

# A FINANCIAL RECOVERY PLAN FOR VIETNAM ELECTRICITY (EVN)

WITH IMPLICATIONS FOR  
VIETNAM'S POWER  
SECTOR

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First printing: February 2016

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## ACKNOWLEDGEMENTS

This report was prepared by a task team led by Joel Maweni (Energy Adviser, Team Leader and Principal Author) and comprising Jyoti Bisbey (Infrastructure Specialist and Co-Author), Hung Van Tien (Senior Energy Specialist and Co-Team Leader), Franz Gerner (Energy Sector Coordinator), Lien Thi Bich Nguyen (Program Assistant), Hien Minh Vu (Program Assistant) and Hoa Chau Nguyen (Program Assistant). AF Mercados Energy Markets International (EMI) of Spain provided consulting services for data collection and analysis, research and financial modelling, and participated in developing the Financial Recovery Plan. Chris Marquardt provided invaluable editorial support.

This work was conducted under the guidance of Victoria Kwakwa (Country Director for Vietnam). Jennifer Sara, Julia Fraser and Keiko Sato provided valuable comments and guidance. Mohinder Gulati, Katharina Gassner, Artur Kochnakyan and Raihan Elahi served as peer reviewers and provided substantive quality enhancement support.

The task team wishes to acknowledge the support and cooperation extended to it by representatives of EVN and its power subsidiaries, who provided detailed data regarding their operations and finances and devoted substantial amounts of time in discussion with the task team and AF Mercados EMI.

The team further extends its gratitude to officials of the government of Vietnam's Ministries of Finance (MOF), Industry and Trade (MOIT), and Planning and Investment (MPI), as well as to the Office of Government, the Institute of Energy (IE), and the Electricity Regulatory Authority of Vietnam (ERAV) for the contributions they made to the study through sharing data and participating in workshops and numerous discussions with the task team and AF Mercados EMI.

Further gratitude is owed to development partners and members of the private sector for sharing information and insights on both key energy sector development challenges and possible solutions.

Finally, the task team wishes to acknowledge the generous financial support for the analytical work leading to the preparation of the report from the Asia Sustainable and Alternative Energy Program (ASTAE) and the government of Australia, through the Department of Foreign Affairs and Trade.

Support for this report came from the ASTAE. ASTAE's mandate is to scale up the use of sustainable energy options in Asia to reduce poverty and protect the environment by promoting renewable energy, energy efficiency, and access to energy. ASTAE is funded by the Netherlands, Sweden, and the United Kingdom.



## FOREWORD

For decades, the double-digit growth in Vietnam's electricity demand has continued unabated, driven by increasing urbanization, industrialization and growing affluence. Successfully meeting this electricity demand has been an important driver of Vietnam's development. At the same time, it has required substantial levels of investment in power sector infrastructure and these are estimated to further substantially increase, to about US\$7.5 billion per year during 2014–20.

Vietnam has relied on a predominantly public sector model for financing power infrastructure expansion needs. This financing model has come under strain as demand and investment needs have continued to grow unabated. The maintenance of retail electricity prices below cost recovery levels over many years had the impact of depressing the sector's cash flows, leaving EVN with no option but to increase debt in order to meet capital expenditure needs. Potential private sector investors, concerned about low rates of return on equity and the sector's ability to pay for electricity generated, have been reluctant to invest. Besides the rapid demand growth and the large investment expenditure needs, EVN's financial performance has been adversely affected by risk factors including hydrology, fuel price hikes, and currency risks.

Based on a comprehensive analysis of the key drivers of EVN's financial performance, with underlying assumptions on demand growth, investment expenditures, and scenarios of the trajectory of electricity prices to full cost recovery, the report makes the following key recommendations:

- The proposed Financial Recovery Plan should be viewed as an integrated set of measures that are interdependent and mutually reinforcing. For example, improving reliability of power supply by reducing outages or improving voltage conditions will boost customers' willingness to pay the full cost of service for electricity supply. Increases in tariffs will in turn enable EVN to invest in system improvements that will contribute to improved reliability of power supply.
- An electricity tariff adjustment path to reach full cost recovery in the next three to four years is critical for sustainable power supply in Vietnam. If gradually

phased over this period, the increases (about 40 percent in aggregate) will not cause hardships to low-income households whose expenditures on electricity will be in the range of 2-4 percent of total household expenditure—that is, below the international benchmark of 10 percent.

- The report identifies critical non-tariff components of the financial recovery plan, including: (a) improvements in operational efficiency; (b) a new investment strategy; (c) developing a sustainable debt financing strategy; and (d) improving risk management.

For Vietnam to be able to meet its future power needs reliably and efficiently, it is crucial that EVN's financial health be restored and sustained. Implementation of the recommended Financial Recovery Plan would help to achieve this goal. EVN will need to take the lead for achieving its financial sustainability, but the recovery plan will also require actions from other government agencies. At the same time, EVN's financial sustainability is critical for the successful implementation of the government's broader power sector reform roadmap and for the next step of creating the Wholesale Electricity Market.

We hope the reader will get useful insights from this report. We look forward to further supporting EVN and the government for the benefit of a financially sustainable power sector that can meet the demands of Vietnam's society and its growing economy.

Victoria Kwakwa

Country Director for Vietnam

## ACRONYMS

ADB	Asian Development Bank	IPO	initial public offering
BOT	build, own and transfer	IPP	independent power producer
BST	bulk supply tariff	JPY	Japanese Yen
CAGR	compound annual growth rate	KPI	key performance indicator
CAPEX	capital expenditure	kV	kilovolt
CCGT	combined cycle gas turbine	LOLE	loss-of-load expectation
CF	cash flow	MIGA	Multilateral Investment Guarantee Agency
CPI	consumer price index	MPI	Ministry of Planning and Investment
D:E	debt: equity	MMBTU	million British thermal units
DSCR	debt service coverage ratio	MOF	Ministry of Finance
EPTC	electricity power trading company (acts a single buyer)	MOIT	Ministry of Industry and Trade
ERAV	Electricity Regulatory Authority of Vietnam	MOLISA	Ministry of Labor, Invalids, and Social Affairs
ETEF	Electricity Tariff Equalization Fund	MOU	memorandum of understanding
EVN Holding	consolidated EVN group	NLDC	National Load and Dispatch Center (acts as system operator)
EVN	Vietnam Electricity	O&M	operation and maintenance
EVNCPC	Central Power Corporation (distribution company)	OPEX	operational expenditure
EVNHCMPC	Ho Chi Minh Power Corporation (distribution company)	PC	power company
EVNHNPC	Hanoi Power Corporation (distribution company)	PDPAT	Power Development Planning Assist Tool
EVNNPC	Northern Power Corporation (distribution company)	PetroVietnam	Vietnam National Oil and Gas Group
EVNNPT	National Power Transmission Corporation (transmission company)	PM	prime minister
EVNSPC	Southern Power Corporation (distribution company)	PMP	Power Master Plan
FERFA	foreign exchange rate fluctuation adjustment	PPA	power purchase agreement
FRP	Financial Recovery Plan	PSALM	Power Sector Assets and Liabilities Management Corporation
FSA	fuel supply agreement	SAIFI	system average interruption frequency index
FX OR forex	foreign exchange	SFR	self-financing ratio
GDP	gross domestic product	SMB	small and medium business
genco	generation company	SOE	state-owned enterprise
HPP	hydropower plant	SPPA	standard power purchase agreement
IBT	increasing block tariff	TNO	transmission national operator
ICSID	International Center for the Settlement of Investment Disputes	TPP	thermal power plant
IE	Institute of Energy	TSO	transmission system operator
IFI	international financial institution	USD	U.S. dollar
IFRS	International Financial Reporting Standards	VAT	value added tax
IPART	Independent Pricing and Regulatory Tribunal	VBF	Vietnam Business Forum
		Vinacomin	Vietnam National Coal and Minerals Industry Group
		VND	Vietnamese dong
		VNEEP	Vietnam National Energy Efficiency Program



## GLOSSARY

**Build, own and transfer (BOT):** Public infrastructure model under which the private sector designs and builds the infrastructure; finances its construction; and owns, operates, and maintains it over a period.

**Bulk supply tariff (BST):** Tariff charged to distribution companies for bulk supply of power by EVN Corporate.

**Creditworthiness:** An evaluation of customer's or trading partner's financial accountability.

**Currency devaluation:** Decrease in a currency's value with respect to other currencies.

**Debt management:** Implementation of a strategy to support a debtor to reduce his level of indebtedness or handle the debt in a better way over a fixed period. This might require restructuring the debt or assisting the debtor to repay liabilities more effectively.

**Demand risk:** Possible hazard for business entities commonly based on an incorrect demand forecast which does not match the consumer demand. This can lead to the under- or over-production of goods and consequently the loss of profits due to storage costs or the lost opportunity cost for sales.

**Divestiture:** The selling of assets by a regulated utility as part of deregulation. In almost all cases, divestiture refers to generation assets being sold, for example, power plants.

**EVN Corporate:** Includes dependent power plants, the Electricity Power Trading Company (EPTC), the National Load and Dispatch Center (NLDC), and corporate services.

**Financial recovery:** A period of increasing financial stability indicating the end of a financial downturn. In this case, it would mean the achievement of financial sustainability.

**Financial sustainability:** Financial conditions which EVN should achieve to operate as an ongoing and viable business.

**Foreign exchange risk:** The possibility of the loss of value of an asset which is not held in the base currency of the business entity due to adverse movement in the exchange rate.

**Hedge:** The initiation of a transaction in a physical or financial market to reduce risk.

**Independent power producer (IPP):** A private company

which owns facilities to generate electric power for sale to utilities and end users.

**Load factor:** An indicator of how steady an end user electrical load is. It is measured by dividing the average power by the peak power over a period.

**Losses:** Energy lost or wasted during the transmission of energy from the generator to the end user.

**Mitigation strategies:** The assessment of probable current and future risks by combining the probability of occurrence and the severity of outcome for an identified project risk and applying actions to alleviate the negative outcomes. Such action might be to assume, avoid, control, transfer, or monitor the implicit risk.

**Non-core assets:** Assets which became dispensable for a company as they do not make a significant contribution to the core operations of the business. These assets are often sold to pay off outstanding debts.

**Partial privatization:** The constrained hand over of publicly operated enterprises to the private sector or the contract operation of a utility or service by a private entity.

**Power corporation (PC):** Name given to distribution companies in Vietnam.

**Power purchase agreement (PPA):** Contract between the electricity generator as seller and a buyer.

**Private sector responsiveness:** The degree of sensitivity of private entities on external alterations within the business environment, such as amendments in policies and regulations, which might directly or indirectly have an impact on their commercial activities.

**Stabilization fund:** Instrument implemented to protect consumers from high fluctuating revenue streams earned by the utility and hence avoid sharp variations in power prices.

**Standard power purchase agreement (SPPA):** Format of power purchase agreement widely adopted in Vietnam for short-term sale contracts.

**Ton:** Tonnes (1,000 kg).

**Unbundling:** Breaking up the three components of electricity supply: generation, transmission, and distribution.

**Exchange rate:** VND 21,000 = USD 1



This report sets forth details of a financial recovery plan designed to help Vietnam Electricity (EVN), and the Vietnamese power sector more generally, to address a series of complex and interconnected challenges over the next 3 to 10 years. These challenges are operational and institutional as well as financial and will lead to fundamental changes over time in the way that EVN and the overall power sector operate.

The investment requirements of the power sector lie at the heart of these challenges. Electricity demand is expected to double between 2014 and 2020. The investment requirements of about US\$7.5 billion per year are far in excess of what has been achieved in the recent past (US\$2.6<sup>1</sup> billion in 2012, with a small increase in 2013). Moreover, the Vietnam government does not wish to make further direct investments in the sector—while state-owned companies such as the Vietnam National Oil and Gas Group (PetroVietnam) and the Vietnam National Coal and Minerals Industry Group (Vinacomin), which have invested in power projects in the past, are similarly unlikely to invest. As a result, about 50 percent of total investment (or over 65 percent of investment in new generation capacity) from now on is expected to come from the private sector through independent power producers (IPPs) and other private sector participation arrangements. This implies a far more rapid approval and development process for IPP projects than has ever been achieved before. The expected investment in IPPs over the period 2014 to 2020 is in excess of US\$25 billion, implying a new generation project being approved and implemented every three to six months.

Even with this enhanced level of private investment, however, EVN will still have a substantial investment program, amounting to US\$28 billion up to 2020. Investment on this scale will be difficult to finance and will not be achievable without adequate tariffs.

EVN incurred significant financial losses in both 2010 and 2011. This was due to a variety of factors, chiefly: (a) the low rainfall that caused a temporary shift away from lower cost hydropower towards more-expensive thermal power production; (b) a substantial devaluation in the Vietnamese dong (VND) against EVN's major borrowing currencies (the Japanese yen and the U.S. dollar); and (c) tariffs that did

not cover the full costs of power provision. Although EVN's financial results in 2012 were much better, the reasons for the improvement—in particular, better rainfall—were largely outside EVN's control. While EVN continued to be profitable in 2013, results were not as good as in 2012.

EVN has thus remained susceptible to a return to financial difficulties in the absence of mechanisms to manage the risks to which it is most vulnerable (hydrology, foreign exchange, high levels of debt financing, demand forecasting, and changes in input costs) and in the absence of a clear government commitment to an adjustment path for tariffs towards full cost recovery.

The report concludes that a crucial determinant of EVN's financial weakness is the level of power sector tariffs, which is currently below cost. The report further recognizes the need for a recovery strategy that includes both tariff and non-tariff measures to help restore and sustain EVN's financial health. The non-tariff measures should complement, not substitute tariff increases.

### 1.1. THE FINANCIAL RECOVERY PLAN: FIVE PILLARS

The authors, therefore, have recommended a package of tariff and non-tariff measures that, taken together, make up the proposed financial recovery plan for EVN. The package comprises the following five pillars: (i) improving operational efficiency; (ii) designing and implementing a new investment strategy; (iii) developing a sustainable debt financing strategy; (iv) implementing efficient cost-based tariffs; and (v) improving risk management.

The non-tariff component of the financial recovery plan will complement the tariff increases not only through its financial impact, but also by making tariff increases more acceptable to consumers and more feasible to implement. Table O-1, which summarizes the five pillars, shows the relative importance of individual measures in terms of impact on the sector's financial performance while also showing the degree of control that EVN has on each.

#### *1. Improving Operational Efficiency*

After analyzing possible ways to improve EVN's performance to reduce costs and increase efficiency and

<sup>1</sup> This amount excludes private sector investment, for which there are no reliable figures. However, the consultant has estimated that in recent years private sector investment was unlikely to have exceeded US\$1 billion in any one year.

TABLE O-1: RECOMMENDATIONS FOR IMPROVING EVN'S FINANCES

PILLAR	IMPACT ON POWER SECTOR FINANCE	LEVEL OF EVN CONTROL OVER PILLAR
<b>I. IMPROVING OPERATIONAL EFFICIENCY</b>		
Appoint implementation leader	Low	High
Technical management	Low	High
Complete unbundling	Low	Medium
Non-core assets divestiture	Low	High
Better governance	Medium	Medium
Rehabilitate assets	Low	High
Improve service quality	Low	High
<b>II. DESIGNING AND IMPLEMENTING A NEW INVESTMENT STRATEGY</b>		
Encouraging private sector participation	High	Low
Maintaining dialogue with private sector	Medium	Low
Improving capacity in MOIT	Medium	Low
Adopting dynamic approach to planning	High	Low
Genco divestiture	High	Medium
<b>III. DEVELOPING A SUSTAINABLE DEBT MANAGEMENT STRATEGY</b>		
Improving capital structure	Medium	Low
<b>IV. IMPLEMENTING EFFICIENT COST-BASED TARIFFS</b>		
Implement cost-based tariff, including a reasonable return on capital	High	Low
Implement full pass-through of non-manageable costs	High	Low
<b>V. IMPROVING RISK MANAGEMENT</b>		
Stabilization fund	High	Medium
Foreign exchange risks management	Medium	Medium
Planning management	Low	Low

Source: Authors' analysis

productivity, the report concluded that EVN is generally well managed and meets international benchmarks in several key performance areas such as system losses, collection of receivables, and operational and maintenance costs. Nonetheless, some limited and gradual efficiency gains are achievable through the following actions:

- Enhancing technical management to reduce the incidents and duration of outages and to speed up project implementation, thereby realizing investment benefits much more quickly and reducing levels of work in progress on EVN's balance sheet;
- Completing the unbundling of the generation companies (gencos) to promote arms'-length commercial relationships among EVN's companies;
- Divesting EVN of its non-core assets and improving senior management attention to EVN's core business;
- Rehabilitating some generation assets to improve utilization of installed capacity; and

- Improving corporate governance through such measures as appointing private, nonexecutive directors to the gencos and all EVN subsidiaries, accompanied by agreed programs of improvements and the development of modern financial management systems (including a framework for measuring and monitoring key performance indicators).

While it is clear that these measures alone will not be adequate to resolve EVN's financial performance challenges, they do represent an important component of the proposed financial recovery plan.

## 2. Designing and Implementing a New Investment Strategy

The authors identified two crucial weaknesses in the approach to power sector investment planning that need to be addressed to improve the chances of better meeting future demand. First, while the 10-year process for sector planning produces a robust and comprehensive master plan, dynamic factors such as variances in demand require

more frequent (both annual and five-year) updates and corresponding changes in implementation plans. Either the Ministry of Industry and Trade (MOIT) or EVN's National Power Transmission Corporation (EVNNPT) could be tasked to lead the annual updating process.

Second, future planning for generation rests on the crucial assumption that the private sector will be willing to fund more than 65 percent of the required investment. This is far from certain, and dialogue with the private sector needs to be intensified to (a) identify the obstacles that investors see to their increased participation in the power sector and (b) determine steps to address their concerns. In parallel, this dialogue can examine the willingness of the private sector to invest in EVN's existing generation assets. One step that will be necessary is to establish an independent system and market operator so as to reassure private sector owners about the fairness of the power market.

### *3. Developing a sustainable debt financing strategy*

EVN's recent financial condition has been fragile due in part to its highly leveraged capital structure (high debt-equity ratios). Much of the available equity has been created through a huge asset revaluation that was implemented in 2012; and the composition of its debt includes a high component of foreign currency denominated loans on which foreign exchange losses are incurred when the VND depreciates against the loan currencies. In addition the average term of the debt is short relative to EVN's asset base.

With its capital expenditure needs estimated at US\$28 billion, or almost US\$4 billion per year for the period 2014-2020, and with a need to refinance some of its existing borrowings every year EVN is likely to further increase its borrowing in the coming years. Therefore, in the absence of sustained tariff adjustments EVN's financial condition would likely remain fragile. Even with constant tariff adjustments the prospects of financial fragility would likely remain due to uncertainties posed by the various risks that EVN faces (hydrology, debt structure, foreign exchange, and demand forecasting).

The authors have, therefore, recommend that EVN should develop a sustainable financing strategy for its operations which comprises: (a) enhancing its capital structure to increase its equity by generating regular profits, which are retained in the business; (b) seeking government injection of additional equity to the extent that requisite tariff adjustments, including rapid tariff responses to hikes in costs of operations (due to hydrology risks, exchange rate fluctuations, etc.) are not feasible; (c) seeking lenders agreements to extend the repayment terms of some of its loans; and (d) seeking to obtain long-term funds directly from capital markets, perhaps, with the Government providing underwriting guarantees in the initial bond offerings.

### *4. Implementing Efficient Cost-based Tariffs*

The authors recommend that the Vietnamese government adopt a clear tariff adjustment path towards full cost recovery within three to four years. If tariffs are maintained at current levels in real terms—that is, adjusted at the rate of inflation (assumed at 7 percent per annum)—EVN's financial position will deteriorate. It will be barely able to cover operating costs over the next 4 years to 2018. Under that scenario, EVN will be unable to contribute any funds from its internal resources to finance capital investment expenditures. Its debt will become unsustainable.

The authors have estimated that between now and 2018, retail tariffs increases of about 10 percent per annum (well within the 10 percent maximum allowed under Circular 2165 each semester), consistently implemented every year, would enable EVN to achieve full cost recovery and financial sustainability by 2018. Thereafter, the need for price increases would be reduced and adjustments at the rate of inflation to maintain tariffs in real terms would be adequate. A slower adjustment path to achieve full cost recovery a year later (by 2019) would require a moderately slower annual tariff increase of about 8 percent.

Although the analysis of the affordability and fiscal impacts of the tariff increases required to achieve EVN's financial sustainability indicates that there should be no obstacles to increases on this scale, in practice there may well be difficulties. There is bound to be an adverse reaction from both households and industrial consumers to the prospect of higher electricity prices. However, adverse reactions can be addressed by: (a) information campaigns, both centrally and from distribution companies, to explain the case for price increases and the impact on quality of service; (b) extension of cash transfer coverage by the Ministry of Labor, Invalids, and Social Affairs (MOLISA); and (c) improved energy conservation and demand management initiatives.

### *5. Improving Risk Management*

EVN faces a number of risks to its financial sustainability over which it has limited or no control. As the company grows in size, so will the financial significance of those risks. The authors have identified several significant risks concerning hydrology, foreign exchange, high debt capital structures, demand forecasting, and changes in input costs. Hydrology risks arise, because EVN's performance varies substantially between wet and dry years. A stabilization fund could be created, managed by EVN, to which EVN could appropriate up to 2 percent of revenues in wet years, with funds being drawn down in dry years. Implementation of this recommendation may need regulatory support, government approval, and a bank or other financial institution to stand behind the scheme. As further backup measures, EVN should consider (a) rapid responses through tariffs during dry years and (b) evaluating the possibility of insuring hydrology risks on international markets.

Foreign exchange risks arise primarily because much of EVN's debt is and will continue to be denominated in foreign currency. EVN suffers significant losses when the VND is devalued. Various measures are recommended to address this risk, including rapid tariff responses to devaluations and consideration of the government accepting foreign exchange risks on loans for a fee. Looking at the longer term, there may be scope for increased local borrowing and hedging risks in local forward currency markets when these emerge as capital markets develop. Development partners such as the World Bank and Asian Development Bank (ADB) may be able to help the government develop forward foreign exchange markets (allowing for currency purchases at a specified future date at an agreed exchange rate), but this will also require further moves toward a market economy in Vietnam to encourage private sector participation.

Two further risks to EVN's financial performance are the impact of exchange rate depreciation and unexpected sudden price hikes for inputs such as imported fuel. These can be managed under the current regulatory system provided that the pass-through mechanisms are implemented in a timely manner and through the value chain from generation to retail consumers. The report also recommends addressing the other two risks related to variations in demand forecasts and EVN's high debt capital structures—as described under pillars 2 and 3, respectively.

## 1.2. FINANCIAL RECOVERY PLAN: A FRAMEWORK FOR IMPLEMENTATION

A framework for implementation of EVN's Financial Recovery Plan (FRP) is proposed that comprises (a) a set of specific time-bound actions to be carried out under each strategy pillar and (b) designations of responsibilities for implementation. Figure O-1 provides a visual summary of the FRP's top priorities.

The framework for implementing the FRP has implications not only for EVN, but also for all the main governmental participants in the power sector, who will all need to work together to implement the strategy and achieve effective results. The four main governmental parties with implementation and support roles are as follows:

### *Vietnam Electricity*

As the main direct beneficiary, Vietnam Electricity will need to lead and coordinate the implementation plan. Specifically, it is advised to take the lead by appointing a senior official with responsibility for plan implementation. This should be someone with the ability to network effectively with the other key actors in the Ministry of Finance (MOF), the Ministry of Industry and Trade (MOIT), and the Electricity Regulatory Authority of Vietnam (ERAV).

EVN also needs to demonstrate leadership and commitment by taking forward aspects of the plan over which it has substantial control, even in cases where the financial impact

of its actions is likely to be small. For example, EVN should take the lead in creating an internal stabilization fund within EVN and in seeking confirmation from the ERAV that it meets the requirements of tariff directives. It should also make haste in carrying out the divestiture of non-core assets required by the Prime Minister as well as committing to improving labor productivity in all its businesses. Most importantly, EVN should take the lead in developing a communications strategy for the plan. This communications strategy needs to explain the logic of the case for higher tariffs along with other salient aspects of EVN's performance and the need for investment to improve service standards.

### *Ministry of Finance*

The Ministry of Finance has three roles in relation to EVN, as shareholder, lender and key institution responsible for the development of Vietnam's financial sector. Taken together, these three roles are crucial for the successful mobilization of sustainable financing for investment. There are a number of possibilities. First, the MOF could change the terms on which it on-lends funds to EVN—by, for example, accepting the foreign exchange risk on loans from development partners and converting some of its existing loans into equity. However, because these sorts of changes are against MOF policy, they are unlikely to be acceptable. Second, it could inject fresh equity into the company. This is also against government policy, however, and the hope is that additional equity can be raised from the private sector. To achieve this, it is vital that EVN should be permitted to make satisfactory profits. This is currently not the policy of the MOF, which does not expect EVN to make any return on equity. A satisfactory rate of return on equity is vital to EVN in two ways: it will both enable the company to self-finance some capital investment and encourage private investors to take a stake in the company.

The limited level of development of Vietnam's financial sector is a major source of difficulty for EVN in that certain financial products, such as long-term bonds and instruments for hedging foreign exchange risks, are simply not available in the same way as they are in many other countries. The development of such products is important for the future success of EVN, and the MOF should assess how it can work with EVN to improve the conditions in local financial markets for the benefit of EVN and the sector more generally.

### *Ministry of Industry and Trade*

The Ministry of Industry and Trade has a critical role to play in attracting additional private finance into the power sector. To do this, it needs to be more active in promoting the need for private finance and in ensuring that the terms for IPPs are sufficient to attract investors. It should be clear about the volume of investment it is hoping to attract from private investors and aim to attract both local and international investors to the sector.

**Electricity Regulatory Authority of Vietnam**

The Electricity Regulatory Authority of Vietnam is a technically competent regulator. However, it does not yet enjoy full independence to regulate the power sector. In future, it will need to demonstrate that it can strike an appropriate balance between the interests of investors and power consumers, and it must be fully independent to achieve this. Over the next few years there will be further challenges for the regulator as the power sector evolves.

For example, it will need to help devise a mechanism for automatic pass-through of costs in retail tariffs and ensure a fair and balanced market for generation plants. These are challenges that the ERAV can feasibly meet, with some additional technical assistance as necessary. In general terms, the ERAV is well qualified to regulate the sector in accordance with the agreed market framework and should be empowered to do so.

FIGURE O-1: FINANCIAL RECOVERY PLAN (TOP PRIORITIES)

Action	1 Year	2 Year	3 Year	4Year	5 Year	Responsible	Support Stakeholders	
Appoint implementation leader	[Green bar from Year 1 to Year 5]					EVN		
<i>Technical management</i>	[Orange bar from Year 1 to Year 5]							
Manage capital expenditure more effectively		[Green bar from Year 2 to Year 3]						
Set KPI for EVN subsidiaries		[Green bar in Year 2]						
Timely review KPIs		[Green bar from Year 2 to Year 5]				EVN	ERAV	
Improve quality of supply (SIAIFI, SAIDI)		[Green bar from Year 2 to Year 4]						
Establish yardstick competition among companies		[Green bar in Year 2]						
<b>Operational Efficiency</b>		[Orange bar from Year 2 to Year 4]						
Complete Unbundling		[Orange bar from Year 2 to Year 4]						
Intensify efforts to complete unbundling of PCs and NPT		[Green bar in Year 2]						
Set bankable PPAs (adjust Circ 41), finalize loan agreements, etc.		[Green bar from Year 2 to Year 3]				EVN	ERAV	
Enforce Circular 46		[Green bar in Year 2]						
Make NLDC fully independent		[Green bar in Year 2]						
Non-core assets divesture		[Green bar in Year 2]				EVN	MOF	
Improve governance		[Orange bar from Year 2 to Year 5]						
Carry out a detail analysis of governance situation		[Green bar in Year 2]						
Improve financial management systems		[Green bar from Year 2 to Year 4]				EVN	Development partners	
Develop performance measurement systems to monitor and evaluate subsidiaries' performance			[Green bar from Year 3 to Year 5]					
Rehabilitate Assets		[Green bar from Year 2 to Year 4]						
<b>New Investment Strategy</b>		[Orange bar from Year 2 to Year 5]						
Encouraging private sector participation		[Orange bar from Year 2 to Year 5]						
Clear project appraisal mechanisms		[Green bar in Year 2]						
Reduction of administrative burden to the maximum extent		[Green bar in Year 2]						
Tender for negotiating prices					[Green bar in Year 5]			
Maintaining dialogue with private sector		[Green bar from Year 2 to Year 5]				EVN	MOIT / Private sector	
Improving capacity in MOIT		[Green bar from Year 2 to Year 4]						
Adopting dynamic approach to planning		[Green bar from Year 2 to Year 5]						
Preparation Genco divestiture (including definition of bankable PPAs, etc.)				[Green bar in Year 4]				
Implementation of Genco divestiture					[Green bar in Year 5]			
<b>Financing Strategy</b>		[Orange bar from Year 2 to Year 4]						
Improve capital structure		[Orange bar from Year 2 to Year 4]						
Extent maturity of existing loans with commercial banks		[Green bar in Year 2]				EVN	MOF/Commercial banks/ Development partners	
Agreement with IFIs and with MOF's support to extent maturities			[Green bar in Year 3]					
<b>Cost-based Tariff</b>			[Green bar from Year 3 to Year 5]					
Implement Cost-based tariff including a reasonable return on capital			[Green bar from Year 3 to Year 5]			EVN	ERAV/MOIT	
Implement full (uncapped) pass-through of non-manageable costs		[Green bar from Year 2 to Year 4]						
<b>Risk Management</b>		[Green bar from Year 2 to Year 3]				EVN	Development partners/MOF	
Stabilization fund		[Green bar from Year 2 to Year 3]						
Foreign exchange risks			[Green bar from Year 3 to Year 4]					

Source: Own analysis



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## 2. SECTOR CONTEXT AND THE NEED FOR A FINANCIAL RECOVERY PLAN FOR EVN

### 2.1. REPORT OBJECTIVE

The objective of this report is to recommend a financial recovery plan for EVN, Vietnam's state-owned power utility, comprising the courses of action that are most likely to lead to a positive outcome for the sector—with investment needs met at a reasonable cost to consumers.

#### 2.1.1. Background

There are many positive aspects to the Vietnam power sector. Access to electricity is almost universal, with over 97 percent of households connected nationwide and over 99 percent in urban areas. Power losses in transmission and distribution are at or close to best-practice international standards. All consumers are billed regularly and collection rates are almost 100 percent. Operating costs are low by international standards and the costs of investment projects are generally reasonable. Some private generation projects have already been implemented—supplying power to EVN under power purchase agreements (PPAs)—and there is further interest from investors. A good regulatory structure was recently put in place that has the potential to ensure reliable power supplies at competitive tariffs.

However, Vietnam's power sector will also face significant challenges over the next five to ten years. Power demand is increasing rapidly at almost twice the pace of gross domestic product (GDP). This increasing demand, along with a quality of power supply that is not as good as it should be, necessitates significant investment in generation, transmission, and distribution.

Traditionally, most power sector investment has come from the public sector, both through EVN and through investments in power projects by state-owned enterprises (SOEs) in the coal (Vinacomin) and gas (PetroVietnam) sectors. However, EVN has been able to fund its investment program only with difficulty in recent years. It incurred financial losses in 2010 and 2011; and although it was profitable in 2012, it invested only US\$2.6 billion at a time when its investment needs were around US\$5–6 billion per year. In 2013, profits fell slightly and investment increased but was still well below the level of needs.

Moreover, the public sector is unlikely to be able to increase its investment in the power sector given the general thrust of government policy, which requires companies

to confine their activities to their core areas of business. The implementation of the sector's ambitious investment plan is therefore both vital to improved reliability and heavily dependent on significantly greater private sector participation.

The sector's two main challenges in this regard are: (a) the country's new regulatory structure, which is not yet fully implemented; and (b) the fact that tariff increases continue to be subject to government approval. In the recent past, increases have been granted only when EVN was already in financial difficulty and had incurred financial losses.

The future course for the sector is uncertain. With appropriate responses from EVN, the government—in particular, the Ministry of Industry and Trade (MOIT) as the parent ministry—and the private sector, it appears possible for the financial and investment challenges to be met. However, failure to act appropriately could lead to a range of potentially adverse outcomes. In a worst-case scenario, EVN might be unable to meet its financial obligations, in which case responsibility for repayment of its loans would fall on the Ministry of Finance (MOF) as the guarantor of its loans. This scenario would probably be accompanied by major shortfalls in investment, leading to increased levels of supply interruption.

#### 2.1.2. Sources

This report builds on the findings and analyses provided in three previous unpublished reports on EVN done by AF-Mercados: an overall diagnosis of EVN, a financial evaluation and projections report, and a social acceptance assessment. This report refers to them as "Tasks" 1, 2, and 3:

*Task 1, an overall diagnosis of EVN, comprised the following:*

- An overall financial diagnosis of the EVN group and its power subsidiaries;
- A benchmarking of key financial, operational and technical performance indicators;
- An assessment of EVN's Investment Expenditure Program;
- An assessment of the recently created gencos and strategic options for raising equity for generation expansion; and

- A desk review of existing studies on the affordability/fiscal impacts of tariff increases.

Some of the key findings are included in this report and form the basis for the report's recommendations.

*Task 2, a financial evaluation and projections of EVN for 2014–20*, comprised the following:

- A list of assumptions;
- A financial evaluation of EVN Holding and its main subsidiaries, EVN Corporate, the National Power Transmission Corporation (EVNNPT), the five power corporations [PCs], and the three gencos;
- A brief description of the current situation of the companies and their forecast performance under various scenarios;
- A forecast of annual financial statements for each subsidiary and the holding company as well as key financial indicators; and
- Financial models.

The objective was to develop a financial model able to simulate the conditions needed for EVN to achieve financial sustainability—in other words, to operate as an ongoing and viable business. The conditions examined included tariffs, fuel prices, capital expenditure (CAPEX) levels, and operational expenditure (OPEX) efficiency.

*Task 3, a social acceptance assessment*, was designed to assess whether Vietnam's most vulnerable consumers would object to the tariff increase needed to ensure financial sustainability of the country's power sector. The report found that, once the most abrupt tariff adjustment is accomplished, electricity expenses remain around 2 to 4 percent of household expenditures, which is below the acceptable threshold for electricity expenditures. It contains the following:

- A definition of the methodology used to address affordability and data collection;
- An analysis of the existing subsidies in the Vietnam power sector;
- A review of the international and local literature on affordability;
- An analysis of the current tariff structure;
- An identification of affordable tariff levels, divided by customer category (households, small and medium businesses, and industries); and
- Suggestions for potential sustainable mitigation strategies.

## 2.2. VIETNAM'S LEGAL AND REGULATORY FRAMEWORK

Within the government of Vietnam, the main responsibility for the power sector rests with the MOIT and, in particular, its General Directorate of Energy. It is responsible for overall

energy planning and sector policy, including the terms and conditions for private investment in the sector. The MOIT acts as the parent ministry for EVN, the Electricity Regulatory Authority of Vietnam (ERAV), and the Institute of Energy (IE). EVN, the country's principal power utility, has responsibility for power generation, transmission, and distribution. As the country's regulatory agency, ERAV is responsible for establishing and supervising the power market, power planning, tariff regulation, and licensing. The IE undertakes demand forecasting and physical investment planning for the sector and publishes periodic investment plans. The MOIT interacts with various other government departments with interests in the sector including the Office of Government, the MOF, the Ministry of Planning and Investment (MPI), and the Ministry of Natural Resources and Environment.

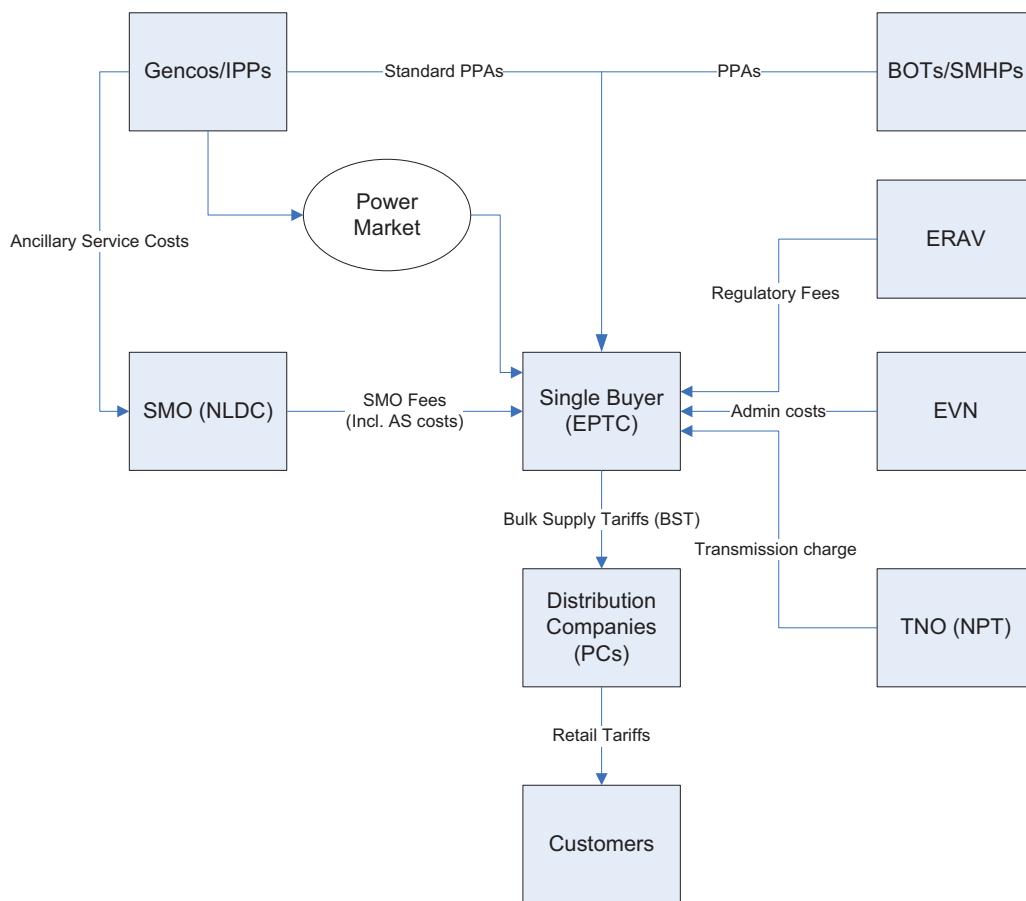
The legal and regulatory framework for the sector is undergoing changes as part of a reform program that began in 2004, and it continues to be a work in progress. The thrust of the program is to transform a state-owned and controlled power sector into a sector that relies far more on market forces, leading ultimately to a competitive retail market. The program's main legal foundations are as follows:

- The Electricity Law, which was approved in 2004 and came into effect in 2005;
- The Power Market Roadmap (Prime Minister's Decision, 2006);
- The establishment of ERAV by PM's Decision, 2006, based on the Electricity Law (2005);
- The Vietnam National Energy Efficiency Program (VNEEP, PM's Decision, 2006); and
- The Energy Efficiency and Conservation Law enacted by the National Assembly in 2010.

These legal documents assign responsibilities and delegate authority to line ministries, the ERAV, and relevant power sector stakeholders to issue policies, regulations, and rules for the program's implementation. In particular, the Electricity Law (2005) was followed by implementation decrees and regulations and tariff-setting approvals drafted by the ERAV and issued by the MOIT through MOIT circulars. Tariff and pricing regulations establish and mandate the principles, responsibilities, methodologies and procedures, and establish the date of effectiveness for implementation.

The Electricity Law (2005) and the PM's Power Market Roadmap (2006) established three phases for the development of competitive power markets in Vietnam. The first phase introduced competition among generators, while retaining a single buyer; in the second phase, a wholesale competitive market (scheduled for 2015–2022) will be introduced wherein generators and wholesalers will compete to sell to the distribution and retail PCs and eligible large customers; and the final phase entails the gradual development of retail competition. To avoid unintended

FIGURE 2.1: STRUCTURE OF VIETNAM'S POWER SECTOR



Source: ERAV.

Note: BOT = build, own and transfer; EPTC = electricity power trading company; IPP = independent power producer; NPT = National Power Transmission; SMHPs = strategic multi-purpose hydropower plants; SMO = System and Market Operator, which is the National Load Dispatch Center (NLDC); TNO = transmission national operator.

negative results, each market phase has been designed with a two-stage approach: an initial pilot to test and improve the market rules and infrastructure, followed by a full commercial operation stage. It is envisaged that tariff mechanisms will be adapted and improved during each power market phase

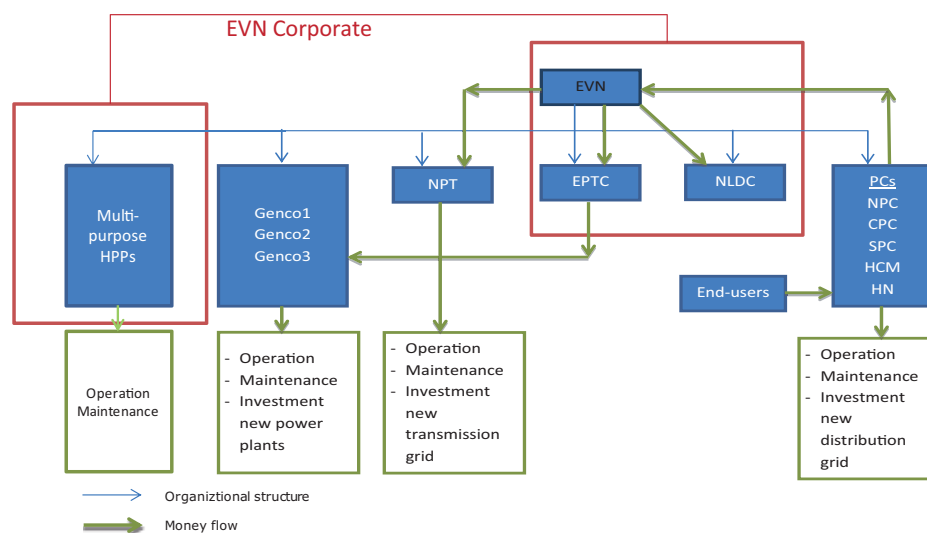
### 2.3. STRUCTURE OF EVN

EVN and its subsidiaries are central to the power sector. The main subsidiaries undertake the key activities of generation, transmission, and distribution. EVN and its subsidiaries collectively control about 66 percent of Vietnam's installed generating capacity. The three generation companies hold most of the capacity, but a number of multipurpose hydropower plants (which provide both power and irrigation)

are owned centrally. The EVNNPT owns and operates the high voltage transmission network (500 kV and 220 kV). The ownership and operation of the distribution (both medium and low voltage) network rests with five PCs.

EVN acts as the single wholesale power purchaser from the generators, and also carries out a number of other central functions. The National Load Dispatch Center (NLDC) is responsible for load dispatch. EVN's headquarters acts as a central treasury for "the group". It also continues to own the multipurpose hydropower plants, which are outside the framework of the three generation companies. Finally, it owns a number of non-core interests in fields such as banking.

SOURCE: ERAVFIGURE 2.2: STRUCTURE OF EVN'S POWER BUSINESS



Source: ERAV  
 Note: HPP = hydropower plant; NPC = Northern Power Corporation; CPC = Central Power Corporation; SPC = Southern Power Corporation; HCMPC = Ho Chi Minh Power Corporation; HNPC = Hanoi Power Corporation.

## 2.4. DEMAND AND SUPPLY

### 2.4.1. Demand

This section analyzes and compares three demand forecasts:

- The forecast used in Vietnam's Power Master Plan for the period 2011-2020 (PMP7), prepared by the IE;
- The unofficial update of PMP7, also prepared by the IE; and
- The independent forecast developed by the consultant for this study.

All three demand forecasts are based on an econometric model that relies on GDP growth as the main explanatory variable to build a simple regression model<sup>2</sup> from historical statistics; thus, all three are comparable methodologically. The main differences are (a) the historical data available (data for 2012 was available for the unofficial update of PMP7 and the work done in this study) and (b) the GDP growth forecasts used to project demand.

The latest demand projections produced by the IE in PMP7 were reviewed to check consistency and adequacy. The trigger for the proposed investment envisaged in PMP7 is the increasing load. The expected annual demand growth rate of 14.1 percent, while very rapid, is not impossible given Vietnam's recent growth rate of 11 percent on average in 2011 and 2012. It is a more conservative rate than the 20 percent average annual growth rate that was anticipated in PMP6 for the period 2006–10. (The actual annual growth rate in that period was 14.3 percent.)

This report analyzes the scenarios, models, and hypotheses

used and the results obtained in various recent projections: PMP6, PMP7, an unofficial update of PMP7, and the new demand forecast prepared for this study. Table 2.1 shows the forecast included in PMP7 in the base scenario.

The latest available information shows that the demand growth for 2011 and 2012 was lower than that forecast in PMP7. The growth forecasts in PMP7 were based on a fast transition toward a highly electricity-intensive economy (for an economy with Vietnam's GDP per capita) and much higher GDP growth rates than those that actually materialized after the slowdown in the economy following the global economic crisis that began in 2008.<sup>3</sup> Since current demand is well below levels forecast in PMP7, in subsequent years demand is unlikely to reach the levels projected in PMP7; for this reason, a new demand forecast (which takes into account the latest yearly consumption data up to 2013)

TABLE 2.1: PMP7 DEMAND FORECAST

	2010	2015	2020	2025	2030
ENERGY (GWH)	87,665	169,821	289,882	430,866	615,205
5-YEAR CAGR		14.1%	11.3%	8.2%	7.4%
MAXIMUM DEMAND (MW)	16,060	30,803	52,040	77,084	110,215
5-YEAR CAGR		13.9%	11.1%	8.2%	7.4%

Source: Own elaboration based on PMP7.  
 Note: CAGR = compound annual growth rate.

<sup>2</sup> The only difference is that the methodology used in PMP7, while considering disaggregated GDP growth by sector (primary, commercial, and industrial), is based on a global GDP growth rate in each case.

was prepared for this report.<sup>4</sup> The new demand forecast is for an average growth rate of 11 percent until 2014 and 12 percent thereafter, against the 14.1 percent used in PMP7. An updated demand forecast from an unofficial amendment

of PMP7 (see Updated PMP7 Forecast\_Op1 in Figure 2.3) broadly matches the forecast prepared for this report.

The breakdown of the demand is depicted in Figure 2.4.

FIGURE 2.3: UPDATED ELECTRICITY DEMAND FORECAST

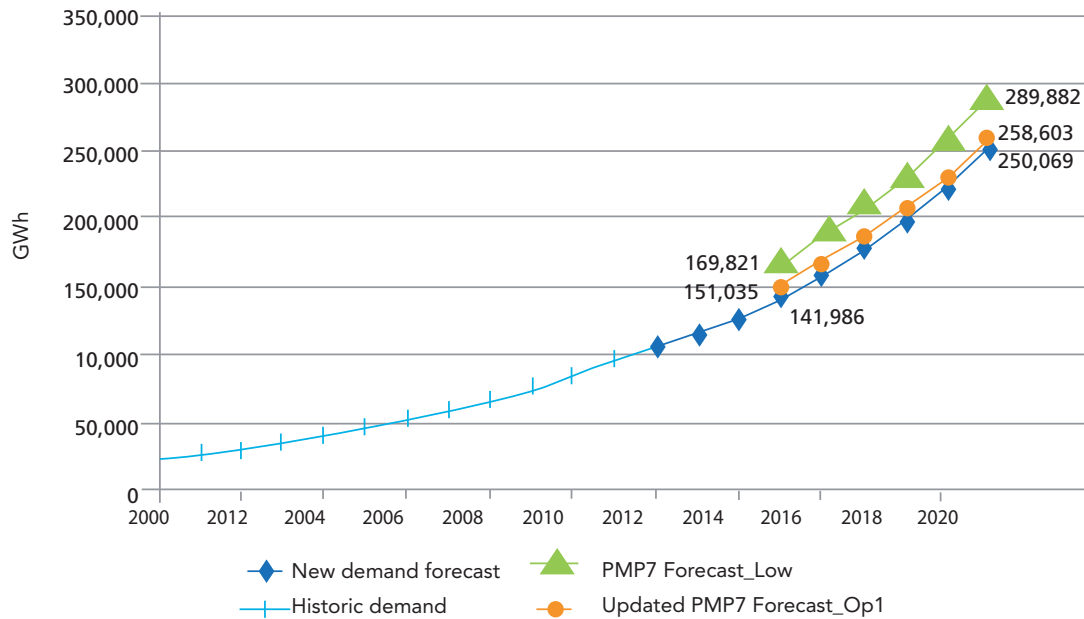
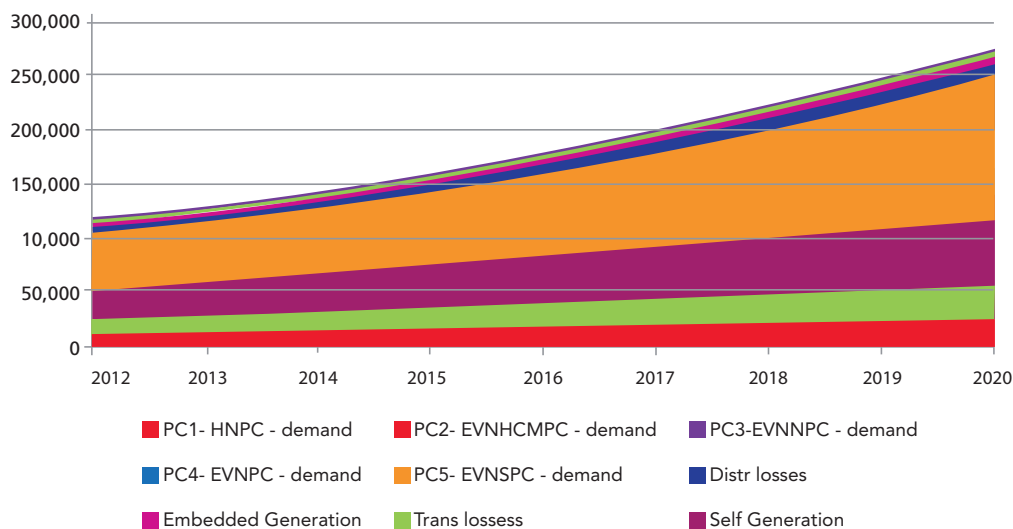


FIGURE 2.4: ENERGY DEMAND FORECAST USED IN THE FINANCIAL FORECASTING MODEL (GWH)



Source: Based on PMP7, information provided by the PCs and own analysis.

<sup>3</sup> Vietnam felt the impact of this crisis some years later: in 2011 and 2012, PMP7 assumed 7.5 percent GDP growth, when the actual GDP growth was 6.0 percent in 2011 and 5.0 percent in 2012.

<sup>4</sup> The forecast was obtained by applying a simple regression technique to the commercial electricity demand to identify its relationship with GDP. The regression equation links the natural logarithm of the demand and the natural logarithm of GDP with a correlation coefficient (R2) of 0.997. The forecast period for this analysis is limited to 2020 (seven years) and we consider the regression approach a reasonable one for short-term forecasts.

The demand assessment is critical to the financial projections for EVN because demand changes are the key variable that could significantly change the requirements for new investment in the coming years. EVN must respond to changes in demand by adjusting its investment program, increasing investment if demand grows faster than expected, and reducing investment if demand grows more slowly. In practice, EVN does make adjustments of this sort; however, in principle EVN is bound by the investment program set out in the PMP.

#### 2.4.2. Supply

Vietnam's power sector must respond to demand increases by developing the power supply infrastructure. PMP7 projected the expansion of generation assets using two pieces of software: STRATEGIST, a simulation tool for optimizing dynamic planning problems; and Power Development Planning Assist Tool (PDPAT), a program that calculates and simulates generation mix. PDPAT served to calculate the country's ability to meet load demand using all safety criteria—that is, to calculate the amount of reserve needed for each interconnected subsystem, as well as for the whole power system, to ensure power supply security, given the amount of supply interruptions expected for a given period (in other words, the loss-of-load expectation, or LOLE). If one of the subsystems lacks the reserve capacity to meet the load demand in a region, the amount of energy and capacity required from the nearby subsystem will be calculated. The LOLE criterion used in PMP7 was 24 hours of expected blackouts per year, which is equivalent to a 99.7 percent reliability rate. A combination of hydrological scenarios was built using a combination of four different rain levels to ascertain what amount of reserve capacity could be put aside.

The various generation capacity forecasts are shown in Table 2.2.

As already mentioned, the assumptions used for this forecast were significantly different due to the slowdown of the global market economy. Lately, the unofficial update of PMP7 by the IE would mean having total installed generation capacity in the amount of 60 GW in 2020, which is 11 GW below the initial forecast of PMP7. This generation forecast is in line with the values used for the financial projections. To meet forecast power demand, installed generation capacity would need to more than double from 29 GW to 64 GW. Table 2.3 shows the new capacity projected to enter the system in coming years, according to the dispatch information and expected capacity additions provided by EVN for 2014–20. The new facilities will be based mostly on hydropower and coal resources.

The evolution of the generation mix is shown in Figure 2.5. Coal-based facilities will be the predominant source of power generation in 2020, while hydropower plants (HPPs) will reduce their share to 30 percent (in 2013 almost 43 percent of the installed capacity was hydropower). The penetration of other renewable energies is negligible. About 53 percent of the total new additions will be installed in the southern region, followed by 40 percent in the northern region and the balance in the central region.

TABLE 2.2: INSTALLED CAPACITY, 2013–20 (MW)

	2013	2014	2015	2016	2017	2018	2019	2020
PMP7	29,485	33,761	38,343	44,646	51,083	60,04	67,605	71,586
UPDATE OF PMP7	29,485	33,761	37,543	42,525	46,812	51,472	54,597	60,317
EVN MOST RECENT PLAN	29,026	35,242	39,265	44,515	46,932	50,314	53,914	64,423

Source: Own elaboration based on PMP7, unofficial update of PMP7 and EVN's updated CAPEX program. Note: n.a. = Not available.

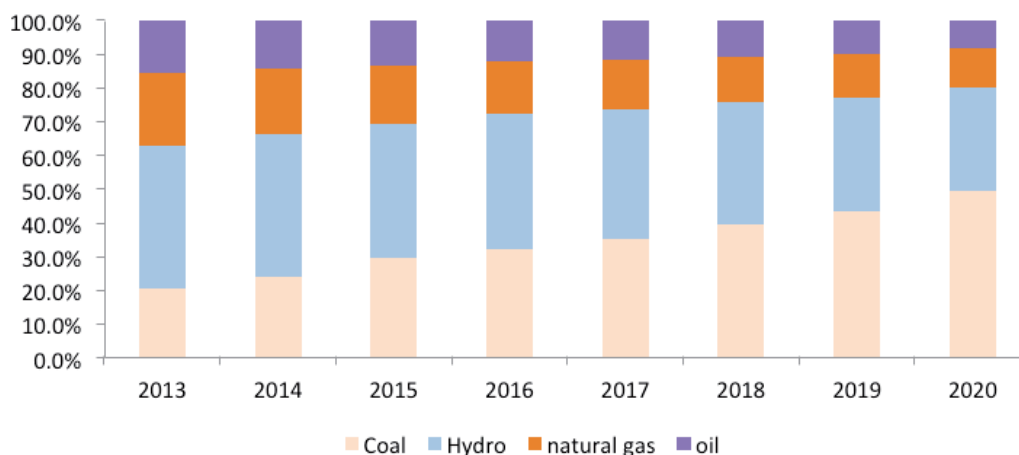


TABLE 2.3: TOTAL INSTALLED CAPACITY AND CAPACITY ADDITIONS BY TECHNOLOGY (MW), 2013–20

	2013	2014	2015	2016	2017	2018	2019	2020
TOTAL INSTALLED CAPACITY: COAL-FIRED TPPS	6,993	9,759	12,896	15,533	17,896	21,158	24,758	31,108
CAPACITY ADDITIONS BY EVN CORPORATE AND GENCOS	-	-	2,004	1,574	900	1,424	375	-
CAPACITY ADDITIONS BY IPPS	-	-	1,133	1,063	1,463	1,838	3,225	6,350
TOTAL INSTALLED CAPACITY: HPPS	13,849	14,826	15,516	17,964	18,018	18,138	18,138	18,644
CAPACITY ADDITIONS BY EVN CORPORATE AND GENCOS	-	-	156	208	-	-	-	-
CAPACITY ADDITIONS BY IPPS	-	-	534	368	54	120	-	506
TOTAL INSTALLED CAPACITY: GAS-FIRED TPPS	6,979	6,855	6,855	6,855	6,855	6,855	6,855	6,855
TOTAL INSTALLED CAPACITY: OIL-FIRED TPPS	1,205	1,205	1,535	1,535	1,535	1,535	1,160	960
<b>TOTAL</b>	<b>29,026</b>	<b>32,645</b>	<b>40,629</b>	<b>44,892</b>	<b>46,721</b>	<b>51,068</b>	<b>54,511</b>	<b>64,423</b>

Source: EVN's updated CAPEX program. Note: Data are as at the end of each year listed. HPP = hydropower plant; IPP = independent power producer; TPP = thermal power plant

FIGURE 2.5: GENERATION MIX (BY CAPACITY)



Source: EVN's updated CAPEX program.

Historically, available capacity accounts for over 95 percent of EVN's overall installed capacity. Therefore, existing generators are available to generate very close to their maximum capacity. If unavailable capacity is added to total

outages (see Table 2.4), around 15 percent of the capacity is not able to produce power; even though this value is well aligned with international benchmarks, this can be improved through more investment.

TABLE 2.4: LOAD FACTORS AND OUTAGES

	CAPACITY FACTOR 2013	EXPECTED CAPACITY FACTOR 2020	TOTAL OUTAGES 2012
<b>GENCO 1</b>	41%	59%	10.0%
Coal	46%	69%	
Hydro	40%	37%	
<b>GENCO 2</b>	46%	51%	12.2%
Coal	60%	68%	
Hydro	41%	42%	
<b>GENCO 3</b>	47%	55%	8.9%
Coal	70%	67%	
Hydro	51%	45%	
Natural gas	66%	77%	

Source: Own elaboration based on EVN's expected dispatch and data on outages.

The load factors currently observed in the Vietnamese power sector are low. According to the analysis carried out in the diagnosis report, the average load factor of coal-fired generation and gas-fired generation is particularly low in the case of the former (52.58 percent on average in 2011 and 52.87 percent in 2012). By contrast, the typical load factor of a coal-fired power plant is nearly 80 percent and a similar level is expected for gas-fired power plants, especially in a system with generation shortages where all power plants should be dispatched at maximum levels (if allowed to do so by the transmission capacities and the requirements for secure operation of the system).

Having such low load factors means that the power plant investments might be larger than normally required, with higher load factors (that is, the plant has the same fixed costs but is generating less), meaning that investments take longer to be recovered. The exact reasons behind this situation cannot be assessed without carrying out detailed simulations of the power system; however, based on operational information and the analysis of the generation and transmission investments carried out, it seems that there are two potential causes:

- A shortage of generation capacity in the Southern region, combined with low transmission capacity in the 500 kV north-south link; and
- High reserve generation requirements related to either security requirements or cycling requirements. Since the system relies heavily on hydropower generation, higher reserve margins are needed.

Additional causes could include a shortage in fuel supply and/or technical constraints in operation inside the power plants; but there is no evidence for either.

According to EVN's forecast, this situation shows steady improvement up to 2020, when coal-fired facilities will reach an average load factor close to 70 percent—because new power plants will be more efficient than current plants and the system as a whole will become more thermal-based, thus needing less reserves to offset low hydrological conditions.

The geographic distribution of generation capacity (which is biased toward northern Vietnam) and the low capacity of the north-south transmission links may also result in the asymmetric distribution of the available reserve generation capacity. This should be optimized to make better use of the generation assets and provide a safer reserve margin in the southern region, where it is too low (below 10 percent).

According to the IE's analysis, in addition to being asymmetrically distributed, the reserve capacity would be excessive if PMP7 were to be executed as it is now, given the new demand forecast. This situation would result in some plants in the northern and central regions being operated less than 1,000 hours per year by the end of the period 2015–20.

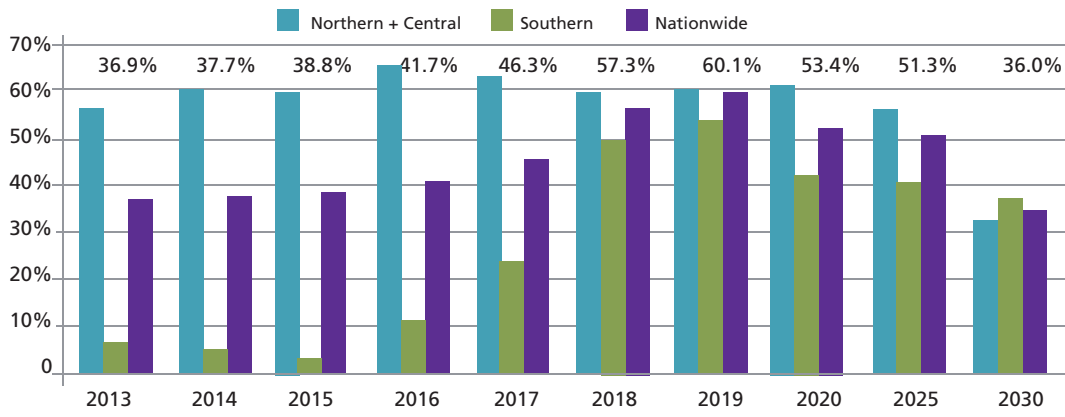
In principle, the rescheduling of generation capacity additions proposed by the IE in its unofficial update seems adequate for resolving the issue described. It would bring equilibrium to the north-south flows and balance generation reserves, thus meeting the new demand during both wet and dry seasons (Figure 2.7).

This value of reserves is very well aligned with the demand forecast used in the financial projections and the dispatch scenario assumed in the analysis. Table 2.5 depicts a rough estimate of the reserve margins that the system will have according to the demand forecast and expected new capacity used in the financial projections.



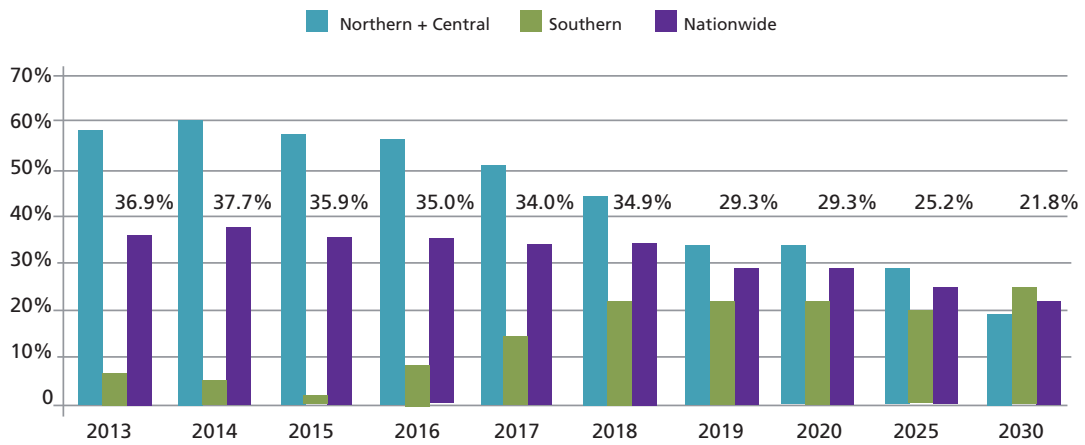


FIGURE 2.6: GENERATION RESERVES FORECAST (FROM PMP7)



Source: PMP7.

FIGURE 2.7: GENERATION RESERVES (UNOFFICIAL PMP7)



Source: Unofficial update of PMP7.

TABLE 2.5: RESERVE MARGINS

	2015	2020
MAXIMUM DEMAND (MW)	27,355	48,014
RESERVE MARGIN (MW)	11,910	13,868
RESERVE MARGIN (%)	43.5%	28.9%

Source: Own elaboration

Table 2.6 shows the overall situation in the power sector and the projected match between supply and demand in the coming years.



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TABLE 2.6: ENERGY BALANCES (GWH)

	2013	2014	2015	2016	2017	2018	2019	2020
DEMAND	124,614	140,919	156,854	174,704	195,591	218,718	244,404	273,496
PC1 -HNPC	11,273	12,739	14,395	16,266	18,381	20,770	23,470	26,521
PC2 - EVNHCMPC	17,651	19,240	20,972	22,859	24,916	27,159	29,603	32,267
PC3 - EVNNPC	33,500	38,023	43,156	48,982	55,594	63,099	71,618	81,286
PC4 - EVNCPC	10,954	12,277	13,760	15,423	17,286	19,374	21,714	24,337
PC5 - EVNSPC	39,980	44,577	49,704	55,420	61,793	68,899	76,823	85,657
DISTRIBUTION LOSSES	6,748	7,271	7,708	7,784	8,852	9,496	10,192	10,939
TRANSMISSION LOSSES	3,152	3,689	4,137	4,628	5,206	5,839	6,548	7,343
CONSUMERS NOT SUPPLIED BY PCS	1,356	3,103	3,022	3,342	3,563	4,082	4,436	5,146
SUPPLY	124,614	140,919	156,854	174,704	195,591	218,718	244,404	273,496
GENCO 1	14,838	20,544	22,766	27,328	33,675	37,461	38,530	36,863
GENCO 2	12,753	16,350	17,400	18,108	20,524	21,933	22,680	18,852
GENCO 3	27,787	30,441	35,401	37,922	42,661	48,269	49,726	50,894
EVN	22,496	25,312	25,296	29,419	30,061	32,257	33,505	33,678
EXISTING IPP BOT	36,310	37,070	37,465	39,767	40,439	42,327	41,668	41,034
NEW IPPS	4,934	5,160	12,483	16,117	22,188	30,428	52,251	86,132
EMBEDDED GENERATION	5,496	6,043	6,043	6,043	6,043	6,043	6,043	6,043

Source: Own elaboration based on data provided by EVN.

## 2.5. INVESTMENT NEEDS

### 2.5.1. Generation

Financial projections of EVN and subsidiaries were built on the basis of the foregoing demand/supply scenario.

The aggregate investment plan corresponding to the capacity requirements totals VND 1,100 trillion (about US\$53 billion) for the period 2014–20 (Table 2.7). The plan presented below covers all investment needs for the sector irrespective of implementation and financing responsibilities.

This section briefly summarizes the investments forecast by PMP7 in comparison to the IE's unofficial update and the EVN CAPEX financing program.

The generation power plant projects included in PMP7 have been costed at their individual CAPEX and OPEX (as described in PMP7 and confirmed through interviews). These costs were entered into the simulation software STRATEGIST to select the optimal power plant development and yield the year-by-year investments in generation assets. Although

the data are partly confidential and thus could not be accessed, PMP7 includes a table with typical values of unit costs for thermal generation plants by type that have been

confirmed by EVN to be, on average, close to those used in the simulations. All reference costs mentioned in PMP7 are within the technology benchmarks provided by international organizations.

Generation investment during 2011–20 in PMP7 will require VND 970 trillion (US\$46 billion), of which over VND 171 trillion will be devoted to the development of the first nuclear power plants in Vietnam. However, although the first unit is planned to be operational at the end of 2020, in reality it is unlikely to be commissioned before 2020. In EVN's latest update on its planned capital expenditure on generation, almost two-thirds of these investments are shown to have been postponed beyond 2020.

According to EVN's CAPEX financing plan—and with a rough estimate of the IPPs' investments, assuming international benchmarks for the investment costs by technology, as shown in Table 2.7—new generation capacity will mean that total investment costs will amount to VND 800 trillion in 2015–20. Out of this amount, almost VND 525 trillion (more than 65 percent) will be invested by the private sector.

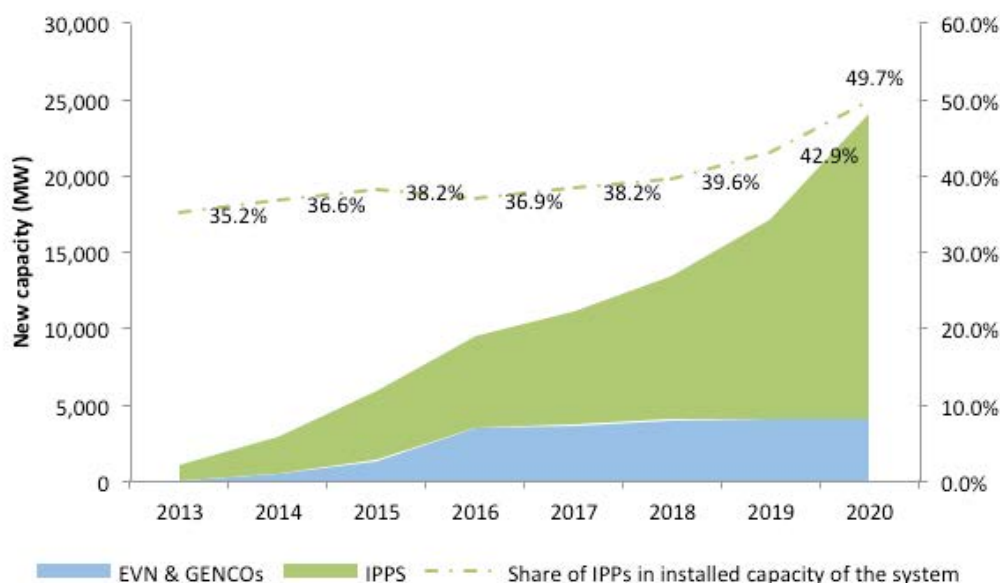
Figure 2.8 shows the steady increase in the share of IPPs in the generation mix in the next few years.

TABLE 2.7: TOTAL INVESTMENT COST, 2014–20

	VND, BILLIONS							TOTAL COST (VND, BILLIONS)	TOTAL COST (US\$, MILLIONS)
	2014	2015	2016	2017	2018	2019	2020		
<b>GENERATION</b>	60,604	147,153	120,015	103,730	111,897	164,467	86,738	794,605	37,838
IPPS	0	96,881	66,112	70,085	90,460	148,995	52,714	525,248	25,012
EVN CORPORATE AND GENCOS	60,604	50,272	53,903	33,645	21,438	15,472	34,024	269,358	12,827
<b>TRANSMISSION</b>	14,873	15,843	17,808	18,924	20,307	21,155	25,810	134,720	6,415
<b>DISTRIBUTION</b>	23,593	22,053	25,364	26,062	27,963	28,187	28,745	181,967	8,665
<b>TOTAL</b>	99,070	185,049	163,187	148,716	160,168	213,809	141,293	1,111,293	52,919

Source: Own elaboration based on EVN-updated CAPEX program.

FIGURE 2.8: NEW CAPACITY AND SHARE OF IPPS



Source: Own elaboration based on EVN's updated CAPEX program.

Moreover, coal will be the main fuel source for additional generation capacity in the coming years. Given current sustainability concerns, this might hinder the ability to raise funds for these plants. The World Bank Group will provide financial support for new greenfield coal power generation projects only in rare circumstances, such as meeting basic energy needs in countries with no feasible alternatives.

### 2.5.2. Transmission

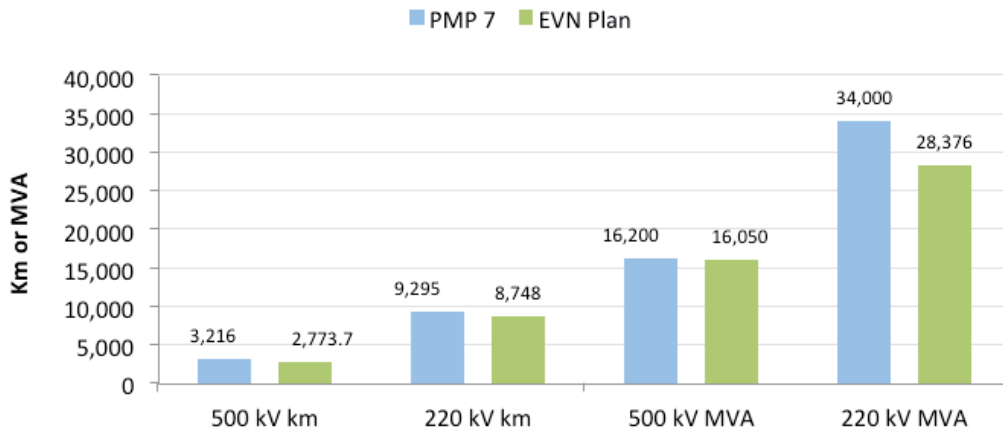
Regarding the investments planned in transmission facilities, there is a noticeable (although not excessively significant) difference between what was approved in PMP7 and what has been included in EVN's investment plan for 2012–20.

EVN's updated CAPEX program has 13.8 percent less 500 kV circuit-km, 5.9 percent less circuit-km<sup>5</sup> at 220 kV, basically the same transformer capacity at 500 kV (-0.9 percent), and 16.5 percent less transformer capacity at 220 kV than PMP7.

Investments in the transmission grid are higher in northern Vietnam. The reason for this seems to be that, under PMP7, the government plans to locate most of the new power plants in the north because of the higher availability of local coal resources. Both PMP7 and the IE's unofficial update highlight the importance of expanding the capacity of the north-central-south 500 kV link. This is a sound solution for enabling the transfer of excess generation capacity from

<sup>5</sup> Circuit kilometers refers to the length of the actual path of revenue-producing circuits in service, as determined by measuring the length of the actual path followed by the transmission medium.

FIGURE 2.9: INVESTMENTS IN TRANSMISSION GRID ASSETS  
IN EVN'S UPDATED CAPEX PROGRAM VERSUS PMP7



Source: Own elaboration based on EVN's updated CAPEX program and PMP7.  
Note: MVA= megavolt-ampere.

the northern region to fill the energy deficit in the southern region and to free coal- and gas-fired power plants from cycling duties.

In the EVNNPT's latest investment plan, capital expenditures in the transmission grid in the same period reach VND 135 trillion. Investments in transmission facilities are mainly driven by the development of transmission facilities connecting the northern region, where most generation is located, with the southern area of the country. Moreover, from 2018 onwards new investments are likely planned by the EVNNPT with the aim of accommodating the power output from a nuclear power plant, which is expected to be commissioned after 2020.

### 2.5.3. Distribution

Investments in distribution networks are executed by the PCs based on regional master plans. According to the latest information provided by the PCs, total expenditures during 2014–20 will be around VND 180 trillion.

### 2.5.4. Summary

According to its CAPEX plan for 2014–20 for all subsidiaries, EVN expects to borrow over US\$27 billion (Table 2.8). The annual fluctuations reflect expectations about the timing and cost of implementation of individual projects.



TABLE 2.8: EVN SUBSIDIARIES' INVESTMENT (VND, BILLIONS)

	2014	2015	2016	2017	2018	2019	2020	TOTAL
TOTAL INVESTMENT	99,070	88,168	97,075	78,631	69,708	64,814	88,579	586,045
EVN CORPORATE	12,486	14,201	21,108	13,611	15,174	15,472	34,024	126,076
GENCO 1	13,088	12,681	14,368	3,834	1,607	0	0	45,578
GENCO 2	9,779	4,601	2,628	1,881	0	0	0	18,889
GENCO 3	25,251	18,789	15,798	14,318	4,657	0	0	78,813
PCS	23,593	22,053	25,364	26,062	27,963	28,187	28,745	181,967
NPT	14,873	15,843	17,808	18,924	20,307	21,155	25,810	134,720

Source: Own elaboration based on EVN's updated CAPEX program.



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This section examines the current financial, operational and technical performance of the EVN group, considering first the overall level of performance for the consolidated company and then the performance of its various subsidiaries.

### 3.1. EVN GROUP

#### 3.1.1. Operational and Technical Performance

In general terms, EVN's performance standards are very good in many respects. The level of losses in the distribution utilities ranges from 5.6 percent to 8.0 percent, which compares favorably with distribution companies in developed countries such as Australia and the United Kingdom. In transmission, losses are in the range of 2 percent to 3 percent, which is slightly high but understandable in view of Vietnam's geography and overloading on some lines. Invoices for power sales are issued regularly and promptly and are almost always fully collected. Productivity, though still low, has been rising steadily—as reflected in, for example, the number of customers per employee. Operational expenditure in distribution is extremely low by international standards in view of the low volumes of energy being wheeled;<sup>6</sup> this may be due to the low cost of labor.

There are areas of activity where staffing levels are above international norms. While this may reflect the low costs of labor, low levels of outsourcing, and some non-core activities, continuing improvements in productivity would seem possible. However, there is no indication that there are areas of activity where significant improvements in financial performance can be achieved quickly through better operational performance. In the financial projections, it has been assumed that operational performance will continue to improve over time, with increasing demand resulting in higher productivity. The assumptions built into the model to reflect this are based on savings in operating expenses (excluding fuel), selling expenses, and administration costs. Specifically, these costs are assumed to increase in line with inflation—but with operating and selling expenses increasing by 70 percent of the demand increase, and administrative expenses increasing by 50 percent of the demand increase.

#### 3.1.2. Financial Performance

From 2008 to 2011 EVN suffered sustained losses that contributed to a serious deterioration in EVN's financial condition. In 2010 and 2011 EVN's self-financing ratio (SFR)—that is, its ability to finance planned investments from its own resources—was negative, and its debt service coverage ratio (DSCR)—its cash flow available to pay debt obligations—fell well below the previous level of 140 percent, to around 70 percent. By 2011 the company was stretched, with debt accounting for 85 percent of assets.

In 2012 EVN's financial performance improved significantly, from a loss of 12 percent of income in 2011 to a profit of 14 percent of income, an improvement of 26 percent. The turnaround reflected three major trends between 2011 and 2012:

- First, tariffs increased by 5 percent in December 2011, July 2012, and December 2012. Other things being equal (including volumes of electricity supplied), revenue would therefore have increased by about 10 percent between 2011 and 2012; in fact EVN achieved an increase of 24 percent in revenue in 2012 with a 10 percent increase in tariffs, implying an increase of about 14 percent in units sold. However, the cost of sales increased by only 8 percent. If costs had increased in line with the units sold, they would have been around VND 7.0 trillion higher and EVN's financial performance would not have shown the same improvement.
- Second, losses arising due to the depreciation of the Vietnamese dong against foreign currencies were considerably lower in 2012 than in 2011, falling by more than 50 percent between 2011 and 2012 (from VND 16 trillion to VND 7 trillion).
- Third, because there was greater use of hydropower in 2012, the unit costs of sales fell by 7 percent between 2011 and 2012. Moreover, if they had also increased in line with the average inflation of about 7 percent, costs would have been around VND 15.5 trillion higher.

A key point to note here is the significant effect of the changed hydrological conditions on EVN's performance. As an example, the saving of VND 15.5 trillion is equivalent to the following:

<sup>6</sup> Electric power is said to be *wheeled* when it is transmitted through or over transmission lines.

- A 9 percent increase in tariffs in 2012
- A 12.4 percent revaluation of the Vietnamese dong in 2012
- A 23 percent reduction in operating costs in 2012 (including fuel costs)
- 3.5 percent of EVN's total debt in 2012
- 15 percent of the planned capital program for 2012

EVN's results for 2013 show that profitability was maintained, albeit at a slightly lower level than in 2012. Although the company benefited from a lack of exchange losses in 2013, tariff increases were limited to a rise of 5 percent in mid-2013.

The influence of hydrology on EVN's costs and revenues will fall over time because planned additions to capacity are predominantly thermal rather than hydropower. As shown earlier in Figure 2.5, the share of hydropower in the generation portfolio is projected to decline from 41 percent to 31 percent in 2020.

In addition to improved profitability, EVN has also increased its equity through asset revaluations so that debt fell to 62 percent of assets in 2012 and 50 percent in 2013. This improved the debt-equity ratios in the affected subsidiaries.

Because of its financial problems, EVN had difficulty in

managing its cash flow. Accounts payable increased from 127 days of operating expenses in 2007 to 168 days in 2012; there was an improvement to 155 days in 2013. This is well above commercial good-practice standards for paying suppliers, which would be a maximum of 90 days. Having accounts payable at such a high level can lead to such problems as suppliers refusing to extend further credit and insisting on cash payment. In practice, the delays in payments principally affected two other SOEs: EVN's main suppliers, PetroVietnam and Vinacomin. The company made successful efforts to improve cash flow from customers, and accounts receivable fell from 84 to 54 days of revenue between 2008 and 2013.

EVN has had a high and rising level of borrowing, most of it in foreign currency. Total debt increased from VND 86 trillion at the end of 2007 to VND 284 trillion in 2013. At the same time, foreign currency debt increased from 64 percent of the total in 2007 to 88 percent in 2012, though falling again to 63 percent in 2013. This places EVN's profitability at increasing risk from the depreciation of the Vietnamese dong.

Much of EVN's borrowing is short-term: around 45 percent of its debt is due for repayment in the next five years. However, the assets that EVN is acquiring have long lives of up to 25 years. There is therefore a mismatch between EVN's assets and liabilities.

TABLE 3.1: STRUCTURE AND COST OF EVN'S DEBT

VND TRILLION	2007	2008	2009	2010	2011	2012	2013
LOANS DENOMINATED IN USD	24	33	46	64	77	130	42
LOANS DENOMINATED IN JPY	28	38	43	49	74	79	129
LOANS DENOMINATED IN VND	31	41	59	78	64	29	107
LOANS DENOMINATED IN €	2	3	4	4	2	5	3
LOANS DENOMINATED IN K WON	1	1	1	1	1	1	1
LOANS DENOMINATED IN CNY	–	–	–	–	–	2	2
% LOANS DENOMINATED IN VND	36.0%	35.3%	38.6%	39.8%	29.4%	11.8%	37%
AVERAGE INTEREST RATE	4.6%	6.7%	4.9%	8.3%	9.3%	8.4%	6.1%
TENOR < 1 YEAR	6	9	13	21	20	24	28
1 YEAR < TENOR < 2 YEARS	8	14	24	35	30	26	32
2 YEARS < TENOR < 5 YEARS	19	32	52	97	89	77	69
TENOR > 5 YEARS	54	61	64	42	80	118	154
% LOANS DUE < 5 YEARS	38.9%	47.4%	58.2%	78.5%	63.5%	51.8%	45%

Source: Own elaboration. Note: K won = Korean Democratic Peoples' Republic won.



### 3.1.3. Governance

The current governance arrangements in EVN leave responsibility for management and control largely with EVN headquarters. The boards of the subsidiaries are drawn exclusively from EVN management and make few decisions in their capacity as boards. Appointments are made centrally. Assets and liabilities are allocated to subsidiaries based on decisions by EVN headquarters and cash flow is managed centrally. There are no management information packages in place and the preparation of financial information is slow, with the completion of audited accounts taking up to a year.

### 3.2. EVN SUBSIDIARIES

This section examines the operational, financial and technical performance of EVN's main subsidiaries, which are as follows:

- The three generation companies, known as Genco 1, Genco 2, and Genco 3;
- The National Power Transmission Corporation, EVNNPT; and
- The five distribution companies, known as the Hanoi, Ho Chi Minh, Northern, Central, and Southern Power Companies (PCs).

An additional subsidiary, EVN Corporate, is a company that carries out a range of residual EVN activities, such as acting as the single buyer of all generated electricity and having responsibility for the multipurpose hydropower projects. EVN Corporate needs to become commercially focused in the same way as other EVN subsidiaries to play an effective role in the new unbundled structure for the industry. This will involve, for example, charging for the services of the multipurpose hydropower plants, both in supplying electricity and irrigation water.

Earnings, before interest, taxes, depreciation and amortization (or EBITDA) for EVN Holding represent the sum of earnings by the individual companies, net of intercompany transactions.



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### BOX 3.1: EVN'S 2012 REVALUATION OF ASSETS

EVN carried out an asset revaluation in 2012 for its transmission and distribution companies. The impact was to increase the assets' value significantly. As a result, EVN appears to have additional equity in its balance sheet, and financial indicators such as the debt-equity ratio were improved. For EVN overall, the debt-equity ratio improved from 85:15 in 2011 to 70:30 in 2012. There were similar improvements for the subsidiaries; the debt-equity ratio at NPT, for example, improved from 83:17 to 49:51. The impacts at the EVN distribution companies are as shown in the following table.

TABLE 3.2: IMPACT OF ASSETS REVALUATION ON DEBT-EQUITY RATIOS

Subsidiary	Debt-equity Ratio	
	2011	2012
Hanoi PC	81:19	52:48
Ho Chi Minh PC	73:27	45:55
Northern PC	77:23	59:41
Central PC	62:38	53:47
Southern PC	65:35	48:52
NPT	83:17	49:51

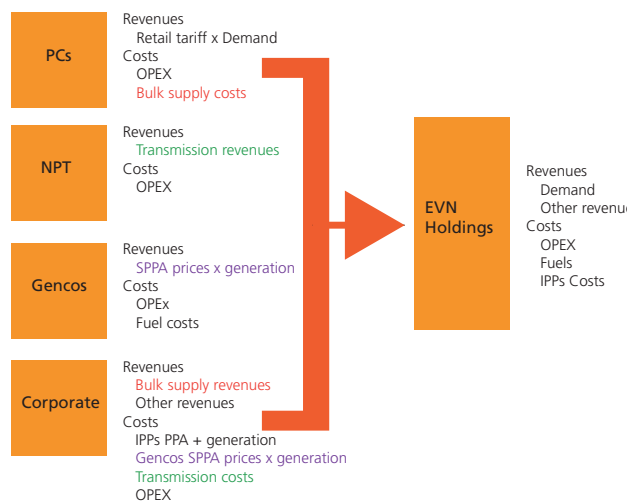
Source: Authors' calculations based on financial data provided by EVN.

The revaluation did not generate any additional cash, however. Under the existing regulatory regime, EVN has not been able to charge current cost depreciation and increase retail tariffs because the recently issued regulation (MOIT Circular 12) is not clear on whether the windfall profit of asset revaluation should be considered in the tariff calculation or not. Discussions about these issues are taking place among EVN, the MOIT, and ERAV.

Consequently, although there is no substantive impact, the appearance of the financial results has improved through a better debt-equity ratio. Following the revaluation exercise, EVN as a whole and all six subsidiaries now have a debt-equity ratio of better than 70:30, which is often taken as a benchmark for minimum capital adequacy in power utilities. This may improve the perception of EVN and its subsidiaries in the eyes of lenders who take a mechanistic approach to financial indicators, but it does not address fundamental aspects of creditworthiness or valuation, not to mention the perception of more-sophisticated analysts.

Most importantly, the improved debt-equity ratio may mislead EVN's owner, the government, into believing that EVN's financial position is secure, when in practice it is not. It would have been far more beneficial to improve EVN's financial position through a capital injection, but the government has not done this for many years.

FIGURE 3.1: CONSOLIDATION OF THE EVN GROUP (EBITDA)



Source: Own elaboration.  
 Note: Colors show the main inter-subsidiary transactions (red for bulk supply costs/revenues, green for transmission costs/revenue, and purple for generation costs/revenues). Transaction pricing is formally regulated: bulk supply cost was recently regulated by Circular 12/2014, transmission tariffs are regulated by Circular 14/2009 and amendments, and standard power purchase agreements (SPPAs) are regulated by Circular 42/2010. EBITDA = earnings before interest, taxes, depreciation, and amortization.

### 3.2.1. The Generation Companies Operational and Technical Efficiency

Although the operation of the generation plants across the three gencos is satisfactory, there is some room for improvement. Available capacity accounts for over 95 percent of the overall installed capacity. Therefore, existing generators are available to generate very close to their maximum capacity. If unavailable capacity is added to total outages, more than 15 percent of the capacity is unable to produce power; this can be improved through more investment. Genco 3's plants are among the oldest in the system although their operational performance is reasonable.

Among Genco 2's coal-fired power plants, a recent overhaul of the two units at the Pha Lai power station (the country's largest coal thermal power plant (TPP) caused them to underperform quite significantly in 2012, with Pha Lai 1 out of work about 60 percent of the time. Even though Pha Lai 1 and 2 showed reasonably good performance in 2013, the capacity factors of such plants have diminished since 2010. EVN is advised to consider carrying out major refurbishments of these and similar power plants to improve their contribution to the system's power generation.

Similarly, since 2013, the utilization rate of the Ninh Bin power plant has deteriorated and it shows significant underperformance. Again, although it is not possible to determine the underlying reasons for this, given the features of the plant, some rehabilitation may be needed.

Utilization levels in some of the older coal plants are low although this is related to the reserve margin needed by the system.

According to the available feasibility studies of individual plants, as of 2012 these plants' net operating margin ratios barely reached best international standards, and in most cases the ratios were not sufficient to ensure liquidity in day-to-day operations. Even though these ratios have improved recently, they are still far from levels at which they will attract private investors' interest.

The average unit cost of construction varies widely among technologies. Several references may be found. In PMP7, unit investment costs for TPPs were defined as shown in Table 3.3.

TABLE 3.3: COMPARISON OF UNIT INVESTMENT COST FOR THERMAL POWER PLANTS

FUEL TYPE - PLANT	REFERENCE COST IN PMP7 (US\$/KW)	BENCHMARK REFERENCE COST: INTERNATIONAL ENERGY AGENCY AND WADE (US\$/KW)
GAS (CCGT)	1,020	550–1000
COAL-FIRED	1,400	600–2,400
DIESEL -FIRED	600	400–1,500
OIL-FIRED	1,200	900–1,300
NUCLEAR	3,000	2,000–4,600

Source: Own elaboration.

Note: CCGT = combined-cycle gas turbine; WADE = World Alliance for Decentralized Energy

Because HPP projects tend to be very site-specific, analyzing them is best done by reviewing feasibility studies and the cost of the materials and works involved. Overall, unit investment costs are not far from international norms; the main problems are associated with delays in the commissioning of the facilities and cost overruns.

As previously noted, PMP7 includes reference prices for the capital and operational costs of thermal plants, grouped by technology. Table 3.4 shows reference levelized costs for Vietnam, grouped by technology and location. For the load factors observed in Vietnam (50–70 percent), the minimum levelized cost is 4.86 U.S. cents per kWh (domestic coal-fired in the north) and the maximum, for peaking units, is 10.98 U.S. cents per kWh (thermal gas units in the south).

Considering that the most probable scenario in the south is the installation of CCGTs, the levelized cost of these units would range between 6.69 and 8.24 U.S. cents per kWh (for load factors ranging from 90 percent to 50 percent, respectively).

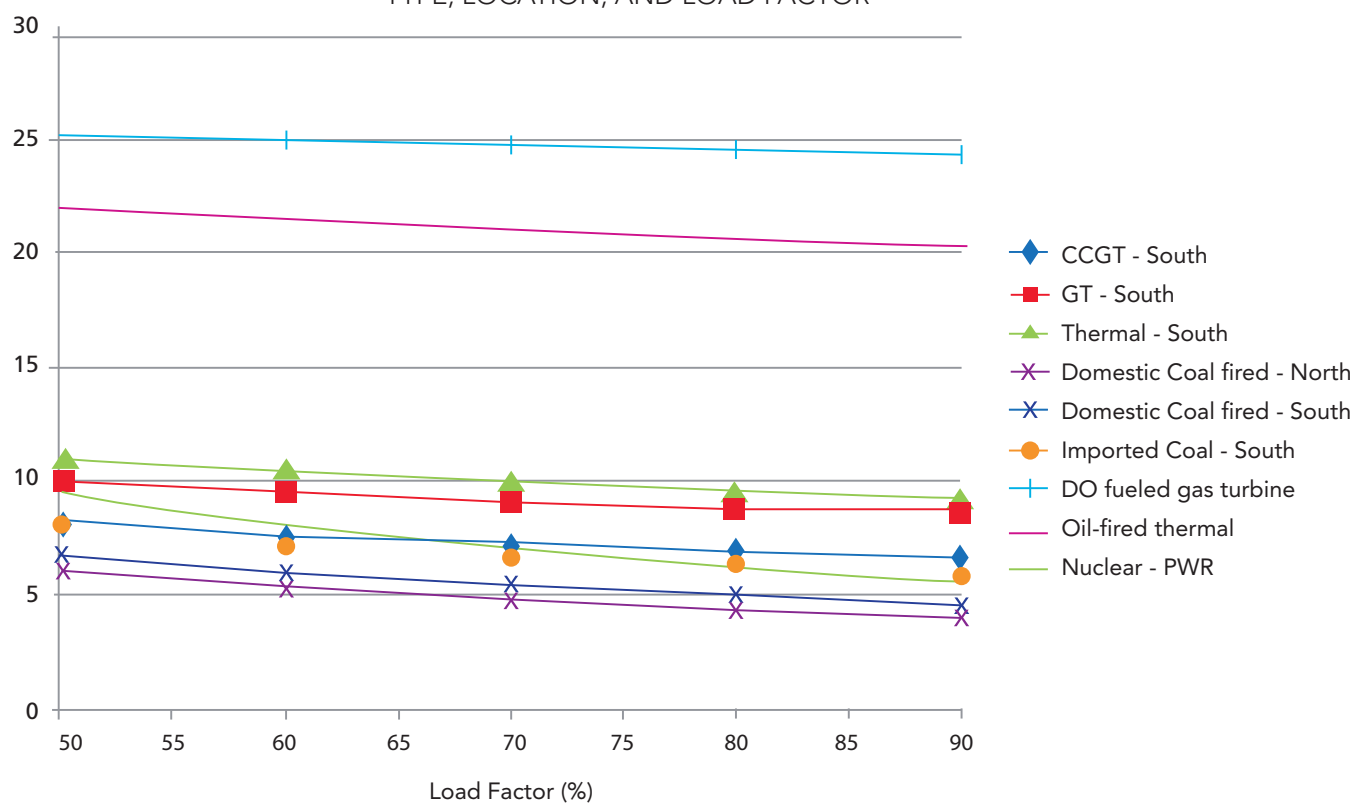
Even though there are some data limitations to analyzing the investment programs submitted by the gencos, on average, construction costs related to their investments in new facilities are mostly aligned with international norms.

TABLE 3.4: OTHER OPERATIONAL ASSUMPTIONS, BY TECHNOLOGY

TECHNOLOGY (FUEL)		GAS			COAL			OIL	
		GT (BIG)	THERMAL	DOMESTIC COAL-FIRED THERMAL (NORTH)	DOMESTIC COAL-FIRED THERMAL (SOUTH)	IMPORTED COAL THERMAL	DO-FUELED GAS TURBINE	OIL-FIRED THERMAL	
LOCATION		South	South	South	North	South	South	All	All
CRITERION									
EFFICIENCY	%	52	34	35	41	41	41	34	36
FUEL CONSUMPTION RATE	kcal/kWh	1.658	2,535	2,463	2,102	2,102	2,102	2,535	2.394
CALORIFIC VALUE OF FUEL	kcal/kg	9,800	9,800	9,800	5,500	5.5	6,500	10,150	9,910
FUEL PRICE OF BASE YEAR	US\$/unit	5.26 (MMBTU)	5.26 (MMBTU)	5.26 (MMBTU)	28.1 (ton)	38.1 (ton)	86 (ton)	785 (ton)	637 (ton)

Source: PMP7. Note: Fuel costs are based on local prices as defined in PMP7. MMBTU = million British thermal units; DO = diesel oil.

FIGURE 3.2: LEVELIZED COSTS OF GENERATION TECHNOLOGIES BY TYPE, LOCATION, AND LOAD FACTOR



Source: PMP7.

It is worth carrying out a detailed, case-by-case analysis to determine whether rehabilitation of existing generation assets to improve their efficient operation could be more economic than replacing them with new power plants.

### Financial Performance

Because the gencos are new, they have no records of past profitability. 2013 is the first year in which the gencos have audited accounts, and 2014 accounts had not yet been audited at the time of updating this report in April 2015.

Their future sustainability is highly dependent on their ability to charge tariffs that cover costs and provide sufficient cash flow to meet debts and fund investment.

The gencos fall short of this ideal in a number of ways. First, as mentioned, the companies have no trading history. Second, Genco 1's financial performance in 2013 was unsatisfactory. Looking ahead, while the base-case tariffs show adequate financial performance for Gencos 1 and 2, there are problems at Genco 3, and all the gencos may have inadequate financial performance with a less favorable evolution of tariffs. Finally, the governance structures of the companies need substantial improvement. All these issues can be addressed but it will take time.

Genco 3 faces the most critical financial situation among all the EVN subsidiaries. This is basically caused by its ambitious investment plan and the relatively low purchase prices of some power plants.

TABLE 3.5: FINANCIAL PERFORMANCE - GENCOS (2013)

INDICATOR	2013	ACCEPTABLE RANGE
ACCOUNTS RECEIVABLE AS NUMBER OF DAYS REVENUE	63–160	60–80
ACCOUNTS PAYABLE AS NUMBER OF DAYS OPERATING EXPENSES	64–300	80–120
WORKING RATIO	81–116%	60–80%
NET OPERATING MARGIN	-16–19%	>5%
CURRENT RATIO	0.5–1.2	>100%
RETURN ON EQUITY	-12–30%	5–20%
DEBT-TO-EQUITY RATIO	54:46–60:40	<75:25
DEBT-SERVICE COVERAGE RATIO	0,7–2	>1.25
SELF-FINANCING RATIO	-7–25%	>25%

Source: Own calculations based on the financial data provided by EVN

3.2.2. National Transmission Corporation, (EVNNPT) EVNNPT has played a period of rapid growth in sales and assets since its establishment in 2008. Its performance was assessed by benchmarking its key performance indicators (KPIs) against international reference levels obtained from a sample of 10 specially selected transmission companies from India, Bangladesh, Colombia, Peru, Chile, Portugal, the

United Kingdom, Italy, and other European countries.

### Operational and Technical Performance

Table 3.6 compares key operational indicators for EVNNPT to internationally acceptable ranges derived from the benchmarking exercise.

TABLE 3.6: OPERATIONAL INDICATORS - NPT (2012)

INDICATOR	EVN NPT - 2012	BENCHMARK LEVEL	COMMENT
ASSETS TO ENERGY RATIO (US\$/MWH)	25.34	9.39–49.71	NPT in the lowest tier. Potentially linked to old assets, low investment in network growth, and lack of high-end solutions.
ENERGY LOSSES (%)	2.33	1.09–2.50	Slightly high but within acceptable levels. Positive historical evolution.
OPEX PER GRID KM (US\$/KM)	5,805	761–45,413	In the lowest part of the benchmark range. Linked to low salaries (in the country in general) and long network (to match the country's territory).
EMPLOYEES PER GRID KM (#/KM)	0.44	0.04–0.45	Very high ratio due to low human resource costs, low automation levels, and few outsourced activities.
FAULTS PER 100 KM (#/KM)	1.44	1.0–1.9	Within the range. Good performance.
MEAN DURATION OF FAULTS (MINUTES)	52.25	30–65	Within the range. Reasonable performance, but it has deteriorated over time.
OPEX/MWH (US\$/MWH)	0.90	0.18–4.01	In the lowest part of the benchmark range. Linked to low salaries (in the country in general).

Source: Own elaboration.

The average unit cost of transmission lines is in the upper tier of the typical price range: 300–500,000 USD/circuit-km for a 500 kV line and 150–250,000 USD/circuit-km for a 220 kV line. These figures are averages and thus are affected by both: (a) the timing of construction phases and commissioning during 2011–20; and (b) the assets being installed, including the number of circuits, type of towers, and line routing.

Although prices seem to be relatively high, their levels are not unreasonable for a country that has areas with difficult access, as is the case of Vietnam. The unit prices of transformer substations are within acceptable ranges, both at 500 kV and at 220 kV.

TABLE 3.7: UNIT COST OF TRANSMISSION ASSETS ACCORDING TO PMP7 (2011–20)

ASSET	UNIT COST	
500 KV LINES	356,256	US\$/km
220 KV LINES	173,495	US\$/km
500 KV SUBSTATIONS	35,494	US\$/MVA
220 KV SUBSTATIONS	33,124	US\$/MVA

Source: Own elaboration. Note: MVA= megavolt-ampere.

### Financial Performance

From its inception in 2008 through to 2011, EVNNPT made losses and had unsatisfactory DSCR and SFR. The EVNNPT overcame net losses in 2012, achieving a net profit of VND 1,200 billion on total revenues of VND 8,710 billion. In 2013, profitability was sustained with a slight deterioration as a result of the EVNNPT's substantial borrowing to finance its capital investment program. In previous years, the main reason for the net loss was the large foreign exchange loss on the EVNNPT's foreign currency debt (76 percent in 2012).

Because the company has been almost wholly reliant on debt to fund its ambitious capital program, it now has high levels of debt relative to its equity. Although the equity position was improved significantly by an asset revaluation in 2012 (see Section 3.1.2), this has not provided any additional cash. Table 3.8 shows key financial indicators compared to internationally acceptable ranges.

### 3.2.3. Power Companies

#### Operational and Technical Performance

The five power distribution companies have similar operational and technical performance levels. These are summarized in Table 3.9; details for each subsidiary are provided in Annex III.

TABLE 3.8: FINANCIAL INDICATORS - NPT (2010-2012)

INDICATOR	2010	2011	2012	2013	ACCEPTABLE RANGE
ACCOUNTS RECEIVABLE AS NUMBER OF DAYS OF REVENUE	150	178	147	125	60–80
ACCOUNTS PAYABLE AS NUMBER OF DAYS OF OPERATING EXPENSES	481.1	–	248	185	80–120
WORKING RATIO	107.1%	129%	86.3%	99%	60–80%
NET OPERATING MARGIN	-7%	-29%	13.7%	1%	>5%
CURRENT RATIO	56%	49%	60.2%	1.3	>100%
RETURN ON EQUITY	-6%	-2%	5.9%	0.5%	5–20%
DEBT/EQUITY	80:20	83:17	49:51	54:46	<75:25
DEBT SERVICE COVERAGE RATIO	0.84	1.00	1.64	1.6	>1.25
SELF-FINANCING RATIO	-9%	0%	20%	24.8%	>25%

Source: Own elaboration.

The PCs' performance was assessed by benchmarking KPIs observed in each against international reference levels obtained from a sample of specially selected distribution companies from Argentina, Australia, Brazil, Chile, Portugal, the United Kingdom, and the Philippines.

The PCs are very successful at collecting full payment from their customers on a timely basis. Their collection rates—over 99.5 percent in all cases except for the Central PC, where it was 99.15 percent—match those of their international peers. The average collection period is very short (around 10 days) as well, because they invoice three times a month to industrial customers.

Where interruption statistics are concerned, however—the System Average Interruption Duration Index (SAIDI) and the System Average Interruption Frequency Index (SAIFI)<sup>7</sup>—the PCs are in the upper tier (that is, worst performing) distribution companies when compared to their peer group. Nonetheless, it is difficult to assess whether these interruptions result from the PCs' underperformance or from broader system shortfalls. There is not enough historic data

<sup>7</sup> The SAIDI indicates the average outage duration for each customer served; the SAIFI is the average number of interruptions that a customer would experience.

TABLE 3.9: PCS – BENCHMARK OPERATIONAL PERFORMANCE (2012)

INDICATOR	RANGE OF PERFORMANCE	BENCHMARK	COMMENT
ASSETS-TO-ENERGY RATIO (US\$/MWH)	28.06–64.58	54.33–416.37	Generally below the minimum of the benchmark range. Low investments in assets in relation to the energy wheeled.
AGGREGATE TECHNICAL, COMMERCIAL, AND COLLECTION LOSS (%)	5.56–8.04	4.99–12.52	Within the benchmark. Good loss levels.
COLLECTION EFFICIENCY (%)	99.15–100.15	98.5–99.5	Excellent collection performance.
SYSTEM AVERAGE INTERRUPTION FREQUENCY INDEX (#)	16.5–53.0	0.69–15	In the worst-performing tier for the benchmark. Considerable room for improvement, target SAIFI = 10 or lower.
SYSTEM AVERAGE INTERRUPTION DURATION INDEX (MINUTES)	2,988–9,797	17.08–432	Very far from the benchmark levels. Large room for improvement. Need to distinguish sources of interruptions.
OPEX (US\$/MWH)	2.89–4.67	4.99–29.21	Low OPEX, below the benchmark minimum level. Linked to low labor costs but possibly also low budgets available for spare parts, maintenance, and quality programs.
CUSTOMERS/EMPLOYEE	250–289	557–2,868	Out of the benchmark range. Very low ratio. Linked to potential overstaffing, the low automation level, and low outsourcing rate.

Source: Own elaboration.

to analyze the evolution of SAIDI and SAIFI over the years except for 2011–12, during which the frequency and duration of customer interruptions slightly worsened. The SAIFI in the EVNNPC is more than double that of the other four distribution companies. Other studies in the country indicate that maintenance of assets is generally adequate, but the availability of spare parts is often limited (mainly due to the age of most assets), thus preventing timely repairs and/or replacement of equipment.

The performance of the distribution companies in terms of system interruptions (both SAIDI and SAIFI) shows considerable scope for improvement. It may be that maintenance spending, which is well below international benchmarks, is too low. Increases in maintenance spending—for example, on increased holding of spare parts or enhanced engineering skills—could reduce SAIFI and SAIDI in the future. However, it is impossible to reach a definitive judgment at this stage. EVN has strong engineering capabilities and the capacity to reach appropriate conclusions and increase spending if necessary in the future. The financial impact will be small as maintenance spending is a small part of the costs of the power sector.

#### *Financial Performance*

Financial performance is very similar across the PCs due to EVN's management of the PCs through its setting of bulk

electricity tariffs. The PCs' report of larger net losses for 2011 related to the wider financial difficulties throughout the EVN group than to specific difficulties within the PCs. A portion of the losses that originated in the EVN parent company (EVN Holding) in 2011 may have been assigned to the PCs. As a result of the existing mechanism for setting bulk tariffs, the financial performance of the PCs is not independent of EVN and its other member companies.

All five PCs were marginally profitable in 2012, in line with improved performance in EVN as a whole, with operating margins between 2.1 percent (Central) and 4.8 percent (Hanoi). The return on equity varied from 4 percent and 10 percent. Financial ratios such as the SFR and DSCR are stretched in some cases, but overall the companies were at acceptable levels of performance in 2012. Profitability fell again in 2013 due to inadequate retail tariff adjustments.

All the companies have had success at managing accounts receivable, which in 2013 were in the range of 11 to 17 days' revenue. They have also managed to reduce levels of accounts payable, which are now in the range of 36 to 93 days' operating expenses. As a consequence, all the companies have had positive cash flow from operations in the last few years.

The current ratio of all the PCs is somewhat low, which can indicate the potential for liquidity difficulties. The PCs provided some clues on current ratios presented in audited

financial statements (2012). One key reason is that trade receivables by the end of the year are underestimated due to the regulations governing power-meter reading, which do not allow for full accrual of all earned income.

TABLE 3.10: PCS - FINANCIAL INDICATORS, 2102 AND 2013

INDICATOR	2012 RANGE	2013 RANGE	ACCEPTABLE RANGE
ACCOUNTS RECEIVABLE AS NUMBER OF DAYS REVENUE	12–23	11–17	30–60
ACCOUNTS PAYABLE AS NUMBER OF DAYS OPERATING EXPENSES	38–98	36–93	40–120
WORKING RATIO	86–95%	99–100%	60–80%
NET OPERATING MARGIN	2.1–4.8%	0–2%	>5%
CURRENT RATIO	65–95%	75–105%	>100%
ROE	4,2–10%	0–3%	5–20%
D:E	23:77–44:66	20:80–34:74	<65:35
DSCR	1,37–4,86	1,5–5	>1.25
SFR	8–120 %	37–125 %	>25%

Source: Own elaboration.

All the PCs generated positive net cash flows from their operations in all years between 2008 and 2013. This means that revenues from electricity sales covered all cash operating and maintenance expenditures and left a surplus that could be used to contribute to capital investments and debt repayment.

While the level of debt within the PCs has progressively increased between 2007 and 2011, their capital structures have remained much more balanced between debt and equity than those of the gencos and EVNNPT. Moreover, in 2012, debt-to-asset ratios improved among all the PCs, although this largely reflects the asset revaluation exercise mentioned earlier. In particular, the distribution companies Southern Power Corporation (EVNSPC) and Ho Chi Minh Power Corporation (EVNHCMPC) hold the lowest share of debt compared to the other businesses (though again, the improvement of this ratio in 2012 resulted mainly from asset revaluation). In 2013 there was a small increase in equity as a result of profits, but in general, investments in new assets are fully funded by loans.

### 3.3. SUMMARY

In summary, EVN's subsidiaries in generation, transmission, and distribution have generally strong operational and technical performance and are well managed. However, they operate under considerable financial constraints because tariffs are low and the companies have low levels of equity. In 2010 and 2011, EVN was unable to meet its financial commitments to fuel suppliers and defaulted for a period. Financial performance improved in 2012 but, as demonstrated by the 2013 results, these improvements can only be sustained with a steady increase in tariffs. There are considerable financial challenges in both servicing existing debt and financing the level of capital investment expected in the period up to 2020.

In the absence of regular tariff increases, EVN's financial condition could deteriorate rapidly, resulting in defaults not only to fuel suppliers but also potentially to lenders. Such defaults are highly risky as they suggest the possibility of insolvency, which would lead to more wide-ranging defaults and ultimately constrain the country's economic growth. As a result, lenders and suppliers tend to tighten credit terms at precisely the time when there are cash flow difficulties. In such circumstances new loans are likely to be difficult to secure and the capital expenditures get deferred. Potential investors in IPPs will be unwilling to accept the credit risk of supplying EVN and will demand payments directly from the government.

These challenges are serious but they can be met. The next section discusses the way forward to avoid these potential issues.





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At present Vietnam's power sector as a whole, and EVN in particular, face six major financial and operational challenges that need to be addressed in order to meet the rising power demand described in section 1. The challenges are both complex and interconnected:

1. Achieving the scale of private investment expected in the power sector to meet investment needs
2. Addressing the inadequacy of the present level of retail tariffs
3. Overcoming political concerns over the affordability of power
4. Achieving operational improvements at EVN
5. Enhancing EVN's capacity to manage financing risks in areas such as hydrology, foreign exchange, and debt structure
6. Improving standards of corporate governance

This section will discuss each of these in turn.

#### 4.1. PRIVATE INVESTMENT NEEDS

Over the next seven years, extensive changes are expected in financing responsibilities for investment in Vietnam's power sector, particularly in generation. Between 2013 and 2020, it is expected that about 65 percent of generation investment will be undertaken by IPPs and only 35 percent by EVN. The total expected value of private investment is over US\$25 billion (see Figure 2.7 in Section 2.5.1).

Moreover, this investment will need to come wholly from the private sector. This is because state enterprises that have invested in power projects in the past, such as PetroVietnam, can no longer do so because of a new government policy that forbids SOEs from investing in non-core businesses. Project promoters will seek various government guarantees to protect their investments in these IPPs. The extent of these guarantees is a matter for negotiation, but it will be difficult for the government to extend guarantees to the scale of this investment without impairing its own credit rating and limiting the fiscal space available for other activities.

Nowadays, over 90 percent of Vietnam's overall generation is in the state's hands. As shown in Figure 4.1, IPP and

BOT plants (including plants owned by other SOEs such as PetroVietnam) account for 36 percent of the installed capacity, but out of this, less than 18 percent belongs to non-SOEs. The private sector's role in the recently created gencos is negligible for Gencos 1 (less than 2 percent) and 3 (less than 7 percent). Only in Genco 2 is the private share of its generation portfolio significant (17 percent).

The scale of this investment will require major new projects to be approved and implemented every three to six months, which is a far more rapid rate of approval than usual: in recent past, where major IPPs have only been approved every one or two years.

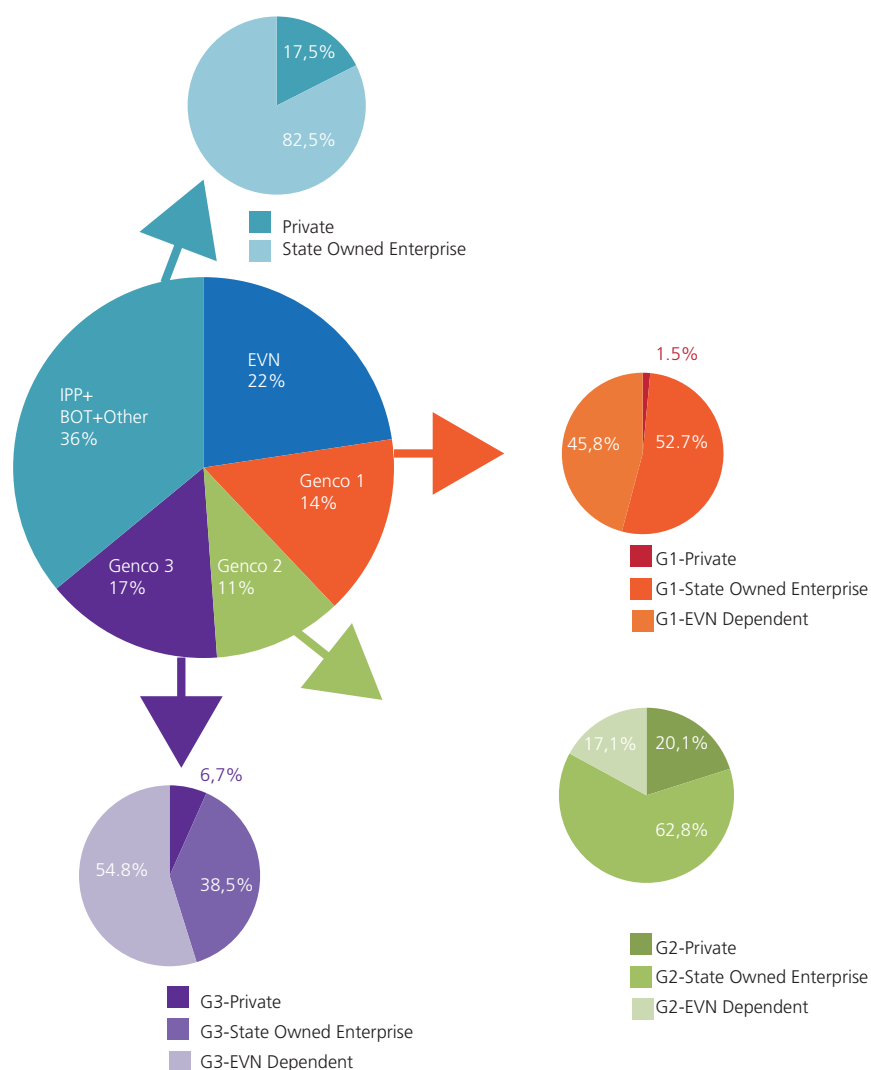
This is feasible, however, as evidenced by several positive signs in the sector. A number of local and international companies and investors have shown interest in developing major power projects in Vietnam. The international interest includes a number of companies with extensive power sector holdings elsewhere in Asia—firms such as Tata, AES, Jaks, Sembcorp, SN Power, and CLP Holdings (formerly China Light & Power); as such, they are highly credible as project promoters. There are also interested local investors that may be able to participate in the market. Although they have less experience with, and financial capacity for, major power projects, experience elsewhere in Asia shows that local investors' capabilities can grow quickly in an encouraging environment.

There are also financing possibilities. For example, additional funding may be available from import-export banks in China and Korea for projects that employ plant and equipment provided by those countries; although such financing can be expensive and inevitably limits the choice of suppliers, it is the most likely source of funds for coal projects. Also, a hydropower project has recently managed to secure funding from an Austrian bank.

However, there are a number of constraints on the capacity of the private sector, both locally and internationally, to invest in generation projects on the required scale. These constraints fall into four categories—the power market, conditions for power projects, capital markets, and the performance of the MOIT—as follows:

1. The *power market* is characterized by retail prices that are below cost, and investors understand this. They are therefore not confident of negotiating adequate

FIGURE 4.1: SHARE OF POWER GENERATION OWNERSHIP (BASED ON INSTALLED CAPACITY), 2012



Source: Own elaboration

prices for generation projects. Although Circular 56 provides for standardization of PPAs, investors will likely continue to doubt the fairness of the power market until: (a) implementing regulations are put in place; and (b) an announcement is made on how existing different PPA structures for IPPs, BOTs, gencos and multi-purpose hydropower power plants are to be dealt with. This concern is magnified by the uncertainty regarding the timing for the establishment of an independent system and market operator.

2. There are further specific concerns over the *conditions applicable to power projects*. These include the availability of government guarantees, land use conditions, and the adequacy of fuel supplies for plants. Individual projects are likely to raise their own special issues.

3. Power projects will need to raise funds in both international and local *capital markets*. In current market conditions, however, any project will inevitably find it difficult to raise funding in international markets. The terms and conditions agreed by the government will play a vital role in making projects bankable. The local capital markets, which are not well developed and do not have a large appetite for initial public offers, will be only a limited source of funds for the next few years.

4. Another major matter of concern is the slow speed at which the *MOIT* negotiates with private investors for BOT projects. It may take up to seven years to negotiate a BOT project, and there are lengthy intervals between meetings to discuss potential projects. The ratio of commissioned to MOU-stage projects is very low; at the time of the preparation of this report, only two projects had been commissioned while MOUs for another three

had been signed (of which only one was actually under construction). This reflects limited capacity in the MOIT.

According to the authors' analysis, new generation capacity is needed urgently and the funding required from the private sector to develop it is significant. In the absence of such investment, it is unlikely that the forecast demand will be met—and correspondingly likely that, over time, system security and reliability will be compromised. If for any reason (creditworthiness of EVN, the MOIT's response speed, or lack of interest from private sector because of macro conditions) private sector investment cannot be mobilized, a generation gap of up to 20 GW will emerge, with obvious consequences for quality of service. Under these circumstances, EVN will have limited scope for funding the required new investment internally, and most likely the government would need to finance the expansion plan—with the associated fiscal cost.

#### 4.2. INADEQUACY OF RETAIL TARIFFS

The financial analysis was carried out for: (a) two options, or scenarios, of tariff increases; and (b) a number of sensitivity analyses. The base-case scenario addresses the current situation of the country and proposes a gentle but constant tariff-adjustment path, which will lead to financial sustainability in EVN in 2018. An alternative scenario was simulated assuming average annual tariff increases at the rate of inflation (projected at 7 percent per year) to evaluate the consequences of not implementing cost-reflective tariffs in the medium term.

The underlying assumptions of these scenarios are as follows:<sup>8</sup>

- PPAs are linked to the evolution of fuel prices.
- It is envisaged that in the next 10 years, prices of indigenous fuel sources will rise to international levels in the region (inflation estimates were provided by the World Bank's country economists).
- Tariffs are based on the following revenue requirements for all subsidiaries:
  - o For the PCs and NPT, tariffs are based on MOT Circulars 12 and 14 (a brief description is included in Annex VII) using a 10 percent real (after tax) return on equity.
  - o For the gencos:
    - For existing plants, current purchase prices are provided by EVN.
    - The cost of new power plants is based on the levelized costs.
  - o The real rate of return on assets is assumed to be 10 percent, and the depreciation period 20 years.

- o Variable costs are based on fuel prices and the expected efficiency of each technology.

Since fuel prices are one of the main drivers of the outstanding tariff increase, which is needed to achieve financial sustainability over the next few years, the authors simulated a sensitivity test in which fuel prices remain at today's levels.

In addition to the tariff assumptions, the financial projections assume modest improvements in the efficiency of operations, as described in Section 3.

The results are shown in Table 4.1. They show that for the EVN power group to achieve financial sustainability in four years to 2018 will require average retail tariffs increases of around 10 percent per year, factoring in the potential for modest efficiency improvements. If the target date for achieving financial sustainability is delayed by one year to 2019 to further smoothen the adjustment path, the required average annual tariff increase would be about 8 percent.

The alternative scenario, which is based on tariff increases at the rate of inflation, would lead to an unsustainable financial outcome for EVN, such as insolvency and serious power supply deficits, unless there is massive government fiscal support.

The last simulation shows that, assuming fuel prices remain flat in the next few years (which is unlikely given the need to import fuel in the near term), tariffs will increase at the same average rate as inflation, enabling EVN to reach cost-reflective tariffs. (See Figure 4.2.)

Thus, a clear commitment to ensuring EVN's financial viability through tariff increases that are in line with existing policy—and through modest efficiency improvements, as discussed in Section 3—is critical for ensuring the sector's ability to fund its huge investment program of US\$53 billion during 2014–20. Private investors, who are expected to fund nearly 50 percent of the total investment program, will want to see a creditworthy EVN; and so will lenders, who will be expected to provide about US\$21 billion in loans (70 percent of the expenditure) for the program's public sector component. The size of the program is unprecedented, and so is the required financing.



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<sup>8</sup> Financing plans for new investments were provided by EVN.

TABLE 4.1: EVN'S FUTURE FINANCIAL PERFORMANCE UNDER VARIOUS ASSUMPTIONS

	2015	2016	2017	2018	2019	2020
CASE 1: TARIFF INCREASE TO ENSURE FINANCIAL SUSTAINABILITY IN 2018						
TARIFF INCREASE (%)	7.50	15.00	15.00	10.00	10.00	7.00
D:E (%)	59.4	62.3	62.1	61.3	59.5	59.1
DSCR	1.30	1.47	1.50	1.50	1.50	1.51
SFR (%)	-1.1	10.8	17.4	26.5	27.4	45.4
CASE 2: TARIFF INCREASE CAPPED BY INFLATION (7%) YEAR						
D:E (%)	60.5	66.8	72.8	79.7	87.4	95.4
DSCR	1.19	1.14	0.86	0.68	0.46	0.36
SFR (%)	-6.7	-14.2	-48.8	-95.0	-155.8	-331.3
CASE 3: TARIFF INCREASE TO ENSURE FINANCIAL SUSTAINABILITY IN 2019, ASSUMING FLAT FUEL PRICES						
TARIFF INCREASE (%)	7.50	10.00	10.00	9.70	7.00	5.00
D:E (%)	59.4	62.5	63.1	62.0	59.1	55.9
DSCR	1.30	1.45	1.40	1.44	1.46	1.65
SFR (%)	-1.1	9.8	8.3	21.6	25.2	82.4

Source: Own elaboration.

Figures in red color show performance indicators that are below industry benchmarks

#### 4.3. THE AFFORDABILITY OF POWER

One of the main concerns over any program of power tariff increases relates to the impact of increases on consumers, especially poor consumers. In the light of this concern, an assessment was carried out of the social acceptance of cost recovery tariffs in Vietnam (a summary is presented in Annex IV).

Raising tariffs to a sustainable level (about 40 percent in 4 years) would lead to the following share (Table 4.2) of electricity expenditure in a household's total expenditure. Total expenditures of households are assumed to follow the increase in GDP per capita in all deciles, and the existing increasing block tariff (IBT) is modeled as of this writing.<sup>9</sup>

International experience suggests that 10 percent is a reasonable threshold for electricity expenditures as a percentage of total household expenditure. The results show that electricity expenditure will remain below 5 percent of total household expenditures for the poorest decile of consumers in Vietnam—meaning that the tariff increase required to ensure EVN's financial sustainability would not jeopardize the social welfare of domestic consumers. Should the government wish to assist the poorest power consumers, it should raise the level of cash transfer coverage by the Ministry of Labor, Invalids, and Social Affairs (MOLIS

A). Such a policy would be fully funded by the extra tax revenue from value added tax (VAT) on the higher power prices, without any fiscal impact.

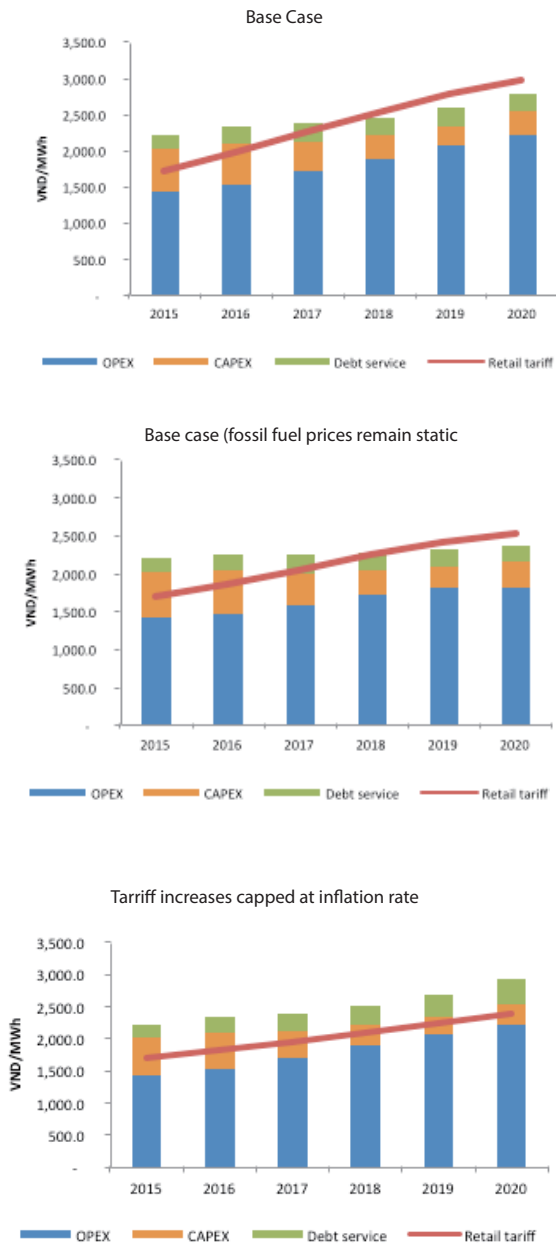
TABLE 4.2: SHARE OF ELECTRICITY IN TOTAL HOUSEHOLD EXPENDITURES (%)

	POOREST 10%	DECILE 2	DECILE 3	DECILE 4	DECILE 5	DECILE 6	DECILE 7	DECILE 8	DECILE 9	RICHEST 10%
2012	1.7	1.9	2.0	2.0	2.1	2.2	2.2	2.1	2.2	2.0
2017	1.4	2.8	3.0	3.0	3.2	3.3	3.5	3.3	3.8	2.7
2020	1.4	3.2	3.4	3.4	3.8	4.0	4.2	4.0	3.4	4.1

Source: Own elaboration.

<sup>9</sup> Under an increasing block tariff (IBT) scheme, users pay different amounts for different consumption levels via a step-wise structure: as energy use shifts to the next block of consumption, the tariff increases.

FIGURE 4.2: TARIFF PATHS AT A GLANCE



Besides these customers, a tariff increase may have an impact on the industrial sector. From the consultant’s review of existing studies on this matter, it is apparent that the proposed cumulative tariff increases (base case scenario) for industrial consumers would not have a huge effect on any specific export-oriented sector. The two industries most affected by the price hike (water processing and gas) are not subject to international competition and should be able to pass the increase through to their final products. For the export-oriented sectors, the cost impact is less than 3

percent of price, with the exception of the textiles sector (3.5 percent). It is very difficult to assess whether these price increases are likely to damage the competitiveness of the various sectors because each sector is unique. A better approach is to address how the cost impacts can be mitigated; this also requires a case-by-case analysis, but some common issues can be managed from the perspectives of the power sector policy. For instance, it is well-known that there is potential for energy efficiency measures in Vietnamese industries.

So far, industrial energy use has increased almost at the same rate as GDP, and energy intensity (GDP/MWh) is broadly constant. The impact of energy efficiency measures to date in the industry has been non-existent or negligible.<sup>10</sup> As of today, energy consumption of these industries is to some extent subsidized, and the removal of these subsidies would need to be offset, at least temporarily, by alternative mechanisms so as to not jeopardize the performance of these industries in the short term and to elicit support from the largest number of stakeholders. Energy efficiency subsidies may help smooth the transition toward this tariff increase while improving sustainability in the use of energy sources in industries. These sorts of incentives could be introduced quickly to partially offset the price hike and avoid negative impacts, especially in export-oriented businesses. Since the government may gain about VND 85 trillion in cumulative extra revenue up to 2020, it seems there is fiscal space to finance energy efficiency investments in the industrial sector. Subsidizing the electricity costs to improve competitiveness is only a short-term policy; subsidizing investments to improve competitiveness on a sustainable basis is a better policy in the medium term.

Finally, it is worth saying that the tariff increase’s impact on inflation is irrelevant: it is only about 0.5 percent above baseline inflation for each 10 percent increase in tariffs. Because the recommended tariff increase would be spread over four to five years, the annual inflationary impact will be very low. In any case, this impact should be compared with the fiscal impact (and the consequent effect on inflation and GDP) of a deteriorating quality of service or the government being forced to bail out the power sector.

#### 4.4. OPERATIONAL IMPROVEMENTS IN EVN

The report’s analysis compared EVN with other power utilities in Asia and elsewhere in the world, including companies from Bangladesh, Brazil, Chile, Colombia, India, Pakistan, Peru, and the Philippines. The comparisons are in many cases favorable to EVN, which has low technical losses, high levels of billing and cash collection, and low levels of operating costs compared to other comparable utilities. In many of these areas, there is little or no scope

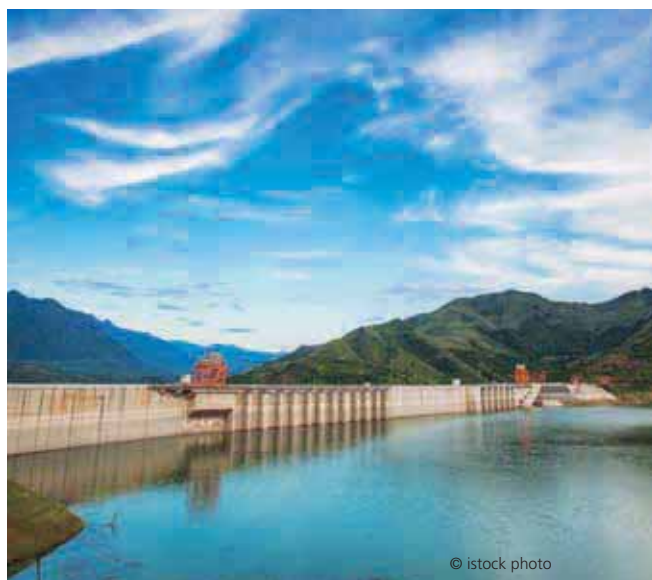
<sup>10</sup> Recent studies—*Energy Efficiency in Vietnam* (Agence Française de Développement, 2012) and “Vietnam Energy Efficiency” (Embassy of Denmark, 2012)—indicate a potential energy reduction of up to 50 percent in the cement industry, 35 percent in the ceramic industry, 30 percent in the textile/apparel industry, and 20 percent in the steel and food processing industries. Within the next five years, the Vietnamese government aims to lower overall industrial energy consumption by 5 to 8 percent through technological upgrading (compared to the business-as-usual scenario). There have been some steps in terms of regulation in Vietnam—that is, the National Target Program on Energy Conservation and Efficient Use, VNEEP—but there seems to be room for improvements and scaling up the current achievements.

for further improvement. Costs for capital projects are also similar to those elsewhere in the world. Consequently, there is no scope for significant short-term cost reduction through productivity improvements.

That said, the report has identified a number of measures that can help enhance labor productivity over time; these are set out in Section 5 and allowed for in the financial projections. The key point is that such operational improvements are not an alternative to tariff increases, but rather a complement to such increases that can help deliver more cost-effective power to consumers over time.

#### 4.5. RISK MANAGEMENT IN EVN

EVN faces a number of risks over which it has limited or no control. As the company grows in size, so will the financial significance of those risks. In the course of the study the authors identified four particularly significant risks concerning hydrology, debt structure, foreign exchange, and demand forecasting.



##### 4.5.1. Hydrology Risk

The hydrology risk is highly significant. The variation in rainfall levels from year to year naturally affects the level of hydropower generation, and hence the need for more-costly thermal power. Hydrology is therefore a critical driver of EVN's future financial performance—and one over which it has little if any control. There are and will continue to be substantial variations in performance between wet and dry years. As the past two years have illustrated, EVN's performance is far stronger in a wet year than a dry one: changes in conditions led to an improvement of VND 15.5 trillion in EVN's financial position in 2012, equivalent to over 10 percent of its revenue in that year. Long-term weather forecasts may help EVN predict its likely costs over a future year, but there is little if anything that EVN can do to plan

and manage water levels in its dams, and thermal generation is the only feasible response in a dry year.

Over time, the importance of this risk is likely to diminish because future additions to capacity are likely to be thermal rather than hydropower (the majority of good hydropower sites are already in use). However, it remains a risk that is difficult and important to manage.

##### 4.5.2. Debt Structure Risk

Too much of EVN's debt, and in particular its local debt, is excessively short-term. EVN's shareholder, the government, is taking a limited direct role in supporting EVN's finances. There have not been any equity injections into EVN for a number of years.

Indirectly, however, the government is heavily involved because EVN is not seen as creditworthy in its own right in international markets. As a result, government guarantees are in place for loans from development partners and import-export banks. Furthermore, the financial position of EVN's subsidiaries is even weaker, and they require additional guarantees from EVN headquarters for foreign borrowing. The gencos are in the weakest position of all: they do not yet qualify for any development partner funds through the MOF because they do not have the qualifying period of three years of profitable operations.

Loans from development partners are passed through the government to EVN, but the main impact of this is to introduce an interest rate premium since EVN bears the exchange risk on these loans. The only other support is through the subsidies paid to EVN for supporting rural areas; but this has a very limited effect. Finally, the size of EVN's debts and capital program provide important context since both are large and growing against the background of current performance. EVN is already trying to negotiate longer terms on some of its loans from local banks and is certain to continue to face difficulties in keeping current on its debt repayments.

The shortcomings in EVN's debt structure reflect the inadequacy of Vietnam's capital markets rather than any lack of capacity in EVN. Because the bond market is very limited, EVN is forced to undertake most of its local borrowing through the local banks. This has an inevitable impact on EVN's creditworthiness in that international banks, other potential lenders, and suppliers will look at EVN's repayment obligations and capacity and conclude that there are risks in extending credit or entering into contracts with EVN in the absence of a government guarantee.

##### 4.5.3. Foreign Exchange Risk

Although tariffs are in local currency, much of EVN's debt and some of its costs are denominated in foreign exchange. About 63 percent of EVN's debt was denominated in foreign currency in 2013; according to EVN, this is expected to increase to over 70 percent by 2017. EVN suffers losses on these loans every time there is a currency devaluation, and

it has limited control over the risks. No market mechanisms exist that would allow EVN to manage these risks.

#### 4.5.4. Demand Forecasting Risk

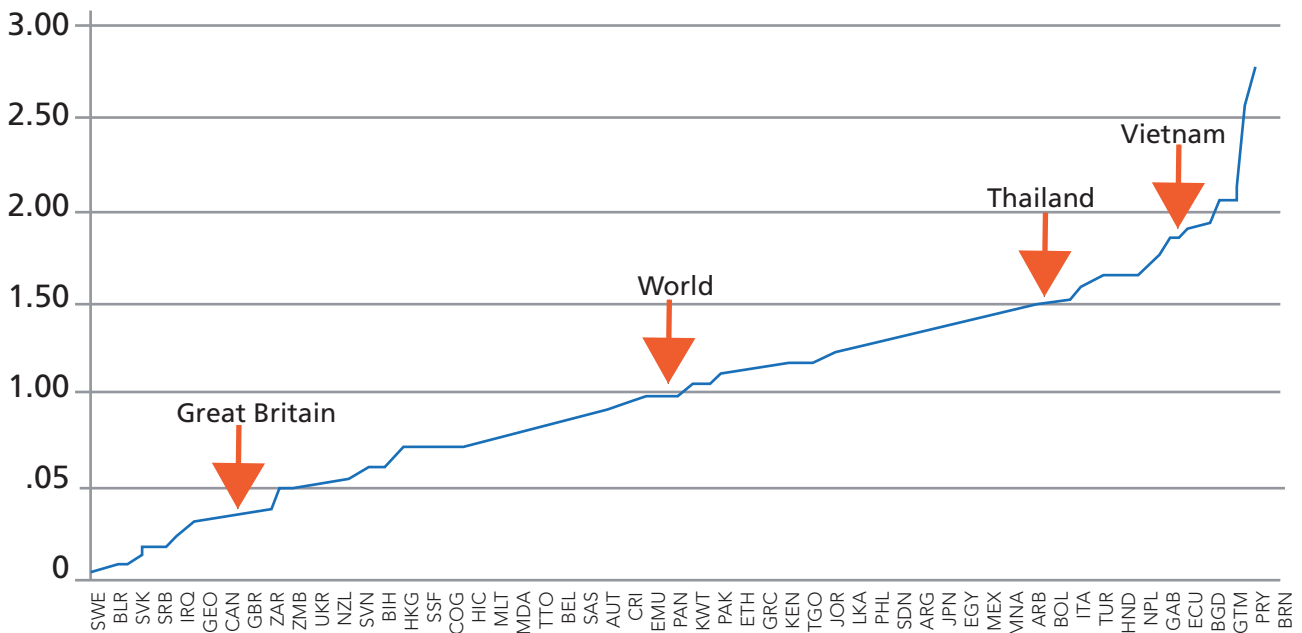
Various factors affect the demand forecast. GDP growth is one; any reduction in energy/GDP elasticity—that is, the percentage change in energy consumption that results from a percentage change in national GDP—might affect the forecast. Currently, the energy/GDP elasticity is in the order of 1.9. This is a very high value compared with other economies (see Figure 4.3). International experience shows that, as the economy develops, elasticity eventually declines. However, international experience also shows that several developing countries have maintained this high elasticity for many years (for example, Turkey and China). It is impossible, therefore, to estimate when the turning point will be reached. Reductions in elasticity are likely to take place over several years and, in many cases, require major investments in the productive sector (through changes in production processes and technologies).

The shift toward cost-reflective tariffs will require an aggregate increase in the price of electricity to end users of about 40 percent during the next four to five years. Higher electricity prices could lead to a significant slowdown in rate of growth of demand for electricity. However, because there is currently insufficient data on price elasticity of demand for electricity—the percentage reduction in electricity consumption that results from a one percentage increase

in tariffs—it is impossible to estimate the scale of the potential reduction in demand. Thus, while there is evidence from international experience that in certain situations, when facing significant step increases in electricity tariffs, consumers react by adjusting their consumption patterns, there is also evidence of inelastic price elasticity over long periods of time before the inflexion point is reached.

Therefore, for planning purposes, it is important to retain the flexibility to adjust the rate of investment to match changes in demand when they do occur. The demand for electricity may grow more or less quickly than the estimates in the PMPs and in EVN's forecasts. However, in principle, EVN continues to be bound to implement the PMP, which is only formally updated every ten years. In the past three years, power demand has grown far more slowly than shown in the PMP, but EVN's investment program has also fallen behind schedule—and, as a result, there is a shortfall in capacity. However, if EVN had invested in accordance with the PMP, it would now have too much capacity and face even greater difficulties in managing its finances.

FIGURE 4.3: LN (DEMAND) TO LN (GDP) ELASTICITY ACROSS THE WORLD, 1990–2010



Source: Own elaboration.

<sup>11</sup> *Equitization* is the term used in Vietnam to describe the transformation of a state-owned corporation into a joint stock company and sale of part of the shares to private investors without necessarily transferring majority share ownership to the private sector.

#### 4.6. CORPORATE GOVERNANCE

The rationale behind EVN's current unbundling of the power sector is to create independent companies with responsibility for generation, transmission, and distribution. These companies will eventually be able to operate as self-contained entities within an independently regulated power sector. In due course, EVN hopes to introduce private finance into its gencos through equitization.<sup>11</sup> These objectives are sound, but they will require arm's-length contractual structures and effective corporate governance in all of the subsidiaries before the full benefits can be enjoyed.

The contractual arrangements between the gencos and EVN do not enable the gencos to operate at arm's length from EVN. Until very recently, the PPAs under which the gencos operate were short-term and updated every year, which means that they did not provide a reliable revenue stream that could have enabled the gencos to borrow independently. EVN has finalized the conversion to longer-term PPAs and the ERAV is working on improving Circular 41; both elements can help the creditworthiness of the gencos. At EVN headquarters, further restructuring is required to bring operations to a commercial basis with the separation of the NLDC into an independent entity and the establishment of PPAs for multipurpose hydropower plants.

At present, corporate governance may be improved throughout EVN. Although EVN staff have received training on appropriate approaches to corporate governance, implementation remains a key challenge.

In principle, boards of directors are responsible for the governance of their companies. The shareholders' role in governance is to appoint the directors and the auditors and to satisfy themselves that an appropriate governance structure is in place. The responsibilities of the board include setting the company's strategic aims, providing the leadership to put them into effect, supervising the management of the business, and reporting to shareholders on their stewardship. The board's actions are subject to laws, regulations, and the shareholders in a general meeting. In particular, corporate governance relates to the role of the board and should be distinguished from the day-to-day operational management of the company by full-time executives.

However, because all the subsidiaries are effectively branches of EVN, they lack boards and senior management structures that meet good practice standards. Accounts are subject to audit qualifications and do not comply fully with the IFRS. Financial management systems and internal controls are weak.

Proposals to improve governance and remedy these shortcomings are set out in section 5. Given the relatively short life of the newly created generation companies, an appropriate governance structure is the greatest need.

#### 4.7. CONCLUSION

All the challenges set out above are significant in isolation. Taken together they are a major threat to EVN's future viability. These threats are amplified by the government's reluctance or inability to come to EVN's assistance in the event of difficulties. The government has committed to avoiding further direct investment in the power sector, and its financial position gives it little if any fiscal space to reconsider this position and make, for example, major injections of equity capital. As such, it is vital that the challenges be effectively met. The next section sets out recommendations for achieving this.

The EVN group is not under any immediate threat of insolvency. However, it has in recent years faced cash flow problems that forced it to delay payments to fuel suppliers. A prolonged delay in granting tariff increases, coupled with a series of poor years for hydrology (that is, with continued low rainfall), could place EVN in a far more serious financial position in which its liabilities would exceed its assets and it would face insolvency.

Other power utilities in Asia have faced this situation and adopted a range of different approaches. In the Philippines, the government established an asset and liability management company called Power Sector Assets and Liabilities Management Corporation (PSALM) to oversee what was, in effect, a managed default on the power sector's debts, with the government injecting funds to meet liabilities. Subsequently, the Philippines renegotiated its debts to development partners to reschedule them. In Bangladesh, new companies were set up to manage the assets of the power sector—along with the liabilities of predecessor companies that, unable to meet their debt repayments to government, had defaulted. Thus the Dhaka Electricity Supply Authority was replaced by the Dhaka Electricity Supply Company and the Dhaka Power Distribution Company.

In both cases, the governments had to accept the loss of significant sums because their power sectors were unable to meet their liabilities and the governments were called on to make loan guarantees. In the case of the Philippines, power tariffs had to be increased to among the highest in Asia to limit the impact on public finances. EVN's current liabilities are less onerous, however, and the recommendations in Section 5 are designed in part to prevent such a scenario from occurring in Vietnam.







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## 5. RECOMMENDATIONS FOR A FINANCIAL RECOVERY PLAN

This section sets forth a number of detailed recommendations that, taken together, comprise a financial recovery plan designed to help improve the finances of EVN and the Vietnamese power sector more generally.

As mentioned in Section 2.1.2, the financial recovery plan was developed on the basis of work carried out during a diagnostic analysis, a financial evaluation, and a social and

fiscal analysis of the impact of tariff adjustments. In these earlier reports, the key performance drivers were identified, current performance was benchmarked with comparable utilities, risk factors specific to EVN and its operating environment were identified and analyzed, and future performance was simulated under various scenarios and options for improvements considered. The financial recovery

TABLE 5.1: RECOMMENDATIONS FOR IMPROVING EVN'S FINANCES

PILLAR	IMPACT ON POWER SECTOR FINANCES	LEVEL OF EVN CONTROL OVER PILLAR
<b>1. OPERATIONAL EFFICIENCY</b>		
Appoint implementation leader	Low	High
Technical management	Low	High
Complete unbundling	Low	Medium
Non-core assets divestiture	Low	High
Better governance	Medium	Medium
Rehabilitate assets	Low	High
<b>2. NEW INVESTMENT STRATEGY</b>		
Encouraging private sector participation	High	Low
Maintaining dialogue with private sector	Medium	Low
Improving capacity in MOIT	Medium	Low
Adopting dynamic approach to planning	High	Low
Genco divestiture	High	Medium
<b>3. DEVELOPMENT OF SUSTAINABLE FINANCING STRATEGY AT EVN</b>		
Improving capital structure	Medium	Low
<b>4. IMPLEMENTATION OF COST-REFLECTED TARIFFS</b>		
Implement cost-based tariff, including a reasonable return on capital	High	Low
Implement full pass-through of non-manageable costs	High	Low
<b>5. RISK MANAGEMENT</b>		
Stabilization fund	High	Medium
Foreign exchange risks management	Medium	Medium
Planning management	Low	Low

Source: Own elaboration.

plan pulls together measures for revenue enhancement, cost/operational/technical efficiency, debt, investment, and risk management into a coherent plan for EVN and the Vietnamese authorities to consider for implementation to achieve the sector's financial sustainability objectives.

The recommendations are not mutually exclusive; rather, they tend to reinforce one another in that implementation of any one of them is likely to facilitate the implementation and effectiveness of the others. The recommendations are grouped into five key pillars, as shown in Table 5.1.

This section discusses each of the pillars in turn. It should be noted that the recommendations are aligned with the guidelines and provisions established in Prime Minister's Decision 1782/2012. To facilitate decision making in the future and ensure better overall performance, EVN should periodically review this recovery plan and adjust it if necessary.

## 5.1. IMPROVING OPERATIONAL EFFICIENCY

Analysis of the operations of the various EVN subsidiaries determined that they are generally well run and meet international performance benchmarks. Levels of losses are low and EVN invoices for its sales and collects revenue well. Costs of operation are also generally low. However, a range of areas where EVN can improve its operational efficiency was identified, mostly related to asset management. In all cases, improvements are likely to be gradual and limited, but they are nevertheless worthwhile as EVN aims to offer a cost-effective service to consumers.

There are six measures that EVN can take to improve its operations. These are: (a) the appointment of a leader to take the financial recovery plan forward; (b) better technical management; (c) full unbundling; (d) the divestiture of non-core assets; (e) asset rehabilitation; and (f) better governance.

### 5.1.1. Appointment of a Senior EVN Official

The recommendations that make up this financial recovery plan will require input from a number of ministries and agencies as well as EVN itself. To ensure that the recommendations are implemented in a coordinated and comprehensive manner, a senior EVN official should be appointed and given responsibility for taking all the recommendations forward.

### 5.1.2. Technical Management

EVN has very high levels of staffing in areas such as sales and administration. This is understandable in that the cost of employing workers is low and levels of outsourcing with EVN are low so that almost all activities are carried out in-house. However, EVN can progressively improve labor productivity over time by expanding its labor force at a slower rate than the growth in power demand. The financial projections have assumed this.

The authors have also identified two opportunities for managing capital expenditure more effectively. First, some older coal plants have low levels of utilization. This reflects both their status as backup plants for years of poor rainfall and, to some extent, their condition, which could be improved by rehabilitation investment. Some investment for plant improvement in EVN's capital program has been built into the financial projections. While the impact of such improvement is small, it contributes to the total performance enhancement package.

Second, levels of capital work in progress are very high throughout EVN. It is clear that too many projects are being started before other projects are completed. Placing the management of the capital program on a more efficient footing could reduce the level of capital work in progress and improve EVN's overall efficiency.

### *Quality of Service*

In addition to the reliability of the supply, a key parameter to be assessed is the quality of consumer service. This includes the accuracy of metering and billing, time required to make new connections, procedures, and time required for an increase in load. These issues may be evaluated through technical measures such as interruption frequency and duration, voltage fluctuations, and load-shedding.

Of all the key performance indicator (KPIs), quality of service is one of the most relevant because: (a) current levels are well below acceptable standards; and (b) an increase is needed to show that tariff increases are paying off. To enhance the quality of service in Vietnam, EVN should consider implementing state-of-the-art equipment to make the grid "smarter" —though more-CAPEX-intensive measures may also be needed, such as increasing the number of substations. SAIDI is not only related to CAPEX but also to internal organization and management. EVN can learn from successful peers on how to manage interruptions more efficiently. In any case, it is imperative that the quality of service improves in parallel with the increase in tariffs.

### *Generation, Transmission, Distribution, and Supply Indicators*

A number of KPIs that are normally used to characterize the performance of a generation, transmission, or distribution company are available from international experience. The key task, however, is to identify a subset of such indicators that may be used to characterize the desired performance of a company operating under the specific conditions of Vietnam. Different indicators have to be defined for each business branch of the company. (Section 3.2 outlines performance indicators and reference values proposed by the authors.)

### *Generation Indicators*

The three categories of performance indicators for generation companies relate to the following:

- *Power plant availability and maintenance performance.* Examples of such indicators are the overall availability (in percentage terms), forced outage rate (FOR), the equivalent forced outage rate (EFOR), and so on.
- *Unitary efficiency of each generator and the entire power plant.* Probably the most important in this subset is the heat rate of thermal stations.
- *Operation and maintenance (O&M) costs,* in comparison with similar power plants either in Vietnam or other countries, and the debt coverage.

#### Transmission and System Operation Indicators

The three performance indicators for the NPT, as the transmission service provider, relate to the following:

- *Transmission network availability and/or disconnections produced to customers originated in this network.*<sup>12</sup> Examples of such indicators include the number of faults per kilometer of high-voltage line, total duration of the interruptions, and power (in MWh) not delivered due to transmission network unavailability. Efficiency of the protection system is also included in this category.
- *Total OPEX, expressed as a ratio of the size of the network (km of high-voltage lines, number of substations, and so on) and CAPEX associated with network expansions.*<sup>13</sup> International information is a good source for benchmarking these indicators. Debt service coverage indicators are also in this group.
- *Security of O&M activities.* Examples are accidents (fatalities/injuries) per km of high-voltage line or similar.

#### Distribution Indicators

The various distribution indicators relate to the following:

- *The quality of service provided to the end users.* This category includes the three 'parameters' of quality of service: quality of the supply (absence of interruptions); power quality (voltage profile, absence of flicker, and harmonics and voltage spikes); and commercial quality (time required to make a new connection, number of complaints, and proper answers to claims). Most of these indicators are relatively standard since their formulas and method of calculation are regularly published by the regulatory institutions. The major problems with them have to do with the procedures and IT systems that should be established in the companies to calculate the values.
- *Technical losses.* These losses are relatively controllable by the operators and, therefore, these indicators are directly related to their average efficiency.
- *OPEX and CAPEX.* There is an important range

of such indicators, normally used by the regulator to determine a company's efficiency and to set tariffs accordingly.

- *Debt coverage and the payment procedures to the debtors.*
- *Security of O&M activities.* An example is the number of accidents (fatalities/injuries) per kilometer of high-voltage line.

#### Supply indicators

Supply indicators relate to the following:

- *Efficiency in meter reading, proper invoicing, and collection.* Examples of such indicators include average number of estimated bills per thousand customers, number of complaints regarding invoicing, average time required to answer these complaints, average level of account receivables, and percentage of bad debts.
- *The level of technical and non-technical losses,* covering both the percentage of these losses and their evolution.

#### Summary

Most of the above mentioned indicators are aimed at increasing the efficiency in EVN's operations and reducing energy use as far as possible. EVN is committed to the enhancement of energy efficiency measures in the power sector, and adequate monitoring of KPIs will help it accomplish this.

When determining the values of the parameters needed to adjust tariffs, the regulator should take into account the factors influencing the values of these input parameters. The ERAV should complement its existing regulatory framework with incentive measures to reduce losses, enhance technical performance, and improve quality of service. The final aim of all these initiatives is the accomplishment of efficient operations and improvement in the use of energy.

The effectiveness of the regulatory incentives in SOEs depends ultimately on the corporate governance framework applied to these companies. MOIT and ERAV should jointly set targets for some of the KPIs, such as operating costs and losses in the networks. They could calculate some of the input parameters (using as the reference value the average of the actual value in the last few years) and then adjust this value according to improvement objectives. An example of how this calculation would work for the distribution losses is as follows:

- The regulator carries out a benchmarking study on the loss factors in different countries and factor evolution across time on these losses. The sample of countries should ideally include countries similar to Vietnam in terms of weather and other factors.

<sup>12</sup> Indicators related to disconnection to customers, although important to be tracked and monitored, are relatively difficult to benchmark since they heavily depend on the network architecture, which is an issue not totally under the control of the NPT (as transmission service provider).

<sup>13</sup> Total fixed costs of the existing transmission network are a variable that is not considered relevant for an efficiency analysis since, as with existing generation assets, it depends on previous investments decided in a completely different environment.

- Based on the loss factors and technical considerations, the regulator should consult with stakeholders on the loss factors attainable in Vietnam's PCs and the length of time for convergence from the current values to the target.
- Once a long-term target and a period of convergence are set, the annual allowed value of losses should be set annually, taking into consideration the previous year's actual value.
- Similarly, it may be agreed that: (a) distribution OPEX per kWh sold should decrease by 10 percent in the next five years; and (b) each year an adjustment factor for the actual OPEX should be incorporated into the tariff calculation.

This is a very simple and easy-to-implement example designed to show how companies can be induced to improve performance. Obviously, more complex calculations are possible, but the report suggests giving priority to the application of simple incentives rather than developing complex methodologies for setting performance targets that may not be applied because of their complexity.

Table 5.2 shows a list of potential parameters that can be subject to performance targets.

### 5.1.3. Unbundling

EVN could intensify its efforts to unbundle the organization into a group of independent companies. The distribution and transmission companies have already made substantial progress down this path. However, many activities remain to be completed at the gencos, where unbundling only began in 2013. More broadly, the PPAs needed to give the companies autonomous revenue streams are not in place for the dependent power plants; and where PPAs are in place, they may not be sufficiently long-term or adequate to support independent operation by the gencos. Resolution of these shortcomings, which will take some time, is the precondition for enabling the new companies to borrow on their own behalf without guarantees from EVN headquarters. The main measures required to accelerate this process are as follows:

- Finalize fuel supply agreements (FSAs) with existing plants.
- Adjust Circular 41 along the lines proposed in this plan (see section 5.4).
- Finalize loan agreements with the gencos.
- Assess the current capital structure and ensure a reasonable level of debt. If current figures are not sustainable, alternative mechanisms such as equity injections or debt rescheduling have to be evaluated.

The multipurpose hydropower projects also need to be placed within a commercial framework, with PPAs in place and appropriate arrangements made for users to pay for irrigation services. EVN Corporate needs to be operated as

TABLE 5.2: POTENTIAL PARAMETERS SUBJECT TO PERFORMANCE TARGETS

PARAMETER		COMMENT
<b>GENERATION</b>		
	Non-fuel cost	Non-fuel costs are mainly O&M costs but also staff costs in the power plants, administrative costs, and so on. These costs may be reduced with efficient management of the procurement of external (and internal) services.
	Plant energy efficiency	Fuel consumption in a power plant depends both on technical and operational factors. Since both the responsibilities, to maintain and dispatch the plants, still lie with EVN, it is important to provide a signal to improve these parameters.
<b>TRANSMISSION</b>		
	Transmission losses	Given that the transmission remuneration is set in a separate piece of regulation, the only external parameter available to set a performance target is the losses factor.  Transmission losses may be reduced in the long term by improving the planning and development of the network and in the short term by operating efficiently the network.
<b>DISTRIBUTION</b>		
	Operating costs	These costs are not related to investments but with the normal day-to-day activities of the company. These costs include the expenditure in thousands of small decisions and some bigger ones. Regulators are not able to decide if all the small cost items were prudently incurred, so they need to rely on providing the right incentives and information disclosure mechanisms to provide efficiency gains.  Because operating costs are recurrent, past information is useful to forecast future expenditure. At the same time, comparisons with other utilities provide a benchmark of whether there is room to reduce these costs.
	Losses	Distribution losses may be reduced by proper management, mostly for commercial losses.
<b>SECTOR ADMINISTRATION AND ANCILLARY SERVICES</b>		
	Operating costs	The logic that applies to operating costs in distribution also applies to operating costs in sector administration and ancillary services. However, in this case, it may be more difficult to have external benchmarks on the efficient level of costs.

Source: Own analysis

a commercial entity rather than as a residual cost center for activities that cannot be located elsewhere. This requires the actual implementation of Circular 46, which establishes the framework governing the operation of multi-purpose hydropower plants.

Finally, the NLDC needs to be made independent and allowed to demonstrate its independence in managing load dispatch operations. It is a common international practice to completely unbundle dispatch centers from the utilities, and doing so is of the utmost importance in ensuring greater investment from the private sector.

#### 5.1.4. Non-core Assets

The extent of EVN's non-core activities is expected to decrease in accordance with government policy. In July 2012, the PM stated that EVN and other SOEs must dispose of non-core assets by 2015. EVN must sell a number of subsidiaries and associated entities. The book values as provided by EVN in VND billions (2012) are listed as follows:

- An Binh Joint Stock Commercial Bank: 757.1
- Global Insurance Company: 80
- An Binh Security Joint Stock Company: 114
- Power Finance Joint Stock Company: 1,000

The sale arrangements are restrictive. EVN must sell the assets for no less than their book value. It is unclear what sanctions will apply if EVN fails to meet the deadline or achieve the required price.

These sales, if achieved at the required price, will provide limited capital funding and have a negligible impact on EVN's financial sustainability. Assuming that these non-core entities are sold at their book value in 2015, this will lead to a non-operating income of VND 2 trillion, which accounts for 3.2 percent of equity and less than 2 percent of the cash of the company at the end of the year.

However, there is a wider point, which is that the sale of these assets will enable EVN's management to focus attention on its core business rather than on activities such as insurance and banking projects. This ought to lead to some improvement in EVN's overall performance.

TABLE 5.3: IMPACT OF DIVESTING NON CORE ASSETS ON EVN HOLDINGS' FINANCIAL INDICATORS (2015)

	WITHOUT SELLING NON-CORE ASSETS	SELLING NON-CORE ASSETS
D:E	63.4 : 36.6	63.3 : 36.7
DSCR	1.4	1.4
SFR	3.8	3.8

Source: Own elaboration.

Within its subsidiaries, EVN also undertakes a number of other activities (such as running guest houses and engineering activities) where services could be bought, thus conserving capital for and focusing management attention on core activities. Since the direct impacts of these measures

would be small in the short term, no allowances have been incorporated in the financial modeling.

#### 5.1.5. Asset Rehabilitation

A number of power plants are in an unsatisfactory condition and, as a result, suffer excessive levels of unplanned outage. Rehabilitating these plants could help improve EVN's performance in a cost-effective way. An assessment is needed as soon as possible.

#### 5.1.6. Better Governance

None of EVN's subsidiaries currently meets standards of good governance for commercial companies. Corporate governance is a complex subject with extensive literature. The London Stock Exchange has produced an excellent practical guide on the subject that is widely followed by companies in the United Kingdom.<sup>14</sup> Stock exchanges around the world produce similar, though generally less detailed, guidance and often have formal governance requirements in their listing rules.

The governance requirements of the Vietnam stock exchanges are less rigorous and are under development. EVN personnel have been given training in corporate governance but this is not yet reflected in current practice in the various subsidiaries. As a matter of process, EVN subsidiaries should seek to learn not only from the London Stock Exchange guidelines, but also from other countries with well-developed stock exchanges and corporate governance codes such as India and France.

The distribution and transmission companies have taken some steps toward better governance through the creation of boards of directors with some decision-making powers. However, the process has not begun in the gencos. There is much more to be done in all the companies in terms of implementing programs of good governance. To move gencos into the private sector, either wholly or in part, they will need to have a board of directors that operates in accordance with normal commercial practices and standards for the private sector.

The role of the board should include setting policy and strategy, monitoring management and company performance, selecting the chief executive, devising compensation strategy, reviewing budgets, and ensuring financial sustainability. However, in the short term, the boards will lack the skills and financial systems required to do any of these tasks effectively. As a first step, it is suggested that EVN should recruit several non-executive directors and appoint them to board positions with one or more of the various subsidiaries, so they can act as mentors to the board and assist its members' effectiveness. Placing the governance of all the companies on a proper commercial footing will be time-consuming; the process can begin immediately but will take two to three years to produce results.

<sup>14</sup> <http://www.londonstockexchange.com/companies-and-advisors/aim/publications/documents/corpgov.pdf>

As part of this process, EVN subsidiaries should develop performance measurement systems to monitor and evaluate their performance. This should include KPIs set and reviewed regularly by the board to assess overall performance at the companies (see section 5.1.2). It should also include lower-level indicators to assess the performance of groups of staff, individuals at the level of business units, and (from a technical standpoint) individual feeder lines in the distribution system or of a generation unit within a genco. Moreover, these KPIs can be adjusted over time with the aim of ensuring ongoing improvement in EVN's operations.

The development of effective accounting and financial management systems should also be a priority at all the subsidiaries. EVN is in the process of launching new accounting and financial management software, Oracle Financials, to replace its existing in-house system, FMIS. The software has been fully tested in the Head Office and is in a pilot phase in the subsidiaries. The transition period has taken longer than usual because the new software needed to reflect recent changes in the Ministry of Finance's accounting policies for corporates. The first group quarterly financial reports produced by Oracle Financials is expected at the end of 2015.

Furthermore, EVN's accounts are subject to a number of recurring qualifications from their auditors because they do not fully comply with the IFRS. In addition, the consultants' experience collecting data for the financial model for this study showed that financial data are often unreliable and only available after lengthy delays. The report recommends a review to identify the most effective way forward to address all these weaknesses. The starting point should be an analysis of all the areas where EVN's accounts and information systems fall short of IFRS and other good practice standards. This should be followed by the development and implementation of a prioritized program of improvements. The adoption of a reliable enterprise resource planning system at all the major EVN subsidiaries is likely to be a major part of this program. Selection and implementation of such a system will be time-consuming and may well take two to three years. However, it will yield significant long-term benefits in terms of producing reliable and timely financial information that will comply fully with the IFRS and inform company management of all aspects of its activity, from setting tariffs to devising appropriate risk management strategies.

#### 5.1.7. Summary

These six measures for improving operational efficiency—the appointment of a leader to take the financial recovery plan forward, better technical management, full unbundling, the divestiture of non-core assets, asset rehabilitation, and better governance—can largely be undertaken internally by EVN (although some of them may require approval from the government—for example, to appoint external non-executive directors). However, improvements to accounting

and financial systems will require external assistance and should be supported operationally and financially by development partners.

## 5.2. DESIGNING AND IMPLEMENTING A NEW INVESTMENT STRATEGY

The government is advised to develop and implement an investment strategy for the power sector that envisages a hugely increased role for the private sector in power generation. Table (in Section 2.5.1) identified private investment requirements for the period 2014 to 2020 as US\$25 billion. Private investment in Vietnam on this scale is unprecedented. While there are no formal figures, it seems unlikely that private investment has ever previously reached US\$1 billion in a single year. Between 2013 and 2020, private investment is expected to average over US\$4 billion per year.

There will likely be some doubts regarding the feasibility of achieving such a huge increase in investment, especially in light of the current policy environment. As a result, major changes in policy will be required. These policy reforms fall into five main areas:

1. Encouraging greater private sector participation
2. Maintaining dialogue with the private sector
3. Increasing the MOIT's capacity to manage private sector projects
4. Moving forward with divestiture of the gencos
5. Adopting a dynamic approach to planning

### 5.2.1. Encouraging Private Sector Participation

The challenges involved in reaching a target of US\$4 billion per year of private investment are considerable. Higher tariffs are part of the solution, along with increased capacity at the MOIT and improved regulation, which are discussed further below. However, it is also likely to be necessary to improve incentives for the private sector to invest in power projects. These incentives will need to be carefully tailored to be as attractive as possible to private investors while protecting the interests of the Vietnamese government. This in turn will require regular dialogue between the government and the private sector, which is further discussed in section 5.2.2.

The government's dialogue with the private sector must be accompanied by a willingness to consider and implement policy changes in cases where this is vital to securing investment. The key concerns of investors that were consulted during the course of this study relate to guarantees on the remittance of funds, the availability of fuel, security of land titles, and access arrangements (these issues are discussed further in annex V). The dialogue with investors needs to be a continuous process that identifies various points of concern and maps out options for solutions. The government should understand that the more risks it wishes to place on investors, the more difficult it will



be for investors to raise loans and equity—and the higher the likely price of power will ultimately be. Investor requests for guarantees may raise questions as to the fiscal space available to the government for such guarantees; however, support from international financial institutions (IFIs) in this area may well be possible.

To gain approval to invest in the power sector, foreign investors must currently negotiate with EVN to get a PPA. Extensive negotiations are also required with multiple authorities—from the government and ministries (MOIT, MPI, Ministry of Natural Resources and Environment, MOF, and State Bank of Vietnam) to local authorities (People's Committees at the provincial, district, and commune levels)—to get an investment license. In total, these steps can take from one to five years to complete before investors can move to the next step. Streamlining this negotiation process will be vital to fostering private sector participation.

In addition, the following specific measures should be taken to further encourage private sector participation in power generation:

- Establish clear and straightforward licensing procedures
- Establish clear project appraisal mechanisms for the following:
  - o Timeline
  - o Evaluation criteria (avoid consideration of those projects which are not financially viable)
  - o Land use
  - o Infrastructure use
- Reduce the use of permits as much as possible

At present the right to develop and operate power plants is conferred to investors on the basis of unsolicited bids. The alternative approach of competitive tendering is detailed in MOIT's regulations for procuring private investors but hardly followed. The latter approach is more likely to attract developers with the required technical and financial capacity and who are, therefore, better placed to offer efficient power prices than unsolicited bidders. The government is advised to implement its existing competitive bidding as the default approach for securing private sector investment.

EVN is not a sufficiently credible offtaker without sovereign guarantees. Rather than abruptly ending sovereign guarantees, the government should gradually reduce its use of them. The underlying principle is that sovereign guarantees will no longer be needed once the power market is firmly established and financially sound and credible players exist at all levels of the industry. EVN has to enhance its creditworthiness to boost private investors' appetites.

In the interim, the government's policy could be to provide sovereign guarantees only for the duration of the loan

repayments of the IPP instead of the whole duration of the PPA. It must be noted, however, that this would mean asking equity investors to take on a higher risk; they would consequently require a higher return on investment, and this would affect power prices.

#### 5.2.2. Maintaining Dialogue with Private Sector

There is already a channel of communication between the government of Vietnam and private sector power investors in the form of the Infrastructure Working Group of the Vietnam Business Forum (VBF). The Group is well established and brings together a range of private sector interests. However, its work needs to be deepened and intensified so that obstacles to private investment in the power sector can be kept under constant review and tackled as they arise. Formal dialogue should take place on a regular basis, at least quarterly, with specific contacts between designated individuals at EVN, the MOIT, and the VBF to ensure day-to-day continuity.

#### 5.2.3. Improving Capacity to Manage Private Sector Projects

In the consultants' interviews, a number of project promoters were critical of the pace at which the MOIT is negotiating IPP investments. In particular, they complained of long intervals between negotiation meetings with the MOIT. With the expected huge increase in numbers of IPP projects as a result of future power investment programs, this is a source of concern. The numbers and caliber of staff will have to be improved to meet the objective of promoting more projects more quickly.

Capacity can also be increased by adopting more-uniform formats for contracts. At present, each contract negotiation proceeds on the basis of a specific set of contract documents. Greater standardization will speed up processing.

#### 5.2.4. Moving Forward with the Divestiture of Gencos

Partial divestiture of the gencos is planned as part of EVN's future development, and initial planning work for this divestiture is now in progress. The terms on which the gencos may be sold are necessarily uncertain at this stage because there has been no evaluation to date of investor interest in purchasing stakes in the gencos. Options for the divestiture process are now being studied under funding from the World Bank, and the recommendations of this study will inform the decisions of the government and EVN in this regard.

The government should move forward with two initiatives. First, it is imperative to finalize the unbundling, as described in Section 5.1.3. Second, regulation should be adjusted to make the current standard power purchase agreement (SPPA) bankable. This will require amendments to Circular 41 to cover at least the following provisions:

- Ensure that SPPAs are automatically adjusted every year.

- Set longer periods and fixed quantities to increase investor confidence.
- Ensure the enforcement of all provisions set out in PPAs.

### 5.2.5. Adopting a Dynamic Approach to Planning

In the longer term, the government of Vietnam needs to decide how it plans to ensure the adequacy of future generation capacity. Currently, it is wavering between an approach based on BOT IPPs with market interventions (price cap and floors) and a consolidation of the generation power market, with expansion based on merchant plants.<sup>15</sup>

At present there are a number of differences in status between generation projects run by EVN Corporate (the multipurpose hydro projects) and the projects run by the gencos and IPPs. The multipurpose hydro projects are simply cost centers and have no PPAs. The projects run by the gencos do have PPAs whose duration has recently been increased from 1 to 10 years—which, while an improvement, is still short of the industry standard of 20 to 25 years. Private investors may consider these PPAs to be unattractive as they give no long-term assurance over prices. The IPPs do have proper PPAs but these are negotiated with the MOIT on a case by case basis.

#### *Establish an Independent System and Market Operator*

Over the next few years, in addition to the planned rapid growth in the IPP market, EVN is planning to equitize its gencos and introduce private capital to them. These activities will necessitate significant changes in the market for power and arrangements for load dispatch. Establishing an independent system and market operator will go part way toward giving private sector operators greater confidence that the system and market operator will dispatch their plants in a fair manner. In addition, the structure of the PPAs will need to be addressed. An industry structure in which similar terms are in place for all projects, whether private or wholly or partly private, is likely to give the greatest encouragement to private developers.

#### *Develop a Robust Master Plan*

A key aspect to the future development of the power sector and the attraction of foreign investors in generation is a robust master plan that is readily available to all parties. All these changes will require more-frequent adjustments to the planning process. MOIT or NPT, as the transmission system operator (TSO), should lead this process in close consultation with EVN and other stakeholders (at least twice a year) to be in a position to fine-tune and redefine plans for the power system. The plan should be thoroughly updated every five years, with annual revisions to reflect actual demand growth and new developments in the sector.

#### *Reconsider the Treatment of Embedded Generation Plants*

On a minor scale, one possible area where the government could consider a revised regulatory approach is in the

treatment of embedded generation plants, which are permitted for units with a capacity of up to 30 MW. The PPA arrangements for these sorts of plants are based on feed-in tariffs (most of these facilities are renewable energy plants including hydropower). These schemes have proved attractive to local investors and could be a good entry point for local investors to build up their capabilities to promote larger schemes. To encourage increased investment, the government should consider both improving the contractual terms and increasing the ceiling from, say, 30 MW to 50 MW (which would be justified in the light of overall system growth). Of course, although these would be worthwhile improvements, they would represent only a minor contribution to the private sector investment requirement of US\$4 billion per year.

### 5.3. DEVELOPING A SUSTAINABLE FINANCING STRATEGY

As discussed earlier in Section 3.1.2, EVN is currently in a precarious financial situation. Its debt-to-equity ratio is high, and much of the equity has been created through an asset revaluation. The level of foreign debt remains high, although in 2013 it decreased from almost 88 percent of total debt to 63 percent. However, the potential for foreign exchange losses remains substantial, and EVN will have no control over losses arising on this debt when the currency is devalued. The term of the debt is short relative to EVN's asset base, although this ratio improved in 2013 as well. According to the financial statement for 2013, around 45 percent of EVN's borrowings are due for repayment within five years. Finally, the recent improvement in EVN's finances has predominantly reflected higher levels of rainfall, with consequent higher levels of hydropower generation, which may not be sustained in future.

Table 5.4 summarizes EVN's financial challenges through 2020, with the increased tariffs assumed in the base-case financial projections. Key points to note are as follows:

- EVN's capital needs over the period 2014 to 2020 are US\$28 billion, or almost US\$4 billion per year.
- In addition to borrowing to finance capital expenditure, EVN also needs to refinance some of its existing borrowings every year so that total borrowing usually exceeds capital expenditure.
- The majority of new borrowing comes from foreign sources, peaking at 74 percent of requirements in 2016. Thereafter, local borrowing takes an increasing share of the total.
- Total debt increases from US\$14.6 billion in 2014 to US\$28.2 billion in 2020.

These variables clearly demonstrate that the improvement in financial performance will remain fragile even if the base-case tariff increases are assumed. This is due to the uncertainty posed by the various risks (hydrology, debt

<sup>15</sup> Merchant power plants differ from traditional rate-based plants in terms of how they are financed and where they sell the electricity they generate. A merchant power plant is funded by investors and sells electricity in the competitive wholesale power market.

TABLE 5.4: SUMMARY OF EVN'S FINANCIAL CHALLENGES, 2014–20 (US\$, MILLIONS)

CHALLENGE	2014	2015	2016	2017	2018	2019	2020	TOTAL
CAPITAL EXPENDITURE DURING YEAR	4,718	4,198	4,623	3,744	3,319	3,086	4,218	27,907
DEBT REPAYMENT DURING YEAR	1,646	1,647	1,711	1,972	2,299	2,412	2,515	14,200
GROSS NEW BORROWING DURING YEAR	6,241	3,938.76	4,048.71	1,687.83	1,803.32	1,135.09	2,754.70	21,609
...OF WHICH NEW FOREIGN BORROWING	61%	65%	74%	62%	54%	45%	49%	–
EVN'S CLOSING STOCK OF DEBT	14,656	18,088	22,129	24,116	26,438	28,219	32,394	–

Source: Own elaboration.

structure, foreign exchange, and demand forecasting) EVN faces, as described in the previous section. Most of these risks will likely intensify rather than diminish over the period to 2020 (hydrology is the exception due to a change in generation mix). It is therefore vital that EVN seeks responses to those risks and is supported by the government and other agencies in making appropriate changes. The recommendations for doing so are described in the following sections.

#### 5.3.1. Capital Structuring

The most important step EVN can take to enhance its capital structure is to increase its equity by generating regular profits, which are retained in the business. The higher revenues arising from the implementation of cost-based tariffs (see section 5.4), in combination with more efficient operations, will help in this respect. In addition, it would be clearly helpful if the government could agree to inject additional equity, although this is not consistent with the government's current thinking. Creating additional equity through asset revaluations is of limited benefit as it provides no cash.

EVN cannot increase the length of its loan terms without assistance from lenders. Loans from IFIs are already on comparatively long terms, so it is in local debt that most progress can be made. Very sensibly, EVN is already seeking agreement from its bankers to extend the term of some of its loans. In addition, it should seek to obtain long-term funds directly from capital markets. EVN and its subsidiaries are the sorts of organizations that should be able to attract long-term funding from markets. At present these markets are comparatively poorly developed in Vietnam; however, EVN can act as a catalyst to introduce longer-term bonds to the local market, working in cooperation with the government. The government's assistance might, for example, include offering underwriting guarantees to ensure that initial bond issues by EVN are successful.

Alternatively, the government could itself issue longer-term bonds and simply on-lend the proceeds to EVN. However, although this has the advantage of providing a quick solution, it has two disadvantages. First, it could be a

disincentive to potential private investors in the gencos, who would see that their lending needs were being met by the government (rather than directly by the market) and would be uncertain as to whether such a privileged arrangement would continue after their investment took place. Second, it would not help develop the local capital market in the same manner as a corporate bond issue.

#### 5.4. IMPLEMENTING COST-BASED TARIFFS

The report's analysis shows that implementing sustainable tariffs would lead to an average increase of around 10 percent in the average retail tariff up to 2018<sup>16</sup> (under the assumptions taken in the analysis, see section 4.2). Higher tariffs are not only vital for EVN but for attracting private investors into the generation sector. Investors are well aware that current retail tariffs are below cost-based levels and, as such, make it difficult for EVN to bear the cost of IPPs, which are priced in market terms. For EVN, the higher tariffs will imply both that the investment program of US\$28 billion over the period up to 2020 will become a reality and that it will have adequate funding to improve the quality of service towards international standards.

The government should move ahead in two complementary actions, as shown in Table 5.5.

To properly implement cost-reflective tariffs, the government will need to:

- Enforce the current regulatory scheme under the ERAV for PCs and the NPT (Circulars 12 and 14) to ensure distribution and transmission business are rewarded with a reasonable return;
- Amend current regulation (that is, Circular 41) to attract private capital;
- Carry out electricity tariff adjustments (to ensure EVN's financial viability) when needed and to the extent they are needed;
- Set PPAs in line with international standards;
- Allow market prices (that is, results of tendering

<sup>16</sup> The average tariff increase would be about 8 percent per year if the achievement of financial sustainability is delayed by one year to 2019.

TABLE 5.5: IMPLEMENTING COST-BASED TARIFFS

ACTION	RATIONALE	STAKEHOLDERS	ROADMAP
Implement efficient cost-based tariffs.	Ensure financial sustainability of EVN and attract private capital.	ERAV/MOIT/MOF	Empower the ERAV to enforce current regulation including a reasonable return on capital. Remove distortions to generation pricing. Ensure that SPPAs are automatically adjusted every year. Set longer periods and fixed quantities.
Adopt full pass-through mechanisms in retail tariffs.	Pass-through to customers non-manageable cost such as foreign exchange, fuel, and inflation.	MOIT/ERAV	Ensure that pass-through is automatic and there are no delays in adjustments. Increase the cap levels so that more automatic increase is allowed. Remove MOIT/MOF approval to maximum extent possible.

procedures) for new generation investment; and

- Develop further the principles of efficiency stated in Decision 69/2013 by amending Decision 24/2011, which states that the MOIT shall base its adjustments of the electricity retail tariffs on the annual financial reports and audits of EVN and the economic and technical norms.

A pass-through mechanism is currently envisaged in existing rules. However, pass-through mechanisms are not considered unless tariff variations exceed 7 percent. Additionally, in such cases, EVN should obtain authorization from the MOIT to adjust electricity tariffs. This threshold is high and has an effect on EVN’s financials. It has actually been increased from a former 5 percent; ideally, it should have moved in the opposite direction, lowering the limit to 3 percent for automatic adjustments of tariffs. The authorization by the MOIT should be kept only for very large variations that may have an impact at a macro level (that is, more than 15 percent), which is unlikely to happen, mostly if a stabilization fund is finally established. In case the stabilization fund (see section 5.5.1) is finally established, the threshold might remain at current levels and the fund will be used to partly offset these fluctuations in costs.

In the longer term, the ERAV’s role as an independent regulator will evolve. It will be necessary to ensure that EVN’s tariffs strike a balance between the interests of stakeholders, primarily consumers, producers of electricity, and macroeconomic managers. This in turn means that the ERAV will want to ensure that EVN seeks and achieves the efficiency improvements that are considered feasible over time.

Communicating the tariff increases is critical to ensuring smooth implementation of such adjustments. Key stakeholders such as government institutions, civil society, politicians, development partners, media, and the consumers at large must be made aware of the reform process. A focused communication strategy will enable greater cooperation between public and private companies in the

future, thus helping to ensure the involvement of the private sector in the future development of the power sector. A tentative communication strategy tailored to the main stakeholders is summarized in Table 5.6.

#### 5.5. IMPROVING RISK MANAGEMENT

The report’s recommendations for addressing the risks described in Section 4.5 are as follows:

1. Create a stabilization fund
2. Reduce the exchange risks associated with foreign borrowing

##### 5.5.1. Creating a Stabilization Fund

The first and most urgent action is the establishment of a stabilization fund to manage the risks that EVN faces—in particular the hydrological risks and, in the near future, the fuel price risk. A stabilization fund in tariff regulation is already envisaged but has not been implemented. Stabilization funds can be used to mitigate a variety of risks, including fuel price and foreign exchange risks. Since the risks associated with poor hydrological conditions have potentially greater adverse impacts, they could be a prime candidate for the use of a stabilization fund in the initial years, during which hydro-based generation will continue to play a large role in the generation mix.

In setting tariffs, EVN should plan for an average year for rainfall in which it would make some use of thermal plants when hydropower schemes run dry. This would need to be approved by the ERAV/MOIT. At the year-end, if there has been heavy rainfall and EVN has used less thermal plant energy than expected, then EVN would be profitable and the regulator would approve an arrangement under which the company would appropriate up to 2 percent of its revenue to a stabilization reserve fund. By contrast, in dry years when EVN makes a loss, there would be a drawdown from the stabilization fund to cover any losses.

In the immediate future, administration of the fund would be the responsibility of a senior official within EVN’s central

TABLE 5.6: RECOMMENDED COMMUNICATION STRATEGY

STAKEHOLDER	MESSAGE	CHANNEL
GOVERNMENT INSTITUTIONS	<p>Communicating new roles and mandates in the sector, especially with regard to new generation procurement and negotiation</p> <p>Communications of expectations for progress during the recovery plan</p> <p>Investment promotion and opportunities</p> <p>Communication on timing of reforms and impact on the economy</p> <p>Support for EVN turnaround and the proposed changes to the ownership and company structure</p>	<p>Direct communication and announcement to key stakeholders</p> <p>Workshops or strategy review meetings for close collaboration</p>
POLITICIANS	<p>Communicating development of the recovery plan designed to meet identified needs</p> <p>Actionable plans tied to reform strategy and dedicated functions to promote transformation</p> <p>Focus on fair and competitive procurement</p> <p>Long-term planning to promote security of supply</p>	Direct communication
DEVELOPMENT PARTNERS	Communication and involvement of the reforms process	Meetings
PRIVATE SECTOR	<p>Communication of market/regulatory changes to promote greater cooperation</p> <p>Communication of new developments, including the formation of a procurement cycle and development of new processes for procurement</p>	<p>Cooperative investment promotion with timely announcements from the MOIT and EVN</p> <p>Participation in conferences</p>
GENERAL PUBLIC	Informing customers on the development of cost-reflective tariffs aimed at improving quality of service delivery	Newspaper, radio, and television

finance function. This would help to institutionalize the stabilization fund mechanism in the short term. In the medium-to-long term the fund could be devolved to EVN's subsidiaries.

The fund would be established within EVN and funds retained internally. However, EVN would need to put in place backup arrangements for dry years when cash flow would be tight and the company would need to draw on the stabilization fund. This can be achieved most effectively with support from a commercial bank, which would be committed to providing EVN with the necessary short-term funding in dry years. The government may need to make an initial contribution to the fund, although ideally this would be reimbursed relatively quickly.

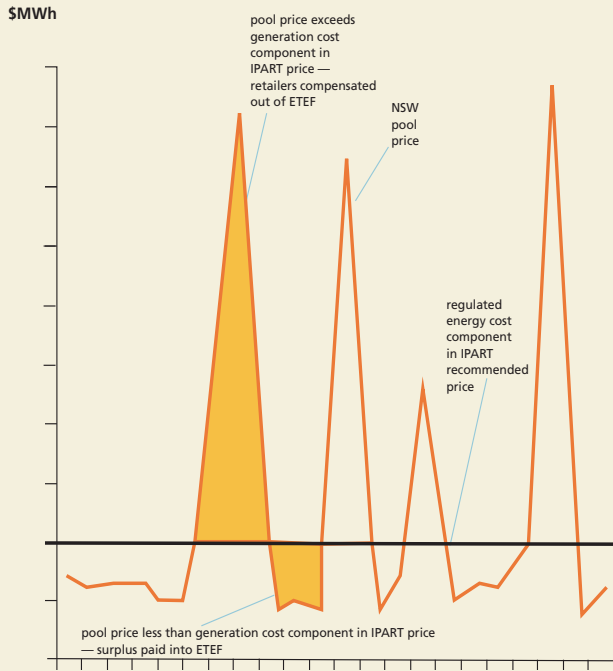
The arrangements for the fund will require scrutiny by EVN's auditors, lawyers, and the regulator to ensure that they comply fully with Vietnamese accounting and tax laws and are consistent with regulatory directives. EVN must take the initiative in putting forward proposals for the operation and governance of the fund because it has by far the greatest interest of any stakeholder in seeing the fund established. EVN may need to modify its proposals in the light of

comments from its auditors, lawyers, and the regulator. A senior finance official within EVN needs to take responsibility for driving this proposal forward.



## BOX 5.1: THE ELECTRICITY TARIFF EQUALIZATION FUND (ETEF) IN NEW SOUTH WALES

Figure 5.1: How The Electricity Tariff Equalization Fund Operates in New South Wales  
Operation of the ETEF



It is widely agreed that electricity users need to be protected against wholesale price volatility through stable, predictable retail rates. The Australian state of New South Wales has used a transitional mechanism to provide such protection. Lessons learned from this experience could be of interest for Vietnam.

All standard retailers in New South Wales are government owned and, like other retailers, purchase energy through the national electricity market. They have to offer small users a regulated electricity tariff that includes a regulated energy cost component, both of which are set by the state's Independent Pricing and Regulatory Tribunal (IPART).

In setting the regulated energy cost, IPART was directed by the government to take into account the

long-term marginal cost of generation. The ETEF mechanism is designed so that retailers supplying customers at regulated rates must contribute to the fund when spot market prices fall below this reference price and are compensated by the fund when spot market prices rise above it.

To ease the transition to the ETEF regime, the government made an initial contribution of \$A 50 million to the fund. In addition, generators were called on to contribute to the fund. The government's contribution was transferred back to the treasury after six months, as planned. While the generators were required to put money into the fund a few times, they tended to be repaid within a few weeks.

The fund offers a potential model for developing countries, but only when a number of preconditions for the successful development of competitive electricity markets have been met.

The stabilization fund would not lead to any overall increase in average tariffs; it would just make them fluctuate less dramatically between dry and wet years. Once it has been established, EVN can consider whether it provides enough tariff stability or whether further measures are required to supplement the fund. Possible measures include (a) establishing, within tariff regulations, a procedure whereby EVN can have a special tariff increase in the event of a particularly dry year when the fund is exhausted; or (b) using an insurance instrument. Insurance policies are a new mechanism for managing hydrology risks and have recently been implemented in Uruguay, with assistance from the World Bank (see Annex II).

The adoption of mechanisms such as a stabilization fund or an insurance scheme will require government and regulatory agreement. EVN should take the initiative in putting forward proposals and demonstrating that they are in the best interests of both consumers and EVN.

### 5.5.2. Reducing Foreign Exchange Risks

Foreign exchange risks are particularly significant to EVN because much of its borrowing is from foreign sources. In the longer term, increased local borrowing can help to reduce this risk. However, in the period to 2020, this risk remains high. There are currently no hedging mechanisms available in the local markets that can help mitigate this risk, although such options may emerge over the next several years and

EVN should be active in trying to promote them. Two different mechanisms may be appropriate to mitigating such risks in the short and long terms:

- In the short term, allowing pass-through mechanisms—and linking their usage to tariff fluctuations—is considered the most reasonable approach. This measure has been adopted in some countries, such as Kenya, to pass through to consumers

the increased costs arising from currency depreciation whenever currency fluctuations have exceed predefined bands. This requires estimating the foreign cost component of the tariff (CAPEX and fuel, primarily) and allowing for adjustments to this component of the retail tariff whenever the fluctuations exceed the defined bands.

- In the longer term, development partners may be able to assist in the development of market mechanisms. However, they will only be successful if Vietnam makes further progress toward becoming a market economy with a range of willing private buyers and sellers who wish to participate in the market.





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## 6. FRAMEWORK FOR IMPLEMENTATION OF THE FINANCIAL RECOVERY PLAN

This section recommends specific actions the government of Vietnam should take to implement the financial recovery plan outlined in section 5, including the time frame for its implementation.

The action plan is based on the government's overall policy that the power sector must accelerate its progress on structural reforms in line with Circular 1782/2012. The importance of the structural reform policy and its associated sector performance improvement goals is now more evident than ever given that, in the coming years, the private sector will be required to undertake the vast majority of investment in the generation sector. Such investment will only be achieved if private investors are convinced by improved sector performance, progress in restructuring and regulatory reforms, and the government's sustained commitment to staying the course on policy reforms.

The action plan has implications for all the main governmental participants in the power sector, and they will need to work together to achieve effective results. We first consider, therefore, the roles of the four main participants: EVN, the MOF, MOIT, and the ERAV.

EVN, although more affected by the action plan than any of the other actors, has limited direct control over some of the required actions. To ensure that the plan is taken forward as broadly as possible, EVN should take the lead in appointing a senior official with responsibility for plan implementation. While this may not be a full-time role it will require substantial time commitment and would need to be undertaken by an official who can network effectively with the other key actors, the ERAV, MOIT, and MOF.

EVN also needs to show initiative in taking forward aspects of the plan over which it has substantial control and even in cases where the financial impact of its actions is likely to be small. It should therefore take the lead in creating an internal stabilization fund within EVN and seeking confirmation from the ERAV that it meets the requirements of tariff directives. It should also make haste in carrying out the divestiture of non-core assets required by the PM's directive and in committing to improving labor productivity in all its businesses.

Most importantly, EVN should take the lead in developing a communications strategy for the plan. This communications

strategy needs to explain the logic of the case for higher tariffs along with other salient aspects of EVN's performance and the need for investment to improve service standards.

The MOF has three roles in relation to EVN. First, it is EVN's owner. Second, it is a lender to EVN. Third, it is responsible for the development of Vietnam's financial sector. There are a number of ways in which MOF could combine these roles to catalyze the scale of investment the sector needs, but this will require MOF to accept some changes to its current policy positions. First, the MOF could change the terms on which it on-lends funds to EVN—by, for example, accepting the foreign exchange risk on loans from development partners and converting some of its existing loans into equity. However, because these sorts of changes are against MOF policy, they are unlikely to be acceptable. Second, it could inject some fresh equity into the company. This is also against government policy, however, and the hope is that additional equity can be raised from the private sector. To achieve this, it is vital that EVN should be permitted to make satisfactory profits. This is currently not the policy of the MOF, which does not expect EVN to make any return on equity. A satisfactory rate of return on equity is vital to EVN in two ways: it will both enable the company to self-finance some capital investment and encourage private investors to take a stake in the company.

The limited level of development of Vietnam financial sector is a major source of difficulty for EVN in that certain financial products, such as long-term bonds and instruments for hedging foreign exchange risks, are simply not available in the same way as they are in many other countries. The development of such products is important for the future success of EVN, and the MOF should assess how it can work with EVN to improve the conditions in local financial markets for the benefit of EVN and the sector more generally.

The MOIT has a critical role to play in attracting additional private finance into the power sector. To do this, the MOIT needs to be more active in promoting the need for private finance and in ensuring that the terms for IPPs are sufficient to attract investors. It should be clear about the volume of investment it is hoping to attract from private investors and aim to attract both local and international investors to the sector.

The MOIT is unlikely to obtain investment on the scale required without improving the incentives on offer to investors. To ensure these incentives are adequate, the MOIT needs to engage in regular dialogues with the private sector; there are institutional mechanisms already in place that can help with this. Finally, the MOIT will need additional capacity to negotiate more rapidly and more effectively with potential investors. Greater standardization of paperwork will help achieve this.

The ERAV is a technically competent regulator. However, it does not yet enjoy full independence to regulate the power sector. In future, it needs to demonstrate that it can strike an appropriate balance between the interests of investors and power consumers, and it must be fully independent to achieve this. Over the next few years there will be further challenges for the regulator as the power sector evolves. For example, it will need to help devise a mechanism for automatic pass-through of costs in retail tariffs and ensure a fair and balanced market for generation plants. These are challenges that the ERAV can feasibly meet, with some additional technical assistance as necessary. In general terms, the ERAV is well qualified to regulate the sector in accordance with the agreed market framework and should be empowered to do so.

### 6.1. IMPLEMENTING THE FIVE PILLARS

The key actions fall under the following five pillars, of the Financial Recovery Plan, as outlined in Section 5:

- Improving operational efficiency
- Designing and implementing a new investment strategy
- Developing a sustainable debt-financing strategy
- Implementing efficient, cost-based tariffs
- Improving risk management

Figure 6.1 shows at a glance the recommended actions for each pillar, the rationale for the actions, the suggested partnership arrangement, and the timeline. The partnership arrangements are provided as appropriate because some actions can be implemented wholly or largely by EVN on its own while others require wider involvement from the government and/or other parties.

As shown in Figure 6.1, the suggested time frame for completing the proposed actions is three to five years. This is ambitious and will be achieved only if EVN moves rapidly and forcefully to take the first steps in implementation. It will require commitment from across EVN and support from the government and the regulator. The scale of the effort is considerable and will involve input from many individuals both inside and outside EVN. A senior EVN official (director or higher), preferably with financial expertise, should be designated and given the responsibility for ensuring that

the recommendations are carried forward; this responsibility should represent the entirety, or at least a major part, of that individual's job description. EVN's senior management should keep track of progress and be available to take implementation decisions and address bottlenecks as necessary.

### 6.2. EVN'S CENTRAL ROLE

As indicated in Figure 6.1, in the short term most actions envisaged in the plan will need to take place at EVN's corporate headquarters. Actions such as the creation of a stabilization fund, or the development of Vietnam's financial sector to permit longer-term borrowing and FX hedging, will inevitably need to be handled centrally. EVN continues to be an integrated company with financial results that have to be consolidated at year-end. It therefore makes sense for EVN to continue to use a single accounting system with a common chart of accounts. Moreover, unbundling continues to be a work in progress at EVN and the subsidiaries are not yet ready to take full control of their affairs, in a way that many expect to be possible in a few years' time. For this reason, under the general activities envisaged in the coming years for EVN Corporate, are included the relevant activities to be developed by the subsidiaries.

### 6.3. ROLE OF THE SUBSIDIARIES

This is not to say that EVN's subsidiaries do not have an important role in the implementation of the financial recovery plan. They are the customer-facing and production units of EVN and their future will be heavily influenced by the plan's success or failure. They can also provide invaluable advice during the implementation of the recovery plan on topics such as the appointment of non-executive directors and the development of new accounting systems.

Moreover, there are a number of areas where the distribution and transmission companies can take the plan forward independently.

The EVNNPT is in many ways the most advanced of the EVN subsidiaries along the path to full unbundling. It already has an operational board and a considerable level of financial autonomy. EVN should aim to build on this position by using the EVNNPT as the forerunner in improving its subsidiaries and encouraging the company to take the initiative in acting autonomously. One possibility would be for the EVNNPT to take the lead in appointing a non-executive director to its board. The EVNNPT is also well placed to take full responsibility for negotiating with the ERAV over its tariff applications and ending any EVN Corporate involvement in the development of its tariff proposals and applications.

Thereafter, the EVNNPT can take forward its status as an independent company in a number of ways. It can:

FIGURE 6.1: ACTION PLAN (TOP PRIORITIES)

Action	1 Year	2 Year	3 Year	4Year	5 Year	Responsible	Support Stakeholders
Operational Efficiency	Appoint implementation leader	[Green bar]				EVN	
	Technical management	[Orange bar]					
	Manage capital expenditure more effectively	[Green bar]					
	Set KPI for EVN subsidiaries	[Green bar]				EVN	ERAV
	Timely review KPIs	[Green bar]					
	Improve quality of supply (SIAFI, SAIDI)	[Green bar]					
	Establish yardstick competition among companies	[Green bar]					
	Complete Unbundling	[Orange bar]					
	Intensify efforts to complete unbundling of PCs and NPT	[Green bar]				EVN	ERAV
	Set bankable PPAs (adjust Circ 41), finalize loan agreements, etc.	[Green bar]					
	Enforce Circular 46	[Green bar]				EVN	MOF
	Make NLDC fully independent	[Green bar]					
	Non-core assets divestiture	[Green bar]					
	Improve governance	[Orange bar]					
	New Investment Strategy	Carry out a detail analysis of governance situation	[Green bar]				EVN
Improve financial management systems		[Green bar]					
Develop performance measurement systems to monitor and evaluate subsidiaries' performance		[Green bar]					
Rehabilitate Assets		[Green bar]					
Encourage private sector participation		[Orange bar]					
Clear project appraisal mechanisms		[Green bar]					
Reduction of administrative burden to the maximum extent		[Green bar]					
Tender for negotiating prices		[Green bar]					
Maintaining dialogue with private sector		[Green bar]				EVN	MOIT / Private sector
Improving capacity in MOIT		[Green bar]					
Financing Strategy	Adopting dynamic approach to planning	[Green bar]					
	Preparation Genco divestiture (including definition of bankable PPAs, etc.)	[Green bar]					
	Implementation of Genco divestiture	[Green bar]					
Cost-based Tariff	Improve capital structure	[Orange bar]				EVN	MOF/Commercial banks/ Development partners
	Extent maturity of existing loans with commercial banks	[Green bar]					
Risk Management	Agreement with IFIs and with MOF's support to extent maturities	[Green bar]					
	Implement Cost-based tariff including a reasonable return on capital	[Green bar]				EVN	ERAV/MOIT
Risk Management	Implement full (uncapped) pass-through of non-manageable costs	[Green bar]					
	Stabilization fund	[Green bar]				EVN	MOF/Commercial Banks/ Development Partners
Risk Management	Foreign exchange risks	[Green bar]					

Source: Own analysis

- Develop its governance framework in the light of international best practice and, in particular, develop board policies and procedures;
- Identify, measure, and set targets for KPIs (some of these indicators can be drawn from the list of international comparators identified earlier in this report);

- Develop management information systems to measure and monitor performance, both at the corporate level and for lower-level business units; and
- Set targets for productivity improvement—in particular, improvements in labor productivity and reductions in the frequency and duration of outages.

The distribution companies have similar opportunities as the EVNNPT in taking forward the restructuring plan independently from EVN Corporate. While they are slightly behind the EVNNPT in their readiness to operate as independent companies, their position is broadly similar and they can proceed along a similar path. The distribution companies should also aim to appoint one or more independent non-executive directors in the near term, and they should take more of a lead in submission to the ERAV (while recognizing that they are in a different position from the EVNNPT). Because retail power prices are set nationally, submissions and negotiations with the distribution companies will have to be coordinated between them and cannot be conducted independently. However, the distribution companies as a group can take a more central role in putting forward tariff proposals. They can follow a similar approach to the EVNNPT's in taking forward their position as independent companies, and the proposals suggested above are applicable to them. In addition, there are three points that are specific to the distribution sector:

- The distribution companies are involved in a number of non-core activities, such as running guest houses. They should each develop a plan to withdraw from these activities so as to focus their investment programs on core activities in the power sector.
- The distribution companies all have very high levels of frequency and duration of power interruptions. Addressing these interruptions should be a key part of their KPIs and targets for the next few years.
- All the distribution companies should identify areas where their performance does not meet international benchmarks and develop proposals for improvement.

The gencos are well behind the other subsidiaries in their readiness to operate as independent companies. As mentioned earlier, there are several issues that hinder the actual unbundling of these companies. Nevertheless, the gencos can help EVN ensure a smooth restructuring process by:

- Identifying areas where their performance does not meet international benchmarks and developing proposals for improvement;
- Endeavoring to improve their efficiency and explore, jointly with EVN, rehabilitation activities that may be needed in specific plants; and
- Negotiating loan agreements and enhancing, to the extent possible, current borrowing conditions.



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## ANNEX I: OPTIONS FOR RAISING CAPITAL BY DIVESTING ASSETS

The privatization of existing power sector assets is another potential way of attracting investment and there are a number of ways in which this could be accomplished. EVN could, in principle, invite private participation in its distribution and transmission companies. At present, this option is not under consideration by the government and has not been considered in this report. However, given the progress that has been made in establishing new corporate and governance structures for the distribution and transmission businesses, it would probably be easier to bring private finance into these companies than into the gencos in the short term.

The privatization of generation activities could be accomplished in several different ways. Certainly the easiest approach in the short term would be to sell stakes in individual generation plants; this could be done in a number of ways. If EVN wishes to follow this approach, there are several decisions it needs to make. In general terms, the authors suggest that EVN identify which plants it is willing to consider selling and then consider the best approach on a case-by-case basis. There is little expertise in carrying out this sort of work in EVN as a whole and it is doubtful whether it is feasible to build capacity quickly in all three of the new gencos. EVN should therefore review this issue at the corporate level. The decision process should include substantial dialogue with potential investors to see what their interest is regarding types of plants and sale processes. During the course of this study, several investors indicated potential interest in purchasing plants from EVN. Additional investors may well come forward if EVN develops an active marketing campaign for asset sales.

First, EVN must decide whether to sell whole plants or retain a minority stake in any plants it sells. In general, investors find it most attractive to acquire entire plants or majority stakes so that they can carry on their business unimpeded and reap the full benefits of improvements in the performance of the plant. However, there are situations where a sale of a smaller stake in a plant has advantages for both sides. For example, if EVN is trying to attract additional investment to a TPP to carry out rehabilitation, it may be possible to develop contractual arrangements whereby the new investor makes an investment through financing plant rehabilitation, with EVN retaining a stake in exchange for the

transfer of its existing assets into the venture. Some plants already have other investors, and in such cases it may be possible to sell some of EVN's shares to the partners.

Second, EVN must decide if it is willing to sell hydropower plants or thermal plants, or both. In general terms, EVN has taken the lead in investing in hydropower plants while accepting a greater role for the private sector in developing thermal plants through IPPs. However, there are examples of hydropower plants with private financing. The recent example of the Thuong Kon Tum hydropower plant shows that innovative financing structures can work in this sector as well as in thermal generation. There are also potential advantages to EVN in selling some hydropower capacity in that it could reduce the company's exposure to hydrology risk. This is discussed further below.

Third, EVN needs to consider the terms on which it might dispose of plants. This is not just a question of price but also the other contractual arrangements and, in particular, the PPA. One possibility would be to make a trade sale of assets or shares, with a PPA in place to give the purchaser assurance of a revenue stream. The terms of the PPA would need to be evaluated carefully. If the PPA offers favorable terms for the sale of electricity, then it will be possible to obtain a good price for the shares or assets, but this will be at the expense of higher prices for consumers. Alternatively, the sale price could be zero or set at a fixed level and bidders invited to enter prices into a PPA.

Fourth, EVN should consider if there are plants that could be sold with associated conditions, for example, related to the rehabilitation of the plant. This approach could be applicable to circumstances such as the older thermal plants, where some rehabilitation is required for the plants to operate at full capacity. It would also be potentially applicable to the further development of additional hydropower capacity at sites where there is scope for growth.

In the longer term, EVN could try selling a stake in one or more of the newly created gencos. Such sales could be accomplished either through the sale of a stake in a genco to a strategic investor or through an offer for sale on the local stock market. Neither option looks straightforward in the short term. There seems to be little interest from strategic investors, especially if the stake on offer is only a

minority one. The option of sale on the stock exchange also appears difficult as Vietnam's capital markets do not appear to have sufficient liquidity to support a sale and market interest appears to be below the level at which it was when the initial bunch of power initial public offerings (IPOs) was developed. There is some trading in the listed PCs but it is limited. Experts in the local capital market have suggested to us that an IPO of generation assets would mean excellent business and should be carefully designed and marketed to

attract capital as there is a shortage of capital in general. Table I.1 summarizes these options.

TABLE I.1: OPTIONS FOR FINANCING ADDITIONAL INVESTMENT

OPTION	PROS/CONS	TIME FRAME
SALE BY EVN OF STAKES IN THE RECENTLY CREATED GENCOS	<ul style="list-style-type: none"> <li>• Gencos are not independent of EVN.</li> <li>• Loan agreements for assets are with EVN and not gencos.</li> <li>• Lenders are not likely to be willing to lend to gencos with existing capital structure.</li> <li>• Corporate structure of gencos is unlikely to be attractive to external investors.</li> <li>• Tariff agreements are not attractive to investors.</li> <li>• Market reforms are a work in progress and investors will want to see them made operational before investing.</li> <li>• Strategic investors are looking for controlling stakes of the companies.</li> <li>• Financial investors that are not looking at controlling stakes (such as Dragon Capital, CAFIC [China]) may be options to explore in case of small stakes.</li> <li>• Market conditions for IPOs seem to be weak.</li> </ul>	At least five years and probably longer
SALE BY EVN OF STAKES IN INDIVIDUAL GENERATION PLANTS	<ul style="list-style-type: none"> <li>• Sales of generation plants with existing independent shareholders may be fairly easy through an offer on the local stock exchange but the available funding from this source is likely to be limited.</li> <li>• Sale of plants that do not have external shareholders at present would take longer.</li> <li>• Trade sales of some or all shares to companies in the sector would be potentially attractive for plants needing rehabilitation. However, any potential buyers will want to do extensive due diligence, especially if the plant is run-down.</li> <li>• Newer plants could be sold through share offerings.</li> <li>• Satisfactory PPAs will need to be in place to make the sales attractive and will have a major influence over price obtainable.</li> <li>• Fuel prices are negotiated by EVN headquarters; it is not clear that FSAs as such are in place.</li> <li>• The valuation gap between EVN and the buyer may be an issue.</li> <li>• Strategic investors are looking for controlling stakes in the companies.</li> <li>• Financial investors that are not looking at controlling stakes (such as Dragon Capital or CAFIC [China]) may be options to explore.</li> <li>• Because market conditions for IPOs seem weak, there may be an overall ceiling on amounts that can be raised from this source in the next two years.</li> </ul>	Six months to two years
SALE BY EVN OF STAKES IN OTHER POWER SECTOR COMPANIES, IN TRANSMISSION AND DISTRIBUTION	<ul style="list-style-type: none"> <li>• Sales of transmission and distribution companies are not current government policy.</li> <li>• Companies are not structured in a way that would enable sale to the private sector.</li> <li>• Tariffs are not set independently by the regulator.</li> <li>• The tariffs are, in effect, mechanisms for allocating available cash and profit/losses within the EVN group.</li> <li>• Information systems in companies need to be improved and put on commercial terms.</li> <li>• Market conditions for IPOs seem to be weak.</li> </ul>	Two to three years

OPTION	PROS/CONS	TIME FRAME
MORE BORROWING FROM DEVELOPMENT PARTNERS AND EXPORT CREDIT AGENCIES	<ul style="list-style-type: none"> <li>• Development partners are generally lending EVN as much as they are prepared to.</li> <li>• Most IFIs<sup>17</sup> are unwilling to fund coal projects.</li> <li>• Export credits may be available but will limit procurement options.</li> <li>• Both development partners and export credit agencies are looking to see better overall financial performance from EVN.</li> <li>• Export credit agencies have numerous opportunities in other markets and may not prioritize Vietnam.</li> </ul>	Six months to two years
MORE BORROWING FROM LOCAL FINANCIAL INSTITUTIONS	<ul style="list-style-type: none"> <li>• Availability of local finance is limited.</li> <li>• Long-term borrowing is particularly hard to access.</li> </ul>	Immediate
BOND ISSUANCE	<ul style="list-style-type: none"> <li>• Limited experience.</li> <li>• Illiquidity, lack of depth, and small size of the local bond market according to expert opinions.</li> <li>• May need government guarantee if issued in hard currency and in the international markets. Multilateral hedging tools may be available.</li> </ul>	One to two years
FURTHER INVESTMENT BY OTHER SOES	<ul style="list-style-type: none"> <li>• Companies such as PetroVietnam and Vinacomin should focus on their core business according to new government policy.</li> <li>• Funding for these SOEs is no more readily available to them than it is to EVN.</li> </ul>	One to three years
BOT DEVELOPMENTS	<ul style="list-style-type: none"> <li>• Protracted processes for finalizing BOT arrangements with bidders arising from, in particular, negotiations over pricing, infrastructure sharing agreements (transport of the coal), and land use.</li> <li>• Policy uncertainties over, for example, availability of government guarantees.</li> <li>• Experience of long negotiations. The MOIT is trying to negotiate too many projects at the same time.</li> <li>• The BOT format is changed for every project and standardized formats are missing.</li> <li>• A foreign lender cannot hold a mortgage over lands or assets in Vietnam.</li> <li>• Vietnam is not a member of the International Center for the Settlement of Investment Disputes (ICSID).</li> </ul>	One to three years (ideally)
GREATER SELF-FINANCING	<ul style="list-style-type: none"> <li>• Limited scope for reducing costs</li> <li>• Political challenge of agreeing to higher retail tariffs</li> </ul>	Immediate

<sup>17</sup> Moreover, official development assistance (ODA) will not be adequate to meet the sector's large financing needs and more recourse needs to be made to private sector sources.



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## ANNEX II: RISK MANAGEMENT OPTIONS

This annex suggests options for managing hydrology risk, foreign exchange risk, and demand risk.

### HYDROLOGY RISK

There are a number of ways to manage hydrology risk. First, all parties can accept that tariffs have to increase significantly in years when there is inadequate rainfall. Second, a stabilization fund could be established either within or externally to EVN. Third, EVN could endeavor to pass the risk to the private sector through the terms of contracts for generation projects. Fourth, EVN could insure against years of low rainfall on international markets.

Increasing tariffs significantly in dry years would be a suitable way of passing risks from EVN to consumers. However, both the higher levels and increased variability of tariffs are unlikely to be popular with consumers. A strategy that aims to smooth tariffs between wet and dry years is preferable.

A tariff stabilization fund has been suggested in the past for EVN but it has not been implemented. Actually, the recent regulation tariff—Circular 12—includes a component, so far not fully implemented, governing the mechanism whereby funds are either used to replenish the Electricity Tariff Stabilization Fund (+) or withdrawn from the fund to stabilize the electricity tariff (-) following the guidance of the MOF and MOIT. There have been successful examples of stabilization funds in similar situations to Vietnam, for example, in the power sector of some Latin American countries with hydro-thermal power systems. (See Box II.1 for the Argentina case.)

However, stabilization funds have a mixed record internationally since funds are often used for other purposes and not available when required. One way in which a stabilization fund could be implemented would be for it to be handled within EVN. Retail tariffs would be set by the regulator on the basis of normal rainfall and hydro generation. In the event of a good year for hydro, EVN would be permitted to appropriate an amount equivalent to (say) 2 percent of revenue to a stabilization reserve. This would not be treated as a profit and hence, would be less liable to attract comments that EVN was profiteering. In the event of a dry year, EVN could draw down the stabilization reserve. While the reserve is in credit, EVN could use the resources of the stabilization fund to self-finance capital

### BOX II.1 STABILIZATION FUNDS IN LATIN AMERICA: THE ARGENTINA CASE STUDY

In Argentina, the distribution companies supplying the end consumers pay a stabilized “seasonal” price that is adjusted quarterly in the spot market. These seasonal prices are reset at least every six months on the basis of the operation forecasted by CAMMESA (Market Operator) taking into account likely marginal cost, capacity requirements to cover the demand, reserves, quality of service, and optimal hydrothermal dispatch. These prices may be amended every three months, provided that significant changes have taken place. The seasonal prices are approved by the government.

When the spot market prices exceed the forecast seasonal price, the stabilization fund is used to cover the deficit for power generation charges. When they are lower, the difference is collected into the fund to offset future deviations.

The fund is managed by CAMMESA following government rules on fund governance. It is important to mention that in the case of Argentina, the board of the market administrator was equally shared by the Association of Gencos, distribution companies, large consumers, the TSO, and the government, which chairs.

Governance and adequate management of this fund are crucial. In the case of Argentina, the fund ran out of cash when the government intervened in retail electricity prices immediately after the massive devaluation of the local currency in December 2002.

investment. However, it would have to make arrangements with a bank or other financial intermediary to ensure that it could borrow from them in dry years when it would have to draw down the reserve.

An external stabilization fund could be managed either by the Vietnam government or by a bank. Funds would be passed over to the fund in wet years and repaid in dry years in the same way as for the internal fund. The holder of the fund would need to demonstrate proper stewardship of the funds so as to reassure customers that resources collected in wet years could be repaid in dry years.

EVN could also try to pass some of the hydrology risks to the

private sector. A private hydropower operator, for example, would not be paid in dry years but would have to bear costs and recover these costs in wet years. Similarly, merchant thermal plants that were not used in wet years would not be paid in wet years. Some of these arrangements may be difficult to achieve in the short term in that, for example, investors are unlikely to construct merchant power plants in the immediate future. However, initiatives such as the sale of some EVN hydropower capacity on suitable terms can help reduce risks to EVN.

The possibility of using insurance to manage hydrology risks has only recently been achieved. For instance, it has been supported by the World Bank in Uruguay.(see Box II.2)

This scheme allows UTE to overcome its vulnerability to weather conditions (drought years) and potential hikes in fossil fuel prices.

In addition to these mechanisms, hydrological risk may be transferred through contracts to HPPs.

Table II.2 shows the main advantages and disadvantages of the above-mentioned approaches.

#### FOREIGN EXCHANGE RISK

EVN faces significant exposures to foreign exchange (FX) risks because so much of its debt burden is denominated in foreign currency. When the Vietnamese dong is devalued it creates a loss for EVN. Although the Vietnamese dong is on a generally downward trend against international currencies

#### BOX II.2 : WEATHER INSURANCE: URUGUAY

In Argentina, the distribution companies supplying the end consumers pay a stabilized “seasonal” price that is adjusted quarterly in the spot market. These seasonal prices are reset at least every six months on the basis of the operation forecasted by CAMMESA (Market Operator) taking into account likely marginal cost, capacity requirements to cover the demand, reserves, quality of service, and optimal hydrothermal dispatch. These prices may be amended every three months, provided that significant changes have taken place. The seasonal prices are approved by the government.

When the spot market prices exceed the forecast seasonal price, the stabilization fund is used to cover the deficit for power generation charges. When they are lower, the difference is collected into the fund to offset future deviations.

The fund is managed by CAMMESA following government rules on fund governance. It is important to mention that in the case of Argentina, the board of the market administrator was equally shared by the Association of Gencos, distribution companies, large consumers, the TSO, and the government, which chairs.

Governance and adequate management of this fund are crucial. In the case of Argentina, the fund ran out of cash when the government intervened in retail electricity prices immediately after the massive devaluation of the local currency in December 2002.

FIGURE II.1: HOW DOES WEATHER INSURANCE WORK?

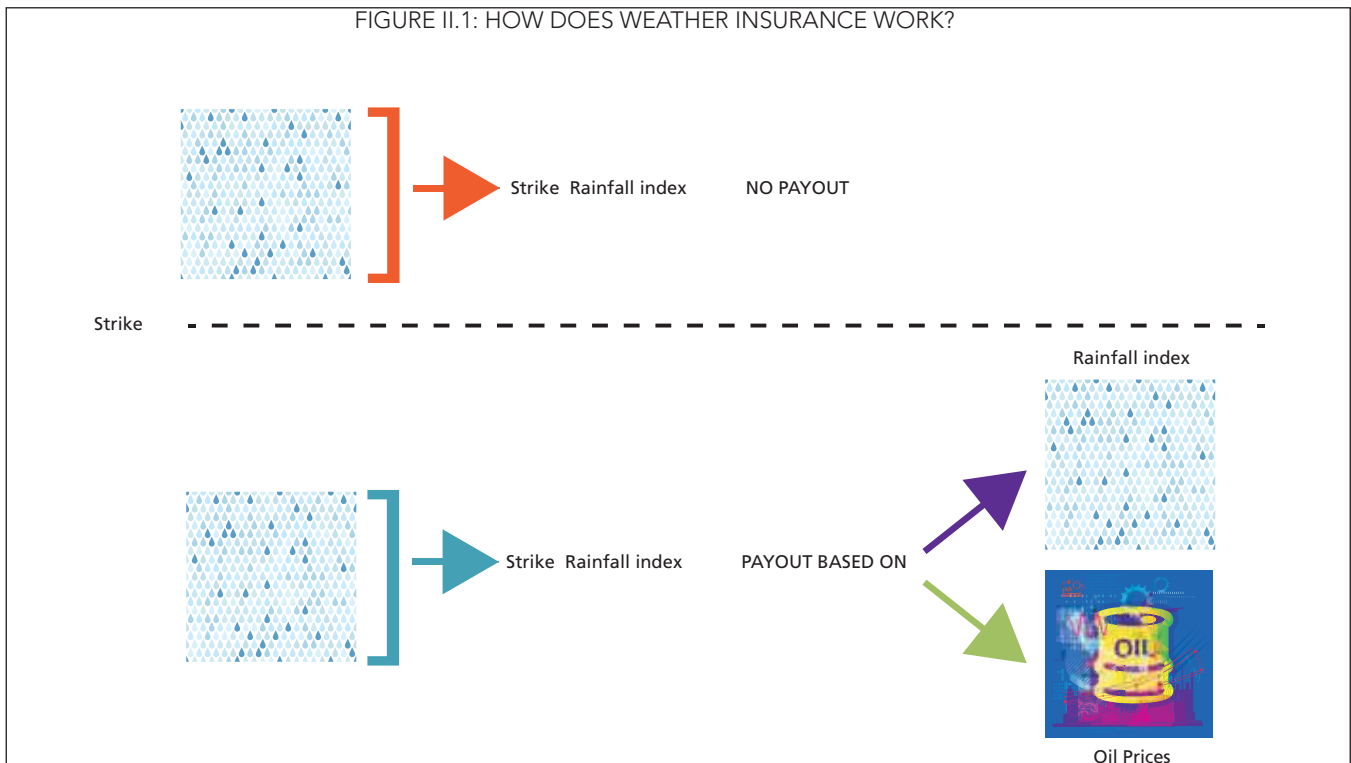


TABLE II.1: RISK MANAGEMENT APPROACH TO HYDROLOGY

RISK MANAGEMENT APPROACH	ADVANTAGES	DISADVANTAGES
STABILIZATION FUND	<ul style="list-style-type: none"> <li>Ensures stable tariffs over seasons</li> <li>Reasonably simple to implement locally</li> <li>Protects company finances during drought</li> </ul>	<ul style="list-style-type: none"> <li>Extra administrative cost</li> <li>Never the right time to introduce</li> </ul>
WEATHER INSURANCE	<ul style="list-style-type: none"> <li>Takes risk outside power sector</li> <li>Protects company finances during drought</li> </ul>	<ul style="list-style-type: none"> <li>May lead to higher tariffs</li> <li>Complex contracts which require detailed hydrological data</li> <li>Limited precedents</li> </ul>
TRANSFER TO PRIVATE SECTOR	<ul style="list-style-type: none"> <li>Relief for EVN from risk management liabilities</li> </ul>	<ul style="list-style-type: none"> <li>Requires divesting of assets or sophisticated asset management contracts</li> </ul>
FULL PASS-THROUGH TO CONSUMERS	<ul style="list-style-type: none"> <li>Follows the spirit of Vietnamese regulation although it is constrained by the tariff increase caps</li> </ul>	<ul style="list-style-type: none"> <li>May lead to temporary price hikes for which political and social acceptability is challenging</li> </ul>

because of Vietnam's comparatively high inflation rate, the rate of its depreciation is unpredictable and varies from year to year. One of the main reasons why EVN has such a major exposure to FX risks is the denomination of so much of its borrowing in FX. Funds from development partners are loaned to the Vietnam government, which then on-lends to EVN. Then, EVN is expected to bear the FX risk. This is common practice in most developing countries although governments have often borne FX risks in practice because power utilities have defaulted.

The simplest way for EVN to eliminate these FX risks would be to increase its local-currency borrowing. However, this is not likely to be feasible in the short-to-medium term. The resources available on the local market are both insufficient and too short term. Moreover, power sector equipment has to be imported and as such has to be paid for in FX. However, the potential to move toward increased local borrowing should not be dismissed, and this is a further reason for EVN and government to work to increase the opportunities for local longer-term borrowing.

The government could help EVN avoid this risk by bearing the risk itself, for a fee. There are precedents for this sort of arrangement elsewhere in the world. For example, in the 1970s, the U.K. government encouraged its water industry to borrow from foreign governments and bore the exchange risk on the resultant loans for a fee. Similarly, in the past the Central Bank of the Philippines has established swap facilities whereby it absorbed the exchange-rate risk that should have been borne by banks and end-user non-financial corporations.

FX risks could also be borne by consumers, by making the pass-through of losses to consumers rapid and automatic. This would require some changes to existing regulatory mechanisms but would still be consistent with the principles of regulation. EVN subsidiaries would be allowed to increase tariffs automatically in response to movement in the exchange rate.

Kenya has adopted a much-applauded model which allows the utility to transfer exchange rate related increases in costs directly to consumers through tariff surcharges. This has contributed to the cost-reflectiveness of the tariff and the financial sustainability of the utility. However, it also leads to erratic tariff increases that are absorbed by households and companies. Tariff surcharges to cover exchange rate losses have peaked at 11–12 percent in single months in times of crisis.<sup>18</sup> These consequences are no fault of the utility, the government, or the consumers. Faced with the need to manage the exchange rate risk, a choice must be made between transferring the cost to consumers for free or to the government or capital markets in exchange of an insurance premium.

Another way of managing this risk would be to establish forward currency markets in Vietnam in which EVN could hedge its risks. Such markets operate in many developing countries but not in Vietnam at present. Such markets are generally promoted by banks but they can only operate effectively in a market economy where there are businesses which wish to manage currency risks in both directions. EVN wants to guard against the possibility of depreciation of the Vietnamese dong. The likely counterparty could be, for example, an exporter with costs denominated in Vietnamese

<sup>18</sup> The tariff in Kenya includes a variable Foreign Exchange Rate Fluctuation Adjustment (FERFA) to cover exchange rate losses suffered by the utility. Between November 2008 and March 2013, the FERFA averaged 5.7 percent of the aggregate tariff for domestic users, assuming average consumption. It peaked at 12.5 percent in October and November 2011 and again at 11 percent in late 2012.

dong that wished to ensure that it earned adequate revenue to cover its costs. With the value of the Vietnamese dong currently managed by the Vietnam government, the scope for developing a market is likely to be limited in the short term. However, banks should be encouraged to take opportunities in this area forward. Development partners may be able to offer technical assistance to support this process.

TABLE II.2: ALTERNATIVE STRATEGIES FOR MANAGING FOREX RISKS

RISK BORNE BY	ADVANTAGES	DISADVANTAGES
GOVERNMENT ON-LENDING ON LOCAL CURRENCY CHARGING A PREMIUM	<ul style="list-style-type: none"> <li>Stability in power prices</li> <li>Government manages exchange rate</li> <li>Government may be forced to accept risk anyway if EVN defaults on loans</li> </ul>	<ul style="list-style-type: none"> <li>Possible cost to taxpayer</li> <li>Beneficiaries are power consumers, who can afford to pay</li> <li>Government already facing exchange risk on other foreign borrowings</li> </ul>
EVN AS OF TODAY	<ul style="list-style-type: none"> <li>Forces EVN to evaluate tradeoff between local and foreign borrowing</li> </ul>	<ul style="list-style-type: none"> <li>Unpredictable cost over which EVN has little control in current markets</li> <li>Leads to fluctuations in financial performance</li> </ul>
FULL PASS-THROUGH TO CONSUMERS	<ul style="list-style-type: none"> <li>Places cost on beneficiary of power sector activities</li> <li>Mechanism for cost-reflective tariff</li> <li>Follows the spirit of Vietnamese regulation</li> </ul>	<ul style="list-style-type: none"> <li>May lead to price hikes whose political and social acceptability is challenging</li> </ul>
HEDGING IN CAPITAL MARKETS	<ul style="list-style-type: none"> <li>Ideal solution when market conditions permit</li> <li>Good experience elsewhere in the world (for example, South Africa)</li> </ul>	<ul style="list-style-type: none"> <li>Proper market conditions should be in place. Even then, markets will enable hedging of only short-term risks</li> <li>Counterparties needed</li> </ul>

## DEMAND RISK

The final major area of risk is demand risk, that is, the risk that the demand for electricity will grow either more quickly or more slowly than expected. EVN has to respond to changes in demand by adjusting its investment program—increasing investment if demand grows faster than expected, and reducing investment if demand grows more slowly. In practice, EVN does make adjustments of this sort. However, in principle, EVN is bound to the investment program set out in the Power Master Plan (PMP). The PMP is a sound document with a well-thought-out program of investments. However, the plan is modified infrequently, with a full update every ten years and only one revision between full updates. The separation of the planning of the system from the management of the sector is unsound and it would be preferable for the plan to be revised and updated regularly, every one to two years, by key sector players such as MOIT and EVNNPT. Otherwise, there is a risk of the plan becoming increasingly separated from reality as demand grows faster or slower than expected.



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## ANNEX III: OPERATIONAL PERFORMANCE OF PCS

Operational performance is very similar across PCs. Even if the PCs seem to be overstaffed, the OPEX/MWh ratio is similar and low in all the companies. It is particularly low in the case of the EVNSPC. The OPEX observed in Vietnamese PCs is lower than would be expected for utilities of their characteristics; this may be caused in part by the country having low costs but also due to the financial difficulties preventing the optimal allocation of resources for maintenance. According to the experience of the consultant in Vietnam, the maintenance actions carried out are considered adequate in most of the cases, but the availability of spare parts is limited, mainly due to the age of most assets, thus preventing timely repairs and/or replacement of equipment.

The value of assets in the PCs has increased sharply due to the asset revaluation carried out between 2011 and 2012. The EVNCPC had the highest assets-to-energy ratio in 2008 (and it still does), with US\$69.75 per MWh compared to US\$41.29 per MWh in the EVNNPC, the second in the ranking. The stability of the ratio over time is probably due to the fact that the starting level was already high (meaning that either the network was mainly formed by new assets or that there was enough extra capacity to absorb part of the extra demand over the years). In addition to this, the EVNCPC had the lowest revaluation of assets in 2011–12, a 22 percent increase, and the EVNNPC the second highest, with 25.7 percent.

Regarding the PCs' operations, their interruption statistics—the SAIDI and SAIFI—put them in the upper tier (worst performing) of PCs when compared to their peer group. Nonetheless, it is difficult to assess whether these interruptions are actually caused by underperformance of the PCs or due to shortfalls in the system. The SAIDI and SAIFI are high and there is not enough historic data to analyze the evolution over the years except for 2011–12 within which the frequency and duration of customer interruptions slightly worsened. The SAIFI in the EVNNPC is more than double that of the other four PCs.

Summarizing the findings on PCs' operations, the EVNHCMP is overall the best-performing utility. The fact that it serves an eminently urban area contributes to this fact. Moreover, all the PCs have very similar ratios of customers/employee and OPEX/MWh, which is particularly low in the case of the EVNSPC.

TABLE III.1: OPERATIONAL PERFORMANCE OF PCS, 2012

EVNHNPC			
INDICATOR	VALUE IN 2012	BENCHMARK	COMMENT
ASSETS TO ENERGY RATIO (US\$/MWH)	43.13	54.33–416.37	Below the minimum of the benchmark range. Low investments in assets in relation to the energy wheeled.
AGGREGATE TECHNICAL, COMMERCIAL, AND COLLECTION LOSS (%)	7.08	4.99–12.52	Within the benchmark. Good loss levels.
COLLECTION EFFICIENCY <sup>19</sup> (%)	100.14 <sup>20</sup>	98.5–99.5	–
SAIFI (#)	16.50	0.69–15	In the worst-performing tier for the benchmark. Room for improvement, target SAIFI = 10 or lower.
SAIDI (MINUTES)	9,797	17.08– 432	Very far from the benchmark levels. Worst performance, followed by the EVNNPC. Large room for improvement. Need to distinguish sources of interruptions.
OPEX (US\$/MWH)	4.67	4.99–29.21	Low OPEX, below the benchmark minimum level. Linked to low labor costs but possibly also low budgets available for spare parts, maintenance, and quality programs.
CUSTOMERS / EMPLOYEE	252	557–2,868	Out of the benchmark range. Very low ratio value. Linked to potential overstaffing, the low automation level, and low outsourcing rate.

<sup>19</sup> Also called the *rate of rise*, this is defined as the value of invoices obtained divided by the value of bills issued.

<sup>20</sup> This is higher than 100 percent because of the recovery of due amounts from the previous year (98.85 percent collection efficiency in 2011).

TABLE III.1: OPERATIONAL PERFORMANCE OF PCS, 2012

EVNHCMP			
INDICATOR	VALUE IN 2012	BENCHMARK	COMMENT
ASSETS TO ENERGY RATIO (US\$/MWH)	35.98	54.33–416.37	Below the minimum of the benchmark range. Low investments in assets in relation to the energy wheeled.
AGGREGATE TECHNICAL, COMMERCIAL, AND COLLECTION LOSS (%)	5.56	4.99–12.52	Within the benchmark. Very good loss levels.
COLLECTION EFFICIENCY (%)	99.7	98.5–99.5	Excellent performance.
SAIFI (#)	22.31	0.69–15	Out of the benchmark, poor performance. Large room for improvement, target SAIFI = 10 or lower.
SAIDI (MINUTES)	2,988	17.08–432	Very far from the benchmark levels. Large room for improvement. Need to distinguish sources of interruptions.
OPEX (US\$)/MWH	3.89	4.99–29.21	Low OPEX, below the benchmark minimum level. Linked to low labor costs but possibly also low budgets available for spare parts, maintenance, quality programs, etc.
CUSTOMERS/EMPLOYEE	260	557–2,868	Out of the benchmark range. Very low ratio value. Linked to potential overstaffing, the low automation level, and low outsourcing rate.

EVNNPC			
INDICATOR	2012 VALUE	BENCHMARK	COMMENT
ASSETS TO ENERGY RATIO (US\$/MWH)	51.67	54.33–416.37	Below the minimum of the benchmark range. Low investments in assets in relation to the energy wheeled.
AGGREGATE TECHNICAL, COMMERCIAL, AND COLLECTION LOSS (%)	8.04	4.99–12.52	Within the benchmark. Good loss levels but room for improvement.
COLLECTION EFFICIENCY (%)	99.85	98.5–99.5	Excellent performance.
SAIFI (#)	53.00	0.69–15	Out of the benchmark, poor performance. Worst performance level in SAIFI among the Vietnamese PCs. Large room for improvement, target SAIFI = 10 or lower.
SAIDI (MINUTES)	9,005	17.08–432	Very far from the benchmark levels. Large room for improvement. Second worst performance, after EVNHNPC. Need to distinguish sources of interruptions.
OPEX (US\$)/MWH	4.39	4.99–29.21	Low OPEX, below the benchmark minimum level. Linked to low labor costs but possibly also low budgets available for spare parts, maintenance, and quality programs.
CUSTOMERS/EMPLOYEE	258	557–2,868	Out of the benchmark range. Very low ratio value. Linked to potential overstaffing, the low automation level, and low outsourcing rate.



TABLE III.1: OPERATIONAL PERFORMANCE OF PCS, 2012

EVNPCC			
INDICATOR	VALUE IN 2012	BENCHMARK	COMMENT
ASSETS TO ENERGY RATIO (US\$/MWH)	64.58	54.33–416.37	Close to the minimum of the benchmark range. Low investments in assets in relation to the energy wheeled.
AGGREGATE TECHNICAL, COMMERCIAL, AND COLLECTION LOSS (%)	7.10	4.99–12.52	Within the benchmark. Good loss levels but room for improvement.
COLLECTION EFFICIENCY (%)	99.15	98.5–99.5	Good performance.
SAIFI (#)	21.40	0.69–15	Out of the benchmark, poor performance. Large room for improvement, target SAIFI = 10 or lower.
SAIDI (MINUTES)	4,558	17.08–432	Very far from the benchmark levels. Large room for improvement. Need to distinguish sources of interruptions.
OPEX (US\$)/MWH	4.18	4.99–29.21	Low OPEX, below the benchmark minimum level. Linked to low labor costs but possibly also low budgets available for spare parts, maintenance, and quality programs.
CUSTOMERS/EMPLOYEE	250	557–2,868	Out of the benchmark range. Very low ratio value. Linked to potential overstaffing, the low automation level and low outsourcing rate.

EVNSPC			
INDICATOR	VALUE IN 2012	BENCHMARK	COMMENT
ASSETS TO ENERGY RATIO (US\$/MWH)	28.06	54.33–416.37	Below the minimum of the benchmark range. Low investments in assets in relation to the energy wheeled.
AGGREGATE TECHNICAL, COMMERCIAL, AND COLLECTION LOSS (%)	5.64	4.99–12.52	Within the benchmark. Very good loss levels.
COLLECTION EFFICIENCY (%)	100.15 <sup>21</sup>	98.5–99.5	On par with best performers
SAIFI (#)	24.13	0.69–15	Out of the benchmark, poor performance. Large room for improvement, target SAIFI = 10 or lower.
SAIDI (MINUTES)	7,047	17.08–432	Very far from the benchmark levels. Large room for improvement. Need to distinguish sources of interruptions.
OPEX (US\$)/MWH	2.89	4.99–29.21	Low OPEX, below the benchmark minimum level. Linked to low labor costs but possibly also low budgets available for spare parts, maintenance, quality programs, etc.
CUSTOMERS/EMPLOYEE	289	557–2,868	Out of the benchmark range. Very low ratio value. Linked to potential overstaffing, the low automation level, and low outsourcing rate.

<sup>21</sup> Higher than 100 percent because of the recovery of due amounts from the previous year (collection efficiency of 99.54 percent in 2011).



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## ANNEX IV: SOCIAL AND FISCAL ASSESSMENT OF COST-REFLECTIVE TARIFFS

According to the financial projections prepared for this report, to make EVN financially sustainable, average retail tariffs would need to rise by a cumulative 40 percent by 2018 and thereafter rise at a rate slightly lower than the forecast inflation rate.

FIGURE IV.1: COST-REFLECTIVE TARIFFS



The methodology used for the analysis involved the following:

- A focus on consumer affordability rather than on access to subsidies (because access to electricity in Vietnam is high, coverage is not an issue).
- Identification of the current level of affordability of power prices for households.
- Identification of the potential effects of a price hike in the different small and medium business (SMB) and industrial sectors, focusing on the export-oriented industries in which the increase to retail prices is more difficult or impossible to bear. The aggregate effect on inflation is analyzed as well.
- Identification of affordability thresholds based on existing literature and international experience.

- Analysis of the current pricing for the household category increasing block tariff (IBT) and recalculation of the share of electricity expenses in total household expenses. Alternative pricing options are analyzed as well.
- Recalculation of the current tariffs for SMB and industries and the effects on final goods prices and on inflation.
- Identification of the need for mitigation measures and identification of alternatives.

The latest tariffs (excluding VAT) for households are shown in the following table. The column on the right shows the domestic tariffs, which would be in place in 2017 based on the increases required to achieve financial sustainability.

TABLE IV.1: HOUSEHOLD CONSUMPTION

BLOCKS	DATE						2017
	1/3/2010	1/3/2011	20/12/2011	1/7/2012	21/12/2012	31/7/2013	
0-50 KWH (LIFELINE)	600	993	993	993	993	993	1,589
0-100 KWH	1,004	1,242	1,242	1,284	1,350	1,418	2,269
101-150 KWH	1,214	1,304	1,369	1,457	1,545	1,622	2,595
151-200 KWH	1,594	1,651	1,734	1,843	1,947	2,044	3,270
201-300 KWH	1,722	1,788	1,877	1,997	2,105	2,210	3,536
301-400 KWH	1,844	1,912	2,008	2,137	2,249	2,361	3,777
401+ KWH	1,890	1,962	2,060	2,192	2,307	2,420	3,872

The evolution of domestic tariffs in Vietnam in recent years shows that subsidies to the poorest category of consumers have been increased since lifeline tariffs have remained at the same level since 2011.

Table IV.1 shows the share of electricity expenditure in total expenditure after the tariff increase. The consultant analyzed this share assuming that (a) the total expenditure of households remains constant and (b) total household expenditure increases in line with the increase in GDP/capita.

The purpose of this analysis is to assess whether the tariff increase needed to ensure financial sustainability of the Vietnamese power sector will trigger affordability issues among the most vulnerable consumers. Once the most

abrupt tariff adjustment is accomplished in 2017, it can be seen that electricity expenditure remains around 2 to 4 percent of household expenditure. International experience suggests that 10 percent, or even 5 percent, is a reasonable threshold for electricity expenditure as a percentage of overall household expenditure. This tariff increase would not therefore jeopardize the social welfare of the poorest domestic consumers.

At present, the household tariff structure involves a sharply IBT. Generally, an efficient tariff (subsidy free) structure for households involves setting a decreasing block tariff or a linear tariff rather than an IBT. The consultant therefore defined an alternative pricing scheme under which all retail tariffs converge to the household national cost-reflected average tariff of VND 2,677 per kWh (that is, a flat one-part tariff for all households). This tariff change would lead to the following share of electricity expenditure in total expenditure.

TABLE IV.2: SHARE OF ELECTRICITY IN TOTAL HOUSEHOLD EXPENDITURES (%)

	2012	WITH FORECAST INCREASE IN TOTAL EXPENDITURES		WITHOUT FORECAST INCREASE IN TOTAL EXPENDITURES	
		2017	2020	2017	2020
POOREST 10%	1.7	1.44	1.43	2.67	3.87
DECILE 2	1.9	2.84	3.17	5.29	8.59
DECILE 3	2.0	2.97	3.41	5.54	9.23
DECILE 4	2.0	2.96	3.39	5.52	9.17
DECILE 5	2.1	3.18	3.78	5.93	10.23
DECILE 6	2.2	3.33	3.98	6.21	10.77
DECILE 7	2.2	3.53	4.23	6.58	11.44
DECILE 8	2.1	3.30	3.95	6.15	10.70
DECILE 9	2.2	3.79	3.44	7.06	9.30
RICHEST 10%	2.0	2.73	4.10	5.09	11.10

TABLE IV.3: SHARE OF ELECTRICITY COST IN TOTAL HOUSEHOLD EXPENDITURES (WITH REMOVAL OF IBT)

	2017	2020
POOREST 10%	2.42	2.41
DECILE 2	3.35	3.73
DECILE 3	3.50	3.91
DECILE 4	3.44	3.83
DECILE 5	3.61	4.02
DECILE 6	3.67	4.10
DECILE 7	3.69	4.12
DECILE 8	3.41	3.81
DECILE 9	3.60	4.02
RICHEST 10%	3.09	3.45

## ANNEX IV: SOCIAL AND FISCAL ASSESSMENT OF COST-REFLECTIVE TARIFFS

Without the existing cash subsidy (MOLISA), the share of the electricity expenditure in total expenditure of poorest households increases to 2.4 percent in 2017. Even though this approach would phase out current subsidies, as shown in the previous exhibit, the share of electricity expenditure for the poorest segment of society would remain well within acceptable limits. Removal of the subsidized tariff for the poor increases the share of electricity expenditure but still meets acceptable thresholds.

Based on existing studies, we found that the proposed cumulative tariff increase for industrial consumers would not have a huge effect on any specific export-oriented sector. The two industries most affected by the price hike are not subject to international competition (water processing and gas) and should be able to pass through the increase to their final products. For the export-oriented sectors, the cost impact is less than 3 percent of the price, with the exception of the textiles sector (3.5 percent). It is very difficult to assess whether these price increases are likely to damage the competitiveness of the various sectors as each sector is unique. A better approach is to address how the cost impacts can be mitigated; this also requires a case-by-case analysis, but some common issues can be managed from the perspectives of the power sector policy. For instance, it is highly likely that there is potential for energy efficiency measures in Vietnamese industries.

It is worth mentioning that business tariffs currently subsidize industrial rates; in case these subsidies are removed—on top of the price increase—the effect on some energy-intensive consumers (textiles, and leather and leather products) that are within tradable goods industries should be carefully explored. Although we believe the case for subsidies is limited, we have identified and reviewed the main mitigation instruments. The instruments are tabulated below.

proposed, the household electricity spending increases slightly as a percentage of total expenditure but remains well within below the limits of acceptability. However, the following are the effects:

- The impact on inflation is not negligible, with an increase of about 1.2 percent in 2015 and 2016 above baseline inflation.
- The removal of the subsidies that are currently in place for the domestic category should be carefully analyzed. The analysis showed that no real issue of affordability is identified even for the poorest segment of the Vietnamese society; however, in many cases, perception of unaffordability is even more important than affordability as such. This could be partially mitigated by a good communication strategy by the PCs and government. In any case, it is difficult to address this issue properly and it may lead to damage to EVN's image and increase in non-technical losses.
- The effect which this price increase will have on export-oriented industries and the potential removal of subsidies within these industries might require the implementation of certain mitigation measures.

We believe that deepening two existing policies will ease the social acceptability of cost-reflected tariff:

- Increase the MOLISA cash transfer temporarily in the case of the poorest segments of the population.
- Increase and speed up energy efficiency subsidies in the case of export-driven industries.

Best practices in subsidy provision are already in place in Vietnam, such as the IBT and conditional cash transfers based on the MOLISA list. We suggest a higher coverage of the MOLISA subsidy to channel all subsidies through

TABLE IV.4: OPTIONS FOR MITIGATING THE IMPACT OF TARIFF ADJUSTMENTS ON AFFORDABILITY

EVALUATION CRITERIA	IBT WITH LIFELINE SUBSIDIES SET BY CONSUMPTION LEVEL	IBT WITH FLOATING LIFELINE SUBSIDIES	CONDITIONAL CASH TRANSFERS (MOLISA-LIKE)	ENERGY EFFICIENCY SUBSIDIES	GLIDE PATH PRICING	TAX REBATES FOR INDUSTRIES
COVERAGE	√√√	√√√	√√√	√√	√√√	√√√
TARGETING	√√	√√√	√√√	√√	√	√√√
PREDICTABILITY	√√	√	√√√	√	√	√√
PRICING DISTORTION	√	√√	√√√	√√	√	√√√
ADMINISTRATION COST	√√√	√√	√	√√√	√√	√√

In summary, the overall impact of the cumulative price increase until 2017 does not jeopardize the affordability of electricity for households or the productive sectors. The simulations show that under the tariff increase scenarios

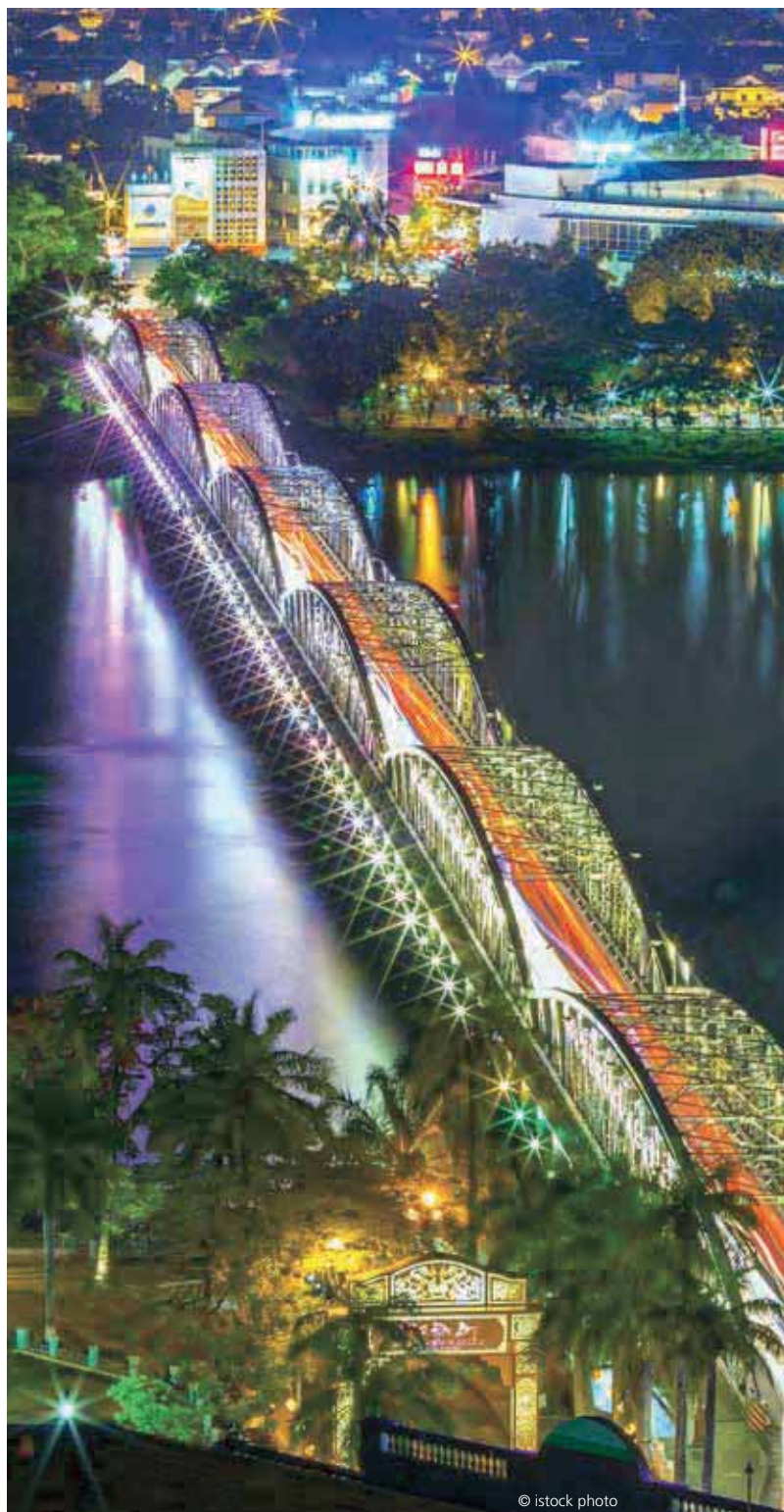
a conditional cash transfer and remove the current IBT. In this scenario, the MOLISA poor would receive around VND 68,000 per month—more than twice as of today and the annual cost of the policy would be VND 1.35 trillion (2017).

Subsidies can place a heavy burden on government finances, weakening the potential for economies to grow and reducing the potential to invest in social equity. However, the tariff increase proposed by the consultant will lead to higher VAT perceived by the government as well as an increase in the profit tax paid by EVN. A rough estimation of the overall VAT collection from electricity sales to households can be around VND 15 trillion. On top of this, according to the financial projections, in 2017 profit taxes would reach almost VND 20 trillion and increase over time. In conclusion, the potential impact from extending the MOLISA in Vietnam would be negligible in comparison with the impact of setting cost-reflective tariffs in the country.

The second issue which has been identified within this analysis is the impact of this tariff increase on energy-intensive industries. Energy efficiency subsidies may smooth the transition toward this tariff increase while improving the sustainability in the use of energy sources in industries. So far, industrial energy use has increased almost at the same rate as GDP. An increase or steady path of the energy intensity indicator (GDP/MWh) means that presently, the impact of energy efficiency measures in the industry has been nonexistent or negligible.

Recent studies indicate a potential energy reduction of up to 50 percent in the cement industry, 35 percent in the ceramic industry, 30 percent in the textile or apparel industry, and 20 percent in the steel and food processing industries. Within the next five years, the Vietnamese government aims to lower overall industrial energy consumption by 5–8 percent through technological upgrading.

The main tool the government has for influencing the implementation of energy efficiency in industries is incentive-based regulation. These incentives in a relatively short period could offset the price increase to some extent and avoid negative impacts, especially in export-oriented business. Moreover, as previously mentioned, there seems to be fiscal space to finance energy efficiency investments in the industrial sector. The question is whether is better to go on subsidizing the electricity cost to improve competitiveness, which is short-term policy, or subsidize investments to improve competitiveness on a sustainable basis.



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## ANNEX V: MARKET FEEDBACK

This annex summarizes the feedback received from interviews with existing and potential investors, advisors, financiers, and market participants in the private sector. Interviews were conducted in confidence. The points noted in the annex were raised by more than one interviewee and are considered representative of market opinion at the time of the interviews.

The market climate for private power investment varies over time and levels of investor interest can rise and fall quickly. However, in general terms, there is substantive interest in power sector investment in Vietnam. There are several investors who are interested in projects where they can have management control, either through direct investment in an IPP or through the purchase of assets from EVN. There is lesser interest in portfolio investment, that is, in acquiring minority stakes in EVN companies without management control.

Comments fell into four categories:

- The power market
- Conditions for power projects
- Capital markets
- The performance of the MOIT

### THE POWER MARKET

Investors appreciate that market reform is in progress. However, the ERAV is not perceived to be an independent regulator at this stage and there is consensus that tariffs are set by government rather than through independent regulation. In addition, investors are convinced that retail tariffs are too low to cover costs and hence there are doubts over the willingness of the authorities to offer sufficiently attractive tariffs in PPAs.

With EVN controlling so much of the generation market, investors are concerned that the market may be rigged against them. The NLDC's independence is an important way of ensuring fair load dispatch, thereby encouraging investment.

International investors take a long-term perspective and do not expect immediate success in negotiations. However, they do not look only at Vietnam. They are generally pursuing a number of opportunities in the region and their appetite for investment could be diverted elsewhere.

Myanmar in particular was referenced as a major source of opportunity.

### CONDITIONS FOR PROJECTS

The detailed, specific conditions for power projects may vary from project to project. However, a number of generic comments were made in interviews:

- Projects will require government guarantees that funds can be fully remitted from projects. PM's Decision 72, which established a foreign exchange cap of 30 percent, is an issue; however, for very large strategic projects, there is room for negotiations.
- Projects require proper legal title to the land on which they are constructed.
- Projects require guarantees of fuel supply and availability.
- The transport of coal will also have to be financed.
- A foreign lender cannot hold a mortgage over lands or a factory in Vietnam. In the past, companies have used a security agent structure to get around this, but the State Bank is saying this will not work. It is at best ambiguous. Vietnam is not a member of ICSID.
- In the case of existing projects, governance is a big issue. Many people involved in the process commented that it is not even clear that EVN is paying what is written in the SPPA to the power plants, and currently FSAs are not signed for each power plant.

It is possible that investors can be attracted to invest without meeting these conditions, but this will certainly lead to higher prices in PPAs to reflect the associated risks.

### CAPITAL MARKETS

The general perception of investors is that Vietnam's capital markets are poorly developed. The stock exchange is available and some power projects are quoted on it and traded with fair liquidity, but investors feel that the climate for new IPOs is not favorable. IPOs were very easy in the past (that is, more than five years ago); many companies went to market and raised a lot of money. Now, however, the market

is illiquid and not willing to pay as much as in the past. Some experts state that the government had decided to list some SOEs (or part of them, because of a PM decision about focusing on core business) and the process was deferred to avoid a failure. From an international standpoint, the country is not investment grade as it was downgraded. The government is only issuing bonds in limited quantities; there is no big international appetite for a Vietnamese capital market at the moment.

Only foreign banks with bank licenses can lend in local currency but maturity is short (consumer lending). Only large state banks lend for infrastructure projects. Sometimes these banks are forced to lend to infrastructure projects. Project finance in Vietnam is not exactly what it is supposed to be; in most cases, it requires collateral from investors. According to some experts, bond issuance backed by the government could be the simpler and faster way to move ahead.

Regarding equity, for not very large projects, local investors and regional investment funds and sovereign funds such CAFIC (China) may be available. For larger projects, only industrial foreign companies have the ability and the willingness to participate.

#### PERFORMANCE OF THE MOIT

Investors believe the MOIT is capable of negotiating IPPs. However, they consider that there is considerable scope for speeding up the approval process (that is, the investment certificate is supposed to take 45 days but took seven months in one specific case). There are too few staff dealing with IPPs and, as a result, there are long intervals between meetings with potential investors. The process could be speeded up if the MOIT adopted standard contract documentation rather than negotiating each IPP from first principles.

Another criticism of the MOIT is that it seeks to progress projects in every region rather than going with those projects that are most ready to move. Also, they change staff too often. High-level authorities push for the project to move ahead but the mid-level bureaucracy delays because of the details. However, according to some people involved in negotiations, the main reason for these delays is that there is no incentive for mid-level managers to sign off on projects (and many signatures are needed) and they face a lot of risks (being accused of corruption). Other developers have a different view: they state that the context of negotiation of old BOT projects was totally different in the past as BOT was linked to the use of gas flaring; the problems were more due to the ignorance of the government about BOTs. But even in those cases, it took four years for a project; and political will is critical.



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## ANNEX VI: SUMMARIZED STAKEHOLDERS' COMMENTS

This annex summarizes comments made by stakeholders at a study review workshop on October 21, 2014.

**Genco 3** found the presentation in alignment with its thinking. The key issue is to make Genco 3 ready for equitization, which requires increases in tariffs (perhaps a 5 percent increase every six months). A communications strategy is needed to address the concerns of the government and people over increases in power tariff. The following aspects of Genco 3's current situation were raised:

- Genco 3 needs US\$5 billion for investment.
- With a profit rate of 1 percent, Genco 3 does not generate enough profit to invest.
- The balance sheet shows 82 percent debt and 18 percent equity.

Projects cannot proceed without EVN and government guarantees. Investors will want to earn a return on their investment that exceeds what they can earn in a bank account.

**The MOF** noted that there were various recommendations for the ministry and some for other agencies and wanted to see recommendations grouped by agency.

The overall environment in Vietnam is difficult and it is recognized that 80 percent of EVN debt is denominated in foreign currencies. However, it would not be fair to transfer risks to the government. Loans are passed on to EVN on the same terms and currency as they are received. The MOF is also unwilling to consider debt restructuring for EVN. Nevertheless, restructuring is currently taking place for companies in financial difficulty, which does not include EVN.

The MOF accepts the difficulty of raising long-term bonds on the local market where the longest term is five years. Regulations are still being drafted to permit longer-term bonds, with the implementation of long-term capital markets planned for 2020. The MOF committed to make an official response.

**The PM's office** wanted to see analysis extended beyond 2020 as this is not sufficiently long term—it recommended looking forward to 2030 and starting 2013. Queries were raised on whether EVN made losses from 2008 to 2011 as

this should have led to a review of the chairman's position.

There were concerns over results in each part of the industry—generation, transmission, and distribution—as all need to be sustainable. It is necessary to assess financial indicators for each component. They wanted an opinion on whether margins are high enough in distribution and transmission.

Gencos are heavily dependent on hydrology and coal. Price adjustments are needed so that power prices respond to fuel price changes.

**JICA** emphasized the need to resolve the asset/liability mismatch. Development partners cannot take currency risk by offering local currency loans so there is a need to develop the local hedging market.

EVN will import coal, so power prices need to take into account coal price fluctuations.

**AFD** stated that 2012 was a year with better results and 2013 also seemed to have reasonable accounts. Tariffs have not yet gone up in 2014. How urgent is the need for tariff increases and would it be possible to develop a communications strategy before the tariff increases?

**ADB** commented that the results are not a surprise and the model is useful. Although EVN's hands are tied and more support is needed from the government, they are not sure about the government assuming foreign exchange risk. A tariff methodology is needed. ADB remains willing to support but cannot fund, for example, subcritical coal technology. However, they are willing to support operational improvements.



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## ANNEX VII: KEY REGULATIONS

TABLE VII.1: KEY REGULATIONS

REGULATION	MAIN CONTENT
PM DECISION 1782/2012 ON THE RESTRUCTURING PLAN FOR EVN 2012–15	<ul style="list-style-type: none"> <li>• Line of business that EVN should retain.</li> <li>• Business that EVN should divest and timeline.</li> <li>• Restructure corporate governance, focusing on improving internal management regulations; rearrange the organizational structure, the management, and administration; complete rules on personnel issues, accelerate the training of human resources, and strengthen internal controls.</li> </ul>
PM DECISION 69/2013 ON THE MECHANISM TO ADJUST THE AVERAGE RETAIL PRICE OF ELECTRICITY	<ul style="list-style-type: none"> <li>• It deals with intra-annual adjustment of average retail tariffs. Replaces PM Decision 24/2011.</li> <li>• Changes in input parameters (fuel, FX) are monitored every semester. If the adjustment needed is less than 7%, it is automatic; if between 7 and 10%, it requires MOIT authorization; and if higher than 10%, MOF approval is needed.</li> <li>• Stabilization fund to offset variations across years is defined.</li> </ul>
PM DECISION 854/2012 ON APPROVAL OF THE BUSINESS PLAN AND DEVELOPMENT INVESTMENT PLAN FOR 2011–15 FOR THE EVN GROUP	<ul style="list-style-type: none"> <li>• It includes detailed information about CAPEX for the period, debt service payment, financial needs, change in organization, and so on.</li> </ul>
MOIT CIRCULAR 41/2011 ON STANDARD GENERATION POWER PURCHASE CONTRACTS	<ul style="list-style-type: none"> <li>• Stipulates generation pricing methodologies, procedures for establishment and issuance of generation price range for new generation, and procedures for review and approval of PPAs.</li> <li>• Price of new TPP encompasses both a fixed price and a variable price. Fixed price stands for the total investment cost of generation (annuity-like calculation) and variable price stands for fuel costs, variable O&amp;M costs, and any other costs incurred by the plant in its day-to-day operations. The levelized fixed price shall be adjusted according to variation of exchange rate. The variable price of thermal generation is adjusted according to the fuel price.</li> <li>• Price for hydro includes a fixed component and an ad hoc formula for indexing it.</li> </ul>
MOIT CIRCULAR 12/2014 ON RETAIL TARIFFS AND BSTS	<ul style="list-style-type: none"> <li>• It includes three main components: <ul style="list-style-type: none"> <li>• <b>Average retail tariff definition:</b> Recognized costs in the average retail tariff, including stabilization funds and ex post review, are defined.</li> <li>• <b>Distribution tariff calculation:</b> Cost-plus with ex post review, including <ul style="list-style-type: none"> <li>• total allowed O&amp;M costs of the five PCs in year N;</li> <li>• total allowed depreciation costs of the five PCs in year N;</li> <li>• total allowed costs for payments to generators under 30 MW which are embedded in the distribution networks of the five PCs in year N (EG);</li> <li>• total return allowed year in N Finance costs (including forex losses) in year N; and taxes in year N.</li> </ul> </li> <li>• <b>Bulk supply tariff:</b> The components and the adjustments of the tariff that EVN Corporate charges to the PC are defined. An assumption is that the nation-wide uniform retail tariff is to be maintained. The uniform national residential tariff requires cross-subsidies between PCs which is funded through an adjustment to the BST for each PC.</li> </ul> </li> </ul>
MOIT CIRCULAR 46/2011 ON TARIFF FOR SPHPS	<p>Stipulates how to calculate the tariff for SMHPs. It is a cost-plus approach, including depreciation allowances and interest payments. No return on equity is considered. Not fully implemented.</p>
MOIT CIRCULAR 14/2009 ON TRANSMISSION TARIFFS	<p>Stipulated a cost-plus approach, including the same components as in the case of distribution (Circular 12/2014).</p>
MOIT CIRCULAR 3/2013 ON MARKET RULES	<p>Regulates the functioning of the competitive generation market.</p>

