

I. Power Generation

1. Overview

Vietnam's installed capacity is currently just over 18,500 MW and annual power production is approximately 95,000GWh per annum. At just over 1000kwh per capita, Vietnam has one of the lowest electricity consumption rates in Asia. However, with GDP growth of approximately 6-7% per annum the consumption of electricity is growing rapidly at a rate of approximately 12-15% per annum. The construction of new power plant capacity in the Vietnam is not keeping pace with demand and this is resulting in a shortfall in power supply, especially at times of peak demand. The situation is particularly serious during the dry season, due to lower availability of the hydro-electric power plants, which make up around 40% of the country's installed capacity. In the 2010 the drought resulted in reduced availability at hydro-electric power plants, which forced the state-owned Electricity of Viet Nam (EVN) to instigate a programme of rolling blackouts and load shedding, particularly in the major cities.

EVN has been trying to reduce the effect of the power shortages by importing electricity, mainly from China and by utilising fuel oil in gas turbine plant. In recent news reports, EVN has quoted that electricity generated from fuel oil at O Mon and Hiep Phuoc is costing VND4000/kWh (more than 20 cents/kwh). EVN has stated that it has lost US\$246.137 million from buying power from high-cost sources in the first half of this year. Purchases of electricity by EVN from external sources in the first half of this year are quoted as 18.341 billion kWh of electricity. It is clear that the power supply/demand imbalance in Vietnam is beginning to have a negative impact on GDP growth. Some international investors have recently highlighted that threats to reliable power supplies are causing them to be wary about investing in Vietnam. The situation is predicted to get worse, since growth in demand for power is set to continue, whilst many large power projects are delayed due to tariff issues, project documentation, financing difficulties and/or land clearance issues. There is an urgent need for the barriers preventing progress with these projects to be removed.

The seventh Power Development Master Plan (PDMP), which is due to be launched, will set out which power plants are planned for the future and the required transmission system development. It is clear that the capital requirement under the 7th PDMP will be very significant. An indication of power plant pricing in Vietnam has been demonstrated recently at the Nghi Son 1 power project in Thanh Hoa Province. The engineering, procurement and construction contract for this 600MW coal-fired plant is quoted to be in excess of US\$1600/kW. At this pricing, the future power plant build-out would translate into a capital expenditure requirement of approximately US\$40 billion over the next five



years, with additional significant infrastructure investment being required for associated transmission system upgrade and new connections.

It is acknowledged that much of this new investment will be required in the form of FDI by international IPP developers. State Owned Enterprises, such as EVN, Petrovietnam and Vinacomin will also play a part in the growth of the power sector. However, it is likely that EVN will undergo major structural changes in the future and PVN and Vinacomin currently have many other calls on capital in their core businesses. Therefore the SOE's will have limited capability to fill the gap in infrastructure funding that is urgently needed in the power sector.

Solutions for attracting foreign investment currently under development by the Government include (i) the ongoing development of a draft legal framework for PPP pilot projects, (ii) a stated intention of the Government to restructure the electricity market to make it more competitive by creating a more liberalised market and (iii) revisions to the laws governing infrastructure project development (including power). Decree 108-2009-ND-CP, relating to BOT, BTO and BT Contracts came into force on 15th January 2010. However, the implementing regulations (i.e. Circulars) are still subject to finalization and approval. Typically, in developing markets, such initiatives take many years to develop and implement. Therefore, at least in the short and mid-term, until the transition to a competitive power market is completed, a long term contracted market based on PPAs backed by government guarantees is likely to be needed to attract foreign investment and for successful contract implementation. Experience with the previous successful IPPs implemented in 2004 and 2005 (such as the Phu My 2.2 and Phu My 3 power projects) has shown that risk guarantees, including for currency convertibility and performance risk of Vietnamese counterparties, are indispensable for raising capital from both multilateral banks, bilateral agencies and other sources of private financing and hence making power projects bankable.

Vietnam's urgent power needs and huge forecast demand growth in the future will no doubt have to be met by utilising fossil fuels. Both domestic and imported coal plants will play a significant part. Currently, the leading power projects under negotiation or approaching financial close, including Mong Duong 2, Vung Ang 2 and Van Phong to name a few, are large scale coal fired projects. There are also a number of new gas-fired projects planned. However, Vietnam is conscious of the need to address climate change, being one of the countries most likely to be impacted from an increase in sea level rise. The development of renewable energy is being promoted in the country, in the form of wind power and some biomass projects, in addition to the continuing development of hydro-electric capacity. However, these new renewable projects will require very significant tariff increases to feed through into the power generation sector and appropriate tariff mechanisms to be in place in order to make them viable—a



commitment the Government does not yet seem able to make in light of its more urgent need to secure large scale base load power, which must come from traditional thermal power projects.

2. Energy Prices

Energy in Vietnam is comparatively cheap both when compared to the world market and the region: The current average retail price is approximately VND1058/kWh (5.4c/kWh). There are growing calls for the retail tariff to be increased to a level that will justify the investment required for new build capacity. In the past there has been a fear that a hike in electricity price will be damaging both socially and will be detrimental to GDP growth. It is clear that currently the greater threat to GDP comes from unreliable power supplies.

The difficulty in achieving a sustainable and financeable electricity tariff is a key obstacle in the growth of internationally financed power projects. In the rush to implement cheaper power projects (necessitated by Vietnam's low tariffs) life of project cost calculations appear to be missed or ignored. For example, those projects that have been implemented by EVN have been forced to use cheaper Chinese plant and equipment in an effort to keep the apparent headline tariff at a low level. These projects are facing delayed implementation and unreliable startup. It can be argued that the final cost of these projects in terms of damage to the economy will be much higher than if international standards had been applied and good quality equipment had been utilised from the start. High quality power plants which are designed with optimum plant redundancy and high reliability & performance as a key objective tend to deliver much lower through life costs than plants designed to minimise up front plant and equipment cost.

3. Competitive Bidding

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 difficulties implementing the project's new model tender process. Therefore no benchmark tariff is currently available.

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, the need to negotiate the tariff and PPA anew for each project creates a severe bottleneck in the implementation of internationally funded projects. 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 reduce the dominance of EVN by allowing other players in the market, thereby building up a fully competitive market in terms of electricity generation, wholesale and retail markets sooner as planned yet (until 2024).

Energy prices: The current energy price of VND1058/kWh (5.4c/kWh) is too low to attract investors to the energy / electricity industry. 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. We therefore recommend that:

- Electricity prices to be raised at least 50% higher than at present. Subsidies, if any, should be only for granted for the poor and people covered by special Government policies (currently the subsidized price applies to all categories). 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).
- For projects based on imported coal we recommend allowing for even higher tariffs, if they are to be internationally financed (tariff dependant on Indonesian and Australian coal prices, amongst other things). In turn, new gas power plant tariff pricing would also be dependent on project specific factors.

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.

Standardized Project Documentation: Projects should be tendered, negotiated and implemented on the basis of well crafted, bankable standard contracts—, particularly the concession agreement (i.e. BOT Contract), PPA and guarantees (i.e. Government Guarantees and Undertakings). The Ngih Son 2 tender process attempts to move the Government closer to this concept by having short-listed (pre-qualified) bidders provide input into the project contracts in an effort to consolidate all key issues into a single set of documents upon which the bidders make their final bid. The intent of this process is to limit the number of issues open for negotiation once the project is awarded, thereby reducing the time needed to move the project through negotiation to financial close. However, given the number of comments and issues to be worked out prior to the bid stage, this process appears to stretch the capacity of the Government negotiation team and may itself be contributing to the project’s continued delay.

Therefore, we urge the Government to co-operate with independent advisors and input from the international financial community to standardize its project documentation. The goal should be to develop workable, bankable contracts upon which all bidders to a project place a tender on an even and transparent basis. Such standardized documentation should set forth a fair, reasonable and workable risk allocation, distributing risk to the party best able to manage such risk at the lowest overall cost to the project. This would require the Government to set a firm policy on the level of guarantee it will provide to projects. We believe that in the long run, this will pay for itself and bring greater overall benefits to Vietnam as bids become easier to assess by the Government (i.e. fewer factors to negotiate), projects are negotiated on a speedier basis and, consequently, projects are funded and implemented earlier, thus supplying much needed power to meet economic growth demands.

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. As noted above, standardized project contracts would significantly contribute to an improved tender process. 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 over a specified threshold size.

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. Standardized project contracts inform potential investors and lenders of the playing field and how the law will be implemented, thereby allowing them to better assess the bankability of a desired project. 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 renewable energy (RE) 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 great 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.

We note that those governments that have been most successful in implementing wide scale RE programs are those that have (i) legislated for feed in tariffs for RE projects and (ii) implemented large scale energy efficiency programs. Although Vietnam is currently developing a progressive body of energy efficiency legislation with the assistance of international donors, it still lacks the political will or ability to commit to feed in tariffs for RE projects. The current tariff level in Vietnam is simply insufficient to support meaningful investment in wind, solar or geothermal projects. We acknowledge that there is urgency at this time to implement large scale base load power, which must come from traditional thermal sources. However, we recommend that RE policies and laws continue to be developed in anticipation of Vietnam setting its energy future onto a more sustainable and energy secure pathway. While there is much interest in Vietnam in nuclear power development to address carbon reduction and energy security, a diverse fuel mix should be sought.

Recommendations:

- The government should further promote the use of renewable energies in the 7th Power Development Master Plan, 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.
- We encourage alternative incentives such as tax cuts on imported technology, land, and profits.
- As suggested by the MoIT, a responsible RE office should be set up, to assist in the research, development and deployment of efficient 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 those 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 certified emission reductions (CERs) to develop projects that would not have otherwise been possible under normal market conditions. Currently, Vietnam has 33 registered CDM project and 6 projects awaiting registration. It is notable that prior to 2009 Vietnam had only two registered CDM project. Therefore this is rapidly growing sector that will gain greater importance over the coming years (assuming a successor treaty or mechanism to CDM is implemented by the end of 2012).

Recommendations: Vietnam's Designated National Authority (DNA) under the Ministry of Natural Resources and Environment has made great progress in educating the public and potential project owners on the value and opportunities of CDM in Vietnam. However, there is greater scope for further development, particularly amongst potential project owners. 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. In addition to Government level capacity building, policies and incentives should be developed to promote home grown Designated Operating Entities (the independent parties validating and verifying CDM projects) to ease the continued bottleneck in project registration and home grown carbon developers to help identify and implement a wider variety of projects across more sectors.

3. Natural Gas

Natural gas is another important source of energy to be further developed for domestic electricity generation. Currently, natural gas is accounting for around 25 per cent of electricity generation structure of the country. The government rightly pays special attention to the natural 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 2011. 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 urgent requirements.

III. Electrical Efficiency and Safety

1. Electrical Safety

According to statistics from the 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 MoIT, 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 high-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 counterfeit 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, achieving electrical energy efficiency is a necessary step for both private and public sectors in Vietnam. 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.

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 etc.), 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.