

Introduction Report

Environmental Study of the Lancang-Mekong Development Plan

March 2019



Prepared for: **Critical Ecosystem Partnership Fund (CEPF)**
Prepared by: **ICEM - International Centre for Environmental Management**

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This report is one of four in this set on the *Environmental Study of the Lancang-Mekong Development Plan*:

- 1. Introduction Report**
2. Baseline Assessment Report
3. Impact Assessment Report
4. Mitigation Recommendations Report

The report covered in this volume is bold.



DISCLAIMER

This document was prepared by a consultant team engaged to undertake the Environmental Study of Lancang-Mekong Development Plan. The project is funded by the Critical Ecosystem Partnership Fund (CEPF), a joint initiative of l'Agence Française de Développement, Conservation International, the European Union, the Global Environment Facility, the Government of Japan, the MacArthur Foundation and the World Bank. A fundamental goal is to ensure civil society is engaged in biodiversity conservation. The views, conclusions and recommendations in the document are not to be taken to represent the views of CEPF.

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ABBREVIATIONS

AIIB	Asian Infrastructure Investment Bank
CEPF	Critical Ecosystems Partnership Fund
DWT	Deadweight ton
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ES	Environmental Study
GMS	Greater Mekong Subregion
HPP	Hydropower project
IUCN	International Union for Conservation of Nature and Natural resources (IUCN)
JCCCN	the Joint Committee on Coordination of Commercial Navigation on the Lancang-Mekong River
LMB	Lower Mekong Basin
LMCM	Lancang Mekong Cooperation Mechanism
LMDP	<i>'Development Plan of International Navigation on the Lancang-Mekong River 2015-2025'</i>
LNMC	Lao National Mekong Committee
MRC	Mekong River Commission
NAP	Navigation Programme
NESDB	National Economic and Social Development Board (NESDB)
NGO	Non-governmental organisation
ONEP	Office of Natural Resources Environmental Policy and Planning (ONEP)
PAT	Port Authority of Thailand
PCD	Pollution Control Department
PNPCA	Procedures for Notification, Prior Consultation and Agreement
SEI	Stockholm Environment Institute
TMD	Thailand Marine Department
TNMC	Thailand National Mekong Committee

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1 INTRODUCTION

The Mekong is one of the world's great rivers. Running through six countries – originating in PR China, continuing to form the international borders between Myanmar and Lao PDR, then between Lao PDR and Thailand before it flows onward to Cambodia and Viet Nam. It is of fundamental cultural, ecological and economic importance to the entire Mekong region. Much is at stake when choices regarding the development of the river are made and such decisions are mired in complex and influential interests. Biodiversity is very low on the agenda for consideration when those critical decisions are made. Hence the importance of this study which assesses the impacts on biodiversity of the '*Development Plan of International Navigation on the Lancang-Mekong River (LMDP) 2015-2025*' and of the Pak Beng hydropower project. This volume introduces the study and the proposed developments. It is accompanied by three supporting volumes – the Baseline Assessment, Impact Assessment and Mitigation reports.

1.1 RECENT DEVELOPMENTS ON THE LMDP

An informal bilateral meeting between H.E. Mr. Wang Yi, State Councilor and Minister of Foreign Affairs of People's Republic of China and H.E. Mr. Don Pramudwinai, Minister of Foreign Affairs of Thailand was held 15 – 16 February 2019 in Chiang Mai, Thailand. During this meeting, both Ministers exchanged in-depth and wide-ranging views covering key bilateral, regional and international issues of mutual interest. Among these issues, both sides agreed to support the cooperation framework of the JCCCN, taking into account the development, pace, and readiness of the relevant parties, including the public. In this regard, Councilor Wang Yi noted the views regarding the blasting of rocks and rapids in the Mekong River, which would affect the Thailand – Lao PDR border and the livelihoods of the people along the river, and agreed to cooperate with the Thai side's proposal to terminate the said project.

The study was conducted on the assumption that the plan would proceed and sought to formulate recommendations to improve sustainability including environmental and social equity outcomes. As it happened the study consultations, briefing papers and presentations as it progressed, and the disclosure of new information and analysis became an important part of the science evidence base and influences leading to this informal agreement to halt the plan. As there has been no official statement from China or Thailand on the cancelation of the LMDP, apart from the press release on the bilateral meeting in February 2019, it is possible that China may seek to pursue the plan again at a later stage. The study results will continue to provide important information to decision makers should the plan be resurrected.

2 THE PROPOSED DEVELOPMENTS

2.1 LANCANG-MEKONG NAVIGATION PLAN

In February 2016, the Joint Committee on Coordination of Commercial Navigation (JCCCN) on the Lancang-Mekong River gave conditional approval for the LMDP. The JCCCN comprises representatives from Lao PDR, Thailand, PR China and Myanmar with MRCS as an observer. The Committee is covered by a quadripartite agreement for commercial navigation between Simao in PR China and Luang Prabang in Lao PDR.

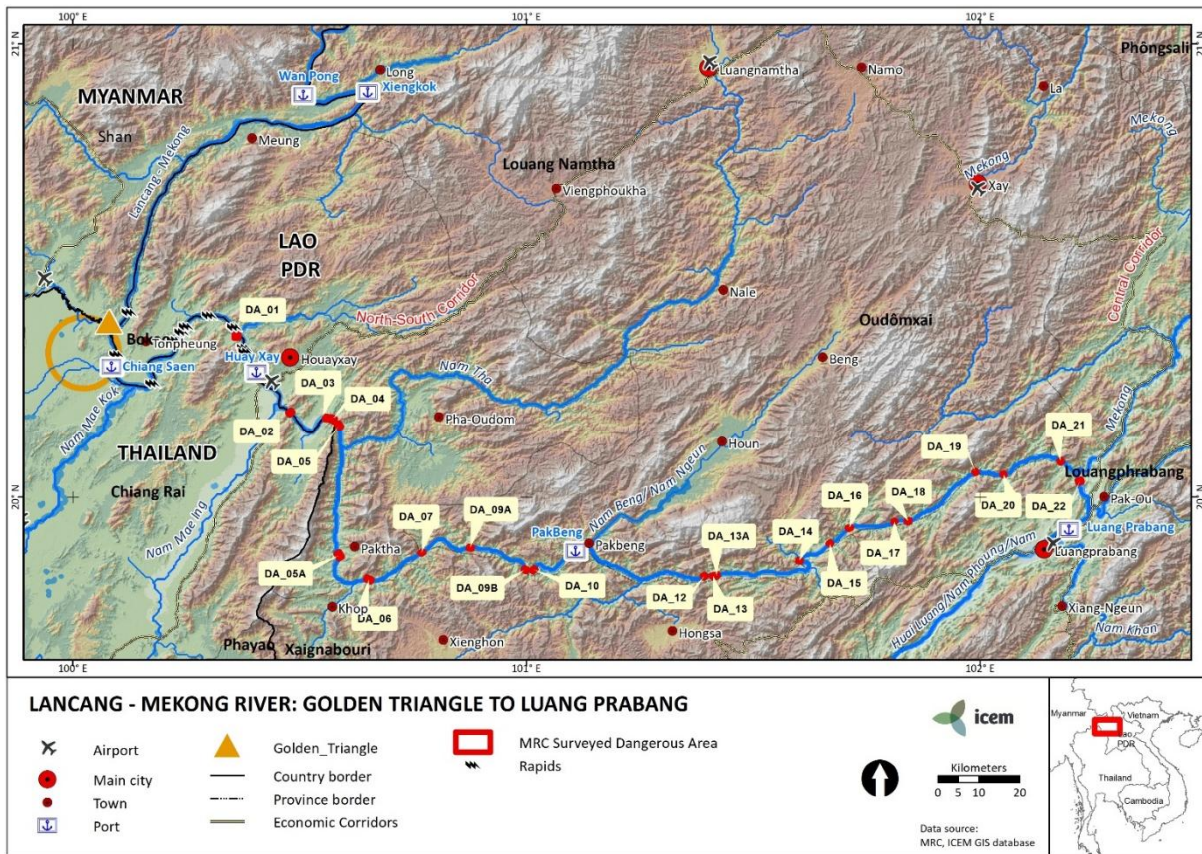
2.1.1 Key aspects of the LMDP

The key aspects of the full LMDP are:

- **To upgrade several cargo ports:** Ban Sai, Xieng Kok, Muong Mom, Ban Khouane Houay Xay, Pak Beng, Luang Prabang, Chiang Saen and Chiang Khong. Only Houay Xay, Pak Beng, Luang Prabang, Chiang Saen and Chiang Khong are in the study area and Chiang Saen port has already been upgraded.
- **Partial clearing of 146 rapids, rocky outcrops and shoals** to allow navigation for up to 500DWT vessels in the whole stretch covered under the JCCCN between Simao, PR China and Luang Prabang, Lao PDR¹. 23 dangerous areas have been surveyed by the MRC in the study area – Figure 2.1 – which are assumed to be targeted for clearing under the LMDP and hence assessed under this study.
- **Construction of four emergency response and rescue ships and 1199 aids** to navigation.
- **Promoting increased shipping,** trade, passenger transport from Yunnan province to Luang Prabang.

¹ It is understood that most of the rapids upstream of the Golden Triangle have already been cleared hence the focus of this study is on the Golden Triangle to Luang Prabang stretch.

Figure 2.1: The 23 MRC surveyed dangerous areas in the study area

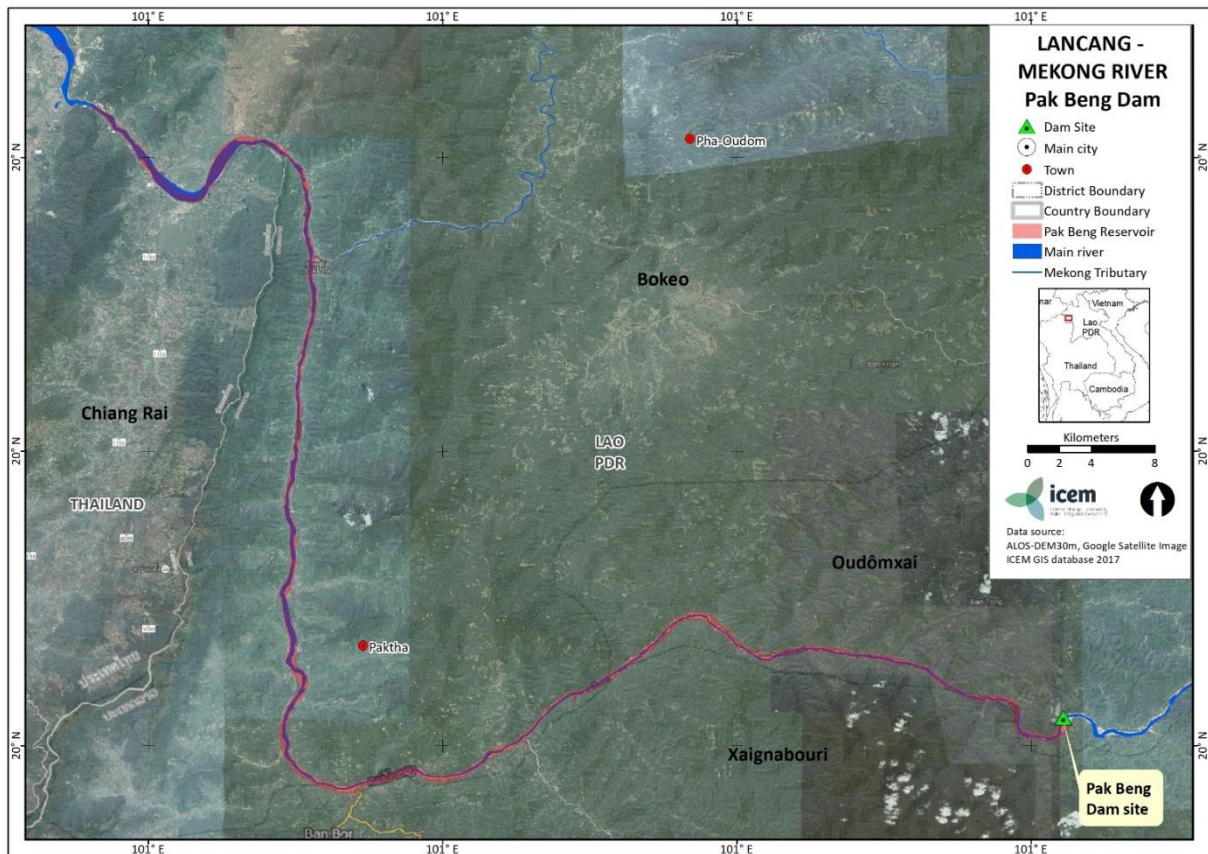


2.2 PAK BENG HYDROPOWER PROJECT (HPP)

During the scoping phase of this LMDP environmental study, it became evident that the Lao PDR Government would initiate the MRC Procedures for Notification, Prior Consultation and Agreement (PNPCA) process for the Pak Beng hydropower project (HPP) which falls within the study area.

The Pak Beng Hydropower Project (PBHPP) is located approximately 14 km upstream of Pak Beng town on the Lancang-Mekong River in northern Lao PDR. The dam reservoir extends approximately 96 km upstream of the dam site (Figure 2.2), effectively ending (insignificantly beyond) where the Mekong becomes the shared border between Lao PDR and Thailand. The Pak Beng HPP was therefore assessed for its biodiversity effects as a scenario as part of the impact assessment phase in this study.

Figure 2.2: The Pak Beng dam location and reservoir extent upstream



The proposed Pak Beng HPP is to be a concrete run-of-river gate dam (64m high or 47m from river bed x 900m long) – Figure 2.3. There will be navigation locks for 500DWT boats. The increase in water level at the dam will be approximately 27 m. The dam is also planned to include a fish passage cement canal 1.6 km long, 10 m bottom width. The key design features and status of the PBHPP are given in Table 2.1.

Table 2.1: Key design parameters and status of Pak Beng Hydropower Project (taken from MRC 2018)

	Design flow	Full supply level	Capacity	Annual generation	Status
Pak Beng	4110 m ³ /s (5771 m ³ /s)	340/335 masl	912 MW	4800 GWh	Prior Consultation concluded. Expected 2023

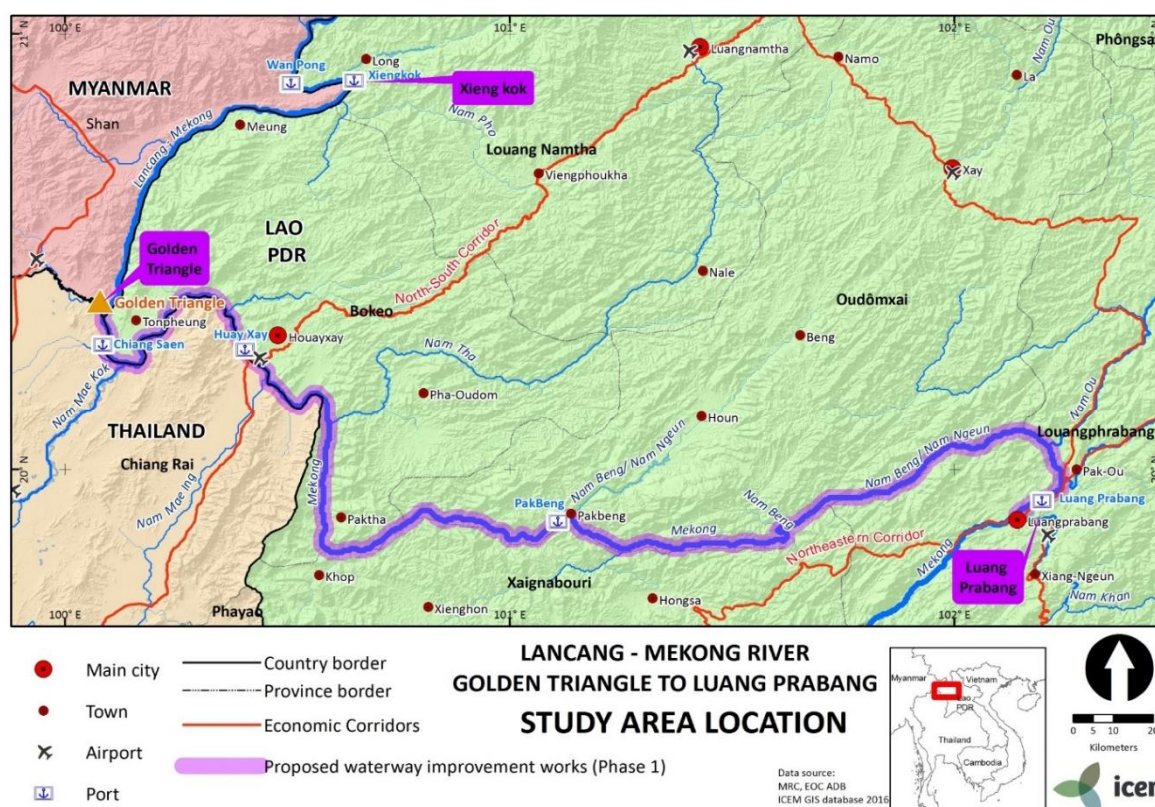
Figure 2.3: A computer image of the proposed Pak Beng hydropower dam (photo courtesy of Pak Beng hydropower project)



3 ENVIRONMENTAL STUDY RATIONALE

There may be significant long-term and irreversible social and environmental impacts of the LMDP from port construction, increased waterway use and partially removing 146 rapids and shoals to improve navigation. The environmental and social impacts need to be fully assessed. As the LMDP does not currently include a comprehensive environmental management plan, the Critical Ecosystems Partnership Fund (CEPF) allocated grant funding to ICEM to conduct an Environmental Study (ES) of the LMDP from the Golden Triangle to Luang Prabang (Figure 3.1). The ES will set priorities for an environmental management plan with a special focus on biodiversity to be integrated within the LMDP. The LMDP would be the most significant development of the Mekong River since the proposed mainstream hydropower projects in Lao PDR and Cambodia.

Figure 3.1: Study area for the ES of the LMDP



The ES supports the findings of the ‘CEPF Status and Distribution of Freshwater Biodiversity in Indo-Burma’ that calls for targeted ecological studies of fresh-water species in the upper mainstream Mekong River to determine the impacts of navigation development.

The ES also supports CEPF recommendations to integrate aquatic biodiversity and biodiversity surveys into the SEA/environmental impact assessment (EIA) processes in the Mekong region. This ES responds to concerns raised by Mekong River Commission (MRC) member countries, donors and development partners that the cumulative and trans-boundary impacts of the LMDP and Pak Beng HPP require comprehensive environmental assessment. The MRC Navigation Programme (NAP) ‘Master Plan on Regional Navigation 2015’ recommended that an independent strategic environmental assessment of the LMDP be completed.

ICEM ensured that these concerns were taken into consideration in the ES including conducting a rapid integrated field survey in the development corridor between the Golden Triangle and Luang Prabang to inform strategic planning and sustainable decision-making.

3.1 CEPF STRATEGIC DIRECTION

The ES was undertaken in the Indo-Burma region, which is one of the most threatened of the earth's 34 biodiversity hotspots. Lao PDR and Thailand – primary countries involved in the ES - are a strong focus of the CEPF. The project relates to Strategic Direction 6: *'to engage key actors in mainstreaming biodiversity, communities and livelihoods into development planning in the priority corridors'*. The ES will integrate biodiversity and ecosystem services values to ensure a more sustainable decision making framework for the LMDP. This directly addresses CEPF investment priorities 6.1 and 6.6:

- **Strategic Direction 6. Engage key actors in mainstreaming biodiversity, communities and livelihoods into development planning in the priority corridors**
 - 6.1 Support civil society efforts to analyze development policies, plans and programs, evaluate their impact on biodiversity, communities and livelihoods and propose alternative development scenarios and appropriate mitigating measures where needed
 - 6.6 Integrate the biodiversity and ecosystem service values of priority corridors into financial decision making by governments, private investors and development banks

The baseline assessment, impact assessment and design of the mitigation recommendations reports as part of the ES engaged national and provincial departments and the private sector to avoid biodiversity losses and manage the impacts of inland navigation in the Mekong mainstream. The process of implementing the ES also enhanced coordination between key actors at the national and provincial level and promoted increased ownership of environmental protection, trans-boundary cooperation and management.

4 LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 AGREEMENT ON COMMERCIAL NAVIGATION ON LANCANG-MEKONG RIVER

The Agreement on Commercial Navigation on Lancang-Mekong River, signed at Tachileik on 20 April 2000, forms the legal basis of the opening of the Upper Mekong for international navigation. The Parties to this Agreement are People's Republic of China, Lao PDR, Myanmar and Thailand. The aim of the agreement is to develop international passenger and cargo transportation among the Contracting Parties on the Lancang Mekong River, to promote and facilitate trade and tourism, and strengthen cooperation in commercial navigation. Vessels of any Contracting Party are entitled to sail freely between Simao in China and Luang Prabang in Lao PDR in conformity with the provisions of this Agreement and the relevant rules and regulations jointly adopted by the Contracting Parties.

The JCCCN was established to oversee the implementation of the agreement and develop regulations for navigation safety, emergency response and trade facilitation. The JCCCN comprises representatives from transport departments from Lao PDR, Thailand, PR China and Myanmar. The current navigable river section is 890 kilometres long from Simao, China, to Luang Prabang, Lao PDR. Navigation is categorised by:

1. **Simao to boundary marker 244 (290 km)** for vessels of 300 DWT;
2. **Boundary marker 244 to Houay Xay (300 km)** for vessels of 150 DWT throughout the year and 200-300 DWT seasonally; and
3. **Houay Xay to Luang Prabang (300 km)** - has never been improved and maintained and is currently navigable for vessels of 60 ton in the dry season.

The LMDP goals are:

- To make the total length of the JCCCN Lancang-Mekong navigable for 500 DWT vessels by 2025; and
- To upgrade the ports of Ban Sai, Xieng Kok, Muong Mom, Ban Khouane, Houay Xay, Pak Beng, Luang Prabang, Chiang Saen and Chiang Khong.

4.2 ENVIRONMENTAL ASSESSMENT FRAMEWORK

This stretch of the river encompasses portions of the administrative units of western Luang Prabang Province, northern Sainyabuli Province, southern Oudomxay Province and southern Bokeo Province, Lao PDR, as well as part of northern Chiang Rai Province (Chiang Saen District), Thailand. Prior to undertaking any port construction or waterway improvement, the environmental assessment framework would need to be considered in Lao PDR and Thailand. Table 4.1 provides a summary of the environmental assessment regulations and the size and type of project/activities that require an environmental impact assessment (EIA).

Table 4.1: Environmental law and assessment framework

Country	Law	Size and type of project/activities for inland waterways	Environmental assessment framework
Lao PDR	Environment Protection Law 2013	Not specified	Initial Environment Examination (IEE): minor environmental impacts SEA: process of assessing environmental and social impact while developing strategies and programs undertaken by sectors EIA: assessing environmental and social impacts from investment projects or activities
Thailand	National Environmental Quality Act 1992	Port: Capacity of vessels more than 500 DWT, berth length more than 100m or total area is more than 1000m ² Recreational port: Capacity of more than 50 vessels	EIA EMP and monitoring

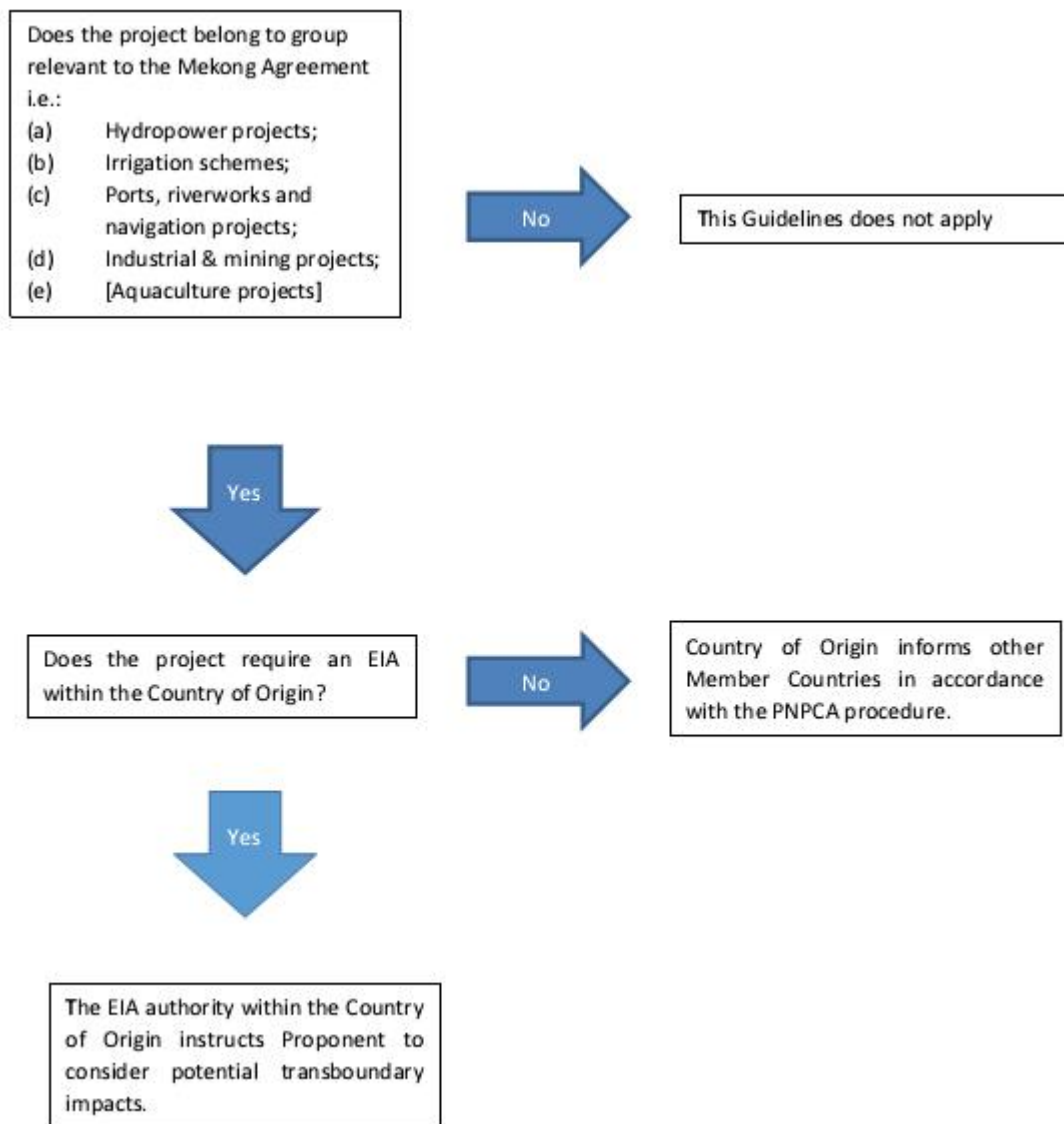
The draft LMDP states that an EIA will be conducted as part of Phase 1. At the time of reporting, this environmental assessment is underway being conducted by a Chinese company in collaboration with the Thai and Lao inland waterway navigation departments. The draft EIA will be reviewed by the JCCCN in the first quarter of 2019.

The review and approval of the EIA by the JCCCN will be challenging as all but one of the ports (Chiang Khong) will be constructed in Lao PDR and the navigation improvements will take place in both Lao PDR and Thai waters. Also, all relevant line agencies within both countries will need to be consulted.

Normally, separate EIAs would be prepared for each of the ports and for specific sections of the river in relation to waterway improvement projects to ensure approval by the Government of Lao PDR and Thailand under relevant environmental protection law. The JCCCN would need to ensure transboundary and cumulative impacts are considered. The MRC has developed Guidelines for Transboundary Environmental Impact Assessment (TbEIA) in the Lower Mekong Basin² to specifically deal with assessing potential transboundary impacts of projects falling into the scope of 1995 Mekong Agreement and ideally those guidelines should be followed for the LMDP assessment. The scope and application of the TbEIA Guidelines is shown in Figure 4.1.

² <http://www.mrcmekong.org/assets/Publications/TbEIA-Guidelines-Final-version-25-9-2018.pdf>

Figure 4.1: Scope of application of the MRC Transboundary EIA Guidelines flowchart



As the LMDP will be implemented within multiple countries - PR China, Myanmar, Lao PDR and Thailand – these are all considered ‘Countries of Origin’ under the TbEIA Guidelines and the potential transboundary impacts of the LMDP works to be conducted within each country will need to be considered separately within each respective EIA or through a joint EIA if the countries decide. The TbEIA Guidelines also apply to the Pak Beng HPP.

4.3 THE LANCANG-MEKONG COOPERATION MECHANISM (LMCM)

The LMCM was launched in November 2015 and is a six-country collaboration agreement between China, Myanmar, Lao PDR, Thailand, Cambodia, and Vietnam. The agreement covers five priority areas: 1) interconnectivity (transport, power and communications); 2) production capacity; 3) cross-border economic cooperation; 4) water resources and cooperation on agriculture and; 5) poverty reduction. LMCM is much broader than other Mekong agreements, such as the Greater Mekong Subregion (GMS), which has the same membership and MRC agreement. There are potential linkages with the Asian Infrastructure Investment Bank (AIIB) launched in January 2016. The arrangements for member countries to assess sustainability implications of developments remain uncertain.

4.4 PNCPA FOR PAK BENG HPP

On 4 November 2016 the LNMC submitted the detailed description of the planned Pak Beng HPP to the MRC for its review and further action to inform the other member countries about the project's scope and other requirements under the prior consultation process. The prior consultation is part of the MRC's procedural rules on cooperation on water use of the Mekong mainstream PNPCA. Under the procedures, any project using the mainstream water during the dry season within the same basin, as well as during the wet season between two basins, must undergo the prior consultation process. Given the central importance of the proposed Pak Beng HPP reservoir to the LMDP and its strategies, this ES has taken the reservoir into account as an additional development scenario – ie LMDP plus the Pak Beng HPP. An EIA and SIA has been completed for Pak Beng HPP by the developer – Kunming Engineering Corporation Limited.

5 SCOPE OF THE ES

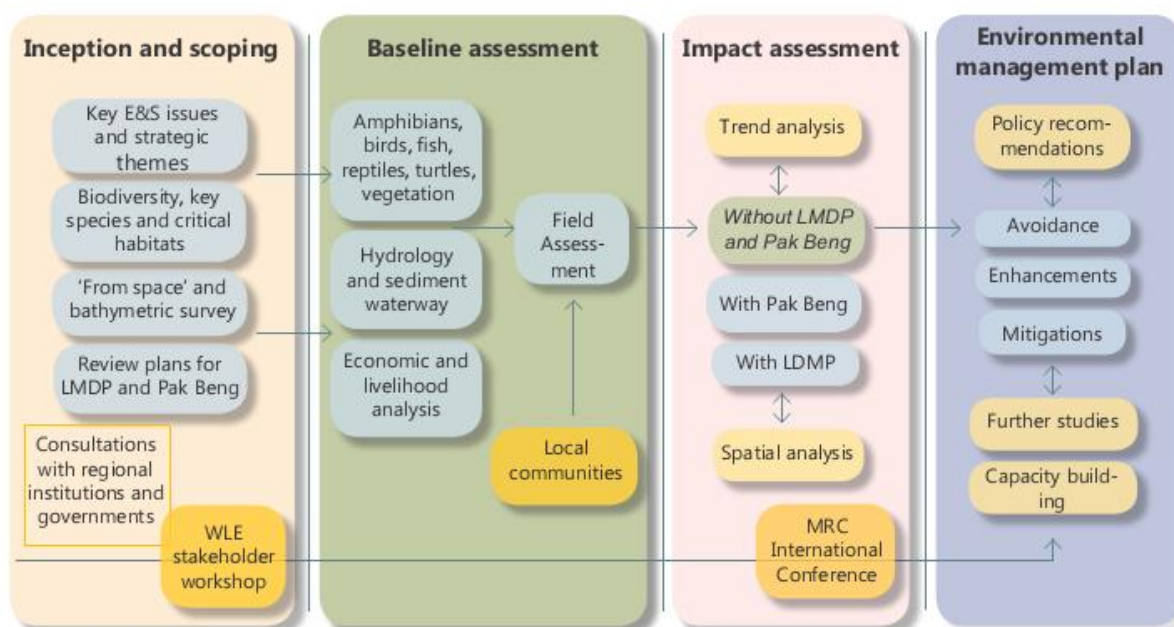
The objectives of the ES are to develop an integrated biodiversity assessment and assess the impacts of rapid and shoal improvement, port construction and increased shipping associated with the LMDP and the Pak Beng HPP on the biodiversity and critical habitats between Golden Triangle and Luang Prabang. The original scope of the study was revised to include the impacts of the Pak Beng HPP reservoir. The ES builds on past research and has engaged stakeholders, civil society and research institutes to determine the cumulative impacts of the LMDP.

The following four phases were adopted to implement the ES:

- (i) **Scoping:** What are the key issues for biodiversity and river basin development between Golden Triangle and Luang Prabang?
- (ii) **Baseline:** What are the trends in the key issues without the LMDP and Pak Beng HPP?
- (iii) **Impact:** What are the impacts of the LMDP and Pak Beng HPP on each of these key issues and trends?
- (iv) **Avoidance, mitigation and enhancement recommendations:** How will the most important risks be avoided or mitigated, and the benefits be enhanced?

The ES was conducted from July 2017 to December 2018.

Figure 5.1: LMDP Environmental Studh assessment phases



The geographic scope of the study is the stretch of river between Chiang Saen and Luang Prabang, divided into three distinctive zones for the purposes of this assessment:

1. Chiang Saen to Thai-Lao border (a few km's upstream of Pak Tha)
2. Pak Tha to Pak Beng HPP dam site
3. Pak Beng HPP dam site to Luang Prabang

The inception and scoping phase carried out between July and October 2017 identified the key issues for biodiversity and navigation developments between the Golden Triangle and Luang Prabang under each of the key themes of the study:

- Hydrology and sediment;
- Aquatic biodiversity and wetlands;
- Fish;
- Amphibians and reptiles;
- Birds;
- Waterways; and
- Socio-economics and livelihoods.

The inception phase included the initial spatial analysis, data and literature review and design of field assessments.

5.1 LONG AND SHORT-TERM AIMS OF THE ENVIRONMENTAL STUDY

The long-term (3+ years) aims of the ES are to:

- Provide the rationale and justification for effective conservation of the threatened and endangered (Red-List) species in the Mekong River;
- Define and promote the establishment of biodiversity conservation areas and arrangements for effective management;
- Safeguard the diversity and multiple uses of the Mekong River for existing and future generations; and
- Sustain the health and wellbeing of river ecosystems and livelihoods.

The short-term (1-3 year) aims are to:

- Engage local communities, civil society, research institutes and government in the comprehensive assessment of the potential impacts of the LMDP and Pak Beng HPP;
- Ensure more complete information on ecological sustainability is available to decision makers in the consideration of the LMDP, Pak Beng HPP and other river basin developments;
- Support Mekong Countries in ensuring the potential impacts of the LMDP and Pak Beng hydropower dam are managed through appropriate avoidance, enhancement and mitigation measures; and
- Promote the adoption of an environmental management framework that safeguards the biodiversity and environmental values of the target reaches of the Mekong River.

5.2 IMPLEMENTATION ARRANGEMENTS

The study was conducted as a component of the MRC Council Study with the MRC facilitating consultation with member countries. Reporting was to the MRC on technical matters and to the CEPF as the contracting organization. The CEPF Regional Implementation Team was involved in providing technical advice, especially in the early stages of the study. The structure for implementing the study is shown in Figure 5.2.

5.2.1 The study team

The ES required a team of biodiversity experts on aquatic ecology, amphibians and reptiles, turtles, fisheries and birds supported by experts in impact assessment, inland navigation and waterway

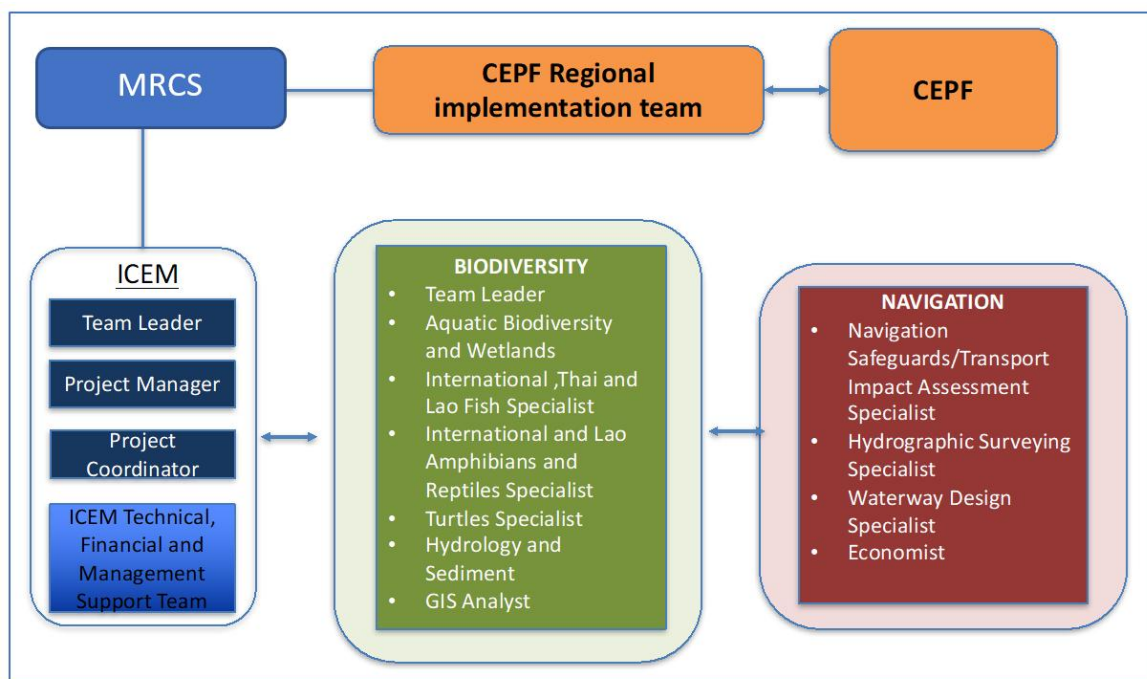
design. ICEM worked closely with the CEPF Regional Implementation Team to source experts with experience specific to the Mekong River. The specialist team which implemented the ES are listed in Table 5.1.

Table 5.1: ES of the LMDP consultant team

Title	Team Member
1. Ecologist and Environment Assessment Specialist/Team Leader	Jeremy Carew-Red
2. Aquatic Biodiversity and Wetlands Specialist	Peter-John-Meynell
3. International Fish Specialist	Eric Baran
4. Lao PDR Fish Specialist	Oudom Phonekhampheng
5. Thailand Fish Specialist	Jutagate Tuantong
6. International Amphibian and Reptiles Specialist	Bryan Stuart
7. Lao PDR Amphibian and Reptiles Specialist	Somphouthone Phimmachak
8. Turtles Specialist	Tim McCormack
9. Bird Specialist	Will Duckworth
10. Navigation Safeguards/Transport Impact Assessment Specialist	Rory Hunter
11. Hydrologist and Sediment Specialist	Simon Tilleard
12. Hydrographic Surveying Specialist	Paul Simcock
13. Waterway Design Specialist	Jacques Dezeure
14. Economist	Daniel Gilfillan
15. GIS Analyst	Mai Ky Vinh

To implement the study, ICEM split the team into two covering biodiversity and navigation. The biodiversity team focused on the integrated assessment of biodiversity, trend and spatial analysis. The navigation team focused on assessing the LMDP, waterways and status of inland navigation and hydropower development. The sub-teams worked closely together to carry out the impact assessment and to design the environmental management plan. The ICEM team in Hanoi provided technical, financial and operational support and were responsible for reporting to the CEPF.

Figure 5.2: ES of the LMDP institutional arrangements and reporting structure



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