

ASIAN DEVELOPMENT BANK

TAR: LAO 37734

TECHNICAL ASSISTANCE

TO THE

LAO PEOPLE'S DEMOCRATIC REPUBLIC

FOR PREPARING THE

GREATER MEKONG SUBREGION: NAM THEUN 2 HYDROPOWER
DEVELOPMENT PROJECT

PHASE II

March 2004

CURRENCY EQUIVALENTS

(as of 1 March 2004)

Currency Unit	–	kip (KN)
KN1.00	=	\$0.000096
\$1.00	=	KN10,350

ABBREVIATIONS

ADB	–	Asian Development Bank
CIA	–	cumulative impact assessment
EAMP	–	environmental assessment and management plan
IPP	–	independent power producer
Lao PDR	–	Lao People's Democratic Republic
MIH	–	Ministry of Industry and Handicrafts
NGO	–	nongovernment organization
NT2 Project	–	Nam Theun 2 Hydropower Project
NTPC	–	Nam Theun 2 Power Company
RAP	–	resettlement action plan
RRP	–	report and recommendation of the President
SEMFOF	–	social and environmental management framework and operation plan
SESIA	–	summary environmental and social impact assessment
SDP	–	social development plan
TA	–	technical assistance

NOTES

- (i) The fiscal year (FY) of the Government and its agencies ends on 30 September.
- (ii) In this report, "\$" refers to US dollars.

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I. INTRODUCTION

1. In November 2003, the Asian Development Bank (ADB) provided phase I of a technical assistance (TA)¹ to the Government of the Lao People's Democratic Republic (Lao PDR) to undertake preparatory work for the Nam Theun 2 Hydropower Development Project (NT2 Project). The TA was to assist the Government of Lao PDR's efforts to (i) prepare the cumulative impact assessment (CIA) study; (ii) assess its capacity to implement the hydropower development projects effectively, particularly the social and environmental mitigation measures, and develop an appropriate capacity-building program; (iii) communicate effectively with the project-affected people; (iv) identify compensatory forestry component for NT2 Project submergence area; and (v) facilitate coordination with the civil society, nongovernment organizations (NGOs), and other stakeholders.

2. The activities under the proposed NT2 Project were delayed due to the possible change in the composition of the developer, the Nam Theun 2 Power Company (NTPC)² resulting from the withdrawal of Electricité de France International (EdFI) from the Project on 17 July 2003. With the return of the EdFI as the lead project sponsor on the same terms and conditions as previously agreed, and signing of the power purchase agreements between NTPC and the Electricity Generating Authority of Thailand, and between NTPC and Electricité du Lao in November 2003, the processing of the proposed NT2 Project is back on track. The Government of Lao PDR and NTPC have requested ADB and the World Bank to complete the due diligence process as soon as possible.

3. In response to the request of the Government of Lao PDR, an ADB Mission visited the Lao PDR in January 2004 to reconfirm the understanding with the Government of Lao PDR on the objectives, scope, cost estimates, and implementation arrangement for the second phase (Phase II) TA,³ which was agreed during the Fact-Finding Mission conducted in July 2003 prior to splitting of the TA. The Mission also held an aid coordination meeting with key aid agencies active in the Lao PDR to exchange information and views on each other's initiatives. While some aspects of the Phase I TA, namely the capacity-building program and the CIA study, need to be incorporated into the phase II TA, most activities proposed under phase II such as the economic and financial analysis and social assessment are independent of the phase I TA. Therefore, the Government of Lao PDR requested ADB to proceed with the phase II TA as soon as possible to facilitate the completion of the due diligence. The Government of Lao PDR was advised that, notwithstanding the timeframe for the completion of the phases I and II TAs, processing of the proposed NT2 Project will be initiated only after the satisfactory completion of the due diligence process.⁴ The NT2 Project is included in the country strategy and program for the Lao PDR in 2004.⁵ The initial poverty and social assessment is shown in Appendix 1.

II. ISSUES

4. The Government of Lao PDR plans to accelerate hydropower development and substantially increase power exports to achieve three main goals: (i) promotion of economic

¹ ADB. 2003. *Technical Assistance to the Lao People's Democratic Republic for the GMS Nam Theun 2 Hydropower Development*. Manila.

² The consortium comprises the Electricité de France International (EdFI), Electricity Generating Public Company of Thailand (EGAT), Electricité du Lao (EDL), and Ital-Thai Development Company (ITD).

³ The Phase II TA first appeared in *ADB Business Opportunities* in December 2003.

⁴ The Government of Lao PDR has requested the ADB public sector loan for the payment of a portion of its equity contribution in NTPC, where as the NTPC has requested a private sector loan and a political risk guarantee.

⁵ ADB. 2003. *Country Strategy and Program (2004-2006): Lao People's Democratic Republic*. Manila.

development, (ii) increased foreign exchange earnings, and (iii) an increased fiscal revenue base for meeting development objectives and poverty reduction. The Lao PDR has a technically exploitable hydropower potential of about 18,000 megawatts (MW), of which 623 MW of generation capacity has been developed through seven hydropower plants.

5. There are about 33 potential sites for hydropower development in the Lao PDR, of which 11 major hydropower projects, with a total design capacity of 4,000 MW, are in the planning or advanced planning stage for implementation during the next 10 years. Eight of the 11 projects are expected to be built on an IPP/build-operate-transfer basis. The total capital cost of the currently proposed IPP projects for the period to 2010 is about \$5 billion in current prices. However, it is unlikely that all projects will be implemented in the period originally planned. A major challenge in realizing the hydropower development goals is the domestic resource constraints to finance the development expenditure. The Government of Lao PDR recognizes that it will need to attract increased private investment to help bridge the domestic investment-savings gap in financing its ambitious hydropower development agenda. Socially appropriate and environmentally sustainable investments in hydropower generation capacity to facilitate the hydropower exports are required to increase market opportunities and boost fiscal revenue.

6. A private sector consortium, NTPC, is in the process of completing the studies on the NT2 Project to generate about 1,100 MW of electric power, mainly for export to Thailand. Power export to Thailand will lower energy cost in that country and enhance energy security through fuel diversity. The revenue generated from NT2 Project will help the Government of Lao PDR implement measures for poverty reduction and design programs to improve the quality of life of the people. However, insufficient capacity to effectively implement socially and environmentally sustainable hydropower development projects in the Lao PDR is a major concern, particularly for large-scale and complex projects, such as the NT2 Project. Effective implementation is essential to realizing the potential benefits of the NT2 Project. To help the country address these issues, there is a need for longer-term capacity building efforts, which have been initiated under the phase I TA.

7. A set of policy and institutional reforms covering the macroeconomic stabilization program, governance, and human capital development have been outlined and discussed by ADB, International Monetary Fund (IMF), and the World Bank. The IMF-backed Poverty Reduction and Growth Facility, the World Bank's Financial Management Adjustment Credit and ADB's Banking Sector Reform Program seek to strengthen the Government of Lao PDR's capabilities through economic, financial, and public sector reforms. The policy reforms under these interventions have strong links and impacts on all sectors of the Lao economy and are deriving the current reform agenda, particularly the development of macroeconomic framework and sector development strategies and plans for the country. Also, the government-driven Poverty Reduction Policy and Strategy lays out the strategy for sustainable and environmentally responsible use of revenues derived from natural resources such as hydropower, forestry, and mining. Demonstrated progress on the implementation of these reforms will be guided and measured by a set of performance benchmarks and will be prerequisite for ADB and World Bank support for the NT2 Project.

8. The World Bank⁶ has been involved in assessing the financial and economic impact of the NT2 Project. The World Bank's work related to the NT2 Project that has been completed or is in progress include (i) analysis of financial revenue flow, (ii) review and update of the power

⁶ Other external funding agencies such as the Agence Francaise de Developpement and European Investment Bank may also provide some financial support for the project.

demand forecast for Thailand, (iii) a least-cost analysis for Thailand with a range of alternatives being considered by EGAT, (iv) a risk analysis of the Thai least-cost analysis, (v) a risk analysis of least-cost alternatives for the Lao PDR; and (vi) development of the Power Sector Development Plan that includes a least-cost analysis for the Lao PDR with 33 possible hydropower development sites in the country. The World Bank will also undertake the demand forecast analysis for the areas feasible for electrification in the Lao PDR in the short and medium term run as a result of the NT2 Project. ADB will review the key aspects of the economic and financial analysis undertaken by the World Bank and assess the information gaps in their work, such as the distribution analysis, to ensure that ADB's requirements are met. Further data collection and analysis will be required for the Lao PDR, particularly with respect to demand and investment requirements in distribution and transmission, for assessing domestic absorptive capacity for supply of electricity from the NT2 Project. Additional data and analysis will also be required to assess the distribution of benefits between Thailand, the Government of Lao PDR, Electricité du Lao, private investors, and Lao consumers. ADB and the World Bank will also jointly provide funds to the Government of Lao PDR, with appropriate financial and revenue management controls to ensure the availability of funds for implementation of its National Poverty Eradication Program. The phase II TA will review appropriate financial and revenue management controls for the agency nominated to hold the Government of Lao PDR's share in the NT2 Project and receive project dividends. The updated list of work undertaken or being undertaken by ADB, the developer, and World Bank is presented in Appendix 2.

9. The main social impacts are relocation of 5,600 people on the Nakai Plateau and the reservoir area, potential for trafficking of women and children and spread of diseases during construction, uncertain impacts of increased flows and water levels downstream from the dam, and restrictions on access to resources by 5,000 ethnic minority people in the watershed and national biodiversity conservation area. These issues are being addressed by the Project developer to meet ADB and the World Bank's social safeguard requirements. Other potential adverse environmental and social impacts requiring mitigation or compensation measures include (i) ecological losses in the Nam Theun, downstream areas of the dam, and the Xe Bang Fai; and (ii) fisheries impact affecting the livelihood of the people in the downstream areas of the dam and the Xe Bang Fai. These issues are also being addressed by the project developers in detail and the recommended mitigation measures will be incorporated in the final project design. In addition, the CIA study will look into a range of issues along the Nam Kading, Nam Theun, and Xe Bang Fai river basins with respect to the vulnerability due to flooding, hydrology, fisheries, water quality. Water assessment for the Project will be undertaken with respect to supply and irrigation, urban development, institutions, and biodiversity. The TA will also examine the potential impacts beyond the project boundary in the Mekong River basin.

10. The assessment of the mitigation measures for potential environmental and social impacts of the NT2 Project has been extensively studied by the World Bank since early 1990s. ADB has been involved in the NT2 Project since November 2002 to complement the due diligence work being undertaken by the World Bank. The joint ADB-World Bank due diligence work is to ensure that the safeguard policies of the two institutions are complied with and the sector issues are addressed appropriately. It has been agreed that funding agencies will coordinate, and not duplicate work, unless there are compelling institutional requirements for separate analysis and/or documentation.

11. The work under the phase I TA is in progress and the relevant results will be incorporated in the phase II TA. The outcome of the phase II TA will help ensure for the Government of Lao PDR the technical, economic, and financial viability of the NT2 Project, and that the design and implementation of safeguard policies covering the hydropower development

are of a standard acceptable to the multilateral financial institutions and other lenders. It will also help the Government of Lao PDR obtain broad support from international funding agencies and civil society for the Lao PDR's development strategy, and more specifically, the development of the NT2 Project. The findings of the TA will be used in discussion with stakeholders, especially the affected people in the project area and the downstream river basin, and with the national, regional, and international civil society.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Proposed Output

12. The objectives of the phase II TA are to (i) confirm specific aspects of the technical, economic, and financial viability of the proposed Project not covered under the World Bank work; (ii) ensure that social and environmental impacts have been properly identified; (iii) ensure that the mitigation measures are developed in a consultative manner in accordance with the good practices and relevant ADB policies and guidelines; and (iv) enable the Government of Lao PDR to manage complex hydropower development projects in an environmentally and socially sustainable manner in the future. The scope of the TA will include (i) incorporation of relevant results of the phase I TA findings into the project safeguard documents, (ii) implementation of the short- and medium-term capacity building program for effective mitigation of social and environmental impacts developed under the phase I TA, (iii) additional economic and financial analysis of the Project to include risks and distributional effects and integrating the results of the social and environmental cost-benefit analysis, (iv) poverty analysis focusing on the macroeconomic impacts of the NT2 Project, (v) facilitation of effective consultation with various stakeholders, (vi) continued coordination with local and international nongovernment organizations, and other civil society stakeholders, and (vii) preparation of the safeguards documents in accordance with ADB requirements. The outline terms of reference of the consultants is given in Appendix 3.

B. Methodology and Key Activities

13. The phase II TA will assess the macroeconomic impact of the NT2 Project and examine possible effects on sectoral allocations and other funds particularly essential for poverty reduction in the Lao PDR. To ensure that the ADB requirements are met, the phase II TA will also undertake the project economic and financial analysis to supplement the work being done by the World Bank. This work will include (i) reconfirmation of work conducted by the World Bank consultant, and (ii) distribution analysis focusing on net benefits between Lao PDR and Thailand and on the benefit stream for the Lao PDR. The phase II TA will facilitate the local, national, regional, and international consultation process, including participation of ADB staff as resource speakers and facilitators. It will also facilitate effective dissemination of information about the NT2 Project to various stakeholders using various modes of communication.

C. Cost and Financing

14. The total cost of the phase II TA is estimated at \$1.18 million equivalent, comprising a foreign exchange cost of \$940,000 and a local currency cost of \$240,000 equivalent. ADB will provide \$1.00 million to finance the entire foreign exchange cost and \$60,000 equivalent of the local currency cost. The TA will be financed by ADB on a grant basis by ADB's TA funding program. The Government of Lao PDR will finance \$180,000 equivalent in kind by providing office accommodation, counterpart staff, and related facilities. The details of the cost estimates

are outlined in Appendix 4. The Government of Lao PDR has been informed that provision of the TA does not commit ADB to finance any ensuing project.

D. Implementation Arrangements

15. The TA will finance international and domestic consulting services, which will be provided by a consulting firm and a team of individual consultants. The firm will implement the capacity-building program for mitigation of the social and environmental impacts. The consulting firm for the capacity-building program will be selected through simplified technical proposals. Individual consultants will be engaged for specific tasks, including economic analysis, financial analysis, macroeconomic analysis and poverty assessment, communication, environment, ethnic minorities development, social development, and project management and coordination. Financial and economic analysis work will also involve confirmation and enhancement of the work undertaken by the project sponsor and the other development partners. The total international consultants input is estimated at 35 person-months and the domestic consultants at about 20 person-months. ADB will recruit the consultants in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for the engagement of domestic consultants. All procurement under the TA will be in accordance with *ADB's Guidelines for Procurement*. Materials and supplies will be procured by the consultants.

16. The Ministry of Industry and Handicraft (MIH) of the Government of Lao PDR will continue to be the Executing Agency of the phase II TA. MIH will also act as the national coordinator and interact with the consultants and the ADB team. MIH has established a task force that includes representatives from key economic, energy, social, and environmental policy-making government agencies. The task force is chaired by a senior MIH official whose responsibility is to facilitate TA activities, provide inputs, and review the outputs. The consultants for the phase II TA will review the relevant documents prepared by the phase I TA consultants, the World Bank, project developer, and other financial institutions, and coordinate their activities. In view of the diverse field of activities to be undertaken simultaneously by a large number of consultants who will be required to interact with numerous government agencies, ADB staff, phase I TA consultants, and experts from other agencies undertaking numerous studies, a consultants project manager must be engaged to coordinate all activities during the critical stage of project preparation.

17. The phase II TA will be implemented over an 18-month period commencing in April 2004 and ending in September 2005. An inception report to be submitted after 1 month of commencement will include an overall phase II TA work plan that will be discussed at ADB in Manila and in the Lao PDR. An interim report summarizing the phase II TA activities up to December 2004 will be submitted at the end of January 2005. The draft final report will be submitted in May 2005 and the final report incorporating comments on the draft report will be submitted in September 2005.

IV. THE PRESIDENT'S DECISION

18. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$1,000,000 on a grant basis to the Government of the Lao People's Democratic Republic for preparing the Greater Mekong Subregion: Nam Theun 2 Hydropower Development Project Phase II, and hereby reports this action to the Board.

INITIAL POVERTY AND SOCIAL ASSESSMENT

A. Linkages to the Country Poverty Analysis

<p>Sector identified as a national priority in country poverty analysis?</p> <p>Sustainable economic growth is identified as a strategic focus in the poverty reduction partnership agreement for the Lao People's Democratic Republic (Lao PDR). Hydropower is a major industry in terms of contribution to total economic output, fiscal revenue, and export earnings.</p>	<p>Sector identified as a national priority in country poverty partnership agreement?</p> <p>The poverty reduction partnership agreement identifies growth of the energy sector as a key goal for the country strategy and program to increase access to electricity and develop potential. The Lao PDR has technically exploitable hydropower potential estimated at 18,000 megawatts (MW), but only 623 MW have been harnessed. The project will help significantly fulfill this potential.</p>
<p>Contribution of the sector/subsector to reduce poverty in the Lao PDR:</p> <p>Sustainable economic growth is critical to reduce poverty in the Lao PDR. Over the last 10 years, poverty has declined from 45% in 1993 to about 30% in 2003. This remarkable achievement is due mainly to stable economic growth of about 5.5% per annum. The Government of Lao PDR has an ambitious target of graduating from a least developed country by 2020.</p> <p>To achieve this, the Government of Lao PDR aims to accelerate hydropower development and substantially increase power exports to achieve two main goals: (i) promote economic and social development by providing an affordable, reliable, and sustainable electricity supply; and (ii) build an additional revenue base to meet development objectives and reduce poverty. The country's rich hydropower resources are an important source of foreign exchange earnings and budget revenue, amounting to about \$45 million since 2000.</p> <p>While the project's financial revenue stream has significant potential to enhance the fiscal revenue base, the effective impact on economic growth and poverty reduction will depend on proper management and adequate allocation of funds for poverty reduction-related initiatives.</p>	

B. Poverty Analysis
Thematic Classification: Economic growth

Proposed Poverty Classification:
Beneficiary nonspecific intervention

The poverty analysis will need to examine the key channels (direct, indirect, and macroeconomic) through which the project will reduce poverty.

Direct Effects on Poverty

The project is expected to generate significant revenues over a considerable period to the Government of Lao PDR in the form of dividends, taxes, and royalties. The poverty analysis must consider how these revenues should be expended to maximize their impact on reducing poverty. The analysis should consider what mechanisms are needed to ensure that expected revenues are channeled into poverty reduction initiatives. The World Bank and ADB have proposed a two track approach: Track one is to build on ongoing reform programs to strengthen the Government of Lao PDR's financial management systems. Track two is to put in place the essential safeguards to ensure that NT2 revenues specifically are used transparently in financing the Government of Lao PDR's priority poverty reduction programs.

Indirect Effects on Poverty

Of the hydropower generated from this project, 5% will be consumed in the Lao PDR, and could provide electricity to some of the more remote and poor regions, where it will significantly improve living conditions of the poor. The analysis should examine which regions will benefit from access to the power generated, and distributional aspects associated with it.

Macroeconomic Effects on Poverty

Given the large size of the project in relation to the Lao PDR's gross domestic product (GDP), economic growth is expected to be boosted significantly. Improved and sustainable economic growth will help reduce poverty. The analysis should assess the project's potential economic growth effects, as well as how economic growth has recently affected poverty. The analysis should also examine the impacts on the fiscal situation and service delivery. If

managed appropriately, project revenues could help improve budgetary stability and curtail inflation, enhancing macroeconomic performance and economic growth. Project revenues will also help improve service delivery and thus reduce poverty.

C. Participation Process

Stakeholder analysis:

Stakeholder analysis has been an integral part of project preparation. Four target groups have been identified for consultation: (i) project-affected people; (ii) district, provincial, and national government officials; (iii) civil society and nongovernment organizations (NGOs); and (iv) international NGOs, international organizations, and other interest groups. These target groups have been subdivided into the following operating areas:

- (i) local: households and villagers in the Nam Theun Watershed; Nakai Plateau; and downstream communities in the project area (downstream channel, Xe Bang Fai River, Nam Kathang, Nam Phit, Nam Kading, Nam Theun, the transmission line corridor, etc.);
- (ii) regional: community leaders, district agencies, provincial agencies, and business/contractors;
- (iii) national: government ministries, citizens, and media; and
- (iv) international: international NGOs, international media, aid community, financial institutions, international power utilities, and other hydropower dam developers.

Participation strategy required: Yes—for all aspects of the project preparation, including the social development plan for the plateau and downstream communities, and the social and environmental management framework and operational plan for the watershed.

D. Potential Issues

Subject	Significant, Not Significant, Uncertain, None	Strategy to Address Issues	Plan Required
Resettlement	Significant	A resettlement action plan is being prepared under the social development plan for relocation of about 1,000 families in the reservoir area. A resource access restriction plan is being prepared under the social and environmental management framework and operation plan (SEMFOF) for the watershed. The World Bank and ADB have provided extensive comments on the earlier drafts and the draft final reports are expected to be completed by April 2004.	Yes
Gender	Uncertain	The project is expected to assess the gender issues and mainstream them in all relevant safeguards documents.	Yes
Affordability	Uncertain		
Indigenous People	Uncertain	A draft ethnic minorities development plan is being prepared under the social development plan for relocation of about 1,000 ethnic-minority families in the reservoir area. Potential impact areas include the watershed, Nam Theun downstream, Xe Bang Fai, and land parcels acquired for the Project. A draft ethnic minority development plan is also being prepared under the SEMFOF for the watershed. The World Bank and the ADB have commented extensively on the earlier drafts, and draft final reports are expected to be completed by April 2004.	Yes
Other Risks/Vulnerabilities	Uncertain	The project is expected to generate significant revenue for the Government of Lao PDR. But proper channeling of the revenue to the intended use, particularly to poverty reduction, is in question. A policy framework is being implemented to create macroeconomic stability and promote good governance (institutional and financial). Close monitoring and assistance are needed in this regard.	Yes

LIST OF STUDIES AND DOCUMENTS FOR NAM THEUN 2 PROJECT

A. By the Project Developer, Nam Theun 2 Project Company

1. **Environment Assessment and Management Plan (EAMP).** The document contains an assessment of environmental impacts of the project and management plan to avoid, minimize, or mitigate, these impacts. (Completion date 5/04)
2. **Social Development Plan (SDP) including Resettlement Action Plan and Ethnic Minorities Development Plan.** The documents provide a management plan for resettlement in the Nam Theun 2 Hydropower Project (NT2 Project) and working with ethnic minorities. (Completion date: May 2004)
3. **Social and Environmental Management Framework and Operational Plan (SEMFOP).** The document outlines a management plan for the Nakai Nam Theun National Protected Area and its corridors (called the “Watershed”), which will be conserved as compensation for the natural habitats impacts of the NT2 Project. (Completion date: May 2004)
4. **Riparian Release Study.** The NT2 Project will significantly reduce the flow of water from the Nakai Dam to Nam Theun River. The study will assess the environmental and social impacts of changes in flow in the Nam Theun River from the Nakai Dam to the Hinboun Dam (and fisheries impacts to the Mekong River). It will also identify environmental and social objectives for different river reaches and management measures to achieve these objectives. (Completion date: June 2004)
5. **Lower Xe Bang Fai (XBF) Hydrology Modeling Study.** The NT2 Project will divert water through the power station to the XBF basin. The effect of the incremental flow in the Lower XBF is complicated by the compounding effects of the Mekong River flows. The study will (i) provide an understanding of the hydrology of the Lower XBF region, including the relationship between water levels in the XBF and Mekong; and (ii) evaluate potential hydrological impacts of the NT2 project. The study’s outputs will be used for further assessment of social impacts on villages during flooding and nonflooding. (Completion date: June 2004).
6. **Water Quality Assessment Program.** The program will provide baseline water quality and water quality changes during the preliminary construction and construction phases of the project. The program will monitor ground and surface water quality during the preconstruction, preliminary construction, and construction phases to identify variations, trends, and abnormal levels and take action where levels are exceeded. (Ongoing)
7. **Chronology of Deforestation and Evaluation of the Current Biomass on the Nakai Plateau.** The study will provide a chronology of clearance of the NT2 project area in terms of habitat type and cover density and quantify the biomass currently present in the inundation area. The study will propose means for maximizing removal of biomass (timber and firewood) in the Nakai reservoir area prior to inundation so as to improve water quality. This will also be used as an input to the Natural Habitats Accounting Analysis. (Completion date: June 2004).
8. **Physical Cultural Resources Survey.** The work will establish a cultural resources registry and management and mitigation procedures. The survey will be split into three phases:

- (i) Phase A will include a survey of project lands required for preliminary construction activities during the 2004 construction season. (Completion date: September 2004).
- (ii) Phase B will survey NT2 project lands that contain features that have a little or no flexibility in their location, those that may be required for other preliminary construction works, and the downstream channel area. (Completion date: September 2004).
- (iii) Phase C will survey project lands not included in phase B, areas around the Nakai reservoir, and areas within the banks of the affected areas of the upper and middle XBF River. (Completion date: December 2004)

9. **Natural Habitats Accounting Analysis.** The quality and quantity of natural habitats that will be degraded and converted due to the NT2 Project will be analyzed and compared with those planned to be created or conserved as part of the NT2 Project. The study will provide a quantitative rationale for the conservation of the national protected area as compensation for natural habitats degraded and converted as part of the NT2 Project. (Completion date: May 2004)

10. **Pest Management Study.** Project activities may lead to an increase in the use of pesticides in the NT2 project area. If pesticides are toxic, it may endanger health and the environment in the project area. The study will identify pest management issues and impacts in the project area and suggest management and mitigation measures. (Completion date 5/04).

11. **Construction Contractor Environmental Monitoring and Mitigation Plan.** A Construction Contractor Environmental Monitoring and Mitigation Plan will be developed for the preliminary construction and construction phases and will contain 19 subplans to address impacts such as spoil disposal, erosion, physical cultural resources, construction work camps, and a spontaneous settlement areas plan. (Completion date: September 2004)

12. **Public Health Plan.** The plan will identify the health risk to local communities as well as construction workers and camp followers and develop a public health action plan covering the following: identification of health issues related directly to the water resource development, strengthening of the staff health plan for the construction workforce, development of a spontaneous resettlement health plan for camp followers, strengthening of the resettler's health plan, and strengthening of the regional health program, including a HIV/AIDS/STD¹ awareness program. All of these outputs will be a part of the SDP. (Completion date: May 2004)

13. **Human Trafficking Awareness Plan.** The plan will assess the potential for the increase in the risk of trafficking in women and children, and develop an awareness program about trafficking and safe migration. (Completion date: May 2004)

14. **Summary Environment and Social Impact Assessment (SESIA).** The assessment report will summarize the salient features of the EAMP, SDP, SEMFOP, and other key supporting studies and assessment including the cumulative impact assessment (CIA) and the environment and social assessment of Thai transmission lines. (Completion date: July 2004)

¹ Human immunodeficiency virus/acquired immune deficiency syndrome/sexually transmitted disease.

B. By the World Bank

15. Due diligence on project design, dam safety, financing plan, and safeguard compliance of all social and environmental impact assessment will be prepared by the Nam Theun 2 Power Company (NTPC). (Completion date: June 2004)
16. An external experts will review the procurement process, packaging, and costs; concession agreement and power purchase agreement (PPA).
17. A macroeconomic impact study will be completed by June 2004.
18. A revenue management study and financial revenue flows for poverty reduction will be completed by June 2004.
19. Economic analysis studies will include (i) a power demand forecast for Thailand, (ii) a least-cost analysis for Thailand, (iii) a risk analysis of the least-cost analysis, (iv) a risk analysis of the least-cost alternatives for the Lao People's Democratic Republic (Lao PDR), (v) development of the power sector development plan's least-cost analysis for the Lao PDR with 33 options, (vi) a demand forecast analysis for the areas feasible for electrification in the Lao PDR, and (vii) determination of the environment and social cost.
20. The sectoral environmental assessment study will address the broader issues relating to hydropower development in the Lao PDR and formulate a strategy for improvement of environmental and social management within the sector.

C. By the Asian Development Bank

21. The ADB will (i) review the due diligence and safeguard compliance of social and environmental impact assessment of the NT2 Project (completion date: May 2004), (ii) review the investment analysis and commercial due diligence of the concession and power purchase agreements (to be done by ADB's private sector department) (completion date: December 2004), and (iii) provide a report on the assessment of the environment and social impact for the Thai transmission lines. (Completion date: May 2004).
22. **Cumulative Impact Assessment Study.** The study will provide an understanding of the cumulative impacts of the NT2 Project in a regional context covering the basins of the Mekong River, Nam Kading, Nam Theun, and linear development zones for the transmission lines. It will evaluate impacts for the next 5–20 years. (Completion date: August 2004)
23. **Compensatory Forestry Program Study.** The study will determine the forests to be submerged by the NT2 Project and identify areas for compensatory forestry, including forest rehabilitation, restoration, deforestation, reforestation and other possibilities. It will also formulate an implementation plan. (Completion date: May 2004)
24. **SESIA Report.** The report prepared by NTPC will be finalized for circulation to ADB, Agence Francaise de Developpement, World Bank, and other development institutions. The report will summarize the major environmental and social impacts and mitigation and/ or compensatory measures under the NT2 Project. The SESIA is also to be a key public document for regional and international consultations. (Completion date: August 2004)

25. **Economic Study.** The study will include a distribution analysis, and additional macroeconomic and poverty impact analyses, if the World Bank does not cover the ADB requirement. (Completion date: July 2004).
26. **Capacity-Building Program.** The phase I and phase II project preparatory technical assistance will formulate and implement the short-, medium-, and long-term capacity-building program.
28. **Consultation Program.** The program will include activities involving local, provincial, national, regional, and international consultation on environment, social, and safeguard issues.
29. **Gender and Development.** The study will prepare a gender strategy covering (i) specific activities and mitigation measures needed for women's issues, (ii) training, (iii) a partnership mechanism among stakeholders on gender issues, and (iv) a gender sensitive monitoring and evaluation framework. The overriding aim will be to ensure the gender issues are mainstreamed in the social development plan. The gender strategy and associated mitigation measures will be integrated into key safeguard documents and operations plans with an overview chapter in the EAMP.
30. **Confirmation of Livelihood Study.** The study will confirm the viability of the livelihood options for the resettlement areas based on technical analysis, absorptive capacity, and implementation risks.
31. **Development Study for Ethnic Minorities.** The study will review the relevant documents prepared by NTPC with special focus on (i) a consultation and participation process with ethnic minorities for project planning, (ii) participation in the resettlement planning and decision making process, (iii) classification of land titles, (iv) community land resources tenure arrangements, (v) access to forest resources until the new livelihood program is fully operational, and (vi) limited infrastructure development in the national biodiversity conservation area.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The implementation of the technical assistance (TA) will require the services of a multidisciplinary team of international and domestic consultants. One firm and a team of individual consultants will be engaged to provide services. The firm will implement the capacity-building program for mitigation of social and environmental impacts. The consulting firm will be selected on the basis of simplified technical proposals. Individual consultants will be engaged to undertake specific tasks including project economic analysis, financial analysis, macroeconomic analysis and poverty assessment work, communication, environmental aspects, ethnic minorities development, social development, and project management and coordination. Economic and financial analysis work will involve checking and enhancing of the work undertaken by the project sponsor and the other development partners

2. The total international consultants input is estimated at 35 person-months. Approximate person-months needed are given in parentheses. The international consultants will provide expertise in capacity building (environment and social aspects 12), project economic analysis (3), financial analysis (2), macroeconomic analysis (2), communication (2), environment (2), ethnic minorities development (3), resettlement (2), and project management (7). The total domestic consultant input is estimated at 20 person-months. The Asian Development Bank (ADB) will recruit the consultants in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for the engagement of domestic consultants.

A. Consulting Firm for Implementation of Capacity-Building Program for Environmental and Social Mitigation Measures (12 person-months)

3. Under project preparatory TA Phase I, the Government of Lao PDR's institutional and human resource capacity assessment is being undertaken. It will include an assessment of the need for capacity building, covering the institutional structure, human resource, and incorporation of lessons learned from past projects. Based on the assessment, a corresponding capacity-building and institutional strengthening assistance program will be developed.

4. The capacity-building program completed under the phase II TA study may include, but not limited to the following. The phase II TA Consultants will (i) assist the Government of Lao PDR in implementing the institutional structure best suited for monitoring compliance and policy oversight for environmental and social mitigation measures (this should be done in accordance with the existing government decrees/regulations, e.g. environment law and decentralization decree); (ii) implement short-, medium-, and long-term personnel development programs, including (a) a training of trainers program, (b) short courses (certificate) or local seminars, (c) long-term courses (degree) at foreign universities, (d) development of linkages with local and regional universities in delivering formal training, (e) development of tools and templates (including electronic equipment) to assist the government personnel in the field, e.g., electronic tools to assess proper compensation packages for individuals being resettled, (f) informal training, including on-the-job training; (iii) implement schemes to increase the number of qualified staff in the relevant government agencies (this may involve an incentive system to attract and retain qualified staff, and establishment of professional associations or professional certification); (iv) assess various outsourcing options—civil society, Nam Theun 2 Power Company (NTPC), and other independent body, or long-term consultants for implementing environmental and social mitigation measures; (v) develop a linkage with environmental and social mitigation implementation arrangements in other sectors; and (vi) establish a professional network with regional academic institutions for long-term capacity building.

B. Individual Consultants

1. Economic Analysis (3 person-months)

5. In accordance with ADB's *Guidelines for Economic Analysis of Projects*, the consultant will undertake the following tasks: (i) Review the load forecast analysis for Thailand by consumer category. Review Electricity Generating Public Company of Thailand's expansion plan to meet forecast load, including assumptions and constraints on which the plan is based. Prepare a least-cost power sector justification for Thailand. Identify and assess risks with forecast projections. Assess least-cost implications of the various forecast scenarios for Thailand. (ii) Review the power sector development plan for least-cost alternatives for the Lao People's Democratic Republic (Lao PDR), in terms of export earnings of power and for domestic purposes. Prepare a least-cost justification for the Nam Theun 2 Hydropower Project (NT2 Project) from the perspective of the Lao PDR, Thailand, and the subregional aspect. (iii) Identify and prepare a load forecast for the areas to be supplied from the NT2 Project in the Lao PDR. Assess the domestic absorption capacity and investment requirements in distribution and transmission for the load from the NT2 Project. Identify possible sector and institutional constraints. Prepare a summary review of the sector and institutional issues, including tariffs and subsidies. (iv) Calculate the shadow exchange rate for Lao PDR and Thailand. (v) Update data and revise the existing economic model for the NT2 Project to analyze the economic viability and distribution of net project benefits. Identify stakeholders in the Lao PDR to conduct the distributional analysis of net project benefits in line with ADB guidelines. Analyze the benefit distribution between Lao PDR and Thailand. Conduct sensitivity analysis with respect to key risks on the economic internal rate of return, net present values, and distribution of project benefits. (vi) Analyze key risks and assumptions in the economic model and conditions in the concession and power purchase agreements in accordance with ADB's *Guidelines for Integrating Risk Analysis in the Economic Analysis of Projects*. (vii) Assess the institutional implications and sustainability of the NT2 Project. (viii) Identify any additional costs associated with possible externalities, in particular with respect to Theun Hinboun power generation, for inclusion in the economic model. (ix) Prepare a project framework, according to ADB standards, that clearly identifies goals, objectives, and justification of the proposed project components, the overall project, required inputs, targets or benchmarks, monitoring mechanisms, sustainability, and potential risks and assumptions with mitigation measures. (x) Prepare background documents as supplementary appendixes, and an appendix of the NT2 Project economic analysis to be included in the Report and Recommendation of the President (RRP).

2. Financial Analysis/Financial Management Specialist (2 person-months)

6. In accordance with *Guidelines for the Financial Governance and Management of Investment Projects Financed by the Asian Development Bank (2001)*, the consultant will perform the following tasks: (i) Review the project financial analysis carried out by the World Bank consultant and determine whether this analysis is in line with ADB guidelines. If not, assess what items need to be modified. Ensure that parameters of the financial analysis are consistent with the economic analysis to allow proper distribution of benefits. (ii) Verify all assumptions forming the basis for the projections in the project company's/sponsor's financial model, including project cost estimates, the relevant provisions of the concession and power purchase agreements in the model, and the tariff calculations in the model, the accuracy of the NT2 Project's debt service coverage obligations and other financial performance ratios. (iii) Revise the financial analysis of the proposed investment to calculate the financial internal rate of return (i.e. return on capital) and weighted average cost of capital, from the perspective of the project company, taking into account all the financial costs and benefits of the proposed NT2 Project. Assess the return on equity for the Government of Lao PDR, including dividends,

royalties, and tax revenue. Carry out sensitivity analysis (stress tests) on all major risks to the NT2 Project and the Government of Lao PDR's investment. Prepare an appendix of the project financial analysis to be included in the RRP. (iv) Using the sponsor's financial model, prepare financial projections of the project company, as an appendix to the RRP. Projections will include pro forma financial statements (balance sheet, income statement, and statement of cash flows) in accordance with International Accounting Standards. Assess the company's projected compliance with financial performance measures/ratios in pro forma statements. (v) Review the NT2 Project's revenue management and audit arrangements proposed by the World Bank consultant. Assess whether the proposed flow of funds mechanism(s) will be transparent. Demonstrate whether the Government of Lao PDR's project revenue is being used to finance priority development and poverty reduction programs as laid out in the National Poverty Eradication Program. (vi) With regard to the Government of Lao PDR company established or nominated to hold the Government of Lao PDR's shares in the NT2 Project, outline the proper financial management structures and internal controls that should be put in place. Review studies on financial management in the Lao PDR, such as ADB's Diagnostic Study of Accounting and Auditing, and assess what standard government procedures need to be enhanced and strengthened to meet creditor's requirements on flow of funds. (vii) Prepare background documents as supplementary appendixes for the RRP, including the financial analysis.

3. Macroeconomist/Poverty Analysts (2 person-months)

7. The expert will complete the following tasks: (i) Assess the macroeconomic impacts of the proposed NT2 Project, including external balances, and fiscal and monetary effects. Examine the possible effects on social sector allocations and other funds particularly essential for poverty reduction in the Lao PDR. In collaboration with the financial analyst, determine whether the Government of Lao PDR project revenue is being used for activities supporting the National Poverty Eradication Program. (ii) Assess the impacts of the NT2 Project on sectoral growth and the possible effects on poverty reduction. (iii) Identify risks and assess the implications of risks for economic growth and poverty reduction. Assess in particular the terms of trade effects, and its effect on poverty. Propose mitigation measures to address identified risks. (iv) Identify and examine key channels (including direct, indirect, and macroeconomic channels) through which poverty would be affected by the NT2 Project. Develop a model for examining economic growth and distributional and poverty effects of the proposed NT2 Project. Based on existing data, documentation, and reports, collect relevant data to conduct the analysis. (v) Assess the ability of the poor to benefit from economic growth and regional integration. Identify constraints. (vi) Examine the full social and economic justification of the NT2 Project. Prepare relevant documentation, including background material, data, and a summary report. Prepare a poverty impact matrix illustrating the impacts and risks (and mitigation measures), using the channels through which the poor are affected by the NT2 Project and the summary social and poverty appendix, in line with ADB's *Handbook on Poverty and Social Analysis*.¹ (vii) Prepare background documents as supplementary appendixes for the RRP, including the poverty analysis.

4. Communication Expert (2 person-months)

8. Under the phase I TA, ADB is assisting the Government of Lao PDR to develop a methodology and materials to be used in the communication program with respect to local consultations with project-affected people on the project safeguards documentation and plans. A consultant is needed to assist the Government of Lao PDR in the actual consultation workshops and to assess the efficacy of the consultation materials and program in terms of

¹ ADB. 2001. *Handbook on Poverty and Social Analysis*. Manila.

enhancing their knowledge about the anticipated project benefits, impacts, and mitigation measures. The phase II TA consultant will (i) participate in the actual consultation workshops with the project-affected communities, (ii) review the consultation process undertaken by the communication facilitators, (iii) assess efficacy of the consultation process undertaken by the communication facilitators to date, and (iv) provide recommendations for improvements.

5. Environmental Specialist (2 person-months)

9. The consultant will do the following: (i) Prepare the summary environmental and social impact assessment (SESIA) after completing the (a) environmental assessment and management plan (EAMP); (b) the social development plan, which includes the resettlement action plan (RAP), the ethnic minority development plan with a livelihood program, measures against trafficking of women and children, and the program to support the HIV/AIDS/STD² disease control; (c) watershed conservation and management plan; and (d) downstream impact on the Xe Bang Fai River basin and the provision of appropriate mitigation or compensatory measures. (ii) Review and update the SESIA to ensure that it complies with ADB's safeguard policies and guidelines. (iii) Assess the appropriateness of the design implementing the social and environmental program under the SESIA, and adequacy of resources for an effective implementation program. Identify needs for quality control. (iv) Based on the foregoing, initiate preparation of a country environmental assessment for the Lao PDR.

6. Ethnic Minorities Development Specialist (3 person-months)

10. The consultant will do the following: (i) Function as the NT2 project team's ethnic minorities development specialist. (ii) Review the NT2 Project documents related to ethnic minorities and identify major issues and gaps that need to be addressed from the perspective of ADB's policy on indigenous peoples. In this regard, provide specific recommendations on how to address the gaps. (iii) Assess the adequacy of the public health plan in meeting the specific culturally-defined health needs of the ethnic minority populations and advise how to overcome any inadequacies. (iv) Assess the adequacy of the documentation on the NT2 Project's social and cultural impacts on ethnic minority communities in watershed area, reservoir area, project lands, and downstream channels. Provide recommendations on the preparation of policy framework for unknown project impacts. (v) Assess the adequacy of the implementation arrangements for the NT2 Project's ethnic minority plans (ethnic minorities development plan and social and environmental management framework and operation plan), strategy for ethnic minority participation, and monitoring of the ethnic minority outcome. (vi) Coordinate with, and seek policy guidance from, the indigenous peoples development specialist of ADB's Regional and Sustainable Development Department—with respect to compliance with ADB's relevant policies.

7. Resettlement Specialist (2 person-months)

11. The consultant will do the following: (i) Review the NT2 Project documents related to the social safeguards, namely, SDP, SEMFOP, and Concession Agreement. (ii) Assess and evaluate the viability and sustainability of the proposed resettlement programs and whether all project documentation meets ADB and World Bank social safeguard requirements. (iii) Identify gaps, constraints, risks, and adequacy of cost estimates in the proposed resettlement programs. (iv) Based upon these activities and findings, make recommendations to, and discuss with, the Government of Lao PDR, NTPC, ADB and the World Bank the need for any modifications in resettlement planning, implementation, monitoring, and evaluation. Assist the NTPC to revise and finalize the resettlement plans and resource access restriction framework which is expected

² Human immunodeficiency virus/acquired immune deficiency syndrome/sexually transmitted disease.

to be prepared by 31 August 2004, and ensure all project documentation meets ADB and World Bank's social safeguard requirements. (v) In coordination with the livelihood specialists engaged by other institutions, assist the legal counsels of the respective institutions in reviewing the legal framework and existing legal instruments that have been prepared for the resettlement programs. Recommend necessary amendments and new legal instruments that may be required to ensure that the objectives of the resettlement programs can be achieved.

8. TA Project Manager (7 person-months)

12. The TA project manager's duties include the following: (i) Coordinate and manage the work of the consulting team. Liaise with the Government of Lao PDR, ADB, and other stakeholders, and maintain overall responsibility for the study. (ii) Be involved in project-related discussions with ADB, World Bank, and other external funding agencies, Government of Lao PDR, and the private sector project consortium. (iii) Consult with the Ministry of Foreign Affairs; Ministry of Finance; Ministry of Industry and Handicrafts, Science, Technology and Environmental Agency; key line ministries; provinces, districts, and communities; and other development partners, stakeholders, and civil society. (iv) Examine related government policies, strategies, programs and procedures in relation to NT2 Project. (v) Ensure integration of the TA output in ADB's operations. (vi) Prepare a detailed work program for implementing the TA and ensure that it is implemented according to the outlined terms of reference. Incorporate any subsequent instructions and guidance provided by the Government of Lao PDR and ADB. (vii) Formulate a policy matrix of issues and constraints, and work with the Government of Lao PDR, funding agencies, and the project developer to devise a time-bound action plan to implement and monitor the proposed NT2 Project. (viii) Prepare a detailed implementation and monitoring schedule and recommend resource requirements. (ix) Prepare reports and documents for the Government of Lao PDR and ADB relating to the proposed NT2 Project including the draft RRP in form and content as desired by these organizations. (x) Assist the NT2 mission leader in undertaking various project related activities.

9. Domestic Consultants (20 person-months)

13. Two domestic consultants will help the international experts. It is envisaged that one domestic consultant will help the consulting firm implement the capacity-building program and the other will help the individual consultants. The capacity building expert will (i) help prepare the training materials and tools; (ii) collect data and information related to the capacity building program; (iii) conduct the training seminars and workshops, including the in-class seminars and on-the-job training; and (iv) communicate and coordinate with the local, provincial, and national authorities; and national academic institutions; and the project-affected people with respect to the capacity-building program. The translation and interpretation expert will (i) participate in the local consultation workshops and meetings to ensure that the project-affected people are properly informed about the project benefits and costs, (ii) prepare documentation for the local consultation workshops and meetings, (iii) assist the communications expert in validating the efficacy of the consultation activities undertaken, and (iv) assist other individual consultants in communicating and collecting data and information from the local people.

COST ESTIMATE AND FINANCING PLAN
(\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank (ADB) Financing^a			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants	660	0	660
ii. Domestic Consultants	0	30	30
b. International and Local Travel			
i. International Consultants	90	5	95
ii. Domestic Consultants	0	5	5
c. Reports and Communications	10	5	15
2. Stakeholders'/Public Consultation ^b	80	5	85
3. Miscellaneous Technical Assistance Administration	20	5	25
4. Contingencies	80	5	85
Subtotal (A)	940	60	1,000
B. Government Financing			
1. Administrative Support	0	35	35
2. Counterpart Staff	0	115	115
3. Local Transport and Communication	0	5	5
4. Office Supplies	0	5	5
5. Contingencies	0	20	20
Subtotal (B)	0	180	180
Total	940	240	1,180

^a Funded by ADB's technical assistance funding program.

^b Includes preparation of tools and materials for local consultation on the project impacts and mitigations and participation in stakeholder consultation, workshops, preparation of information dissemination materials, etc.

Source: ADB estimates