On March 31, 2005, the Board of the World Bank approved the Bank’s participation in a US$1.45 billion financing arrangement for the Nam Theun 2 (NT2) hydroelectric project in the Lao People’s Democratic Republic (Lao PDR). The project’s economic, technical, social, and environmental assessments and planned safeguard mitigation and management measures were among the most comprehensive in the history of the application of the safeguards policies of the Bank. Complementing the project-specific process, two studies that together essentially integrate a strategic environmental assessment (SEA) provided a forum for the Government and relevant stakeholders to discuss cumulative sectoral and transboundary impacts of hydropower development in Lao PDR, with particular attention to NT2. These studies served as tools to engage a wide range of stakeholders on issues and concerns beyond the scope of the project-specific issues. The processes associated with these two studies provide lessons for mainstreaming environmental and social considerations in large infrastructure projects, in general, and for the management of national and regional hydropower development plans in particular.
Background and Context

Lao PDR is among the least developed countries in the East Asia and Pacific region and for many years the country has had income and social indicators that are among the lowest in Asia. To meet its poverty reduction targets, Lao PDR has limited options for accelerating its economic growth rate. The development of its natural resources, particularly its hydro-power potential, is one of the most important options for national revenue generation.

The potential for hydropower development on the Nam Theun and Nam Kading river systems in the central highlands of Lao PDR was identified as early as the 1970s, and the power sector was identified as a potential driver of growth by Lao PDR’s National Growth and Poverty Eradication Strategy. The Nam Theun 2 (NT2) hydroelectric project was viewed as a highest priority project with potential—through sale of power to neighboring Thailand—to deliver significant incremental financial resources to support Lao PDR’s poverty reduction efforts.

The World Bank’s involvement in the NT2 project started in the mid-1990s when the Government of Lao PDR (GOL) invited the Bank to join the financial consortium of the project, primarily as a country-risk guarantor. With 27 parties participating in the funding of the project, NT2 had an estimated base cost of US$1.25 billion plus an additional US$200 million for contingency. Once operational, the project is expected to generate significant financial revenues for the GOL in the form of taxes, royalty charges, and dividends over the twenty-five years of the concession period.1

Due to its large-scale works and extensive geographic footprint, concerns about the potential environmental and social impacts associated with NT2 drew significant attention and triggered intense debate over this project’s advantages and disadvantages. Rated as a Category A environmental risk operation in accordance with the Bank’s environmental screening procedures, NT2 triggered all ten of the Bank’s environmental and social safeguard policies (see Box 1). While the project was expected to have significant adverse environmental and social impacts resulting from the construction and the operation of the power generating facilities, the project also promised significant social and environmental benefits at the local, regional, and national scales as a result of mitigation efforts, pro-active livelihood investment programs, and provision of financial resources for regional conservation programs.

In addition to the preparation of project-specific environmental and social impact analysis and assessments, compliance with World Bank and Asian Development Bank (ADB) safeguard policies required the preparation of two complementary studies:

- A cumulative impact assessment (CIA) to address concerns regarding potential transboundary and cumulative impacts to the Mekong river system associated with the construction of NT2 and two additional hydropower projects (called NT1 and NT3) included in Lao PDR’s Hydropower Development Plan. In addition, the Government of Cambodia was concerned about the potential impacts on the Tonlé Sap ecosystem, a combined
Box 1. Environmental and Social Safeguard Studies for the Nam Theun 2 Hydroelectric Project

The NT2 project was unusual in that it triggered all ten of the World Bank’s safeguard policies. Environmental and social studies prepared to evaluate the impacts and risks of the proposed project included three principal integrated studies: (i) the Environmental Assessment and Management Plan (EAMP); (ii) the Social Development Plan (SDP) that includes a Resettlement Action Plan and Ethnic Minorities Development Plan; and (iii) the Social and Environmental Management Framework and Operational Plan (SEMFOP) for the Nam Theun watershed conservation area.

These reports were based on numerous individual technical studies, field surveys, and consultations with local, regional, and international project stakeholders. A large number of studies concerning planning, investment, environment, and social and economic issues have been prepared for a variety of purposes at different levels. Copies of selected studies are available to the public at http://www.worldbank.org/laont2.

An important aspect of the environmental and social analysis was its intensive consultation and participatory process. Stakeholders, including all villagers to be relocated, local government authorities, and Lao-based NGOs, were consulted in nearly 400 public meetings and briefings during a decade-long assessment process. The consultation process also included an unprecedented level of transparency for Lao PDR, including rounds of international consultations in Japan, Thailand, France, and the United States.

The consultation process yielded a much deeper understanding of community concerns and constraints and led to several changes in the project design and some of the mitigation strategies. Resettlement sites, for example, were identified in response to preferences expressed by the affected population, and significant changes were made to the nature and scope of mitigation and livelihood support programs in the downstream areas of the XE Bang Fei. The unprecedented level of consultation set a new standard for future similar projects in Lao PDR and in the East Asia and Pacific region as a whole.

The World Bank and ADB commissioned these two additional assessments. The SIA served as a sectoral impact assessment whereas the CIA served two functions: (i) it provided the regional impact assessment required under World Bank safeguard policies, and (ii) it evaluated potential cumulative impacts on the Mekong river system required by the ADB. Although the CIA and the SIA were not explicitly called strategic environmental assessments (SEAs), their approaches and the issues addressed exemplify the use of environmental assessment at the regional and watershed levels in response to the complex analytical and participatory requirements of large-scale infrastructure projects. They are, therefore, examined here for the lessons they provide for future SEAs of water and energy plans that by definition have a regional or sector perspective.

The Strategic Environmental Assessment Process

The principal purpose of the strategic studies was not to propose project-specific mitigation measures. Rather, they were primarily intended to provide decision makers and other stakeholders a forum for discussion and information sharing on the broader issues and implications of hydropower development in Lao PDR. These studies and the associated public
consultation meetings provided mechanisms for under-
standing and evaluating the potential cumulative, sectoral, and transboundary implications of the project over the medium to long term, recognizing NT2’s significant role as a driver of economic development as well as in the development and use of the water resources throughout the project area of influence. The SIA and CIA studies were not done in isolation from the project’s other economic, technical, financial, social, or environmental analyses. Rather, they were part of a program of studies that both updated existing work carried out years earlier and extended that work through consideration of new issues.

While the audience and stakeholders for the SIA and CIA were similar, the studies were intended to engage stakeholders on fundamentally different sets of issues. The SIA was prepared mainly to engage the GOL, donors, and other stakeholders on recurrent issues relating to the implementation of Lao PDR’s national hydropower plan. The SIA identified opportunities and constraints in the sector such as institutional capacity limitations, the need for regulatory reforms, and performance standards for social and environmental analysis; its aim was to identify an agenda for necessary institutional reform and technical capacity building that would facilitate longer-term development of the sector.

The SIA complemented the extensive planning that had been carried out in the power sector: seven studies in seven years. Its objective was to provide an updated evaluation of the legal and institutional framework governing environmental assessment or the hydropower subsector; it evaluated lessons learned from existing hydropower experience in Lao PDR through selective case studies. The report recommended general mitigation approaches, broad management programs, and approaches to planning, training, monitoring, and capacity building suited to the Lao context.

The CIA aimed at engaging stakeholders in discussions of regional development issues at different spatial and temporal scales. The methodology involved the assessment of development trends and implications within the project’s area of influence within the Nam Khading and XE Bang Fei river systems. It also evaluated the potential impacts at the level of the Mekong river system. The study was intended to provide important insights into the downstream impacts of the project on the main stream of the Mekong, including the Tonlé Sap ecosystem in Cambodia. Thus it complemented ADB’s emerging Greater Mekong Subregion program. Undertaking these studies contributed to understanding pre-project baseline at the sectoral and regional levels and also established a precedence and sample methodology for analysis of future projects.

The SIA, funded by the World Bank, was carried out by the consulting firm Norplan. It cost about US$70,000 and was prepared over a six-month period in 2004. The CIA was funded by the Asian Development Bank and cost roughly US$300,000. Norplan carried out this work as well, over an eighteen-month period that ended in 2004. Availability of a number of pre-existing power and hydropower subsector studies, including the analysis of the baseline situation, allowed consultants to complete the strategic analysis in a relatively short time frame and at relatively low incremental cost. The fact that both reports were commissioned to the same firm also lowered the overall preparation costs. The relatively low cost should not be seen as the norm for strategic environmental assessments, as few SEAs would enjoy the luxury of having such a wealth of available background information as NT2.

The NT2 SIA and CIA were largely desk studies supplemented by field visits undertaken by a group of international and local experts. Both were supplemented through consultations with key stakeholders—international and local NGOs, the private sector sponsors, the GOL at various administrative levels, and donors. With its focus on regional impacts, the CIA also engaged the Mekong River Commission and the Government of Cambodia among others. Draft versions of the SIA and CIA were reviewed at international stakeholder meetings held between July and September 2004 in Bangkok, Tokyo, Paris, Washington D.C., and Vientiane, the capital city of Lao PDR. These fora provided a means for the GOL to discuss
its interest in applying international environmental and social policies throughout the hydropower sector without slowing down the NT2 project since the SIA and CIA processes were advisory in nature and not intended to prescribe mitigation measures.

Value Added of the SIA and CIA Studies

Both the SIA and the CIA were key elements of the NT2 compliance assessment and approval process for the World Bank and the Asian Development Bank. An important element of these studies was that they covered a range of issues that were only partially within the scope of responsibility of the project developer. Many of the issues covered went beyond what the project could be accountable for and thus required a close working relationship with government and donor counterparts.

Because these studies were part of a suite of analytical instruments and safeguard management documents, it is very difficult to isolate their role vis-à-vis the entire spectrum of documents. Both the SIA and CIA were synthesis documents that drew upon data and perspectives from a wide range of pre-existing documentation in various formats. At the same time, the studies evaluated issues that were not covered in conventional, project-specific environmental and social impact analysis carried out by the project proponents.

For example, the SIA summarized findings from earlier alternatives analysis prepared as part of the project evaluation as well as information from previous analysis of the power sector and available hydropower options. A 1997 study of alternatives undertaken by the consulting firm Lahmeyer International for the World Bank had examined the entire spectrum of proposed hydropower projects nationally and compared them with other energy-generating alternatives within Lao PDR as well as Thailand. It had also analyzed future electricity demand in Lao PDR and neighboring countries, to which most of the electricity generated at NT2 would be exported, and concluded that NT2 was the best option available to achieve Lao PDR’s poverty reduction goals. The SIA complemented and extended this and other studies by evaluating operational and institutional constraints to implementing the national hydropower development plans.

The SIA highlighted several recurrent themes in hydropower development. Among other important insights the SIA evaluated 22 hydropower projects identified for development over the next 20 years and estimated that implementation in about half (12 of 22) of those projects would require resettlement of more than 15,000 people in each case. It identified that most of the projects would occur in areas where
ethnic minority groups are a majority of the population. The SIA also put the Lao Hydropower plan into an appropriate regional context, showing its relative importance within the context of planned hydropower schemes of other countries in the greater Mekong subregion.

Recognizing these issues as important implementation challenges, the SIA proposed that the GOL establish a national resettlement policy, proposed changes to procedures for awarding Memoranda of Understanding and licenses, and identified need for clarification of regulations and development of sector-specific guidelines. The SIA and the CIA also reinforced the importance of mainstreaming NT2 safeguards practices in the hydropower sector as a whole. In response, in 2005, Lao PDR adopted the “National Policy on Environmental and Social Sustainability for the Hydropower Sector,” adapting and tailoring the principles developed under NT2 to the entire hydropower sector.

The CIA contributed to a deeper understanding of the regional context and development trends that could affect or be affected by the NT2 project. It examined development scenarios and analyzed potential cumulative impacts that could arise from development of proposed projects across a range of sectors in Lao PDR and neighboring countries over a 5-year and a 20-year planning horizon. The scenarios evaluated anticipated interacting impacts across multiple sectors that influence or rely on water resources, including irrigation, water supply and sanitation, forestry and mining, and in selected zones such as the Nakai plateau and the Mekong River Basin. The potential cumulative impacts, especially in downstream areas, were assessed as more significant than simply the impacts from individual projects.

The CIA also helped to identify and address potential transboundary issues. In particular, it helped to clarify potential impacts on regional hydrology, seasonal variations in Mekong river flow volumes, and their potential effects for the water levels and water quality in Cambodia’s Tonlé Sap ecosystem. The CIA additionally reinforced the need for creating a bilat-
eral agreement between Lao PDR and Vietnam for the management of natural protected areas located on their shared border. Such an agreement would provide a basis for planning and political decision making to address anticipated impacts of potential plans and projects to be undertaken in these areas. The studies also pointed to the need for developing an integrated approach to Nam Theun and Nam Kading River Basin Management, including appropriate institutional arrangement to manage the cumulative impacts resulting from NT2 and other hydropower projects in the area.

Because many issues identified in these studies require long-term government responses, institutional capacity building was highlighted in both the CIA and the SIA as a priority activity. Various stakeholders raised concerns about Lao PDR’s mixed track record in previous hydropower projects; international NGOs, in particular, expressed concern about local capacity to implement important responsibilities such as land acquisition, resettlement, livelihood support, and environmental monitoring.

In response to the concerns, the Nam Theun 2 Power Company (NTPC) mobilized nearly 150 qualified international and national professional staff to implement the project mitigation program, and the government created the Watershed Management and Protection Authority (WMPA) whose mandate is conservation of the project’s designated protected area. WMPA is receiving US$30 million in project funds, disbursed over 30 years (5 years construction plus 25 years concession periods), to build institutional capacity at the local level. In addition, a second Bank-supported project, the Lao Environment and Social (LENS) project, is being implemented as a complement to the NT2 project to scale up the capacity building initiatives and maintain momentum.

Lessons Learned

The participatory approach of the two strategic studies was a key factor in creating an open dialogue among relevant stakeholders. While consultation for both the CIA and the SIA involved similar stakeholder groups, the scope of the studies was very different; the SIA included stakeholders located downstream of NT2 who were concerned about cumulative impacts and riparian flows and also stakeholders whose track record in implementing safeguards measures in previous hydropower projects has been mixed.

The advisory nature of the assessments facilitated the GOL’s ability to discuss and receive feedback on environmental and social policies for the hydropower sector. Nevertheless, initial support for these studies was not uniform as the GOL, the Nam Theun 2 Power Company (NTPC), and the NT2 project’s Panel of Experts expressed skepticism at various times regarding the relevance and utility of the CIA/SIA process, which they saw primarily as a donor-driven requirement by the multilateral development banks. Concerns were also raised about the timing of the studies; many stakeholders felt there was limited ability to influence project design since the SIA and CIA came late in the planning and decision process after many project decisions had already been taken.

Although the GOL seemed initially reluctant to undertake the SIA and CIA, a pragmatic and more favorable attitude developed over time as evidenced by the adoption of the “National Policy on Environmental and Social Sustainability for the Hydropower Sector.” The formulation of this policy is one indicator of the value of the process as a means of engaging national and regional stakeholders and sustaining their commitment. At the same time, the SIA and CIA served as a platform for engaging the donor community.

This case illustrates that SIA and CIA are tools to complement, not to replace, conventional project environmental and social impact analysis. The various analytical tools used for the project are best thought of as being complementary in nature. For example, the SIA complemented the project-specific Analysis of Alternatives by considering cumulative impacts over time, and provided broader and more strategic information to planners than that available from a traditional,
project-specific environmental impact assessment. When a proposed plan is likely to have significant cumulative and induced impacts at a regional level, as in the Lao Hydropower Development Plan, SIA and CIA can provide an entry point to initiate discussion on broader environmental and social issues with key stakeholders, increase awareness, and strengthen institutional capacity.

As countries in this region are preparing legislation on strategic environmental assessment, they may consider that SEA is not a mere extension of environmental impact assessment, but a planning tool for assessing key environmental effects at a regional or sectoral level, involving relevant stakeholders in the planning process. An SEA can produce important information for environmental and social sustainability of plans, programs, and projects with wider regional or sectoral impacts.

Conclusion

The safeguard studies conducted for the NT2 are among the most comprehensive undertaken for a World Bank–supported project. The overall process introduced new and higher environmental standards and improved resettlement and consultation practices in Lao PDR and has positively influenced water resource planning practices in the country. It could be argued that, through the two SEA-type studies complementing the safeguard studies, the NT2 project was set into a broader development perspective, beyond its role as a large hydropower-generation project. The participatory process of the CIA and SIA studies added value because it provided a platform for dialogue among the GOL, donors, NGOs, and other governments in the Mekong Basin region on key environmental and social issues associated with hydropower development, including transboundary issues.

Endnotes

1. The project is expected to generate annual revenues averaging about US$30 million per year during the first ten years of operation (2010–19) while commercial debt service is paid, then rising sharply thereafter to an average of approximately US$110 million per year from 2020 to 2034 (http://www.worldbank.org/laont2).

2. There is no a rigorous and universally applicable definition of SEA. SEA refers to an umbrella term for a family of analytical and participatory approaches that aim to integrate environmental considerations into policies, plans, and programs and to evaluate the interlinkages with economic and social considerations. See OECD, Applying Strategic Environmental Assessment: Good Practice Guidance for Development Cooperation. Chapter 2. Paris: OECD Publishing, 2006.