



I. Power Generation

1. Overview

Vietnam's rapid development has been accompanied by a steadily growing demand for energy, both for private consumption and industrial development. Consumption of electricity has been growing by 15% annually, hence substantially surpassing the economic growth rates, and is expected to reach 3.5 times the current 2009 figure by 2020. The Sixth Master Plan for Power Development was approved by the Prime Minister in 2006. This plan envisaged growth scenarios for electricity demand of between 17-20% per annum. For the period of 2006 – 2015, some 54 electricity projects were planned to be developed. Many of these projects were to be in the form of IPPs. However, to date, only six projects have been completed, with a capacity of approximately 2,000 MW, fulfilling only about 5.6% of the plan. Furthermore, no new project financed IPPs have been implemented since the Phu My 3 project in 2004. It is clear that demand growth rates have recently been negatively impacted by global economic factors. However gradual economic recovery and prospective GDP growth of 6-8% in future years should ensure that electricity demand remains in the range of 12-15% for several years to come.

A key feature of Vietnam's power sector is that the reserve margin is highly dependent on the availability of hydro-electric capacity and, due to the prolonged dry season, there is little or no reserve margin for much of the year. Hence, imported power from neighboring countries is used to supplement the high load demand. It is predicted that, if new capacity is not constructed in time, by 2015, because of high demand, even more power could be imported from Laos and China. Compared to some other countries in the region, Vietnam has fallen behind with respect to developing a competitive electricity market. This issue has not yet been settled due to a number of problems, of which electricity pricing is probably the most significant. This key problem is leading to a shortage of investment capital and threatening to perpetuate the slower growth in power capacity for the remaining years of the Sixth Master Plan.

Substantive financing in the power sector comes from the state budget and Official Development Assistance (ODA). The other main sources are Electricity of Vietnam (EVN), through its own resources and different ways of borrowing, including a big share of ODA and independent investment by State Owned Enterprises (SOEs), and the domestic and international private sector. Many issues in the energy sector are resulting from project financing. Total demand for investment and debt payment of EVN between 2009 and 2015 is well beyond EVN's limited financial capacity. Projects with total investment of over US\$1 billion frequently meet difficulties. In the years to come, the



share of independent (foreign) investment will have to be substantially increased to meet the growing demand for new capacity.

The realization of the global community that climate change presents an immediate threat to the world's productivity, and Vietnam being one of the most impacted from an increase in sea level rise, the development of renewable energy and greener production of energy from traditional sources is imperative. The productivity of energy use in coal-fuelled power plants in Vietnam is very low, at 28-32 percent, which is 10 percent less than in developed countries.

At least in the short and mid-term, until the transition to a competitive power market is completed, government loans, guarantees and subsidies are likely needed for the attraction of investment and successful contract implementation. Experience with existing projects has shown that risk guarantees, including for currency convertibility and performance risk of Vietnamese partners, are indispensable for raising capital from both multilateral banks, bilateral agencies and other sources of private financing and hence making power projects bankable.

2. Energy Prices

Energy in Vietnam is comparatively cheap both when compared both to the world market and the region: On September 1, 2009, the average retail price was VND943.7/kWh (about US\$0.053/kWh). It has gradually begun to increase but currently still falls far short of the long run marginal costs of production. EVN has stated that the long-run marginal cost (LRMC) to ensure profits and accumulations for development investment must be at least 7.5 cent/kWh. Therefore, EVN is currently not able to make profits. Accordingly, EVN has requested for electricity prices to be increased and a decision has been issued by the Prime Minister foreseeing the gradual increase of prices until the market price is reached by 2010. However, the decision has not yet been fully implemented. Although there are many variables that influence electricity production costs (and therefore the actual LRMC figure may be higher than quoted by EVN), there is no doubt that the current retail price falls far short of what is sustainable.

An attempt at providing a solution to electricity pricing for new coal plants was launched in 2008, in the form of the international competitive bidding process for the 1200MW coal-fired Nghi Son 2 project, located in Thanh Hoa province. This project was promoted by the government as being a project that would help to determine a benchmark power tariff for new coal-fired plants, especially those utilizing imported coal. Unfortunately, the Nghi Son 2 project has been delayed due to many local project specific issues and therefore no benchmark tariff is currently available. Projects in the power sector tend to be very complex and contract negotiation costs can run into the millions of dollars,



resulting in significant losses when projects fail to reach implementation. Common issues arising after contract conclusion include the failure of the local partner to adhere to contract terms (as approved by the Vietnamese government) in a timely fashion, and changes to projected contract outcomes and timelines caused by an often rapidly shifting legal environment.

3. Competitive Bidding

Although a competitive international bidding process may be a fair and sensible way forward for determining future tariff levels, there is clearly not enough time or resources to establish fully comprehensive bidding processes for all the planned power projects in the short term. Without there being a competitive framework in place, the Government has been awarding power projects to selected investors and instructed various Vietnamese enterprises, together with foreign power investors and developers to undertake feasibility studies and develop these power projects, which are all contained in the 6th Master Plan. However, because there is still no mechanism for determining an appropriate tariff for these projects, significant delays in implementation are occurring and it is likely that these delays will continue unless a suitable tariff mechanism is put in place.

4. Recommendations:

General: Given that substantive private investment will be needed in the years to come, it is important that the regulatory framework is further improved to be attractive to private investors. In particular, Vietnam should consider to reconsider the current dominance of EVN by building up a fully competitive market in terms of electricity generation, wholesale and retail markets sooner as planned yet (until 2024). Until the regulatory environment in Vietnam has reached an internationally competitive level, we recommend adjusting energy prices and maintaining government guarantees in order to encourage foreign investment and lessen the perception of high risk in relation to major projects.

Establishment of independent authority: In the short term, we recommend that a new independent authority be established, a “one-stop-shop”, to promote and facilitate private sector participation in the power sector in line with 6th/7th Power Development Master Plan and with due regard to the supply/demand balance. The role of this new authority would be to negotiate, agree and approve development schedules, tariff pricing and key project agreements for the various types of power project. For example, Power Purchase Agreement, Fuel Supply Agreement, other related agreements. As a one-stop-shop this authority could also perform a coordinating role between the concerned local and international agencies, for the purpose of expediting the implementation of private sector projects. It would also play a coordinating role between the various ministries and



EVN and whether the project be subject to tendering or on a negotiated basis, this authority would have a key facilitating role. The new authority would need to be composed of appropriately skilled and experienced representatives from both inside and outside government and would need to have the authority to require EVN to agree reasonable tariff levels for new IPPs. For example, IPPs such as those projects mentioned above that have been already awarded to selected investors.

Energy prices: Although affordability and public welfare must be taken into consideration at Vietnam's stage of development, the gradual increase of energy prices is inevitable to both encourage energy efficiency and private investment. Only higher but realistic prices combined with increased efficiency of service providers will enable businesses to generate operating surpluses to finance capital expenditure, and thus allow these to operate on a commercially viable and sustainable level. Charging users on their actual consumption level maybe considered, potentially in a system with wholesale and retail prices as well as a high tariff during consumption in peak hours and a low tariff in times of low consumption (at night). In part, the increase in electricity prices could be facilitated by the new "one-stop-shop" mentioned above. To ensure the retail price increase is gradual, only wholesale prices could be increased initially, followed by a slower increase retail prices and a consequential gradual reduction in Government subsidies.

Competitive bidding: Although recent revised bidding regulations seem to require competitive bidding for infrastructure projects if there is more than one interested party, projects to date have been largely undertaken without a competitive bidding process. The absence of competitive bidding does clearly bear the risk of poor outcomes for both state agencies and project partners, and may result in an inadequate allocation of risk. We recommend the requirement for a clear and transparent competitive bidding process should be clarified in the relevant laws and regulations and properly implemented. In addition, an explicit and transparent complaint and dispute resolution mechanism should be instituted to settle disputes in relation to the awarding of bids. Generally, we recommend narrowing down the scope of projects subject to complicated and tedious bidding procedures to the large scale projects.

Stability of law and adherence to contract terms and conditions: In order to ensure the interest of foreign investors, we recommend the relevant authorities strive to ensure contract terms are clear and adhered to in a timely manner, especially in large-scale and BOT projects, in which state agencies have a direct role. We also encourage the authorities to do their best to enhance transparency and notice in planning for laws and regulations to best enable forward planning in the negotiation of major projects. Also, a BOT scheme, the necessary relative governmental guarantees and a long term PPA is the expected triangle to lure foreign investors in the IPP sector and make the projects



bankable. Finally, we suggest enforcing foreign investors' legal right to use international dispute settlement mechanisms.

Power projects: The Government should continue to pursue a policy of supporting power projects with bankable Government Guarantees, Power Purchase Agreements and Implementation Agreements, whilst a competitive market is being established. The Government should insist upon the application of international standards for new power plants, with respect to construction, thermal efficiency, operational performance, environmental and safety issues.

II. Renewable Energies and Carbon Efficient Energy

1. Overview

As a signatory of the Kyoto Protocol, Vietnam should be committed to reaching its 2020 Industrialization goal through new and innovative technologies which will minimize their contribution to global climate change. Excluding large hydro, Vietnam's current RE (renewable energy) mix stands at only 1.5% of total energy production, which is even regionally quite low. If Vietnam wants to reach its 2020 targets across a variety of sectors, it will have to realize the importance to the development of renewable and carbon efficient technologies. Many of the above issues also need to be addressed by the RE sector, specifically the importance of energy prices. Vietnam holds huge potential for the development of energy production through wind, solar, geo-thermal, biomass and further development of hydroelectric power. It is possible that a combination of these energy sources will allow Vietnam to reach its RE targets of 3% by 2010 and 5% by 2020 as development of these energy sources will be the most cost-efficient manner in which the government will provide 100% electrification by 2020. The general sentiment is that RE laws and an open and transparent operational framework, along with competitive market price will be offered in the next couple of years. Currently, the Ministry of Industry and Trade (MoIT) is working on legislation on a feed-in tariff for wind power projects in Vietnam.

Recommendation: The government should further promote the use of renewable energies, building on the commitments already contained in the 6th Master Plan. Vietnam should offer further incentives for increasing the thermal efficiency of existing coal-fuelled power plants, which at only 28-32 percent are 10 percent less than in developed countries. As well as the feed-in tariff it is encouraged that alternative incentives such as tax cuts on imported technology, land, and profits amongst other opportunities to promote RE are also institutionally developed. As suggested by MoIT a



responsible RE office be set up that can assist in the research, development and deployment of RE production.

2. Clean Development Mechanism (CDM)

CDM, a means by which Non-Annex A countries can benefit from mitigating greenhouse gases as a host country and selling these reductions in the form of carbon credits to Annex A countries holds immense potential to be developed in Vietnam. The CDM provides an opportunity for local project developers to be able to secure financing through the sales of carbon emission rights (CERs) to develop projects that would not have otherwise been possible under normal market conditions. As per the RISOE, CDM pipeline of projects that list projects which have at least reached validation, Vietnam has 8 out of a current 90 plus that have reached registration. This exceptionally low figure is due to a number of issues put forth by the energy sector in general, however, a few are more specific.

Recommendation: There is an expectation of project owners that CDM will provide benefits without any efforts. This is not the case, as the project owner has to diligently meet all the financial, measuring and monitoring requirements. It is recommended that a capacity building program be provided to projects to understand what is required of them to get involved in CDM. Another component of the CDM process is the Project Design Document (PDD), being the central piece of documentation to develop, monitor and register for CERs. An issue plaguing the quality of the PDDs, and thus lack of registration, is the inability to correctly apply the baseline and monitoring methodology. Better scientific knowledge of the underlying technology and writing skills need to be provided to local CDM project developers. It is understood that the MoIT is currently developing a standardized emission grid factor with the local Designated National Authority (DNA) under MONRE.

3. Coal

Coal accounts for nearly one-quarter of Vietnam's energy production. Coal production from the underground mines in past years has reached 30 to 35 percent of capacity and will gradually increase to 70 percent of the total output by the year 2010 using present resources. Vietnam National Coal - Mineral Industries Group (Vinacomin), a state owned company, plans to build eight coal-fueled thermal power plants with a total capacity of 2,900 MW by 2010. Six are currently in various stages of planning and construction.

Recommendation: Carbon Capture and Storage (CCS) is being piloted around the world as a means to capture CO₂ emissions from the production of coal produced energy. The applications of CCS or geosequestration include not only coal fired power



plants, but also for cement refineries, and petroleum and natural gas fields with very elevated levels of CO₂. The geological conditions required for CCS are not found everywhere and rather require specific conditions like a saline aquifer at depths of greater than 700 metres with high porosity and a natural seal. So far there has not been sufficient integration of geological information on the likely whereabouts of such possible sites for CCS with the planning of new coal fired power plant developments. The geological studies should go ahead as a matter of urgency to make the approach practical and affordable.

4. Natural Gas

Natural gas is another important source of energy being developed for domestic electricity generation, again accounting for around 25 per cent of electricity generation structure of the country. The government pays special attention to gas industry, which has played an important role in the national strategy of socio-economic development and energy security. It is one of the leading industries in the industrialization and modernization of Vietnam. The gas reserves and potential resource is big, but the gas market has been newly established and the number of customers is slowly developed and not corresponding to the natural gas potential of Vietnam. Exploration and development conditions are complicated (deep water, deep and tight sandstone reservoirs etc.) requiring advanced technologies and very high cost, especially for marginal fields.

So far PetroVietnam is supplying between 6 and 9 billion cubic metres of natural gas per year to the local market. Vietnam imports about 400 million cubic metres of gas per year from Malaysia and Indonesia. The import volume is estimated to increase to 1.8 billion cubic metres by 2010. There are major gas pipeline projects in the South East and Mekong regions already. PetroVietnam bidding is underway for exploration and production contracts for offshore projects in the Red River basin, located upwards of 100km from the shore in a highly prospective but technically difficult deepwater basin. Exploration for new gas sources in the onshore areas of Red River Basin area is also important.

Recommendation: To develop the marginal fields is a big challenge for the petroleum industry, while discoveries of small fields will be predominant in the future. Therefore, technology solutions and incentive conditions, which attract foreign investments to produce the marginal fields and high CO₂ gas fields are extremely urgent requirements. Developing gas consumption market is a key element to stimulate exploration development in Vietnam. In particular to expand the gas utilization for family life, transportation and other industries.



5. Coal Bed Methane

While the conventional coal and gas production has garnered much of attention and investment in the past, one area that was less explored was coal bed methane (CBM). The potential for CBM in Vietnam is substantial, in particular in the Red River Basin and Quang Yen Basins in northern Vietnam. In the Red River Basin the coal deposits are lying 250 to 1,200 meters beneath the basin and spread over a 3,500 square km area is estimated at about 212 billion tones. The average coal thickness is over 100 metres and the coal rank is sub-bituminous B, a suitable CBM reservoir. Gas content estimate is about 30 to 50 scf/ton, conservatively placed at 6 to 10 Tcf over total concession area. The Quang Yen Basin located in Quang Ninh province has estimated resources very high quality anthracite coal of about 5 billion tones of. Currently, CBM potential in this area has not been defined. In the near future, an assessment of the CBM potential of the basin needs to be completed to define exploration targets.

Recommendation: Coal bed methane is also a relatively new approach with a lot of new developments occurring. Because the gas is pumped out with water from the coal bed, there is much less emissions compared with burning the coal directly. Water management is a major issue in coal bed methane projects around the world and this will include developments in Vietnam. Depending on the quality of the groundwater, mining water can be either a hazard or a economic resource for the agriculture sector and other water using sectors and the environment. As well CBM developments can cause dewatering and land subsidence and this need to be managed. Further investment in regional and integrated geological studies of the regional groundwater resources and the coal bed methane potentials of key sedimentary basins is required. Coal bed can also be a good reservoir for CO₂ storage (CCS).

III. Electrical Efficiency and Safety

1. Electrical Safety

According to statistics from the Ministry of Labor, Invalids and Social Affairs (MOLISA), there were 5,836 labor accidents nationwide in 2008. Fatalities caused by electrocution accounted for 22.6 per cent of the death toll and 26.7 per cent of total accidents. According to the Ministry of Industry and Trade, since 2000, there have been nearly 500 accidents related to electricity at domestic enterprises, killing 400 people and injuring hundreds of others. According to the Ministry of Public Security's Police Department for Fire Prevention and Control, electrical fires are the second most common type of fire. Electric accidents have three main causes:



1. Defective electrical installations;
2. Use of poor-quality or counterfeited electrical products;
3. Users don't obey safety regulations.

Positive developments and legal framework: The Ministry of Construction (MOC) has adopted code TCXDVN394:2007, inspired by the International Electrotechnical Commission (IEC) standard 60364 for electrical design and installation of buildings focusing on protection and safety.

Recommendations:

Improve the quality of electrical installations through regulation enforcement:

Publish the Vietnamese Installation Standards; these installation standards shall cover every type of installation: public or private, every market segment from industry to housing to be included. National installation standards must be mandatory. A chapter shall deal with control and verification in order to strengthen enforcement. The issuance of an Electrical and Automation Installation guide for basis of certification of all electrical installers.

Use quality products: Only products meeting standards requirements should be used. We highly recommend a national program for checking enforcement. Increase the quality level of switchboards and claim for tested equipment could be further pushed.

Fight against counterfeited products: Train customs agents in order to better detect counterfeits entering the country; take actions against companies manufacturing and/or trading counterfeits; educate and remind that copies mislead customers into thinking they are purchasing a good quality branded product and expose them to multiple risks.

Enforce safety regulations: Conduct audits in order to re-assess installers' licenses; work with insurance companies to institute preferred fire insurance policies if the electrical installation is done by certified/licensed electrical installers; educate customers on the danger of inappropriate electrical installation and encourage them to ask for conformity assessment.

2. Electrical Efficiency

In the past five years, national electricity consumption in Vietnam has increased by 13% on average, while electrical consumption has increased 15% yearly. Even the most optimistic projected increase of production capacity will not enable to solve the electricity



shortage for the next ten years, due to minimum time required to plan, build and operate power plants being three to four years. In order to confront such an energy dilemma, while not affecting economic growth, achieving electrical energy efficiency is a necessary step for both private and public sectors in Vietnam. In the long run, it shall also enable to contribute to the reduction of green gas house emission worldwide and sea level rise, for which Vietnam shall be third most affected country in Asia. Solutions exist to reduce consumption by 20 to 40% in all market segments in the short run, but most companies are reluctant to invest with a two to three years ROI.

Positive developments and legal framework: Several dedicated seminars have been conducted by authorities in order to raise public awareness on energy efficiency and possible environmental consequences. For instance, DPM has mandated to MOIT and Eurocham to co-organize three workshops which were conducted on 24th June 2009. The workshop gathered more than 150 participants. 20 companies, including energy efficiency Vietnamese leaders, have presented their practical recommendations on how to unleash Energy Efficiency business for building & industry segments, and how to raise awareness among general public and business communities. Recommendations are presented below. A policy for developing ESCOs (Energy Service Companies) was launched in 2007. Authorities have decided to implement incentives for companies sourcing energy efficient solutions, but decrees have not been enforced. A Green Building Council in charge of describing the “Lotus” Vietnam standard was created.

Recommendations:

- Creation of an Energy Efficiency Board reporting directly to Prime Minister with following main objectives: coordinating and prioritizing numerous actions taken in most Vietnam Ministries (MOC, MOIT, Education, Sciences...), monitoring the progress and efficiency of actions implemented, and for making sure new standards are properly enforced. Electricity pricing policy shall be followed by such body.
- Increase the number of private ESCOs by clarifying and simplifying the legal framework: It is agreed that the more private ESCOs will be created, the more Energy Efficiency business will grow. Each private ESCO shall be certified by relevant authorities. Number of private ESCOs shall reach 100+ by 2011 as compared to 1-2 today.
- Integrate inside the government stimulus package a preferred interest rate for Energy Efficiency loans (-4% to -5% as compared to market rate is necessary to compensate for low electricity price in Vietnam and reduce ROI).
- Launch a yearly recognition program (award) to best performing certified ESCOs and/or best merit for Energy Efficient businesses.
- Continue and launch new general awareness communication campaigns nationally.



- Insert school program about climate change and energy efficiency (high schools and University degrees).
- Help clarify Carbon Credit attribution process in Vietnam market.
- Provide tax incentives for purchasing power monitoring equipment in Industry and Building.
- Provide tax incentives for purchasing Energy Efficiency audits to ESCOs
- Keep organizing Energy Efficiency seminars regularly
- Study the creation of a Vietnamese Energy Efficient label on certain categories of products (e.g. HVAC, lighting, fridges, power transformer).

IV. Fuel Distribution

As from 1 January 2009, foreign invested companies are entitled to operate distribution services (commission agents, wholesale and retail business) for all legally imported and domestically produced products. Vietnam will not open the distribution service sector for retail sales to foreign companies for nine product categories: rice, sugar, tobacco, processed and crude oil, pharmaceuticals, gunpowder, newspapers and magazines, precious metals and stones, and audio/video items. The fuel supply chain in Vietnam is divided into three levels: (i) Importers, having import quotas granted by the Ministry of Trade; (ii) Wholesalers; and (iii) Retailers. Effective from 1 May 2007, wholesalers and retailers have been allowed to set fuel prices within a small trading band regulated and controlled by the Government.

Recommendations:

EuroCham recommends that the Government should reconsider its position on the distribution of processed oils and oil products with a view to allowing fuel distribution by reputable international enterprises. The exclusion of processed oils or oil products is not necessary. Generally, the presence of foreign distributors has provided many benefits to Vietnamese consumers. In particular, allowing foreign distributors of fuels will also bring enhanced value to Vietnam for the following reasons:

- Improved safety, reliability, and quality of products and services
Major foreign distributors have many years of experience in distributing fuel and have continuously improved the safety of their service and products for several decades. For example, propriety additives used by such distributors in gasoline would clean engines better and thus prolong engine life. Fuel is a volatile and dangerous product and can cause catastrophic outcomes if an accident occurs. The higher safety standards of major foreign distributors will reduce the likelihood of such accidents. Allowing foreign fuel distributors will also push local companies to improve the safety



and quality of their products and services, and consequently will provide greater benefits to domestic consumers.

- Economic benefits to Vietnam

Foreign companies can bring economic value to Vietnam in many ways:

Additional revenue/tax: Enhanced safety and product quality will increase demand and therefore increase revenues to the Government of Vietnam. For example, most international airlines do not presently refuel in Vietnam due to concerns regarding the safety and quality of the products available domestically. Instead they refuel outside of Vietnam on their services in and out of the country. This is not an ideal strategy for the airlines as it requires them to fly heavier planes and therefore reduce fuel efficiency. Allowing fuel distribution by reputable international enterprises would provide airlines with confidence that they would receive similar high-quality products within Vietnam as at airports outside the country. This increased confidence would also increase the likelihood that purchasers would switch to Vietnamese suppliers in the future.

Price: Increased competition would drive down prices and benefit consumers. Even accounting for the few refineries that Vietnam plans to build in the near future, Vietnam will continue to import oil products in the next decade. However, most international companies with internal supply networks, including world-class refineries in the region, have the capacity to provide fuel directly to Vietnam without third-party involvement, thus lowering fuel prices for local consumers.