

The Use of Environmental Impact Assessment in Laos and its Implications for the Mekong River Hydropower Debate

by

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March 2011

Masters project submitted in partial fulfillment of the requirements for the Master of Environmental Management degree in the Nicholas School of the Environment of Duke University

2011

Abstract

Hydropower development in the Lower Mekong Basin is occurring at a rapid pace. With partial funding from international financial institutions has come pressure on the riparian governments to ensure that the potential environmental and social impacts of hydropower projects are properly considered. Environmental Impact Assessment (EIA) is one of the primary environmental management tools being proposed to fulfill these obligations. This raises the question of whether EIA is serving its intended purpose in the Lower Mekong, and more specifically Laos, or is instead being produced to fulfill basic funding requirements. Based on a comprehensive literature review, in-country research, and analysis of current hydropower cases studies in Laos, this paper seeks to assess the impact EIA is having on the hydropower decision-making process. Current EIA application practices show that it may not be readily transferable from its socio-political origins to the current Lao context. To have a more meaningful impact, EIA application needs to be equipped with necessary institutional arrangements and a more integrated and transparent public participation process.

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Introduction

The Mekong River is one of the least developed and longest rivers in the world, flowing from China's Tibetan Plateau through Myanmar, Laos, Thailand, Cambodia and Vietnam before discharging into the South China Sea (Johnston 2008). The potential for hydropower is great and consequently, the Mekong and its tributaries have become the site of numerous hydropower dam projects. In recent decades, the number of these projects, some of which have reached implementation stages, has accelerated greatly in conjunction with the changing political dynamics of the region (Middleton et al. 2009; Hirsch 2010).

Laos, the least developed of the six riparian nations, has found the prospect of substantial income from the foreign funded hydropower development to be vital for economic development (Lamberts 2008). As of 2010, there are approximately 120 hydropower projects in various stages of planning, design, and implementation, 11 of which are on the Mekong mainstream (Hirsch 2010). The majority of these projects are in Laos (Hirsch 2010). If constructed, the projects will enable the Lao government to export the bulk of their electricity produced to neighboring Thailand while also meeting regional energy demands.

The hydropower projects have received international financial backing from a variety of sources including the World Bank, Asian Development Bank (ADB), private companies such as Sinohydro Corporation and Electricite de France, and both regional and international private financial institutions¹. With World Bank and ADB funding has come pressure on the riparian governments to ensure that the potential environmental and social impacts of the projects are properly considered. The Mekong River system is home to one of the largest freshwater fisheries in the world and provides water for agriculture that supports both local rural populations (Keskinen 2008a) and a rich range of ecosystems. The projects are likely to have major impacts on the availability of these water related resources and consequently on the livelihoods of millions of people (Keskinen 2008a).

Environmental Impact Assessment (EIA) has become one of the primary environmental management tools being used to assess the potential impacts of the hydropower projects and to certify that they are in compliance with environmental regulations. The production of an EIA is often a requirement for lending, particularly from the World Bank and the ADB (Kersten 2009; Alshuwaikhat 2005; King et al 2007). Given

¹ Since 2006, the private sector has been playing an increasingly important role in funding hydropower projects, sidelining World Bank and ADB financial involvement (ICEM 2010).

this requirement, the riparian governments have been pushed to build capacity for EIA implementation.

The question arises as to whether EIA is serving its intended purpose in the Lower Mekong, and more specifically Laos, or is instead being produced to fulfill basic funding requirements. EIA standards in Laos are still being developed and are not always enforced, leading to documents of ranging quality and accuracy. EIA implementation occurs at a single point in the planning process with no requirement for developers to revisit the EIA and consequently no realistic opportunity to adjust project design. Furthermore, developers and government agencies often view EIAs as costly hindrances to development. In both the Mekong region and the rest of the world, there is concern that EIAs are being used not to assess potential environmental impacts, but rather to justify proposed projects and meet requirements for best practices (Alshuwaikhat 2005).

In assessing the actual impact EIA is having on the hydropower decision-making process, this paper will first provide a critical analysis of both the conceptual and institutional aspects of EIA. It will then examine the current Mekong hydropower debate, including a discussion of key stakeholders, surrounding legal framework, and recent private sector involvement. It will then examine EIA's application in Laos and the specific role it is playing in the hydropower debate. Two hydropower case studies in Laos will be discussed to better illustrate EIA-related shortcomings, particularly the issue of limited public involvement. Finally, conclusions will be drawn regarding whether the use of EIA is actually helping the decision process. Recommendations will also be made regarding which EIA issues to focus on for improvement and the degree to which improvement is feasible given the current Lao socio-political environment.

Methods

Research methodology for this paper included an initial literature review and in-person interviews followed by a second literature review. This information was then applied to two major hydropower project case studies in Laos.

The initial literature review and in-person interviews and observations were conducted in Laos during June and July of 2010. The literature review was focused on EIA framework and practice; the Lao political and social environment; and the history and current status of hydropower development in the Lower Mekong. Interviews with key informants were conducted in Vientiane, Laos in June and July of 2010. This work was done

while interning with International Water Management Institute (IWMI) under the direction of Dr. Diana Suhardiman. Interviews focused on the EIA process in Laos as applied to hydropower projects and other regional projects requiring an EIA. International EIA consultants were interviewed informally to discuss how the actual EIA implementation process differs from the expected. The Lao Department of Environmental and Social Impact Assessment (ESIA) was created within the Water Resource and Environment Administration (WREA) in 2008 for the purpose of reviewing EIAs and SIAs (Social Impact Assessments). Meetings with WREA-ESIA staff concerned the role that the agency plays in the EIA review process and the work that is being done to improve this process in Laos. It also included a review of the draft EIA Decree, which puts forth an official EIA procedure for both small and large-scale investment projects. In addition, researchers at IWMI were helpful in providing information regarding the Lao socio-political environment and the current status of hydropower projects within the country.

The second literature review was conducted from late 2010 to early 2011. It covered international, regional, and national environmental policies and regulations for hydropower projects; key stakeholders and their roles in the development process; and environmental and social impact assessments of current and proposed hydropower projects in the Lower Mekong. The information acquired from the literatures reviews and interviews was then applied to two hydropower case studies in Laos: Nam Theun 2 and Xayaburi. The Nam Theun 2 hydropower project went online in 2010 and its EIA is considered to be the most comprehensive to date in Laos. As of April 2011, the Xayaburi hydropower project is in the planning and assessment stages. If approved, it will be the first dam to be constructed on the mainstream. Following the case studies, final conclusions were made regarding the level influence EIA is having on the Lao hydropower decision-making process.

Environmental Impact Assessment: History and Conceptual Analysis

I. The History and Rationale Behind EIA

The EIA process originated with the passing of the US National Environmental Policy Act (NEPA) in 1970. From there, EIA spread rapidly across the globe and is now practiced in more than 100 countries and by numerous international funding agencies (Cashmore 2004). In 1989, the World Bank introduced a comprehensive environmental assessment policy requiring an EIA to be undertaken for major projects by the borrowing

countries with World Bank supervision (World Bank 2007; Alshuwaikhat 2005). The United Nations Environment Programme (UNEP) has offered similar guidance on EIA procedures to member states and specifically to developing countries (Alshuwaikhat 2005). ADB's environmental policy also recognizes the need to incorporate environmental considerations into national and sub-national development planning (King et al 2007). In Laos, EIAs are designed to meet the standards set by international funding agencies but little evidence exists that international EIA standards have been adapted to the country's specific institutional and cultural settings.

EIA is formally defined as a recommendation or report on proposals for legislation and other major actions significantly affecting the quality of the human environment (Salzman and Thompson Jr. 2006). EIAs are intended to educate decision makers on the potential environmental impacts of a proposed project (Salzman & Thompson Jr. 2006). Theoretically they should present information from an unbiased viewpoint and should allow those who are affected by the project to have representation in the process (Karjalainen 2010). They are typically not meant to halt development or reverse the consent decision of a proposed project. While laying out the environmental impacts of the proposed project and alternative options, an EIA ultimately leaves the choice of project up to the decision maker (Salzman & Thompson Jr. 2006). The EIA process does not require the decision maker to select the most environmentally sound option as long as the agency complies with the EIA procedure and prepares a comprehensive EIA (Kersten 2009; Salzman & Thompson Jr. 2006). Depending on where the EIA is produced, the project is required to be consistent with the applicable regulatory framework, such as NEPA in the US. EIA is ultimately intended to reduce the environmental impact of the selected project by requiring that environmental damage be mitigated. Furthermore, public involvement in the process puts pressure on the agency to select the least harmful choice of project. The issue of public participation marks a critical difference between EIA in a wealthy and democratic country versus a less developed country where public participation is actively discouraged and/or the population is less educated. As further explained below, this difference demonstrates why EIAs are often unable to serve their intended purpose when implemented in less developed countries.

II. EIA Framework and Process

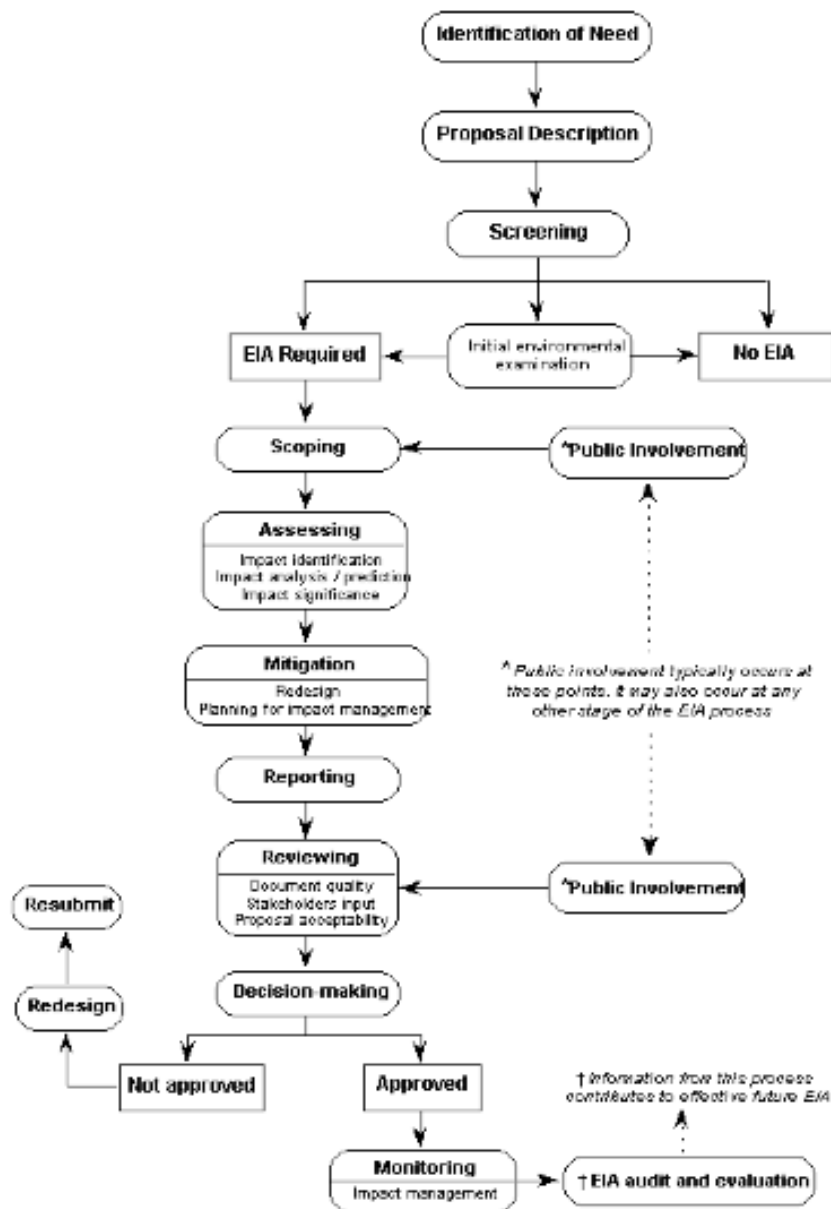
EIAs vary in their robustness and depth of analysis, yet they all contain the same basic elements. An EIA should: address a range of environmental issues divided by resource

area (e.g. water, air, ecosystems) and an analysis of cumulative impacts; contain an appraisal of the no-project situation as well as alternatives to the proposed project; contain both qualitative and quantitative assessments of predicted impacts; and state mitigation measures that could be taken to reduce the scale of negative environmental impacts (Merrett 1997). The analysis of alternatives in an EIA is of particular importance as it compares the different project options based on environmental impacts and allows the lead agency to select a project that both meets objectives and has a lesser environmental impact (Salzman and Thompson Jr. 2006). As described above, the agency is not required to select the least harmful project. The strength in EIA lies in the fact that it gives the agency the ability to make an informed decision.

The EIA process is as important as the contents of the document itself (Figure 1). The process begins with initial examination of the project to determine if an EIA is needed, typically based on regional standards. If it is, the project description is made publicly available and feedback from the public is solicited. The project description should highlight resource areas of concern. Following scoping, the Draft EIA is written based on accepted regional and/or international guidelines. As described above, the analysis is divided by resource area including an analysis of alternatives to the proposed project and cumulative impacts.

Once complete, the Draft EIA is published for review by stakeholders, the reviewing agency and the public and any comments are documented. Following the review, the Draft EIA is revised based on comments received and any new information available to produce the Final EIA. The Final EIA should also include a monitoring plan for mitigation measures and highlight which impacts were found to be significant. The Final EIA is sent to the reviewing agency which makes the ultimate decision on whether to approve the project or not. Once project construction begins, it is expected that the mitigation measures will be implemented and construction monitoring will take place. If the EIA is produced, but there is no repercussion for the agency for failing to implement mitigation measures, then a major part of an EIA's value is lost. Unfortunately, impacts and mitigation measures are not always carried out as intended. Monitoring is typically required to ensure that project activities are going as planned, and, if necessary, take corrective action; however even that may not be enough to curb environmental impacts effectively. Many impacts cannot be mitigated once the project is built (McCully 2001), reinforcing the point that the EIA itself needs to be as accurate as possible for it to be effective.

Figure 1: EIA Process



Source: Ridgway et al, 1996.

EIAs are typically written by a hired consultant and reviewed by both the lead agency and the responsible government agency. Notably, it is a universal practice for the consultant to be hired by the project developer, which introduces a source of bias into the EIA process. Both the lead agency and the consultant want the project to be approved so there is a strong incentive to ignore or downplay negative impacts and to exaggerate potential benefits (O'Faircheallaigh 2010). Conceptually, EIAs are meant to be an unbiased source of information presented by an impartial or neutral viewpoint (Karjalainen 2010).

However, as the developer has the opportunity to review the EIA before it is made public, they can push the consultant to downplay negative impacts. Furthermore, the consultant has an incentive to appease the developer in order to ensure that the consultant is hired to write EIAs for future projects (McCully 2001). As a result, many EIAs for international dam projects conclude that the dam's environmental impacts can be accurately predicted, will be relatively minor, and can be cheaply and easily mitigated (McCully 2001). This source of bias can negatively affect EIAs by reducing their role as a reliable source of information. Even when portions of an EIA are critical, the final conclusion often does not reflect it. For example, the Executive Summary of a 1994 feasibility study for a group of Mekong dams found that environmental impacts would not be severe. Yet, the fisheries analysis in the study predicted that the dams could cause a wholesale decline in the fishery throughout the Lower Mekong River (McCully 2001). The severity of impacts to fisheries has continued to be a source of disagreement between environmental groups and developers. Friend (2009) explains that impacts to fisheries have been viewed by Lower Mekong governments and developers as an unavoidable but necessary cost of hydropower development. Published data on fisheries has improved, such as in the MRC SEA (2010), though impacts are still likely to be downplayed in future project-level EIAs.

Timing is another important aspect of the EIA process. As EIAs are intended to educate decision makers on the potential environmental impacts of a proposed project, they should be made available before the project moves forward or any meaningful action is taken. Otherwise the EIA serves as a post hoc rationalization for a decision that has already been made (Salzman and Thompson Jr. 2006). In the US under NEPA, there are standards for the minimum number of days for comment and review periods. This facilitates accountability of lead agencies by giving the public the information and time needed to review a project (Kersten 2009).

III. EIA and Public Participation

The World Commission on Dams (WCD) defines two forms of public participation: the one-way conveyance of information to the public or the inclusion of public views into the decision making process (Sadler et al. 2000). As mentioned above, a fair and properly implemented EIA allows those affected by the proposed project to have a voice in the process, favoring the later form of public participation (Karjalainen 2010). The EIA process has specific opportunities for the public to review the project, most notably during the initial scoping process and review of the Draft EIA. Further involvement is required when

members of the public are directly affected by the proposed project, such as resettlement following dam construction.

Public participation can serve to give an EIA greater legitimacy and transparency and make it more comprehensive. Though the intent of EIA is not to stop a project, the procedural nature of the EIA process gives the public the opportunity to stall a project and potentially take legal action. Furthermore, the knowledge that an EIA will be subject to public scrutiny may put pressure on the lead agency to make the project as environmentally sound as possible. However, as described above, the agency is not required by the EIA process to choose the least harmful project. Public involvement can be beneficial to stakeholders and members of the public as well as the lead agency. Stakeholders can include people directly affected by a project, government officials, the broader national community, NGOs, and other interest groups (NT2PC 2005). Members of the public benefit by being made aware of project impacts and being given the opportunity to voice their opinions. Research has also found that EIAs lead to increased environmental awareness, particularly in relation to public understanding of local environments (Cashmore et al. 2007).

As public and stakeholder comments are recorded and individually addressed in the Final EIA, their comments may be able to carry weight in the process. Furthermore, as EIAs cannot be entirely comprehensive given their format, the public participation aspect allows the public to be able to fill in gaps in information. For example, the consultant writing the EIA may not fully comprehend the impact that a change in land use induced by a project may have on a local community. Public participation allows local members of society to point out if the EIA is incorrectly identifying the existing land use of a parcel or which natural resources are present in the project area. Furthermore, even if there is not strong public mobilization, the knowledge that an EIA will be subject to public scrutiny may be enough to cause the lead agency to produce a satisfactory EIA (Kersten 2009).

The lead agency can also benefit from public participation as it can make project implementation smoother by lowering the risk of protest or dissatisfaction (O'Faircheallaigh 2010). Major development projects can be sources of conflict and if the public feels that their concerns are being taken into account, they may be less likely to attempt to stall the project. Also, public review of an EIA can help legitimize the document by indicating that the public finds its analysis adequate.

However, when public participation is either not included in the EIA process or not implemented adequately, it can negatively affect those impacted by a project. The powerless in society are the least likely to participate in the EIA process both because they lack the resources to do so and because the process is alien and intimidating to them (O'Faircheallaigh 2010). As EIAs contain technical and scientific information, they are more accessible to educated sectors of society (Cashmore et al 2007). Therefore, if the lead agency does not take measures to ensure that all levels of society are included, it is unlikely they will be. O'Faircheallaigh (2010) describes a case where Indonesian officials undertook an EIA as a requirement for international funding but continued to ignore the interests of villagers whose land was being lost to agribusiness projects. In such a situation, the lead agency is able to fulfill funding requirements and further justify the project without being forced to seriously address local interests.

IV. Critical Analysis of EIA as a Concept

Though EIA is a tool meant to reduce a project's environmental impact, it has conceptual weaknesses at its core that may impact its adequacy. These include its ambiguity, lack of robustness, and method of assessment. First, EIA is a report that outlines predicted impacts of the proposed project based on the best available data. Scientific uncertainty is an unavoidable part of the decision making process (Salzman and Thompson Jr. 2006). As the described impacts are therefore hypothetical, it is important for adequate baseline data to be collected and for monitoring to be conducted once project implementation begins. In the US, under NEPA, it is required that the agency make "reasonable efforts" to gather adequate data (Salzman and Thompson Jr. 2006). Similar requirements exist under international EIA statutes. If baseline data is not accurate or extensive enough, the predicted impacts carry less weight.

EIAs must also have a defined scope for impact assessment and cumulative impacts. The scope of the proposed project is defined early on in the EIA process. Care must be taken to ensure that the scope is broad enough to cover all potential impacts and narrow enough to expose detailed impacts. This is of particular importance when assessing hydropower projects as the downstream impacts to fisheries can extend to communities hundreds of kilometers away from a dam (Richter et al 2010).

Problems can also arise when there are other ongoing or planned projects in proximity to a proposed project. Nearby projects can magnify impacts or lead to complex interactions. Thus, it is important for information regarding concurrent projects to be

included in the EIA. For example, the EIA of a single hydropower dam project may conclude that the environmental impacts will be less than significant. If an additional dam is being built concurrently on the same river, which is the case in both the main stem and tributaries of the Mekong the combined impacts of the two or more projects may have a significant impact on the environment. Therefore, in order for an EIA to accurately predict impacts, it must take surrounding projects into consideration. This can be difficult to accomplish in developing countries where project information is not publicly available or robust. In addition to a defined scope in area and distance, it is also important for the EIA to have a defined length of time as short and long-term impacts may vary (Keskinen 2008b).

V. Strategic Environmental Assessment

Strategic Environmental Assessment (SEA) is a program-level process that incorporates the environment into a higher level of decision-making and facilitates early consideration of alternatives in advance of project-level EIAs (Sadler et al. 2000). Its focus is on the sources of environmental damage and how to account for them in the development of policies and programs. SEAs follow a similar procedure as EIAs, but have broader coverage in terms of time and space (King et al. 2007). As project assessment occurs early on, SEA has the potential to influence project design before irreversible decisions are taken. It is also better at assessing cumulative impacts, such as the overall impact of multiple dams on a single river basin.

As there is growing concern regarding the limitations of EIA, SEA has been pushed as an additional tool for environmental management, particularly at the regional level. The Mekong River Commission has recognized that as there is not a single set of environmental policies being applied in the basin, there is a growing need for a harmonized treatment of environmental issues (King et al. 2007). Furthermore, the sudden revival of numerous projects on the Mekong mainstream highlighted the need for a broader impact analysis.

The Mekong River Hydropower Debate

I. History of Hydropower Development in the Lower Mekong Basin

The history of hydropower development in the Lower Mekong Basin started with the formation of the Mekong Committee (MC) in 1957 with the endorsement of the United Nations and the guidance of the US during the early part of the Cold War (Hirsch 2010). The Committee was comprised of the government of Cambodia, Laos, South Vietnam, and Thailand. At this time, much of the Committee's work focused on planning dams for the

mainstream of the Mekong that would create a series of lakes from northern Laos to central Cambodia (Hirsch 2010). These plans came out of the Cold War ideology to pre-empt communism by improving economic development and enhancing the influence of the US and its allies. This was also a period where progress and large-scale infrastructure projects were thought to go hand in hand (Hirsch 2010). None of the mainstream projects that were proposed during this period were ever constructed, mainly due to the conflict around the Second Indochina War. In 1975, Cambodia withdrew from the Committee, putting development of the mainstream on hold. The Nam Ngum 1 dam, built on a tributary in Laos, was the only hydropower project that was completed under the Committee.

By the end of the 1980s, there was renewed interest in hydropower development on the Mekong mainstream and in regional cooperation. Given that the mainstream flows through all of the riparian countries, impacts are likely to be transboundary (King et al. 2007). Thus, regional cooperation was deemed vital in order to reduce the possibility of conflict between nations. Following the Rio Summit, the Mekong Committee evolved to become the Mekong River Commission (MRC) in 1995 when Cambodia, Laos, Thailand, and Vietnam signed the Agreement on Cooperation for Sustainable Development of the Mekong River Basin. Currently, the Mekong River Commission has a formal mandate to cooperate in all fields of sustainable development, utilization, management, and conservation of water and related resources in the Mekong Region (MRC 1995; Gajaseeni et al. 2005). Under this mandate, the Commission operates both at the regional and national levels.

The demand for electricity has been steadily growing in the Mekong Region due to rapid industrialization, export-led economic growth, and expanding domestic consumer markets (Middleton et al 2009). As of 2008, only ten percent of the Lower Mekong Basin's estimated hydropower potential had been developed (Johnson 2008). The Thai government predicts that Thailand's demand for electricity will approximately double to 58,000 megawatts (MW) by 2021 and the Vietnamese government predicts that Vietnam's demand will almost quadruple to 40,700 MW by 2015 (Middleton et al 2009). Furthermore, Thailand has already developed much of its hydropower potential and Vietnam plans to do so over the next 20 years, necessitating imports from China, Laos, Myanmar and Cambodia. In addition, efforts to reduce reliance on fossil fuels and imported energy are making hydropower increasingly attractive for Lower Basin countries (ICEM 2010).

Yet, hydropower development has been met with resistance over the past decade as the environmental and social impacts of dams have become increasingly important and

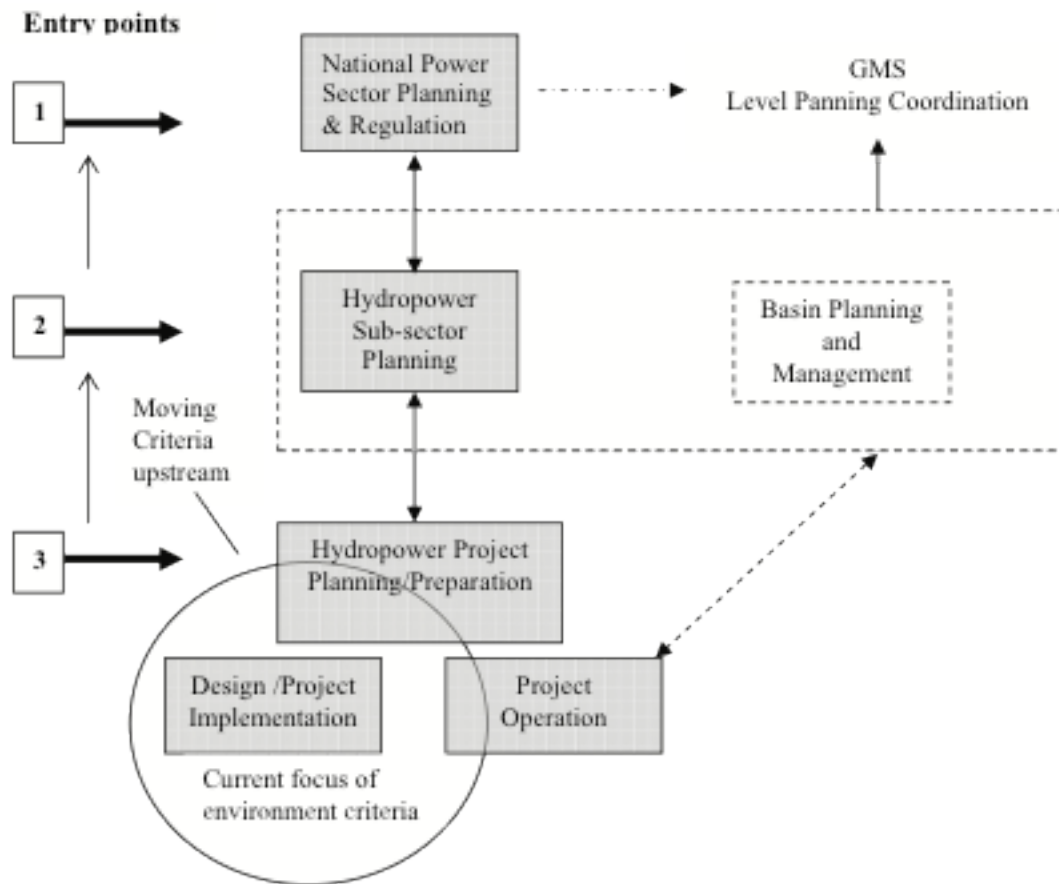
public issues. Recently, the MRC has stressed the integration of environmental standards in power planning systems at the regional and national level by strengthening EIA and SEA processes in the region. It specifically recommends capacity building for improving scientific information and data and the production of more comprehensive habitat, biodiversity, and ecosystem assessments (ICEM 2010).

However, hydropower development in the region is ultimately being pursued by national governance structures, led by either public sector power entities or the private sector (King et al. 2007). Figure 2 below shows the three entry points for environmental criteria in the Lower Mekong hydropower development process. The first is national-level power sector planning, where decisions are made regarding whether to investment in hydropower or other forms of power generation. The second is hydropower sub-sector planning, where decisions are made on which specific hydropower projects to move forward. The third is the project-level, individual hydropower project planning stage. The circle in the bottom left shows where the current focus of environmental criteria is. It implies that environmental planning is primarily done at the project implementation phase, typically by the preparation of an EIA. Environmental criteria are applied in a more limited manner in the other two entry points (King et al. 2007). EIA is therefore the primary point at which project-induced environmental impacts are considered. This highlights the significance of EIAs role in the planning process and the importance of producing a satisfactory document. If the document does not adequately assess impacts, it is unlikely that they will be in the future as EIA is the only major opportunity for environmental analysis.

II. Hydropower in Laos

Laos (formally the Lao People's Democratic Republic) is a small, landlocked country in Southeast Asia bordered by Cambodia, China, Myanmar, Thailand, and Vietnam. It has a population of approximately 6.0 million and had an estimated per capita income of about \$740 in 2008, making it one of the poorest countries in the Mekong region (Porter & Shivakumar 2011). However, Laos is rich in natural resources, particularly in water,

Figure 2: Representation of Generic Entry Points to Locate Environment Criteria for Hydropower in National Hydropower Planning Systems (King et al. 2007)



minerals, and forestry. Laos is a single-party socialist republic ruled by the Lao People's Revolutionary Party. In August 1991, the National Assembly adopted a new constitution that formally established a market-oriented economy (AG-DFAT 2011). In 2004 the government published the National Growth and Poverty Eradication Strategy (NGPES), which emphasized the importance of natural resource development for sustaining economic growth rates and meeting the Millennium Development Goals.

Hydropower development is of particular interest to the Lao government given that much of the Mekong region's potential has yet to be fully exploited. Furthermore, the country faces development constraints in other areas given its small domestic market, lack of skilled manpower, and large number of subsistence farmers (Goh 2007). Laos has the greatest potential for hydropower of any country within the Lower Mekong. Its central location gives it the strategic advantage of being able to sign bilateral trade agreements with other countries. To date Laos has signed memoranda of understanding with Thailand for

7,000 MW and with Vietnam for 5,000 MW to export hydroelectric power. The Nam Ngum 1, Theun Hinboun, and Nam Theun 2 (NT2) hydropower projects were built primarily to serve the Thai market (Porter & Shivakumar 2011). According to the World Bank, power exports accounted for approximately 30 percent of total export earnings in Laos in 2003. Though this number has declined in recent years, returns from NT2 are expected to raise export earnings back to 30 percent by 2013 (Porter & Shivakumar 2011).

III. Key Stakeholders

The following stakeholder analysis discusses the roles and responsibilities that each of the key stakeholders play in the Lower Mekong hydropower development process. King et al. (2007) proposed a grouping of stakeholders based on the 2004 European Union Project Cycle Management Guidelines (EC 2004) and the WCD Rights, Risks and Responsibilities approach. The main categories of stakeholders are as follows:

1. The Mekong River Commission

The MRC was formed under the 1995 Agreement between the governments of Cambodia, Thailand, Laos, and Vietnam. It supports a joint basinwide planning process to ensure the sustainable development of the basin. It is also involved in fisheries management, promotion of safe navigation, irrigated agriculture, watershed management, environmental monitoring, and exploring hydropower options (MRC 2011). It consists of three permanent bodies: the Council, the Joint Committee, and the Secretariat, as well as committees at the national level.

2. Lao Government

Government decisions are made by the 11-member Politburo, drawn from the 49-member Central Committee (AG-DFAT 2011). The National Assembly, the legislative branch, makes fundamental decisions affecting the country and approves new laws. Citizens elect members of the National Assembly from a list of candidates approved by the Party (AG-DFAT 2011).

Within the government, the Water Resources and Environment Administration (WREA) is the agency primarily concerned with hydropower projects' impacts. It is one of five government agencies, in addition to the Politburo and National Assembly. WREA has a department dedicated to the review of environmental and social impact assessments. Notably, in the Lower Mekong, environment agencies are typically junior to economic and political ones (King et al. 2007).

3. Financial Institutions

The World Bank and the Asian Development Bank (ADB) are the two major international financial institutions involved in the hydropower development process. The World Bank's strategy for Southeast Asia aims to support economic growth and integration with the global economy while enhancing the environment and social stability. The World Bank's two flagship operations in Laos are the NT2 Hydropower Project and the Poverty Reduction Support Operation (WB 2011). The ADB is an international financial institution that focuses on poverty reduction in its member countries. ADB is mandated to provide advice and loans for investing in the region's future (ADB 2011; King et al. 2007). Support to Laos has primarily focused on infrastructure improvements in transport, energy, and agriculture (ADB 2009).

Recently, the private sector has become increasingly involved in hydropower and has been providing financial backing for projects, a discussion of which is included in Section V below.

4. Dam Developers

State agencies are primarily engaged in strategic planning and project selection. Major state agencies in the Lower Mekong include the Electricity Generating Authority of Thailand (EGAT), Electricite du Laos (EdL), and Electricity of Vietnam (EVN). Private developers are also engaged in projects, such as TEAM Consulting Engineering Management, the developer for the Xayaburi project.

5. Communities

Stakeholders at the local level include both people directly impacted by the projects as well as Lao citizens in general that may potentially benefit from the country's economic development. Villagers that are resettled or experience impacts to their livelihood, such as fishing, are the primary focus of most stakeholder analyses.

6. Other Interest Parties

As civil society is constrained in Laos, the NGOs involved are international. International Rivers and the World Wildlife Fund (WWF) have been the most vocal in criticizing the hydropower projects. Support for improved water governance has also come from the Mekong Program on Water, Environment, and Resilience (M-POWER), a network of interested organizations and individuals. Bi-lateral donors have also been involved. For example, AUSAID, the Australian Government's overseas aid program, is a key donor to the

MRC and has expressed concern regarding potential impacts to fisheries and local livelihoods (Corben 2011).

IV. Legal Framework and Guidance Documents

Each country in the Mekong has its own set of environmental laws and regulations regarding EIA procedures. However, the specific regulations and policies that are triggered differ for each individual project depending on the stakeholders involved. The laws and regulations most commonly applied to hydropower projects in Laos are described below.

1. National

The Government of Laos has numerous environmental policies and laws. The laws listed here are those that specifically pertain to large-scale hydropower projects. Implementation of each law is the responsibility of the agencies that administer them.

- The Environmental Protection Law (1999) requires Lao socio-economic development plans to include provisions to protect the environment and natural resources. It requires all development projects that have the potential to affect the environment to prepare an EIA. The Law also contains standards regarding the timing of environmental assessment requirements within the project cycle as well as the content and formatting of the EIA.
- The Water and Water Resource Law (1996) is intended to ensure the sustainable use of water. It establishes requirements for the preparation of an EIA for any large-scale water project prior to the development of the project. The Water Resources Committee under the Prime Minister's Office administers this law.
- The Forestry Law (1996) states that all organizations have an obligation to protect and conserve the use of forest lands and resources. It also assigns the Government of Laos the responsibility of allocating the use of forest lands.
- The Electricity Law (1997) provides the basis for developing a concession agreement to construct and operate a hydropower project. It requires that environmental damage be minimized and that an EIA be prepared for all hydropower projects. Specifically, EIAs must include mitigation measures and address impacts to affected peoples. The Hydropower Department of the Ministry of Industry and Handicrafts administers this law.

- The EIA Decree (2010) requires all investment projects operating in Laos to prepare an EIA. The Decree outlines the EIA process and necessary components. It is administered by WREA.

2. Regional

The MRC's Procedures for Notification, Prior Consultation and Agreement (PNPCA) serve as the formal framework for assessing hydropower project proposals under the 1995 Agreement. Once feasibility and environmental studies have been completed for a proposed dam project, other MRC member countries must be consulted. For tributary projects, this primarily involves notifying other member countries of the project (Bird & Phonekeo 2010). For mainstream projects that may affect dry season flows, there is a more stringent requirement that member countries must enter into a prior consultation process with the intent of coming to an agreement.

The MRC's *Strategic Environmental Assessment of Hydropower on the Mekong Mainstream*, published in October 2010, seeks to identify the opportunities and risks associated with development of the Lower Mekong mainstream. Given the sudden revival of eleven projects on a single river, the MRC decided to prepare the SEA to address the wider strategic issues. The SEA follows similar steps as an EIA but is broader in terms of time, space, and subject coverage (ICEM 2010). It is intended to be an input for the PNPCA process. The SEA provides an analytical framework of the benefits, costs, and impacts of proposed hydropower projects including cumulative impacts. It ultimately recommends deferring any decision on mainstream dam construction for ten years in order to allow for more environmental studies to be conducted.

3. International

There are a vast number of international environmental policies and regulations that require EIAs and guide large development projects. As listed above, the key actors for defining environmental policies and best practices in the Mekong are the World Bank and the ADB. USAID also has an applicable regulation that requires an EIA to be completed for large-scale hydropower projects. Private sector banks, which have been playing an increasingly greater role in hydropower development, are guided by the Equator Principles, though adoption is voluntary.

- Title 22 of the US Code of Federal Regulations contains the EIA procedures used by USAID for all development programs and projects. The regulation classifies dam construction as an action typically having a significant impact on the environment,

thus requiring an EIA. Identical to NEPA, environmental review must be conducted before there is an irreversible commitment of resources to the project. Therefore, USAID will not provide funding for a project until environmental review is complete. Section 216.8 addresses public hearings for the EIA process. Though public hearings on Draft EIAs are not required, considerations must be made as to whether a hearing would be beneficial. These considerations include whether the public has already been included in the process, the degree of interest in the project from key stakeholders, and the magnitude of the project.

- The World Bank's Environmental and Social Safeguard Policies have the goal of preventing and mitigating undue harm to people and their environment in the development process. The Environmental Assessment policy is used to "identify, avoid, and mitigate the potential negative impacts associated with WB investment operations, with the purpose of improving decision making while ensuring that project options under consideration are sound and sustainable and that potentially affected people have been properly consulted" (Porter & Shivakumar 2011). It specifically requires public disclosure of information about proposed projects and their impacts, in English and local languages, at public sites.
- The ADB's Environmental Policy was adopted in 2002 and requires projects to prepare a comprehensive EIA, the findings of which must be used to influence project design. EIA has been a requirement for all ADB projects since 1988 and the Environmental Policy was added as a further safeguard. Projects that are expected to induce major environmental impacts are required to prepare a full EIA, the summary of which must be available for public review 120 days prior to ADB Board consideration (King et al. 2007). The Policy acknowledges the value of SEAs but does not require them (King et al. 2007). ADB has separate environmental checklists for different types of projects, including one for energy projects.
- The World Commission on Dam's produced 26 good practice guidelines, including a code of practice for the private sector, that have been used by other actors, to complement their decision support system. The WCD was an international, multi-stakeholder initiative that reviewed the complex and often controversial issues associated with large dams. The guidelines can be used as a checklist to ensure that all elements of sound-decision making have been addressed (King et al. 2007). The

guidelines were published in November 2000 in the report *Dams and Development: A New Framework for Decision-Making*.

- The Equator Principles are a financial industry benchmark for determining, assessing and managing social and environmental risk in project financing (EP 2011). Institutions that adopt these principles must ensure that projects are developed in a socially responsible manner and reflect sound environmental management practices.

V. Investment from the Private Sector and China

Recently, the private sector has been crowding out international financial institutions such as the World Bank in providing funding for hydropower projects. There is growing concern that this will further reduce transparency in the decision-making process, making accountability difficult (King et al. 2007). Funds are not always provided in the form of direct project financing. Shareholders of private developers may include financial institutions that provide general funds. For example, Morgan Stanley and State Street, two US financial institutions, are major shareholders of CH Karnchang, the lead developer of the Xayaburi project (described below) (CH Karnchang 2009). Many private financial institutions have committed to the Equator Principles or other environmental investment policies. However, others have not, opening up the possibility of reduced environmental safeguards for projects. Funds are also coming from China, with an estimated 40 percent of the proposed tributary and mainstream hydropower development in coming years in MRC member countries being funded by Chinese companies. These companies have had a mixed record in terms of environmental management safeguards and transparency. Recently, Sino-Hydro and others have been taking EIAs more seriously than in the past. Sino-Hydro's recently proposed Nam Ngum 5 tributary dam in Laos will be an important test case (Hirsch 2011).

King et al. (2007) cite two major critiques regarding private sector involvement. The first is the prospect that the social and ecological costs of individual hydropower projects will be increasingly externalized. Lax environmental management policies are normally attractive because they can result in lower project costs. Ensuring there is adequate funding for mitigation measures is of particular concern. The second critique is that there will be proportionately more hydropower projects backed by the private sector. To the extent that these projects will be developed without multilateral development bank environmental safeguard policies, the weakness of national environmental policies will be tested. This puts

further emphasis on the need for ongoing efforts to strengthen national EIA processes and integrate environmental standards into power planning systems.

The Use of EIA in Laos and Hydropower Case Studies

I. EIA Implementation Issues

The World Bank has identified lack of implementation capacity as the biggest constraint to effective EIAs (Alshuwaikhat 2005). The same author (2005) notes that in many Asian countries, EIA has been introduced with insufficient staffing, experience and monitoring, with evaluation inadequacies, and without enough baseline data. In Laos, EIAs are implemented at a fairly high level, typically involving the developer, the government, and a consulting agency and are reviewed by the ESIA department of WREA (Keskinen 2008a). Insufficient baseline data leads to EIAs with potentially inaccurate predictions of impacts. Current EIAs do not reflect the magnitude of impacts to fisheries in the Mekong and data is either not being collected or not used for project analysis (Johnston 2008). There is also a lack of follow-up and mitigation monitoring once the EIA has been implemented. As described above, when the public and other stakeholders are given the opportunity to review an EIA, they do so with the understanding that the mitigation measures outlined in the EIA will be implemented. If they are not, then the EIA process loses its legitimacy. This has particularly been a problem for existing hydropower projects in the Lower Mekong (King et al 2007). Timing is also an issue as many EIAs are either not made public until they are certified or not at all (Johnston 2008). If an EIA is released to the public after the proposed project has moved forward, it would be too late for any significant changes to be made. Furthermore, the alternatives analysis of an EIA allows the lead agency to compare project options based on environmental considerations. If project implementation moves forward before the EIA has been published, the selection of alternatives becomes largely insignificant.

Given that the EIA format assesses resource areas individually, problems can arise when integrative processes that affect multiple resource areas are impacted. For example, the Tonle Sap flood pulse in Cambodia is at risk of being impacted by hydropower development. The Tonle Sap is governed by the variations in the Mekong's flow throughout the year (Lamberts 2008). When water levels rise above a threshold level, usually late May or early June, flow in the Tonle Sap is reversed and river water is pushed into the Tonle River and Lake. Characteristics of the flood pulse have important ecological significance.

Upstream development outside of Cambodia may alter ecological functions and characteristics of the flood pulse and consequently fisheries production (Lamberts 2008). Yet, Lamberts (2008) argues that as the Tonle Sap is an integrative process, it is not covered by the EIA's discrete method of assessment. Most EIAs require a cumulative analysis that has the potential to cover integrative processes. However, this type of analysis requires a significant amount of baseline information and in developing countries this information is often not available or not shared between countries.

Cumulative impacts are of particular concern in the Lower Mekong given the sudden revival of many hydropower projects at the same time on one river (ICEM 2010). In Laos, EIAs are typically conducted at the project-level without a detailed review of cumulative impacts. This highlights the advantage of having the MRC present to provide modeling capacity and transboundary impact analysis, such as the SEA. Also, under the 1995 Mekong Agreement, member nations are required to notify their neighbors and the MRC of any proposed mainstream projects.

In Laos, there is little space for negotiation and expression of societal and community-level concerns (Hirsch 2006). Even though international NGOs have been pushing for greater public involvement, public participation in the region is still limited. In order for the decision-making process to be transparent, there must be a well-developed civil society and access to independent sources of information. However, in Laos there is no independent media or local NGOs (Imhof & Lawrence 2005). The riparian states argue that large dam decisions must be based on the sovereign right of the country or state to determine what is best for its citizens (Sneddon & Fox 2007). Furthermore, many government officials in the Lower Mekong see participation as at best a tool of anti-development environmentalist groups or at worst as having little value (Sneddon & Fox 2007). Even when the public is consulted on a project, it is typically in the form of conveyance of information without giving weight to any public feedback received. Singh (2009) found that villagers affected by NT2 are cautious in speaking about the project for fear of impacting the project or attracting the government's attention. Thus, even when participatory interventions exist, if the villagers do not know their rights or are hesitant to speak openly, the interventions are largely ineffective.

EIAs are often not made public, even after they are complete or project implementation begins. Most EIAs are published in English as they are primarily written for an international audience, leaving a large portion of local populations unable to read them

even if they are given access (Johnston 2008). Furthermore, as EIAs are technical documents, they are not easily understood by those lacking an education. Limited participation is particularly problematic because it plays such a significant role in the EIA process. If the people affected by the proposed project are not given a voice and the EIA is used to justify a project, it can make marginalized groups even more marginalized by legitimizing the project (O’Faircheallaigh 2010). In a 2007 report, the MRC cited increasing public participation in project-level EIAs as an important step in the hydropower planning process (King et al. 2007).

The recent publication of the EIA Decree in 2010 is an indication that WREA is taking the EIA process seriously. The Decree lists the necessary components for EIAs produced for projects in Laos and also requires public consultation. Meetings with members of the WREA-ESIA confirmed that staffers are interested in ensuring that adequate EIAs are produced for projects. They indicated a clear understanding of the EIA process, including timing and public consultation. WREA-ESIA staff also admitted that there they were still building capacity for assessment of cumulative impacts. Problematically, WREA does not have a lot of weight in the country’s decision-making process. Political and economic bodies, such as the Ministry of Planning and Investment, ultimately make the final decision regarding whether or not to approve a dam project. According to a key observer, the agencies have a tendency to reduce EIAs to a rubber-stamp procedure in order to speed up the project approval process.

II. Case Studies

1) Nam Theun 2

The Nam Theun 2 (NT2) hydropower project is located in central Laos on the Nam Theun River, a Mekong tributary. The project’s geographic footprint is largely in the Khammouana Province, with some features located in the Bolikhamxay and Savannakhet provinces (Porter & Shivakumar 2011). It has the development objective of generating revenues that will be used to finance poverty reduction and environmental management programs. NT2 was approved by the World Bank in 2005 and was financed by private developers. Between 2009 and 2034, the project is expected to generate \$1.95 billion of revenues to the Lao government. After this 25-year period, complete ownership of NT2 assets will transfer to the Lao government at no cost (Porter & Shivakumar 2011).

The project EIA was prepared for the Nam Theun Power Company (NTPC) by Seatec International, a Thai consulting firm. The final draft was published in 2005, based on data

from a number of habitat and environmental surveys. The original EIA was completed in 1995, however the World Bank found the document to be inadequate and requested that further assessments be conducted. Producing an adequate EIA faced the challenges of assessing environmental impacts spread over six zones; impacts to local livelihoods; and uncertainty regarding project impacts (Porter & Shivakumar 2011). The Final EIA includes a detailed assessment of project alternatives, social and environmental impacts, and the public consultation process. It has been considered the most comprehensive and accurate EIA produced in Laos to date.

Both the World Bank and ADB helped financially support the NT2 project. When the project began in 1993, Laos had limited resources for implementation of environmental and social mitigation activities. Part of the banks' involvement was based on a commitment to higher environmental and social standards in Laos. In 2001, the World Bank negotiated a decision framework with the Lao government. This framework consisted of three pillars:

“Under its terms (a) the government was to implement a development strategy and program characterized by concrete performance on poverty reduction and environmental protection; (b) the project developer and the government were to ensure that the technically, financial, and economic aspects of the project and the design and implementation of safeguard policies were of a standard acceptable to the World Bank; and (c) the government was to obtain broad support from international donors and civil society for the country's development strategy and the NT2 project itself.” (Porter & Shivakumar 2011).

World Bank and ADB involvement also led to the development of a Lao National Hydropower Policy (NHP) in 2005 (Johnston 2008). The NHP includes provisions for improving environmental standards and public disclosure of EIAs. However, for numerous reasons including lack of political commitment, human and financial resources, and clarity the NHP was not as effective as hoped (Johnston 2008).

As part of the third pillar, the World Bank put together a series of workshops held in Bangkok, Tokyo, Washington, and Vientiane to provide major stakeholders with information regarding the project and to obtain feedback from international civil society groups. They have been praised as a successful demonstration of the Lao government's willingness to engage with critics of the project (Porter & Shivakumar 2011). However, the workshops were held too late to fundamentally affect project design. Singh (2009) criticized the workshop in Vientiane as only being comprised of Lao government officials, foreign consultants, foreign NGO staff, and a few journalists. Though the workshop was marketed as

a forum for an open and well-informed discussion, it was in practice a negotiated performance for an international audience.

NT2 required the resettlement of nearly 6,300 people. In keeping with World Bank and ADB guidelines, the Nam Theun Power Company (NTPC) prepared a Resettlement Action Plan that outlined the public consultation process including negotiating compensation, livelihood assistance, and the timing of resettlement activities. The resettlement process has been publicized as a success by the NTPC as displaced Lao citizens were given access to electricity, clean water, and schools in their new villages. However, the project has been criticized by local NGOs for not adequately disseminating information to the villagers regarding the dam's predicted environmental and social impacts. Furthermore, Singh found evidence that villagers in the NT2 districts show constraint in discussing the project with outside journalists, illustrating how the Lao government may be limiting the effectiveness of participatory interventions by putting pressure on villagers to remain silent.

Early consultations primarily involved the one-way conveyance of information regarding project benefits to affected people. They did not solicit the views or concerns of these local populations nor did they discuss the costs of the project. International concern that these consultations were not effective prompted the World Bank to commission a review of the local consultation process in 2003. This led to the creation of a new consultation methodology that invited full and unscripted feedback (Porter & Shivakumar 2011). In order to accommodate illiterate populations, pictorial posters were used to illustrate key concepts and issues. It was hoped that this new methodology would allow a broad array of opinions to be heard without letting those in positions of authority dominate the discussion. Though imperfect, the incorporation of public feedback into NT2's project design is viewed as the most substantive of all the major hydropower projects in Laos (Porter & Shivakumar 2011).

The Lao government has said that it would not go through with an assessment process as long and comprehensive as NT2's in the future (Hirsch 2010). It is worth highlighting here that it is not so much the high level of complexity of an EIA that is most significant, but rather how different parties make use of the information provided regarding crucial issues such as resettlement, mitigation measures and compensation. NT2 may be the most comprehensive EIA that has been published in Laos to date, but without proper public participation or implementation of mitigation measures, the document still falls short of

fulfilling its intended purpose. King et al. (2007) note that as NT2 was a proving ground for the incorporation of environmental considerations into the hydropower planning process, it would be helpful to use lessons learned here to continue to improve public participation in the Lao EIA process. However, it may have the unintended consequence of leading hydropower developers to seek funding from sources that are not as concerned about environmental consequences, such as private developers.

2) Xayaburi

The proposed Xayaburi Hydropower Project would be located about 150 km downstream of Luang Prabang, Laos on the Mekong mainstream. The project has a capacity of 1,260 MW, about 95 percent of which will be exported to Thailand. It will cause an estimated 2,130 people to be resettled (ICEM 2010). As the project is located on the Lower Mekong mainstream, it was the first project to be submitted for approval through the PNPCA framework process in September 2010. Under the PNPCA, the MRC Joint Committee, consisting of representatives from the four member countries, will try to reach a common decision regarding the project by April 22, 2011. Notably, the decision is expected to set a precedent for whether more mainstream dams will be built or not. Furthermore, if the Committee does not approve the dam, whether or not the Lao government continues to push the project forward will have implications for the MRC's ability to influence national hydropower decisions. As discussed above, the MRC's SEA recommends a 10-year moratorium on mainstream dam building until further environmental studies are conducted.

The Lao government signed a Memorandum of Understanding (MoU) with Thailand's Ch. Karnchang Public Company, the project's lead developer, on May 4, 2007. SouthEast Asia Energy Company, Limited (based in Laos and Singapore) is an additional developer. Another MoU was signed for a Power Purchase Agreement between the Electricity Generating Authority of Thailand (EGAT) and the Lao government in July 2010, which will allow EGAT to purchase 1,220 MW of electricity through a 200 kilometer long transmission line that will be built from the dam to Thailand's northeastern province of Loei (IR 2011). Other potential investors include the Lao government and Ratchaburi Electricity Generating Holding Company.

Xayaburi has drawn criticism from Vietnam, Thailand, the MRC, as well as international NGOs. As of February 2011, the project was in the public consultation stage as required by the PNPCA with international consultations held in Vietnam, Thailand, and

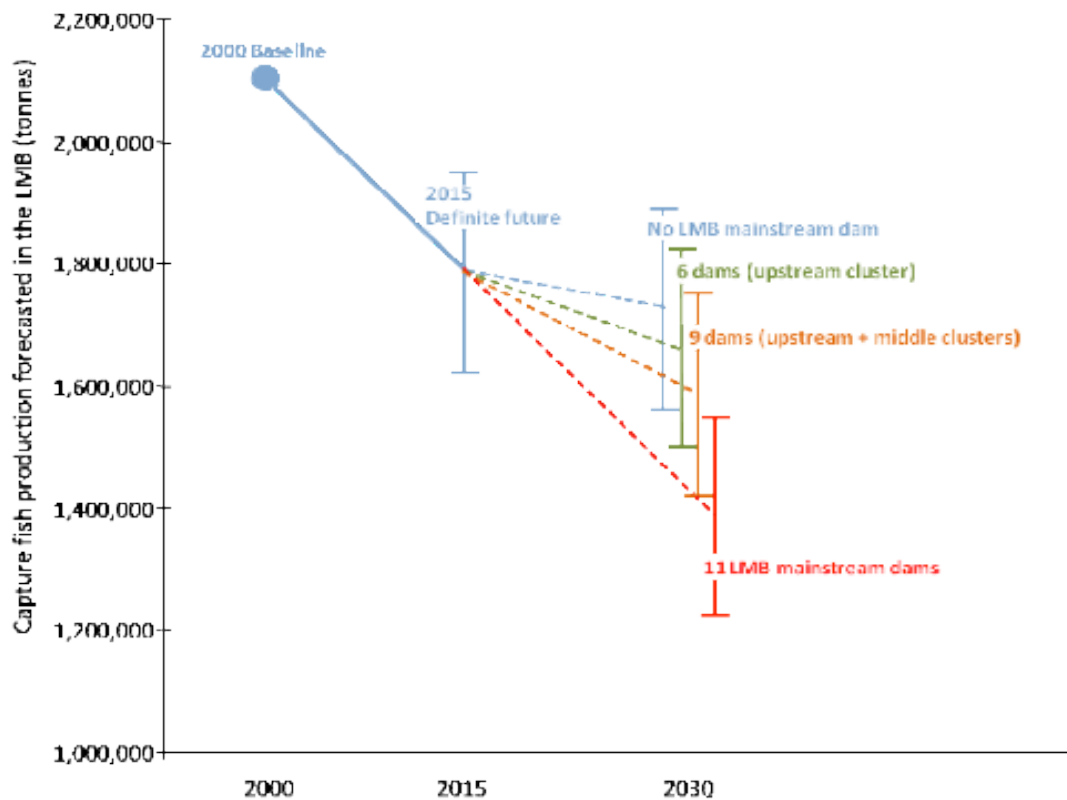
Cambodia. Under PNCPA guidelines, summaries of impact assessment and technical documents are sufficient for the consultation process. However, the consultations concluded that the available documentation was insufficient, particularly regarding potential transboundary impacts (PPP 2011). Furthermore, the director of the Cambodian Rural Development Team noted that there was no representation by local villagers at the consultations (PPP 2011). Both Vietnam and Thailand have requested that public hearings be extended, as allowed under the PNCPA. Vietnamese officials specifically expressed concern that the project would jeopardize water supplies and threaten fisheries (VoA 2011). In response, the Lao government stated that it has full authority to proceed with the project given that it is located entirely within the country (BP 2011).

The project's EIA was first submitted to the Lao government for approval in February 2010, though it was not made public until March 2011 (IR 2011). As timing and public involvement are both important parts of the EIA process, it is of concern that the public has only been given a month to review the document before a decision is made in April. The EIA consultations held in Laos included a combined total of 234 local people from the project area and were held in January and April of 2010 (TEAM Consulting 2010). As of March 2011, the EIA had only been published in the English language (IR 2011).

The EIA itself has been criticized for a number of flaws, including inadequate analysis of impacts to fisheries and cumulative and transboundary impacts. The EIA contains very little baseline data regarding fisheries, such as migration patterns, species diversity, and anticipated impacts. The EIA recommends that fish ladders be used to mitigate impacts. Yet, the MRC's SEA states that fish ladders are not a realistic mitigation option for Mekong mainstream dams due to the large amount of biodiversity present in the basin. The EIA also only considers a downstream area of 10 kilometers. Transboundary impacts are expected to be widespread, with impacts potentially being felt in Vietnam and Cambodia. Furthermore, a cumulative analysis of the combined operation of all eleven mainstream dams is not included in the EIA (IR 2011). Cumulative impacts are expected to be significant regarding flow and biological resources. Figure 3, from the MRC SEA, shows the additive effect of different numbers of dams on Lower Mekong fish production.

Given that NT2 was viewed as a major step in the right direction for the EIA process in Laos, it is notable that the Xayaburi EIA has been highly criticized and that the public participation process has been limited. This may be an indication that the Lao government is not going to use NT2 as a learning experience in terms of environmental management.

Figure 3: Potential Incremental Impact of Lower Mekong mainstream dams on fish production basin wide (ICEM 2010)



Instead, Xayaburi may be the first of multiple dams that the government pushes forward without a serious assessment of impacts. The MRC Joint Committee's April decision will be important in determining whether the project moves forward. If Laos decides to proceed without other MRC member countries' support, this will have massive implications for both the MRC's decision-making power and future dam building on the mainstream.

Conclusions and Recommendations

While the application of EIA indicates concern for environmental impacts, it is not necessarily a sign of meaningful environmental stewardship. The fact that EIA was introduced in the Lower Mekong region largely to meet World Bank and ADB standards and lending conditions brings to light its characteristic as a donor-induced environmental management exercise. Therefore, it may not be the technical issues that are the biggest constraint but rather the issue of purpose (Cashmore 2004). If EIAs are being used to justify proposed projects without a clear perception of EIA or significant public involvement in the process, then it is unlikely that they will be effective in fulfilling their original goal of

enhanced environmental mitigation and management and stakeholder engagement. It is also unlikely that the process will improve through capacity building alone as implementation problems may be a symptom of lack of interest in EIA rather than insufficient capacity.

EIA is a western tool intended to be applied in a society that is open to public involvement and demands freedom of information. In the Mekong region in general and in Laos in particular, EIA processes are conducted with a lower degree of public involvement than is expected within the framework of hydropower projects. Within this set up, there is a strong presumption that public engagement can be ensured through the local population's attendance in EIA processes. In practice, the fact that citizens are informed about the predicted project impacts and have attended the EIA meeting does not always equate to meaningful participation and comprehension. This indicates that the process may not be readily transferable to other socio-political environments that do not have an active and outspoken civil society.

Kersten (2009) also questions whether NEPA and its components can be brought to other countries without the western institutions that support them. Though international EIA regimes may be beneficial to the environment, their effectiveness may be curtailed by a lack of analogous institutional arrangements or differing regional values. If EIA is applied in a socio-political environment that is not suited to EIA procedures, it may fall flat without realizing any major environmental or societal benefit. In the US, EIAs are reviewed by either a state or federal environmental agency for quality assurance and public record keeping. Though Lao WREA reviews EIAs, it does not have a significant amount of decision-making power. Thus, even if WREA found an EIA to be insufficient, the political and economic branches of the government may still choose to move a project forward.

This is not to say that EIAs are completely ineffective in developing countries such as Laos, but rather that the existence of an EIA should not be taken as complete proof of sound environmental practices. Current EIA processes do a disservice to water resource management by leading decision makers to believe that they are adequately informed (Lamberts 2008). This is particularly a problem for hydropower dam projects that have significant and widespread impacts. The implementation of a tool that fails to fulfill its purpose of informing stakeholders and assessing and mitigating project impacts does little to benefit the environment. Yet, by enabling the project to move forward, the EIA validates it, leaving less room for criticism and debate.

Though the use of EIA has become widespread in Laos, the actual impact it is having on the decision making process is debatable. EIA is the only major point in the process at which environmental impacts are considered. Furthermore, as the private sector becomes increasingly involved in hydropower, a greater emphasis may be placed on national level environmental policies and EIAs. Thus, their continued use is important for ensuring that at least one environmental management tool is available to decision-makers.

However, EIAs inherent weaknesses make it far from the ideal decision tool. Conceptually, EIAs have weaknesses concerning their ambiguity, robustness and methods of assessment. Practically, EIAs are also hampered by timing and the fact that mitigation measures are not always carried out as intended. In developed countries, these weaknesses are partially addressed through public involvement in the EIA process.

These conclusions raise the question of how to practically involve the public in the process. NT2 is an important case study for understanding which methods of public engagement are more promising than others. The World Bank ultimately concluded that public involvement methods and approaches need to be better tailored to affected or interested social groups to reflect their cultural traditions and socio-economic circumstances (Porter & Shivakumar 2011). Lessons from NT2 also stressed the importance of disseminating information in both English and local languages as well as training local villagers to conduct the consultations, rather than outside consultants.

The lack of appropriate institutional arrangements within Laos is a more difficult issue to address. Within the context of NT2, the World Bank attempted to make clear that it was in the country's best interest economically to comply with environmental and social standards. The Bank framed the project not only in terms of economic development, but also social development and poverty reduction. Framing the issue in this way may have persuaded the Lao government to support a more robust EIA process, but it did not change the fact that WREA lacks the necessary amount of decision-making authority. It will ultimately require a much stronger shift in the Lao political mindset for environmental and social issues to carry significant and ongoing weight.

Notably, the current Xayaburi EIA process indicates that the lessons learned from NT2 may not become the foundations for future hydropower development on the Mekong. The public consultation process has been limited and even though environmental groups have deemed the EIA insufficient, the project may still move forward. This highlights the fact that even though NT2 may have resulted in stronger institutional capacity for impact

assessment, the level and quality of analysis is ultimately a political decision. Shortcomings in the Lao EIA process should therefore not be seen solely as an issue of capacity building, but also an imperfect fit within the Lao socio-political environment.

Currently, efforts to increase the standard of environmental management in the region are focused on improving scientific information and data. The Mekong River Commission plays an important role in introducing the 'science' element into the current debate in hydropower development (ICEM 2010). However, given the findings in this paper, efforts to strengthen and improve EIAs application in Laos in particular and in other developing countries in general should be focused on finding alternative ways to ensure meaningful public participation in EIA processes, rather than striving towards scientific perfection. Public involvement is crucial in shaping the actual meaning of EIAs application in Laos. EIA application also requires certain institutional set-ups and arrangements to enable necessary follow up and monitoring of the assessed potential impacts. Lacking such set-up and arrangements, the EIA process becomes largely a procedural exercise to fulfill funding requirements. The use of EIA in Laos will continue to be hindered as long as the existing institutional set-up does not enable WREA to enforce EIA standards and procedures. Though EIA does provide some value to the environmental management process, without addressing the problems of purpose and public engagement, its impact on the hydropower decision-making process will remain limited.

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