



## Viet Nam: Establishing the Wholesale Electricity Market

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|---------------------------------------|---|-----------------|
| Project Name                          | Establishing the Wholesale Electricity Market                                     |                 |
| Project Number                        | 48328-001   |                 |
| Country                               | Viet Nam  |                 |
| Project Status                        | Active  |                 |
| Project Type / Modality of Assistance | Technical Assistance  |                 |
| Source of Funding / Amount            | <b>TA 8851-VIE: Establishing the Wholesale Electricity Market</b>                 |                 |
|                                       | Technical Assistance Special Fund   | US\$ 750,000.00 |
| Strategic Agendas                     | Inclusive economic growth   |                 |
| Drivers of Change                     | Governance and capacity development<br>Partnerships<br>Private sector development |                 |
| Sector / Subsector                    | <b>Energy</b> - Energy sector development and institutional reform                |                 |
| Gender Equity and Mainstreaming       | No gender elements  |                 |

## Description

Energy is one of ADB's priority sectors of engagement in Viet Nam. CPS indicates that the energy sector operations will focus on reform and market development to meet electricity demand with reliable, environmentally sustainable supply. The activities of the TA, to be executed by the TA consultants, are as follows:

Activity 1: Basic and advanced trainings on generic wholesale market mechanisms, Consultations with ERAV and key power sector players revealed that potential market participants lack the understanding of a wholesale electricity market. The TA consultants will organize two workshops (basic and advanced courses) to lecture on the mechanisms of a generic wholesale electricity market based on international experience. Participants to the workshop include the Power Corporations, NLDC (SMO), GENCOs, NPT, EPTC and prospective renewable energy investors, large consumers and wholesalers. This activity envisages an overseas study tour to a country in the region (limited to ADB's member countries) which has a functioning wholesale electricity market (e.g. Singapore, Australia). Participants are expected to be from Power Corporations, NLDC (SMO) and ERAV. The TA consultants will research and summarize the characteristics and the status of wholesale markets in the potential study tour destinations, propose a destination, and make logistical arrangements. If deemed necessary, the TA consultants will accompany the study tour.

Activity 2: Recommendation on new functions and critical requirements of Power Corporations and NLDC (SMO) for the VWEM.

Sub-Activity 2-1: Assessment of the draft VWEM design, market rules and legal and regulatory framework. AFD is recruiting experts to prepare the detailed design of the VWEM, and other development partners are envisaged to provide support to draft the market rules and the legal and regulatory framework. The TA consultants will review the drafts in detail, and will organize (i) a workshop to widely disseminate the VWEM mechanism to the same participants to the Activity 1 workshop, and (ii) workshop(s) to provide detailed explanation on the functions and responsibilities of the Power Corporations and NLDC (SMO) under VWEM. The TA consultants will take note of the feedbacks obtained during the workshops, and present them to ERAV for their consideration.

Sub-Activity 2-2: Recommendation on new functions and critical requirements of Power Corporations and NLDC (SMO). Based on the review of the VWEM design, etc. and discussions in Activity 2-1, the TA consultants will prepare, separately for the Power Corporations and NLDC (SMO), recommendations on modifications to their charter, objective (mission), business registration, legal status, functions, business model, financing, budgeting, staffing, information and communication technology (ICT) hardware and software (see Activity 3 for details), retrenchment, training requirement, etc. The recommendation will also include action plans and cost estimates to implement the recommended solutions. It is expected that the TA consultants are already familiar with the current structure of the power sector in Viet Nam. The TA consultants will organize a workshop to present the draft recommendations on the reorganization, seek feedback which should be incorporated in the final recommendations.

Activity 3: Review the current ICT infrastructure of Power Corporations and NLDC (SMO), and recommendation for upgrading ICT infrastructure for the VWEM. The TA consultants will review the current ICT infrastructure of Power Corporations and NLDC (SMO), including: supervisory control and data acquisition (SCADA) and energy management (EMS) systems, SCADA and demand management systems, metering system, software/tools for managing operation of distribution network, etc. The TA consultants will assess the adaptation of the current system with the VWEM's requirements, especially in the aspects of collecting and transferring real-time operational data, collecting and transferring metering data, controlling and operating grid's elements. Based on these outcomes, the TA consultants will provide recommendation for upgrading the current system in order to fully meet the requirements of the VWEM operation. In addition the consultants will monitor their implementation and provide further recommendations.

The impact of the TA is that national electricity growths are met sustainably through deregulation. Performance indicators by 2020 are (i) Electricity supply increases to 329.4 TWh; (ii) Eligible large customers purchase electricity at unregulated market prices; (iii) Retail electricity tariff for small customers reflects market-based wholesale prices. An additional performance indicator beyond 2020 is that pilot competitive electricity retail market is implemented by 2021.

The outcome of the TA is that the competitive electricity wholesale electricity market is fully established. Performance indicators (i) at least 3-5% of electricity purchased by Power Corporations is traded in the market by 2016; (ii) existing power purchase agreements (PPA) of the power plants (excluding build-own-transfer [BOT] projects) with EPTC are transferred to the Power Corporations by 2017; (iii) new wholesalers are registered by 2017; and (iv) bulk supply tariff for the Power Corporations is abolished by 2017.

The outputs of the TA are: (i) Power Corporations effectively participates in the wholesale electricity market; and (ii) SMO is established and functional.

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Project Rationale and Linkage to Country/Regional Strategy

Since enacting the Electricity Law in 2005, the Government of Viet Nam has demonstrated strong commitment in creating a competitive electricity market to attain the following purposes: (i) To step by step develop a competitive electricity market in a stable manner, eliminate subsidy for the power industry, and increase the electricity consumers' right to select electricity suppliers; (ii) To attract investment from all economic sectors inside and outside the country into electricity-related activities, and gradually reduce the state investment in the power industry; (iii) To raise efficiency of production and business activities of the power industry, and reduce the pressure of increasing electricity price; (iv) To ensure the stable and reliable supply of electricity with higher quality; and (v) To ensure sustainable development of the power industry.

As a first step, the Electricity Regulatory Authority of Vietnam (ERAV) was established in 2005. In 2006, the road map to establish the electricity market was approved by the Prime Minister which stipulates to develop the electricity market in three phases: (i) Phase 1\_competitive generation market until 2014; (ii) Phase 2\_pilot competitive wholesale market from 2015, and full implementation from 2017; and (iii) Phase 3\_competitive retail market from 2021.

In line with this road map, the restructuring of the power sector was initiated in 2006 by restructuring Vietnam Electricity (EVN) from a vertically integrated utility into a holding company, and establishing the National Load Dispatch Center (NLDC) and the Electric Power Trading Company (EPTC; the single-buyer) under EVN. Subsequently, the transmission function was unbundled as the National Power Transmission Corporation (NPT) in 2008.

Phase 1 of the road map \_ the Vietnam Competitive Generation Market (VCGM) \_ was launched in July 2012 with the legal unbundling of EVN's generation function into three Power Generation Corporations (GENCOs). Currently 102 power plants with a total installed capacity of 26,901 megawatts (MW) participate in the VWGM which is designed as a mandatory cost-based pool market with day-ahead bidding.

During the early stages of sector reform between 1995 and 2009, ADB has supported the reform through six technical assistances which was the basis for the Electricity Law of 2005. Currently ADB is implementing TA 8203-VIE: Electricity Transmission Pricing Review in the Context of Power Sector Restructuring in Viet Nam which focuses on reviewing the transmission wheeling charges payable to NPT.

The World Bank provided support to ERAV to develop the conceptual design of Phase 2 of the road map \_ Viet Nam Wholesale Electricity Market (VWEM) \_ which was completed in 2012. Based on this work, ERAV is to receive support from AFD to develop the detailed design of VWEM, while US DoS and the World Bank are also preparing to provide support to monitor and improve the VCGM as well as to establish the market rules and the legal and regulatory frameworks for the implementation of VWEM. ADB is also in the process of recruiting two resident advisors under TA 7262- VIE: Capacity Building of Renewable Energy Development to support ERAV make informed decisions on the design and implementation of the VWEM.

Despite these interventions to develop the VWEM, there is a lack of attention paid to preparing the market players to effectively participate in the proposed VWEM. The proposed TA focuses on building the capacity of the main market participants, particularly the distribution companies (Power Corporations) and the System and Market Operator (SMO) which is expected to be developed out of the existing NLDC, while basic support will also be provided to other market participants including GENCOs, NPT, EPTC, and other market entrants such as renewable energy investors and potential wholesalers. The expected changes to the functions and responsibilities of the market participants are summarized below.

**Power Corporations.** The Power Corporations currently purchase electricity from EVN at assigned transfer prices called the Bulk Supply Tariffs (BST) and sell the electricity to the end-users at nationally regulated tariffs. In the VWEM, the Power Corporations will initially purchase 3-5% of its electricity on the spot market, while the remainder will be purchased at BST. Gradually, the volume purchased based on BST will be reduced to zero, and the Power Corporations will only either purchase electricity in the spot market or through PPAs which they will conclude with the power plants, and compete with other wholesalers. Under the VWEM, the Power Corporations will become network service providers. Therefore, the distribution and retail functions need to be separated to ensure non-discriminatory access to the distribution network by all network users.

**SMO.** The SMO will be established based on the NLDC. Apart from its system operation (i.e. load dispatch) function, the SMO will need to manage the market. This will include new responsibilities such as operating the sales and purchase of electricity, facilitating market settlements, and developing and reconciling energy accounts and monetary accounts.

**Other participants.** The changes to the functions of the existing entities in the power sector \_ GENCOs, NPT and EPTC \_ are expected to be limited, but contractual relationships with other participants will change. In addition, new entrants to the VWEM such as prospective renewable energy investors, wholesalers and large customers will need to understand the mechanism of the VWEM in order to participate. Without new participants, the reform's objective to attract investment into electricity-related activities and gradually reduce the state investment in the power industry cannot be met.

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| Impact | National electricity growths are met sustainably through deregulation. |
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**Project Outcome**

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|-------------------------|---|
| Description of Outcome  | Competitive wholesale electricity market is fully established.  |
| Progress Toward Outcome | The development and implementation of capacity building plan and technical studies for the VWEM underway. |

**Implementation Progress**

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|---|--|
| Description of Project Outputs                                      | Increased capacity and knowledge of relevant power agencies to operationalize effective wholesale electricity market mechanisms<br>Power Corporations and NLDC (SMO) effectively participate in the VWEM   |
| Status of Implementation Progress (Outputs, Activities, and Issues) | The international firm is engaged with inputs of 19.5 person months. The individual consultant is engaged to deliver 6.5 person months to assist the ERAV with vesting contract allocation. Consultants commenced their services and inception mission completed in May 2016. Consultant team is identifying capacity gaps in market participants and carrying out technical studies on wholesale market design assessment, water valuation model, ICT requirements for VWEM, among others. Two training programs were organized in 2016 for VWEM market participants such as power corporations, generation companies, and system and market operator (NLDC). Most of assessments were drafted towards the finalization by Q3 2017. |
| Geographical Location   |  |

## Summary of Environmental and Social Aspects

Environmental Aspects

Involuntary Resettlement

Indigenous Peoples

### Stakeholder Communication, Participation, and Consultation

|                               |   |
|-------------------------------|---|
| During Project Design         | Stakeholders consulted during the design of the TA  |
| During Project Implementation | Stakeholder meetings carried out during the inception mission in May 2016. Water valuation workshop is expected to be held in May 2017. |

## Business Opportunities

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|---------------------|--|
| Consulting Services | International consulting firm engaged for 19.5 person months. International individual consultant was engaged for 6.5 person months. |
| Procurement         | Some equipment will be procured through the consulting firm contract.  |

## Responsible Staff

|                            |  |
|----------------------------|--|
| Responsible ADB Officer    | Lee, Hyunjung  |
| Responsible ADB Department | Southeast Asia Department  |
| Responsible ADB Division   | Energy Division, SERD  |
| Executing Agencies         | <i>Electricity Regulatory Authority of Vietnam<br/>D11 Khuat Duy Tien Street,<br/>Thanh Xuan District,<br/>Ho Noi, Vietnam</i> |

## Timetable

|                     |             |
|---------------------|-------------|
| Concept Clearance   | 05 Nov 2014 |
| Fact Finding        | -           |
| MRM                 | -           |
| Approval            | 19 Dec 2014 |
| Last Review Mission | -           |
| Last PDS Update     | 27 Mar 2017 |

## TA 8851-VIE

| Milestones                    |              |                  |             |                          |        |
|-------------------------------|--------------|------------------|-------------|--------------------------|--------|
| Approval                      | Signing Date | Effectivity Date | Closing     |                          |        |
|                               |              |                  | Original    | Revised                  | Actual |
| 19 Dec 2014                   | 25 Mar 2015  | 25 Mar 2015      | 31 Dec 2017 | 31 Mar 2018              | -      |
| Financing Plan/TA Utilization |              |                  |             | Cumulative Disbursements |        |

| ADB        | Cofinancing | Counterpart |               |                 |        | Total      | Date        | Amount     |
|------------|-------------|-------------|---------------|-----------------|--------|------------|-------------|------------|
|            |             | Gov         | Beneficiaries | Project Sponsor | Others |            |             |            |
| 750,000.00 | 0.00        | 30,000.00   | 0.00          | 0.00            | 0.00   | 780,000.00 | 19 Dec 2014 | 186,359.95 |

Project Page

<https://www.adb.org/projects/48328-001/main>

Request for Information

<http://www.adb.org/forms/request-information-form?subject=48328-001>

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