

TAR: VIE 36352

Technical Assistance to the
Socialist Republic of Viet Nam
for Preparing the Song Bung 4
Hydropower Project Phase II
(Cofinanced by the Japan Special
Fund and Government of France)

August 2005

CURRENCY EQUIVALENTS

(as of 14 July 2005)

Currency Unit	–	dong (D)
D1.00	=	\$0.000063
\$1.00	=	D15,870

ABBREVIATIONS

ADB	–	Asian Development Bank
CSP	–	country strategy and program
EA	–	executing agency
EIA	–	environment impact assessment
EMDP	–	ethnic minority development plan
EMP	–	environment management plan
EVN	–	Electricity of Viet Nam
GAP	–	gender action plan
HPPMB 3	–	Hydro Power Project Management Board Number 3
IWRM	–	integrated water resource management
JFPR	–	Japan Fund for Poverty Reduction
MONRE	–	Ministry of Natural Resources and Environment
NGO	–	nongovernment organization
PECC 3	–	Power Engineering Consulting Company No.3
PHAP	–	public health action plan
PPTA	–	project preparatory technical assistance
PRF	–	Poverty Reduction Cooperation Fund
SEIA	–	summary environmental impact assessment
TA	–	technical assistance
WCD	–	World Commission on Dams

WEIGHTS AND MEASURES

TWh	–	terawatt-hour (1,000,000,000 kWh)
GWh	–	gigawatt-hour (1,000,000 kWh)
kWh	–	kilowatt-hour (1,000 Wh)
m ³	–	cubic meter
MW	–	megawatt (1,000,000 W)

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	General intervention
Sector	–	Energy
Subsector	–	Hydropower Generation
Themes	–	Sustainable economic growth, inclusive social development, environmental sustainability
Subthemes	–	Fostering physical infrastructure development, indigenous people/involuntary settlement, environmental policy and legislation (i.e. mainstreaming environmental considerations in economic growth)

NOTES

- (i) The fiscal year (FY) of the Government ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

This report was prepared by a team consisting of P. Perera (team leader), M. Huddleston, and E. Baardsen, Infrastructure Division, Mekong Department; and R. Everitt, Agriculture, Environment and Natural Resources Division, East and Central Asia Department.

I. INTRODUCTION

1. The Government of Viet Nam has requested the Asian Development Bank (ADB) to consider financing revenue generating projects in power generation using ordinary capital resources. Based on discussions with the Government, it was decided to prepare the Song Bung 4 Hydropower Project (the proposed Project) for ordinary capital resources financing in 2006.¹ Given the complex environmental and social issues associated with hydropower projects, it was decided to undertake the project preparatory technical assistance (PPTA) in two phases. The Phase I² identified the key environmental, social, and water resources management issues, and defined the scope of work to be undertaken during Phase II. At the conclusion of Phase I, an ADB fact-finding mission visited Viet Nam from 10 to 22 March 2005 and reached an understanding with the Government on the objectives, cost, financing, implementation arrangements, and outline terms of reference for PPTA Phase II. The design and monitoring framework is in Appendix 1.

II. ISSUES

2. The power sector's key challenge is to provide adequate system capacity to meet rapid growth in electricity demand. Demand has been growing at an average rate of 14.6% during the past 5 years, underpinned by economic growth of 7%–8%. According to the latest projections of Electricity of Viet Nam (EVN), energy sales are expected to increase from 34.8 terawatt-hour (TWh) in 2003 to 80.4 TWh by 2010, and maximum power demand is projected to rise from 7,366 megawatt (MW) to 16,766 MW during the same period.

3. The Government's policy objective for the sector is to create an institutional and regulatory framework that mobilizes investment from internal and external sources in a financially and fiscally sustainable manner. The Electricity Law, 2004, provides the legal framework for transparent regulation and the creation of a competitive wholesale electricity market. The power sector restructuring plan—aimed at corporatizing and partially privatizing (commonly referred to as equitizing in Viet Nam) the majority of EVN-owned power plants and distribution units, and creating a competitive wholesale power market and regulatory body—is expected to be approved by the Government later this year. The Government has requested further technical assistance (TA) from ADB to implement these reforms and set up a regulatory framework for the sector.

4. Hydropower currently accounts for about 46% of Viet Nam's electricity generation. The Government's fifth electricity master plan (2000–2010) identifies the importance of expanding hydropower—along with other generation technologies and efficiency improvements—to meet future electricity needs. The national hydropower plan and the sixth master plan (2006–2015) currently under preparation have applied technical, economic, social, and environmental screening criteria to a range of projects across the country. Song Bung 4 Hydropower Project is selected for implementation from 2007 to 2011, based on economic screening and preparatory work already undertaken by the Government. Initial project screening undertaken during PPTA

¹ The Country Strategy and Program (CSP) Update 2005–2006 referred to this Project as the Power Generation Development Project and the corresponding project preparatory technical assistance (PPTA) was included in the CSP Update 2004–2006. The technical assistance (TA) first appeared in *ADB Business Opportunities* (internet edition) on 20 May 2004.

² ADB. 2004. *Technical Assistance to the Socialist Republic of Viet Nam for Preparing the Song Bung 4 Hydropower Project Phase I*. Manila.

Phase I and the national hydropower plan indicated that the proposed Project is economically attractive, and the social and environmental impacts can be mitigated.

5. ADB's energy policy recognizes the value of hydropower as a renewable resource eligible for ADB support, provided adverse social and environmental impacts are minimized, and the livelihoods of project-affected people are improved. Given the multipurpose nature, and social and environmental issues associated with large hydropower projects, private sector investment focuses on small hydropower (i.e., less than 100 MW) and thermal power projects. Public sector investment targets large hydropower projects. The Government is committed to partially privatizing most public sector power plants, including the proposed Project.

6. The Law on Water Resources, 1998, provides the legal and institutional framework for water resource management in Viet Nam, including establishing a National Water Resource Council to coordinate water resource management issues among different ministries. The Ministry of Natural Resources and Environment (MONRE) is responsible for state water resource management and is the licensing authority for major water resources projects, including hydropower projects. However, guidelines and institutions for ensuring integrated water resource management (IWRM) at the national and provincial levels are still evolving. PPTA Phase II will consider the concerns of the river basin's other water users and appropriate recommendations will be made to project design and operational rules to incorporate IWRM principles in the prevailing institutional environment (including watershed management-related issues) and minimize downstream impacts due to changes in flow regime and water quality.

7. The proposed Project is located in the Vu Gia-Thu Bon river basin in Quang Nam Province. The river basin's catchment area is mountainous and sparsely populated, and subject to floods during the wet season and the very low dry season flows, which cause water shortages for irrigation and saline intrusion. Hydropower projects in the river basin with associated reservoirs are expected to help alleviate these problems by making the annual water flow more uniform. A pilot demonstration activity supported by ADB's Water Cooperation Fund is proposed to be undertaken in parallel with PPTA Phase II to (i) introduce stakeholders to IWRM principles and the importance of multi-sector coordination, (ii) undertake modeling studies to determine the scale of cumulative impacts caused by future development of the river basin, and (iii) make recommendations to operationalize IWRM principles in the river basin.

8. Initial screening of the project's environmental and social issues were undertaken during Phase I, which identified the key environmental issues: (i) potential loss of biodiversity and threats to the integrity to Song Thanh Nature Reserve, (ii) threats to the sustainability of the watershed and reservoir due to extensive gold mining and soil erosion caused by road construction, and (iii) the need to establish baseline information on aquatic resources and forest cover in project-affected areas. Social issues include the lifestyle, traditions, and vulnerability of project-affected communities, and the need to plan and design social mitigation measures in a culturally sensitive manner. In particular, livelihood opportunities, including access to forest resources, need to be identified in a sustainable manner. Compensation for communities affected due to changes in the water flow in downstream areas would be discussed with the Government.

9. The proposed Project would be subject to ADB's safeguard policies on environment, involuntary resettlement, and indigenous people. The PPTA Phase I concluded that improvements to project design may be introduced in the current planning process to meet ADB safeguard policies. The proposed Project would consider relevant aspects of ADB's water policy, including principles of IWRM and participatory process. Stakeholders would be fully

informed of the proposed Project and their views would be considered in the project design. The proposed Project would be the first hydropower project in Viet Nam to be financed by a multilateral financing institution. ADB's safeguard and other social sector policies—and the implementation of the resulting environment management plan, resettlement plan, ethnic minority development plan, gender action plan, and public health action plan—would set an example of environmentally and socially sustainable hydropower development in Viet Nam. It would also provide an opportunity to incorporate livelihood improvement and poverty reduction measures for the project-affected population, and take a proactive approach to mitigate and manage the environmental impacts.

III. THE TECHNICAL ASSISTANCE

A. Impact and Output

10. The TA's objective is to prepare the 165 MW Song Bung 4 Hydropower Project (the Project) located in Vu Gia–Thu Bon river basin in Quang Nam Province, central Viet Nam, for ADB financing. A dam (120 meters [m] high, 360 m long, and 340 m wide) would be built across the Bung River, creating a reservoir with a storage capacity of 621 million cubic meters (m³) and a surface area of 18.4 square kilometers (km²). It has been estimated that reservoir inundation would require resettlement of 185 mainly ethnic minority families (940 individuals). The total project cost has been estimated at D3,425 billion (\$218 million) at the pre-feasibility study stage.

B. Methodology and Key Activities

11. The master plan for hydropower in the Vu Gia–Thu Bon river basin was approved by the Ministry of Industries³ under the authority of the Prime Minister, and the proposed Project was identified as a priority project in the river basin. The proposed Project's pre-feasibility study was completed in 2003 and the feasibility study is currently being carried out by the executing agency's domestic consultants. PPTA Phase II consultants will review the technical, social, and environmental studies already undertaken as part of the proposed Project's basin master plan, pre-feasibility, and feasibility studies. PPTA Phase II consultants will analyze in detail (i) the hydrology of the river system, soil, and geotechnical conditions of the dam site and tunnels, (ii) the proposed design for the dam and the power plant, (iii) resettlement plans and mitigation and livelihood improvement measures for project affected people, and (iv) environmental impacts and management plans, including measures to protect the upper watershed. They will also provide assistance to the executing agency and its consultants to prepare detailed engineering designs and bidding documents.

12. The PPTA Phase II will undertake several initiatives to achieve an integrated water resource management approach, including stakeholder consultations, and views expressed would be included in the project design. The river basin stakeholder group formed under the proposed pilot demonstration activity mentioned in para. 7 will review and oversee the consultation process. Hydrological studies will be undertaken to determine the downstream impacts, to optimize and coordinate the operation of the proposed Project, and to ensure optimum water resource allocation among different water users. The PPTA Phase II will also propose institutional arrangements to promote sustainable participatory watershed management practices for the operational phase of the proposed Project—land use, water quality, and biological diversity conservation—in close collaboration with MONRE and provincial authorities. Pilot activities for watershed management to be carried out during the construction phase of the proposed Project will be considered.

³ Decision No. 875/QĐ–KHDT dated 2 May 2003.

13. To ensure compliance with ADB's social safeguard policies for involuntary resettlement and indigenous and ethnic minority peoples, as well as its policy on gender and development, the PPTA Phase II will build on the initial assessments of social and environmental issues identified during Phase I, and conduct social analysis and public consultations to confirm the likely social impacts of the proposed Project. The PPTA Phase II will review the preliminary resettlement plan prepared during the government's feasibility study and revise it as appropriate in accordance with ADB requirements. The resettlement plan and the ethnic minority development plan (EMDP) will be prepared for all people affected by reservoir flooding, downstream impacts, and land acquisition for project-related construction work, access roads, transmission lines, and substations. Given the interrelated nature of downstream impacts caused by several other projects in the river basin, and the poor socioeconomic conditions of ethnic minorities inhabiting the river basin, it is proposed that a complementary livelihood restoration project be prepared under the PPTA. It is expected that this would cover approximately 5,000 indigenous people in the project area who are not covered by the resettlement plan. It will take a development approach by enhancing their livelihoods in a sustainable manner. The PPTA Phase II will conduct a gender analysis and prepare a gender action plan (GAP), including a HIV/AIDS⁴ awareness plan, and mainstream it into project documents. The TA will assess project-related health risks and prepare a public health action plan (PHAP). The summary initial poverty and social analysis is in Appendix 2.

14. In accordance with ADB's environment policy and *Environmental Assessment Guidelines* (2003), PPTA consultants will conduct an environmental impact assessment (EIA). This will be done in close collaboration with MONRE to ensure that the EIAs undertaken by government authorities and PPTA consultants are consistent. The consultants are expected to facilitate knowledge transfer to MONRE and provincial authorities on environmental assessment of hydropower projects. The EIA will include an assessment of the impacts on physical, biological, and related impacts on the social environment. The cumulative impacts—due to other hydropower projects in the Vu-Gia subbasin—will be addressed, and the temporal and spatial distribution of impacts will be determined. The EIA will include mitigatory measures and an economic assessment of alternatives.

15. A conservation offset⁵ would be prepared by the PPTA Phase II in a manner complementary to the Greater Mekong Subregion Biodiversity Conservation Corridors Initiative.⁶ This may involve supporting selected parts of the Biodiversity Conservation Corridors Initiative under the proposed Project. The impacts will be assessed, including downstream impacts associated with the construction and operation of the dam and the reservoir, as well as the impacts of the 220 kV transmission line, access roads, and other construction sites. Necessary mitigation measures and environmental monitoring requirements will be incorporated into an environment management plan (EMP). The key threats to the upper watershed (soil erosion caused by gold mining and poor road construction techniques) have been identified in Phase I and mitigatory measures will be recommended during PPTA Phase II.

16. Viet Nam's electricity generation capacity expansion plan—as described in the Government's fifth electricity master plan (2000–2005) and sixth master plan under preparation for 2006–2015—will be reviewed by PPTA Phase II consultants to confirm that the proposed

⁴ Human immunodeficiency syndrome/acquired immunodeficiency syndrome.

⁵ An intervention to compensate for any habitat or ecosystem function that may be impaired or lost due to the proposed Project.

⁶ ADB. 2004. *Technical Assistance for the Greater Mekong Subregion Biodiversity Conservation Corridors Initiative*. Manila.

Project is part of the least-cost generation expansion program for Viet Nam. The economic and financial viability of the proposed Project will be determined and a distribution analysis will be carried out to identify benefits enjoyed and costs borne by different stakeholders. The financial sustainability of the sector and EVN—in the context of the increasing investment requirement—will be assessed, and tariff reforms aimed at removing pricing distortions and cross subsidies will be proposed. A risk allocation framework and a time-bound action plan to partially privatize the proposed Project will also be prepared.

C. Cost and Financing

17. The total cost of the PPTA Phase II is estimated at \$2,175,000 equivalent, of which \$1,275,000 is the foreign exchange cost and \$875,000 equivalent the local currency cost. The Government has requested financing on a grant basis for \$975,000 from the Japan Special Fund, funded by the Government of Japan, and \$600,000 from the Government of France for a total of \$1,575,000 equivalent, comprising the entire foreign exchange cost and \$275,000 of the local currency cost. The TA will be administered by ADB. EVN will finance the remaining \$600,000 equivalent of local currency costs through in-kind contributions by the executing and implementing agencies, the cost of pre-feasibility and feasibility studies undertaken by the Power Engineering Consulting Company No. 3 (PECC 3), office accommodation and facilities, local communications, and counterpart staff. Detailed cost estimates and financing plan are in Appendix 3. The Government has been informed that approval of the TA does not commit ADB to finance any ensuing project.

D. Implementation Arrangements

18. The executing agency for the PPTA Phase II will be EVN and Hydro Power Project Management Board No. 3 (HPPMB 3) will be the implementing agency. HPPMB 3 is a unit of EVN with responsibility for managing the implementation of the proposed Project. The PPTA Phase II will require about 52 person-months of international and about 35 person-months of domestic consulting services. An international consulting firm will be recruited using quality-based selection due to the technically complex nature of the Project based on the full technical proposal in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for the selection and engagement of domestic consultants. An independent advisory panel on dam safety, environmental, and social issues, will be recruited as individual consultants to support the PPTA Phase II. An expert on IWRM and international best practices in planning hydropower projects will be retained separately to guide the proposed Project's overall preparation. The PPTA Phase II will be implemented over a 12-month period from September 2005 to August 2006. Outline terms of reference for the consultants are in Appendix 4.

IV. THE PRESIDENT'S DECISION

19. The President, acting under the authority delegated by the Board, has approved (i) ADB administering technical assistance not exceeding the equivalent of \$600,000 to be financed on a grant basis by the Government of France, and (ii) ADB providing the balance not exceeding the equivalent of \$975,000 on a grant basis, to the Government of Viet Nam for preparing the Song Bung 4 Hydropower Project Phase II, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/ Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p>Impact Satisfaction of Viet Nam's power demand with reliable electricity supply at least cost, contributing to environmentally sustainable and socially inclusive economic growth.</p>	<p>Increased electricity demand met by least cost technologies by 2012.</p> <p>Improved environmental and social performance of the sector by 2012.</p> <p>Benefits to local population from hydropower development.</p>	<p>Financial and other reports containing the sector's performance data.</p> <p>Environmental and social performance monitoring of the sector.</p>	<p>Assumptions</p> <ul style="list-style-type: none"> Political commitment to improve the sector's social and environmental performance is maintained. Adequate financial resources are available to undertake the necessary investments in the sector.
<p>Outcome Prepare the Song Bung 4 Hydropower Project for ADB financing in accordance with relevant ADB policies and integrated water resource management principles.</p>	<p>Project preparation meets ADB policy requirements.</p>	<p>Staff reviews of PPTA final report.</p> <p>Reports of the independent specialists.</p>	<p>Assumptions</p> <ul style="list-style-type: none"> The safeguard documents prepared under the PPTA are accepted by the Government. The proposed mitigatory measures for adverse impacts of sector investments are acceptable to stakeholders.
<p>Outputs</p> <ol style="list-style-type: none"> Review of the technical aspects of the feasibility study and recommendations for the technical design. Safeguard documents according to ADB guidelines (Environment Impact Assessment, Summary Environment Impact Assessment, Environment Management Plan, resettlement plan, Ethnic Minority Development Plan, Gender Action Plan, Public Health Action Plan, etc.). Design of a complementary livelihood improvement project. Economic and financial assessment of proposed Project and sector. 	<p>Technical review of the feasibility study is completed within 4 months of commencing PPTA.</p> <p>First drafts of the safeguard documents are prepared within 6 months and final drafts acceptable to ADB and the Government is prepared within 10 months of commencing PPTA.</p> <p>Acceptance of the complementary livelihood improvement project for financing by JFPR or Poverty Reduction Cooperation Fund</p> <p>Completion of the analysis acceptable to ADB and the Government by 31 March 2006.</p>	<p>Technical assistance Progress reports</p> <p>Review missions</p> <p>Independent advisory panel reports</p> <p>ADB staff review of safeguard documents</p> <p>ADB staff review</p>	<p>Assumptions</p> <ul style="list-style-type: none"> Executing Agency provides data and information, and cooperates with consultants in organizing stakeholder consultations. Executing Agency shows flexibility in revising feasibility study to comply with ADB requirements. <p>Risk</p> <ul style="list-style-type: none"> Lack of commitment and interest from provincial authorities to apply IWRM principles to maximize the overall benefits of the hydropower projects in the river basin.

Activities	Inputs
<ol style="list-style-type: none"> 1. Review basin master plan, pre-feasibility, and feasibility studies undertaken by Electricity of Viet Nam . 2. Provide input to the proposed Project's technical design. 3. Analyze the financial and economic viability of the proposed Project and the sector. 4. Propose a strategy for the proposed Project's partial privatization after commissioning. 5. Conduct additional studies on hydrology, dam design, geology, etc., if necessary. 6. Prepare Environment Impact Assessment and Summary Environment Impact Assessment for the proposed Project according to ADB guidelines. 7. Prepare resettlement plan, Ethnic Minority Development Plan, gender action plan, and public health action plan for and in consultation with project-affected people. 8. Conduct stakeholder consultations at river basin level to identify broad water management issues. 9. Prepare a conservation off-set to compensate for forestry loss due to the proposed Project. 10. Prepare a strategy for benefit-sharing and participatory watershed management with vulnerable communities in the project area. 11. Undertake modeling of the Vu Gia river system and develop recommendations on the proposed Project's future operation. 	<p>52 person-months of international and 35 person-months of domestic consultants.</p> <p>TA resources of \$1,575,000.</p> <p>Counterpart funding of \$600,000.</p>

ADB = Asian Development Bank, JFPR = Japan Fund for Poverty Reduction, PPTA = project preparatory technical assistance.

INITIAL POVERTY AND SOCIAL ANALYSIS

A. Linkages to the Country Poverty Analysis

Is the sector identified as a national priority in country poverty analysis?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is the sector identified as a national priority in country poverty partnership agreement?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<p>Contribution of the sector or subsector to reduce poverty in Viet Nam The Country Strategy and Program (CSP) Update 2005–2006 identified the importance of maintaining sustainable equitable economic growth momentum to achieve further reductions in poverty. Viet Nam's recent success in reducing the share of the population below the poverty line from 70% in 1990 to less than 30% by 2002 is based on rapid but equitable economic growth during this period. The availability of cheap and reliable electricity generated from indigenous sources is an essential requirement for sustainable economic growth and maintaining Viet Nam's competitiveness as it makes the transition from an agriculture-based to an industrialized economy. Viet Nam has also placed emphasis on creating nonfarm employment opportunities for its rural population through rural infrastructure, including access to electricity. Viet Nam has achieved considerable success in rural electrification—over 90% of rural communes and over 86% of households have access to electricity.</p>			

B. Poverty Analysis

Targeting Classification: General Intervention

<p>What type of poverty analysis is needed? The Government's poverty reduction strategy will be reviewed to identify the role and impact of large-scale infrastructure projects (such as the proposed Project) in overall poverty reduction in Viet Nam. It would analyze the incidence of poverty, and provincial governmental policies and strategies for poverty reduction in Quang Nam Province. Appropriate measures would be included in the project design to complement the Government's initiatives for poverty reduction—flood control, agricultural water release, watershed management, livelihood improvement components for project-affected people, and improvements to rural infrastructure. A detailed poverty and social analysis of the power sector was conducted under the project preparatory technical assistance (PPTA) for the Northern Power Transmission (Sector) Project.¹ This analysis will be updated, taking into account the specific circumstances of Quang Nam Province. Appropriate measures will be recommended, if necessary, to address the affordability of electricity and up-front connection costs by the rural poor, especially ethnic minorities.</p>
--

C. Participation Process

<p>Is there a stakeholder analysis? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>A detailed stakeholder analysis was carried out during the PPTA Phase I. The main stakeholders include (i) central government; (ii) provincial government agencies; (iii) district administration; (iv) project developer and its agencies—Electricity of Viet Nam (EVN) and Hydro Power Project Management Board Number 3 (HPPMB 3); (v) communities currently living in the reservoir area, which would be resettled; (vi) communities affected by associated facilities (such as transmission lines, access roads, and worker camps); (vii) host communities in resettlement sites; (viii) communities inhabiting upstream areas and the watershed; (ix) downstream riverine communities; (x) communities in lowland urban areas; (xi) project financiers; (xii) other donors to Vietnamese energy and water sectors; (xiii) civil society (local community organizations); (xiv) international conservation nongovernment organizations (NGOs) active in the region; and (xv) contractors and consultants.</p> <p>The rights, responsibilities, and risks for different stakeholders and the organizations and/or institutions representing these stakeholders are identified. The stakeholders will be consulted on relevant issues during project preparation.</p> <p>Is there a participation strategy? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>A detailed project consultation and participation strategy has been developed under PPTA Phase I to be implemented during PPTA Phase II. The strategy has identified several focal groups for consultations based on the impacts of the proposed Project in different locations. These include (i) people who would be resettled or directly affected by the Project due to downstream impacts—Song Bung subbasin (i.e. downstream) and the watershed (ii) people who are likely to be indirectly affected; and (iii) communities along the wider river basin. The level of intensity of consultation will vary according to the nature and scale of projected impacts, the number of people involved, and the ability of existing administrative structures to reflect the concerns of the project-affected people. Consultation will be carried out in a culturally sensitive manner to ensure the full participation of ethnic minorities.</p> <p>The basic principles of the consultation strategy will be (i) full and complete information, and disclosure of project impacts; (ii) exploration of options to minimize unavoidable project impacts; (iii) collection of needs, priorities, and preferences of communities affected; (iv) full participation, cooperation, and feedback on planning mitigation and</p>
--

¹ ADB. 2004. *Report and Recommendation of the President to the Socialist Republic of Viet Nam for the Northern Power Transmission Sector Project*. Manila.

compensation mechanisms; and (v) community participation in monitoring the implementation of mitigation and compensation measures.

D. Gender Development

Strategy to maximize impacts on women:

PPTA consultants will conduct a detailed gender assessment and prepare a gender action plan (GAP) in accordance with ADB's operations manual and mainstream it into project documents, such as the resettlement plan, ethnic minority development plan (EMDP), public health action plan (PHAP), and staffing plan. All data collected during the PPTA will be gender disaggregated to determine differential impact.

Has an output been prepared? Yes No

E. Social Safeguards and other Social Risks

Item	Significant/ Not Significant/ None	Strategy to Address Issues	Plan Required
Resettlement	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	A resettlement plan will be prepared during the PPTA in compliance with ADB's policy on involuntary resettlement. It will address resettlement impacts related to reservoir inundation, downstream water flow and water quality changes, and all project construction—access roads, dam, powerhouse, diversion channel, transmission lines and substations, and construction work camps, etc.	<input checked="" type="checkbox"/> Full
Affordability	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Labor	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	Project-affected people will be given opportunities for project-related construction work. Standard clauses with respect to International Core Labor Standards and national labor legislation will be included in the report and recommendation of the President and in the loan agreement.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Indigenous Peoples	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	Since the majority of reservoir-affected villages are made up of ethnic minorities, an EMDP will be prepared during the PPTA in compliance with ADB's policy on indigenous peoples. This will include ethnic minorities inhabiting the downstream and upstream areas of the proposed Project who would not necessarily be relocated.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Other Risks and/or Vulnerabilities	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	A GAP will be prepared during the PPTA in compliance with ADB's policy on gender and development. A health impact assessment will be conducted during the PPTA and a PHAP will be prepared to address health-related risks to resettlers, construction workers/camp followers, and the local population in the vicinity of the project areas. A trafficking awareness and prevention program will also be prepared.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank Financing^a			
1. Consultants			
a. Remuneration and Per Diem			
i. Consultants	650	0	650
ii. NGO Subcontractor	0	25	25
b. International and Local Travel	60	5	65
c. Interpretation and Translation Services	0	15	15
2. Equipment ^b	10	10	20
3. Hydrological Modeling Study	15	15	30
4. Training, Seminars, and Conferences			
a. Facilitators	0	15	15
b. Other Expenses for Workshops ^c	0	10	10
5. Surveys ^d	0	30	30
6. Miscellaneous Administration and Support Costs	0	15	15
7. Contingencies	40	60	100
Subtotal (A)	775	200	975
B. Government of France			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants	390	0	390
ii. NGO Subcontractor	0	15	15
b. International and Local Travel	40	10	50
c. Interpretation and Translation Services	0	10	10
2. Equipment	0	20	20
3. Hydrological Modeling Study	10	10	20
4. Representative for Contract Negotiations	5	0	5
5. Contingencies	55	35	90
Subtotal (B)	500	100	600
Subtotal (A+B)	1,275	300	1,575
C. Government/Executing Agency Financing			
1. Office Accommodation and Communication	0	25	25
2. Remuneration and Per Diem of Counterpart Staff	0	25	25
3. Studies Undertaken by EA's Domestic Consultants	0	500	500
4. Contingencies	0	50	50
Subtotal (C)	0	600	600
Total (A+B+C)	1,275	900	2,175

EA = executing agency, NGO = nongovernment organization.

^a Financed by the Japan Special Fund, funded by the Government of Japan.

^b Includes office hardware (photocopier, fax machine, printers, desktop computers) and the lease of all-terrain vehicles.

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

^d Includes surveys required for preparing safeguard documents (Environmental Impact Assessment (EIA), resettlement plan, etc.).

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The implementation of the project preparatory technical assistance (PPTA) will require the services of a multidisciplinary team comprising international and domestic consultants. An international firm of consultants will be engaged for this assignment and is expected to procure the services of both international and domestic experts, as appropriate, and a nongovernment organization (NGO). An integrated water resource management (IWRM) advisor and an independent advisory panel will be recruited separately as individual consultants.

A. Advisor to PPTA Team (2 person-months, international)

2. The advisor with expertise in IWRM and hydropower development international best practices will provide overall guidance to the PPTA team. The advisor will help ensure that the proposed Project is prepared according to IWRM principles and the approach recommended by the World Commission on Dams (WCD), in a manner consistent with relevant Asian Development Bank (ADB) policies. The advisor will participate in the review missions and provide input to the ADB team during PPTA.

B. Technical/Engineering Review (20 person-months consultancy input and a local consultancy firm for hydrological modeling)

1. Senior Hydropower Planning Engineer and Overall Team Leader

3. The senior hydropower planning/design engineer will be responsible for the overall delivery of the proposed Project's technical review, as well as overall coordination of the PPTA, as team leader. The consultant will:

- (i) take overall responsibility for coordination and delivery of consultancy services;
- (ii) consult with the key stakeholders at the beginning of the PPTA to identify their concerns and incorporate them into the project design;
- (iii) coordinate with the economist to establish that the proposed Project is part of the least cost generation expansion plan for central Viet Nam;
- (iv) propose an optimum operating regime based on hydrological modeling studies carried out for the river basin—taking into account the combined operation of proposed hydropower plants in the basin and in consultation with the proposed Vu Gia-Thu Bon Water Resource Review Committee;
- (v) estimate the operational and maintenance cost of the proposed Project;
- (vi) review technical aspects of the feasibility study at the outset and comment on the detailed technical design to the Power Engineering Consulting Company No.3 (PECC 3), in consultation with the technical team;
- (vii) verify project cost estimates and provide input to the financial analyst to estimate price and physical contingencies;
- (viii) prepare the schedule of contract packages, clearly indicating the procurement method;
- (ix) review the bidding documents to be prepared by the implementing agency for ADB-funded contracts;
- (x) prepare a detailed project implementation schedule;
- (xi) identify the proposed Project's key technical risks and provide input to model these risks in the sensitivity and risk analysis;
- (xii) review the capacity and experience of the Hydro Power Project Management Board Number 3 (HPPMB 3) to supervise and manage the proposed Project; and identify the need for capacity strengthening, external consultants, and training; and
- (xiii) prepare the terms of reference for implementing support consulting services.

4. The draft feasibility study of the proposed Project to be undertaken by PECC 3 will be critically reviewed by the PPTA technical team. The consultants will review the technical design on a periodic basis (every 3 months) during the technical design phase and the findings will be presented to Electricity of Viet Nam (EVN) in the form of review reports.

2. Engineering Hydrologist

5. The engineering hydrologist will
- (i) establish the amount of firm and secondary energy to be generated by the proposed Project;
 - (ii) verify energy increments in proposed downstream projects, and irrigation and flood control benefits attributable to the proposed Project; assess any changes to project energy output due to future hydropower projects in the Bung River;
 - (iii) supervise the hydrological studies, flood study, sediment study, and hydraulic model studies to be undertaken by a local consultancy firm subcontractor;
 - (iv) undertake modeling on sediment deposition in the reservoir;
 - (v) assess the water quality and impacts in downstream areas;
 - (vi) provide input to the environment impact assessment (EIA) and make recommendations regarding the need for environmental flows; and
 - (vii) recommend steps to ensure the safety of people in downstream areas during the reservoir inundation, testing, and operation.

3. Geotechnical Engineer

6. The geotechnical engineer will
- (i) review the geological conditions in the reservoir and project component areas with special reference to reservoir water tightness, earthquakes, and major faults; and
 - (ii) review the geo-technical conditions at the dam site.

4. Dam Design Engineer

7. The dam design engineer will
- (i) review the general layout of the proposed Project's structural components, as stated in the feasibility study: (a) main dam, diversion, and spillway mechanism; (b) adequacy of project structures; and (c) underground works;
 - (ii) assess the feasibility of introducing a bottom outlet;
 - (iii) assess the need for multiple off-takes at different elevations;
 - (iv) verify the cost estimates of main structures;
 - (v) propose arrangements for dam safety monitoring; and
 - (vi) review the technical design of the dam and other structures.

5. Electro-Mechanical Engineer

8. The electro-mechanical engineer will
- (i) review the general layout of the power station, turbine, and other mechanical components; protection systems; switch gear; and transmission line—as mentioned in the feasibility study;
 - (ii) prepare cost estimates and a bidding plan for procuring these component through international competitive bidding; and
 - (iii) review the technical designs of the items in (i).

C. Economic and Financial Analyses (5 person-months of consultancy input)

1. Power System Economist

9. In accordance with ADB's *Guidelines for the Economic Analysis of Projects*, the consultant will undertake the economic analysis of the proposed Project and the scope of work will include

- (i) establishing links between electricity demand growth, economic growth, and poverty reduction;
- (ii) recommending targeted intervention to address the affordability of electricity and up-front connection costs for the rural poor;
- (iii) computing the long-run marginal cost for peak and off-peak supply to different consumer categories and the full financial cost recovery tariff;
- (iv) reviewing the national demand forecast for electricity, and the underlying assumptions and least cost generation expansion plan for Viet Nam, and confirm that the proposed Project is part of the least cost plan;
- (v) preparing the regional and provincial load forecast and demand-supply balance for 2005–2020 for central Viet Nam, taking transmission constraints into account;
- (vi) identifying alternatives to the proposed Project—including energy imports from neighboring countries—and establishing that the proposed Project meets least cost criteria to satisfy regional demand;
- (vii) computing the proposed Project's economic internal rate of return according to ADB's *Guidelines for the Economic Analysis of Projects*;
- (viii) undertaking sensitivity and risk analyses of the proposed Project according to ADB's *Handbook for Integrating Risk Analysis in the Economic Analysis of Projects*; and
- (ix) undertaking a distribution analysis of project outputs.

2. Finance Specialist

10. In accordance with the *Guidelines for the Financial Governance and Management of Investment Projects Financed by ADB*, the consultant will undertake financial analysis of the sector and the proposed Project, as follows:

- (i) review the historical financial performance and compliance with financial covenants;
- (ii) update the independent creditor's model and carry out a sensitivity analysis of projected financial statements;
- (iii) review existing financial covenants, revise them if necessary, and assess the adequacy of tariffs;
- (iv) prepare the projected pro forma financial statements for the proposed Project as a standalone entity and undertake a cash-flow based valuation;
- (v) prepare cost estimates, including price and physical contingencies, and a project financing plan;
- (vi) compute the financial internal rate of return and the weighted average cost of capital of the proposed Project, and carry out a sensitivity analysis; and
- (vii) assess EVN & HPPMB 3's financial management capabilities, budgeting, and internal control procedures, and prepare the procedures for project fund flows.

3. Power Sector Reform Specialist

11. The power sector reform specialist will

- (i) assess the potential for private sector participation in the proposed Project;
- (ii) recommend a risk allocation framework to facilitate the partial privatization of the proposed Project after completion, including a capital structure for the partially privatized entity; and
- (iii) prepare a time-bound action plan for partially privatizing projects in the river basin.

D. Preparation of Social Safeguard Documents (30 person-months of consultancy input and an NGO subcontractor)

12. The consultants will prepare the social safeguard documents in accordance with relevant ADB policies, guidelines, and operations manual (OM 47). A team of social development experts led by an experienced resettlement specialist will prepare a resettlement plan, ethnic minority development plan (EMDP), gender action plan (GAP), and public health action plan (PHAP)—based on full participation, consultation, and disclosure to project-affected people. A complementary livelihood restoration project will be prepared to mitigate the cumulative impact of hydropower projects in the river basin not directly attributable to Song Bung 4 Project.

1. Resettlement Planning and Social Assessment Specialist

13. The resettlement planning and social assessment specialist will
- (i) identify and prepare socioeconomic profiles of project-affected communities, including gender and local ethnic minority profiles;
 - (ii) evaluate the proposed Project's projected social impact, particularly adverse impacts on vulnerable groups;
 - (iii) undertake surveys to establish a population record of project-affected people, asset inventory, landownership, usage, and productivity assessments;
 - (iv) review the preliminary resettlement plan prepared during the feasibility study, and revise it to meet the requirements of ADB's safeguard policy requirements and include the downstream impacts and resettlement impacts due to project-related civil works such as access roads, worker camps, and power transmission lines;
 - (v) undertake consultations on resettlement options and compensation details to project-affected people in a culturally appropriate manner;
 - (vi) prepare a detailed resettlement plan; and
 - (vii) prepare an institutional assessment with recommendations for implementing and monitoring the resettlement plan.

2. Ethnic Minority Development Planning Specialist

14. The ethnic minority development planning specialist will
- (i) prepare a time-bound EMDP in accordance with ADB's policy on indigenous peoples;
 - (ii) identify aspirations, needs, preferred options, local social organization, cultural beliefs, ancestral territory, and resource use patterns among project-affected ethnic minority peoples;
 - (iii) identify potential positive and negative impacts of the proposed Project on ethnic minority peoples; and
 - (iv) propose measures to avoid, mitigate, or compensate for the adverse project effects to ensure project benefits will accrue to ethnic minority peoples, and strengthen institutions to address ethnic minority issues.

3. NGO Subcontractor with Specialization in Rural Development in Viet Nam

15. The NGO subcontractor with specialization in rural development in Viet Nam will
- (i) undertake a participatory assessment of existing livelihoods of resettlers and other project-affected people, and livelihood potential at the proposed resettlement area;
 - (ii) design a socially and culturally feasible and sustainable livelihood program with the full participation of resettlers and other directly affected people due to the Song Bung 4 Hydropower Project in the downstream areas;
 - (iii) recommend steps for implementing the livelihood development program that would provide a sustainable improved livelihood program for project-affected people; and

- (iv) design a separate livelihood development program (with cost estimates and implementation arrangements) for other vulnerable people in the basin who may be affected by other hydropower projects.
- 4. Public Health Impact Specialist**
16. The public health impact specialist will
- (i) assess the adequacy of health infrastructure to cater for a large influx of workers and identify improvements to local health infrastructure and service; and
 - (ii) prepare a costed, time-bound PHAP to address the health and safety of resettlers, construction workers, and project area communities.
- 5. Gender Specialist**
17. The gender specialist will
- (i) prepare a gender action plan (GAP) in accordance with ADB's policy on gender and development and operations manual;
 - (ii) ensure gender concerns are incorporated in resettlement identification, planning, and management—including gender-disaggregated data collection and gender-specific consultation;
 - (iii) assess potential health impacts of relocation on resettlers; and
 - (iv) design measures for preventing sexually transmitted diseases and trafficking of women and children, during project construction.
- 6. Consultation Specialist**
18. The consultation specialist will
- (i) prepare a strategy to be adopted in consultations for preparing environmental and social safeguard documents—taking into account the recommendations of PPTA Phase I and ADB's water policy requirement of “informed participation of stakeholders”;
 - (ii) train local facilitators and develop material to be used in consultations;
 - (iii) oversee the consultation process; and
 - (iv) prepare detailed documentation of the consultation process and how stakeholders' views are considered in the project design.

E. Environment Impact Assessment (27 person-months of consultancy input)

19. In accordance with ADB's environment policy and *Environmental Assessment Guidelines*—and in conjunction with the EIA being prepared by PECC 3—the consultant will conduct an environmental assessment of the proposed Project. This will be done in close collaboration with the Ministry of Natural Resources and Environment (MONRE) to ensure that the environment impact assessments (EIA) undertaken by the Government and PPTA consultants are consistent. The environmental outputs will include a category A environment impact assessment (EIA), an environment management plan (EMP), and a summary EIA (SEIA). The outputs will be developed collectively by a group of international consultants consisting of (i) environmental impact assessment specialist, (ii) terrestrial ecologist, (iii) aquatic ecologist, (iv) road engineer, (v) mining expert, and (vi) forestry specialist. The international consultants will be supported by a team of domestic consultants with expertise in water quality, fisheries, forestry, biochemistry, and reservoir water quality modeling.
20. The scope of work will include
- (i) reviewing the draft EIA of the Project (prepared by PEEC 3 under the feasibility study), draft Quang Nam conservation strategy, and ADB and government guidelines on hydropower project EIAs;

- (ii) reviewing the institutional framework for environmental regulation and proposing measures to improve coordination between project developers and approving agencies;
- (iii) collecting primary and secondary data on aquatic and terrestrial species, habitats, biodiversity, and economic importance;
- (iv) conducting public consultation at least twice—(a) during the early stages of EIA fieldwork, and (b) on the draft EIA report in close collaboration with the river basin stakeholder group formed under the pilot demonstration activity;
- (v) assessing the physical, biological, and related impacts on the social environment—including relevant and significant cumulative impacts due to other developments in the Vu Gia subbasin;
- (vi) undertaking an option analysis for project alternatives, including environmental/social costs and benefits;
- (vii) identifying mitigation measures and monitoring programs;
- (viii) identifying gaps in government hydropower project regulations compared to ADB requirements;
- (ix) preparing an environmental management plan (EMP);
- (x) preparing an environmental impact assessment (EIA) report and summary EIA report (SEIA) following ADB's *Environmental Assessment Guidelines*;
- (xi) preparing initial environment examination reports for associated project facilities, including transmission lines and access roads;
- (xii) recommending measures for strengthening the executing agency's environmental management and/or assessment capabilities (MONRE and provincial authorities); and
- (xiii) recommending steps to develop an institutional framework for watershed and/or environmental management using project revenue.

21. PPTA Phase I identified soil erosion and sedimentation—caused by extensive gold mining and road construction—as the main threats to the reservoir. A road engineer and a mining engineer, supported by a domestic consultant, will make recommendations regarding specific measures to be taken to control and mitigate threats to the watershed due to these activities. A forestry specialist is required to assess the extent and significance of forestry loss due to the proposed Project, and recommend a conservation off-set in a complementary manner to the Greater Mekong Subregion biodiversity corridor project to be implemented in the Quang Nam Province.

F. Independent Advisory Panel (3 person-months, international)

22. The independent advisory panel will consist of three internationally renowned experts in (i) technical and safety aspects of the proposed type of dam, (ii) environment safeguard aspects, and (iii) social safeguard issues. The dam safety specialist will ensure that the design and construction of the 120 m high dam is undertaken in accordance with state-of-the-art technology and accepted international best practices. The environment and social safeguard experts will independently verify that the safeguard documents prepared by the PPTA consultants and the Government meet relevant ADB safeguard and thematic policy requirements.