

**PROGRAM INFORMATION DOCUMENT (PID)
APPRAISAL STAGE**

Report No.: 114955

Project Name	Fourth Power Sector Reform Development Policy Operation
Region	East Asia Pacific
Sector	Energy and Extractives
Project ID	P157722
Borrower(s)	Socialist Republic of Vietnam
Implementing Agency	Ministry of Industry and Trade (MOIT)
Date PID Prepared	May 11, 2017
Estimated Date of Appraisal Authorization	June 2017
Estimated Date of Board Approval	October 2017

1. Key development issues and rationale for Bank involvement

The government's development priorities are set out in its Socio-Economic Development Strategy (SEDS) 2011–2020. The SEDS has a long-term growth strategy focused on structural reforms, environmental sustainability, social equity, and macroeconomic stability to minimize vulnerability to shocks. It identifies three areas of 'strategic breakthrough', namely: (a) improved market institutions and administrative reforms for a more competitive and equitable business environment; (b) development of human resources and investment in science and technology; and (c) improved infrastructure. Policy actions and programs to achieve the SEDS's development goals are further elaborated in two Socio-Economic Develop Plans (SEDPs), covering the years 2011–2015 and 2016–2020. The structural reform agenda specified by the SEDP puts emphasis on the restructuring of three areas of economic governance; financial system; State Owned Enterprises (SOEs); and public investment.

Complementing the SEDS, the government in 2013 also adopted a master plan for restructuring of the economy. On SOEs, the government has prioritized the restructuring of state economic groups and general corporations, acceleration of equitization and the divestment of SOEs from the nonstrategic sectors, strengthening corporate governance including information disclosure, and improving the regulatory environment for SOEs. The electricity sector is one of the largest and most strategic areas in the economy where the SEDS and economic restructuring is being implemented. The impetus for power sector reform was the need to put the electricity sector on a sustainable footing to meet fast-growing demand driven by industrial expansion and increased household access.

Evolution and Government of Vietnam Approach to Power Sector Reform. The overarching guiding principles of the Government of Vietnam (GoV) in relation to power sector development and private sector participation has been to: (i) ensure reliable, safe power system operation and security of supply; and (ii) minimize impacts on electricity tariffs (i.e. macroeconomic spillover effects and distributional impacts). The overall investment program of the power sector is set out in the Revised Power Sector Development Plan (RPSDP) VII approved by PM in March 2016.

Power sector reform began in earnest with the approval of the 2004 Electricity Law. The law provides the guiding framework for developing a competitive electricity market; which requires the unbundling of the sector by breaking up the dominant, vertically integrated, state-owned power utility Electricity Vietnam (EVN). The law also directs electricity tariff reforms to move prices toward cost-reflectiveness in order to attract private investment needed to ensure sustainable sector development, reduce subsidies, and promote demand-side energy efficiency. It mandates the MOIT to govern the energy sector. The Electricity Regulatory Authority of Vietnam (ERAV) was established in 2005 as an entity under the MOIT, and is responsible for the issuing of licenses; review of the power system's expansion plans and

financing needs; preparation, issuance, and enforcement of regulations; and review and recommendation of tariffs. In 2006, the Prime Minister (PM) issued a ‘20-year Roadmap’ for gradually developing a competitive electricity market in three stages: (i) competitive generation market; (ii) competitive wholesale market; and (iii) competitive retail market. The roadmap sets out a deliberately careful approach to rolling out reform—designing each stage of the process as a pilot to test, improve, and learn, followed by full implementation. This approach reflected the high priority given by the GoV to gradual, consensus-driven change to avoid negative shocks to the economy and households.

The unbundling of EVN started in 2008 with the creation of separate transmission and distribution businesses (i.e. National Transmission Company; Distribution Companies; National Load Dispatch Center; Electricity Power Trading Company). In 2012, EVN unbundled its generation business into 3 separate Gencos. In that year, the Vietnam Competitive Generation Market (VCGM) became fully operational and EVN was established as the Single Buyer.

Sizeable Private Sector Participation in Power Generation: The GoV’s step-by-step approach for market reform and investments comprised the developing of relevant policies and regulations and in parallel conduct public sector projects and gradually open to private sector participation. The speed and size of private sector involvement in power generation technologies was driven by cost and tariff implications. Overall private sector participation in power generation is sizeable and between 1990-2016 financed 12.1 GW of generation (coal, hydropower, wind, gas) totaling US\$8.1 billion. In 2016, 31% of total installed generation capacity (39GW) is private sector financed. The World Bank Group provided a combination of advisory and financial instruments to crowd in private sector in hydropower and gas. Direct financing support to private sector was provided to the development of 715 MW Phu My 2.2 and 720 MW Phu My 3 gas plants and the development of 340 MW of small & medium sized hydropower totaling 1.5 GW.

Vietnam Power Sector Development – A Success Story: The overall strategy of the GoV to develop the power sector has been effective being one of the most successful development stories globally (high electricity access, low network losses, high collection rates, high system reliability, high share of renewables in the energy mix, high technically/operational capacity of EVN; sizeable private sector participation in generation; comparatively low tariffs).

Promoting the Clean Energy Transition: Vietnam has been extremely successful in exploring its domestic gas, coal and hydropower reserves and currently has a high share of renewables (i.e. hydropower) in the overall energy mix. However, domestic energy resources are limited and Vietnam will increasingly rely on imported energy sources to meet its fast growing domestic energy needs. Imported coal will play a particularly important source of future power generation and the revised power system plan. However, since Vietnam’s climate change targets and the Nationally Determined Contributions (NDC) adopted at the 21st Conference of the Parties of the United Nations Framework Convention on Climate Change (COP21) the Government has set ambitious solar and wind generation targets of 18 GW by 2030 aiming to reduce its future reliance on imported coal. In its Low Carbon Development Strategy for Vietnam, the Bank further estimates that up to 12 GW of new coal fired generation could be avoided through demand side energy efficiency measures. Additional hydropower imports from Laos PDR could further reduce the need to install 5 GW of coal fired generation. Implementing Vietnam’s solar, wind, energy efficiency and power trading potential can substantially contribute to achieving the country’s climate change targets. This specific reform program is estimated to reduce GHG emissions by some 156 million tons CO₂, between 2017 and 2030 (see Annex 6).

In addition to this policy series, the Bank has a comprehensive technical and financial package to support the Government’s objectives to develop non-hydropower RE, EE, natural gas and the financial viability of EVN and the power sector building on an already strong and long-term relationship on energy in Vietnam. The Bank’s energy program, key pillars and activities to support

public & private sector to ensure the sustainable, affordable and reliable development of the power sector in line with GoV polices is set out in table below. In parallel, a CC/GG DPO series will have specific indicators and triggers on EE and RE to promote policy reform and operationalize advisory services under Pillars II and III.

Table 1: WBG Program to Support Power Sector Development

Pillar I: Financial Viability of EVN
<ul style="list-style-type: none"> - EVN Credit Rating/Bond Issuance - EVN Corporate/Financial Strategy up to 2030 - EVN Credit Enhancement for renewable energy development - EVN Debt Restructuring - EVN Tariff and Energy Conservation Communication Strategy - EVN Gender Action Plan - ERAV Transparency of Processes for Determination of Electricity Tariffs
Pillar II: Energy Efficiency (Supply & Demand)
<ul style="list-style-type: none"> - Distribution Efficiency Project - Transmission Efficiency Project - EE Credit Line for Industry - EE Risk Sharing Facility for Industry - Scale Up ESCOs - Clean Production & EE Project - Transfer from Voluntary to Mandatory EE Policy Regime
Pillar III: Renewable Energy (Solar Scale Up)
<ul style="list-style-type: none"> - National Solar PV Development Strategy up to 2030 - Rooftop Solar PV Strategy for Danang and HCMC - Solar Resource Measurement - EVN Pilot Solar PV Project - Design of Pilot Auction Scheme - IFC (direct or indirect) Investment (equity) in Solar
Pillar III: Renewable Energy (Hydropower)
<ul style="list-style-type: none"> - Renewable Energy Development Project - 260 MW Trung Son Hydropower Project - Renewables Mapping - Laos – Vietnam Interconnector - Pumped Storage Development Strategy - IFC Investment on hydropower platforms - EVN Divestiture Strategy - EVN Sustainable Hydropower Protocol
Pillar IV: Competitive Power and Gas Markets
<ul style="list-style-type: none"> - Competitive Power Market Activities covered under this Operation - Gas Pricing and Gas Market Liberalization Study - Phasing out of Fuel Subsidies Study - WBG LNG regasification, gas-to-power, upstream gas project

2. Proposed objective(s)

The PSRDPO Program Development Objective (PDO): The PDO for the programmatic series (PSRDPO 4, 5, and 6) is to enhance competition, transparency and efficiency in the power sector, and improve quality of electricity services to final consumers.

The proposed operation aims to support the implementation of the ongoing reform, by helping to adopt key measures in the main areas affecting the sustainable development of the power sector of Vietnam. This condition can be characterized as the permanent provision of good quality electricity services to all consumers in full compliance with the applicable regulations, within a framework of environmental sustainability, operational efficiency and financial viability of service providers in all segments of the electricity supply chain.

Like in any other developing country with electricity demand growing at high rates, achieving the sustainable development of the power sector requires to address in a coordinated and systematic

manner three main dimensions: (i) supply adequacy, ensuring the permanent availability of generation installed capacity needed to attend increasing demand, built and operated at least cost for the country; (ii) operational efficiency of service providers in all segments of the electricity supply chain, to ensure least cost provision of good quality electricity services to all consumers countrywide; and (iii) financial viability of the power sector, by applying tariffs to end users that promote efficiency in their electricity consumption, while at the same time allow efficient service providers to get revenues allowing them to cover costs of service provision plus an adequate remuneration on invested equity.

The proposed PSRDPO series aims to support the next phase of the GoV’s power sector reform by addressing in a coordinated manner the three above-described key dimensions, through a set of actions organized in four policy areas described below.

3. Preliminary description

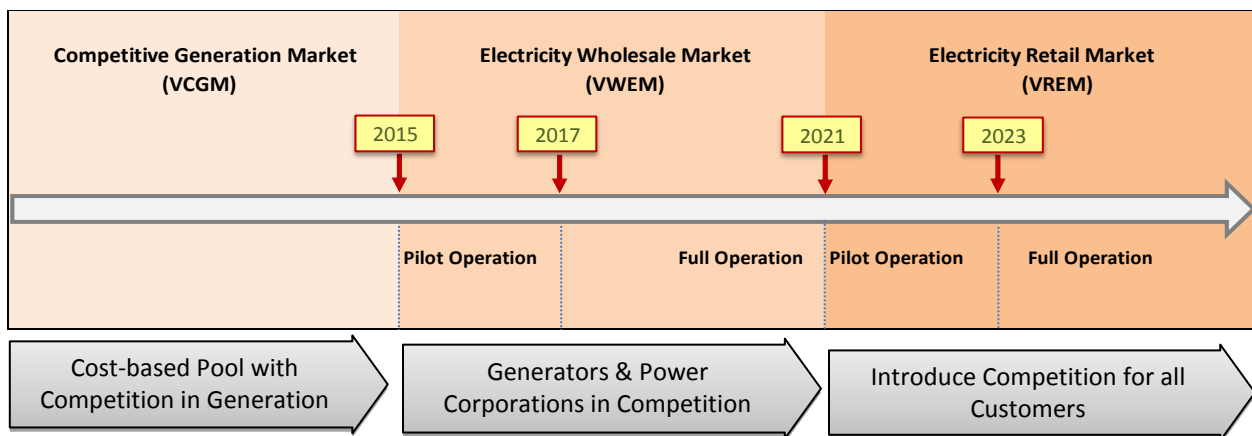
The PSRDPO 4 will support four policy areas with distinctive overall objectives set out below.

Policy Area A: Development of a Competitive Power Market: Actions in this policy area aim to: (i) improve efficiency in the generation segment of the electricity supply chain through competition; and (ii) assure timely availability of the generation capacity needed to attend demand growing at high rates, at least-cost for the country.

The Vietnam Competitive Generation Market (VCGM), the first stage of the reform agenda in generation, became fully operational in 2012, with EVN affiliate generation companies (Gencos) and independent power producers (IPPs) competing in a power pool to sell to the single buyer—the Electricity Power Trading Company (EPTC), a fully owned subsidiary under EVN. In 2013, the government updated the roadmap aiming to start the pilot phase of the second stage (the wholesale electricity market - VWEM) in 2015 and for the VWEM to be fully operational in 2021.

As electricity demand is expected to continue to grow at high rates for several years to come, the gradual implementation of a competitive market needs to be complemented by measures to permanently ensure supply adequacy at least cost. Proposed actions in this policy area specifically address this aspect, by supporting the design and implementation of mechanisms for competitive procurement of new generation capacity defined in the planning process conducted by the GoV, in order to ensure effective implementation of those projects at least cost for the country.

Figure 1. Electricity Sector Reform Roadmap



Policy Area B: Power Sector Restructuring: Actions in this policy area aim to support the establishment of an institutional structure for the power sector fully compatible with the development of a competitive wholesale market. At present, EVN has unbundled and corporatized its affiliate operating companies in all segments: three generation companies (Gencos), the National Power Transmission

Company (NPT), and five distribution companies (“Power Corporations”; PCs). The next phase of the reform agenda as expressed by a 2017 PM Decision aims to raise the effectiveness of generation, improve transparency, fairness and strong competition, ensure that market structure support effective wholesale competition and raise the effectiveness of regulation. EVN generation assets will be equitized by 2018 with EVN holding at least 51% shareholding. After two years of equitization the GoV will assess operational results aiming to continue to divest fully the state’s share in power generation. The NPT and the PCs will remain under full public ownership until 2025 with the latter being equitized starting in 2021. From 2021 onwards, the PCs will conduct separate accounting for its distribution and retail businesses to prepare for retail competition. The National Load Dispatch Center (NLDC) will conduct the function of an independent System and Market Operator (SMO) and will be converted as an independent accounting unit of EVN by 2021. By 2025, the SMO will be fully separated from EVN but remain in Government control.

Policy Area C: Electricity Tariff Reform: Actions in this policy area aim to support the systematic transparent application of tariff regulations ensuring to service providers (NPT and PCs) allowed revenues sufficient to recover costs incurred for efficient service provision. The tariff reform agenda started in 2009, and at present, the ERAV has established regulations that allow to set full cost recovery generation, transmission and distribution tariffs, as well as to annually adjust regulated prices to reflect changes in uncontrollable costs (e.g. fuel prices, exchange rate). Vulnerable and poor electricity consumers are protected through an increasing block tariff (IBT) structure, with a subsidized lifeline block. Further developments are needed to consolidate the tariff reform, by improving some of the existing regulations, and ensuring systematic transparent application of all regulations. On the one side, existing procedures need to be improved to set average tariff levels allowing recovery of total costs of efficient service provision. On the other side, all tariff regulations and procedures must be systematically applied in the future, to ensure achievement and sustainability in time of the financial viability of all efficient agents and the power sector as a whole. Proposed actions in this policy area provide support to the Government’s efforts to address those two aspects, by improving the current tariff regime to promote efficiency in operations, as well as enhancing transparency in systematic application of processes for the determination and adjustment of electricity tariffs.

Policy Area D: Improving Demand Side Response (DSR) and Quality of Service (QoS) in electricity supply to final consumers: Actions in this policy area aim to: (i) put in place effective mechanisms to promote response by consumers to pricing signals reflecting cost of service provision, and optimize their usage patterns; and (ii) establish procedures to measure and monitor QoS service provided to consumers in a systematic and transparent manner. The Vietnam Energy Efficiency Program (VEEP), approved in 2006, has created a comprehensive set of government-led activities to improve demand-side energy efficiency and energy conservation. In particular, in order to promote efficient use of electricity, the GoV has introduced time of use electricity tariffs for medium and large users, accounting for more than 50 percent of electricity consumption in Vietnam. Another important ongoing initiative is the preparation and implementation of a roadmap including specific DSR programs for all PCs. Proposed actions in this policy area will support the effective implementation of those programs.

Regulations regarding quality in electricity supply to consumers are being currently updated to reflect best practices. Proposed actions will support the effective application of those regulations, through implementation of mechanisms to systematically measure and monitor QoS.

4. Environment Aspects

The implementation of the programmatic policy operation series is not likely to have significant negative impacts on Vietnam’s environment, forests, or other natural resources.

Development of a Competitive Power Market: Creating competition in natural monopoly sectors such as electricity benefits economic welfare and development of a country. The overall objective of an

efficient and effective power sector is to provide reliable, affordable and sustainable energy to people and support economic growth and development. Competition promotes higher efficiency, lower electricity supply costs and better quality of service. It also brings in co-benefits relating to lower pollution as well as reduced net GHG emissions through improvement of operational and efficiency gains, when compared to non-competitive markets.

In a competitive power market, coal fired plants which are efficient will benefit and run more frequently; inefficient (and often higher polluting ones using low value coal) will be shut down and exit the market. 70% of future coal generation in Vietnam will come from imported high quality coal able to be burnt in critical and supercritical thermal plants. This expensive resource will compete with domestic gas, imported hydro, wind, solar and low quality/low efficiency domestic coal. In the long run, a competitive power market and expensive imported coal will contribute to making renewable energy such as solar PV and wind, gas, EE investments, imported hydro become more cost competitive; thus having a positive impact on pollution reduction and future GHG reductions in Vietnam.

Power Sector Restructuring: A key component of the power sector reform agenda is to equitize and divest EVN's generation assets to create multiple generators and a level playing field for competition in power generation, whose costs account for the lion share of end user tariffs. The Gencos, which hold both hydropower and thermal assets, will benefit from the equitization/divestitures as capital and expertise will come in to run the generation business more efficiently. From an environmental perspective, Gencos currently run old, inefficient, and more polluting, coal fired power generation units which urgently need upgrade and rehabilitation works to improve their reliability and efficiency. Implementation of these works brought about through the power sector restructuring will imply lowered pollution levels and reduced net GHG emissions.

Electricity Tariff Reform: Cost reflective tariff levels and elimination of subsidies to consumers able to pay cost reflective rates will provide economic signals to reduce consumption and for the efficient use of electricity (e.g. energy efficiency investments), leading to lower pollution and emissions and higher energy savings.

Demand Side Energy Efficiency and Quality of Service: Demand side energy efficiency measures by PCs promote lower peak demand, thereby reducing higher peak transmission and distribution losses and use of less efficient generation. Demand response programs and performance based tariff setting of PCs promote reduction of network losses and lower energy consumption.

Greenhouse Gas Emissions Impacts: The reform will affect Vietnam's GHG emissions in two ways: in the short term by changing the operation of the existing system, and in the medium to long term by changing the timing, type and efficiency of future generation capacity additions. The aggregate impact of the reform program on GHG emissions is unambiguously positive. Although there are some aspects of the reforms that will result in small increases in emissions (associated with more generation due to elimination of power cuts), these are far outweighed by the significant GHG emissions reductions associated with tariff reform, the efficiency gains of competitive markets, increased renewable energy generation, and demand side interventions. Overall, the reform program is estimated to reduce GHG emissions by some 155 million tons CO₂ (between 2017 and 2030) or 5.5% of the emissions of the no-reform counterfactual.

5. *Tentative financing*

Source: IBRD

	170(\$m.)
Total	170

6. *Contact point*

Franz Gerner, Lead Energy Specialist