiently, a number of institutions/agencies will be designated to lead activities, and a committee will be established for coordinating, monitoring, and evaluating NIP activities.

*The Lao National Mekong Committee (LNMC):* will be the key institutional body responsible for directing the NIP implementation. Lao National Mekong Committee Secretariat (LNMCS) will serve as the Secretariat and will be responsible for the following tasks:

- Coordinate the Lao National Indicative Plan Implementation Committee (NIPIC) and encourage each member of the NIPIC to integrate NIP projects into sectoral and national development plans as appropriate. LNMCS will also encourage the NIPIC members to monitor and report on progress of implementation of NIP projects in their sector or province;

- Monitor, assess and report progress of implementation of the NIP regularly to the LNMC Chairman and to MRC, as well as to each member of NIPIC;
- Promote the NIP as much as possible in a variety of ways, such as by producing materials for disseminating the NIP such as brochures, policy briefing papers, organizing NIP dissemination workshops, etc.;
- Seek funding for NIP project implementation through many possible ways, including contracting and communicating with MRCS and other funding agencies such as ADB, WB, UNDP, UNEF, the Ministry of Planning and Investment (MPI), the Ministry of Finance, etc.; and
- Organize workshops and meetings related to NIP implementation.

***The NIP Implementation Committee (NIPIC):*** NIPIC will be composed of representatives from concerned agencies including MONRE, MPI, MAF, MEM and others, as well as representatives from provincial offices for natural resource and environment, provincial offices for planning and investment (OPI), provincial Offices for Agriculture and Forestry (OAF) and provincial Offices for Energy and Mines (OEM). The members of NIPIC should be assigned by the LNMC Chairman based on agreement from ministries and agencies concerned. Each member of the NIPIC should be responsible for pushing ahead with the implementation of the NIP as much as possible; including integrating NIP projects into sectoral and national socio-economic development strategies and plans. Each member of the NIPIC is also responsible to monitoring and reporting the progress of NIP project implementation in his/her sector or province to the NIP Secretariat/LNMCS as well as in annual meetings regarding NIP implementation.

### **Coordinating/Working Mechanism**

**The annual NIP implementation review meeting** will be an important event supporting NIP implementation. Every year, the meeting should be organized before the last quarter of the fiscal year (from July to September), in which the Government of Lao PDR reviews implementation of its yearly socio-economic development plans and draft the one for the following year. The main purpose of the meeting is to follow the progress of NIP implementation and to identify the constraints, additional needs for action, as well as to discuss how to proceed with NIP implementation in each sector and province.

All members of the NIPIC, including representatives of government planning agencies such as MPI, provincial offices for planning and investment (POPI), planning and investment units of each ministry, representatives from donors/ development partners and other stakeholders should be invited to the meeting.

### **Monitoring and Evaluating Mechanism**

The members of NIPIC will be required to report on progress of NIP implementation in their sectors or provinces/districts regularly twice per year. Based on the reports submitted from each member of the NIPIC, LNMCS will compile a progress report for submission to the LNMC and to MRC.

Once per year, LNMCS as well as members of the NIPIC will be required to complete and present their progress reports on NIP implementation progress to date at the annual NIP implementation review meeting. NIP implementation plans and guidelines for the next year will also be presented at the annual meeting.

If needed, LNMCS will arrange for external audits of NIP implementation activities. Special meetings would be organized and audit reports provided to the LNMC and MRC, if required.

### **Risk Management and Mitigation**

Identification of potential risks associated with implementation of the NIP is important, so that measures may be put in place at the earliest possible stages to mitigate any problem issues. Risks have been assessed in terms of institutional and technical capacity, technical challenges associated with project implementation, as well as regarding financial considerations. The likelihood and potential impact of potential risks was deemed to be medium or low, and mitigation measures have been proposed to minimize potential issues with NIP implementation.

## 1.0 INTRODUCTION

The Final Draft Lao PDR National Indicative Plan (NIP) provides a detailed work plan for implementing the agreed Mekong River Commission's *IWRM-Based Basin Development Strategy* (BDS). The NIP includes a summary of activities currently being implemented by the Government of Lao PDR (GoL) under its current national plans, and also includes additional activities proposed to be implemented under the BDS. The main objective of the NIP is to focus on areas, programmes and projects that Lao PDR would like to implement between the period 2011-2015, related to IWRM and natural resource development in the country.

The Lao NIP was developed through a participatory consultation process with all relevant line agencies (LAs) and other key stakeholders in Lao PDR. Included is a list of Priority Focus Areas, which were developed through consultation with Lao stakeholders, and which follow the Strategic Priorities for Basin Development and Management listed in the BDS. From these Priority Focus Areas, a list of projects has been developed for implementation between 2012-2015; these projects will form the basis for implementation of the NIP.

The MRC's *Guidelines for Action Planning to implement the IWRM-based Basin Development Strategy* (MRC 2011b) was used as a guidance to develop the NIP. The NIP is an integral part of the development of the MRC Basin Action Plan (MRC 2011a), which will provide a clear response to the priorities established and agreed between countries within the BDS. The NIP includes a description of the activities, methodologies, and implementation arrangements required for meeting the overall objectives of the GoL with respect to Mekong River Basin sustainable development. Linkages are made between projects and programs identified under the NIP and the following:

- Strategic Priorities and Strategic Actions set out in the MRC's IWRM-based Basin Development Strategy (BDS);
- GoL's National Socio-Economic Development Plan (NSEDP 2011-2015) and national sector development plans (MPI 2011);
- Provincial Socio-Economic Development Plans for the Years 2011-2015;
- Draft National Water Resources Policy (WREA 2010a);
- Draft National Water Resources Strategy and Action Plan for the Years 2011 to 2015 (WREA 2010b);
- Draft Natural Resources and Environment Sector Plan for 2011-2015 (MONRE 2011); and
- Other GoL water-related sector strategies.

As part of the Seventh Five-year National Socio-economic Development Plan (NSEDP) 2011-2015, the GoL will implement procedures to eliminate state-subsidized mechanisms and move toward a market-oriented economy and international integration, while balancing and enhancing economic, socio-cultural and environmental development. The GoL will continue to invest in education and health care services, and build a skilled labor force to advance

toward industrialization and modernization. Administration and service delivery will be consolidated in an effective and transparent manner, and coordination practices will be modernized to correspond with international practices. Funding and special promotions will be invested toward poverty reduction, along with the expansion of road and air transport, telecommunications, water supply and rural electrification.

The NIP consists of six (6) main chapters, including this Introduction (Chapter 1). Chapter 2 provides background information on development priorities in Lao PDR, water resources in the country, challenges and opportunities associated with natural resource development, and information on the MRC's BDS. Chapter 3 describes the goals, objectives and focus areas of the NIP. Chapter 4 provides a summary of the Project Identification Notes (PINs) which summarize the priority projects to be developed under the NIP. Chapter 5 describes how the NIP will be implemented, monitored and evaluated, and also includes an evaluation of potential risks and uncertainties. References are provided in Chapter 6, and Appendices s are provided with specific details regarding the proposed NIP Project PINs.

## 2.0 BACKGROUND

The ultimate goal of the GoL is to emerge from Least Developed Country status by the year 2020. In order to achieve this goal, in the Seventh Five-year NSEDP 2011-2015, the GoL lays out a roadmap for the development objectives, goals, priorities and plans. During the period of 2011-2015, the main objectives are to maintain economic growth, achieve the Millennium Development Goals (MDGs), and ensure sustainable development, political stability, equity and social order.

A number of guidelines highlighted in the Five-year NSEDP related to the Lao NIP include the following: developing a strong and stable macroeconomic foundation; applying modern science and technology; reducing poverty and improving human development; protecting the environment and planning for mitigating climate change, especially preserving and enhancing forest cover and conserving and managing water resources; working on the comparative advantages of different sectors; and, finding ways to boost rural development

Several priorities reflected in the NSEDP and programs are as follows:

- a. Rural development, poverty alleviation by developing green rural areas, promote agriculture production, rural electrification and develop basic infrastructure;
- b. Ensuring food security, increasing agriculture productivity, protecting the remaining forest and reforest the degraded areas;
- c. Expanding sources for hydropower, coal and renewable energy, expansion of electricity lines for domestic supply and export, geological and mineral assessment, create mineral milling facilities;
- d. Natural resources management and sustainable development by introducing a green economy, ensuring environmental protection (forest, water, land, biodiversity, minerals);
- e. Regional and local development by setting up economic centres, infrastructure development;
- f. Industrialisation and modernisation by focusing on potential sectors (tourism, mining, construction materials), including hydropower.

To realise the NSEDP, the government has identified four (4) approaches which will be implemented:

**1. Breakthrough in thinking:** Firstly the GoL needs to eliminate completely the impact of bureaucratic centralized and state-subsidized mechanisms and then lead towards the mechanism of a market-oriented economy under state management. The GoL has to firmly regard economic development as the centre and keep harmony between economic development and socio-cultural development, enhance the capacity of all economic sectors to boost production capacity, and be more competitive in the era of international integration as well as ensure the continuation, stability and sustainability of the country's development.



**2. Breakthrough in human resource development:** This is a breakthrough approach towards high-quality education, ensuring that investment in education and health reaches its target. This requires more use of a knowledge economy, the creation of a skilled labour force and specialists, creation of business operators, administrators and managers to meet economic development in line with market mechanisms and international economic integration. The use of the labour force should take place in an appropriate manner to create incentives for national construction and ensure that more agricultural workers move to the industrial and service sectors.

**3. Breakthrough in mechanisms, procedures and rules of administration:** The GoL has to consolidate administration and service delivery in an effective and transparent manner, create favourable conditions for equal competitiveness under the law, and proceed towards industrialization and modernization. The GoL has to modernise coordination practices in line with international practices by using this breakthrough step in connection with activities related to the establishment of the ASEAN Community and the preparation of Lao's membership in the World Trade Organisation (WTO).

**4. Breakthrough in poverty reduction:** This is to be achieved by mobilizing funding and through special promotion policies; creation of a socioeconomic infrastructure with a focus on land transport (including railways), air and water transport; linking the capital with the provinces and Lao PDR with its neighbours and the international community; and the creation of an electricity network, telecommunications, communications, water supply and other necessary facilities.

To support the successful implementation of the five-year NSEDP as well as the Rural Development Strategy and Poverty Reduction Goal, the Lao government issued order No. 16 as a move toward the decentralization of authorities to the provincial, district and local levels. The directive to establish "the provinces as a Strategic Unit, District as a comprehensive capable unit and villages as development unit" was to improve the rights, roles, functions and responsibilities of the grassroots levels and to empower people to participate fully in their own socio-economic development. This process aims to improve the administration mechanisms and procedures and create facilities and an enabling environment for successful rural development and poverty reduction as cited in the government policy and strategies.

National economic and social development must ensure "sustainable green and clean growth", including: implementing environmental and social safeguards for all developments; integrating climate change adaptation and mitigation measures in future plans; ensuring environmental sustainability, including natural resources protection; and, awareness raising on natural resources and environmental management, to contribute to the achievement of MDG 7 (MONRE 2011).

Another top priority of the GoL for socio-economic development is to transform the country from landlocked to land-linked, particularly in the Greater Mekong Sub-region. The Mekong River, as a trans-boundary river connecting to six countries in Asia (China, Myanmar, Lao PDR, Thailand, Cambodia and Vietnam) is a critical route for navigation and inland water transport in Lao PDR.

Lao PDR is an active member of the ASEAN Economic Community and is a signatory of a number of international agreements and conventions, including the 1995 Mekong Agreement. As such, Lao PDR shares responsibility for management of the Mekong River resources with the MRC member countries, including Cambodia, Thailand and Viet Nam. Lao PDR is on target to complete negotiations for membership in the WTO by the end of 2012.

Key national challenges include poverty eradication and rural development, addressing social inequities and building stronger human capacity to manage and develop the nation's rich natural resources efficiently (Ministry of Industry and Commerce 2008). The road network needs to be expanded to link between provinces, districts and remote areas. Achievement of the MDGs by 2015 will be a key indicator of success in meeting the country's socio-economic development priorities, and sufficient funding and improved human capital development will be required to meet these goals.

While significant progress was made on a number of MDG targets, some challenges remain. The most critical include the still high child malnutrition rates; high maternal mortality; persistent and strong disparities in people's access to education and social services such as health care; access to safe drinking water and basic sanitation in rural areas; gender inequalities; and the high rate of loss of environmental resources (United Nations Development Programme, 2010). Mobilization of adequate financial resources to address these concerns continues to be a challenge. Therefore the efforts to achieve the GDP growth target and upgrade the living condition of Lao people, poverty eradication and integration into the region and the world is of the utmost importance for Lao PDR.

Lao PDR has made a number of achievements with respect to Mekong River Basin management, through its work with the MRC, including cooperation with the Basin Development Plan (BDP) on development of the BDS, the establishment of the Nam Ngum River Basin Committee (RBC), and the development of fisheries co-management plans and regulations. Significant progress has been made through cooperation with MRC Programmes on improving baseline monitoring data collection systems at the national and provincial level, development of guidelines, and improving capacity of the LNMC & line ministries. This has led to improvements in programmes for the sustainable development of the Mekong River and strengthened cooperation with riparian countries.

However, a number of issues related to the Mekong River basin development and management remain. Increased cooperation with member countries is needed to:

- Share socio-economic development plans and water related policies and strategies and their socio-economic potential; promote the exchange of experiences on water use for a variety of purposes (including hydropower and agriculture and poverty alleviation);
- Improve sharing of information related to hydropower development and other water related studies;

- Ensure policies and plans related to water resource use and management are institutionalized;
- Build capacity of line agencies, and provincial, district and village-level for improved management of the Mekong River;
- Strengthen mechanism for improving trans-boundary cooperation in overall management and development of water resources in the Mekong River Basin.

The MRC can help contribute significantly to the above, especially in terms of capacity building, filling critical data gaps, information exchange, and improving regional cooperation amongst all member countries.

The following sections describe the importance of the Mekong River's water resources to Lao PDR, the challenges associated with development of these resources, and how these will be addressed through the NIP.

## **2.1 IMPORTANCE OF MEKONG RIVER WATER RESOURCE MANAGEMENT IN LAO PDR**

Lao PDR is rich in water and other natural resources, which are considered the key to future economic development plans for the country. More than 90% of the total area of the country is located in the Mekong River basin, making Lao address Mekong River water management characteristically different than other Mekong riparian countries (Figure 1). Approximately 35% of total Mekong River runoff from the mainstream and tributaries is contributed from the Lao territory, but only 2.8% of the annual surface water resources are currently utilized for domestic use, irrigation, and industry (including hydropower). There is potential for increasing the use of this resource for economic development, such as expanding tourism, irrigation development and agriculture productivity to ensure food security (MAF 2010). Little reliable information is available on groundwater resources (MONRE 2011).

The water resources and topography of Lao PDR give it great potential for hydropower development, an important part of the GoL's national socio-economic development strategy. Water resources are also valuable for other economic sectors such as the irrigation, rural and urban water supply, fisheries, tourism, mining, industry, transportation (navigation) and others.

Development of multi-purpose hydropower is needed for the GoL to meet its goal of reducing poverty and ensuring food security through the expansion of irrigated agriculture. Better water management and use will also help with flood and drought management protection, and to assist the country to address issues related to climate change.

The potential for hydropower development in Lao PDR is significant. The Lao power sector is still in its early development, with approximately 78% of the population (as of 2011) having access to electricity. The hydropower sector has the potential to play a pivotal role in achieving the social and economic development objectives of the GoL by expanding the availability of low-cost, reliable electricity within the country and earning revenue from export sales to the region. The Government's power sector policy facilitates these objectives by

encouraging optimal use of the country's natural resources, promoting efficiency in power sector institutions and creating an environment conducive to responsible infrastructure investment, both public and private.

The power sector in Lao PDR serves three vital national priorities and the global fight against climate change: (1) it promotes economic and social advancement by providing a reliable and affordable domestic power supply; (2) it earns foreign exchange from electricity exports; and (3) it provides a better alternative to other forms of electricity generation. The power sector, and especially hydropower, has already become an important contributor to Lao PDR's economic growth and its national poverty eradication effort.

**Figure 1 Lao PDR's location in the Mekong River Basin.**



## 2.2 THE IWRM-BASED BASIN DEVELOPMENT STRATEGY (BDS)

Following the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin signed in 1995, the BDS was developed and approved by the MRC Member Countries in 2011, to be implemented with their cooperation. The BDS identified four key **development opportunities** and associated risks including:

- Considerable potential for further hydropower development in tributaries, particularly in Lao PDR and Cambodia, requiring harmonized social and environmental standards to ensure sustainability;
- Major potential to expand and intensify irrigated agriculture production to increase food security, including water use from the Mekong mainstream, and to combat Delta saline intrusion, subject to LMB coordination and cooperation with other Mekong countries in the sound operation of existing and planned storage dams, to ensure increased, regulated and reliable dry seasonal flows;
- Potential for some mainstream hydropower development, provided that uncertainties and risks are fully addressed and trans-boundary assessment and approval process followed; although potential benefits are high, so are potential costs, including trans-boundary impacts; and
- Potential for other priority water-related development (e.g., fisheries, navigation, flood and drought management, tourism, and environment and ecosystem management), as well as those beyond the water sector (e.g., other power generation options).

Furthermore, the Strategy identified the following seven (7) **strategic development priorities** including:

- Opportunities and risks of current development (to 2015) addressed, including coordination between LMB countries and cooperation with China achieved, to ensure: increased dry season river flows; agreement on the maintenance of flows on the LMB mainstream implemented; and, risks of committed projects managed;
- Irrigated agriculture for food security and poverty alleviation expanded and intensified;
- Environmental and social sustainability of hydropower development greatly enhanced;
- Essential knowledge acquired to address uncertainty and minimize risks of identified development opportunities, including knowledge on migration and adaptation of fish, trapping and transport of sediments and nutrients, changes in biodiversity, and social and livelihood impacts;
- Options for sharing development benefits and risks identified;
- Climate change adaptation strategy prepared and its implementation initiated; and
- Basin planning considerations integrated into national planning and regulatory systems.

In addition, the BDS identified five further **basin management priorities** including:

- Basin objectives and management strategies defined for water-related sectors, including fisheries, flood and drought management, wetland management and navigation;
- National-level basic water resources management processes strengthened, including water resources monitoring, water use licensing, and data and information management;
- Basin-level water resources and related management processes strengthened, including the implementation of MRC Procedures, State of Basin monitoring and reporting, project cycle monitoring, and enhanced stakeholder participation;
- Rigorous basin-wide environmental and social objectives and baseline indicators defined; and
- Water resources management capacity building programme implemented, linked to MRC's overall initiatives and complementary to national capacity building activities.

Following the adoption of the BDS by all MRC member countries in 2011, Lao PDR is responsible for developing and implementing the NIP to address the needs for incorporating IWRM principles in future development activities. More details on objectives, methodologies, organization structure and process of NIP development are described in the sections below.

## **2.3 CHALLENGES AND OPPORTUNITIES**

Given the extent of the development of the country with respect to natural wealth, it is imperative for Lao PDR to provide measures to protect this endowment to ensure the sustainability of the resource and the continued provision of ecosystem services to the population, especially those most heavily reliant to it.

Lao PDR faces a number of challenges related to water resource management. Investment and development has been steadily increasing in the water sector, particularly related to hydropower, but there is a need to strengthen institutions and technical capacity of staff to manage these developments.

At present, there is a Draft National Water Resources Policy (WREA 2010a) and Draft National Water Resources Strategy and Action Plan for the Years 2011 to 2015 (WREA 2010b). The Water Law is currently being revised. With the establishment of the Ministry of Natural Resources and Environment (MONRE) in 2011, there have been significant improvements in coordinating water, land, and forestry resource management. There is now a mechanism for coordinating and integrating water sector management and socio-economic development planning with river basin management (e.g., RBCs), for the effective implementation of the Water Resources Policy and Water Resources Strategy and Action Plan.

As water resource development increases across the country, there will be a number of challenges to be addressed, including ensuring adequate water quality in Vientiane Capital City and other populated areas. Development of irrigated agriculture and industry (including hydropower), will require careful management and monitoring of water use throughout the country. Dredging and extraction of sand, gravel and other mineral resources from the Mekong River and its tributaries has become an issue of increasing concern in recent years. Potential impacts of developments on water quantity and quality, human health and the natural environment are key concerns of the Government of Lao PDR, and significant investment in water protection measures will be required. Protection of critical ecosystems and species, including the Mekong Giant Catfish (*Pangasianodon gigas*) and the Irawaddy dolphin (*Orcaella brevirostris*), among others, need to be carefully considered in water resource development planning. Effective mitigation measures to minimize transboundary impacts must to be incorporated in all future water resource development plans, for all countries in the Mekong Basin. Finally, floods and drought can have serious negative impacts and may, in fact, increase under the impacts of climate change. These need to be carefully managed and monitored, and systems need to be in place to ensure there is sufficient technical and management capacity at all levels of government. This will become increasingly more crucial as national government agencies decentralize management authority to provincial, district and village level authorities.

Therefore, it is necessary to develop the roles and responsibilities, and raise the capacity, of GoL agencies which are involved in water resource management. Appropriate plans and planning tools are needed to guide both public and private sector investment activities and to balance economic development with protection of the environment, eradication of poverty and other social development objectives.

Government agencies, other organizations and the public need a greater awareness and understanding of the significance of water, priority areas in water management and the Government's direction and decisions. Mechanisms are needed to coordinate activities and to resolve disputes on water use and other matters to maintain equity and sustainability. Effective collaboration with private sector partners in the hydropower, mining, agriculture, forestry and other sectors will be essential to ensure that water resources are used efficiently and developed in a sustainable manner. Contributions of the private sector to river basin management are required to help ensure that key water users are actively involved in the process of protecting the country's water resources.

There is a general need for improved coordination of investments and developments between different ministries, and procedures for screening and evaluation of investment proposals requires strengthening. Furthermore, improved monitoring and management systems for assessing environmental impacts of proposed developments, and enforcement of environmental and water resource policies, laws and regulations are essential to future sustainable development. Capacity building, particularly at the provincial and district levels, is critical in this regard.

### **3.0 GOALS, OBJECTIVES AND FOCUS AREAS OF THE LAO NATIONAL INDICATIVE PLAN**

The four countries as members of MRC, including the Lao PDR, agreed in 2011 to develop and implement their NIPs to contribute to the implementation of BDS. Through the NIP, the Lao PDR has taken the opportunity to strengthen and fulfill its National Socio-Economic Development Plan and Strategy, and thereby to help achieve its overall socio-economic development goals and targets more safely and efficiently.

#### **3.1 GOALS**

The ultimate goals of the Lao NIP are as follows:

1. To promote effective water resources management (and natural resource management in general) to help Lao PDR meet its national socio-economic development goals by 2015; and
2. To contribute to the national objectives of sustainable development of water and natural resources in the Mekong River Basin and to ensure effective transboundary cooperation with Member Countries.

#### **3.2 OBJECTIVES**

The overall objectives of Lao NIP are:

1. To provide a mechanism for Lao PDR to address the main challenges and opportunities in water resource development and management by 2015;
2. Ensure transboundary issues are addressed in a collaborative manner with concerned Member Countries;
3. To promote development of the agriculture and fisheries sectors to ensure food security for the local population;
4. To ensure sustainable development of the hydropower sector;
5. To develop effective management and monitoring systems for overall water use and to protect water quality;
6. To improve navigation in the Mekong waterway throughout the country;
7. To apply the IWRM based approach into river basin management in the country by establishing RBCs in the Nam Ngum, Nam Theun-Kading, Xe Bang Fay-Xe Bang Hieng, Nam Ou, and Sekong Rivers by 2015;
8. To establish an effective Early Warning system and disaster risk management plan at the national, provincial, district and village level; and
9. To strengthen coordination, monitoring and evaluation systems for water resource management at the national, provincial, district and village level.



### **3.3 FOCUS AREAS**

The Lao NIP has been structured according to six (6) key focus areas, as follows:

1. Sustainable agriculture and fisheries development for food security and poverty reduction;
2. Energy and sustainable hydropower development;
3. Natural resource management, particularly water resources management;
4. Climate change adaptation and mitigation;
5. Data and information management, and filling knowledge gaps (research and development); and
6. Human resource development for natural resources management, and environmental monitoring and evaluation.

Each of these focus areas is directly linked to the main goals of the NSEDP (2011-2015), sector policies and strategies, as well as the Strategic Priorities and Actions listed in the BDS. Incorporating gender considerations and perspectives into Lao PDR's development will be crucial to ensure the effective achievement of environmental, social, and economic goals. Therefore, gender mainstreaming will be incorporated into all of the projects and activities. Training on the importance of gender equality will also be a key capacity building activity for all sectors. Specific projects will also be developed related to: (1) gender and climate change; and (2) gender mainstreaming in IWRM.

The following sub-sections provide background on the focus areas for the NIP.

#### **3.3.1 Sustainable Agriculture and Fisheries Development for Food Security and Poverty Reduction**

Sustainable agriculture and fisheries development for food security and poverty reduction are the key priorities areas that the Government of Lao PDR has identified in the Seventh Five Year National Socio-Economic Development Plan 2011-2015. In addition, according to the Agriculture Master Plan 2015, the vision of the GoL is to develop agriculture, forestry, natural resources management and rural development in a sustainable manner following the concept of sustainable development, including economic, social and ecological dimensions. The long-term development goals until 2020 are focused on:

- the increase in application of modernized lowland market-oriented agricultural production;
- including mechanisms for adaptation to climate change;
- smallholder farmers; and
- conservation of upland ecosystems to ensure food security and improve the livelihoods of rural communities.

The long-term framework mentioned above is a roadmap of the agriculture sector development as stated in the five year development plan (2011-2015). There are four specific goals, as follows:

1. Ensure food security by focusing on increasing: productivity of rice and diversified farming systems; adapting to climate change; building resilience to floods and droughts; food security; and improving agriculture infrastructure (e.g., mechanization, post-harvest handling, rural market access roads, marketing, etc.). Also forestry infrastructure should be improved by developing Agro-forestry Eco-parks, demarcation of protected areas, community-based watershed protection, etc.
2. Improving agricultural communities/pro-poor and green value chains by focusing on supporting the smallholder farmers and local Small and Medium Enterprises (SMEs) to engage in a network of public-private partnership systems in order to increase value-added products which are environmentally-friendly. Along with ensuring an appropriate regulatory framework, quality monitoring instruments are provided. The goal is to ensure that commercial agriculture development and processing will not impact the natural environment and human health. Introducing new techniques for irrigated agriculture is also required.
3. Sustainable production patterns, land allocation and rural development are the main programs to support rural development and poverty reduction, especially in remote areas with limited access to development. Activities to be considered include expansion of commercial cropping systems in suitable areas, establishment of producers groups and cooperatives, land use planning, etc.
4. Sustainable forest management to protect the forest cover, watersheds and to improve poor farmer's lives in rural areas. Laws and regulations related to forest management should be improved and strictly enforced (MAF 2010).

The foundation of sustainable agriculture development is to ensure food security in order to reduce poverty. Food security is therefore the key goal of the agriculture and fisheries sectors in terms of improving people's lives and ensuring sufficient nutrition for the growing population. Production basics are a critical part of enhancing food security; this includes: good soil management; improved seed and livestock breeds; organic fertilizers and efficient use of agriculture waste; elimination of the use of toxic chemicals; irrigated agriculture with more training in on-farm and in-field water use; community management of irrigation structure to intensify and increases yields; protection of wild fisheries and aquatic biodiversity; protection and strengthening of livelihoods for fisher-folk; and aquaculture development.

Since Lao PDR is a land-locked country, the Mekong River basin is critical to rural people's livelihoods. Industrial crops and aquaculture are gaining importance in terms of contribution to food security and economic growth. Water use management is a vital part of agriculture development. Current estimated irrigated area potential in the dry season is 300,000 hectares (ha) and

in the rainy season this increases to 500,000 ha (MPI 2011). The main source of capture fisheries are the rivers (the Mekong River and its tributaries), reservoirs, ponds, and wetlands. There is significant potential for aquaculture development throughout the country.

In order to achieve these irrigated area goals, water use plays an important role for increasing agricultural productivity, both to the mountainous and plain areas. Irrigation systems (both large scale and small scale are required) therefore must be enhanced and expanded in the most suitable areas. Small-scale irrigation, small hydropower projects and other water-related developments are critical infrastructure that can help to reduce poverty and enhance food security. Development of reservoir fisheries is an area which will become increasingly important in future. The development of the national fisheries law, improving fisheries management and aquaculture development are also important projects which will contribute towards GoL's goals for food security and poverty reduction.

Investment is needed for the implementation of the GoL's food security program, the agricultural commodity production support program, infrastructure development program, agriculture and forestry research programs, fisheries and aquaculture enhancement, and human resource development programs.

Poverty eradication and rural development are the key priorities of the Seventh NSEDP 2011-2015, which has a particular focus on the improvement of the poverty situation in the poorest households, villages, and Kumbans nationwide; this includes remote villages that have minimally benefitted from various programmes in the past. The approaches include enhancing people's livelihoods in rural areas by improving access to production inputs, markets, social services and finance. Economic development and improving the living standards of people are the key to achieving the MDGs by 2015, to increase grassroots level access to development and reduce the gap between rural and urban areas (MPI 2011).

### **3.3.2 Energy and Sustainable Hydropower Development**

The GoL has identified the hydropower sector as one of the strategic sectors to help drive economic growth and poverty reduction. Significant investment has been flowing into this sector in recent years. According to statistical data provided by MEM, from 1989 to 2008, investment in hydropower amounted to USD \$9,845.8 million, presenting approximately 59% of total foreign direct investment flow into Lao PDR during the same period.

Hydropower is seen as a cost-effective energy source in Lao which has a theoretical hydroelectric potential of about 26,500 MW excluding the mainstream Mekong. Of this, about 18,000 MW is technically exploitable, with 12,500 MW found in the major Mekong sub-basins and the remainder in minor Mekong or non-Mekong basins. Around 10% of the country's hydropower potential has been developed over the past 30 years, but under present government policy the rate of development will accelerate to supply electricity to the rapidly growing economies of the region.

Currently, there are 10 hydropower projects in operation; 10 projects are under construction and will be in operation in the near future; 16 projects are under investigation; and, 34 projects have MOUs. Therefore, over 80 hydropower projects are planned in Lao PDR in the near future. Sustainable management and protection of water resources is therefore critical to the future development of the Lao economy.

The GoL's plans and policies for the power sector involve rapid and simultaneous development on several fronts with a view to:

- Expanding the generation, transmission, distribution and off-grid development to increase the domestic electrification ratio for the country from the current level of about 78% (as of 2011) to a target of above 90% by 2020;
- Increasing government revenues from Independent Power Plant (IPP) export investments and honoring power export commitments with neighboring countries by promoting a producer development carried out by private sector; and
- Promoting 500kV grid development within the Greater Mekong Sub-region (GMS) to integrate the power systems of Lao PDR and its neighbours.

There are a number of regulations, laws and policies related to water and watershed protection; including the Water and Water Resource Management Law (1996), Forestry Law (1996), Environmental Protection Law (1999), Agriculture Law (1998), National Strategy on Environment (2004), Draft National Water Resources Policy (WREA 2010a) and Draft National Water Resources Strategy and Action Plan for the Years 2011 to 2015 (WREA 2010b). However, some of the existing water resource laws are not widely disseminated and enforced. New laws and regulations need to be developed and implemented to reflect the current socio-economic development priorities.

The strengthening of laws and policies related to water and water resources use is essential for future hydropower development in Lao PDR, in order for the country to secure social and economic benefits from investment in the sector. The strengthening of water and water resources protection will include: (1) revising and/or updating regulations and laws related to water and water resources protection; and (2) improving implementation and enforcement mechanisms of these laws and regulations.

Sustainable hydropower development in Lao PDR is a primary goal of the government for poverty reduction and food security, which is reflected in the adoption of the National Policy on the Environmental and Social Sustainability of the Hydropower Sector in 2006. In the past, utmost efforts were made by the government to develop comprehensive plans for large dams. Development projects, especially mining and hydropower, were required to undertake an Environment Impact Assessment and submit the report to the government. High technological standards are a priority for resource exploitation. Key environmental concerns included: potential impacts to surface and ground water quality and quantity, aquatic biodiversity (particularly fisheries resources), sediment transport, and most importantly, the protection of livelihoods of rural

people. However, the number and capacity of human resources to manage the water resources and related sectors are inadequate. There is an urgent need to build the technical skills of government staff related to hydropower management and planning, monitoring, and evaluation of the Environmental Impact Assessment (EIA) reports. Policy formulation to empower the staff of line ministries at different levels is a high priority.

To integrate water resources management and related sectors, such as hydropower development, into the NSEDP-7 there is a need to: (1) revise the institutional and legal frameworks related to hydropower development in Lao PDR; (2) to revise the coordinating mechanisms among agencies involved in hydropower management; (3) to assess the capacity of the agencies concerned; and (4) to assess the level of government staff responsible for carrying out ESIA of hydropower developments and their capacity to evaluate the assessment reports, including cumulative impacts.

Along with the development of hydropower, the Government of Lao PDR promotes the development of renewable energies as an important component of national economic development to ensure energy security, sustain socio-economic development, and enhance environmental and social sustainability. The Lao Government supports domestic and foreign entrepreneurs and investors to invest in energy projects at the village level. The development of renewable energy resources while responding to the needs of the local people contributes to the process of becoming self-sufficient in energy supply and for the development of energy exports. Renewable energy development involves participation of both the public and private sectors.

Policies on the promotion and development of renewable energies in Lao PDR focus on small power development for self-sufficiency and grid connection, biofuels production and marketing, and development of other clean energies in the country. As a target, the Government aims to increase the share of renewable energies to 30% of the total energy consumption by 2025. To reduce the importation of fossil fuels, the Government outlines a tentative vision to reach 10% of the total transport energy consumption from biofuels. This target will be regularly revisited and revised, feeding in results of special studies, lessons learned from on-going implementation, and international technological developments in the field (MEM 2011).

### **3.3.3 Natural Resources Management, Particularly Water Resources Management**

As stated in the MDG Progress Report (2008): *Lao PDR has a wealth of natural resources: forest cover that is substantially higher than in surrounding countries; the largest per-capita volume of (internal) renewable water resources in the region; and considerable mineral resources, such as gold, lignite and copper. The country is also one of the most biodiversity-rich in the region. ... These natural resources have catalyzed past economic growth throughout Lao PDR, playing a significant role in supporting rural livelihoods and contributing to the national economy. ... Timber and hydropower are Lao PDR's primary exports, accounting for two-thirds of total export value. However, in recent years timber export has been declining in terms of share because of a rapidly increasing share of mining products (Government of the Lao PDR; United Nations, 2008).*

Effective natural resource management is critical to long-term economic growth plans and sustainable development in Lao PDR. The natural resource sectors contribute to three quarters of the per capita GDP, over 90% of employment, almost 60% of exports and foreign exchange earnings, just under a third of government revenues and nearly half of foreign direct investment inflows (Emerton 2005). A number of agencies are involved in natural resources management, including MPI, MONRE, MAF, MEM, Ministry of Public Works and Transport (MPWT), the Ministry of Culture, Information and Tourism (MCIT), provinces, and several others. The recent establishment of MONRE has resulted in much clearer direction at the national level concerning overall management of natural resources in the country. However, improved coordination between MONRE and other GoL agencies is required to ensure adequate monitoring, management and protection of natural resources, including enforcement of environmental regulations. The institutional and legal framework related to natural resource management, and academic curricula and training materials, need to be reviewed and strengthened in order for Lao PDR to fully benefit from the development of water and other resources.

To meet the GoL's goals for economic growth and poverty reduction, the management of natural resources in Lao PDR needs to be improved and strengthened. A review of the strengths and weaknesses of current institutional and legal frameworks related to natural resources management, including newly-established river basin organizations, is therefore required.

Improved planning of natural resource developments is also needed, both at the national and provincial level to reduce potential overlaps and conflicts between different developments. Designing and implementing an overall natural resource allocation plan is important both for maximizing the development opportunities for economic purposes, as well as for ensuring adequate environmental protection.

Technical and management capacity building is required to help improve natural resource management practices, especially at the provincial and district levels. There are few qualified staff at many of the provincial natural resources and environment offices. Therefore, capacity building related to natural resources and environmental planning, monitoring and evaluation, protection, enforcement of regulations, and related issues is urgently required.

Effective coordination is required for water resources planning and management in order to ensure there are no overlaps or gaps in activities. Recognizing the need for a cross-sectoral and integrated river basin management approach that integrates policies and management at a range of levels from resource users and districts at the watershed and sub-watershed scales (including through provincial, national and even trans-boundary policies), in June 2010 the GoL passed Decree No. 293 which provided for the establishment and activities of River Basin Committees (RBCs) in Lao PDR.

Decree No. 293 mandates an intergovernmental and multi-sectoral body to promote good water resource management practices for the priority river basins and sub-basins of the country. The Nam Ngum River Basin Committee (RBC) was the first of several such organisations in the country, and their IWRM plan

will serve as a template for River Basin Committees elsewhere in Lao PDR (Boulapha and Philavong 2011).

The objectives of establishing RBCs includes systematic planning and implementation of water resources, reducing socio-economic and environmental impacts from water related disasters, managing water quality, and improving livelihoods.

Following the pilot of the Nam Ngum RBC, 4 more basins have been identified for RBC development in the period 2011-2015: Nam Theun-Kading, Xe Bang Fai/Xe Bang Hien, Nam Ou and Sekong. The RBCs will need to develop and integrate both "top-down" policy implementation and "bottom-up" participatory processes through sub-basin level multi-stakeholder dialogues (Clausen 2011). Adequate resourcing, accurate scientific information for effective planning, and good coordination and cooperation between government agencies at the different levels with the private sector and local communities, and land and water resource users, will be the key to the success of the RBCs and the sustainable management of watersheds and river basins in Lao PDR. Support to RBCs is in line with the implementation of the BDS (and the Regional Action Plan [RAP]).

In addition, MONRE will focus on strengthening water resources procedures and guidelines, and sub-basin management in general. MONRE has also been actively reviewing and updating their legal framework for natural resources management, such as the land law, mineral law, environmental protection law, water and water resources law, forestry law as well as the development of new laws, such as the meteorology and hydrology law, which have been scheduled for approval by the National Assembly. Furthermore, a significant national land policy and its master plan are also being developed.

### **3.3.4 Climate Change Adaptation and Mitigation**

Lao PDR has in recent years experienced the effects of climate change through an increase in floods and droughts (Department of Environment 2004; 2010). Extreme climatic events have caused great damage to the country and to people's livelihoods and assets. Lao PDR is considered one of the countries most vulnerable to the impacts of climate change due to its high dependency on climate-sensitive natural resources and the low adaptive capacity of its people (Department of Environment 2010). The GoL considers this problem as an urgent and important issue in need of appropriate solutions. The GoL has therefore employed its utmost efforts, and collaborated with domestic, regional and international organizations to develop activities that prevent damage from, and strengthen adaptation to, climate change.

The national socio-economic development plan emphasizes the need for sustainable economic growth with green growth and clean development. Ensuring the sustainable use and management of natural resources is a key task.

The GoL will continue to focus on finding practical solutions to the challenges posed by climate change both at the national and local levels, especially in formulating policies, approving suitable laws and regulations and making solid decisions to participate with the international community by ratifying the United

Nations Framework Convention on Climate Change (UNFCCC) in 1995 and Kyoto Protocol in 2003 (Government of the Lao PDR 2009). Thus, the GoL is fully committed in its obligations to promote actions that reduce climate change impacts and build resilience in key sectors including: agriculture; natural resource management (particularly water resources management); energy; as well as the management and protection of the environment. For example, as a strategy to reduce shifting cultivation, the GoL is promoting the management and sustainable use of forests, promoting the renewable use of energy, developing biogas as an alternative to fuel wood, and enhancing climate change awareness.

There is a growing need to improve strategies to counteract the disasters caused by climate change and strengthen the capacities of the National Disaster Management Committee to deal with the adverse impacts which are likely to occur in the future. It is necessary to strengthen the recently established Disaster Management and Climate Change Department (under MONRE), strengthen the National Early Warning System with assistance by the ADB through the GMS Regional Flood Risk Management Project and the WB through the National Component of the Mekong IWRM to reach the provincial, district and village levels in the most vulnerable areas, realize in-depth studies of the impacts of climate change especially concerning droughts and floods in Lao PDR, formulate a strategy on climate change, mobilize reforestation, and other necessary activities.

The National Adaptation Program of Action to Climate Change (NAPA) aims at focusing on four main sectors, namely, agriculture, forestry, water resources and public health. Thus, the climate change adaptation strategy and action plan should be in line with the National Socio-Economic Development Plan, the National Growth and Poverty Eradication strategy, National Environment Strategy, Agriculture Strategy, Policies on Irrigation Extension, Draft Strategy for Water Resources Management, and Natural Disaster Prevention.

There has been limited data collection, assessment, analysis and predictions of the potential impacts of climate change on the natural and man-made environment of Lao PDR. Information is lacking on baseline climate and hydro-meteorological conditions, projected changes over time, and how climate change will affect natural resources and people's livelihood in Lao PDR. Of particular concern are potential impacts to agriculture production and livelihoods of small-scale farmers, increased potential for floods and droughts, and how people may adapt to climate change

It is generally perceived that the dry season is becoming longer, that droughts are becoming more frequent and severe, and the incidence of unusual and extreme flood events is increasing. However, very little national data exist to substantiate these perceptions and even less information is available (at a national level) on how future climatic conditions may impact the environment and the economic growth of Lao PDR. What is clear is that additional pressures on the natural resource base of Lao PDR will have serious consequences for the 80% of the Lao population that live in rural areas. These people are primarily farmers and fishermen who rely on natural resources including agricultural land, aquatic resources, forests and wetlands for their livelihoods.



In order to adapt to climate change, there are a number of activities to consider, including enhancing the capacity of MONRE staff on Agro–Climate Modeling and Application, participating in REDD+ capacity building and readiness to reduce the rates of deforestation and forest degradation, in order to join international efforts in reducing greenhouse gas (GHG) emissions from the forestry sector. Renewable energy options are also being explored as a viable means of reducing GHG emissions. Land use planning and management is the key area that supports climate change mitigation and adaptation measures. In addition, there are some projects related to climate change adaptation by improving the resilience of the agriculture sector to climate change impacts, especially from floods and drought; upgrading early warning systems; risk management and community preparedness development planning; as well as improved water resources management strategies and wetlands protection for sensitive areas (i.e., environmental hotspots).

### **3.3.5 Data and Information Management, and Filling Knowledge Gaps (Research and Development)**

A number of information gaps need to be filled in order to provide the required baseline data for natural resource development in Lao PDR, and to meet the needs of the NSEDP and goal of the BDS. At present, information is lacking in a number of key areas, which is essential for planning hydropower, irrigation, forestry, mining, and other developments, and for environmental protection in general. Data need to be collected in standardized formats, following internationally-accepted protocols, in order to ensure their suitability for long-term monitoring of environmental impacts. The priority areas for filling knowledge gaps and research include:

*Economic, social and environmental impacts of hydropower:* Hydropower is the main driver of economic growth in Lao PDR, but additional research is required on the social and environmental impacts associated with the large number of proposed developments. Baseline data are needed in a number of areas, including: water quantity and quality, hydro-meteorology, fisheries resources, sediment transport, navigation and livelihoods of people living in proposed hydropower development areas. Additional studies and research are required to provide a better understanding of baseline environmental conditions, and potential impacts of hydropower developments on the natural environment and human population in Lao PDR. Cumulative impacts also need to be studied according to national laws and regulations.

*Inventory of environmental hotspots:* There are limited data on the current extent and importance of wetland ecosystems and other environmental hotspots (including areas of high biodiversity importance, critical habitats for protected species, and areas of key importance for maintaining livelihoods) in Lao PDR. Wetlands provide essential ecosystem services which are important for people's livelihoods, conservation of biodiversity, and protection from devastating effects of floods and droughts (potentially increasing as a result of climate change). Therefore, a national wetland inventory and identification of key environmental hotspots in Lao PDR is urgently needed. An inventory and assessment of other environmental hotspots is required, including detailed mapping and surveying of their location, extent and connection to other ecosystems in the Mekong Basin. This activity will be closely linked to the biodiversity studies described below.

***Biodiversity in the Mekong River mainstream and tributaries in Lao PDR:*** Biodiversity makes a major contribution to national economic activity and growth, and contributes to government revenues through protection of critical water resources, and tourism. Biodiversity forms an integral part of rural livelihoods and poverty alleviation and plays an important role in supporting urban and commercial production and consumption in key sectors of the economy. Biodiversity conservation supports a wide range of economic activities including watershed protection, climate change adaptation, sustainable agriculture practices, and fisheries management.

The Mekong River is one of the most biodiverse river systems on earth, but little is known about the number, life-histories and habitats of the approximately 1,200 fish species which are found in the river and its tributaries. There are also significant data gaps in our knowledge of other aquatic and terrestrial flora and fauna, as well as the socio-economic and livelihoods of people using the river's resources. Due to this lack of knowledge, assessing impacts and developing mitigation measures to protect aquatic biodiversity is challenging. Therefore, additional studies on aquatic and terrestrial biodiversity in the Mekong River basin and its tributaries are required.

***Inland Waterway Transport and navigation channel improvement:*** Inland Waterways are a traditional mode of transportation in Lao PDR. However, after the construction of Roads No.13 North and No.13 South, the Inland Waterway Transport's performance fell into decline. Key issues include: a lack of tools and equipment for loading and unloading at the ports; limited passage in the dry season due to shallow water levels, sand bars and rapids; difficulties in the rainy season due to high current flow, turbulence, and rapids along the rivers; and, the high cost of this form of transportation in comparison with road transportation. The development of international transport along the Upper Mekong shows the potential use of the river for promoting trade, tourism and cooperation between China, Lao PDR, Myanmar and Thailand. The Strategic Plan for Inland Waterway Transport (2011-2015) includes: the drafting of the Inland Water Transport Law; feasibility studies, surveys, design and construction of international river ports; improvements of existing ports; installation of navigation aids; modernizing statistical collection system; installing radio communication equipment in the vessels for navigation safety purposes; and, setting up a national navigation training centre. Inland Waterway Transport and navigation channel development and improvement programs included in this NIP will positively contribute to the implementation of the BDS and the RAP.

***Establishment of the Lao National Mekong Basin Information System:*** is also highly needed for providing sufficient statistical data and information for research and development work. Currently, there is no adequate system to provide sufficient specific statistical data and information related to water resources and environmental protection in Lao PDR, resulting in difficulties in accessing this information and data thereby constraining sustainable development. Therefore, the establishment of the information system is expected to improve the access to information and thus contribute to environmental protection and sustainable development.

### **3.3.6 Human Resource Development for Natural Resources Management, and Environmental Monitoring and Evaluation**

Human resource development is one of the breakthrough approaches to support the NSEDP as stated in the IX Party Congress Resolution. Capacity building is regarded as central to achieving the MDGs by 2015 and for Lao PDR to graduate from LDC status by 2020.

The NSEDP (2011-2015) places an emphasis on quality and sustainability of growth and building primary foundations for the industrialization and modernization of the country. The issue of environmental protection and monitoring are core pillars of development, along with social order. Although the GoL has always recognized the importance of environmental protection, monitoring and evaluation, as well as the use of natural resources in a sustainable manner, development of government staff with technical expertise and management skills remains insufficient to support the increasing development needs in the natural resources sector.

Even though the GoL's efforts in the past have achieved considerable success on many fronts, many challenges remain. Capacity building at all levels (national, provincial, district and village) is urgently needed, including improving skills in land use and watershed management, social/environmental impact assessment and mitigation, environmental monitoring and evaluation, and reviewing development opportunities. On-the-job training programs are especially needed at the local level to help promote learning and cooperation in livestock, fisheries, forestry and water management. Training is also needed in environmental baseline data collection, analysis, monitoring, evaluation, reporting, and establishment of networks and databases for river basin development, and fisheries and aquaculture development at the central and local levels.

Hydropower management, watershed protection and management, conservation of forests, natural resource management, and environmental assessments, monitoring and evaluation require enhanced technical capacity, as well as increased awareness of the importance of these issues for Lao PDR's social and economic development. Participatory planning and monitoring sector policy formulation are the core elements of future capacity building efforts in the country.

## 4.0 PROPOSED NIP PROJECTS

The NIP includes a list of projects to collectively address the development priorities of the GoL, and also the Strategic Priorities listed in the BDS. Key information about each project has been summarised in Table 1-3. Projects are classified under 3 categories: (a) priority projects; (b) new projects; and (c) on-going projects with secured funding.

All projects have been detailed in Project Identification Note (PINs) by the respective GoL Ministries as part of the project development process to secure funding and ensure effective implementation. The PINs may be used for monitoring and evaluation purposes, and will include the following information:

**Responsibilities:** Confirming who will be the lead entity overall responsible for the project and others who are expected to participate (and may be responsible for subsidiary products or deliverables).

**Dates:** The planned start and end of projects (subject to funding being available).

**Objectives and key performance indicators:** The overall goal (referenced to achieving all or part of one or more Strategic Priorities), the immediate objective(s) (referenced to one or more Strategic Actions) and the measurable indicators of success (i.e., the degree to which the objective has been successfully met).

**Key deliverables and milestones:** That which the project actually produces (e.g., reports, functioning monitoring systems, agreed guidelines, etc.) and the key dates associated with these and any interim products.

**Linkages to other Projects:** Identifies other projects and programmes that need to be coordinated with this project.

**Description of the project:** Key features of the project, specific tasks under the project and the associated implementation responsibilities, and a description of the institutional arrangements for the implementation of the project.

**Risks, mitigation and coordination:** Identification of the principal risks of not achieving the project's objective(s) and the means of mitigating these, and establish key coordination requirements, both externally with other project and programmes and internally with supporting entities for this project.

**Project funding:** Describes current sources and extent of funding available to undertake this project and highlights any additional funding required (Table 2).

**Work plan:** A summary bar chart of the main tasks within the project together with a cost estimate of additional funding requirements.

**Supporting documentation:** Lists reference material (e.g., MRC Programme documents, etc.), which provide detailed information about the project.

**Table 1 Proposed Projects under the National Indicative Plan for Lao PDR 2011 – 2015.**

Focus Areas	1. Sustainable agriculture and fisheries development for food security and poverty reduction	2. Energy and Sustainable Hydropower Development	3. Natural resource management, particularly water resources management	4. Climate change adaptation and mitigation	5. Data and information management, and filling knowledge gaps (research and development)	6. Human resource development for natural resources management, and environmental monitoring and evaluation
Priority Projects	<p>1.1. Improvements to irrigated agriculture along the Mekong River to increase crop and livestock productivity</p> <p>1.2. Develop national fisheries law, create awareness on the law and regulations, as well as develop a fisheries management strategy and plans for Lao PDR</p> <p>1.3. Improve fisheries management system in reservoirs and irrigation systems</p> <p>1.4. Promote the development of aquaculture in Lao PDR</p> <p>1.5. Improvement of fisheries statistics in Lao PDR</p>	<p>2.1. Strengthening the hydropower management system under the framework of the RBCs</p>	<p>3.1. Strengthening of water resource procedures and guidelines</p> <p>3.2. Strengthening of Nam Ou River basin management</p> <p>3.3. Strengthening the Management of the Conservation and Protection Forest Areas Programme</p>	<p>4.1. Greater Mekong Subregion: Flood and Drought Management and Mitigation Project</p>	<p>5.1. Establishment of Lao National Mekong Basin Information System</p> <p>5.2. Inventory of environmental hotspots in Lao PDR</p> <p>5.3. Study on the social, economic and environmental benefits of hydropower development in Lao PDR</p> <p>5.4. Installation of navigation aids and waterway distance posts along the Mekong River in the section from the Khone Falls, the Golden Triangle, and to Vientiane Capital of Lao PDR</p> <p>5.5. Search and rescue stations established and teams trained to take control and responsibility in the occurrence of an accident</p>	<p>6.1. Gender mainstreaming in IWRM and water resources planning</p> <p>6.2. Capacity building for Monitoring and Evaluation (M&amp;E) related to PINs implementation</p>

Focus Areas	1. Sustainable agriculture and fisheries development for food security and poverty reduction	2. Energy and Sustainable Hydropower Development	3. Natural resource management, particularly water resources management	4. Climate change adaptation and mitigation	5. Data and information management, and filling knowledge gaps (research and development)	6. Human resource development for natural resources management, and environmental monitoring and evaluation
New projects		2.2. Promotion of small to mid scale hydropower projects enhancing national energy security	3.4. Strengthening of Sekong River basin management 3.5. Developing Land Policy and Master Plan for Land Use Planning		5.6. Study on ecosystem services of wetlands and biodiversity 5.7. Case study on impacts of climate change on agriculture 5.8. Collaborative Research Project on the Establishment of the Sustainable and Independent Farm Household Economy in the Rural Areas of Indo-China (Lao PDR) 5.9. Hydro-meteorology network enhancement 5.10. Riverbank protection master plan 5.11. River dredging impact assessment 5.12. Navigation channel improvement along the Mekong River in the section from Houayxai to Luang Prabang of Lao PDR 5.13. Updating chart datum of UHA 1996 of the Lower Mekong	6.3. Strengthening NUOL's Curriculums on IWRM, Meteorology and Hydrology, Environmental Economics, and Engineering and Toxicology 6.4. Enhancing capacity building of MONRE and MAF staff on Agro-Climatic Modeling and Application 6.5. Strengthening capacities in forest Information Management

Focus Areas	1. Sustainable agriculture and fisheries development for food security and poverty reduction	2. Energy and Sustainable Hydropower Development	3. Natural resource management, particularly water resources management	4. Climate change adaptation and mitigation	5. Data and information management, and filling knowledge gaps (research and development)	6. Human resource development for natural resources management, and environmental monitoring and evaluation
On-going projects with secured funding	1.6. The Agro-Biodiversity Initiative (TABI) – Phase II: Sustainable management and use of Agrobiodiversity (ABD) in multi-functional landscapes in upland communities	2.3. Sub-basin hydropower development planning related to risk management during implementation 2.4. Water Resources Management and Least-cost Hydropower Development Planning 2.5. Hydropower planning and optimal integration and operation of renewable resources 2.6. Strengthening of governmental function on technical regulations in the power sector at the central and provincial levels 2.7. Hydropower Management and Implementation of the National Policy on Sustainable Hydropower (NPSH)	3.6. National Integrated Water Resources Management (IWRM) Support Program 3.7. Promote sustainable forest management by scaling up the Sustainable Forestry for Rural Development (SUFORD) Project, including REDD+ mechanisms	4.2. Reducing Emission from Deforestation and Forest Degradation (REDD+) to reduce the rates of deforestation and forest degradation, in order to join international efforts in reducing greenhouse gas (GHG) emissions from forestry sector in developing countries to mitigate climate change 4.3. Improving the Resilience of the Agriculture Sector to Climate Change Impacts 4.4. Forest Investment Program in Lao PDR: to reduce emissions from deforestation and forest degradation, while also helping the country to adapt to climate change impacts	5.14. Set up the GPS instrumentation for navigation safety at hot spots and the installation of alert system for navigation during lowest water level (in dry season) along the Mekong River from Houayxai to Luang Prabang of Lao PDR	

**Table 2 Lao NIP Projects, with Estimated Budget, Secured Funding and Budget Gaps.**

<b>Focus Area</b>	<b>Number of Projects</b>	<b>Estimated Budget</b>	<b>Secured Funding</b>	<b>Budget Gap</b>
1. Sustainable agriculture and fisheries development for food security and poverty reduction	6	\$10,102,000	1 (\$6,152,000)	\$3,950,000
2. Energy and Sustainable Hydropower Development	7	\$21,330,000	5 (\$5,830,000)	\$15,500,000
3. Natural resource management, particularly water resources management	7	\$140,650,000	3 (\$58,800,000)	\$81,850,000
4. Climate change adaptation and mitigation	4	\$72,090,000	3 (\$71,500,000)	\$590,000
5. Data and information management, and filling knowledge gaps (research and development)	14	\$116,980,000	1 (\$1,580,000)	\$115,400,000
6. Human resource development for natural resources management, and environmental monitoring and evaluation	5	\$8,000,000	0	\$8,000,000
<b>Total</b>	<b>43</b>	<b>\$369,152,000</b>	<b>\$143,862,000</b>	<b>\$225,290,000</b>



**Table 3 Linkages between Lao Policies and Legislation (Driving Forces), BDS Strategic Priorities, Lao NIP Focus Areas and Proposed Projects under the Lao NIP.**

Lao Policy/Legislation (Driving Force)	BDS Strategic Priority	Focus Area for NIP	Related Projects Proposed Under the NIP
NSEDP (2011); National Poverty Eradication Strategy	422000 - Expand and intensify irrigated agriculture for food security and poverty alleviation	Sustainable agriculture and fisheries development for food security and poverty reduction	<ol style="list-style-type: none"> <li>1.1. Improvements to irrigated agriculture along the Mekong River to increase crop and livestock productivity</li> <li>1.2. Develop national fisheries law, create awareness on the law and regulations, as well as develop a fisheries management strategy and plans for Lao PDR</li> <li>1.3. Improve fisheries management system in reservoirs and irrigation systems</li> <li>1.4. Promote the development of aquaculture in Lao PDR</li> <li>1.5. Improvement of fisheries statistics in Lao PDR</li> <li>1.6. The Agro-Biodiversity Initiative (TABI) – Phase II: Sustainable management and use of Agrobiodiversity (ABD) in multi-functional landscapes in upland communities</li> </ol>
NSEDP (2011); Draft National Water Resource Policy Draft National Water Resources Strategy and Action Plan for the Years 2011-2015	<p>421000 - Address opportunities &amp; consequences of on-going developments incl. development in Upper Mekong Basin</p> <p>423000 - Improve sustainability of hydropower development:</p> <p><i>423100 - (a) Move towards sustainable development of hydropower on tributaries</i></p> <p><i>423200 - (b) Address the uncertainty and risk of possible mainstream dams</i></p>	Energy and Sustainable Hydropower Development	<ol style="list-style-type: none"> <li>2.1. Strengthening the hydropower management system under the framework of the RBCs</li> <li>2.2. Promotion of small to mid scale hydropower projects enhancing national energy security</li> <li>2.3. Sub-basin hydropower development planning related to risk management during implementation</li> <li>2.4. Water Resources Management and Least-cost Hydropower Development Planning</li> <li>2.5. Hydropower planning and optimal integration and operation of renewable resources</li> <li>2.6. Strengthening of governmental function on technical regulations in the power sector at the central and provincial levels</li> <li>2.7. Hydropower Management and Implementation of the National Policy on Sustainable Hydropower (NPSH)</li> </ol>

**Table 3 (Cont'd.)**

<b>Lao Policy/Legislation (Driving Force)</b>	<b>BDS Strategic Priority</b>	<b>Focus Area for NIP</b>	<b>Related Projects Proposed Under the NIP</b>
<p>Draft National Water Resource Policy Draft National Water Resources Strategy and Action Plan for the Years 2011-2015</p>	<p>427000 - Integration of basin development planning considerations into national systems 431000 - Establish basin visions and management strategies for water-related sectors 432000 - Strengthen national level water resources management processes 424000 - Acquisition of essential knowledge to address uncertainties and minimize risk</p>	<p>Natural resource management, particularly water resources management</p>	<p>3.1. Strengthening of water resource procedures and guidelines 3.2. Strengthening of Nam Ou River basin management 3.3. Strengthening the Management of the Conservation and Protection Forest Areas Programme 3.4. Strengthening of Sekong River basin management 3.5. Developing Land Policy and Master Plan for Land Use Planning 3.6. National Integrated Water Resources Management (IWRM) Support Program 3.7. Promote sustainable forest management by scaling up the Sustainable Forestry for Rural Development (SUFORD) Project, including REDD+ mechanisms</p>
<p>National Climate Change Strategy</p>	<p>426000 - Climate change adaptation</p>	<p>Climate change adaptation and mitigation</p>	<p>4.1. Greater Mekong Subregion: Flood and Drought Management and Mitigation Project – Lao People’s Democratic Republic 4.2. Reducing Emission from Deforestation and Forest Degradation (REDD+) to reduce the rates of deforestation and forest degradation, in order to join international efforts in reducing greenhouse gas (GHG) emissions from forestry sector in developing countries to mitigate climate change 4.3. Improving the Resilience of the Agriculture Sector to Climate Change Impacts 4.4. Forest Investment Program in Lao PDR: to reduce emissions from deforestation and forest degradation, while also helping the country to adapt to climate change impacts</p>

**Table 3 (Cont'd.)**

Lao Policy/Legislation (Driving Force)	BDS Strategic Priority	Focus Area for NIP	Related Projects Proposed Under the NIP
<p>Draft National Water Resource Policy Draft National Water Resources Strategy and Action Plan for the Years 2011-2015</p>	<p>424000 - Acquisition of essential knowledge and minimize risk 440000 - Studies and guidelines</p>	<p>Data and information management, and filling knowledge gaps (research and development)</p>	<p>5.1. Establishment of Lao National Mekong Basin Information System 5.2. Inventory of environmental hotspots in Lao PDR 5.3. Study on the economic, social, and environmental benefits of hydropower development in Lao PDR 5.4. Installation of navigation aids and waterway distance posts along the Mekong River in the section from the Khone Falls, the Golden Triangle, and to Vientiane Capital of Lao PDR 5.5. Search and rescue stations established teams trained to take control and responsibility in the occurrence of an accident 5.6. Study on ecosystem services of wetlands and biodiversity 5.7. Case study on impacts of climate change on agriculture 5.8. Collaborative Research Project on the Establishment of the Sustainable and Independent Farm Household Economy in the Rural Areas of Indo-China (Lao PDR) 5.9. Hydro-meteorology network enhancement 5.10. Riverbank protection master plan 5.11. River dredging impact assessment 5.12. Navigation channel improvement along the Mekong River in the section from Houayxai to Luang Prabang of Lao PDR 5.13. Updating chart datum of UHA 1996 of the Lower Mekong 5.14. Set up the GPS instrument for navigation safety at hot spots and the installation of alert system for navigation during lowest water level (in dry season) along the Mekong River from Houayxai to Luang Prabang of Lao PDR</p>
<p>Draft National Water Resources Strategy and Action Plan for the Years 2011-2015</p>	<p>435000 - Implement a targeted IWRM capacity building programme</p>	<p>Human resource development for natural resources management, and environmental monitoring and evaluation</p>	<p>6.1. Gender mainstreaming in IWRM and water resources planning 6.2. Capacity building for Monitoring and Evaluation (M&amp;E) related to PINs implementation 6.3. Strengthening NUOL's Curriculums on IWRM, Meteorology and Hydrology, Environmental Economics, and Engineering and Toxicology 6.4. Enhancing capacity building of MONRE staff on Agro-Climatic Modeling and Application 6.5. Strengthening capacities in forest Information Management</p>

## 5.0 LAO NIP IMPLEMENTATION AND MONITORING

### 5.1 NIP IMPLEMENTATION MECHANISM

Implementation of the NIP will be conducted by GoL's concerned organizations/agencies using existing national budget whenever possible. NIP development projects will be implemented through existing sectoral and national socio-economic development strategies and plans. Technical and financial assistance from foreign donors and international organizations will be required to fund additional projects which have been identified under the NIP.

To implement the NIP efficiently, a number of institutions/agencies will be designated to lead activities, and a committee will be established for coordinating, monitoring, and evaluating NIP activities, as described in the next section.

### 5.2 INSTITUTIONAL FRAMEWORK

For effective implementation of the NIP, the institutional arrangements below are required.

*The LNMC:* will be the key institutional body responsible for directing the NIP implementation. LNMCS will serve as the Secretariat and will be responsible for the following tasks:

- Coordinate the Lao National Indicative Plan Implementation Committee (NIPIC) and encourage each member of the NIPIC to integrate NIP projects into sectoral and national development plans as appropriate. LNMCS will also encourage the NIPIC members to monitor and report on progress of implementation of NIP projects in their sector or province;
- Monitor, assess and report progress of implementation of the NIP regularly to the LNMC Chairman and to MRC, as well as to each member of NIPIC;
- Promote the NIP as much as possible in a variety of ways, such as by producing materials for disseminating the NIP such as brochures, policy briefing papers, organizing NIP dissemination workshops, etc.;
- Seek funding for NIP project implementation through many possible ways, including contracting and communicating with Mekong River Commission Secretariat (MRCS) and other funding agencies such as ADB, WB, UNDP, UNEF, the Ministry of Planning and Investment (MPI), the Ministry of Finance, etc.;
- Organize workshops and meetings related to NIP implementation.

*The NIP Implementation Committee (NIPIC):* NIPIC will be composed of representatives from concerned agencies including MONRE, MPI, MAF, MEM and others, as well as representatives from provincial offices for natural resources and environment, provincial offices for planning and investment (OPI), provincial Offices for Agriculture and Forestry (OAF) and provincial Offices for Energy and Mines (OEM). The members of NIPIC should be assigned

by the LNMC Chairman based on agreement from ministries and agencies concerned. Each member of the NIPIC should be responsible for pushing ahead with the implementation of the NIP as much as possible; including integrating NIP projects into sectoral and national socio-economic development strategies and plans. Each member of the NIPIC is also responsible to monitoring and reporting the progress of NIP project implementation in his/her sector or province to the NIP Secretariat/LNMCS as well as in annual meetings regarding NIP implementation.

### ***Coordinating/Working Mechanism***

**The annual NIP implementation review meeting** will be an important event supporting NIP implementation. Every year, the meeting should be organized before the last quarter of the fiscal year (from July to September), in which the Government of Lao PDR reviews implementation of its yearly socio-economic development plans and draft the one for the following year. Therefore, the last quarter of the fiscal year is a very important time for the annual review, to follow the progress and to identify the constraints, additional needs for action, as well as to discuss how to proceed with NIP implementation in each sector and province.

All members of the NIPIC, including representatives of government planning agencies such as MPI, provincial offices for planning and investment (PDPI), planning and investment units of each ministry, representatives from donors/development partners and other stakeholders should be invited to the meeting.

## **5.3 MONITORING AND EVALUATION**

The members of NIPIC will be required to report on progress of NIP implementation in their sectors or provinces/districts regularly twice per year. Based on the reports submitted from each member of the NIPIC, LNMCS will compile a progress report for submission to the LNMC and to MRC.

Once per year, LNMCS as well as members of the NIPIC will be required to complete and present their progress reports on NIP implementation progress to date at the annual NIP implementation review meeting. NIP implementation plans and guidelines for the next year will also be presented at the annual meeting.

If needed, LNMCS will arrange for external audits of NIP implementation activities. Special meetings would be organized and audit reports provided to the LNMC and MRC, if required.

## **5.4 RISK MANAGEMENT AND MITIGATION**

Identification of potential risks associated with implementation of the NIP is important, so that measures may be put in place at the earliest possible stages to mitigate any problem issues. The levels of risk are assessed in terms of likelihood and potential impact.

**Table 4 Potential risks associated with NIP implementation, with likelihood of occurrence and mitigation measures proposed to address the risk.**

<b>Risk</b>	<b>Likelihood (Low, Medium, High)</b>	<b>Comments/ Mitigation Measure</b>
Institutional: (a) legislation or policies change; (b) support for NIP is not realized by all levels of GoL (national, provincial and district).	Low	Policies and legislation are in place, or currently are being updated. Support for NIP implementation is strong from all levels of GoL.
Capacity: technical and management capacity to implement the NIP is not developed.	Medium	Capacity building and training will be a key focus of NIP activities, and significant resources will be directed to this component
Technical: Projects and programs under the NIP cannot be completed due to technical challenges. (Ask Tom??)	Medium	Realistic project outcomes and outputs will be developed, with realistic targets to be achieved will be clearly stated. Technical support from GoL agencies, other member countries and external advisors will be used as needed.
Financial: Support for NIP from national budget and donor agencies is not fully realized.	High	GoL has committed national resources for the development and implementation of the NIP. Support for other activities will require donor and MRC support.
Monitoring and Evaluation system for NIP is not implemented	Low	NIPIC will be established to assist with M&E for NIP. Clear indicators will be developed for tracking progress made on NIP projects and programs.

## 6.0 REFERENCES

- Boulapha, C. and O. Philavong. 2011. Department of Water Resources, Ministry of Natural Resources and Environment. In: Water planning in the transition to a green economy. Presented at the UN-Water conference “Water and the Green Economy in Practice: Towards Rio+20” on 3-5 October 2011 in Zaragoza, Spain.
- Clausen, T. 2011. Scoping and planning of Integrated Water Resources Management (IWRM) and River Basin Management (RBM) component in Lao PDR and Thailand for the Mekong Water Dialogues, August 2011. Gland, Switzerland: IUCN.
- Department of Environment. 2004. Lao PDR National Adaptation Program for Action on Climate Change (NAPA). Department of Environment (DOE), Vientiane.
- Department of Environment. 2010. Strategy on Climate Change of the Lao PDR. March, 2010. Department of Environment (DOE). Watershed Resource and Environment Administration (WREA), Lao PDR.
- Emerton, L. 2005. Making the Economic Links Between Biodiversity and Poverty Reduction: The Case of Lao PDR, IUCN – The World Conservation Union, Ecosystems and Livelihoods Group Asia, Colombo.
- Government of the Lao PDR. 2009. National Growth and Poverty Eradication Strategy (NGPES). Government of Lao PDR, Vientiane, Lao PDR.
- Government of the Lao PDR; United Nations 2008. Millennium Development Goals: Progress Report Lao PDR 2008.
- Ministry of Agriculture and Forestry (MAF). 2010. Agricultural Master Plan 2011-2015. Vientiane, Lao PDR.
- Ministry of Energy and Mines (MEM). 2011. Renewable Energy Development Strategy in Lao PDR, October 2011.
- Ministry of Industry and Commerce (MOIC). 2008. Lao Cleaner Production Programme Annual Report 2008.
- Ministry of Natural Resources and Environment (MONRE). 2011. Natural Resources and Environment Sector Plan 2011 - 2015. Lao People’s Democratic Republic, Ministry of Natural Resources and Environment. September, 2011.
- Mekong River Commission (MRC). 2011a. Integrated Water Resources Management-based Basin Development Strategy for the Lower Mekong Basin. Mekong River Commission Secretariat, Vientiane, Lao PDR.
- MRC. 2011b. Guidelines for Action Planning to Implement the IWRM-based Basin Development Strategy. Basin Development Program, Mekong River Commission Secretariat, Vientiane, Lao PDR.

Ministry of Planning and Investment (MPI). 2011. The Seventh Five-Year National Socio Economic Development Plan (2011-2015). Lao People's Democratic Republic, Ministry of Planning and Investment. October 7, 2011.

United Nations Development Programme. 2010. Accelerating Progress Towards the MDGs: Innovative Options for Reaching the Unreached.

Water Resources and Environment Administration (WREA). 2010a. Draft National Water Resource Policy. Lao People's Democratic Republic, Water Resources and Environment Administration. August 2010.

WREA. 2010b. Draft National Water Resources Strategy and Action Plan for the Years 2011 to 2015. Lao People's Democratic Republic, Water Resources and Environment Administration. August 2010.



---

## **APPENDICES**

---

---

**Appendix A1**

**Lao NIP Development  
Organization & Methodology**

---

## **A1.1 LAO NIP DEVELOPMENT ORGANIZATION**

The Lao National Mekong Committee (LNMC) is the focal point for coordination and facilitation of the NIP development, approval and monitoring, in cooperation with the MRC. To develop the NIP, the LNMC assigned the following committee in cooperation with the MRC:

*National Adviser:* was assigned by the MRC in cooperation with LNMC/MONRE. The national adviser acts as supervisor for the NIP development process in order to make sure that the NIP will meet the requirements of the BDS and the Lao national socio-economic development plans and strategy. The national adviser was responsible for the NIP development project design and implementation of the work plan for NIP development as well as providing consultation for the NIP development team including MONRE, the technical working group, the core-technical working group and the international consultant.

*Technical working group:* was assigned by LNMC and was composed of representatives from the concerned agencies including representatives from the Lao National Mekong Committee (LNMC), the Ministry of Natural Resources and Environment (MONRE), the Ministry of Energy and Mine (MEM), the Ministry of Agriculture and Forestry (MAF), the Ministry of Planning and Investment (MPI), Ministry of Public Works and Transport (MPWT) and others. The technical working group had 10 members in accordance with the Agreement Number 039/MONRE.LNMC, dated on June 8, 2012. The technical working group was responsible mainly for drafting the NIP and presenting it to the LNMC for approval. The technical working group was composed of the following two main parts:

*Core-Technical Working Group:* was composed of six members/experts; of whom two members are from the Ministry of Planning and Investment (MPI), two from MONRE, one member MAF and one from MEM. The Core-Technical Working Group was responsible for: (1) collecting, reviewing and analyzing related policies, regulations, laws, strategies, plans, etc.; (2) meeting and discussing with representatives from the concerned agencies; (3) drafting the NIP; (4) presenting the draft in each consultation meeting; and (4) revising the draft of NIP in accordance with comments and suggestions made in technical workshops as well as in national consultation meetings.

*Non-core Technical Working Group:* included additional members who were responsible for providing data and information to core-technical working group members for drafting the NIP as well as for review of the drafts, participating in technical consultation workshops, and providing comments and suggestions for improvement of the NIP to the core technical working group.

*Secretariat and project management team:* LNMCS was the central coordinator in the NIP development process. LNMCS was responsible for the management and administration of the project, including organizing consultation workshops, reporting results from the consultation meetings to the LNMC preparing administrative documents for the project, etc.

*International Consultant:* was assigned by the MRC in agreement with the LNMC. The international consultant was responsible for assisting and supporting the Core-Technical Working Group to draft and edit the NIP.

## **A1.2 NIP DEVELOPMENT METHODOLOGIES AND ACTIVITIES**

Key steps in preparing the NIP were as follows:

*Identification of focus areas:* The first step in the NIP development process was the prioritization of IWRM-based focus areas which meet the overall socio-economic development plans for Lao PDR. Key focus areas of the NIP must contribute to implementation of the BDS and, at the same time, to be complimentary to the implementation of the Lao NSEDP and other GoL sector plans.

*Developing and prioritizing Project Identification Notes (PINs):* The NIP includes development and prioritization of a number of projects and programs (PINs) based on identified focus areas. This includes ongoing project activities being conducted by GoL Ministries at the national and provincial level, many of which have received national and/or donor funding, and also new activities which are proposed for implementation (funding sources remain to be determined). The NIP includes a general description of each project; more detailed project planning and design will be required prior to implementation. This will be conducted on a project-by-project basis during implementation of NIP.

*Developing mechanisms for implementing the NIP:* The NIP will include detailed monitoring and reporting mechanisms to ensure effective implementation of all projects and programs.

Specific activities that the NIP development team undertook included the following:

*Literature review:* Review of all relevant policies, laws, sector plans and other related background information relevant to the NIP (e.g., IWRM-based BDS)

*Key informant interviews:* Representatives of MONRE, MAF, MPI, MEM, MPWT, the Ministry of Labor and Social Welfare (MLSW), the National Agriculture and Forestry Research Institute (NAFRI), and other GoL agencies were interviewed to obtain their sector plans, projects, programs and ongoing activities being undertaken related to IWRM in Lao PDR. Other agencies important to the NIP development process were identified during the technical and consultation workshops.

*Workshops and meetings:* Numerous workshops and consultation meetings were held to improve understanding of GoL agencies, including provincial authorities, on the NIP formulation process, to discuss and provide perspectives on key focus areas, programs and projects, and to solicit comments and feedback on the various drafts before finalizing the NIP. These workshops and meetings included an orientation workshop, a national technical workshop, numerous brainstorming meetings, and a national consultation meeting. The national consultation meeting included high-ranking officers from the provinces and the national line agencies concerned, and provided an opportunity to discuss and provide comments on the Draft Final NIP before finalizing and passing the document to the Lao National Mekong Committee.

---

**Appendix A2**

**Proposed Projects in the NIP**

---

## A2.0 PROPOSED PROJECTS IN NIP AND LAs RESPONSIBLE FOR IMPLEMENTATION

No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation (funding is in USD)
<b>Focus Area 1. Sustainable agriculture and fisheries development for food security and poverty reduction</b>				
<b>Priority projects</b>				
1.1.	Improvements to irrigated agriculture along the Mekong River to increase crop and livestock productivity	To increase crop and livestock productivity and overall production at the 7 focus sites along the Mekong River, thereby increasing incomes and improving food security for small farm households	<ul style="list-style-type: none"> <li>a) Baseline data are reviewed and updated</li> <li>b) A comprehensive implementation plan is developed for Irrigation systems expansion and upgrading of reservoirs, weirs, pumping stations and canal systems</li> </ul>	<ul style="list-style-type: none"> <li>▪ Department of Irrigation (DOI) &amp; Department of Agriculture Extension and Cooperatives of Ministry of Agriculture and Forestry (MAF), and the provincial offices and districts concerned</li> <li>▪ Total budget for Implementation Plan: \$500,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$500,000</li> </ul>
1.2.	Develop national fisheries law, create awareness on the law and regulations, as well as develop a fisheries management strategy and plans for Lao PDR	<ul style="list-style-type: none"> <li>1) To elaborate fisheries law into legal enforcement tools (by-laws) such as decrees, instructions and regulations</li> <li>2) To create awareness on the fisheries law and regulations to local authorities and local people</li> <li>3) To develop and/or improve the national strategy for the management and development of the fisheries and aquaculture sub-sectors</li> </ul>	<ul style="list-style-type: none"> <li>a) Consultation meetings with key stakeholders and technical working group organized</li> <li>b) Draft of by-law documents developed and submitted to MAF and GoL for approval</li> <li>c) Awareness raising campaigns developed and implemented</li> <li>d) Enforcement of the law</li> <li>e) A review of previous national strategy for fisheries management and development is conducted</li> <li>f) Existing fisheries information is reviewed, knowledge of tributary and reservoir fisheries is improved</li> <li>g) Development of procedures and technical guidelines for fisheries management is completed</li> <li>h) Strategy and plans approved</li> <li>i) Monitoring and evaluation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Department of Livestock and Fisheries (DLF) of MAF; Provincial Agriculture and Forestry Offices (PAFO); Ministry of Justice</li> <li>▪ Total budget: \$450,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$450,000</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation (funding is in USD)
1.3.	Improve fisheries management system in reservoirs and irrigation systems	To develop strategic plans for fisheries development and management in hydropower and irrigation reservoirs in Lao PDR.	<ul style="list-style-type: none"> <li>a) A review of baseline information on fisheries management and development in hydropower and irrigation reservoirs in Lao PDR is conducted</li> <li>b) Models for fisheries co-management and aquaculture development in hydropower and irrigation reservoirs are developed</li> <li>c) Fisheries co-management and aquaculture development plans for the target reservoirs that have been selected by the project are developed</li> </ul>	<ul style="list-style-type: none"> <li>▪ DLF, PAFO, RBCs, provincial offices and districts concerned</li> <li>▪ Total budget: \$500,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$500,000</li> </ul>
1.4.	Promote the development of aquaculture in Lao PDR	<ul style="list-style-type: none"> <li>1) To develop small-scale culture-based fisheries in selected water bodies (community reservoirs or ponds)</li> <li>2) To improve Government fish hatchery stations</li> </ul>	<ul style="list-style-type: none"> <li>a) Lessons learned from Phase 1 developed and applied to new areas</li> <li>b) Expand pilot projects to selected provinces for the northern, central and southern regions</li> <li>c) Target reservoirs and community ponds are surveyed and selected for development</li> <li>d) Participatory Rural Appraisal (PRA) in selected communities conducted</li> <li>e) Technical training for local staff and communities conducted</li> <li>f) Pilot projects in selected communities implemented</li> <li>g) Monitoring and evaluation</li> </ul>	<ul style="list-style-type: none"> <li>▪ DLF; National Aquaculture Development Center (NADC); LARReC; PAFO; provincial fish stations</li> <li>▪ Total budget: \$1.5 million</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$1.5 million</li> </ul>
1.5.	Improvement of fisheries statistics in Lao PDR	To improve data collection system for gathering baseline information on the status and trends of fisheries and aquaculture in Lao PDR	<ul style="list-style-type: none"> <li>a) Reviews of national censuses and surveys on fisheries and aquaculture are conducted</li> <li>b) National consultation workshop with key stakeholders on the improvement of fisheries statistics organized</li> <li>c) Improved data collection system for inland capture fisheries and aquaculture</li> <li>d) Socio-economic and gender considerations integrated</li> <li>e) Status of exotic species determined</li> </ul>	<ul style="list-style-type: none"> <li>▪ DLF; PAFO</li> <li>▪ Total budget: \$1 million</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$1 million</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation (funding is in USD)
			f) Field surveys are designed and implemented g) Network and database for information on fisheries and aquaculture at the central and local levels is set up and maintained h) Training for central and local level staff (DLF, PAFO, DAFO) is conducted i) Monitoring and evaluation	
<b>On-going projects with secured funding</b>				
1.6.	The Agro-Biodiversity Initiative (TABI) – Phase II: Sustainable management and use of Agrobiodiversity (ABD) in multi-functional landscapes in upland communities	To conserve, enhance and manage the biological diversity found in farming landscapes in order to improve the livelihoods of upland farm families in northern Lao PDR	a) Forests and ecosystems services, including watersheds, are protected b) Options and systems for ABD-based livelihoods are designed, demonstrated and applied by upland farming communities and other stakeholders c) Livelihood, ABD and Agro-ecosystem baselines and surveys are completed, secondary data accessed and selected studies undertaken d) Central GoL agencies incorporate ABD into strategies, action plans and institution arrangements	<ul style="list-style-type: none"> <li>▪ MAF; Ramboll Natura AB, and Swiss Agency for Development and Cooperation (SDC)</li> <li>▪ Period 1 July 2012 – 30 June 2016</li> <li>▪ Ongoing and funded already</li> <li>▪ Total budget: \$6,152,000</li> <li>▪ Secured funding: \$6,152,000</li> <li>▪ Budget gap: \$0</li> </ul>



No	Project	Suggested Objectives	Outputs	LAs Responsible for implementation
<b>Focus Area 2. Energy and Sustainable Hydropower Development</b>				
<b>Priority projects</b>				
2.1.	Strengthening the hydropower management system under the framework of the RBCs	<ol style="list-style-type: none"> <li>1) To improve capacity for effective governance and coordination with RBC</li> <li>2) To improve information exchange and data sharing between hydropower operators and RBC</li> <li>3) To provide mutual benefits through efficient and effective water resource management, i.e. on the principles of economic viability, social equity and biodiversity conservation</li> <li>4) To maintain and enhance community access and control over their natural resource base</li> <li>5) To support development and operation of a knowledge and information centre to disseminate experiences and lessons learned regarding monitoring and evaluation by RBC</li> <li>6) To strengthen the accountability of the hydropower operator in their areas of responsibility</li> </ol>	<ol style="list-style-type: none"> <li>a) Forum for major stakeholders is established</li> <li>b) Improved coordination mechanism among agencies related to hydropower management (See website for additional info)</li> </ol>	<ul style="list-style-type: none"> <li>▪ MONRE, Department of Water Resources; MEM;, provincial offices and districts</li> <li>▪ Total budget: \$500,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$500,000</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for implementation
<b>New projects</b>				
2.2.	Promotion of small to mid scale hydropower projects enhancing national energy security	1) Develop hydropower plants with less social-environmental impact to secure stable and sustainable domestic power supply as well as national energy security (small to midsized HPPs) 2) Development of hydropower projects less than 15MW will be delegated to the provincial departments (PDEM)	a) Priority hydropower projects reviewed (from PDP), socio-environmental impact reviewed b) Promotion of PPP scheme studied, feasibility studies conducted on necessity basis c) Financing arrangement and implementing plan proposed	<ul style="list-style-type: none"> <li>▪ MEM, provincial offices and districts</li> <li>▪ Period 2011-2012</li> <li>▪ ADB TA</li> <li>▪ Total budget: \$15 million (est.)</li> <li>▪ Phase 1 completed, but requesting ADB for additional funding for Phase 2 (\$15 million)</li> <li>▪ Budget gap: \$15 million (est.)</li> </ul>
<b>On-going projects with secured funding</b>				
2.3.	Sub-basin hydropower development planning related to risk management during implementation	1) Aim to build capacity for good practices of hydropower planning at sub- basin level to ensure sustainable water resources management and utilization 2) Update and improve the existing modeling developed under the IWRM, using the Nam Ou sub-basin as a pilot study area	a) Issuing guidelines on hydropower cascade operations, dam stability analysis and dam break analysis related to earthquakes, landslides, and other natural events that may cause serious damage to dam structure b) Risk analysis for four river basins (Nam Khan, Nam Ngum, Nam Kading, and Sekong) will be used as the case study	<ul style="list-style-type: none"> <li>▪ MEM , provincial offices and districts</li> <li>▪ Period 2011-2014</li> <li>▪ Total budget: \$300,000 from WB Hydro Mining Technical Assistance</li> <li>▪ Secured funding: \$300,000</li> <li>▪ Budget gap: \$0</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for implementation
2.4.	Water Resources Management and Least-cost Hydropower Development Planning	1) Development of power facilities to meet the goals proposed by NSEDP-VI in an affordable, reliable, and sustainable manner; IPPs should play principal roles for power development 2) Region-wide optimal power planning and system control, management 3) Develop power facilities in accordance with the Government strategic development plan 4) Improvement of the governance mechanism for sustainable power development planning	a) Quality and comprehensiveness of the National Power Development Plan is enhanced b) Reliable power statistics and demand forecast made c) Demand supply scenario with mid-long term perspective developed d) Power development and investment plan proposed e) Comprehensive power development plan including IPPs proposed f) Power network system analyses and development plan made g) Revision of annual statistics book made	<ul style="list-style-type: none"> <li>▪ MEM; JICA Power Sector Cooperation Program</li> <li>▪ Period 2012-2015</li> <li>▪ Total budget: \$2 million</li> <li>▪ Secured funding: \$2 million</li> <li>▪ Budget gap: \$0</li> </ul>
2.5.	Hydropower planning and optimal integration and operation of renewable resources	1) Drafting of Biomass, Biogas and Solar Decrees 2) To equip the government staff with Renewable energy (RNE) planning and management skills in order to effectively promote RNE	a) Technology on RNE updated, legal and institutional arrangement for RNE implemented b) Promotion studied, cost benefit analysis including environmental impact conducted c) Detailed planning and management skills learnt, action plan proposed and implemented	<ul style="list-style-type: none"> <li>▪ MEM; JICA Power Sector Cooperation Program</li> <li>▪ Period 2012-2015</li> <li>▪ Total budget: \$500,000</li> <li>▪ Secured funding: \$500,000</li> <li>▪ Budget gap: \$0</li> </ul>
2.6.	Strengthening of governmental function on technical regulations in the power sector at the central and provincial levels	Improvement of the central and provincial authorities' examination and inspection capacities of electric power facilities including hydropower plants	a) Supervising and advising capacities of the central and provincial government strengthened b) References and cases updated c) Streamlined Examination and Inspection (E&I) procedures	<ul style="list-style-type: none"> <li>▪ MEM; Department of Environmental and Social Impact Assessment (DESIA) and Department of Meteorology and Hydrology (DMH), MONRE JICA Power Sector Cooperation Program</li> <li>▪ Period 2010-2013;</li> <li>▪ Total budget: \$2.5 million</li> <li>▪ Secured funding: \$2.5 million</li> <li>▪ Budget gap: \$0</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for implementation
2.7.	Hydropower Management and Implementation of the National Policy on Sustainable Hydropower (NPSH)	<ol style="list-style-type: none"> <li>1) Update NPSH and develop operational regulations and procedures for its implementation</li> <li>2) Improving MEM internal regulations, technical standards and administrative procedures for enforcement and monitoring</li> <li>3) Safeguard capacity building at MEM and provincial MEM Departments</li> </ol>	<ol style="list-style-type: none"> <li>a) Operational regulations and procedures in place to facilitate implementation and monitoring of the NPSH, to ensure environmental and social sustainability in hydropower development</li> <li>b) Improved internal regulations, standards and administrative procedures to enable MEM and MONRE in leading the implementation of NPSH</li> <li>c) Enhanced staff capacity for implementation and monitoring of NPSH</li> <li>d) Support and resources made available to improve safeguard performance of selected on-going projects in line with HPSH, inspect compliance of selected hydropower projects through site visits, interviews and consultation</li> </ol>	<ul style="list-style-type: none"> <li>▪ MEM, MONRE (DESIA)</li> <li>▪ Hydro Mining Technical Assistance supported by WB and AusAID</li> <li>▪ Period 2011-2014</li> <li>▪ Total budget: \$530,000</li> <li>▪ Secured funding: \$530,000</li> <li>▪ Budget gap: \$0</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for implementation
<b>Focus Area 3. Natural resource management, particularly water resources management</b>				
<b>Priority projects</b>				
3.1.	Strengthening of water resource procedures and guidelines	To ensure water resources are used efficiently and sustainably	<ul style="list-style-type: none"> <li>a) Procedures for water use are developed</li> <li>b) Improved regulations and laws related to water resource management</li> <li>c) Guidelines and procedures developed for water use for multi-purposes, including water allocation and water diversion plans</li> </ul>	<ul style="list-style-type: none"> <li>▪ Department of Water Resources of MONRE</li> <li>▪ Total budget: \$350,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$350,000</li> </ul>
3.2.	Strengthening of Nam Ou River basin management	<ul style="list-style-type: none"> <li>1) Build capacity in the establishment and management of Nam Ou RBC to support decentralization policy of MRC and river basin initiative of the GoL</li> <li>2) Effectively and efficiently managed prioritized river basins</li> <li>3) To develop Nam Ou basin management plans</li> </ul>	<ul style="list-style-type: none"> <li>a) RBC is established in the Nam Ou Basin</li> <li>b) Basin management plans developed</li> <li>c) Scenarios for basin management developed</li> </ul>	<ul style="list-style-type: none"> <li>▪ MONRE (DWR, Department of Protected Forestry, Department of Geology, RBCs), MEM</li> <li>▪ MEM / Department of Energy Policy and Planning</li> <li>▪ Total budget: \$1million</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$1 million</li> </ul>
3.3.	Strengthening the Management of the Conservation and Protection Forest Areas Programme	<ul style="list-style-type: none"> <li>1) Formulate an action plan for protection forest area management</li> <li>2) Strengthening technical staff on surveying &amp; inventory techniques, demarcation and management skills</li> <li>3) To rehabilitate 3.9 million hectares of forest for conservation forests, protection forests and plantation forests</li> <li>4) To monitor the seasonal rainfall to secure the water inflow/supply for hydropower plants and other end-users</li> <li>5) Formulate a programme on forest fire prevention and fighting, including capacity</li> </ul>	<ul style="list-style-type: none"> <li>a) Management and Action Plans completed for 14 national protection forest areas in the sub-basin of LMB and 48 catchment areas, to increase forest cover to 65% by 2015</li> <li>b) Action plans developed for the Programme for Action on restoring 3.9 million hectares of forest by year 2018 in catchment areas of hydropower dams, land and water conservation, etc.</li> <li>c) Enforcement of legal framework</li> <li>d) Monitoring of rainforest, national park mapping with GIS system</li> <li>e) Assessment of areas vulnerable to forest fires completed</li> <li>f) Programme and Action Plans on forest fire prevention and fighting to protect about 13 million hectares in conservation and protection forest, including the</li> </ul>	<ul style="list-style-type: none"> <li>▪ Department of Forest Resources Management &amp; DMH of MONRE; Ministry of Interior: Department of National Geographic; MEM: Department of Energy Policy and Planning, provincial offices and districts</li> <li>▪ Period 2011-2015</li> <li>▪ Total budget: \$97 million</li> <li>▪ Secured funding: ADB Biodiversity Corridors \$20 million (for 4 NPAs)</li> <li>▪ Budget gap: \$77 million</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for implementation
		building, purchasing equipment	establishment of forest fighting stations	
<b>New projects</b>				
3.4.	Strengthening of Sekong River basin management	<ol style="list-style-type: none"> <li>1) Build capacity in the establishment and management of Sekong RBC to support decentralization policy of MRC and river basin initiative of the GoL</li> <li>2) Effectively and efficiently managed prioritized river basin</li> <li>3) To develop Sekong basin management plans</li> </ol>	<ol style="list-style-type: none"> <li>g) RBC is established in the Sekong Basin</li> <li>h) Basin management plans developed</li> <li>i) Scenarios for basin management developed</li> </ol>	<ul style="list-style-type: none"> <li>▪ MONRE (DWR, Department of Protected Forestry, Department of Geology, RBCs), DMH</li> <li>▪ MEM / Department of Energy Policy and Planning</li> <li>▪ New project</li> <li>▪ Total budget: \$1 million</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$1 million</li> </ul>
3.5.	Developing Land Policy and Master Plan for Land Use Planning	To improve land administration	<ol style="list-style-type: none"> <li>a) Policy Framework for Land Administration drafted</li> <li>b) Master Plan for Land Use Planning in association with river basin management completed</li> </ol>	<ul style="list-style-type: none"> <li>▪ Department of Land Administration; Department of Land Allocation and Development</li> <li>▪ Government of Lao PDR</li> <li>▪ Period 2011-2015</li> <li>▪ New Phase</li> <li>▪ Total budget: \$2.5 million</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$2.5 million</li> </ul>
<b>On-going projects with secured funding</b>				
3.6.	National Integrated Water Resources Management (IWRM) Support Program	<p>To support legal, institutional, and human resources strengthening to implement IWRM and better water resources planning in Lao PDR through:</p> <ol style="list-style-type: none"> <li>1) Development of a new Water Resources Law considering the regional enabling implementation of IWRM in the Mekong River;</li> <li>2) Installing essential institutional capacity regarding water quality monitoring, hydro-meteorological modeling, and</li> </ol>	<ol style="list-style-type: none"> <li>a) Updated Water Resources Law through support to the department of water resources</li> <li>b) Support for Water Quality and Aquatic Ecosystem Health, including support to a water quality monitoring laboratory and toxic chemical monitoring</li> <li>c) Support for Water Resources Modeling, including review and selection of appropriate, adapted models, technical assistance and training; and</li> <li>d) Support for Hydromet Network Upgrading, and strengthening of flood and drought early warning systems, through provision of</li> </ol>	<ul style="list-style-type: none"> <li>▪ DWR &amp; DMH &amp; Natural Resources and Environment Institute (NREI) of MONRE; National University of Laos (NUOL)</li> <li>▪ Period 2011-2014</li> <li>▪ Total budget, estimated: \$28.8 million</li> <li>▪ Secured funding: World Bank \$24.6 million; ADB / AusAID/SDF \$4.2 million.</li> <li>▪ Budget gap: 0</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for implementation
		<p>collection and analysis of data from the hydro-metrological networks</p> <p>3) Support to development of RBCs and development of a floodplain management plan for the lower Xe Bang Fai (XBF) and Xe Bang Hian (XBH) rivers</p> <p>4) Rehabilitation of existing water resources infrastructure, mainly floodgates and village based small irrigation schemes covering 14,000 hectares in total to enhance environmental benefits (e.g., allowing fish passage, and increased water efficiency), and increased water efficiency</p>	<p>equipment and training to the department of Meteorology and Hydrology within MONRE</p> <p>e) Improve the floodplain and aquatic resources management in regionally-significant wetlands and water bodies</p> <p>f) National IWRM capacity building framework developed</p> <p>g) River basin and sub-basin management</p> <p>h) Support IWRM bachelor's degree at the National University</p> <p>i) Strengthening groundwater management</p>	
3.7.	Promote sustainable forest management by scaling up the Sustainable Forestry for Rural Development (SUFORD) Project, including REDD+ mechanisms	<p>1) To use forest resources in a sustainable manner</p> <p>2) To contribute to and meet the objectives of social and economic development while maintaining environmental integrity and enhancing biodiversity richness</p> <p>3) To achieve the goals of forest management according to the National Forest Strategy 2020 (FS2020)</p> <p>4) To achieve the goals of implementation of REDD+ according the RPP and the National REDD+ Strategy</p>	<p>a) Participatory and sustainable management process are in place for all production forest areas</p> <p>b) Forest governance is significantly improved</p> <p>c) Improved capacity for the formulation and implementation of policy strategy in the forestry sector</p> <p>d) Several activities regarding REDD+ are promoted and there is an improved capacity of operation and management on forest resource information</p>	<ul style="list-style-type: none"> <li>▪ Department of Forest Resources Management, MONRE; Department of Forestry, MAF</li> <li>▪ Ongoing project</li> <li>▪ Total budget: \$10 million</li> <li>▪ Secured funding: \$10 million</li> <li>▪ Budget gap: \$0</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation
<b>Focus Area 4. Climate change adaptation and mitigation</b>				
<b>Priority projects</b>				
4.1.	Greater Mekong Subregion: Flood and Drought Management and Mitigation Project – Lao People’s Democratic Republic	<ol style="list-style-type: none"> <li>1) Enhance regional data and knowledge for the management of floods and droughts</li> <li>2) Upgrade or develop water management infrastructure</li> <li>3) Prepare communities to manage disasters such as flood and drought and adapt to climate change</li> </ol> <p>The Project will improve flood and drought risk management on over 20,000 ha and reduce the vulnerability to floods of over 61,500 people</p>	<p><b>a) Enhanced Regional Data, Information, and Knowledge Base for the Management of Flood and Droughts:</b> The project will assist the government of Lao PDR to strengthen its national flood and drought forecasting capacities</p> <p><b>b) Upgraded Water Management Infrastructure:</b> The project will support: (i) rehabilitation of flood control embankments, associated water control structures, and access roads; (ii) rehabilitation of drainage canals, including increasing flow capacity and improving water control infrastructure; and (iii) rehabilitation and extension of canals, water control structures and irrigation distribution networks. Specifically, in Lao PDR, the subprojects include the Vientiane Flood Protection Embankment and the Irrigation Development Subproject in Vientiane Capital</p> <p><b>c) Enhanced Capacity of Community Based Disaster Risk Management:</b> Community based disaster risk management (CBDRM) forms an important strategy for enhancing the impact of the structural investments supported by the Project. In each of the communities where infrastructure development is undertaken, CBDRM actions will be implemented to ensure that communities are able to obtain the full benefit from the improved water control infrastructure and improved flood warnings. Community–driven flood and drought risk reduction measures will be implemented based on participatory local level disaster risk reduction and</p>	<ul style="list-style-type: none"> <li>▪ The Ministry of Agriculture and Forestry (MAF) will be the executing agency and will be responsible for overall project management and coordination through its Department of Irrigation (DOI)</li> <li>▪ Total estimated budget: \$37.09 million.</li> <li>▪ Secured funding: The Government has requested a loan not exceeding \$24.00 million equivalent and a grant of \$12.50 million both from ADB’s Special Funds resources to help finance the Project</li> <li>▪ Budget gap: \$590,000</li> </ul>



No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation
			management plans <b>d) Effective Project Implementation</b> The project will support the executing agencies to undertake overall project oversight and strengthen the project planning, implementation and management capacities of implementing agencies	
<b>On-going projects with secured funding</b>				
4.2.	Reducing Emission from Deforestation and Forest Degradation (REDD+) to reduce the rates of deforestation and forest degradation, in order to join international efforts in reducing greenhouse gas (GHG) emissions from forestry sector in developing countries to mitigate climate change	1) To implement the strategies for the protection of natural forest landscapes in order to reducing GHG from forestry sector 2) To achieve the goals of RPP (Readiness, Preparation, Proposal) to develop National REDD+ Strategy, and to facilitate the implementation of REDD+	a) The technical and economic feasibility of REDD in Designated Forest Areas (incl. NAPA) and adjoining areas is demonstrated b) Local communities involved have received performance based payments through a REDD benefit sharing and distribution mechanism c) REDD+ Framework and enabling mechanism is in place d) REDD+ capacity building in all relevant sectors	<ul style="list-style-type: none"> <li>▪ Department of Forest Resources Management, MONRE; Department of Forestry, MAF</li> <li>▪ Total budget: \$13 million</li> <li>▪ Secured funding: \$13 million</li> <li>▪ Budget gap: \$0</li> </ul>
4.3.	Improving the Resilience of the Agriculture Sector to Climate Change Impacts	1) To minimize food insecurity resulting from climate change in Lao PDR 2) To reduce farmers' vulnerability to extreme flooding and droughts	a) An agricultural information system that integrates flood- or drought-related hazards for early warning is established b) Comprehensive national long-term information system for flood and drought-related hazards and vulnerabilities, and the effects on agriculture established, managed and updated c) Capacities of sectoral planners and agricultural producers strengthened to understand and address climate change – related risks and opportunities for local food production and socio-economic conditions d) Climate resilient land-use planning principles developed and integrated in to Lao PDR's poverty reduction and agricultural policies and action plans based e) Community-based adaptive agricultural practices and off-farm opportunities	<ul style="list-style-type: none"> <li>▪ The National Agriculture and Forestry Research Institute (NAFRI); MAF; DMH of MONRE</li> <li>▪ Period 2011-2014</li> <li>▪ On-going project</li> <li>▪ Total budget: \$12 million</li> <li>▪ Secured funding: \$12 million</li> <li>▪ Budget gap: \$0</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation
			<p>demonstrated and promoted within suitable agro-ecological systems</p> <p>f) District Disaster Management Communities (DDMC) in target districts trained in climate change risk assessment and potential community-based risk reduction strategies</p> <p>g) Project knowledge incorporated into national flood and drought prevention and agricultural training programmes in Lao PDR</p>	
4.4.	Forest Investment Program in Lao PDR: to reduce emissions from deforestation and forest degradation, while also helping the country to adapt to climate change impacts	<ol style="list-style-type: none"> <li>1) To reduce GHG emissions from deforestation and forest degradation, and enhanced forest carbon stocks by attaining FS2020 the 70% forest cover target</li> <li>2) To address the drivers of deforestation and forest degradation identified in Lao PDR</li> <li>3) To reduced poverty in forest dependent villages through increase incomes from sustainable forest landscape-based livelihoods</li> </ol>	<ol style="list-style-type: none"> <li>a) Million tons of CO<sub>2</sub> emissions are reduced by using sustainable forest practices</li> <li>b) Million tons of CO<sub>2</sub> sequestered through natural regeneration and tree planting</li> <li>c) Increase in legally recognized tenure and access to economic benefit for ethnic groups</li> <li>d) Increase in incomes of forest-dependent communities</li> <li>e) Increase in school enrolment of very rural children</li> </ol>	<ul style="list-style-type: none"> <li>▪ Department of Forestry</li> <li>▪ Total budget: \$10 million from WB</li> <li>▪ Secured funding: \$10 million</li> <li>▪ Budget gap: \$0</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation
<b>Focus Area 5. Data and information management, and filling knowledge gaps (research and development)</b>				
<b>Priority projects</b>				
5.1.	Establishment of Lao National Mekong Basin Information System	To provide current data and information on natural resources in the Lao Mekong Basin to support the research network for policy decision-making and formulation	<ul style="list-style-type: none"> <li>a) A National Information System of the Lao Mekong Basin, which comprehensively integrates MRC data and information, is consolidated, regularly updated and made available for internal and external users</li> <li>b) Data storage system and IT infrastructure at LNMCS improved</li> <li>c) The operation and maintenance of the National Information System successfully interacting with Line Agencies</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lao National Mekong Committee Secretariat, Ministry of Natural Resources and Environment (MoNRE)</li> <li>▪ Total budget for Implementation Plan: \$500,000 for 2013-2015</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$500,000</li> </ul>
5.2.	Inventory of environmental hotspots in Lao PDR	<ul style="list-style-type: none"> <li>1) To provide an inventory and assessment of key environmental hotspots in Lao PDR</li> <li>2) To accurately map and document sensitive ecosystems, including wetlands, biodiversity hotspots and other areas</li> <li>3) To develop policies and regulations for management of environmental hotspots</li> </ul>	<ul style="list-style-type: none"> <li>a) Inventory of environmental hotspots (wetlands and biodiversity) in the Lao PDR area of the Mekong River completed</li> <li>b) Mapping and GIS database developed, including important and sensitive ecosystems (environmental hotspots)</li> <li>c) Compilation of data for wetland inventory and biodiversity assessment completed</li> <li>d) Environmental hotspot monitoring methodologies developed</li> <li>e) Policies and incentives for environmental hotspot management and conservation developed</li> </ul>	<ul style="list-style-type: none"> <li>▪ MONRE; NUOL</li> <li>▪ Total budget: \$1 million</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$1 million</li> </ul>
5.3.	Study on the economic, social, and environmental benefits of hydropower development in Lao PDR	<ul style="list-style-type: none"> <li>1) To improve understanding on social, economic, and environmental benefits of hydropower development in Lao PDR</li> <li>2) To provide information for improving hydropower management in Lao PDR</li> </ul>	<p>A comprehensive report completed containing information on:</p> <ul style="list-style-type: none"> <li>a) Overview of hydropower development in Lao PDR</li> <li>b) Current and future hydro power management</li> <li>c) Economic, social and environmental benefits of hydropower development</li> <li>d) Policy recommendation for improving hydropower management in Lao PDR</li> </ul>	<ul style="list-style-type: none"> <li>▪ The Environmental Research Institute, MONRE; the National Economic Research Institute, MPI; NUOL, MEM</li> <li>▪ Total budget: \$500,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$500,000</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation
5.4.	Installation of navigation aids and waterway distance posts along the Mekong River in the section from the Khone Falls, the Golden Triangle, and to Vientiane Capital of Lao PDR	1) To conduct a study to determine best navigation routes 2) To identify and map the distance of the waterway from proposed points to the Mekong Delta by installing distance posts and name place plates at key sites	a) Full set of specific data/information on points (places) to be installed on waterway distance posts b) Project implemented on the installation of navigation aids and waterway distance posts at key sites	<ul style="list-style-type: none"> <li>▪ Lead agency: Department of Waterways (DOW), Ministry of Public Works and Transport (MPWT)</li> <li>▪ Involved: LNMC, Provincial Department Public Works (DPWT)</li> <li>▪ Proposed project implementation time: 2013-2015</li> <li>▪ Total budget: \$500,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$500,000</li> </ul>
5.5.	Search and rescue stations established, and teams trained to take control and responsibility in the occurrence of an accident	To save lives and property of the people along the Mekong River from the Golden Triangle to Vientiane Capital of Lao PDR	a) Full set of data collected on information/statistics related to accidents along the Mekong River b) Rescue station team trained and established	<ul style="list-style-type: none"> <li>▪ Lead agency: DOW, MPWT</li> <li>▪ Involved: LNMC, Provincial Department of Public Work and Transport (DPWT)</li> <li>▪ Proposed project implementation time: 2013-2015</li> <li>▪ Total budget: \$300,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$300,000</li> </ul>
<b>New projects</b>				
5.6.	Study on ecosystem services of wetlands and biodiversity	1) To provide better understanding on wetland ecosystem services and biodiversity; and 2) Develop recommendations on how to protect and sustainably use these resources.	A study completed containing: a) General overview of wetlands and biodiversity in Lao PDR b) Importance of wetlands and biodiversity for local livelihoods described c) Threats to and vulnerabilities of wetlands and biodiversity is recorded d) Recommendations on how to strengthen wetland and biodiversity protection in Lao PDR	<ul style="list-style-type: none"> <li>▪ MONRE; NUOL</li> <li>▪ Total budget: \$200,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$200,000</li> </ul>
5.7.	Case study on impacts of climate change on agriculture	To improve understanding of the impacts of climate change on agriculture, which can be used to provide policy recommendations for the	A report completed containing information on: a) Downscaling models of climate change in Lao PDR b) Crop modeling (production, disease, etc.)	<ul style="list-style-type: none"> <li>▪ Natural Resource and Environmental Institute (NREI) MONRE; NAFRI; the Ministry of Agriculture and Forestry; the National Economic Research</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation
		agriculture sector on how to cope with climate change	<p>linked to climate change variables</p> <p>c) Current status of institutional and legal framework to cope with climate change in the agriculture sector</p> <p>d) Assessment of potential impacts of climate change on agriculture, particularly on small-scale agriculture</p> <p>e) Policy recommendations on how to improve climate resilience</p>	<p>Institute (NERI), the Ministry of Planning and Investment; NUOL; DMH of MONRE</p> <ul style="list-style-type: none"> <li>▪ Total budget: \$300,000</li> <li>▪ Secured funding: 0</li> <li>▪ Budget gap: \$300,000</li> </ul>
5.8.	Collaborative Research Project on the Establishment of the Sustainable and Independent Farm Household Economy in the Rural Areas of Indo-China (Lao PDR)	<p>The focus of this project will be on irrigation and fisheries to:</p> <p>1) Develop new technologies, in which the regional natural resources are not only utilized sufficiently but also managed appropriately in a sustainable way, respecting the traditional systems in the rural areas in Lao PDR</p> <p>2) Establish both sustainable and profitable farming system and realize the vital rural societies in harmony with biodiversity</p>	<p>a) Small scale irrigation systems for stabilization and improvement of rice production are established</p> <p>b) Sustainable and low-input aquaculture of indigenous fishes using paddies, irrigation canals and reservoirs are developed</p> <p>c) Sustainable small-scale fisheries and resource conservation are developed</p> <p>d) Year-round utilization of paddy field based on the information on available soil water and yielding performance of crops under ground water receding condition</p> <p>e) Development of the effective rural development methods for sustainable agriculture, forestry and fishery production systems in harmony with biodiversity</p>	<ul style="list-style-type: none"> <li>▪ NAFRI; JIRCAS, DLF</li> <li>▪ Total budget: \$500,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$500,000</li> </ul>
5.9.	Hydro-meteorology network enhancement	<p>1) Improvement of flood management</p> <p>2) Upgrading of hydrological station to enhance data accuracy</p>	<p>a) Hydro-climatological database</p> <p>b) Review of the data station network</p> <p>c) Implementation of rainfall/flow model</p> <p>d) Development of information sharing process</p> <p>e) Link to Project 3.6: Support for Hydromet Network Upgrading, and strengthening of flood and drought early warning systems, through provision of equipment and training to the department of Meteorology and Hydrology within MONRE</p>	<ul style="list-style-type: none"> <li>▪ MONRE (Department of Meteorology and Hydrology)</li> <li>▪ National Disaster Prevention Center</li> <li>▪ MEM / Department of Energy Policy and Planning</li> <li>▪ Total budget: \$110 million</li> <li>▪ Secured funding: &lt; \$1 million</li> <li>▪ Budget gap: \$110 million</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation
5.10.	Riverbank protection master plan	To study the impacts of water resource development on the Mekong riverbank	Master Plan for stabilization of Mekong riverbank in major cities in Lao PDR	<ul style="list-style-type: none"> <li>▪ MPWT</li> <li>▪ Total budget: \$400,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$400,000</li> </ul>
5.11.	River dredging impact assessment	<ol style="list-style-type: none"> <li>1) To assess the impacts of river dredging, sand and gravel extraction, and mining</li> <li>2) To identify gaps in existing regulations related to extractive industries</li> </ol>	<ol style="list-style-type: none"> <li>a) ESIA completed in key river dredging areas of Lao PDR</li> <li>b) New regulations formulated</li> <li>c) Improved means of enforcing regulations</li> </ol>	<ul style="list-style-type: none"> <li>▪ MPWT</li> <li>▪ Total budget: \$500,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$500,000</li> </ul>
5.12.	Navigation channel improvement along the Mekong River in the section from Houayxai to Luang Prabang of Lao PDR	<ol style="list-style-type: none"> <li>1) To conduct a study on navigation channel improvement to ensure the safety of vessel/boat navigation along the Mekong River in the section from Houayxai to Luang Prabang</li> <li>2) To strengthen the national water management process to support the successful implementation of the IWRM-based Basin Development Strategy</li> </ol>	<ol style="list-style-type: none"> <li>a) Full set of specific data and information compiled for navigation improvement</li> <li>b) Project implemented to improve the navigation channel</li> </ol>	<ul style="list-style-type: none"> <li>▪ Lead agency: DOW, MPWT</li> <li>▪ Involved: LNMC, Provincial Department Public Works and Transport (DPWT)</li> <li>▪ Proposed project implementation time: 2013-2015</li> <li>▪ Total budget: \$350,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$350,000</li> </ul>
5.13.	Updating chart datum of UHA 1996 of the Lower Mekong	To update existing chart datum of UHA 1996 as accurately as possible for use in river work activities along the Mekong mainstream and for IWRM purposes	<ol style="list-style-type: none"> <li>a) A study completed to update a set of specific data/information of all chart datum of UHA 1996</li> <li>b) Report completed on existing condition of the ground control bench marks (BM) of UHA 1996</li> </ol>	<ul style="list-style-type: none"> <li>▪ Lead agency: DOW, MPWT</li> <li>▪ Involved: LNMC, DMH (MNRE), Provincial Department of Public Work and Transport (DPWT)</li> <li>▪ Proposed project implementation time: 2013-2015</li> <li>▪ Total budget: \$350,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$350,000</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation
<b>On-going projects with secured funding</b>				
5.14.	Set up the GPS instrument for navigation safety at hot spots and the installation of alert system for navigation during lowest water level (in dry season) along the Mekong River from Houayxai to Luang Prabang of Lao PDR	<ol style="list-style-type: none"> <li>1) To provide pilots with accurate navigation routes and maps which are identified on the navigation charts</li> <li>2) To know the existing condition of bench marks (BMs) for IWRM and for river work management activities along the Mekong River in the section from Houayxai to Luang Prabang</li> <li>3) To ensure the safety of people and property who use the Mekong River for their transport route</li> </ol>	<ol style="list-style-type: none"> <li>a) Data collected and report completed on existing condition of the ground control bench marks (BM) of UHA 1996</li> <li>b) Survey completed to collect data and map the navigation channel, especially the hot spots (dangerous areas)</li> <li>c) Project completed to install alert systems for danger zones during low water levels, including identification of the location of rapids, shoals, sand bars, etc.</li> </ol>	<ul style="list-style-type: none"> <li>▪ Lead agency: DOW, MPWT</li> <li>▪ Involved: LNMC, Provincial Department of Public Work and Transport (DPWT) &amp; MRC</li> <li>▪ Proposed project implementation time: 2012-2015</li> <li>▪ Total budget: \$1,580,000</li> <li>▪ Secured funding: \$1,580,000</li> <li>▪ Budget gap: \$0</li> </ul>

No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation
<b>Focus Area 6. Human resource development for natural resources management, and environmental monitoring and evaluation</b>				
<b>Priority projects</b>				
6.1.	Gender mainstreaming in IWRM and water resources planning	1) To increase awareness of LNMC staff on the importance of gender mainstreaming 2) To build capacity and knowledge of LNMC staff on how to mainstream gender into IWRM 3) To integrate and promote gender considerations in all policies, plans and works of the LNMC	a) Gender analysis with regard to gender issues, concerns and inequalities in IWRM is completed b) Training on concepts related to gender, gender mainstreaming, and the importance of gender considerations in integrated water resources management completed c) Training on mainstreaming gender in the project/program cycle completed d) Tools for formulating policies and designing programs to be gender-sensitive are developed and LNMC staff trained on how to use these tools	<ul style="list-style-type: none"> <li>▪ LNMCS &amp; Lao Women's Union</li> <li>▪ Period 2012-2015</li> <li>▪ Total budget: \$500,000</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$500,000</li> </ul>
6.2.	Capacity building for Monitoring and Evaluation (M&E) related to PINs implementation	1) To build capacity and upgrade knowledge on M&E processes and approaches 2) To set up a good M&E system for sustainable management and planning	Integrated and sustainable M&E systems are developed and established in LNMC programmes	<ul style="list-style-type: none"> <li>▪ LNMCS, provincial offices and districts</li> <li>▪ Period 2012-2015</li> <li>▪ Total budget: \$500,000</li> <li>▪ Secured funding: 0</li> <li>▪ Budget gap: \$500,000</li> </ul>
<b>New projects</b>				
6.3.	Strengthening NUOL's Curriculums on IWRM, Meteorology and Hydrology, Environmental Economics, and Engineering and Toxicology	1) Support training packages for NUOL's faculties to deliver key subjects, including IWRM for the water resources management curriculum for the Department of Water Resources Engineering and Management Faculty of Civil Engineering 2) To facilitate NUOL to develop the curriculum for the newly established Meteorology and Hydrology	a) Faculties are trained in key technical subjects on IWRM practices for the water resources management curriculum at DWEM, NUOL b) Cost benefit analysis conducted c) Detailed planning and management skills learnt, action plan proposed and implemented	<ul style="list-style-type: none"> <li>▪ MONRE, NUOL</li> <li>▪ Period 2012-2015</li> <li>▪ Total budget: \$1 million</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$1 million</li> </ul>



No	Project	Suggested Objectives	Outputs	LAs Responsible for Implementation
		Department at the undergraduate level 3) To purchase new laboratory equipment for improved meteorology and hydrology practices		
6.4.	Enhancing capacity building of MONRE and MAF staff on Agro–Climate Modeling and Application	1) Enhanced use of agro-meteorological data as a decision making tool to better support agricultural practices at national and provincial levels, using short-, medium- and long-term climate change scenarios 2) Assess climate change impacts on crop yields nationwide and develop high spatial resolution scenarios at 2030 and 2050 to be used for developing agricultural policies	a) Install new and upgrade existing agro-met stations (WMO standards) b) Capacity building on data collection and agro–climate modeling c) Capacity building on analysis and applicability to climate change adaptation strategies d) Recommendation paper for adaptation policies	<ul style="list-style-type: none"> <li>▪ DMH of MONRE</li> <li>▪ MAF</li> <li>▪ Period 2012-2018</li> <li>▪ Total budget (TBC): \$5 million</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$5 million</li> </ul>
6.5.	Strengthening capacities in forest Information Management	To improve capacity on forest resource information management	a) Capacity of mapping is improved b) Capacity of dealing with forest inventory data is improved c) Capacity of forest monitoring is improved d) Curriculum at the Forestry University is strengthened	<ul style="list-style-type: none"> <li>▪ Department of Forestry</li> <li>▪ Total budget: \$1 million</li> <li>▪ Secured funding: \$0</li> <li>▪ Budget gap: \$1 million</li> </ul>

---

**Appendix A3**

**Project Identification Notes (PINs)**

---

## A3.0 PROJECT IDENTIFICATION NOTES (PINs)

### Outline of PIN Focus Area 1.1

<b>Project Title</b>	Improvements to irrigated agriculture along the Mekong River to increase crop and livestock productivity	<b>BDP ref</b>	<b>FA 1.1</b>
<b>Responsible (lead) entity</b>	Department of Irrigation (DOI) & Department of Agriculture Extension	<b>Start date</b>	NA
<b>Other entities involved</b>	Cooperatives of Ministry of Agriculture and Forestry (MAF), and the provincial offices and districts concerned	<b>End date</b>	NA
<b>Principal beneficiaries</b>	Smallholder farmers in the project areas		

### Objectives and key performance indicators

<b>Goal</b>	To improve overall livelihoods and food security of small farm households in the 7 focus sites along the Mekong River, by supporting the development of irrigated agriculture expansion and upgrading of reservoirs, weirs, pumping stations and canal systems. The project will enhance the managerial capacity of provincial and district-level government staff.
<b>Immediate objective(s)</b>	To increase crop and livestock productivity and overall production at the 7 focus sites along the Mekong River, thereby increasing incomes and improving food security for small farm households.
<b>Indicators of success Outcomes</b>	Outcome 1: Increase and diversify incomes of rural households in 7 focus areas through enhanced irrigated agriculture; Outcome 2: Ensure water supply is available in both seasons for irrigation of the area under cultivation.
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. Summary of progress reports;</li> <li>2. A comprehensive technical report containing information on the current agricultural practices and irrigation system performance assessment, with recommendations for improvement in the pilot areas;</li> <li>3. Participatory Rural Appraisal (PRA) in selected communities conducted;</li> <li>4. Technical training for local government staff and communities conducted;</li> <li>5. Consultation workshops organized with action plan completed for efficient irrigation water use, irrigation systems expansion, and upgrading of reservoirs, weirs, pumping stations and canal systems;</li> <li>6. Midterm and final evaluations;</li> </ol>
<b>Milestone dates</b>	To be completed
<b>Linkages to other Projects</b>	MRC's Agriculture and Irrigation Programme (AIP) 2011 - 2015

### Description of the project

<b>Outline description</b>	This project aims at improving the overall livelihoods and food security of small farm households in the 7 focus sites along the Mekong River, by supporting the development of irrigated agriculture expansion and upgrading of reservoirs, weirs, pumping stations and canal systems. In addition, the initiative will enhance the managerial capacity of provincial and district-level government staff.
----------------------------	---

<b>Project Title</b>	Improvements to irrigated agriculture along the Mekong River to increase crop and livestock productivity	<b>BDP ref</b> FA 1.1
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>Field observation and baseline data are reviewed and updated; on-farm data collected will include flows in canals, rainfall, evapo-transpiration, percolation, crop production, water distribution practice and management appraisal, etc.;</li> <li>Improved knowledge of irrigation modernization through a Rapid Appraisal Process training workshop and irrigation system performance assessment activities at 7 pilot sites;</li> <li>Training on irrigation modernization including water control methods, water balance, irrigation efficiency and productivity;</li> <li>Using analysis and synthesis of the field data and experience, a comprehensive implementation plan is developed for efficient irrigation water use, irrigation systems expansion, and upgrading of reservoirs, weirs, pumping stations and canal systems</li> </ul>	
<b>Location</b>	To be completed	
<b>Implementation arrangements</b>	Department of Irrigation (DOI) & Department of Agriculture Extension will coordinate with the cooperatives of MAF and the provincial offices and districts concerned	

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	To be completed
<b>External coordination requirements</b>	To be completed
<b>Internal coordination requirements</b>	To be completed

## Project funding

<b>Existing funding</b>	Total budget: \$500,000 Secured funding: \$0
<b>Additional funding required</b>	Budget gap: \$500,000

## Work plan

<b>Work plan</b>	To be completed
<b>Cost estimate of additional funding requirements</b>	To be completed

## Supporting documentation

<b>Document title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary contents</b>
Agriculture and Irrigation Programme (AIP) - Programme Document 2011 - 2015	2011	MRC	Final	This document explains the MRC Agriculture and Irrigation Programme (AIP), which has been developed to address land and water use issues in the agriculture sector. The programme also promotes IWRM-based basin development in line with MRC's Strategic Plan 2011-2015 and the associated IWRM-based Basin Development Strategy (IWRM-BDS).

## Outline of PIN Focus Area 1.2

<b>Project Title</b>	Develop national fisheries law, create awareness on the law and regulations, as well as develop a fisheries management strategy and plans for Lao PDR	<b>BDP ref</b>	<b>FA 1.2</b>
<b>Responsible (lead) entity</b>	Department of Livestock and Fisheries (DLF) of MAF	<b>Start date</b>	NA
<b>Other entities involved</b>	Provincial Agriculture and Forestry Offices (PAFO); Ministry of Justice	<b>End date</b>	NA
<b>Principal beneficiaries</b>	People of Lao PDR		

## Objectives and key performance indicators

<b>Goal</b>	To develop fisheries legislation and enforcement regulations and to improve awareness on fisheries laws and regulations in order to improve the national strategy for the management and development of the fisheries and aquaculture sub-sectors.
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>1. To elaborate fisheries law into legal enforcement tools (by-laws) such as decrees, instructions and regulations;</li> <li>2. To create awareness on the fisheries law and regulations to local authorities and local people;</li> <li>3. To develop and/or improve the national strategy for the management and development of the fisheries and aquaculture sub-sectors.</li> </ol>
<b>Indicators of success Outcomes</b>	<p>Outcome 1: Develop specific legislation and enforcement regulations for the management of the three main sub-sectors, namely, management of capture fisheries, management of aquaculture and fishery inspection;</p> <p>Outcome 2: Develop detailed plan and measures for conducting awareness activities for the dissemination of fisheries law and regulations to the local authorities and local people throughout the country;</p> <p>Outcome 3: Develop and/or improve a national strategy for fisheries management and development from now up to 2020 and five-year action plan for the period from 2011-2015.</p>
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. Summary of workshops, progress reports;</li> <li>2. A report containing detailed information on (1) the existing fisheries legislation and regulations used for fisheries and aquaculture management at the central and local levels; and (2) policy recommendations on fisheries legislation (by-laws) and regulations;</li> <li>3. Consultation workshops organized with action plan completed to develop fisheries legislation (by-laws) and regulations;</li> <li>4. A draft of the fisheries legislation and regulations for submission to MAF and GoL;</li> <li>5. Awareness raising campaigns developed and implemented to disseminate on new fisheries law and regulations;</li> <li>6. Technical and/or coordination committee established;</li> <li>7. A report containing information on the current national fisheries management and development strategy with recommendations for improvement</li> <li>8. Consultation workshops organized with national strategy completed for fisheries management and development from now up to 2020 and five-year action plan for the period from 2011-2015;</li> </ol>

<b>Project Title</b>	Develop national fisheries law, create awareness on the law and regulations, as well as develop a fisheries management strategy and plans for Lao PDR	<b>BDP ref</b> FA 1.2
	<p>9. Action plan on the development and/or improvement of national fisheries strategy and action plan for submission to MAF and GOL;</p> <p>10. Midterm and final evaluations;</p> <p>11. One dissemination workshop at the end of the project implementation.</p>	
<b>Milestone dates</b>	To be completed	
<b>Linkages to other Projects</b>	FAO's Provincial Aquaculture Development Project in Lao PDR	

## Description of the project

<b>Outline description</b>	To be completed
<b>Tasks and outputs</b>	<p>1.1. Conduct study to review the existing fisheries legislation and regulations that were previously used for fisheries and aquaculture management at the central and local levels (provincial/district levels) and identify problems/constraints for further improvement;</p> <p>1.2. Organize consultation meetings to jointly develop fisheries legislation (by-laws) and regulations with the concerned authorities at the central level (MAF, DLF, Living Aquatic Resources Research Center (LARReC) (Fisheries Research Center under NAFRI), Ministry of Justice) and local level (PAFO, PLFO);</p> <p>1.3. Establish technical working groups that will be responsible for drafting the detailed/specific legislation (by-laws) and regulations for the three main sub- sectors: management of capture fisheries, management of aquaculture and fisheries inspection;</p> <p>1.4. Develop action plan for drafting the fisheries legislation and regulations for submission to MAF and GoL;</p> <p>1.5. Implement, monitor and evaluate the project plan;</p> <p>2.1. Organize consultation meetings to develop action plan on awareness activities for the dissemination of fisheries law and regulations at the local levels provincial/district);</p> <p>2.2. Establish a technical and/or coordination committee responsible for the dissemination of fisheries law and regulations at the local levels (provincial/district);</p> <p>2.3. Implement, monitor and evaluate the project plan.</p> <p>3.1. Conduct review study on national strategy on fisheries management and development that was previously implemented to identify problems and constraints for further improvement.</p> <p>3.2. Organize consultation meetings to develop and/or improve a national strategy for fisheries management and development from now up to 2020 and five-year action plan for the period from 2011-2015 at the local level (northern, central and southern regions) and central level.</p> <p>3.3. Develop action plan for the development and/or improvement of national fisheries strategy and action plan for submission to MAF and GOL.</p>
<b>Location</b>	National level
<b>Implementation arrangements</b>	The Department of Livestock and Fisheries (Fisheries Division) will be responsible for implementing all the activities proposed as above and coordinating with the concerned agencies and/or authorities.

<b>Project Title</b>	Develop national fisheries law, create awareness on the law and regulations, as well as develop a fisheries management strategy and plans for Lao PDR	<b>BDP ref</b> FA 1.2
	The Fisheries Division (DLF) will establish technical working groups for drafting the specific legislations (by-laws) and regulations for the three main sub-sectors (capture fisheries, aquaculture and fishery inspection).	

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	To be completed
<b>External coordination requirements</b>	To be completed
<b>Internal coordination requirements</b>	To be completed

## Project funding

<b>Existing funding</b>	Total budget: \$450,000 Secured funding: \$0
<b>Additional funding required</b>	Budget gap: \$450,000

## Work plan

<b>Work plan</b>	To be completed
<b>Cost estimate of additional funding requirements</b>	To be completed

## Supporting documentation

<b>Document Title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
Fisheries and Aquaculture in the Lao PDR - A Legislative Review	2009	Philippe Cacaud and Phouvieng Latdavong	Final	This review forms a background document to a legal review process for fisheries and aquaculture in Lao PDR, which resulted in a draft framework for fisheries and aquaculture for further development into national legislation. This review was part of a collaboration between the Department of Livestock and Fisheries, the FAO (Legal Service and the Regional Office for Asia and the Pacific), WWF, the Mekong River Commission's Fisheries Programme, the Asian Institute of Technology and the WorldFish Center (SE Asia Regional Office)

## Outline of PIN Focus Area 1.3

<b>Project Title</b>	Improve fisheries management system in hydropower and irrigation reservoirs	<b>BDP ref</b>	<b>FA 1.3</b>
<b>Responsible (lead) entity</b>	The Department of Livestock and Fisheries (Fisheries Division)	<b>Start date</b>	NA
<b>Other entities involved</b>	PLFO (planning, monitoring and evaluation) and DAFO / Livestock and Fisheries Unit (coordination and implementation with the local authorities and communities)	<b>End date</b>	NA
<b>Principal beneficiaries</b>	People of Lao PDR		

## Objectives and key performance indicators

<b>Goal</b>	Improve fisheries management system to increase food security benefits in Lao PDR
<b>Immediate objective(s)</b>	To develop strategic plans for fisheries development and management in hydropower and irrigation reservoirs in Lao PDR.
<b>Indicators of success Outcomes</b>	Outcome 1: A review of baseline information on fisheries management and development in hydropower and irrigation reservoirs in Lao PDR is conducted; Outcome 2: Models for fisheries co-management and aquaculture development in hydropower and irrigation reservoirs are developed; Outcome 3: Fisheries co-management and aquaculture development plans for the target reservoirs that have been selected by the project are developed.
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. Summary of workshops, progress reports;</li> <li>2. A report containing information on the current fisheries management and development in hydropower and irrigation reservoirs with recommendations for improvement;</li> <li>3. Consultation workshops organized with strategy completed on the improvement of fisheries management and development in hydropower and irrigation reservoirs at the central and local level;</li> <li>4. Baseline survey on socio-economic and fisheries in the target reservoirs completed;</li> <li>5. Consultation meetings organized with strategy plan completed for fisheries management and development in target reservoirs of the project;</li> <li>6. Local Fisheries Management Committees established for each target reservoir;</li> <li>7. Midterm and final evaluations;</li> <li>8. One dissemination workshop at the end of the project implementation.</li> </ol>
<b>Milestone dates</b>	To be completed
<b>Linkages to other Projects</b>	MRC's Fisheries Programme

## Description of the project

<b>Outline description</b>	To be completed
----------------------------	-----------------



<b>Project Title</b>	Improve fisheries management system in hydropower and irrigation reservoirs	<b>BDP ref</b> FA 1.3
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>• Conduct study to review fisheries management and development in hydropower and irrigation reservoirs that have been previously implemented and identify problems and constraints for further improvement;</li> <li>• Organize consultation meetings on the improvement of fisheries management and development in hydropower and irrigation reservoirs at the central level (MAF, DLF, LARReC, DOI, MEM, MONRE, DWR, RBC) and local level (PAFO, PLFO);</li> <li>• Select the target reservoirs to be developed as models or demonstration site by the project;</li> <li>• Conduct baseline survey on socio-economic and fisheries in the target reservoirs selected by the project;</li> <li>• Organize consultation meetings to develop plans for fisheries management and development in target reservoirs of the project with the participation of local stakeholders (RBC, PAFO, PLFO, DAFO, Koum Ban, project developers, etc.);</li> <li>• Facilitate and support the establishment of local Fisheries Management Committees (FMC) at the village level in each target reservoir of the project;</li> <li>• Implement, monitor and evaluate the project plan.</li> </ul>	
<b>Location</b>	To be completed	
<b>Implementation arrangements</b>	<p>The Department of Livestock and Fisheries (Fisheries Division) is responsible for the implementation of all activities as proposed above and coordination with the concerned agencies and/or authorities.</p> <p>The Fisheries Division (DLF) will propose to establish a coordination committee that will be composed of PLFO (planning, monitoring and evaluation) and DAFO / Livestock and Fisheries Unit (coordination and implementation with the local authorities and communities).</p>	

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	To be completed
<b>External coordination requirements</b>	To be completed
<b>Internal coordination requirements</b>	To be completed

## Project funding

<b>Existing funding</b>	Total budget: \$500,000 Secured funding: \$0
<b>Additional funding required</b>	Budget gap: \$500,000

## Work plan

<b>Work plan</b>	To be completed
<b>Cost estimate of additional funding requirements</b>	To be completed

<b>Project Title</b>	Improve fisheries management system in hydropower and irrigation reservoirs	<b>BDP ref</b> FA 1.3
----------------------	---	-----------------------

## Supporting documentation

<b>Document Title</b> and electronic file reference	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
Modeling the cumulative barrier and passage effects of mainstream hydropower dams on migratory fish populations in the Lower Mekong Basin - MRC Technical Paper No. 25	2009	A. S. Halls and M. Kshatriya	Final	This report discusses barrier and passage effects of mainstream dams migratory fish populations in the Lower Mekong Basin.
Fisheries in the Lower Mekong Basin: Status and Perspectives - MRC Technical Paper No. 6	2002	Sten Sverdrup-Jensen	Final	A report prepared by the MRC Fisheries Programme.

## Outline of PIN Focus Area 1.4

<b>Project Title</b>	Promote the development of aquaculture in Lao PDR	<b>BDP ref</b>	<b>FA 1.4</b>
<b>Responsible (lead) entity</b>	The Department of Livestock and Fisheries (Fisheries Division)	<b>Start date</b>	NA
<b>Other entities involved</b>	The Nam Souang Aquaculture Development Center (NADC); LARReC; PAFO; provincial fish stations	<b>End date</b>	NA
<b>Principal beneficiaries</b>	Aquaculture farmers in Lao PDR		

## Objectives and key performance indicators

<b>Goal</b>	Promote the development of aquaculture to increase food security in Lao PDR
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>1. To develop small-scale culture-based fisheries in selected water bodies (community reservoirs or ponds)</li> <li>2. To improve Government fish hatchery stations.</li> </ol>
<b>Indicators of success Outcomes</b>	<p>Outcome 1: Develop models of culture-based fisheries in small-scale reservoirs and community ponds;</p> <p>Outcome 2: Strengthen and/or improve the capacity of local technical staff (provincial, district, fish station) and fish farmer groups or fisher groups in fisheries management and development;</p> <p>Outcome 3: Develop and/or improve a strategic plan for the management and development of Government fish hatchery stations.</p>
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>3. Summary of workshops, progress reports;</li> <li>4. A report containing information on the current culture-based fisheries development in small-scale reservoirs and community ponds with recommendations for improvement;</li> <li>5. Consultation workshops organized with development plan completed for fisheries development and management using the “Culture-based Fisheries” approach at the central and local level;</li> <li>6. Surveys completed of target reservoirs and community ponds selected for development;</li> <li>7. Local “Fisheries Management Committee” (FMC) established at each selected reservoir and community pond established for each target reservoir;</li> <li>8. Participatory Rural Appraisal (PRA) in selected communities conducted;</li> <li>9. Technical training for local staff and communities conducted;</li> <li>10. Report completed reviewing Government fish hatchery stations;</li> <li>11. Consultation workshops organized with strategic plan completed for the management and development of Government fish hatchery stations;</li> <li>12. Training completed on management/administration and technical subjects for technical staff of each Government fish hatchery station;</li> <li>13. Pilot projects in selected communities implemented;</li> <li>12. Midterm and final evaluations.</li> </ol>

<b>Project Title</b>	Promote the development of aquaculture in Lao PDR	<b>BDP ref</b>	<b>FA 1.4</b>
<b>Milestone dates</b>	To be completed		
<b>Linkages to other Projects</b>	MRC's Fisheries Programme		

## Description of the project

<b>Outline description</b>	To be completed
<b>Tasks and outputs</b>	<ol style="list-style-type: none"> <li>1.1 Conduct review study of culture-based fisheries development in small-scale reservoirs and community ponds that was previously implemented to identify problems and constraints for further improvement;</li> <li>1.2 Conduct baseline survey on socio-economic and fisheries in selected water bodies to identify the strengths and potentials of each reservoir or community pond that were selected by the project;</li> <li>1.3 Select small-scale reservoirs and community ponds to be developed as models by the project;</li> <li>1.4 Organize consultation meetings to develop plan for fisheries development and management using the "Culture-based Fisheries" approach (CBF) in selected water bodies (small-scale reservoirs and community ponds) with the concerned agencies at the central level (DLF, LARReC, DOI, DWR, RBC) and the local level (PAFO, PLFO, DAFO, Koum Ban, fish farmer groups, fisher groups);</li> <li>2.1 Facilitate and support the establishment of local "Fisheries Management Committee" (FMC) at each selected reservoir and community pond;</li> <li>2.2 Organize training on participatory fisheries management and other technical aspects (i.e. artificial fish breeding, fry nursing, etc.) for local staff (provincial, district, Government hatchery) and fish farmer or fisher groups;</li> <li>2.3 Implement, monitor and evaluate project plan;</li> <li>3.1. Conduct a review study (including a detailed institutional analysis) of Government fish hatchery stations;</li> <li>3.2. Organize consultation meetings to develop strategic plan for the management and development of Government fish hatchery stations with the participation of concerned agencies and authorities at the central level and local level;</li> <li>3.3. Organize training on management/administration and technical subjects to technical staff of each Government fish hatchery station;</li> <li>3.4. Implement, monitor and evaluate project plan.</li> </ol>
<b>Location</b>	To be completed
<b>Implementation arrangements</b>	<p>The Department of Livestock and Fisheries (Fisheries Division) will coordinate with the responsible fisheries agencies and authorities for the project implementation of all proposed activities.</p> <p>The Nam Souang Aquaculture Development Center (NADC) will provide technical assistance and facilitate technical training sessions for the local staff (provincial, district, Government fish stations).</p> <p>The Fisheries Division (DLF) will establish a project coordination unit at NADC in order to implement the project activities with the concerned local agencies and authorities.</p>

<b>Project Title</b>	Promote the development of aquaculture in Lao PDR	<b>BDP ref</b> FA 1.4
----------------------	---	-----------------------

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	To be completed
<b>External coordination requirements</b>	To be completed
<b>Internal coordination requirements</b>	To be completed.

## Project funding

<b>Existing funding</b>	Total budget: \$1,500,000 Secured funding: \$0
<b>Additional funding required</b>	Budget gap: \$1,500,000

## Work plan

<b>Work plan</b>	To be completed
<b>Cost estimate of additional funding requirements</b>	To be completed

## Supporting documentation

<b>Document Title</b> and electronic file reference	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
Freshwater Aquaculture in the Lower Mekong Basin - MRC Technical Paper No. 7	2002	M.J. Phillips	Final	A report based on contributions of aquaculture and rural development specialists working in the Mekong basin. The material presented in this report was initially gathered for the MRC Fisheries Sector Review

## Outline of PIN Focus Area 1.5

<b>Project Title</b>	Improve fishery statistics in Lao PDR	<b>BDP ref</b>	<b>FA 1.5</b>
<b>Responsible (lead) entity</b>	The Department of Livestock and Fisheries (DLF - Fisheries Division)	<b>Start date</b>	NA
<b>Other entities involved</b>	Ministry of Agriculture and Forestry (MAF)/DOP, MAF Information Center, NAFRI, LARReC, LSB and local authorities (PAFO, PLFO, DAFO)	<b>End date</b>	NA
<b>Principal beneficiaries</b>	DLF, MAF, and fisheries managers		

## Objectives and key performance indicators

<b>Goal</b>	Baseline data and information on the status and trends of capture fisheries and aquaculture in Lao PDR are made available for policy makers, planners, and managers.	
<b>Immediate objective(s)</b>	To improve data collection system for gathering baseline information and monitoring the status and trends of capture fisheries and aquaculture in Lao PDR.	
<b>Indicators of success Outcomes</b>	Outcome 1: A strategic plan for improving fisheries data collection system is developed; Outcome 2: Capacity on fisheries data collection of technical staff at the central level and local level (PLFO and DAFO) is strengthened.	
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. Summary of workshops, progress reports;</li> <li>2. A report containing information on the current of fishery statistics and fisheries data collection system with recommendations for improvement;</li> <li>3. Consultation workshops organized with strategy completed on the improvement of fishery statistics with the concerned agencies and authorities at the central and local level;</li> <li>4. Technical working group established to develop technical guidelines on conducting fisheries baseline survey;</li> <li>5. Strategic plan developed for improving fishery statistics with the participation of all concerned central agencies and local authorities;</li> <li>6. Training conducted on methodologies for the collection of fishery statistics (data collection, data analysis, database management) for technical staff at the central level and local level;</li> <li>7. A fishery information network (database and communication system) established at the central and local levels;</li> <li>8. Midterm and final evaluations.</li> </ol>	
<b>Milestone dates</b>	<b>Proposed Activities</b>	<b>Schedule</b>
	Review national fishery censuses and surveys	
	Organize consultation meeting with key stakeholders (i.e. MAF, DLF, DPC, MAF Information Center, NAFRI, LARReC, LSB, etc.)	
	Setup technical working group to improve survey methodology (fishery questionnaires / survey forms)	
	Develop training manual / technical guidelines	

<b>Project Title</b>	Improve fishery statistics in Lao PDR	<b>BDP ref</b> FA 1.5
	Training of central and local technical staff on survey methodology, data analysis, database management	
	Conduct pilot study (testing methodology) in selected provinces	
	Organize final evaluation meeting	
	Final technical report	
<b>Linkages to other Projects</b>	MRC's Fisheries Programme	

## Description of the project

<b>Outline description</b>	Fishery statistics in Lao PDR were previously estimated based on area and yield for the estimation of fish production from both capture fisheries and aquaculture. Although, there are some national censuses and surveys that cover fishery aspects, but however, there still is a need to improve the survey methodologies and establish an appropriate data collection system that could monitor the status and trends of capture fisheries and aquaculture in a more appropriate and scientifically way in order to provide accurate and reliable information to policy makers, planners and managers.
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>• Conduct a review study of fishery statistics and fisheries data collection system that was previously implemented at the central level and local level (provincial/district) to identify problems and constraints for further improvement;</li> <li>• Organize consultation meetings on the improvement of fishery statistics with the concerned agencies and authorities at the central level (MAF Department of Planning (DOP), MAF Information Center, DLF, NAFRI, LARReC, Lao Statistics Bureau (LSB) and local level (PAFO, PLFO, DAFO);</li> <li>• Establish a technical working group to develop technical guidelines on conducting fisheries baseline survey;</li> <li>• Develop a strategic plan for improving fishery statistics with the participation of all concerned central agencies and local authorities;</li> <li>• Organize training on methodologies for the collection of fishery statistics (data collection, data analysis, database management) for technical staff at the central level and local level (provincial/district);</li> <li>• Establish a fishery information network (database and communication system) at the central and local levels;</li> <li>• Implement, monitor and evaluate project plan.</li> </ul>
<b>Location</b>	DLF, Vientiane, Lao PDR
<b>Implementation arrangements</b>	<p>The Department of Livestock and Fisheries (Fisheries Division) will coordinate with all concerned central agencies (MAF/DOP, MAF Information center, NAFRI, LARReC, LSB) and local authorities (PAFO, PLFO, DAFO) for the implementation of all proposed activities as mentioned above.</p> <p>The Fisheries Division (DLF) will establish a technical unit responsible for improving fishery statistics and developing a fishery data collection system and coordinate with the local fishery authorities (PLFO and DAFO).</p>

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating</b>	Risk: no access to data and information, data gap, lack of interest and cooperation from
--	--

<b>Project Title</b>	Improve fishery statistics in Lao PDR	<b>BDP ref</b> FA 1.5
<b>risks</b>	the concerned line agencies Mitigation: make official request to access necessary data and information from the concerned line agencies	
<b>External coordination requirements</b>	Need technical expertise from international organization such as FAO	
<b>Internal coordination requirements</b>	Need technical expertise from national agency such as the Lao Statistics Bureau (LSB)	

## Project funding

<b>Existing funding</b>	Total budget: \$1,000,000 Secured funding: \$0
<b>Additional funding required</b>	Budget gap: \$1,000,000

## Work plan

<b>Work plan</b>	To be completed
<b>Cost estimate of additional funding requirements</b>	To be completed

## Supporting documentation

<b>Document Title</b> and electronic file reference	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
Inland capture fishery statistics of Southeast Asia: current status and information needs	2002	David Coates	Final	This report assesses the quality and relevance of existing statistics on inland capture fisheries and the extent to which the statistics meet management objectives. The report suggests ways in which the existing statistics might be improved through cost-effective means and explores the information needs for inland capture fisheries.



## Outline of PIN Focus Area 2.1

<b>Project Title</b>	Strengthening the hydropower management system under the framework of the RBCs	<b>BDP ref</b>	<b>Lao NIP 2.1</b>
<b>Responsible (lead) entity</b>	Lao Ministry of Natural Resources and Environment (MONRE), Department of Water Resources	<b>Start date</b>	January 2013
<b>Other entities involved</b>	MEM River Basin organizations Hydropower plant Operators in the relevant basins National Agriculture and Forestry Research Institute (NAFRI)	<b>End date</b>	June 2014
<b>Principal beneficiaries</b>	Farmers directly and indirectly, fishermen with aquaculture activities, local inhabitants; hydropower project companies.		

## Objectives and key performance indicators

<b>Goal</b>	To obtain a thorough understanding of the available water resources and potential impacts of proposed development and improve the livelihoods of basin communities through sustainable management of water allocation
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>To improve capacity for effective governance and coordination through RBC.</li> <li>To improve information exchange and data sharing between hydropower operators and RBC.</li> <li>To provide mutual benefits through efficient and effective water resource management, i.e. on the principles of economic viability, social equity and biodiversity conservation.</li> <li>To maintain and enhance community access and control over their natural resource base.</li> <li>To support development and operation of a knowledge and information centre to disseminate experiences and lessons learned regarding monitoring and evaluation by RBC.</li> <li>To strengthen the accountability of hydropower operators in their areas of responsibility.</li> </ol>
<b>Indicators of success Outcomes</b>	<p>Outcome 1: Good water management, including adaptation to climate change, through an integrated and holistic approach;</p> <p>Outcome 2: Effective governance to meet current and future demands by various sectors, and address water-related disasters;</p> <p>Outcome 3: Sustainable agriculture and farming through irrigation, which are practiced by women and men farmers to improve livelihoods and enhance and conserve biodiversity;</p> <p>Outcome 4: Community access to information hydropower operation regime to increase benefits for local villagers;</p> <p>Outcome 5: Knowledge and information is systematically shared and translated into evidence-based policies and approaches;</p> <p>Outcome 6: RBO structures, processes and capacity are established and effectively mainstreamed.</p>
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>Summary of workshops, progress reports</li> <li>Training modules and documentation, water planning tools, knowledge database</li> <li>Report on agriculture, afforestation and farming diversification and intensification activities</li> </ol>

<b>Project Title</b>	Strengthening the hydropower management system under the framework of the RBCs	<b>BDP ref</b>	<b>Lao NIP 2.1</b>
	<ol style="list-style-type: none"> <li>4. Report on riparian restoration and conservation activities</li> <li>5. Sub-RBO committees established</li> <li>6. Midterm and final evaluations</li> </ol>		
<b>Milestone dates</b>	To be completed		
<b>Linkages to other Projects</b>	<ul style="list-style-type: none"> <li>• National Policy on Environmental and Social Sustainability of the Hydropower Sector in Lao PDR, 2007 (NPSH)</li> <li>• River Basin Organization Frameworks</li> </ul>		

## Description of the project

<b>Outline description</b>	The current development of hydropower is accompanied by the rapid development of other sectors such as agriculture and forestry, mining, tourism, aquaculture and also by infrastructural development such as roads, towns, water and electricity supply. Hydropower development not only provides direct benefits through its generated electricity but is also regarded as a renewable source of energy and water supply during the dry season. Good results would be attained via cooperation with RBO within the specific river basins.
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>• Options and systems for livelihoods based in river basins are designed, demonstrated and applied by farming communities and other stakeholders</li> <li>• The National Policy on Sustainable Hydropower Development guidelines are followed and implemented by the hydropower operators and monitors by the RBC and other stakeholders</li> <li>• Forest and land-use planning process are shared, updated and managed in targeted river basins</li> <li>• Coordination guidelines are formulated for baselines and surveys so data access is guaranteed and undertaken</li> <li>• Knowledge sharing and learning networks are established to foster discussion and collaboration about water allocation among diverse stakeholders</li> <li>• Central GoL agencies incorporate RBO frameworks into strategies, action plans and institution arrangements</li> </ul>
<b>Location</b>	All major river basins such as Nam Ngum River basin, Nam Theun-Nam Kading River basin, and Nam Ou River basin.
<b>Implementation arrangements</b>	<p>The program is jointly managed by MONRE/RBOs and hydropower plant operators as well as the Development Agencies.</p> <p>The day-to-day management is in the hands of the respective RBOs in closed collaboration with Department of Water Resources.</p>

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	<p>Risk: Concern about streamlining the existing structure of RBOs due to involved Government agencies' lack of capacity to implement activities.</p> <p>Mitigation: Focus on exploiting current activities of on-going projects carried out by RBOs and/or establish cooperation with additional stakeholders for supplementary activities.</p> <p>Mobilize organizations and people who have the appropriate capacities and are stakeholders in development issues, e.g. supporting farmer groups at community level to provide information for dissemination to other organizations and associations. Such organizations and human resources are more available at local than at national level and can create constructive competition for resources as well.</p>
--	---

<b>Project Title</b>	Strengthening the hydropower management system under the framework of the RBCs	<b>BDP ref</b> Lao NIP 2.1
<b>External coordination requirements</b>	The project is closely linked with the existing RBO in each basin separately with provincial decision-making authorities	
<b>Internal coordination requirements</b>	Continue to work closely with the Ministry of Natural Resources and Environment (MONRE) and the Coordination Unit (CU) established in the Department of Water Resources. Continue working with other programmes, keep updated information and exchange lessons learned and tools with other programmes	

## Project funding

<b>Existing funding</b>	Total budget for current phase: \$500,000 Existing funding: \$0
<b>Additional funding required</b>	Budget gap: \$500,000

## Work plan

<b>Work plan</b>	To be completed
<b>Cost estimate of additional funding requirements</b>	To be completed

## Supporting documentation

<b>Document Title</b> and electronic file reference	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
--	-------------	---------------	---------------------------------	-------------------------

## Outline of PIN Focus Area 3.1

<b>Project Title</b>	Strengthening of water resource procedures and guidelines	<b>BDP ref</b>	<b>FA 3.1</b>
<b>Responsible (lead) entity</b>	Department of Water Resources of MONRE	<b>Start date</b>	NA
<b>Other entities involved</b>		<b>End date</b>	NA
<b>Principal beneficiaries</b>	Water Resource Managers in Lao PDR		

## Objectives and key performance indicators

<b>Goal</b>	The goal of this project is to strengthen water resource procedures and guidelines in order to make more informed decisions on the sustainable and equitable use of water.
<b>Immediate objective(s)</b>	To ensure water resources are used efficiently and sustainably.
<b>Indicators of success Outcomes</b>	Outcome 1: Greater efficiency (quality and quantity) in water uses; Outcome 2: Shared water resources management; Outcome 3: Improved protection of water resources; Outcome 4: Sustainable water management strategies are developed at the local, regional and national levels.
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. Summary of progress reports;</li> <li>2. A comprehensive report with information on the existing water resources, resource uses, existing schemes and provisions as well as future schemes being considered, gaps/limitations in actual implementation of schemes, and alternative approaches for resource use at different levels;</li> <li>3. A report on existing institutional water resources practices at the national and local level;</li> <li>4. Guidelines and procedures developed for water use for multi-purposes, including water allocation and water diversion plans;</li> <li>5. Improved regulations and laws related to water resource management are developed;</li> <li>6. Midterm and final evaluations.</li> </ol>
<b>Milestone dates</b>	To be completed
<b>Linkages to other Projects</b>	MRC's Mekong Integrated Water Resources Management Project (2009–12)

## Description of the project

<b>Outline description</b>	The GoL aims to improve water resources management to ensure equity in water access and to distribute the benefits of water development across all users in society. Policies that promote the efficient use of water, ensure cost recovery, stakeholder participation, and environmental protection also contribute to poverty reduction, and the long-term protection of water resources. To achieve these goals, it will be critical to strengthen water resource procedures and guidelines in Lao PDR.
----------------------------	--

<b>Project Title</b>	Strengthening of water resource procedures and guidelines	<b>BDP ref</b> FA 3.1
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>• Baseline study is conducted to determine the existing water resources, resource uses, existing schemes and provisions as well as future schemes being considered, gaps/limitations in actual implementation of schemes, and alternative approaches for resource use at different levels;</li> <li>• Study on existing institutional water resources practices at the national and local level is completed;</li> <li>• Procedures for equitable and sustainable water use are developed;</li> <li>• Improved regulations and laws related to water resource management are developed;</li> <li>• Guidelines and procedures developed for water use for multi-purposes, including water allocation and water diversion plans.</li> </ul>	
<b>Location</b>	National level	
<b>Implementation arrangements</b>	To be completed	

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	<p>Risk: Lack of information available on surface and ground water quality and quantity, scale of pollution of sources, needs and demands for water, technical or socio-economic data.</p> <p>Mitigation: Map existing water resources, resources uses, existing schemes and provisions, gaps/limitations in actual implementation of schemes, and alternative approaches for resource use at different levels.</p> <p>Risk: Capacity gaps at various levels constrain implementation.</p> <p>Mitigation: Assess the required human, technical, financial and institutional capacities at all levels, and develop effective capacity building programs for government staff for improved management of PAs at local and provincial levels.</p> <p>Risk: National water policies and regulations are not disseminated.</p> <p>Mitigation: Implement public awareness campaigns at the local level using popular media outlets.</p>	
<b>External coordination requirements</b>	To be completed	
<b>Internal coordination requirements</b>	To be completed	

## Project funding

<b>Existing funding</b>	Total budget: \$350,000 Secured funding: \$0
<b>Additional funding required</b>	Budget gap: \$350,000

## Work plan

<b>Work plan</b>	To be completed
------------------	-----------------

<b>Project Title</b>	Strengthening of water resource procedures and guidelines	<b>BDP ref</b> FA 3.1
<b>Cost estimate of additional funding requirements</b>	To be completed	

## Supporting documentation

<b>Document Title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
Policy guidelines - Water resource management	2011	WaterAid in Nepal	Final	This document sets out a guideline for adopting water resource management initiatives while delivering water, sanitation and hygiene education services in both rural and urban contexts. This guideline discusses how best to deliver water, sanitation and hygiene education services while keeping water resource management at the heart of service provision.
Guidelines on Implementation of the Procedures for Water Use Monitoring	2003	MRC	Final	Describes the guidelines that were adopted at the 10" meeting on November 30", 2003

## Outline of PIN Focus Area 3.2

<b>Project Title</b>	Strengthening of the Nam Ou River Basin Management	<b>BDP ref</b>	<b>FA 3.2</b>
<b>Responsible (lead) entity</b>	Department of Water Resources of MONRE	<b>Start date</b>	NA
<b>Other entities involved</b>	MONRE (Department of Protected Forestry, Department of Geology, RBCs) MEM / Department of Energy Policy and Planning	<b>End date</b>	NA
<b>Principal beneficiaries</b>	Local communities, private sector, and other water resource users in the project area		

## Objectives and key performance indicators

<b>Goal</b>	The goal of this project is to support the sustainable water resources management in the Nam Ou basin to ensure the long term, reliable and sustainable supply of good quality surface and groundwater for economic, environmental and social purposes.
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>1. Build capacity in the establishment and management of Nam Ou RBC to support decentralization policy of MRC and river basin initiative of the GoL;</li> <li>2. Effectively and efficiently managed prioritized river basins;</li> <li>3. Develop Nam Ou basin management plans.</li> </ol>
<b>Indicators of success Outcomes</b>	<p>Outcome 1: Effective coordination and cooperation with government agencies at the different levels and with water using and impacting sectors;</p> <p>Outcome 2: River basin plans that share water between users and the environment and which comply with the goals and rules for Mekong river management;</p> <p>Outcome 3: Improved understanding, capacity and cooperation of resource users.</p>
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. Summary of progress reports;</li> <li>2. A report with information on the results of the stakeholder mapping conducted to identify the diverse water resource users' and land managers' groups, as well as the private sector at the ground level;</li> <li>3. Membership list of RBC and Secretariat established with clear mandates;</li> <li>4. Training modules and capacity building plan developed and implemented;</li> <li>5. IWRM work plan and basin management plans developed and approved;</li> <li>6. Updated scenarios for basin management and river basin profile;</li> <li>7. Dispute-resolution mechanisms developed and capacity building plan for RBC on these mechanisms implemented;</li> <li>8. Midterm and final evaluations.</li> </ol>
<b>Milestone dates</b>	To be completed
<b>Linkages to other Projects</b>	The Nam Ngum River Basin Development Project ADB's project: Updating the National Water Resources Policy and Strategy

## Description of the project

<b>Outline description</b>	The central function of basin- and sub-basin level management is the equitable, productive and sustainable sharing of the basin's water resources. This project will build
----------------------------	--

<b>Project Title</b>	Strengthening of the Nam Ou River Basin Management	<b>BDP ref</b> FA 3.2
	the capacity and approach of governments at all levels, the private sector and community for the coordinated development, protection and enhancement of the Nam Ou River Basin's water and related resources.	
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>• Stakeholder mapping, engagement and awareness building completed;</li> <li>• The membership for the Nam Ou RBC and the Secretariat are set up, with membership for the RBC to include national line agencies and provincial governments;</li> <li>• RBC is established in the Nam Ou Basin;</li> <li>• Capacity building program for RBC members implemented;</li> <li>• IWRM work plan and basin management plans are developed to address the priority issues;</li> <li>• Scenarios for basin management developed and river basin profile is reviewed and updated;</li> <li>• Dispute-resolution mechanisms are set up and RBC members trained on these mechanisms.</li> </ul>	
<b>Location</b>	Nam Ou River Basin	
<b>Implementation arrangements</b>	To be completed	

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	<p>Risk: RBC has insufficient authority and recognition. Mitigation: Government to agree on the mandate and composition of the RBC, prepare and implement relevant regulations.</p> <p>Risk: Lack of human resources and technical capacity to fulfill the required tasks. Mitigation: Capacity building plan is developed and implemented with sufficient resources.</p> <p>Risk: Limited understanding on IWRM at national and local levels. Mitigation: Awareness Raising Plan developed and under implementation.</p> <p>Risk: Poor coordination and cooperation among government agencies at the different levels and with the communities and private sector. Mitigation: Strengthen the capacity of the RBO Secretariat to provide this support, and prepare and implement a Stakeholder Engagement Strategy.</p>	
<b>External coordination requirements</b>	To be completed	
<b>Internal coordination requirements</b>	To be completed	

## Project funding

<b>Existing funding</b>	Total budget: \$1 million Secured funding: \$0
<b>Additional funding required</b>	Budget gap: \$1 million



<b>Project Title</b>	Strengthening of the Nam Ou River Basin Management	<b>BDP ref</b>	<b>FA 3.2</b>
----------------------	--	----------------	---------------

## Work plan

<b>Work plan</b>	To be completed
<b>Cost estimate of additional funding requirements</b>	To be completed

## Supporting documentation

<b>Document Title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
Governing International Watercourses. River Basin Organizations and the Sustainable Governance of Internationally Shared Rivers and Lakes	2012	Susanne Schmeier	Approved	This book focuses on River Basin Organizations as the key institutions for managing internationally shared water resources. This includes a comparative analysis of all River Basin Organizations worldwide and three in-depth case studies from three different continents. The detailed case studies are the Senegal (West Africa), Mekong (South-east Asia) and Danube (Europe) rivers.
Forming the Nam Ngum River Basin Committee	2011	Chanthanet Boulapha and Clive Lyle	Final	This paper describes work under the Nam Ngum River Basin Development (Sector) Project (NNRBDP, 2004-2010)

## Outline of PIN Focus Area 3.3

<b>Project Title</b>	Strengthening the Management of the Conservation and Protection Forest Areas Programme	<b>BDP ref</b>	<b>FA 3.3</b>
<b>Responsible (lead) entity</b>	Department of Forest Resources Management & DMH of MONRE	<b>Start date</b>	2011
<b>Other entities involved</b>	Ministry of Interior: Department of National Geographic; MEM: Department of Energy Policy and Planning, provincial offices and districts	<b>End date</b>	2015
<b>Principal beneficiaries</b>	Direct beneficiaries are local communities surrounding the Conservation and Protection Forest Areas		

## Objectives and key performance indicators

<b>Goal</b>	The ultimate goal of this project is to enhance management of National Conservation and Protected Area Management in Lao PDR, and to ensure that these areas can be maintained and monitored effectively in the future.
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>1. Formulate an action plan for protection forest area management;</li> <li>2. Strengthening technical staff on surveying &amp; inventory techniques, demarcation and management skills;</li> <li>3. To rehabilitate 3.9 million hectares of forest for conservation forests, protection forests and plantation forests;</li> <li>4. To monitor the seasonal rainfall to secure the water inflow/supply for hydropower plants and other end-users;</li> <li>5. Formulate a programme on forest fire prevention and fighting, including capacity building, purchasing equipment.</li> </ol>
<b>Indicators of success Outcomes</b>	<p>Outcome 1: Forest cover has increased to 65% by 2015;</p> <p>Outcome 2: Strict protection is maintained in core zones of protected forests;</p> <p>Outcome 2: Local communities have increased control over forest resources and are practicing sustainable livelihood improvement activities in management zones of the conservation and protected forests;</p> <p>Outcome 3: Degraded forest areas are restored and rehabilitated with indigenous species, and protection is monitored and maintained;</p> <p>Outcome 4: Biodiversity is maintained in National Conservation and Protected Areas.</p>
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. Summary of progress reports;</li> <li>2. Management and Action Plans completed for 14 national protection forest areas in the sub-basin of LMB and 48 catchment areas, to increase forest cover to 65% by 2015;</li> <li>3. Action plans developed for the Programme for Action on restoring 3.9 million hectares of forest by year 2018 in catchment areas of hydropower dams, land and water conservation, etc.;</li> <li>4. Strategy for enforcement of legal framework implemented;</li> <li>5. On-going monitoring of rainforest, national park mapping with GIS system;</li> <li>6. Assessment of areas vulnerable to forest fires completed;</li> <li>7. Programme and Action Plans on forest fire prevention and fighting to protect about 13 million hectares in conservation and protection forest, including the establishment of forest fighting stations.</li> <li>8. Midterm and final evaluations.</li> </ol>
<b>Milestone dates</b>	To be completed

<b>Project Title</b>	Strengthening the Management of the Conservation and Protection Forest Areas Programme	<b>BDP ref</b> FA 3.3
<b>Linkages to other Projects</b>	Sustainable National Protected Area Management (SuNPAM), supported by UNDP/GEF	

## Description of the project

<b>Outline description</b>	This project will support the management and improvement of protected areas within Lao PDR, as well as the conservation of species in and outside of protected areas.
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>• A problem analysis is undertaken and used to develop the action plan for protection forest area management;</li> <li>• Organize consultation meetings to develop an action plan for the improvement of protection forest area management, including a rehabilitation plan for conservation forests, protection forests and plantation forests at the central and local levels;</li> <li>• Training for technical staff on surveying &amp; inventory techniques, demarcation and management skills;</li> <li>• Collect data from local hydro-met stations to monitor the seasonal rainfall to secure the water inflow/supply for hydropower plants and other end-users;</li> <li>• Training programme developed and delivered to technical staff on forest fire prevention and fighting, including capacity building, purchasing equipment;</li> <li>• Monitoring and evaluation of the project plan.</li> </ul>
<b>Location</b>	National level and target provinces (Khammouane, Salavanh, Savannakhet, Champasak)
<b>Implementation arrangements</b>	To be completed

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	<p>Risk: Ineffective management will result in significant constraints for project implementation and the management of protected areas (PAs). Mitigation: Ensure effective capacity building programs for government staff for improved management of PAs at local and provincial levels.</p> <p>Risk: GoL does not attract sustainable financing to ensure that the Conservation and Protection Forest Areas can be maintained and monitored effectively in the future. Mitigation: Utilize hydropower levies as a source of funds for PA management, ensuring that the levies are sufficient for the PA management requirements and their use are clearly defined.</p> <p>Risk: There will be a lack of trained personnel to implement project activities. Mitigation: Effectively use the government trained conservation professionals at the national level and provide training for PA management ability at the provincial and local level.</p> <p>Risk: Local stakeholders, particularly smallholder farmers, are excluded from PA management. Mitigation: Formulate a policy environment for PA management which combines enhancement of conservation values with improved community livelihoods.</p> <p>Risk: Decentralization of natural resource management responsibilities from the centre to the provinces does not result in decreased deforestation and forest degradation. Mitigation: Ensure that decentralized responsibility for NPA management is accompanied by sufficient resources and commitment to local implementation.</p>
<b>External coordination requirements</b>	To be completed

<b>Project Title</b>	Strengthening the Management of the Conservation and Protection Forest Areas Programme	<b>BDP ref</b>	<b>FA 3.3</b>
<b>Internal coordination requirements</b>	To be completed.		

## Project funding

<b>Existing funding</b>	Total budget: \$97 million Secured funding: ADB Biodiversity Corridors \$20 million (for 4 NPAs)
<b>Additional funding required</b>	Budget gap: \$77 million

## Work plan

<b>Work plan</b>	To be completed
<b>Cost estimate of additional funding requirements</b>	To be completed

## Supporting documentation

<b>Document Title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
Lessons learned in Cambodia, Lao PDR, Thailand and Vietnam. Review of Protected Areas and Development in the Lower Mekong River Region	2003	ICEM	Final	This review looks back at the past decade or more of experience in the four countries with protected areas and their links to development. Key lessons learned are discussed in terms of achievements and remaining challenges. Background papers were prepared and round table meetings involving all key sectors and levels of government facilitated this national analysis of lessons.
Review of the National Protected Area System of Lao PDR	2001	W. Robichaud, C.W. Marsh, S. Southammakoth, S. Khounthikoummane	Final	This document is one in a series of resulting documents to assist and provide knowledge and ideas to personnel responsible for policy, planning, and implementation of agriculture and forestry development programmes. It contains lessons and experiences learnt during the programme.
A Manager's Guide to Protected Area Management in the Lao PDR	2000	Department of Forestry/ Lao-Swedish Forestry Program/IUCN	Final	This training manual provides practical advice on tasks to be accomplished during the early years of managing a protected area. Topics include staffing and organization, planning and reporting, participatory land use planning and management, resources inventory-monitoring and protection, livelihood development and conservation education.

Project Title	Strengthening the Management of the Conservation and Protection Forest Areas Programme			BDP ref FA 3.3
The Conservation Handbook: Research, Management and Policy	2000	W. J. Sutherland	Final	This book provides guidance on the implementation of conservation techniques, and includes methods for ecological research, monitoring, planning, education, habitat management and combining conservation with development. Nineteen case studies illustrate how the methods have been applied.
Wildlife in Lao PDR: 1999 Status Report	1999	J. W. Duckworth, R. E. Salter and K. Khounboline	Final	The work documents the status and conservation recommendations for every vertebrate, excluding fish, ever known to have occurred in Lao PDR.

## Outline of PIN Focus Area 4.1

<b>Project Title</b>	Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project	<b>BDP ref</b>	<b>FA 4.1</b>
<b>Responsible (lead) entity</b>	Cambodia: Ministry of Water Resources and Meteorology (MOWRAM); Lao PDR: Ministry of Agriculture and Forestry (MAF); Viet Nam: Ministry of Agriculture and Rural Development (MARD)	<b>Start date</b>	January 2013
<b>Other entities involved</b>	<p>Cambodia: Provincial Department of Water Resources and Meteorology (PDWRAM) Pursat; Department of Hydrology and River Works (DHRW);</p> <p>Lao PDR: Department of Meteorology and Hydrology (DMH), Department of Waterways (DOW), Provincial Agriculture and Forestry Office (PAFO);</p> <p>Viet Nam: Provincial Departments of Agriculture and Rural Development (PDARDs) of Tien Giang and Dong Thap</p> <p>Lao PDR: Three Implementing Agencies (IA) will be established. MAF will establish a project implementation office (PIO) in PAFO of Vientiane Capital to manage and supervise implementation of the Vientiane Irrigation Development Subproject; the Ministry of Public Works and Transport (MPWT) will establish a PIO within its DOW, to manage and supervise the implementation of the Flood Protection Embankment Subproject; and DMH will establish a PIO for implementation of the National Early Warning Center (NEWC) in Vientiane.</p>	<b>End date</b>	December 2018
<b>Principal beneficiaries</b>	The Project will improve flood and drought risk management for farmers of more than 20,000 ha and reduce the vulnerability of floods for more than 61,500 people in Vientiane province.		

## Objectives and key performance indicators

<b>Goal</b>	The goal of the project will be to improve the capacity of communities and the GoL to prepare for, respond to and recover from flood and drought events.		
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>1. Enhance regional data and knowledge for the management of floods and droughts;</li> <li>2. Upgrade or develop water management infrastructure; and</li> <li>3. Prepare communities to manage disasters such as flood and drought and adapt to climate change.</li> </ol>		
<b>Indicators of success Outcomes</b>	<p>Outcome 1: The regional data and knowledge for the management of floods and droughts will be enhanced;</p> <p>Outcome 2: Water management infrastructure will be developed or upgraded;</p> <p>Outcome 3: Communities will be better prepared to manage disasters such as flood and drought and increase their resilience to the impacts of climate change.</p>		
<b>Key deliverables</b>			
<b>Milestone dates</b>	<b>Proposed Activities</b>		<b>Schedule</b>
	<b>1. Strengthening regional cooperation in Lao PDR</b>		
	(i) Equip National Early Warning Center		Mid 2013
	(ii) Appoint NEWC staff		Early 2013
	(iii) Install MRC/FMMP software and calibration for selected basins		By 2014

<b>Project Title</b>	Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project	<b>BDP ref</b> FA 4.1
	(iv) Calibration and test forecasts in flood season	2014-2015
	<b>2. Water management infrastructure works in Lao PDR upgraded</b>	
	(i) Prepare detailed engineering design	By end Q2 2013
	(ii) Prepare resettlement plan and implement relocations according to plan	By end Q2 2013
	(iii) Call for bids	By end Q2 2013
	(iv) Contract for construction works	By end Q4 2013
	(v) Undertake construction works	By end Q4 2015
	(vi) Commission structures and undertake acceptance trials	By mid 2016.
	<b>3. Capacity for community based F&amp;D management developed in Lao PDR</b>	
	(i) Implement training for children, women and men in all project villages, including preparation of flood management plans, O&M plans and training for water control structures, road safety training for communities with new road access etc,	By 2015
	<b>4. Effective Project Management</b>	
	4.1 Appoint implementation management consultants	by 2/2013
	4.2 Establish NPCO in Vientiane	by December 2012
	4.3 Establish PIOs	by December 2012
	4.4 Establish national PPME mechanism	by 4/2013
	4.5 NPCO staff capacity building	(continuous)
<b>Linkages to other Projects</b>	This project links with the Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Projects being implemented in Vietnam and Cambodia	

## Description of the project

<b>Outline description</b>	The Project will support the Government of Lao PDR (GoL) to undertake structural and non-structural measures to prepare for and manage disaster risks linked to floods and droughts. Project interventions will (i) enhance regional data and knowledge for the management of floods and droughts; (ii) upgrade or develop water management infrastructure and (iii) prepare communities to manage disasters such as flood and drought and adapt to climate change. The Project will improve flood and drought risk management on more than 20,000 ha and reduce the vulnerability to floods of more than 61,500 people.
<b>Tasks and outputs</b>	<p><b>Output 1: Enhanced regional data, information and knowledge base for the management of floods and droughts.</b></p> <p>The project will assist the government of Lao PDR to strengthen its national flood and drought forecasting capacities.</p> <p><b>Output 2: Upgraded water management infrastructure.</b></p> <p>The project will support: (i) rehabilitation of flood control embankments, associated water control structures, and access roads; (ii) rehabilitation of drainage canals, including increasing flow capacity and improving water control infrastructure; and (iii) rehabilitation and extension of canals, water control structures and irrigation distribution networks. Specifically, in Lao PDR, the subprojects include the Vientiane Flood Protection Embankment and the Irrigation Development Subproject in Vientiane Capital.</p>

<b>Project Title</b>	Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project	<b>BDP ref</b> FA 4.1
	<p><b>Output 3: Enhanced capacity for CBDRM.</b></p> <p>Community based disaster risk management (CBDRM) forms an important strategy for enhancing the impact of the structural investments supported by the Project. In each of the communities where infrastructure development is undertaken, CBDRM actions will be implemented to ensure that communities are able to obtain the full benefit from the improved water control infrastructure and improved flood warnings. Community-driven flood and drought risk reduction measures will be implemented based on participatory local level disaster risk reduction and management plans; and</p> <p><b>Output 4: Effective project implementation.</b></p> <p>The project will support the executing agencies to undertake overall project oversight and strengthen the project planning, implementation and management capacities of implementing agencies.</p>	
<b>Location</b>	Vientiane province	
<b>Implementation arrangements</b>	<p><b>1. Subproject Preparation and Approval</b></p> <ul style="list-style-type: none"> <li>(i) Survey and preparation of Detailed Engineering Design;</li> <li>(ii) Updating of resettlement plans and preparation of environment management plans;</li> <li>(iii) Review/approval of detailed design;</li> <li>(iv) Preparation of tender documents;</li> <li>(v) Tendering for construction works;</li> <li>(vi) Complete implementation of resettlement plans and provision of required compensation to project affected people before issuing Instruction to proceed to contractors.</li> <li>(vii) Construction, including technical and safeguard supervision and monitoring;</li> <li>(viii) Commissioning, training and handover; and</li> <li>(ix) Operation, maintenance and monitoring.</li> </ul> <p><b>2. Detailed Design of Subprojects</b></p> <p>NPCO will recruit national consultants to carry out surveys and detailed engineering designs of civil works component. The PIOs will assist in carrying out the surveys as necessary and the relevant line agencies as well as the PIC will provide support to the national consultants as required during preliminary design. The preliminary designs will be reviewed by the relevant line agency and if found satisfactory will be submitted to the relevant Ministry for approval. Once the approval of the Ministry has been obtained, resettlement action will be initiated by the Ministry through the district authorities. The NPCO will then give the national consultants the order to proceed with the detailed design. The detailed design will be reviewed by the PICs, and if satisfactory will be submitted to the relevant line agencies for approval to ensure that the subproject design meets the required Lao standards and specifications for its type of infrastructure. Once approved by the relevant line agencies it will be submitted to PSC for approval</p> <p><b>3. Preparation of Bidding Documents</b></p> <p>Once the detailed designs are approved, NPCO will give the order to proceed to the national consultants to prepare bid documents following ICB or NCB procedures depending of the estimated value of the work. The bid documents will be prepared using ADB standard format documents. The draft English language version of the procurement documents for the first ICB and NCB contracts for each type of works will be submitted for ADB review and prior approval regardless of the estimated contract amount. ADB-approved procurement documents will be used as a model for all subsequent ICB and NCB procurement. Documents for ICB procurement will require prior approval of ADB. Documents for NCB procedures will require prior approval of ADB for the first contract for each agency, and all subsequent contracts of similar nature will require post approval. The PIC will review the bidding documents before</p>	



<b>Project Title</b>	Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project	<b>BDP ref</b>	<b>FA 4.1</b>
	they are submitted to NPCO		
	<p><b>4. Procurement of Works Contracts</b></p> <p>Procurement of civil works contracts for the subprojects will be carried out by NPCO following international competitive bidding (ICB) or national competitive bidding (NCB) procedures depending of the estimated value of the work, in accordance with ADB's Procurement Guidelines (2010, as amended from time to time) and the procurement plan in Section VI below. Procurement of contracts following NCB procedures will require prior approval of ADB for the first contract and all subsequent contracts of similar nature will require post approval. All ICB contracts will require prior approval of ADB. The PIC will assist the NPCO in the opening and evaluation of tenders. The NSC will set up a Procurement Committee for the Project comprising representatives from the NPCO and the three PIOs (DOI, MPWT/DOW and DMH), MOF, and MPI. The NPC of the NPCO will act as the secretary of the Procurement Committee. The Procurement Committee will be chaired by the representative of the agency for which the proposed contract award is submitted. For instance if the contract is for civil works for the Flood Protection Embankment, the representative of MPWT/DOW on the Procurement Committee will act as the chairman of the committee for that session. The NPCO will provide all contracts to the NSC for information. Civil works contracts for the rehabilitation of flood control embankments, associated water control structures, and access roads will be co-signed by NPCO and MPWT.</p> <p><b>5. Construction Supervision</b></p> <p>Upon award of contract to the contractors, the NPCO will issue an order to proceed to the national consulting firm to carry out supervision of construction works. The NPCO will also recruit safeguard monitoring entities to monitor the implementation of social and environmental safeguard measures identified in the RP, the EMP, and the GAP. Notice to proceed to the contractor will not be issued until the safeguards monitoring entity has certified that all requirements of the subproject resettlement plan have been fully implemented. The respective PIO will provide assistance and support to both the national consultants and the safeguard monitoring entities in supervision and monitoring of the implementation of the subprojects. The PIC will make regular field inspections during construction to ensure that the works are implemented according to specifications.</p>		

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	<p>Risks: Frequency and severity of flood and drought events exceed capacity of infrastructure due to climate change</p> <p>Mitigation: Develop pre- and post disaster protocols so that impacts are mitigated when an extreme weather event is inevitable</p>
<b>External coordination requirements</b>	To be completed
<b>Internal coordination requirements</b>	To be completed

## Project funding

<b>Existing funding</b>	The total project cost is estimated at \$37.09 million. The Government has requested a loan not exceeding \$24.00 million and a grant of \$12.50 million both from ADB's Special Funds resources to help finance the Project. The Loan and the Grant will be used for financing of resettlement and land acquisition, subprojects, project management and consulting services,
-------------------------	--

<b>Project Title</b>	Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project	<b>BDP ref</b> FA 4.1
	all inclusive of taxes and duties. The Government will finance the equivalent of \$0.59 million, from the central government allocation. The government contribution will be utilized to pay for salaries of NPCO staff, excluding staff secondment, to assist with overall Project implementation and technical coordination/facilitation of detailed designs of subprojects. The NPCO will be responsible for the local costs including staff costs for staff assigned to assist with subproject implementation in its area of authority, subproject management and implementation.	
<b>Additional funding required</b>	NA	

## Work plan

<b>Work plan</b>	To be completed
<b>Cost estimate of additional funding requirements</b>	NA

## Supporting documentation

<b>Document Title</b> and electronic file reference	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
Preparing the Greater Mekong Subregion Flood and Drought Risk Management and Mitigation Project	2008	Asian Development Bank	Final	

## Outline of PIN Focus Area 5.1

<b>Project Title</b>	Lao National Mekong Basin Information System (LNMBIS)	<b>BDP ref</b>	<b>FA 5.1</b>
<b>Responsible (lead) entity</b>	Lao National Mekong Committee Secretariat, Ministry of Natural Resources and Environment	<b>Start date</b>	Jan 2013
<b>Other entities involved</b>	Department of Meteorology and Hydrology; Data and Information Center for Natural Resources and Environment; Department of Geography; Department of Irrigation; Department of Forest Resources Management;	<b>End date</b>	June 2016
<b>Principal beneficiaries</b>	National line agencies, partner agencies, LNMC stakeholders, academic institutions.		

## Objectives and key performance indicators

<b>Goal</b>	Effectively support LMCS and relevant line agencies on the <b>development</b> and management of water and related resources in the Mekong Basin by providing basin-wide monitoring, impact assessment, modeling, forecasting, and knowledge management system for planning and programme implementation work
<b>Immediate objective(s)</b>	An Information System for the MRC (MRC-IS) which comprehensively integrates MRC data and information, is consolidated, regularly updated and made available for internal and external uses
<b>Indicators of success Outcomes</b>	<p>Outcome 1: Data storage system and IT infrastructure at LNMCS improved;</p> <p>Outcome 2: Manuals of standards and guidelines for data and information management and systems translated and made available for uses;</p> <p>Outcome 3: Quality control and correction of important datasets at LNMCS and LAs in place;</p> <p>Outcome 4: Data integration, content management and Metadata management system further developed in the Master Catalogue;</p> <p>Outcome 5: An up-to-date LNMCS database maintained and made available to national line agencies;</p> <p>Outcome 6: The operation and maintenance of the National Information System successfully transferred to Line Agencies;</p> <p>Outcome 7: The Procedures on Data, Information Exchange and Sharing (PDIES) successfully implemented</p>
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. Summary of workshops, progress reports</li> <li>2. Training modules and documentation, knowledge base</li> <li>3. Report on PDIES activities</li> <li>4. Report on decentralization of LNMBIS activities</li> <li>5. Translation of manuals and guidelines</li> <li>6. Methods for QA/QC</li> <li>7. National CBD strategy</li> <li>8. TACT re-established</li> <li>9. Midterm and final evaluations</li> </ol>

<b>Project Title</b>	Lao National Mekong Basin Information System (LNMBIS)	<b>BDP ref</b>	<b>FA 5.1</b>
<b>Milestone dates</b>	To be completed		
<b>Linkages to other Projects</b>	To be completed		

## Description of the project

<b>Outline description</b>	An Information System of the Lao National Mekong Basin (LNMB-IS) which comprehensively integrates MRC data and information, is consolidated, regularly updated and made available for internal and external uses.
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>• Upgrade both hardware and software for data storage and IT infrastructure especially servers at LNMCS</li> <li>• Support LNMCS in improving data and information management systems</li> <li>• Conduct needs assessment on data and information management in LNMCS and LAs</li> <li>• Translate manuals and guidelines used for data and information management systems</li> <li>• Provide capacity building in managing and maintaining the data and information system to national line agencies</li> <li>• Finalize manuals and guidelines for data quality assurance in LNMCS and LAs</li> <li>• Provide quality control and quality assurance to all historical and near real time data available in LNMCS</li> <li>• Transfer knowledge of data quality control and quality assurance to national agencies</li> <li>• Permanently upgrade the MRC master catalogue in both functionality and interface</li> <li>• Work with other programmes and line agencies to regularly update the databases</li> <li>• Support on development of National Information System at LNMCS and line agencies</li> <li>• Gradually handover the task of operation and maintenance of the NIS to national line agencies</li> <li>• Conduct re-assessment of custodians for data provision in the country.</li> <li>• Organize national consultations to identify the best mechanism for data exchange and sharing</li> <li>• Set up detailed manuals (agreements) for data exchange and sharing within LNMCS, LAs and MRCS</li> <li>• Regularly report and update information on PDIES to TACT and related meetings.</li> </ul>
<b>Location</b>	Lao National Mekong Committee Secretariat and Line Agencies. Some river basin committees will be included at a later stage.
<b>Implementation arrangements</b>	The program is managed by LNMCS; LNMBIS is guided by a National Steering Committee but the responsibility of the day-to-day management is in the hands of the IKMP Unit established in LNMCS.

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	<p>Risk: Concern about funding and additional tasks for LNMBIS, because the limitation for implementing additional activities is the lack of capacity of the involved Government agencies in terms of human resources.</p> <p>Mitigation: Focus on exploiting current activities of on-going IKMP in collaboration with WB, ABD-funded IWRM projects and additional stakeholders for supplementary activities.</p>
--	--

<b>Project Title</b>	Lao National Mekong Basin Information System (LNMBIS)	<b>BDP ref</b> FA 5.1
<b>External coordination requirements</b>	The project is linked with the World Bank-funded MIWRM project, and with the ADB-funded NIWRMSP project. It also builds on existing organizations and projects for a program approach.	
<b>Internal coordination requirements</b>	Continue to work closely with the TABI National Steering Committee and the TABI Coordination Unit (CU) established in MAF's Department of Planning. Continue working with other programmes, keep updated information and exchange lessons learned and tools with other programmes	

## Project funding

<b>Existing funding</b>	IKMP budget for current phase: \$6,000
<b>Additional funding required</b>	An additional funding of \$494,000 will be required

## Work plan

<b>Work plan</b>	NA
<b>Cost estimate of additional funding requirements</b>	NA

## Supporting documentation

<b>Document Title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/ Approved	<b>Summary Contents</b>
IKMP-PIP	2011	MRC	Final	

## Outline of PIN Focus Area 5.2

<b>Project Title</b>	Inventory of environmental hotspots in Lao PDR	<b>BDP ref</b>	<b>FA 5.2</b>
<b>Responsible (lead) entity</b>	MONRE	<b>Start date</b>	NA
<b>Other entities involved</b>	NUOL	<b>End date</b>	NA
<b>Principal beneficiaries</b>	Local communities living in and near the environmental hotspots of the Mekong River area in Lao PDR		

## Objectives and key performance indicators

<b>Goal</b>	To increase the understanding of the Mekong biodiversity and livelihoods in order to implement sound planning and policy-making that reflect the role of natural resources and biodiversity in sustaining local livelihoods and important ecosystems.
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>1. To provide an inventory and assessment of key environmental hotspots in Lao PDR</li> <li>2. To accurately map and document sensitive ecosystems, including wetlands, biodiversity hotspots and other areas</li> <li>3. To develop policies and regulations for management of environmental hotspots</li> </ol>
<b>Indicators of success Outcomes</b>	<p>Outcome 1: Detailed biodiversity surveys are completed and used to determine the most critical and vulnerable areas of biodiversity along the Mekong River</p> <p>Outcome 2: Increased understanding of riverine ecosystems, habitats, species and the communities that depend on natural resources for their livelihoods;</p> <p>Outcome 3: Increased understanding of potential changes along the Mekong River resulting from various development initiatives;</p> <p>Outcome 4: Knowledge gained from the biodiversity surveys and monitoring program is used to develop effective policies and regulations for managing environmental hotspots.</p>
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. Summary of progress reports;</li> <li>2. Survey and inventory study of environmental hotspots (wetlands and biodiversity) in the Lao PDR area of the Mekong River;</li> <li>3. Mapping and GIS database with important and sensitive ecosystems identified;</li> <li>4. Stakeholder workshops organized to identify and map natural resource use by local communities and developers in project area;</li> <li>5. Training modules and capacity building plan on natural resource management and planning developed and implemented;</li> <li>6. Policies and regulations for environmental hotspot management and conservation developed and approved;</li> <li>7. Long term monitoring and assessment plan developed and approved with specific monitoring sites identified for the continued collecting of baseline data along the Mekong River;</li> <li>8. Dissemination workshop with stakeholders involved in managing and utilising the resources along the Mekong River;</li> <li>9. Midterm and final evaluations.</li> </ol>
<b>Milestone dates</b>	To be completed
<b>Linkages to other</b>	MRC's Basin Development Plan (BDP) Programme

<b>Project Title</b>	Inventory of environmental hotspots in Lao PDR	<b>BDP ref</b>	<b>FA 5.2</b>
<b>Projects</b>	The Mekong Wetlands Biodiversity and Sustainable Use Programme, managed by the UNDP, IUCN, and MRC		

## Description of the project

<b>Outline description</b>	Managing the wetlands, forests and biodiversity of Lao PDR in a sustainable manner is essential to the efforts by the GoL to meet its development objectives of reducing poverty while promoting economic growth. There is currently little information about the status of these critical resources. This project will provide information on the location and condition of wetland and biodiversity hotspots along the Mekong River and support the development of policies and regulations to better inform development decisions and improve management of biodiversity and livelihoods in the Mekong basin.
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>• Inventory of environmental hotspots (wetlands and biodiversity) in the Lao PDR area of the Mekong River completed;</li> <li>• Mapping and GIS database developed, including important and sensitive ecosystems (environmental hotspots);</li> <li>• Compilation of data for wetland inventory and biodiversity assessment completed;</li> <li>• Environmental hotspot monitoring methodologies developed;</li> <li>• Policies and incentives for environmental hotspot management and conservation developed</li> </ul>
<b>Location</b>	Mekong River area in Lao PDR
<b>Implementation arrangements</b>	To be completed

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	<p>Risk: Lack of information coordination between government agencies;</p> <p>Mitigation: Responsibility for and ownership of the research is placed in the hands of decision-makers.</p> <p>Risk: Inadequate interagency coordination acts as a major barrier to a coherent management strategy;</p> <p>Mitigation: Developing the capacity for networking within and between governments.</p> <p>Risk: A conflict in management strategies between 'development oriented' and 'conservation oriented' approaches;</p> <p>Mitigation: Incorporate the rights and responsibilities of diverse resource users into governance and management decisions, as well as incorporating non-use and indirect-use values.</p>
<b>External coordination requirements</b>	To be completed
<b>Internal coordination requirements</b>	To be completed.

## Project funding

<b>Existing funding</b>	<p>Total budget: \$1 million</p> <p>Secured funding: \$0</p>
-------------------------	--

<b>Project Title</b>	Inventory of environmental hotspots in Lao PDR	<b>BDP ref</b>	<b>FA 5.2</b>
<b>Additional funding required</b>	Budget gap: \$1 million		

## Work plan

<b>Work plan</b>	To be completed
<b>Cost estimate of additional funding requirements</b>	To be completed

## Supporting documentation

<b>Document Title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/ Approved	<b>Summary Contents</b>
Assessment of Basin-wide Development Scenarios - Main Report and Technical Notes	2011	MRC	Final	The MRC's Basin Development Programme has developed basin-wide development scenario assessments covering a range of environmental, social, and economic criteria. The scenario assessments provide information for the Member Countries need to address their concerns and develop a shared understanding of the opportunities and risks of further water resources development. These assessments are presented in a 14-volume report, comprising a main report and 13 technical reports.
An Uncertain Future: Biodiversity and Livelihoods along the Mekong River in Northern Lao PDR	2006	Kate Lazarus, Pierre Dubeau, Channa Bambaradeniy, Richard Friend, Latsamay Sylavong	Final	This report presents a synthesis of the findings and key points of discussion drawn from three years (2003-2005) of monitoring and assessment of the biodiversity hotspots in the upper Mekong River region of Lao PDR. The purpose of these assessments has been to identify key areas of concern that require further regular monitoring and assessment as well as to make recommendations for future work.
Follow-up Survey for Biodiversity Assessment of the Mekong River in Northern Lao PDR.	2004	Pierre Dubeau (ed.)	Final	This report is part of the IUCN Water and Nature Initiative and Mekong Wetlands Biodiversity and sustainable Use Programme,



## Outline of PIN Focus Area 5.3

<b>Project Title</b>	Study on economic, social and environmental benefits of hydropower development in Lao PDR	<b>BDP ref</b>	<b>FA 5.3</b>
<b>Responsible (lead) entity</b>	LNMC	<b>Start date</b>	NA
<b>Other entities involved</b>	The NERI and NUOL	<b>End date</b>	NA
<b>Principal beneficiaries</b>	LNMC staff		

## Objectives and key performance indicators

<b>Goal</b>	To contribute to strengthening the hydropower management system in Lao PDR and thus to ensure long term benefits of hydropower development in Lao PDR.	
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>1. Review the existing hydropower management system in detail; including legal and institutional frameworks related to hydropower management;</li> <li>2. Asses economic, social and environmental impacts of current hydropower development in Lao PDR;</li> <li>3. Providing policy recommendation on how to improve hydropower management system in Lao PDR in order to secure its long term benefits.</li> </ol>	
<b>Indicators of success Outcomes</b>	Outcome 1: Findings of the study, particularly policy recommendations, are used for Improvement to and strengthening of the hydropower management system in Lao PDR to minimize risks and maximize benefits.	
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. A comprehensive report containing detailed information on (1) the existing hydropower management system in Lao PDR; (2) economic, social and environmental impacts of hydropower development in Lao PDR and (3) policy recommendations on how to strengthen the hydropower management system in order to secure its long term benefits;</li> <li>2. Policy briefing paper;</li> <li>3. Two consultation workshops organized during project implementation;</li> <li>4. One dissemination workshop at the end of the project implementation.</li> </ol>	
<b>Milestone dates</b>	<b>Proposed Activities</b>	<b>Schedule</b>
	Literature review and case study design	First, second and third months
	First national consultation workshop	Fourth month
	Finalizing case study design and survey tools and survey training	Fourth month
	Field survey	Fifth and sixth month
	Data entry, analysis and drafting report	Seventh, eighth and ninth months
	Second national consultation workshop	Tenth month
	Finalizing the report	Tenth and eleventh month
	Third consultation workshop	Twelfth month

<b>Project Title</b>	Study on economic, social and environmental benefits of hydropower development in Lao PDR	<b>BDP ref</b> <b>FA 5.3</b>
<b>Linkages to other Projects</b>	NA	

## Description of the project

<b>Outline description</b>	<p>The government of Lao PDR identified the hydropower sector as one of strategic sectors to drive economic growth and poverty reduction. The government has focused its efforts on facilitating and promoting investment in the sector. Hence, a significant investment amount has been flowing into the sector during the last decade. According to statistical data provided by the Ministry of Energy and Mines (MEM), from 1989 to 2008, the investment amount of USD 9,845.8 million, presenting about 59 percent of total foreign direct investment flow into Lao PDR during the same period. Currently, there are 6 hydropower projects in operation; 10 projects are under construction and will be in operation in the near future; 26 projects are under investigation; 34 projects have MOUs and the remaining 8 projects are under MOU preparation. So, there would have around 84 hydropower projects in Lao PDR in the near future.</p> <p>Based on the statistical data, the hydropower sector will be a very large and very important sector for Lao PDR's economy, on one hand, and on the other hand, the development of hydropower is associated with risks and vulnerabilities; particularly it could affect forest cover, water quality and quantity, aquatic biodiversity, people's livelihoods, etc. Therefore, the hydropower development requires a strong management system to maximize economic benefits and minimize negative social and environmental impacts. This study aims to review the existing hydropower management system, assess the economic, social and environmental impacts of hydropower in Lao PDR and provide policy recommendation on how to strengthen the management system to secure long term benefits of hydropower in Lao PDR.</p>
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>• <u>Literature survey and analysis</u>: This will be an important task. During the project implementation, the research team will be required to collect and analyze all available publications and documents related to the topic, including previous related research publication, socio-economic development reports, regulations and laws related to hydropower management in Lao PDR, etc.</li> <li>• <u>Key informant interview</u>: This will be the next important task. During the project implementation, the research team will meet and discuss with representatives of all concerning agencies including representatives of the MPI, the representative of the MEM, MONRE, MRC, LNMC, UNDP, IUCN, etc.</li> <li>• <u>Field survey/Case studies</u>: This will be the most important task aiming to find out what are the economic, social and environmental impacts of hydropower at the grassroots level. At least, three case studies (three hydropower projects) are required; one should be located in the North (Xiengkhouang province), one should be located in the central part (Vientiane province) and the remaining site should be located in the southern part of the country (Khammouane province). In each case study site, the following activities are required to be carried out: (1) Community profile survey using information collection forms; at least three communities affected positively or negatively by a hydropower development project are required to be surveyed; (2) Focus group discussions/Participatory assessments (PA); three focus group discussions are required to be organized in each community, i.e. village authorities, including head of village, head of units, representative of the women's union, youth organization, etc., as well as qualified people, especially women, who know the situation well in their area;. The focus group discussion/PA will follow guidelines designed before starting; (3) Key informant interviews at provincial, district and community level will be also be conducted to get qualitative data and information related to economic, social and environmental impacts of hydropower development; and (4) surveying of 100 households in each case study site.</li> <li>• <u>National consultation workshops</u>: Three national consultation workshops will be organized during project implementation. Representatives of concerning agencies and experts from the area will be invited to the workshops. The first will be organized after the literatures review and analysis is completed and before starting case studies. The purpose of this first national consultation will be to present findings from</li> </ul>

<b>Project Title</b>	Study on economic, social and environmental benefits of hydropower development in Lao PDR	<b>BDP ref</b> FA 5.3
	the literature review and to discuss the case study design. The second national workshop will be organized after the survey and draft report are finished, to present and discuss primary findings. The last consultation workshop will be organized after finalizing the report to disseminate findings from this study.	
<b>Location</b>	Vientiane capital, Xiengkhouang, Vientiane and Khammuane provinces.	
<b>Implementation arrangements</b>	NA	

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	<p>Risk: There will be a lack of sufficient funding. Mitigation: The LNMC will try hard to get funding to support the project implementation in a variety of ways. The possible funding sources include government research funds, MRC, UNDP, ABD, and hydropower companies in Lao PDR.</p> <p>Risk: There are no experience national experts and institutes to carry out the project. Mitigation: Oversee experts and consultation services.</p> <p>Risk: There is a misunderstanding from people and policy makers. Mitigation: Strengthening advocacy and coordination with all stakeholders.</p>
<b>External coordination requirements</b>	MRC
<b>Internal coordination requirements</b>	LNMC

## Project funding

<b>Existing funding</b>	<p>Total budget for current phase: \$100,000 USD Existing funding: \$0</p> <table border="1"> <thead> <tr> <th>Activities</th> <th>Estimated budget (USD)</th> </tr> </thead> <tbody> <tr> <td>Analyzing and report writing</td> <td>10,000</td> </tr> <tr> <td>Field survey</td> <td>40,000</td> </tr> <tr> <td>Data base development and data entry</td> <td>10,000</td> </tr> <tr> <td>Three national consultation meeting</td> <td>30,000</td> </tr> <tr> <td>Administration cost</td> <td>10,000</td> </tr> <tr> <td><b>Total</b></td> <td><b>100,000</b></td> </tr> </tbody> </table>		Activities	Estimated budget (USD)	Analyzing and report writing	10,000	Field survey	40,000	Data base development and data entry	10,000	Three national consultation meeting	30,000	Administration cost	10,000	<b>Total</b>	<b>100,000</b>
Activities	Estimated budget (USD)															
Analyzing and report writing	10,000															
Field survey	40,000															
Data base development and data entry	10,000															
Three national consultation meeting	30,000															
Administration cost	10,000															
<b>Total</b>	<b>100,000</b>															
<b>Additional funding required</b>	NA															

## Work plan

<b>Work plan</b>	The whole project will take about 12 months, after the project is officially approved and the funding is made available as described in the Milestone table above.
------------------	--

<b>Project Title</b>	Study on economic, social and environmental benefits of hydropower development in Lao PDR	<b>BDP ref</b> FA 5.3
<b>Cost estimate of additional funding requirements</b>	To be completed	

## Supporting documentation

<b>Document Title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/ Approved	<b>Summary Contents</b>
7 <sup>th</sup> 5 Years Socio-Economic Development Plan (2011-2015)	2011	GoL	Final	The mid-term Development Plan of Lao PDR; the publication contains targets of hydropower sector development in Lao PDR until 2015
Socio-economic development strategy 2011-2020	2012	GoL	Final draft	The long-term Development Strategy of Lao PDR; the publication contains targets of hydropower sector development in Lao PDR until 2020
Mekong hydropower development	2010	Tira Forian	Final draft	The publication provides an overview of hydropower management system in Mekong countries, including the one in Lao PDR.

## Outline of PIN Focus Area 5.4

<b>Project Title</b>	Installation of navigation aids and waterway distance posts along the Mekong River in the section from the Khone Falls, the Golden Triangle, and to Vientiane Capital of Lao PDR	<b>BDP ref</b>	<b>Lao NIP 5.4</b>
<b>Responsible (lead) entity</b>	Department of Waterways (DOW), Ministry of Public Works and Transport (MPWT)	<b>Start date</b>	January 2013
<b>Other entities involved</b>	Provincial Departments Public Works (DPWT) and LNMC	<b>End date</b>	September 2015
<b>Principal beneficiaries</b>	People who use the river for the purpose of transportation		

## Objectives and key performance indicators

<b>Goal</b>	Ensure year round navigation safety and promote the development of the inland waterway transport
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>To conduct a study to determine best navigation routes</li> <li>To identify and map the distance of the waterway from proposed points to the Mekong Delta by installing distance posts and name place plates at key sites</li> </ol>
<b>Indicators of success Outcomes</b>	<p>Outcome 1: Best known navigation routes to improve navigation safety.</p> <p>Outcome 2: Full set of specific data/information on points (places) to be installed on waterway distance posts.</p> <p>Outcome 3: Project implemented on the installation of navigation aids and waterway distance posts at key sites.</p> <p>Outcome 4: The Mekong River would be used more often for river transport.</p>
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>Specific data collection completed by site investigation and baseline survey;</li> <li>Navigation charts produced;</li> <li>Training for technical staffs /officials completed;</li> <li>Project report and proposal completed;</li> <li>Actively seeking funding opportunities for project implementation.</li> </ol>
<b>Milestone dates</b>	To be completed
<b>Linkages to other Projects</b>	<p>Updating Hydrographic Atlas (UHA) Project, 1996</p> <p>Installation of aids to navigation at hot spot sites along the Mekong river in the section between Houeisai and Vientiane Capital of the Lao PDR, 2008-2010</p>

## Description of the project

<b>Outline description</b>	There are many rapids, shoals and scatted reefs along the Mekong River in the section between the Golden Triangle and Vientiane Capital of Lao PDR, which seriously hinders river navigation. As a result, vessels were often involved in marine accidents, such as reef striking or grounding, which posed great threats to the lives or properties of crewmembers and passengers. Therefore, providing people with knowledge on safe navigation routes to promote the development of the inland waterway transport system is needed.
<b>Tasks and outputs</b>	

<b>Project Title</b>	Installation of navigation aids and waterway distance posts along the Mekong River in the section from the Khone Falls, the Golden Triangle, and to Vientiane Capital of Lao PDR	<b>BDP ref</b> Lao NIP 5.4
<b>Location</b>	Along the Mekong River in the section from the Golden Triangle to Vientiane Capital of the Lao PDR and to Khone Falls.	
<b>Implementation arrangements</b>	To be completed	

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	To be completed	
<b>External coordination requirements</b>	Close coordination with NAP/MRCs is required	
<b>Internal coordination requirements</b>	Continue to work closely with the Ministry of Natural Resources and Environment (MONRE) , LNMC and Provincial Departments of PWT	

## Project funding

<b>Existing funding</b>	Required budget: \$500,000 Secured funding: \$0
<b>Additional funding required</b>	Budget gap: \$500,000

## Work plan

<b>Work plan</b>	NA
<b>Cost estimate of additional funding requirements</b>	To be completed

## Supporting documentation

<b>Document Title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/ Approved	<b>Summary Contents</b>
---	-------------	---------------	-------------------------------------	-------------------------

## Outline of PIN Focus Area 5.5

<b>Project Title</b>	Search and rescue stations established and teams trained to take control and responsibility in the occurrence of an accident	<b>BDP ref</b>	<b>Lao NIP 5.5</b>
<b>Responsible (lead) entity</b>	Department of Waterways (DOW), Ministry of Public Works and Transport (MPWT)	<b>Start date</b>	January 2013
<b>Other entities involved</b>	Provincial Department Public Works (DPWT) and LNMC	<b>End date</b>	September 2015
<b>Principal beneficiaries</b>	The people who use the Mekong River from the Golden Triangle to Vientiane Capital of Lao PDR		

## Objectives and key performance indicators

<b>Goal</b>	To save lives and property of the people along the Mekong River from the Golden Triangle to Vientiane Capital of Lao PDR
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>1. Full set of data collected on information/statistics related to accidents along the Mekong River</li> <li>2. Rescue station team trained &amp; established</li> </ol>
<b>Indicators of success Outcomes</b>	<p>Outcome 1: Full set of data/statistics related to accidents along the Mekong River</p> <p>Outcome 2: Search and rescue stations are established</p> <p>Outcome 3: Search and rescue teams are trained to take control and responsibility in the occurrence of an accident</p>
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. Data/statistics related to accidents along the Mekong River are collected and entered into a database;</li> <li>2. Report on the establishment of the search and rescue stations ;</li> <li>3. Training modules and documentation</li> <li>4. Report on training for search and rescue teams</li> <li>5. Report on training for technical staffs /officials;</li> <li>6. Midterm and final evaluations.</li> </ol>
<b>Milestone dates</b>	To be completed
<b>Linkages to other Projects</b>	Project for Installation of GPS vessel Guidance System and Low water Alert System on selected Mekong Stretches in Lao PDR and Thailand (2012-2013)

## Description of the project

<b>Outline description</b>	There are many rapids, shoals and scattered reefs in the Mekong River in the section between the Golden Triangle and Vientiane Capital of Lao PDR, creating hazards for river transportation. This project will establish search and rescue stations in key areas and build the capacity of search and rescue teams to be able to respond in the occurrence of an accident.
<b>Tasks and outputs</b>	To be completed
<b>Location</b>	Along Mekong River in the section from the Golden Triangle to Vientiane Capital

<b>Project Title</b>	Search and rescue stations established and teams trained to take control and responsibility in the occurrence of an accident	<b>BDP ref</b>	<b>Lao NIP 5.5</b>
<b>Implementation arrangements</b>	To be completed		

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	To be completed		
<b>External coordination requirements</b>	To be completed		
<b>Internal coordination requirements</b>	To be completed		

## Project funding

<b>Existing funding</b>	Required budget:US\$300,000 Secured funding: \$0		
<b>Additional funding required</b>	Budget gap: \$300,000		

## Work plan

<b>Work plan</b>	NA		
<b>Cost estimate of additional funding requirements</b>	To be completed		

## Supporting documentation

<b>Document Title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
---	-------------	---------------	---------------------------------	-------------------------



## Outline of PIN Focus Area 6.2

<b>Project Title</b>	Gender mainstreaming in integrated water resources management and planning	<b>BDP ref</b>	<b>FA 6.2</b>
<b>Responsible (lead) entity</b>	LNMC	<b>Start date</b>	2012
<b>Other entities involved</b>	Lao Women's Union	<b>End date</b>	2015
<b>Principal beneficiaries</b>	NNMC staff		

## Objectives and key performance indicators

<b>Goal</b>	To adopt holistic approaches towards water resource development and management that incorporates ecological, social/institutional and equity issues during decision-making, and to mainstream the development concerns of both women and men in the water resources sector by gender sensitizing water management and development decisions. Gender mainstreaming will help to position gender equality issues at the centre of analyses and policy decisions, strategies, programme budgets, and institutional structures and processes in IWRM.
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>1. To create a knowledge base to identify existing inequalities and water-related challenges, determine where change is needed and what approach to take, and set a baseline for monitoring progress and impact</li> <li>2. To increase awareness of LNMC staff on the concept of gender and the importance of gender mainstreaming for sustainable development</li> <li>3. To build capacity and knowledge of LNMC staff how to mainstream gender into IWRM</li> <li>4. To integrate and promote gender considerations and perspectives in all policies, plans and work of the LNMC</li> <li>5. To developing sex- disaggregated indicators to track success towards meeting the results</li> </ol>
<b>Indicators of success Outcomes</b>	<p>Outcome 1: Gender perspectives are included in the formulation of the IWRM policy issues to be addressed.</p> <p>Outcome 2: IWRM plans are developed that incorporate gender mainstreaming in practice and that enhance the equal participation, representation, and rights of women in the water sector.</p> <p>Outcome 3: Women are involved as key stakeholders and actively participate in the decision-making process in integrated water resources management and planning.</p> <p>Outcome 4: The sustainability and effectiveness of water-related activities and management are improved by incorporating gender equality in the design, implementation, monitoring and evaluation of policies and programs.</p>
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>1. A gender analysis is completed and results are used to determine policy changes needed, and to design and implement action plans;</li> <li>2. Summary of workshops , progress reports;</li> <li>3. Training modules and documentation;</li> <li>4. Mainstreaming tools are identified, developed and adapted to the specific needs and uses;</li> <li>5. A case-study is developed and analyzed from the perspective of gender mainstreaming in IWRM;</li> </ol>

<b>Project Title</b>	Gender mainstreaming in integrated water resources management and planning	<b>BDP ref</b>	<b>FA 6.2</b>
	6. Midterm and final evaluations; 7. Gender-sensitive monitoring and evaluation indicators are developed.		
<b>Milestone dates</b>	To be completed		
<b>Linkages to other Projects</b>	<ul style="list-style-type: none"> <li>MAF's and ADB's "Mainstreaming Gender in the Agriculture Sector in Lao PDR"</li> <li>"CapacityBuildingProgrammeonGenderMainstreamingforManagementSub-CommissionfortheAdvancementofWomen(Sub-CAWs)" implemented by Lao National Commission for the Advancement of Women (LaoNCAW)</li> <li>MRC's Gender Mainstreaming Project</li> </ul>		

## Description of the project

<b>Outline description</b>	Improved water resources management and planning will be a key factor in attaining many of the Millennium Development Goals and achieving sustainable development. Solutions will include developing new technologies, managing the available resource effectively, increasing supply, assessing the competing demands for water and equitable allocations that take into account the needs of all stakeholders as well as ecosystem services. Projects, programmes and policies that address gender inequalities will enhance both water resources management and human development opportunities for both men and women in Lao PDR.
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>Gender analysis with regard to gender issues, concerns and inequalities in IWRM is completed</li> <li>Training on concepts related to gender, gender mainstreaming, and the importance of gender considerations in integrated water resources management and planning is completed</li> <li>Training on how to mainstream gender in the project/program cycle completed</li> <li>Tools for formulating policies and designing programs to be gender-sensitive are developed and LNMC staff trained on how to adapt and use these tools for their specific needs and uses</li> <li>A monitoring and evaluation process that has gender-sensitive indicators is developed and followed</li> </ul>
<b>Location</b>	Vientiane capital
<b>Implementation arrangements</b>	To be completed

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	<p>Risk: There will be a lack of commitment to project goals and support for gender mainstreaming will not be provided by all relevant stakeholders and LAs.</p> <p>Mitigation: Training will be provided for key stakeholders, including LAs, on the importance of gender mainstreaming to ensure the effective achievement of environmental, social, and economic goals for Lao PDR.</p> <p>Risk: There is a lack of precise and accurate data, especially sex-disaggregated statistics and relevant gender information for the in planning, implementing, monitoring and evaluation process.</p> <p>Mitigation: A gender analysis will be conducted to identify existing inequalities and water-related challenges, and the results will be used to design project objectives, activities, outputs and outcomes.</p> <p>Risk: There is insufficient capacity to achieve the project gender objectives.</p>
--	---

<b>Project Title</b>	Gender mainstreaming in integrated water resources management and planning	<b>BDP ref</b> FA 6.2
	<p>Mitigation: Senior gender advisors and gender experts will be appointed for the training, and a gender contact person will be appointed within LNMCS.</p> <p>Risk: Confusion over what gender mainstreaming is and how to do it will slow project implementation.</p> <p>Mitigation: Training will be provided on gender mainstreaming tools and demonstrate use of tools using a case study.</p>	
<b>External coordination requirements</b>	To be completed	
<b>Internal coordination requirements</b>	To be completed	

## Project funding

<b>Existing funding</b>	Total budget for current phase: \$500,000 USD Existing funding: \$0
<b>Additional funding required</b>	Total budget for current phase: \$500,000 USD

## Work plan

<b>Work plan</b>	NA
<b>Cost estimate of additional funding requirements</b>	To be completed

## Supporting documentation

<b>Document Title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
Gender Empowerment for Poverty Reduction: Building Capacity for Stronger Policy and Practice	2009	UNDP Lao PDR	Final	The long-term Development Objective of this project is to achieve gender equality for poverty reduction in Lao PDR
Mainstreaming Gender in Water Management	2006	Gender and Water Alliance, Cap-Net, UNDP	Final	The Guide is a reference document to assist water and gender practitioners and professionals as well as persons responsible for gender mainstreaming, and anybody else who is interested in the water sector. It is a compilation of resources, including documents, papers, books, case studies, tools and toolkits, on gender mainstreaming in Integrated Water Resource Management (IWRM).

## Outline of PIN Focus Area 6.2

<b>Project Title</b>	Capacity building for Monitoring and Evaluation (M&E) related to PINs implementation	<b>BDP ref</b>	<b>FA6.2</b>
<b>Responsible (lead) entity</b>	LNMC	<b>Start date</b>	2012
<b>Other entities involved</b>	Provincial offices and districts	<b>End date</b>	2015
<b>Principal beneficiaries</b>	LNMC staff		

### Objectives and key performance indicators

<b>Goal</b>	To develop the capacity of staff at LNMC, and practitioners at provincial offices and districts to design, plan and implement effective M&E processes, and to establish integrated and sustainable M&E systems in LNMC programmes.
<b>Immediate objective(s)</b>	<ol style="list-style-type: none"> <li>To build capacity and upgrade knowledge on M&amp;E processes and approaches</li> <li>To set up a good M&amp;E system for sustainable management and planning</li> </ol>
<b>Indicators of success Outcomes</b>	<p>Outcome 1: An assessment of existing M&amp;E practices is completed and used to design the M&amp;E framework</p> <p>Outcome 2: M&amp;E practitioners and program managers will have an understanding of the tools, processes and approaches that can be used for informed decision-making and for introducing improvements into future policies, strategic and operational plans</p> <p>Outcome 3: M&amp;E practitioners will be able to assess information collected through the monitoring and evaluation process, use this information as a tool for the modification of ongoing interventions when necessary, and to improve future interventions through the planning process</p> <p>Outcome 4: M&amp;E practitioners will be able to set up a monitoring and evaluation system, manage that system, and produce the results required for impact assessment from it</p> <p>Outcome 5: M&amp;E systems are integrated into the planning process in LNMC programmes, and applied to the planning cycle</p>
<b>Key deliverables</b>	<ol style="list-style-type: none"> <li>Assessment of existing M&amp;E practices completed;</li> <li>Members of the M&amp;E steering committee are identified and the roles and responsibilities of the M&amp;E practitioners are defined;</li> <li>Summary of workshops , progress reports;</li> <li>Training modules and documentation;</li> <li>M&amp;E tools, data collection methods (e.g. quantitative and qualitative research methods such as questionnaires, interviews, and focus group discussions), performance indicators are identified and developed for tracking progress against milestones;</li> <li>M&amp;E plan prepared for each PIN, specifying measurable indicators, data requirements, tools for data collection and analysis, frequency of data collection, and reporting requirements;</li> <li>Mid-term and final evaluation reports.</li> </ol>
<b>Milestone dates</b>	To be completed
<b>Linkages to other Projects</b>	Project Monitoring and Evaluation in the GMS, a Project Monitoring and Evaluation Learning Program co-designed and delivered by the GMS Phnom Penh Plan for Development Management (PPP) and the Mekong Institute (MI)

<b>Project Title</b>	Capacity building for Monitoring and Evaluation (M&E) related to PINs implementation	<b>BDP ref</b>	<b>FA6.2</b>
----------------------	--	----------------	--------------

## Description of the project

<b>Outline description</b>	M&E of projects and programs is an important process designed to monitor outcomes and assess impact, learn from the experiences and take corrective action if needed, as well as increase accountability and cost effectiveness. Building the capacity of staff at LNMC and key stakeholders on M&E practices will contribute to better program design and decision-making, improved organizational performance and project management, and contribute to accountability to donors and sustainability of the projects and programs.
<b>Tasks and outputs</b>	<ul style="list-style-type: none"> <li>• An assessment of existing M&amp;E practices is completed and used to design the M&amp;E framework</li> <li>• An implementation work plan is developed which outlines a framework on what needs to be monitored, how to monitor key outputs, the methods to be used, and the roles and responsibilities of all practitioners</li> <li>• Evaluation topics for generating in-depth R&amp;D information and learning are identified</li> <li>• A representative steering committee is established and committed to overseeing the implementation of the M&amp;E work plan</li> <li>• Training workshops are conducted and technical support is provided for applying M&amp;E approaches within the projects and programs, with appropriate performance indicators</li> <li>• An operational plan is developed to ensure M&amp;E systems are integrated into the planning process in LNMC programmes</li> </ul>
<b>Location</b>	Vientiane capital, and provinces where the PINs will be implemented
<b>Implementation arrangements</b>	To be completed

## Risks, mitigation and coordination

<b>Principal risks and means of mitigating risks</b>	<p>Risk: There will be a lack of commitment, ownership and support for M&amp;E by all relevant stakeholders and LAs.</p> <p>Mitigation: A steering committee will be established to oversee the implementation of the M&amp;E work plan, and designated practitioners will be trained on the importance of M&amp;E to assess program impact, promote learning from program implementation, and improve accountability.</p> <p>Risk: M&amp;E systems are poorly developed and implemented at the field level.</p> <p>Mitigation: Training will be conducted in M&amp;E system design, and during project preparation, time and resources will be allocated to setting up the M&amp;E system then implementing it early in the project cycle.</p> <p>Risk: There is a lack of precise and accurate baseline data.</p> <p>Mitigation: Baseline data will be updated during project start-up with whatever baseline data is available, including proxies if necessary.</p> <p>Risk: Results of the M&amp;E process are not shared.</p> <p>Mitigation: Training will be conducted on M&amp;E reporting and how to use reports in a positive way for management learning and decision making, with realistic expectations that the project/program can reasonably achieve.</p>
<b>External coordination requirements</b>	To be completed
<b>Internal coordination requirements</b>	To be completed

<b>Project Title</b>	Capacity building for Monitoring and Evaluation (M&E) related to PINs implementation	<b>BDP ref</b>	<b>FA6.2</b>
----------------------	--	----------------	--------------

## Project funding

<b>Existing funding</b>	Total budget for current phase: \$500,000 USD Existing funding: \$0
<b>Additional funding required</b>	\$500,000 USD

## Work plan

<b>Work plan</b>	Need to attach a work plan if known
<b>Cost estimate of additional funding requirements</b>	To be completed

## Supporting documentation

<b>Document Title and electronic file reference</b>	<b>Date</b>	<b>Author</b>	<b>Status</b> Draft/Approved	<b>Summary Contents</b>
Monitoring and Evaluation for Business Environment Reform: A Handbook for Practitioners	2008	IFC Advisory Services BEE Business Line  in association with GTZ, DFID, and the World Bank	Final	A handbook for Business Enabling Environment (BEE) practitioners offering guidance on Monitoring and Evaluation (M&E) and Impact Assessment.
Monitoring & Evaluation Systems Manual	2005	Norman Welsh, Martin van der Schans & Chandavanh Dethrasavong	Final	A manual prepared for the Mekong Wetlands Biodiversity Programme, and serves as a basic reference on M&E. It describes the way in which an M&E system can be developed, and on how to plan, organize, carry out and report on the M&E activities.
Monitoring & Evaluation: Some Tools, Methods and Approaches	2004	World Bank	Final	A "how to" manual presenting some important principles for M&E systems.