



Technical Assistance Report

Project Number: 49196-003
Policy and Advisory Technical Assistance (PATA)
December 2015

Socialist Republic of Viet Nam: Power Sector Reform Program

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 23 November 2015)

Currency unit	–	dong (D)
D1.00	=	\$0.000044
\$1.00	=	D22,480

ABBREVIATIONS

ADB	–	Asian Development Bank
BOT	–	build–operate–transfer
CFD	–	contract for difference
EPTC	–	Electric Power Trading Company
ERAV	–	Electricity Regulatory Authority of Viet Nam
EVN	–	Viet Nam Electricity
GW	–	gigawatt
ICB	–	international competitive bidding
MOIT	–	Ministry of Industry and Trade
PDP	–	power development plan
PPA	–	power purchase agreement
PPP	–	public–private partnership
SMHP	–	strategic multipurpose hydropower plant
SMO	–	system and market operator
TA	–	technical assistance
VCGM	–	Viet Nam competitive generation market
VWEM	–	Viet Nam wholesale electricity market

NOTE

In this report, "\$" refers to US dollars.

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POLICY AND ADVISORY TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data		Project Number: 49196-003	
Project Name	Power Sector Reform Program	Department /Division	SERD/SEEN
Country	Viet Nam, Socialist Republic of	Executing Agency	Ministry of Industry and Trade
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Energy	Energy sector development and institutional reform		1.00
		Total	1.00
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded	Climate Change impact on the Project	Low
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Institutional development Institutional systems and political economy Public financial governance	No gender elements (NGE)	✓
Private sector development (PSD)	Conducive policy and institutional environment		
5. Poverty Targeting		Location Impact	
Project directly targets poverty	No	Nation-wide	High
6. TA Category:	B		
7. Safeguard Categorization	Not Applicable		
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		1.00	
Policy and advisory technical assistance: Technical Assistance Special Fund		1.00	
Cofinancing		0.00	
None		0.00	
Counterpart		0.10	
Government		0.10	
Total		1.10	
9. Effective Development Cooperation			
Use of country procurement systems		No	
Use of country public financial management systems		No	

I. INTRODUCTION

1. The Asian Development Bank (ADB) has been supporting Viet Nam's power sector reform from the outset through six technical assistance (TA) projects.¹ These have led to, among others, the promulgation of the Electricity Law in 2004² and the road map for developing a competitive power market in 2006 outlining three phased initiatives: (i) the Viet Nam competitive generation market (VCGM), which was established in July 2012; (ii) the Viet Nam wholesale electricity market (VWEM), which will be piloted by 2017 and fully operationalized by 2019; and (iii) a Viet Nam competitive retail market to be operationalized in 2021.³

2. Until recently, ADB's assistance focused on generation and transmission subsectors because of their urgent investment needs. During the same period, the World Bank provided several TA projects and policy loans for the first phase of the power sector reform for VCGM. In response to the growing importance of power sector reform, ADB has programmed policy-based loans for the second phase of the reform for VWEM through collaborative parallel financing with the World Bank. ADB and the World Bank have programmed \$1.2 billion (\$600 million each) through three subprograms.⁴ The TA will prepare prior actions in the policy-based loan series in consultation with the Government of Viet Nam's Ministry of Industry and Trade (MOIT) and other development partners. The design and monitoring framework is in Appendix 1.⁵

II. ISSUES

3. **Rapid electricity demand growth requires large investment in power sector.** Viet Nam's economy has grown at an average rate of 6.1% per year, and gross domestic product per capita increased from \$699 in 2005 to \$2,052 in 2014. Average annual electricity demand growth was 12.1% during the same period. In 2014, the peak demand was 22.2 gigawatts (GW), and the total installed capacity was 34.1 GW. The generation mix is 46.1% hydropower, 21.6% gas, 28.6% coal, 3.4% oil, and 0.3% renewable energy. Viet Nam Electricity (EVN) and its subsidiaries own 56% of the total installed capacity, while 19% is owned by other state energy utilities, 16% by independent power producers, and 9% by foreign investors on build–operate–transfer (BOT) and import. The revised power development plan (PDP) VII projected electricity demand growth at an average of 10.5% per year during 2016–2020, and 8.0% per year during 2021–2030.⁶ To meet such demand, an annual investment of more than \$6 billion is required during 2011–2030. Nearly 70% of this investment is for generation facilities, 60% of which the private sector is expected to develop. Additional generation capacity required is about 24.0 GW during 2016–2020 and 48.6 GW during 2021–2030 (footnote 6).

¹ ADB. 1995. *Technical Assistance to the Socialist Republic of Viet Nam for the Improvement of Financial Management of Power Companies*. Manila; ADB. 1997. *Technical Assistance to the Socialist Republic of Viet Nam for Improvement of the Power Sector Regulatory Framework*. Manila; ADB. 1997. *Technical Assistance to the Socialist Republic of Viet Nam for Commercialization of Power Companies*. Manila; ADB. 2001. *Technical Assistance to the Socialist Republic of Viet Nam for Road Map for Power Sector Reform*. Manila; ADB. 2006. *Technical Assistance to the Socialist Republic of Viet Nam for the Power Market Design*. Manila; and ADB. 2008. *Technical Assistance to the Socialist Republic of Viet Nam for Capacity Building of the National Power Transmission Corporation in a Competitive Power Market Environment*. Manila.

² Law 28/2004/QH11 dated 3 December 2004.

³ Prime Minister Decision 26/2006/QĐ-TTg dated 26 January 2006; amended in Prime Minister Decision 63/2013/QĐ-TTg dated 8 November 2013.

⁴ ADB. 2015. *Country Operations Business Plan: Viet Nam, 2015–2017*. Manila.

⁵ The TA first appeared in the business opportunities section of ADB's website on 12 November 2015.

⁶ Government of Viet Nam. 2011. *Prime Minister Decision 1208/QĐ-TTg on Approval of National Power Development Plan between 2011 and 2020, with Orientation towards 2030*. Ha Noi. Recently revised in 2014.

4. **Reform is needed to sustain investment in the power sector.** Established in 1995 as a state-owned vertically integrated utility, EVN has been the main operator and has rapidly expanded the power system, reaching 98% electrification ratio in 2014, from less than 50% in 1995. However, its financial burdens have significantly increased at the same time because electricity tariffs are below cost and the company is heavily dependent on foreign debt.⁷ One power reform objective is, therefore, to attract new private sector investment and improve efficiency through a market system. To enable this, EVN has been restructured: (i) the National Power Transmission Corporation, the National Load Dispatch Center, and the Electric Power Trading Company (EPTC) were created as EVN subsidiaries in 2008; (ii) 11 distribution companies of EVN were consolidated into five power corporations in 2010; and (iii) with the launching of the VCGM, EVN's generation function was separated into three generation corporations in 2012. On the government side, the Electricity Regulatory Authority of Viet Nam (ERAV) was created in 2005, followed by the General Directorate of Energy in 2012 within the MOIT. The government also initiated tariff reform in 2009, following the Electricity Law of 2004, to reflect changes in supply costs.⁸

5. **Viet Nam competitive generation market, launched in July 2012, was an initial major step for power market development.** In the VCGM, a single buyer, EPTC, purchases all power from generators using a combination of the spot market price and a contract price, determined by the power purchase agreement (PPA) using contracts for differences⁹ based on an MOIT-issued standard PPA form in 2010.¹⁰ The EPTC provides power to power corporations under the regulated bulk supply tariff, and corporations sell power to consumers based on the uniform retail tariffs. The VCGM's spot market is a mandatory cost-based pool market with day-ahead bidding. After 3 years of operation, the VCGM has significantly contributed to providing more transparent generation pricing. However, about 50% of generation capacity—mainly owned by strategic multipurpose hydropower plants (SMHPs) and BOT generators—is not traded directly in the VCGM because of their operational constraints.¹¹

6. **Next major step is to prepare the Viet Nam wholesale electricity market for full operation in 2019.** In the VWEM, power corporations and large consumers can buy power directly from generators through PPAs and the spot market, and wholesalers are allowed to enter the market, contract with generators, and sell power to the power corporations. Unlike in the VCGM, BOT generators and SMHPs can participate in the VWEM directly or through their traders. The National Load Dispatch Center will be transformed to a system and market operator (SMO) and will manage the market under the VWEM in addition to its system operation

⁷ There is a mismatch between EVN's long-term assets and relatively short-term liabilities. Further, EVN's debt is denominated in foreign currency, which causes significant losses when the dong is devalued.

⁸ Prime Minister Decision No. 21/2009/QĐ-TTg, 2009. EVN is permitted to revise the retail tariff due to changes in fuel cost, exchange rate fluctuations, and generation capacity charges when the changes do not exceed the 5% threshold. An increase of more than 5% requires approval from the MOIT, Ministry of Finance, and Prime Minister. Transmission tariffs are calculated and charged separately by the National Power Transmission Corporation and approved by the MOIT.

⁹ Under contracts for differences, when the spot market price for electricity generated by generator is below the strike price set out in the contract, the EPTC makes payments to the generator to make up the difference. However, when the market price is above the strike price, the generator pays the difference to the EPTC.

¹⁰ Appendix 2 in MOIT Circular 41/2010. The pricing provisions were replaced by Circulars 56 and 57 in 2014.

¹¹ SMHP and BOT generators are not allowed to participate in the spot market. In the case of SMHP generators, water value is not appropriately calculated in a way that reflects the opportunity cost of using water in storage for generation. Incorrect water value can result in sub-optimal use of the hydro resources and higher thermal generation costs on average. In the case of BOT generators, their marginal costs are above the system marginal price cap and their dispatch plans are determined by take-or-pay power purchase agreements.

function.¹² Transmission charges then need to be unbundled so power corporations' purchase costs can be changed from the current bulk supply tariff to a blend of transmission charges and generation costs, through a combination of PPA price and spot market price. While this will improve the transparency and efficiency of the market-based tariff setting, it will also increase power corporations' financial risks during the initial years.¹³ To minimize adverse impacts, EPTC's existing contracts with power corporations will be centrally allocated to generators and power corporations to make each corporation's power purchase cost similar. These vesting contracts will be reduced gradually so generators and corporations can voluntarily enter into new bilateral contracts. The MOIT issued the VWEM's market design outlining such mechanisms in July 2014 (conceptual design) and in August 2015 (detailed design).¹⁴

7. The development of the competitive VWEM is policy area A of the policy matrix being prepared for policy-based loans, and supported by ADB and other development partners.¹⁵ For this policy area, ADB is implementing two TA projects to advise the ERAV on VWEM design and support capacity building for new market participants, such as power corporations and SMO, to participate in the VWEM.¹⁶ ADB also published an assessment of power sector reforms in Viet Nam in 2015.¹⁷ The World Bank is providing assistance for studies on VWEM market rules and the capacity adequacy mechanism; the Agence Française de Développement has supported the study on the VWEM detailed design; and the United States Department of State has nearly completed the study on the treatment of BOT and SMHPs in the market. Development partners' efforts are well coordinated through regular dialogue.

8. Developing competitive wholesale electricity market, while ensuring long-term adequate electricity supply, is a key issue to address. Although significant progress was made in preparing the VWEM market design and rules, VWEM operation-related challenges remain in transitioning contract arrangements from the VCGM to the VWEM, monitoring and supervising the competitive VWEM market operation, and developing market regulations for market prudential requirements and tax treatments. At the same time, the mechanism to sustain new generation capacity investment needs to be established. Currently, new generation capacity is identified through the PDP process, and new investment is ensured through EVN or BOT arrangements. However, with the introduction of the VWEM, this centrally planned approach will need to gradually change to a market-based approach. But other countries'

¹² The SMO's market operation function includes selling and purchasing electricity, facilitating market settlements, and reconciling energy accounts and monetary accounts. SMO will also be required to perform load forecast, day-ahead and hour-ahead scheduling, and calculation of water value for the hydropower plants. It is planned that SMO will be a subsidiary company of EVN in the beginning and scheduled to be fully independent in the future.

¹³ Power corporations' revenues are determined by the amount of electricity sold, regulated uniform retail tariff, power purchase costs, and other operating costs. In the VWEM, their power purchase price will change from the current bulk supply tariff to wholesale market price, determined by PPAs and spot market, and therefore becomes more volatile and riskier.

¹⁴ Prime Minister Decision No. 6463/2013/QĐ-BCT, 2014; Prime Minister Decision No. 8266/QĐ-BCT, 2015.

¹⁵ The policy matrix is prepared for: A: developing a competitive VWEM, B: restructuring the power sector, C: reforming the electricity tariff, and D: improving the quality of supply and demand-side response. For other policy areas such as B, C, and D, their preparations have been relatively well progressed with the assistance from development partners. ADB has provided a TA to review transmission charges payable to the National Power Transmission Corporation in the context of power sector reform (TA 8302). World Bank is assisting studies on EVN generation corporations' equitization, new retail tariff structure, and demand-side response program roadmap. KfW is preparing new assistance for the procedures to enhance transparency of the process for determination of electricity prices.

¹⁶ ADB. 2009. *Technical Assistance to the Socialist Republic of Viet Nam for Capacity Building of Renewable Energy Development*. Manila; ADB. 2014. *Technical Assistance to the Socialist Republic of Viet Nam for Establishing the Wholesale Electricity Market*. Manila.

¹⁷ ADB. 2015. *Assessment of Power Sector Reforms in Viet Nam*. Manila.

experiences show a wholesale electricity market alone cannot ensure long-term, adequate electricity supply, especially when there is growing demand at high rates. Therefore, an adequate supply mechanism, compatible with the VWEM and suitable in the context of Viet Nam's power sector reform, must be developed.¹⁸ If not, there will be a high risk of lacking or delaying new investment, resulting in power shortages and excessive electricity prices. Existing assistance has identified but not sufficiently addressed this issue.¹⁹

9. Against this backdrop, the TA will support policy area A by preparing guidelines, road maps, and regulations for (i) a competitive market operation for contract arrangement and prudential requirements and (ii) a mechanism ensuring long-term adequate supply, which can replace, improve, or complement the current mechanism through PDP and BOT.

III. THE POLICY AND ADVISORY TECHNICAL ASSISTANCE

A. Impact and Outcome

10. The TA impact will be an adequate and reliable supply of power for socioeconomic development.²⁰ The outcome will be an improved regulatory framework and policy actions for a reliable and competitive wholesale electricity market.

B. Methodology and Key Activities

11. The TA outputs will be (i) key policy actions and regulations for competitive power market operation and (ii) key policy actions and regulations to ensure long-term adequate electricity supply.

12. **Output 1: Key policy actions and regulations for competitive power market operation.** The TA will assist ERAV, which is responsible for the power market, in (i) reviewing existing VCGM contract arrangements in light of the full VWEM design and rules; (ii) developing the VWEM's contract models and arrangements; (iii) reviewing the law and rules on prudential requirements and tax treatments, and updating regulations as necessary; (iv) proposing appropriate vesting contract allocation mechanisms for the full VWEM; (v) developing operational guidelines for contract arrangement mechanisms, including contract auction, and updating related decisions or circulars; and (vi) organizing training, workshops, and study tours.

13. **Output 2: Key policy actions and regulations to ensure long-term adequate electricity supply.** The TA will assist the General Directorate of Energy, which is responsible for PDP and BOT, in (i) reviewing viable project financing models to develop greenfield projects; (ii) reviewing possible mechanisms to ensure long-term, adequate electricity supply, including competitive tendering within the PDP, various capacity mechanisms, and a combination of both; (iii) developing the conceptual design, detailed design, and implementation plan of the

¹⁸ If the current PPAs continue for new BOT projects and greenfield investments in the form of a take-or-pay contract, new investment through the VWEM will be jeopardized. However, if the PPAs for BOT projects are changed similar to the PPAs used in the power market in the form of contracts for differences, it will be difficult to attract foreign investment due to high market risks, which will deteriorate long-term supply security. Therefore it is critical to explore new mechanisms to ensure adequate electricity supply compatible with the power market.

¹⁹ The World Bank has completed the study on recommending the capacity-adequate mechanism for ERAV.

²⁰ This is one of the general objectives of PDP VII (2011–2020). Electricity is used for commercial activities and industrial processes, thereby contributing to economic development. Electricity also increases study time for children and leads to improved indoor air quality as a substitute for traditional biomass sources or kerosene, thereby improving health conditions. As such, electricity is essential for socioeconomic development.

mechanism that maintains the electricity market's role in guiding system expansion and ensures long-term adequate electricity supply; (iv) assessing the contingent liabilities assumed under various mechanisms and developing a framework to manage them; (v) setting up the model to determine the amount to be procured through different mechanisms in the PDP planning process; (vi) developing operational guidelines for such mechanisms, and updating related governmental decisions or circulars if required; and (vii) organizing training, workshops, and study tours.

C. Cost and Financing

14. The TA is estimated to cost \$1,100,000, of which \$1,000,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-Others). The government will provide counterpart support in the form of counterpart salaries, office space and supplies, access to information and data, local administration, knowledge generation, monitoring and reporting services, and other in-kind contributions. TA proceeds will be disbursed following ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

D. Implementation Arrangements

15. MOIT will be the TA executing agency, and the General Directorate of Energy and ERAV will be the implementing agencies. ADB's Southeast Asia Energy Division and Viet Nam Resident Mission will manage and administer the TA. Development partners' activities will be coordinated closely and regularly.

16. TA implementation will require 24 person-months of international consultants and 24 person-months of national consultants. Consultants will be engaged through an international consulting firm following ADB's Guidelines on the Use of Consultants (2013, as amended from time to time) using an output-based and lump-sum contract. Equipment will be purchased following ADB's Procurement Guidelines (2015, as amended from time to time), and turned over to the executing agency upon completion of TA activities. The TA will be implemented from 1 March 2016 to 31 May 2019.

IV. THE PRESIDENT'S DECISION

17. 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 Viet Nam for Power Sector Reform Program, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Impact of the TA is Aligned with the PDP VII for 2011-2020 for an Adequate and reliable supply of power for socioeconomic development			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome An improved regulatory framework and policy actions for a reliable and competitive wholesale electricity market	By 2020: a. Full VWEM commercially operationalized (2015 baseline: 0) b. At least one new generation project procured using alternative adequate supply mechanism (2015 baseline: 0)	a. Prime Minister's decisions on power sector structure and tariff structure b. EVN annual reports and TA consultant reports	Strong public resistance on tariff increase
Outputs 1. Key policy actions and regulations for competitive power market operation	By 2019: 1a. VWEM contract model and arrangements developed (2015 baseline: 0) 1b. Vesting contract allocation mechanism developed (2015 baseline: 0) 1c. Regulation on prudential requirements and tax treatments enacted (2015 baseline: 0) 1d. Operational guidelines for contract arrangement mechanisms developed (2015 baseline: 0)	1a. MOIT's decisions and circulars on power sector reform 1b. EVN annual reports 1c. TA review missions 1d. TA consultant reports	Government commitment shifts away from developing a competitive power sector Legislative actions required for sector reform are delayed

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
2. Key policy actions and regulations to ensure long-term adequate electricity supply	By 2019: 2a. Conceptual design, detailed design, and implementation plan of adequate supply mechanism enacted (2015 baseline: 0) 2b. Operational guidelines for adequate supply mechanism prepared (2015 baseline: 0)	2a. MOIT's decisions and circulars on power sector reform 2b. EVN annual reports; TA review missions; TA consultant reports	

Key Activities with Milestones

1. Develop key policy actions and regulations for competitive power market operation

- 1.1 Review existing VCGM contract arrangements in light of the full VWEM design and rules (March 2016–April 2016).
- 1.2 Assess capacity building needs and develop plans for training, workshops, and study tours (March 2016–December 2016).
- 1.3 Develop VWEM's contract model and make arrangements for implementation (April 2016–June 2016).
- 1.4 Review the law and rules on prudential requirements and tax treatments and develop related regulations (July 2016–December 2016).
- 1.5 Propose appropriate vesting contract allocation mechanism for the full VWEM (January 2017–December 2017).
- 1.6 Organize training, workshops, and study tours (January 2017–May 2019).
- 1.7 Develop operational guidelines for contract arrangement mechanisms, including contract auction, and update related decisions or circulars, if required (July 2018–May 2019).

2. Develop key policy actions and regulations to ensure long-term adequate electricity supply

- 2.1 Review viable project financing models to develop greenfield projects in the transition period until VWEM is fully functional (March 2016–May 2016).
- 2.2 Review capacity adequacy mechanism and other possible mechanisms, including competitive tendering within the PDP, various capacity mechanisms, and a combination of both (March 2016–May 2016).
- 2.3 Assess capacity building needs and develop plans for training, workshops, and study tours (March 2016–December 2016).
- 2.4 Develop the conceptual design of the mechanism to ensure long-term adequate electricity supply (May 2016–July 2016).
- 2.5 Develop the detailed design of the mechanism to ensure long-term adequate electricity supply (January 2017–April 2017).
- 2.6 Organize training, workshops, and study tours (January 2017–May 2019).
- 2.7 Assess the contingent liabilities assumed under various mechanisms and develop a framework to manage them (May 2017–September 2017).
- 2.8 Set up a model to determine the amount to be procured through different mechanisms in the PDP planning process (October 2017–January 2018).
- 2.9 Develop the implementation plan of the mechanism to ensure long-term adequate electricity supply (February 2018–July 2018).
- 2.10 Develop operational guidelines for an adequate supply mechanism and update related decisions or circulars, if required (August 2018–May 2019).

Inputs

ADB: \$1,000,000

Note: The government will provide counterpart support in the form of counterpart salaries, office space, supplies, access to information and data, local administration, monitoring and reporting services, and other in-kind contributions.

Assumptions for Partner Financing

Not applicable.

ADB = Asian Development Bank, EVN = Viet Nam Electricity, MOIT = Ministry of Industry and Trade, PDP = power development plan, TA = technical assistance, VCGM = Viet Nam competitive generation market, VWEM = Viet Nam wholesale electricity market.

Source: Asian Development Bank.

COST ESTIMATES AND FINANCING PLAN

(\$'000)

Item	Amount
Asian Development Bank^a	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	605.0
ii. National consultant	136.0
b. International travel	78.0
c. Reports and translation	8.0
2. Equipment ^b	50.0
3. Workshops, training, meetings, seminars, and conferences ^c	48.0
4. Miscellaneous administration and support costs ^d	5.0
5. Contingencies	70.0
Total	1,000.0

Note: The technical assistance (TA) is estimated to cost \$1,100,000, of which contributions from the Asian Development Bank (ADB) are presented in the table above. The government will provide counterpart support in the form of counterpart salaries, office space and supplies, access to information and data, local administration, knowledge generation, monitoring and reporting services, and other in-kind contributions. The value of government contribution is estimated to account for 9.1% of the total TA cost.

^a Financed by ADB's Technical Assistance Special Fund (TASF-Others).

^b Includes computers, printers, and software licenses. The equipment purchased under the TA will be handed over to the executing agency upon completion of TA activities.

^c Includes overseas study tour, training workshops, and meetings, with honorarium and travel costs for resource persons and facilitators, participants' travel costs, travel costs for ADB staff acting as resource persons and/or speakers, as well as costs of representation during the events.

^d Includes data support, communication, printing, and other miscellaneous costs.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The Power Sector Reform Program technical assistance (TA) will engage an international consulting firm for 48 person-months of consulting services (24 person-months of international consulting inputs and 24 person-months of national consulting inputs) following the Asian Development Bank's Guidelines on the Use of Consultants (2013, as amended from time to time). The consultants will work as a team to deliver the following outputs:

- (i) viable project financing models to develop greenfield projects;
- (ii) conceptual design, detailed design, and implementation plan of the mechanism to ensure long-term adequate electricity supply;
- (iii) framework to determine the amount to be procured through different approaches; and mechanisms in the power development plan (PDP) planning process;
- (iv) operational guidelines for adequate supply mechanism;
- (v) Viet Nam wholesale electricity market's (VWEM's) contract for difference (CFD) contract model and allocation mechanism;
- (vi) regulation on prudential requirements and tax treatments for the power market;
- (vii) operational guidelines for contract arrangements, including contract auction;
- (viii) updated relevant decisions or circulars;
- (ix) training, workshops, and study tours; and
- (x) TA inception, interim, progress, and final report.

A. International Project Consultants (24 person-months total)

2. **Power sector reform specialist and team leader** (8 person-months, intermittent). The consultant will be responsible for managing the TA team's activities and schedule to deliver the outputs (para. 1). The consultant will work across all outputs to improve the build–operate–transfer (BOT) arrangement to be compatible with the VWEM market arrangement. The consultant will review and advise the PDP process, BOT procurement, and capacity mechanism to balance between ensuring investment and having market-driven investment to ensure long-term adequate electricity supply. The consultant will develop operation guidelines for an alternative adequate supply mechanism and develop the conceptual design, detailed design, and implementation plan in discussion with the Government of Viet Nam's Ministry of Industry and Trade (MOIT). The consultant will organize training, workshops, and study tours on subjects identified by the government. The consultant will assist the MOIT to make policy decisions on power sector reform and provide advice in day-to-day tasks as needed. The consultant should have extensive knowledge and experience in power sector reform, power sector planning and regulation, public–private partnership (PPP) development, and electricity wholesale market development. The consultant should also have strong report writing and organizational skills.

3. **Legal specialist** (5 person-months, intermittent). The consultant will review all legal documents used for BOT and Viet Nam competitive generation market and propose alternative contracting models and VWEM CFD forms based on international project finance principles and the VWEM design and rules. The consultant will review and suggest prequalification criteria, request for proposal elements, standard model agreements, and project contracts. The consultant should have relevant education, professional accreditation, and at least 10 years' work experience as a legal counsel for international project finance and electricity CFD contracts. Experience in international standard project finance documentation in power sector PPP projects is required, and familiarity with international competitive bidding (ICB) for PPP projects is preferred.

4. **Project finance specialist** (5 person-months, intermittent). The consultant will review and advise all financial aspects of BOT and CFD contracts as well as government budgetary, subsidy, liability, contingent liability, and other fiscal risk exposures inherent to PPP contracts and the capacity mechanism. The consultant will work with the government to build government capacity to identify and monitor these risks and will develop recommendations for a management framework. The consultant will propose a viable project financing model, a financial assessment, and liability monitoring tools. The consultant will also review and develop regulations related to power market prudential requirements and tax treatments. The consultant should have a relevant degree in finance; professional certification, such as chartered accountant, chartered professional accountant, or chartered financial analyst; and at least 8 years' work experience in national public finance management planning, budgeting, and debt management practices, as well as in PPP project finance.

5. **Capacity mechanism specialist** (3 person-months, intermittent). The consultant will review the World Bank-supported study on the capacity adequacy mechanism. The consultant will also review other possible mechanisms, including competitive tendering within the PDP, various forms of capacity mechanisms, and a combination of both, and will assist the MOIT in developing the conceptual design, detailed design, and implementation plan of the appropriate mechanism in the context of power sector reform. The consultant should have a relevant degree and at least 8 years' work experience in power sector reform, power market design, and various capacity mechanisms.

6. **Vesting contract specialist** (3 person-months, intermittent). The consultant will review Viet Nam competitive generation market CFD contracts and develop the methodology to properly allocate CFD contracts among power corporations considering the power purchase cost and transmission charges. The consultant will propose VWEM contract arrangements and allocation mechanisms and develop operational guidelines for contract arrangements, including contract auction. The consultant should have a relevant degree and at least 8 years' work experience with power market design and development, and vesting contract allocations.

B. National Project Consultants (24 persons-months total)

7. **Power sector expert** (6 person-months, intermittent). The consultant will advise the team on technical aspects of preparing requests for qualification, requests for proposal ICB documentation—including determining government technical priorities, specifications, and performance standards—and VWEM CFD contracts. The consultant will also provide insights on Viet Nam's power sector operation and governance in view of the transition to a market-oriented system. As part of collecting information and data, the consultant will conduct interview surveys and meetings with power sector stakeholders, including the government ministries and regulator, power utilities, investors, and consumer groups. The consultant should have a relevant engineering degree and at least 15 years' work experience in developing, designing, tendering, and/or implementing power generation projects. It is preferred the consultant also have a good understanding on power market development, experience with ICB for PPP projects, and familiarity with project finance.

8. **Legal advisor** (5 person-months, intermittent). The consultant will advise the team regarding compliance with and adaptation to national laws, regulations, rules, and policies to balance international standards with national compliance, as well as with any other assistance required. The consultant should have relevant legal education, professional accreditation, and at least 10 years' work experience providing legal advice in Viet Nam. Strong preference will be given to candidates with extensive experience in power sector and PPP projects. Mixed

experience in advising the private sector in developing contracts and the government in developing law or policy is preferred.

9. **Financial specialist** (5 person-months, intermittent). The consultant will support the team by advising on domestic commercial financing, national accounting standards, prudential requirements, tax treatments, and related national laws, regulations, rules, and policies, and by providing any other assistance required. The consultant should have a relevant degree in finance, professional accreditation, and at least 10 years' work experience providing legal advice in a finance function within Viet Nam's government and/or private sector. Strong preference will be given to candidates with extensive experience in power sector and PPP projects.

10. **Project analyst** (8 person-months, intermittent). The consultant will support the team by conducting background research, undertaking analysis, and maintaining a reference material database. The consultant will manage logistics and administration for meetings, workshops, training programs, and study tours, and will coordinate and communicate with the government, development partners, private sector, and civil society, as well as support outreach and communication activities, support intrateam communication, prepare final presentations of graphics and tables, and finalize PowerPoint presentations for workshops and training programs. The consultant will preferably have a graduate degree, prior experience in power sector reform, at least 3 years' academic research experience, and at least 1 year of international professional experience.