

## *Investment Incentives for Renewable Energy in Southeast Asia: Case study of Viet Nam*

---

*Nam, Pham Khanh; Quan, Nguyen Anh; and Binh, Quan Minh Quoc*

*December 2012*

© 2013 The International Institute for Sustainable Development  
Published by the International Institute for Sustainable Development.

---

## About IISD

The International Institute for Sustainable Development (IISD) contributes to sustainable development by advancing policy recommendations on international trade and investment, economic policy, climate change and energy, and management of natural and social capital, as well as the enabling role of communication technologies in these areas. We report on international negotiations and disseminate knowledge gained through collaborative projects, resulting in more rigorous research, capacity building in developing countries, better networks spanning the North and the South, and better global connections among researchers, practitioners, citizens and policy-makers.

IISD's vision is better living for all—sustainably; its mission is to champion innovation, enabling societies to live sustainably. IISD is registered as a charitable organization in Canada and has 501(c)(3) status in the United States. IISD receives core operating support from the Government of Canada, provided through the International Development Research Centre (IDRC), from the Danish Ministry of Foreign Affairs and from the Province of Manitoba. The Institute receives project funding from numerous governments inside and outside Canada, United Nations agencies, foundations and the private sector.

### Head Office

161 Portage Avenue East, 6th Floor, Winnipeg, Manitoba, Canada R3B 0Y4  
Tel: +1 (204) 958-7700 | Fax: +1 (204) 958-7710 | Web site: [www.iisd.org](http://www.iisd.org)

---

## About TKN

The Trade Knowledge Network (TKN) is a global collaboration of research institutions across Africa, Asia, Europe and the Americas working on issues of trade, investment and sustainable development. Coordinated by the International Institute for Sustainable Development (IISD), the TKN links network members, strengthens capacity in areas of research, training and policy analysis, and also generates new research to assess and address the impact of trade and investment policies on sustainable development.

The TKN brings together institutions and individuals working on common concerns, strengthening each others' research and communication capacity and knowledge bases, and developing solutions to share with others outside the network. It thereby provides a platform for partner-based research and specific policy engagement.

### Investment Incentives for Renewable Energy in Southeast Asia: Case study of Viet Nam

December 2012

Nam, Pham Khanh; Quan, Nguyen Anh; & Binh, Quan Minh Quoc

## Table of Contents

|  |    |
|--|----|
| 1.0 Introduction .....   | 1  |
| 2.0 Definitions and Methodology.....   | 2  |
| 2.1 Evaluation Tasks.....  | 2  |
| 2.2 Evaluation Approach.....   | 2  |
| 3.0 Overview of the National Energy Sector.....  | 4  |
| 3.1 Energy Consumption .....   | 4  |
| 3.2 Energy Production .....  | 5  |
| 3.3 Electricity Generation .....   | 6  |
| 3.4 Role of the Private Sector in Renewable Energy Development .....                   | 7  |
| 4.0 Investment Incentives for Renewable Energy.....                                    | 9  |
| 4.1 Policy-Makers and Implementers .....   | 9  |
| 4.2 Subjects of Policy .....   | 10 |
| 4.3 General Renewable Energy Policy Framework .....                                    | 10 |
| 4.4 Overview of the Investment Incentive Framework .....                               | 13 |
| 4.5 Regional Incentives and Special Economic Zones (SEZs).....                         | 14 |
| 4.6 Investment Incentive Programs for the Energy and Renewable Energy sectors .....    | 17 |
| 4.6.1 Financial Incentives .....   | 17 |
| 4.6.2 Fiscal Incentives.....   | 17 |
| 4.6.3 Market Price Support and Regulation .....  | 18 |
| 4.6.4 Other Subsidies.....   | 20 |
| 5.0 Discussion and Analysis.....   | 21 |
| 5.1 Stakeholder Assessment of Investment Incentives for Renewable Energy Projects..... | 21 |
| 5.2 The Impact of Investment Incentives .....  | 22 |
| 5.3 The Costs and Benefits of Investment Incentives.....                               | 23 |
| 6.0 Conclusions and Recommendations.....   | 25 |
| 6.1 Conclusions.....   | 25 |
| 6.2 Recommendations.....   | 25 |
| 7.0 References.....  | 26 |

## 1.0 Introduction

Energy markets around the world face many challenges. Conventional supplies of fossil fuel reserves are becoming increasingly scarce, leading to rising prices. At the same time, concerns over climate change are growing, increasing the urgency for countries to decouple greenhouse gas emissions from economic growth.

All of these pressures have greatly raised the profile of renewable energy technologies (RETs), with governments now commonly providing a range of support frameworks and incentives to attract investment.

In developing countries, government support for renewable energy is complicated by the need to simultaneously expand access to energy more generally, as a cornerstone of poverty eradication and improvement of living standards. Frameworks and incentives must attract finance and maximize benefits from natural resources, while expanding energy access and keeping energy affordable for consumers and industry.

In order to achieve this difficult balancing act, policy-makers must know what kinds of incentives are most effective at attracting investment for renewable energy projects, and what size of support is affordable and reasonable.

This report assesses investment incentives for renewable energy in Viet Nam. It focuses on small hydro, wind, solar, biogas, and biomass resources. Through an analysis of the incentives available for these technologies, and drawing on insights from representatives from governments and industry, it suggests some initial findings on the extent to which Viet Nam's investment incentives for renewable energy are effective and affordable, and identifies further research that could usefully be conducted in this area.

The analysis is part of a series of reports that aim to conduct an initial, exploratory assessment of such incentives in developing countries around the world.

## 2.0 *Definitions and Methodology*

### 2.1 Evaluation Tasks

There is no one agreed definition of “investment incentives.” Thomas (2007) defines them narrowly as “a subsidy given to affect the location of investment,” while UNCTAD (2004) defines them more broadly as incentives intended to attract foreign or domestic investment using: financial incentives (such as grants and loans at concessionary rates); fiscal incentives (such as tax holidays and reduced tax rates); subsidized infrastructure or services; and concessions or exemptions from regulations and standards.

This study follows the broader definition of “investment incentives,” recognizing that the vast majority of renewable energy subsidies cannot just focus on attracting investment to a particular location, but must also provide the financial support that makes such investments viable in the first instance. In this sense, the words “investment incentive” and “subsidy” can be considered interchangeable throughout the report, to the extent that the subsidy in question can be argued to affect investment decisions.

It should be noted, however, that “investment incentives” and “subsidies” do not include measures that are intended to remove existing market distortions that are a barrier to renewable energy. For example, none of the following measures would be considered to qualify as investment incentives: the removal of fossil energy subsidies; regulation intended to remove barriers to renewable energy entering the energy market; or the use of taxation and payments to internalize positive and negative externalities. While such measures are not the focus of this report, they are identified and factored into assessments where relevant.

The evaluation of the impacts from investment incentives is based on two specific goals:

- Choice of location of the renewable energy project. This goal is understood as the effect of the incentive on the firm’s decision to choose a location and invest in a renewable energy project. The key objective of the incentive is to increase the likelihood of choosing a targeted location.
- Continuation of the existing investment. Besides possible impacts on the choice of investment location, a subsidy could help to retain and expand existing facilities. Investment incentives often have short-run impacts on investment decisions. A price subsidy should not be seen as a source of long-term profit. Typical questions are whether and how the incentives affect the decision of the investor on retaining the investment.

### 2.2 Evaluation Approach

Two main research methods were used to collect data for this study: desk research and structured interviews.

The desk research focused on reviewing three issues: i) the current state of Viet Nam’s energy supply and demand and the structure of its energy industry; ii) the laws and regulations that govern the Vietnamese energy industry, including those that, although not targeted at energy, are nonetheless relevant to energy development, such as laws and regulations concerning tax and investment in general; and iii) general issues that affect renewable energy markets, such as ease of doing business. Sources reviewed included government documentation, research papers and news media.

The interviews were held with a range of stakeholders in government and the energy industry, including representatives from: government ministries, intergovernmental organizations such as the Asian Development Bank (ADB), international development agencies (such as the Deutsche Gesellschaft für Internationale Zusammenarbeit [German Society for International Cooperation, or GIZ]), and private sector companies operating in the energy sector.

Interview questions were tailored to suit each respondent's background or institution, but all focused on how best to develop renewable energy in Viet Nam. Respondents were asked to identify the main impediments to developing the renewable energy industry, to critique current investment incentives, and to suggest alternative incentive schemes the government could pursue to attract investment.

The study focused on gathering data from the Ministry of Industry and Trade and other relevant government agencies that influence policy-making processes together with international donors. At the industry level, the impact of investment incentives on wind power, solar photovoltaic (PV), biogas, small hydro and biomass energy sectors was conducted.

The study first provides a summary of the energy sector in Viet Nam in Section 3. It then gives an overview of the country's investment framework, focusing on investment incentives available to the renewable energy sector in Section 4. Section 5 analyzes the extent to which existing incentives have adequately addressed investment barriers for Viet Nam's key renewable energy technologies. Finally, Section 6 summarizes the report's key conclusions and provides a number of recommendations to help improve investment policies.

### 3.0 Overview of the National Energy Sector

Viet Nam’s energy sector plays an important role in the economy, as it provides necessary inputs for economic production and other related activities. The sector has been dynamic over the past 10 years, with considerable change in energy supply and demand, especially in power generation, transmission and distribution.

#### 3.1 Energy Consumption

The key sources of energy in Viet Nam are: (i) coal, (ii) petroleum, (iii) hydro power, (iv) renewable energies and (v) nuclear. Viet Nam’s main renewable energy sources are small hydro, wind, solar, biogas, and biomass. Key energy commodities are diesel oil, gasoline and heavy oil, electricity, coal and liquefied petroleum gas (LPG). Non-commercial energy in Viet Nam is mainly sourced from biomass, such as cattle dung, residues or by-products of agricultural production, forest wood, rubber wood, saw mills, sugar cane, rice husks and coconut husks (traditionally gathered and locally used). With 70 per cent of the country’s population living in rural areas, about one third of Viet Nam’s energy consumption is sourced from traditional biomass and waste sources, with most households consuming 60 per cent of the biomass consumed nationally (Energy Information Administration [EIA], 2012). The use of biomass for producing energy in a commercial sense has yet to be fully developed, while other renewable energy resources, such as solar power, hydro power, wind energy, are beginning to be developed commercially.

Table 1 shows the different sources of energy used in Viet Nam from 2000 to 2009, while Figure 1 illustrates final energy consumption by sector.

**TABLE 1: ENERGY CONSUMPTION IN 2000, 2005 & 2009 (IN KILOTONNE OF OIL EQUIVALENT [KTOE])**

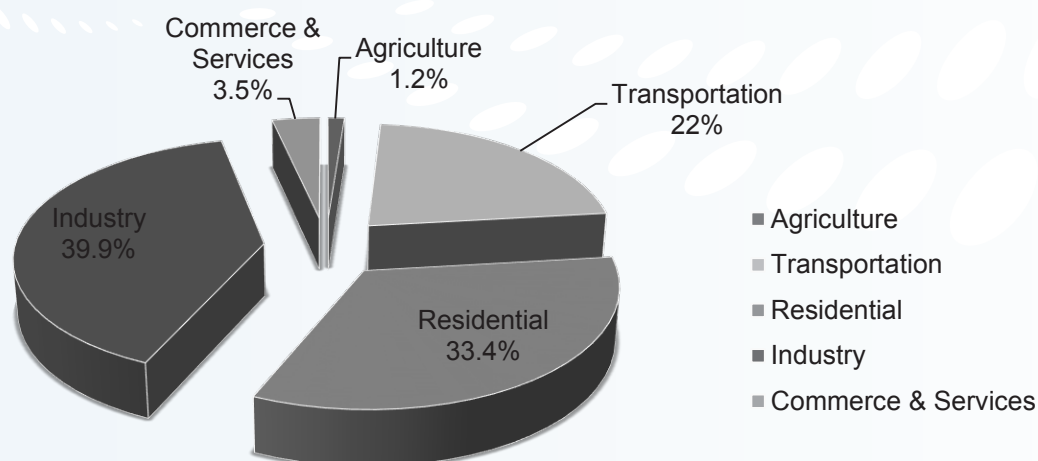
| ENERGY CONSUMPTION*  | 2000   | 2005   | 2009   | AVERAGE ANNUAL GROWTH RATE (%)<br>2000-2009 |
|----------------------|--------|--------|--------|---|
| a. Solid**           | 4,372  | 8,342  | 12,645 | 12.5  |
| b. Liquid***         | 7,917  | 12,336 | 16,607 | 8.6   |
| c. Gas               | 1,441  | 4,908  | 7,290  | 19.7  |
| d. Hydro electricity | 4,314  | 3,835  | 6,785  | 5.2   |
| e. Renewable energy  | 14,191 | 14,794 | 17,732 | 0.4   |
| Total                | 32,235 | 44,215 | 61,059 | 6.8   |

Source: Viet Nam Energy Statistics, 2009.

\* Primary energy consumption + net import (import-export) secondary consumption

\*\* Solid fuels including coal and lignite

\*\*\* Liquid—includes crude oil



**FIGURE 1: FINAL ENERGY CONSUMPTION BY SECTOR (2010)**

Source: Ha, 2012.

The industrial sector consumes the bulk of energy (39.9 per cent) for processing and industrial manufacturing of steel and construction materials. An increase in approved projects in this sector has led to growing demand for electricity. Residential energy consumption (33.4 per cent) and transport (22 per cent) have also experienced significant demand increases (Ha, 2012). Shares for energy consumption in agriculture and commerce and services sectors remain low, accounting for 1.2 per cent and 3.5 per cent of total energy consumed in 2010 (Ha, 2012).

### 3.2 Energy Production

In 2012 coal and oil were the dominant forms of fossil energy produced domestically. Coal production jumped from 15 per cent of energy produced domestically in 2001 to 35 per cent in 2010, while oil production decreased from 39 per cent in 2001 to 23 per cent in 2010 (Ha, 2012).

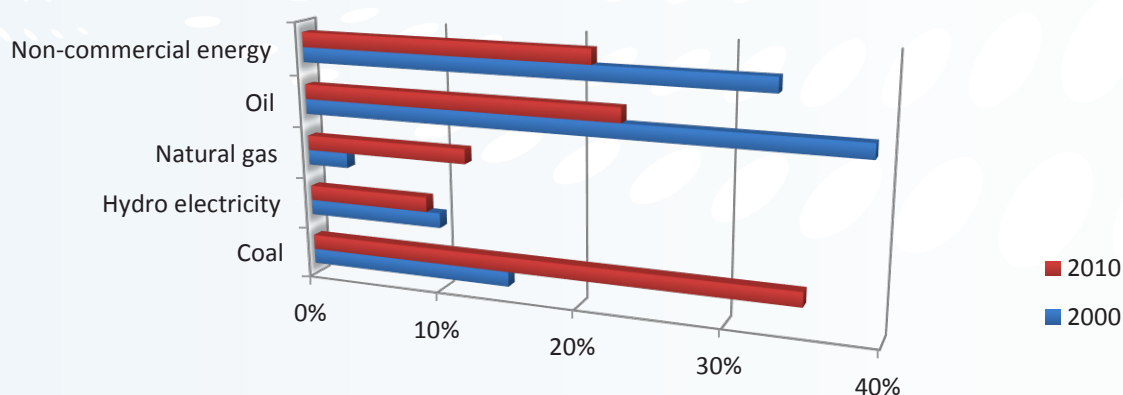
**TABLE 2: ENERGY PRODUCTION FOR YEARS 2000, 2005, AND 2009, IN KTOE**

| ENERGY PRODUCTION          | 2000   | 2005   | 2009   | ANNUAL GROWTH RATE (%)<br>2000 - 2009 |
|----------------------------|--------|--------|--------|---------------------------------------|
| a. Solid*                  | 13,137 | 19,092 | 24,480 | 7.2                                   |
| b. Liquid                  | 9,076  | 19,051 | 16,970 | 7.2                                   |
| c. Gas                     | 1,194  | 6,204  | 7,290  | 22.7                                  |
| d. Hydro electricity       | 3,583  | 3,835  | 6,785  | 7.3                                   |
| e. Renewable energy        |        | 14,794 | 14,722 |                                       |
| Sub-total                  | 26,990 | 62,976 | 70,247 | 11.2                                  |
| Net import (import-export) | n/a    | 17,150 | 13,787 |                                       |
| Total                      | 26,990 | 80,126 | 84,034 |                                       |

Source: Viet Nam Energy Statistics, 2009.

\* Solid fuels including coal and lignite





|      | Coal | Hydro electricity | Natural gas | Oil | Non-commercial energy |
|------|------|-------------------|-------------|-----|-----------------------|
| 2010 | 35%  | 9%                | 12%         | 23% | 21%                   |
| 2000 | 15%  | 10%               | 3%          | 39% | 33%                   |

**FIGURE 2: ENERGY PRODUCTION BY FUEL SOURCE (%) FOR THE YEARS 2000 TO 2010**

Source: Ha, 2012.

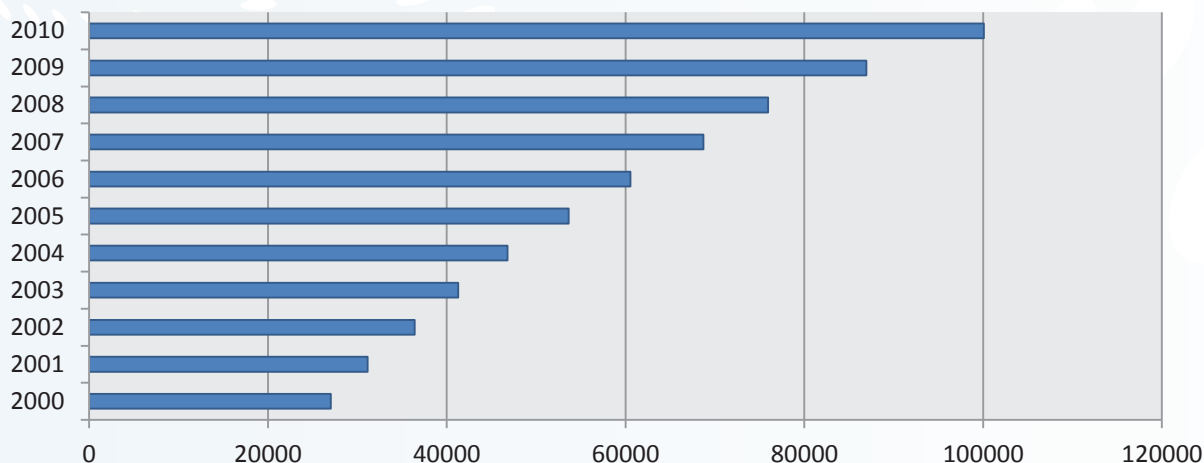
### 3.3 Electricity Generation

In Viet Nam, electricity is supplied from the following sources: (i) hydro power, (ii) coal-fired power, (iii) oil-fired power, (iv) gas-fired and turbine gas, (v) diesel and others and (vi) imported electricity (Ha, 2012). As of 2012, 39 per cent of electricity consumed was provided by non-coal-based thermal power generation (including oil-fired, gas-fired, and diesel sources), 36 per cent from hydropower sources, 10.5 per cent from coal-fired power stations, and the rest from renewable energy and imported energy.

In Viet Nam, Vietnam Electricity (EVN) takes the leading role in power generation, transmission and distribution, as per the Power Development Master Plan VII (Decision 1208/QD-TTg, 2011). Viet Nam's electricity generation has increased from 26,562 gigawatt hours (GWh) in 2000 to approximately 100,000 GWh<sup>1</sup> in 2010, representing an average annual growth rate of approximately 13 per cent (as illustrated in Figure 3). Additional generation capacity of 4,100 megawatts (MW) will be required per year on average during the 2011 to 2015 period to meet rising demand. Presently, there are 29 power plants under construction with a total capacity of 10,029 MW, including 20 hydropower plants and nine thermal power plants. Nuclear power plants with a generation capacity of 2,000 MW are also being developed (Decision 1208/QD-TTg, 2011).

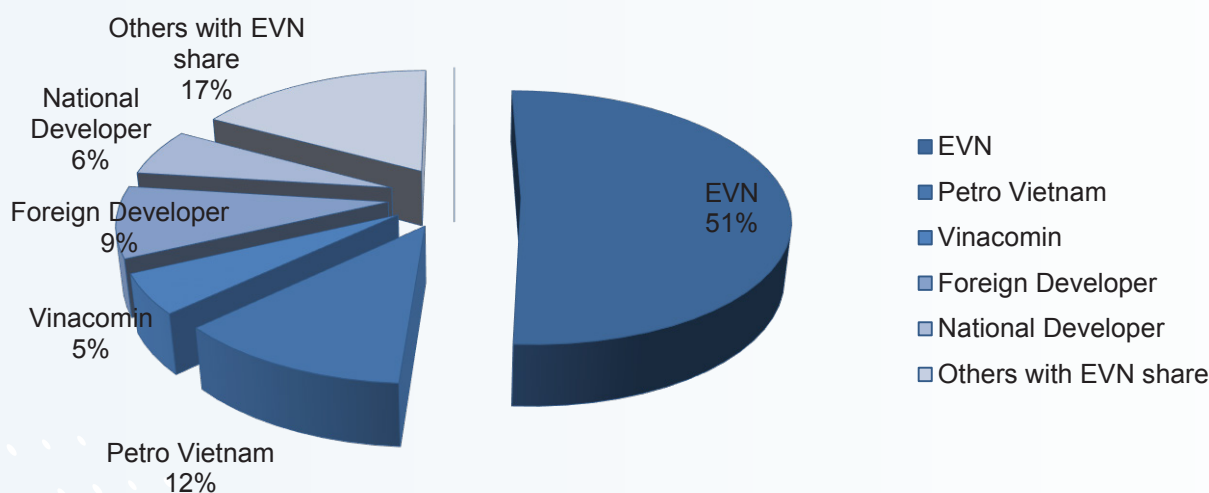
<sup>1</sup> EVN power plants contribute roughly 68 per cent of electricity generated and non-EVN power plants (includes independent power producers [IPPs] and other government generators) provide 32 per cent (Viet Nam Regulatory Authority of Viet Nam, 2010).

### Power Generation (Gwh)



**FIGURE 3: POWER GENERATION (GWH) FROM 2000-2010.**

Source: Tuan, 2012.



**FIGURE 4: POWER GENERATION BY MARKET STAKEHOLDERS**

Source: Vietnam Electricity, 2011.

### 3.4 Role of the Private Sector in Renewable Energy Development

The Vietnamese government has promoted the use of public-private partnerships to mobilize private capital and attract the investment needed for both renewable and non-renewable energy. Based on legislation managed by the Ministry of Industry and Trade (MoIT) (Decision 30/2006/QD-BCN) under agreed power purchasing agreements (PPAs), power generation companies owned by private investors are permitted to sell power to EVN where EVN is unable to mobilize financial resources to meet the full investment capital required for a power generation project. Due to the rapid increase in energy demand, the participation of domestic and foreign investors in the form of independent power producers (IPPs) will play a significant role in supplying power in the future. The following roadmap for developing the power market in Viet Nam has been set out by the government.

**TABLE 3: POWER MARKET DEVELOPMENT ROADMAP**

| ROADMAP     | ACTIONS   |
|-------------|---|
| 2005-2009   | Prepare for single buyer market (internal market)                                 |
| 2009-2014   | Prepare for wholesale market  |
| 2014-2016   | Pilot wholesale market  |
| 2016-2022   | Develop wholesale competitive market  |
| 2022-2024   | Pilot retail market (preparation for the retail market took place in 2014 - 2022) |
| Beyond 2024 | Develop competitive retail market   |

Sources; MoIT (2010, May 10); Circular 18/2010/TT-BCT on regulating the operation of the competitive electricity generation market; MoIT (2011, December 30); Circular 45/2011/TT-BTC on the amendment and supplementation of a number of articles of the Circular No.18/2010/TT-BCT of May 10, 2010 of the Ministry of Industry and Trade defining the operation of a competitive electricity generation market.

The presence of IPPs in the Vietnamese power market is still limited by rigid regulatory policies such as those associated with agreeing on an acceptable “financeable” tariff or per unit electricity price for power purchase agreements (PPAs). The low off-take price for electricity is a key factor hindering the participation of IPPs in the power market (Laykin, 2009). According to EVN, the number of power-generating projects under the Power Development Master Plan VI (17 IPP projects and two build-operate-transfer [BOT] projects) has yet to meet the targets of developing 47 power projects under both IPP and BOT investment schemes by 2015.

Constraints around investment capital are a key barrier to private sector investment in the energy market. A private company is required to have equity capital equivalent to at least 20 per cent of the total investment for an IPP project (EVN, 2012). This means the remaining 80 per cent of the required capital will need to be financed by bank loans from the Viet Nam Development Bank (VDB), or a foreign commercial bank backed by the Government’s credit guarantee scheme. The following table sets out a selection of renewable power projects being developed by IPPs for the period 2011–2015 (principally hydropower projects).

**TABLE 4: LIST OF IPP PROJECTS IN VIET NAM**

| NO. | INDEPENDENT POWER PRODUCER (IPP)                          | OWNERSHIP TYPE / INVESTMENT CAPITAL                     | NAME OF PROJECT  | OPERATIONAL DATE |
|-----|---|---|--|------------------|
| 1.  | Northern Electricity development and investment JSC. No.2 | a. Joint stock company,<br>b. VND1,457 billion          | Ngoi Phat hydropower plant (72 MW)                     | 2011             |
| 2.  | Hoang Anh Hydropower Joint Stock Company                  | a. Joint stock company<br>b. VND1,497 billion           | Ba Thuoc 2 hydropower plant, turbine 1, 2 (80 MW)      | 2012             |
| 3.  | Trung Nam Group   | a. Joint stock company,<br>b. VND2,500 billion          | Dong Nai 2 hydropower plant (70 MW)                    | 2012             |
| 4.  | Southern Hydropower Joint Stock Company                   | a. Joint stock company,<br>b. VND1,798 billion          | Dam Bri hydropower plant (75 MW)                       | 2012             |
| 5.  | Hung Hai Group  | a. Joint stock Company<br>b. VND2,000 billion           | Nam Na 2 hydropower plant (66 MW)                      | 2013             |
| 6.  | Hung Hai Group  | a. Joint stock company<br>b. Bank loan: US\$100 million | Nam Na 3 hydropower plant (84 MW)                      | 2014             |
| 7.  | Viet-Laos Electricity Joint Stock Company                 | a. Joint Venture<br>b. US\$166 million                  | Nam Mo hydropower plant (95 MW) constructed in Lao PDR | 2014             |
| 8.  | Energy and Industry Development Joint Stock Company (EIC) | a. Joint Stock company<br>b. US\$66 million             | Luc Nam coal-fired thermo power plant (turbine 1)      | 2015             |

Source: Vietnam Investment Review, n.d.

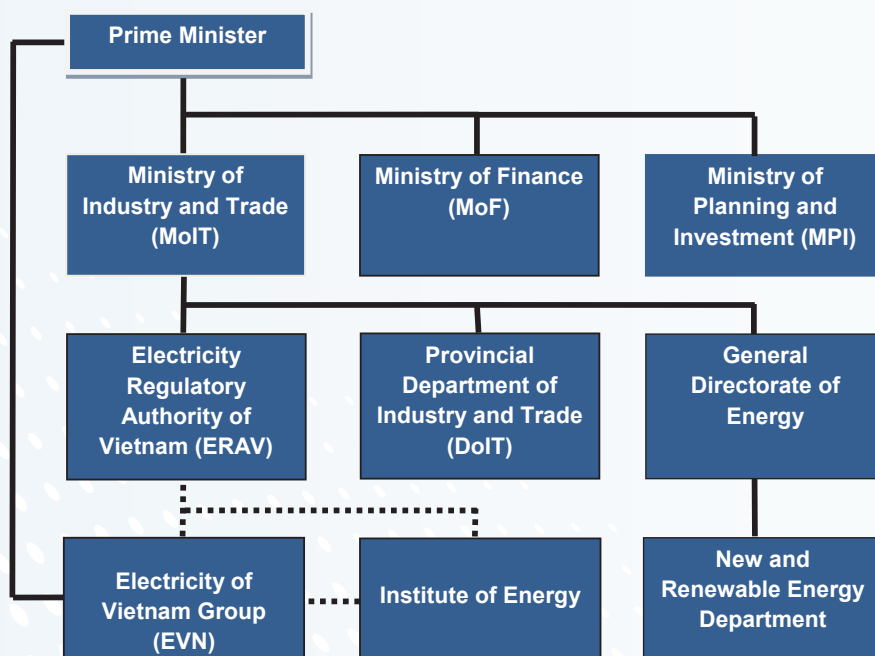
## 4.0 Investment Incentives for Renewable Energy

This section describes the policies introduced by the Vietnamese government to promote the development of renewable energy. The discussion is restricted to policies and regulations that affect the key types of renewable energy focused on in this study: small hydro, wind, solar, biogas and biomass.

### 4.1 Policy-Makers and Implementers<sup>2</sup>

Viet Nam has a complex institutional structure in the energy sector. At least three government agencies are directly involved in formulating or implementing renewable energy policy at a national level, with local governments and a number of other government agencies also having influence over either policy or its implementation, as described below.

- **The Vietnamese Government and Prime Minister** are responsible for policies and regulations, strategies and plans for the development of renewable energy sector.
- **The Ministry of Industry and Trade (MoIT)** manages all energy sectors, such as coal, oil, gas, electricity, nuclear energy and renewable energies. The ministry is responsible for policy design and national plans subject to Prime Minister's approval.
- **The Ministry of Planning and Investment (MPI)** takes the lead role in coordinating and allocating funds for energy projects submitted by line ministries and agencies, for consideration and approval by the Prime Minister.
- **The Ministry of Finance (MoF)** is responsible for taxation and energy tariff policies applied to the energy sector.



**FIGURE 5: GOVERNMENT MANAGEMENT STRUCTURE FOR RENEWABLE ENERGY**

Sources: MoIT, 2010; U.S. Commercial Services, 2012.

<sup>2</sup> This part is mainly based on GIZ/MoIT, 2011.

## 4.2 Subjects of Policy

The actors who are the subjects of energy policy—and who, in turn, often seek to influence policies to meet their needs and interests—are several state-owned enterprises and, in certain segments of the industry, private companies. This includes:

- **Vietnam Electricity (EVN)** is the most important institution in implementing policies and regulations for renewable energy.
- **General Energy Department** under control of the Ministry of Industry and Trade (MoIT). The Department helps MoIT to implement management functions relating to the energy sector.
- **Renewable Energy Department** is in charge of designing plans for renewable energy development.
- **The Electricity Regulatory Authority of Viet Nam (ERAV)** is a department under the Ministry of Industry and Trade. This department manages and regulates electricity market-related activities (also including electricity from renewable sources).
- **At the provincial level, the provincial Departments of Industry and Trade (DOIT)** are responsible for implementing state management directives for the energy sector, including renewable energy.
- **The Institute of Energy** plays an important role in conducting research into renewable energy issues. In 2007, it established the “Center for Renewable Energy and Clean Development Mechanisms.”
- **Independent power producers (IPPs)** generate electricity from renewable technologies in Viet Nam. In most cases, they must sell their electricity to EVN. The electricity is sold at rates set by power-purchase agreements or in line with the national feed-in tariffs.
- **Renewable energy companies, such as biofuel producers, solar PV, wind and other renewable energy companies.**

## 4.3 General Renewable Energy Policy Framework

The Vietnamese Government has recognized the role of renewable energy in delivering a number of positive outcomes, including improving energy security, reducing reliance on more expensive primary fossil sources, and promoting energy access and rural electrification. The Government has recently developed a legislative framework for renewable energy and related institutions.

The general policy targets for renewable energy are reflected in the Decision 1855/QĐ-TTg, which approves Vietnam’s national energy development strategy up to 2020. The national energy development strategy sets targets for the shares of renewable energies in the total primary energy production at 5 per cent and 11 per cent in 2020 and 2050, respectively.

The following table sets out Vietnamese renewable energy targets.

**TABLE 5: POWER GENERATION TARGETS BY SOURCES**

|               | TARGETED CAPACITY BY 2020 (MW) | TARGETED CAPACITY BY 2030 (MW) |
|---------------|--------------------------------|--------------------------------|
| Wind Power    | 1,000                          | 6,200                          |
| Biomass Power | 500                            | 2,000                          |
| Hydropower    | 17,400                         |                                |

Source: Government of Vietnam, 2011, July 21.

The Power Master Plan VII sets priorities in relation to the development of power from renewable sources including hydropower, wind, solar and biomass over the next decade. Hydropower projects will perform multiple functions, such as flood control and water supply in addition to power generation. Financial incentives will also support energy-related enterprises in developing renewable energy from agricultural waste and city garbage. Table 6 below provides an overview of key policies.

**TABLE 6: KEY POLICIES OR DECISIONS**

| LEGAL DOCUMENTS   | CONTENT  |
|---|--|
| Circular 32/2012/TT-BTC dated November 12, 2012           | <p>Guidance on the implementation of (i) wind power projects, and (ii) standardized power purchase agreements (contract) for electricity generated from wind power projects, uniformly applied to:</p> <ul style="list-style-type: none"> <li>• Owners of wind farms</li> <li>• Purchase of electricity</li> <li>• Entities managing wind farms</li> <li>• Power purchasers</li> </ul>   |
| Decision 1208/2011/QĐ-TTg dated July 21, 2011             | <p>National Power Development Plan for the period 2011–2020 and looking forward to 2030:</p> <ul style="list-style-type: none"> <li>• Increasing electricity generation from renewable energy: specifically wind and biomass energy sources from 3.5 per cent of total electricity generation in 2010 to 4.5 per cent in 2020 and 6 per cent in 2030, respectively.</li> <li>• Electrification: 600,000 households will be supplied with electricity from renewable energy by 2020.</li> </ul>   |
| Decree 04/2009/ND-CP dated January 14, 2009               | <p>Preferential treatment and support for selected activities relating to environmental protection. Renewable energy projects are entitled to the following incentives:</p> <ul style="list-style-type: none"> <li>• Preferential corporate tax rates</li> <li>• Exemption from import tax on equipment, facilities and materials imported for activities related to production</li> <li>• Exemption from environmental protection fees.</li> <li>• Ability to depreciate fixed assets 1.5 times faster than normal depreciation rates.</li> </ul>   |
| Joint Circular 58/2008/TTLT-BTC-BTN&MT dated July 4, 2008 | <p>The Ministry of Finance (MoF) and the Ministry of Natural Resource and Environment (MoNRE) guidance on implementing Prime Ministerial Decision 130/2007/QĐ-TTg (02/8/2007) on financial mechanisms and policies for investment projects complying with the clean development mechanism (CDM). Renewable energy power plants will be entitled to support measures relating to electricity tariffs and taxes, e.g., import tax and land fee exemptions during a designated period.</p> <p>Regulations on consumption subsidy for products from CDM projects:</p> <ul style="list-style-type: none"> <li>• Electricity produced from wind, solar, geothermal and tidal projects.</li> <li>• Electricity produced from recovered methane gas (landfill, coal mining).</li> <li>• Grant amount/kWh = Production cost/kWh + reasonable profit/kWh - the selling price/kWh - selling price of CDM Carbon Emission Reduction Credits (CERs).</li> </ul> |
| Decision 1855/2007/QĐ-TTg on Dec 27, 2007                 | <p>Approving biofuel development through to 2015, with a long-term vision towards 2025. The government's objective is for an annual output of 100,000 tons of E5 (a blend of 5 per cent ethanol with 95 per cent gasoline) and 50,000 tons of B5 (a blend of 5 per cent biodiesel with 95 per cent diesel) by 2010 equivalent to 0.4 per cent of the country's projected oil and gasoline demand.</p>  |
| Electricity Law 28/2004/QH11 dated December 3, 2004       | <p>Approved by National Assembly focusing on:</p> <ul style="list-style-type: none"> <li>• Encouraging the exploitation of renewable energies for electricity generation. Renewable energy power plants will receive incentives relating to investment, electricity tariffs and taxation.</li> <li>• Encouraging organizations and individuals to invest in the construction of power networks or power generation plants using local energy, renewable energy resources to supply electricity to rural, mountainous areas or islands.</li> <li>• Support will be provided through: <ul style="list-style-type: none"> <li>◦ Investment capital</li> <li>◦ Favourable interest rates on investment loans</li> <li>◦ Tax incentives</li> </ul> </li> <li>• The Ministry of Finance (MoF) is responsible in conjunction with the MoIT in the implementation of support policies</li> </ul>   |

Source: MoIT, 2012; Government of Vietnam, 2011a; Government of Vietnam, 2009, January 14; Government of Vietnam, 2008, July 14; Government of Vietnam, 2007, December 27; Government of Vietnam, 2007, November; Government of Vietnam, 2005.

The following table sets out the main renewable energy projects in Viet Nam.

**TABLE 7: KEY PROJECTS IN ENERGY EFFICIENCY AND RENEWABLE ENERGY IN VIET NAM**

| REF. NO. | PROJECT TITLE  | PROJECT DONOR/ IMPLEMENTATION AGENCY   | PROJECT VALUE & DURATION   | PROJECT DESCRIPTION  |
|----------|--|--|--|--|
| 1.       | Renewable Energy Development and Network Expansion and Rehabilitation for Remote Communes Sector Project                               | a. Asian Development Bank (ADB), Viet Nam<br>b. Power Companies (PC) PC1, PC2, and PC3 under EVN   | a. SDR 102,161,000** and a technical assistance grant of US\$2,500,000<br>b. 2009-2015 | Primary objective is to promote rural electrification and renewable energy in Viet Nam to benefit ethnic minority communities in remote and poorer parts of the country. Location: Lai Chau and Dien Bien, Quang Nam and Hue, Tra Vinh and Soc Trang, and Quang Tri province.  |
| 2.       | Viet Nam Renewable Energy Development Project to increase the supply of electricity to the national grid from renewable energy sources | a. The World Bank, Viet Nam;<br>b. Swiss Secretariat for Economic Affairs (SECO)<br>a. MoIT<br>b. Investors in small hydropower plants<br>c. Financial institutions          | a. US\$318 million<br>b. 2009-2014   | Aims to provide (i) a refinancing facility for participating commercial banks (PBs) in lending to eligible renewable-based projects whose capacity does not exceed 30 MW developed by private sponsors; and (ii) technical assistance to MoIT for reviewing applications, monitoring the eligibility of PBs and developers, project management, as well as capacity building for PBs and developers in preparation, appraisal, financing, and implementing renewable-based projects according to international best practices. |
| 3.       | Viet Nam National Energy Efficiency Program (VNEEP)— Pilot Program on Solar Water Heaters  | a. The Global Environment Facility (GEF) administered by the World Bank;<br>b. MoIT  | 2008-2009  | Technical Assistance Project assisting MoIT in establishing technical standards for Solar Water Heaters (SWH). Demonstrating the benefits of SWHs for demand-side management and energy efficiency (DSM/EE) through pilot installation in three major cities: Ha Noi, Ho Chi Minh City and Da Nang.  |
| 4.       | Biogas Program on building domestic biogas plants and the development of domestic biogas sector  | The Netherlands' Directorate General for International Cooperation (DGIS) and the government of Viet Nam represented by Ministry of Agriculture and Rural Development (MARD) | Phase 1: 2003-2006<br>Phase 2: 2007-2012<br>EUR 7.5 million                            | Provides a flat-rate subsidy of VND1 million in phase 1, and VND1.2 million in phase 2, respectively, to eligible household to build biogas plants. Equivalent to around 25 to 30 per cent of the investment costs for the complete installation (digester volume of 6 to 8 cubic metres). The goal is to promote environmental protection in rural areas, improve the health of the rural population, create rural jobs, and reduce greenhouse gas emissions.   |
| 5.       | Quality and Safety Enhancement of Agricultural Products and Biogas Development Project (QSEAP)   | Asian Development Bank (ADB), Viet Nam<br>Ministry of Agriculture & Rural Development Ministry (MARD)<br>Central Credit Fund   | US\$110 million<br>2009-2014   | Biogas development with a budget of US\$22.25 million to support the installation of 20,000 domestic biogas plants. Disbursed through the Vietnam Bank for Agriculture and Rural Development (VBARD) and Central Credit Fund (CCF) to 40,000 households, installing an additional 100,000 units over a five-year period (2009-2014).   |
| 6.       | Wind power project in Binh Thuan province, Viet Nam  | Vietnam Renewable Energy Joint stock company (RENV) and German Fuhrlaender AG  | US\$70 million<br>2008-2011  | Wind power project with capacity of 27 MW invested and implemented in Binh Thuan province. Phase 1 completed with five wind turbines in place connected to the national power grid as of August 2009.  |

|    |  |  |                                      |  |
|----|--|--|--------------------------------------|--|
| 7. | Wind power project in Bac Lieu province (Mekong delta), Viet Nam                   | Cong Ly Construction, Trade and Tourism Company  | US\$228 million<br>2010–2013         | Wind farm with capacity of 99.2 MW (62 wind turbines of 1.6 MW each), with total electricity production capacity of is approximately 320 million kWh annually. Construction completed and ready for grid connection.   |
| 8. | Solar PV cells manufacturing plant in Duc Hoa District, Long An province, Viet Nam | Red Sun Energy Joint Venture Company in cooperation with its partners: the Center for Energy Efficiency of Ho Chi Minh city (under the Department of Science and Technology) and Tan Ky Nguyen Company Limited | US\$10,000,000<br>Commencement: 2009 | In phase 1, the production plant will supply solar panels with a capacity of 80–165 MW per module with 16 per cent efficiency levels. In phase 2, the plant is scheduled to produce electronic components using domestic materials (as well as solar hot water systems, light bulbs and other electronic devices). |

\*Projects listed in the table represent wind power projects in operation.

\*\* SDR: Special Drawing Rights, equivalent to US\$151 million.

Sources: (1) <http://www.adb.org/projects/42182-013/documents>; (2) <http://www.worldbank.org/projects/P103238/vietnam-renewable-energy-development-project?lang=en>; (3) <http://www.ieej.or.jp/aperc/CEEP/Viet%20Nam.pdf>; (4) (i) <http://www.biogas.org.vn/English/Home.aspx>; (ii) <http://www.snvworld.org/en/countries/vietnam/our-work/projects/vietnam-national-biogas-programme>; (5)

(i) <http://www.adb.org/Projects/project.asp?id=39421>; (ii) [http://www.snvworld.org/sites/www.snvworld.org/files/publications/brief\\_report\\_2010\\_and\\_plan\\_2011\\_of\\_the\\_working\\_group\\_on\\_domestic\\_biogas\\_under\\_the\\_e4all.pdf](http://www.snvworld.org/sites/www.snvworld.org/files/publications/brief_report_2010_and_plan_2011_of_the_working_group_on_domestic_biogas_under_the_e4all.pdf); (6) <http://enerexpo.com.vn/images/6V-Bai-hoc-kinh-nghiem-tu-DA-Phong-dien-Binh-thuan.pdf>; (7) BMI's Industry Report & Forecasts Series, Business Monitoring International, Q4 2011 [www.businessmonitor.com](http://www.businessmonitor.com); [vfpres.vn/attachments/vn-power-q4-2011-pdf.6662/](http://vfpres.vn/attachments/vn-power-q4-2011-pdf.6662/) [in Vietnamese]; (8) <http://redsun-solar.com>

## 4.4 Overview of the Investment Incentive Framework

This section outlines the investment incentive framework and policies based around the key laws and decisions relating to the development of the renewable energy sector.

The Government has established a coordinated strategy in line with region-based planning and investment mechanisms supporting renewable energy development. This is in response to a number of barriers facing renewable energy, including a lack of resource assessments looking at the potential of renewable energy, and poor integration of energy and renewable energy projects into national energy efficiency programs. The development of a strategy to promote renewable energy has allowed for better alignment with government programs supporting rural electrification, forestry development, poverty alleviation and drinking water resource management. The key laws include:

- a. Investment law No. 59/2005/QH11, which provides a legal framework for both domestic and international businesses/investors, covering provisions on specific types of incentives to attract investment in various areas and sectors/industries, respectively, categorized as “conditional,” “encouraged” and “special encouraged” as follows:

### “Encouraged” or “special encouraged” sectors

- Production of renewable energies; high-value technological products, bio- and information technologies; mechanical manufacturing activities.
- High-tech, modern technologies, ecological and environmental protection, research and development (R&D).
- Labour-intensive industries.
- Forestry, agriculture, fishery industries and animal husbandry.

These sectors include areas related to renewable energy development and deployment.



### “Encouraged” areas

- Geographic areas entitled to investment incentives located in regions with poor socioeconomic development, industrial parks, export-processing zones, zones producing high-tech equipment and economic zones.

Investment incentives are provided through taxation, including favourable income tax rates, low import duties and fees; loss transfer; accelerated depreciation of assets; preferential land rights; and special cases entitled to extended investment incentives.

Investment incentives offered by the Government prioritize the following areas: (i) technology transfer (with a focus on development of advanced technologies and those used to manufacture new and innovative products), activities that can increase production capacity, while enhancing competitiveness, product quality, and the efficient use of production inputs and natural resources in general; (ii) deliver human resources development; (iii) investments in infrastructure systems in industrial parks, export-processing zones, high-tech zones and economic zones.

The following table outlines Viet Nam’s tax policy and the exemptions provided to specific industries.

**TABLE 8: TAX INCENTIVES**

| DESCRIPTION   | CORPORATE INCOME TAX (CIT) RATE (%) | NUMBER OF YEARS FOR WHICH CIT INCENTIVES WILL BE AVAILABLE | CIT EXEMPTION HOLIDAY (NUMBER OF YEARS EXEMPTED FROM TAX) | 50% REDUCTION OF CIT (CONSECUTIVE YEARS FOLLOWING THE TAX EXEMPTION PERIOD) |
|---|-------------------------------------|--|---|---|
| New projects in industries designated as “Encouraged Sectors”                 | 20                                  | 10   | 2   | 3   |
| New projects “Encouraged Areas”   | 20                                  | 10   | 2   | 6   |
| New projects in “Encouraged sectors” located inside “Encouraged Areas”        | 15                                  | 12   | 3   | 7   |
| New projects in special encouraged industries and/or special encouraged areas | 10                                  | 15   | 4   | 9   |

- In 2012, the Government issued Decision 1231/QD-TTg in relation to the Small and Medium-Sized (SME) Development Plan II for the period 2011–2015, setting up eight key measures: (i) improving the legal framework for market entry and exit; (ii) improving SMEs’ access to finance; (iii) support of technological innovation and application of new technologies for SMEs; (iv) human resource development with a focus on capacity building for business management for SMEs; (v) promoting the development of industrial clusters and improved access to land; (vi) provision of information and market expansion; (xii) setting up institutional systems supporting SME development; and (xiii) the implementation of an SME development plan (SME Development Plan II), in particular the establishment of an SME Development Fund.

## 4.5 Regional Incentives and Special Economic Zones (SEZs)

The government has set up a range of incentives designed to attract investment in specific areas.

- In February 2008, the Government approved Decree 29/2008/QD-TTg establishing special industrial, processing, economic and border economic zones. This decree applies to state management agencies, organizations and individuals involved in investment and business activities in these special zones.

- b. In September 2009, the Government approved Decision 105/2009/QĐ-TTg establishing and expanding industrial clusters; and setting out regulations on investment in (i) construction of infrastructure, (ii) business activities within industry clusters, (iii) manufacturing activities and (iv) state management of industrial clusters.
- c. Viet Nam has 256 industrial zones and 20 economic zones located nationwide as of February 2011 (UNIDO, 2011). Table 9 illustrates a selection of economic zones.

**TABLE 9: SELECTION OF ECONOMIC ZONES IN COASTAL PROVINCES**

| ECONOMIC ZONES     | LOCATIONS / PROVINCES | ESTABLISHMENT DATE | AREAS (HA) |
|--------------------|-----------------------|--------------------|------------|
| Chu Lai            | Quang Nam             | June 5, 2003       | 27,040     |
| Dung Quoc          | Quang Ngai            | March 21, 2005     | 45,332     |
| Nhon Hoi           | Binh Dinh             | June 14, 2005      | 12,000     |
| Chan May - Lang Co | Thua Thien Hue        | Jan. 5, 2006       | 27,108     |
| Phu Quoc           | Kien Giang            | Feb. 14, 2006      | 56,100     |
| Vung Ang           | Ha Tinh               | April 3, 2006      | 22,781     |
| Van Phong          | Khanh Hoa             | April 25, 2006     | 150,000    |
| Nghi Son           | Thanh Hoa             | May 15, 2006       | 18,619     |
| Van Don            | Quang Ninh            | May 31, 2006       | 55,133     |
| Dong Nam Nghe An   | Nghe An               | June 11, 2007      | 18,826     |
| Dinh Vu-Cat Hai    | Haiphong              | Jan. 10, 2008      | 21,600     |
| Nam Phu Yen        | Phu Yen               | April 29, 2008     | 20,730     |
| Hon La             | Quang Binh            | June 10, 2008      | 10,000     |
| Dinh An            | Tra Vinh              | April 27, 2009     | 39,020     |
| Nam Can            | Ca Mau                | Nov. 23, 2010      | 11,000     |
| Dong Nam           | Quang Tri             | February 27, 2010  | 23,460     |
| Thai Binh          | Thai Binh             | February 9, 2011   | 30,583     |
| Ninh Co            | Nam Dinh              | February 25, 2011  | 13,950     |

The Ministry of Industry and Trade has been reviewing the implementation of Decision 105/2009/QĐ-TTg in coordination with line ministries, local authorities and relevant stakeholders. During the two-year policy review period, the Government sought to suspend new plans to establish or expand existing industrial clusters nationwide.



**FIGURE 6: ADMINISTRATIVE MAP OF VIET NAM**

**TABLE 10: TAX INCENTIVES APPLIED TO INDUSTRIAL AND ECONOMIC ZONES**

| DESCRIPTION                               | CORPORATE INCOME TAX (CIT) RATE (%) | NUMBER OF YEARS FOR WHICH CIT INCENTIVES WILL BE AVAILABLE (YEARS) | CIT EXEMPTION HOLIDAY (NUMBER OF YEARS EXEMPTED FROM TAX) | 50% REDUCTION OF CIT (CONSECUTIVE YEARS FOLLOWING THE TAX EXEMPTION PERIOD) |
|---|-------------------------------------|--|---|---|
| Service projects                          | 20                                  | 10   | 2   | 3   |
| Manufacturing projects                    | 15                                  | 12   | 3   | 7   |
| Special encouraged manufacturing projects | 10                                  | 15   | 4   | 9   |

In Table 10, special encouraged manufacturing projects are entitled to a CIT rate of 10 per cent for 15 years from the commencement of operations. These projects may be granted a tax holiday for four years beginning from the first year of profitable operations or a 50 per cent CIT reduction for nine years (starting from the fourth year revenue is generated), whichever comes first.

## 4.6 Investment Incentive Programs for the Energy and Renewable Energy sectors

Investment incentives for renewable energy development in Viet Nam can be classified into a number of groups: first, financial incentives, which provide loans and loan guarantees at below-market rates; second, fiscal incentives such as tax exemptions and other tax-related subsidies; third, market price support and regulation, which provide above-market prices or demand when renewable energy is produced and sold; and fourth, other subsidies, which could involve preferential access to government land.

### 4.6.1 Financial Incentives

Financial incentives focus on the provision and cost of project finance. This can be a major issue for renewable energy projects, which require large amounts of capital and can therefore involve substantial risk for the investors. They often take the form of mechanisms such as investment grants, subsidized loans, loan guarantees and insurance at preferential rates.

Decree 151/2006/ND-CP (December 20, 2006) introduced investment and export credits covering construction costs for small hydropower projects (with a maximum capacity of 100 MW) and wind farms. The loan size for each eligible project is up to 70 per cent of the total investment capital of the project (excluding working capital). In special cases where projects are in need of funds exceeding 70 per cent of the total investment capital, and a bank loan is required, it must be endorsed by the Ministry of Finance and approved by the Prime Minister. The investment loan should not exceed 12 years with an interest rate equivalent to government bond interest rates with a term of five years plus 1 per cent for loans in VND. The government can provide loan guarantees in cases where investors have to obtain loans from other financial institutions. This Decree was amended by Decree 106/2008/ND-CP (September 19, 2008) making all renewable energy projects eligible.

The biogas program (with technical assistance from the Dutch government represented by SNV) focused on the development of biogas technology that can provide a sustainable energy source and improve the livelihood and quality of life of rural farmers at the household level. This program promotes a public-private partnership model aimed at enhancing the participation of the private sector in the commercialization of the technology and the development of credit structures provided by financial institutions to facilitate access to finance. There is also an investment incentive scheme for biomass and biogas technically assisted by GIZ with funding from Kreditanstalt für Wiederaufbau (KfW) Development Bank which is awaiting Government approval.

### 4.6.2 Fiscal Incentives

Fiscal incentives are provided through tax provisions. They are typically intended to reduce costs related to investment and plant operation. Some of these have been introduced for renewable energy in Viet Nam but only to a limited extent. Fiscal incentives for renewable energy are outlined in the following table.

**TABLE 11: FISCAL INCENTIVES**

|                            | <b>STANDARD GOVERNMENT RATES FOR ENTERPRISES</b>  | <b>PREFERENTIAL TREATMENT FOR RENEWABLE ENERGY ENTERPRISES</b>  |
|----------------------------|---|---|
| Importation duties         | There are three import duty rates in Viet Nam: ordinary rates, preferential rates and special preferential rates (PricewaterhouseCoopers [PwC], 2012)<br>In calculating import duties, Viet Nam follows the WTO Valuation Agreement. Value of dutiable imported goods is based on the transaction value (PwC, 2012).  | Exemption from import tax on machines, equipment, tools and materials imported for production activities. Available for the first four years of operation.  |
| Value Added Tax (VAT)      | Viet Nam has three VAT rates: 0%, 5%, and 10%<br>a) 0% for exported goods such as those sold to firms without a permanent legal base in Viet Nam and goods at duty free shops.<br>b) 5% is applied to enterprises that provide essential goods and services such as books, teaching aids, clean water, etc.<br>c) 10% is applied to all other activities that are subject to VAT. | a) Purchase of investment equipment is exempted from VAT.<br>b) 0% VAT for renewable energy projects.   |
| Corporate Income Tax (CIT) | Standard corporate income tax for enterprises is 25%. However, enterprises in oil and gas industry have to pay tax ranging from 32% to 50% depending on the geographic location.  | a) Tax rate: 10% for a period of 15 years for newly established renewable energy enterprises. If the project employs advanced technology or is a large-scale project, corporate income tax rates can be extended up to 30 years with a tax rate of 10%.<br>b) Tax exemption and tax reduction: for the first four years, enterprises receive a tax exemption. For the next nine years, enterprises may also receive a tax reduction of up to 50% (Decree No. 124/2008/ND-CP, 2008). |
| Soft loans                 | Companies borrow from commercial sources based on market rates.   | Investors are supplied with preferential loans of up to 80% of the investment cost of projects. In addition, Government Decree 75/2011/ND-CP (August 8, 2011) stressed wind power projects were eligible for government credit incentives.  |

### 4.6.3 Market Price Support and Regulation

There is currently no standardized comprehensive legal framework for feed-in tariffs for renewable energy projects in general in Viet Nam. There are however other forms of subsidies supporting prices for renewable energy.

#### Avoided Cost Tariff

“Avoided Cost Tariff” is defined as “the electricity tariff calculated by avoided costs of the national power grid when 1 kWh is generated to the distribution power grid from a small renewable energy power plant” (“Energy Profile Vietnam,” n.d.). The “avoided cost” is defined as “the production cost per 1 kWh of the most expensive power generating unit in the national power grid, which would be avoided if the buyer purchases 1 kWh of electricity from a small renewable energy power plant instead” (“Energy Profile Vietnam,” n.d.). Avoided cost tariffs are applied in

formulating the purchasing price of electricity generated by small renewable energy power projects with an installed production capacity of 30 MW or less, such as small hydropower plants. Avoided cost tariffs reflect the cost of producing electricity from thermal power plants, investment costs to extend transmission lines out to areas with hydropower plants, the cost of power generation from thermal power plants, and the environmental costs incurred by fossil fuel-based electricity production. Avoided cost tariffs help small renewable energy power projects sell electricity at a price that is equivalent to other generation sources. The current price per kWh for renewable energy is around the equivalent of US\$.05.<sup>3</sup>

### Wind Power

Announced in a Circular (96/2012/T-BTC) by the Ministry of Finance (MoF, 2012 June 8), a price subsidy of US\$0.078 per kWh will be provided to wind farms (with a fixed purchasing price at US\$0.068/kWh plus a US\$0.01 subsidy financed from the state budget through the Environment Protection Fund). The unit subsidy for purchasing the electrical output of grid-connected wind farms is VND207/kWh, with the level of subsidy estimated as the subsidy per unit multiplied by the level of purchased electrical output. The level of per-unit support will be adjusted based on decisions by the Prime Minister. ENV, which purchases the power using a standardized power purchase contract from wind developers, is entitled to a price subsidy from the central government.<sup>4</sup>

The price subsidy is formulated on the following basis. The investment costs for wind power farms equipped with new technology that meets the International Electrotechnical Commission (IEC) standards are paid at US\$2,250 per kW. The average electricity price is calculated at US\$0.1068 per kWh equivalent. Alternatively, if the investment costs are US\$1,700 per kW, then the average electricity price is estimated at US\$0.086 per kWh. This lower cost may be applicable to wind power developers investing in cheaper technologies as estimated by the MoIT.

The following table explains how these two technology cost structures and price subsidies for wind power are calculated.

**TABLE 12: EXPLANATION OF WIND POWER COST STRUCTURES AND PRICE SUBSIDIES**

| FORMULATION  | SCENARIO 1  | SCENARIO 2  |
|--|---|---|
| Target capacity by 2020 of 1,000 MW of wind power x 1,000 kW x 365 days x 24 hours x 90% (estimated loss at 10%) x 25% (the efficiency of wind turbines based on wind velocity conditions in Viet Nam) = 1.971 billion kWh, equivalent to 2 billion kWh outlined in Power Master Plan VII. | With the price subsidy of US\$0.01 per kWh (VND 207/kWh) x 2 billion kWh, the total amount planned for subsidy is VND414 billion, divided by 20 million customers who pay for electricity directly (by 2020): the average amount each household will pay is about VND20,700 annually or VND1,725 monthly. | With the price subsidy of US\$0.04 (VND828)/kWh or the purchase price by EVN of US\$0.108/kWh to secure adequate return on investment and reasonable profit for investors who invest in high tech equipment, the total amount to be spent on the subsidy is VND1,656 billion, divided by 20 million customers: the average extra amount each customer will pay by 2020 is VND81,800 annually or VND6,810 monthly. |

Table 13 summarizes the status of electricity prices and price subsidies for renewable energy projects.

<sup>3</sup> Subject to changes in the exchange rate between US\$ and VND.

<sup>4</sup> ENV is responsible for reporting the following data annually to the ERAV on May 31: (i) general information on wind farms with signed power purchase agreements for the next year (including the name of the wind farm, investor, installed capacity, output, location; and the contract's value, date and number); (ii) amount of electricity purchased from the wind farm in the previous year; (iii) expected output to be contracted with the wind farm operator in the current year and subsequent years set for each wind farm, and (iv) the expected total amount subsidized.

**TABLE 13: MARKET PRICE SUPPORT AND REGULATION-BASED INCENTIVES**

|   |  |
|---|--|
| a. Subsidy                              | Price subsidy for Clean Development Mechanism (CDM) projects:<br>a. A CDM project whose production cost is greater than the contracting electricity selling price may file an application to the Environmental Protection Fund of Vietnam for a price subsidy.<br>b. For wind power: VND207/kWh (US\$0.01/kWh) |
| b. Retail electricity price to increase | Electricity pricing in Viet Nam:<br>a. VND1,242 / kWh (US\$0.06/kWh) on average in 2011;<br>b. VND1,304/kWh (US\$0.063/kWh) currently;<br>c. US\$0.08 / kWh-US\$0.09/kWh by 2020.  |

Based on a meeting with a representative of the Department of Renewable Energy under MoIT in December 2012, it was confirmed that the legal framework for investment incentives is in place, and eligible wind farms are now preparing applications for the price subsidy.

#### Small-Scale Hydropower Projects

The Ministry of Trade and Industry (MoIT) established investment incentive mechanisms based on an avoided cost tariff for electricity generated by small-scale hydropower plants.<sup>5</sup> As such, there are approximately 200 small-scale hydropower projects registered for development with total capacity of 4,067 MW (Phuong & Huong, 2012). The following table highlights avoided cost tariffs for small-scale hydropower.

**TABLE 14: APPLIED AVOIDED COST TARIFF FOR THE PERIOD 2009-2012, IN VND/KWH**

| DESCRIPTION   | 2009  | 2010  | 2011  | 2012   |
|---|-------|-------|-------|--------|
| Capacity cost accounting for three regions (North, Centre, and South) | 1,674 | 1,633 | 1,772 | 1,805  |
| Avoided Cost Tariff   |       |       | 916   | 954.52 |

Sources: MoIT, 2008, 2009, 2010, 2012; Decisions on annual ACT.

#### 4.6.4 Other Subsidies

Several other renewable energy subsidies may be available to investors. For example, renewable energy projects are exempt from environment protection fees, land-use fees and land rent for the whole life span of the project.

**TABLE 15: OTHER SUBSIDIES FOR RENEWABLE ENERGY**

|                               |   |   |
|-------------------------------|---|---|
| Environmental protection fees | a) Solid waste: With the ordinary solid waste from business: not exceeding VND40,000/tonne (nearly US\$2/tonne). With hazardous solid wastes: not exceeding VND6,000,000 /tonne (nearly US\$300/tonne) (Decree No. 174/2007 ND-CP, 2007)<br>b) Liquid waste:<br>+ Chemical Oxygen demand from VND100/kg to VND300/kg<br>+Suspended solids from VND200/kg to VND400/kg<br>+ Mercury from VND10,000,000/kg to VND20,000,000/kg<br>+Cadmium from VND600,000/kg to VND1,000,000/kg (Decree No. 04/2007/ND-CP, 2007) | Exemption from environmental protection fees.   |
| Land-use fee/rental           | Dependent on location.  | Dependent on location of the project; enterprises receive exemption/reduction of land use fees. |

<sup>5</sup> Hydropower plants with a capacity of less than 30 MW.

## 5.0 Discussion and Analysis

### 5.1 Stakeholder Assessment of Investment Incentives for Renewable Energy Projects

The investors interviewed for this study indicated that the current investment incentives supporting renewable energy deployment in Viet Nam have little effect on investment decisions. A foreign investor looking to invest in Viet Nam's renewable energy sector noted: "an investment incentive is not a critical variable in our investment decision. The most important thing is to have a predictable power system regime where market competition is appreciated" (Ann-Mari Lillejord, personal communication, 2012). Potential investors face a range of issues other than investment incentives which are further elaborated on below. The study identified that:

- Viet Nam still does not have a clear legal framework guiding policies on renewable energy projects. The policies are separately stipulated in different laws leading to confusion in their application. In many cases, these laws and regulations are contradictory. For example, a foreign investor interested in investing in a hydropower project in Viet Nam noted that, although the project was exempt from import duties for imported machinery and equipment, there was significant red tape relating to customs processes. In some cases, costs associated with unofficial fees and red tape were higher than the benefits received from the import tax exemption. Furthermore, as noted by a manager of a sugar company investing in a biomass project, although this project can be exempted from certain taxes, these entitlements were still awaiting government approval.
- The low price of renewable electricity is a major hurdle for investors and affects returns on investment. The price at which EVN purchases electricity from renewable energy projects is currently lower than electricity production costs for wind or solar PV. Also, it appears investors in electricity production from biogas and biomass power projects do not currently receive price support from the government. Due to the low price for renewable electricity and returns from investing in renewable energy, the number of new projects is low compared with other industries, and it takes longer for investors to recoup their investments.
- Procedures for establishing and operating renewable energy projects often require the involvement of a number of authorities, resulting in high transaction costs as project developers must submit the same information to several government authorities at different points of time. Effective coordination and clarification of responsibilities among stakeholders is required to reduce the existing fiscal and technical barriers facing the renewable energy sector. Government officials often lack adequate experience in establishing and operating investment incentive policies supporting the renewable energy sector.
- Trust in government guarantees is a critical issue when foreign investors evaluate investment opportunities. Some investors suggested that government guarantees are unreliable.<sup>6</sup> These investors have encountered difficulties in seeking loans for their renewable power projects although legal documents confirm that they are eligible to access available soft loans. Other investors pointed out the unreliability of government macroeconomic policies. For example, Viet Nam's foreign exchange reserves are low and could affect any guarantees relating to the availability of foreign currencies. Similarly, high inflation rates and the devaluation of Viet Nam's currency as part of government policies are also a concern for investors.

<sup>6</sup> Oliver Massmann, managing partner of Duane Morris Vietnam LLC, confirmed this point in a presentation titled "Investment in wind energy in Vietnam: The right time has come?" (Massmann, 2012).



## 5.2 The Impact of Investment Incentives

### a. Hydropower Projects

Current investment incentives provide modest benefits for small hydropower projects, according to the investors interviewed. One investor in a small hydropower project noted the application of the Avoided Cost Tariff and Standardized Power Purchase Agreement with the government allowed his hydropower plant to sell electricity at a higher price compared with electricity prices in pre-2008 periods. From 2009, grid-connected renewable energy projects with an installed capacity lower than 30 MW can apply for the Avoided Cost Tariff. The standardized power purchase agreement provided more opportunities to negotiate with EVN on the purchase price of electricity. In 2012, the Ministry of Industry and Trade approved an increase of 5 per cent in the purchase price of electricity compared with 2011 prices for more than 10 small hydropower plants.

Some small hydropower projects have also received substantial benefits from the Clean Development Mechanism (CDM). According to the GIZ Renewable Energy Project (2012), among the 143 projects operating within the CDM, about 69 per cent (98 projects) were small hydropower projects.

### b. Negative Example: Wind energy

The Electricity Regulatory Authority of Vietnam (EARV) sets consumer electricity price ceilings to which Vietnam Electricity (EVN) (the state monopoly purchasing and distributing power) must adhere when selling to electricity to consumers. EVN is unable to pay more for electricity purchased from generators because of price regulating policies. According to Decision 130, EVN is allowed to pay a higher price for electricity bought from IPPs than the price sold to consumers. However, the price for electricity bought from IPPs or other generators is still lower than the real cost of electricity production incurred by the generator. Funding for these subsidies is limited to the amount set aside in a capped government fund. For example, in 2010, the solar PV company Power RE Co. Ltd. invested US\$17 million in a wind farm in Phú Quý District, Binh Thuan Province. The project's installed capacity of 6 MW (two turbines) can supply electricity to the local area; however, as noted by Pham Cuong, Company Director, the company had to spend US\$480,000 of its own operating capital to cover the losses incurred by the project ("VN 'wind power capital,'" 2012). He explained that "[t]he power produced by the wind farm is bought by the local power sector at 6.8 cent [sic], plus 1 cent subsidized by the government . . . But we will only be able to break even at 10.36 cent [sic] a kWh, although it will also take as long as 12 years" ("VN 'wind power capital,'" 2012). The off-take or purchase price of electricity received by a generator is lower than those in nearby countries such as Thailand (US\$0.89/kWh), the Philippines (US\$0.18 cent/kWh) and Cambodia (US\$0.18/kWh) (Cooper, 2012). Hence, it is hard to attract foreign investment in renewable energy due to the uncompetitive electricity off-take prices provided by EVN.

### c. Negative Example: Biogas

In Ho Chi Minh City, the Go Cat sanitary landfill in Binh Tan District, with an area of 25 hectares, is using landfill gas to produce electricity. The project cost US\$20.8 million, of which 60 per cent was funded by the government of Netherlands and 40 per cent by the state budget of Ho Chi Minh City (Nguyen, 2004). The company signed a contract to sell electricity to EVN at US\$0.04/kWh without any price subsidy from the city authorities. According to the operators of the plant, the electricity price agreed with EVN is too low to cover the cost of production. As explained

by Nguyen Trung Viet, Head of Solid Waste Management, Department of Natural Resources and Environment, Ho Chi Minh City, the main reason the Go Cat Company was able to accept such a low electricity price was due to the plant's technology being 100 per cent funded by foreign capital. The company also uses the revenue generated from municipal waste treatment to offset the losses (SGGP, 2007).

Foreign investors interested in biogas projects ideally are seeking an electricity price of US\$0.07/kWh, a price which is not accepted by EVN. This case explains why many biogas projects in Ho Chi Minh City, such as those invested in by Keppel Seghers Engineering Company (Singapore) (at Dong Thanh) and the International Environmental Energy Corporation (U.S.) (at Phuoc Hiep), were cancelled during the last five years due to a lack of capital and low electricity prices on offer (DuyNguyen, 2012).

One manager of a company investing in a biomass plant said: "Why [have] we invested in this biomass plant? We expected a long-term profit. We knew the incentive policies but we haven't got any support from the government so far" (Manager of Ninh Hòa Sugar Joint Stock Company, personal communication, 2012). Investors in small-scale biogas projects admitted that when making a decision to invest in renewable energy they do consider investment incentives provided by the government. However, they usually do not have sufficient information on the incentives when trying to identify investment opportunities. For investors in large-scale projects, investment incentives seem not to have affected their location decision.

### 5.3 The Costs and Benefits of Investment Incentives

A Cost-Benefit Analysis (CBA) of investment incentives is often used to determine whether or not there is a net social benefit of using these policies. A CBA requires the identification and evaluation of main social costs and benefits related to the investment incentive policies. In practice, policies such as investment incentives are seldom subject to a CBA before being implemented.

Many practical issues hinder the use of CBAs in assessing the implementation of investment incentives. For example, information used to evaluate their costs and benefits in general is not transparent. The Ministry of Finance (MoF) is responsible for estimating and recording related data; however, this data is generally not publicly available. The amount and quality of information, especially financial data, may vary widely according to the level of secrecy or commercial sensitivity. Identification of costs and benefits is not straightforward even when transparency and accountability of information is adequate. The costs of incentives encompass many intangible components such as opportunity costs, administrative costs and social costs relating to market inefficiencies generated by the incentive policies. Currently, it is almost impossible to directly estimate administrative costs related to these policies, as the administration system covers a variety of activities, of which investment incentives are but one component.

Evaluating the beneficial impact of investment incentives is also difficult because they stem from a number of sources other than the use of incentives. When asking one investor to list determinants for selecting an investment location, they identified a range of factors, including available infrastructure and labour costs, and not necessarily the availability of investment incentives (Le An Khang, personal communication, 2012).

**TABLE 16: COSTS AND BENEFITS FOR A TYPICAL WIND ENERGY PROJECT RECEIVING INCENTIVES**

| TYPES OF COSTS AND BENEFITS                    | IMPACT ESTIMATE |        |      |
|--|-----------------|--------|------|
|  | SMALL           | MEDIUM | HIGH |
| Costs  |                 |        |      |
| Price subsidy                                  |                 |        | X    |
| Other types of subsidy                         |                 | X      |      |
| Administrative costs                           |                 | X      |      |
| Transaction cost                               |                 | X      |      |
| Opportunity costs                              | X               |        |      |
| Distortion costs*                              |                 | X      |      |
| Benefits                                       |                 |        |      |
| New investment in renewable energy             |                 |        | X    |
| Environmental benefits                         |                 | X      |      |
| Indirect benefits (employment and tax revenue) |                 | X      |      |

Sources: Personal interviews conducted by authors, 2012. Qualitative estimates in this table are compiled from interviewees and practitioners, and government reports.

\* Distortion costs are social costs associated with the market distortion created by the incentives

## 6.0 *Conclusions and Recommendations*

### 6.1 Conclusions

Viet Nam is well placed to develop renewable energy due to its endowment of natural resources, geographic position and favourable climatic conditions. With a growing demand for electricity, and faced with a reduction in the availability of fossil fuel resources, the Vietnamese government has developed an overarching policy framework for the renewable energy sector. The development of the Power Master Plan VII is a breakthrough in promoting renewable energy development, providing a legal framework for introducing investment incentives, such as tax incentives and a subsidized electricity price.

This study provides a preliminary assessment of incentives based on interviews with investors, and these suggest that current investment incentives have had a limited effect on investment decisions. Most stakeholders interviewed thought incentives were not the key determinant in selecting a specific site or geographic area. Investors in renewable energy felt the current legal framework and incentive mechanism were not adequately developed. Procedures for investors to apply for incentives were often considered opaque and not well understood by the investment community. Some local investors commented that they decided not to submit an application for a price subsidy due to the time required to complete the application. Foreign investors expressed concern over the reliability of government guarantees backing fair prices for electricity or the ongoing terms of the soft loans.

Although the effects of investment incentives promoting renewable energy investment are still limited, their role in future renewable energy development is likely to increase. Viet Nam's huge potential for renewable energy combined with overall increasing demand for renewable energy sources is considered attractive to investors.

### 6.2 Recommendations

The research suggests the following recommendations:

- Ensure the application system for investment incentives is easy to understand and transparent. Presently, many investors are unsure how to apply for incentives.
- The power system regime is not predictable, and there is limited market competition, which acts as a disincentive for investors. The Vietnamese government should support the development of an energy market that treats all investors equally and allows investment incentives to work.
- Although investment incentives are not a critical factor in determining investment decisions in renewable energy projects, they are still important in retaining existing investments and encouraging further investment to develop an existing facility. Further research is required to understand the costs and benefits of the incentives currently on offer, so that they can be improved over time.
- Investment in renewable energy depends a lot on the performance of one actor—the EVN. Investors view electricity prices for renewable energy projects and fair competition in the electricity market as critical factors. The current price subsidy should be revised in situations where the government is unable to subsidize EVN to cover losses from purchasing electricity from renewable energy projects run by IPPs.

## 7.0 References

Cooper, G. (2012, March 23). *Vietnam's renewable energy legal environment getting projects done today and tomorrow*. ENEREXPO Vietnam 2012, Hanoi.

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). (2012). *Renewable energy project*. Retrieved from <http://www.renewableenergy.org.vn/index.php?page=small-hydro-power>

GIZ/MoIT. (2011). *Information on wind energy in Viet Nam*. Hanoi, Viet Nam.

DuyNguyen. (2012). *Sản xuất điện từ rác: Nhiều dự án duỗi sức* [in Vietnamese]. Retrieved from <http://news.go.vn/kinh-te/tin-909481/san-xuat-dien-tu-rac-nhie-u-du-an-duoi-suc.htm>

Electricity Regulatory Authority of Viet Nam. (2010). *Power market developments in Vietnam*. Retrieved from [http://www.theapex.org/images/uploads/Dinh\\_The\\_Phuc-Power\\_Market\\_Developments\\_in\\_Vietnam.pdf](http://www.theapex.org/images/uploads/Dinh_The_Phuc-Power_Market_Developments_in_Vietnam.pdf)

Energy Information Administration (EIA). (2012). *Country analysis*. Retrieved from <http://www.eia.gov/cabs/Vietnam/Full.html>

"Energy Profile: Vietnam." (n.d.). Retrieved from <http://www.reegle.info/countries/vietnam-energy-profile/VN>

Government of Vietnam. (2003). *Prime Minister Decree 102/2003/ND-CP*. Retrieved from <http://thuvienphapluat.vn/archive/Nghi-dinh/Nghi-dinh-102-2003-ND-CP-su-dung-nang-luong-tiet-kiem-hieu-qua-vb51315t11.aspx>

Government of Vietnam. (2005). *Electricity Law No. 28/2004/QH11 approved by the National Assembly on 3 December 2004 and effective 1 July 2005*.

Government of Vietnam. (2005, November 29). *Investment Law No. 59/2005/QH11 endorsed by the National Assembly on 29 November 2005*.

Government of Vietnam. (2006, April 14). *Decision 79/2006/QĐ -TTg dated April 14, 2006 by Prime Minister on approving the National Strategic Program on Energy Saving and Effective Use*.

Government of Vietnam. (2006, August 30). *Decision No. 30/2006/QĐ-BCN dated 30 August 2006 by Minister of Industry on the management of investment-construction of independent power plant projects*.

Government of Vietnam. (2006, September 22). *Decree No. 108/2006/ND-CP on providing guidelines in implementation of a number of articles of law on investment*.

Government of Vietnam. (2006, December 20). *Decree No. 151/2006/ND-CP dated 20 December 2006 on state investment credit and export credit*.

Government of Vietnam. (2007). *Decree No. 04/2007/ND-CP on Environmental protection charge on waste water*.

Government of Vietnam. (2007, August 2). *Decision No. 130/2007/QĐ-TTg dated 02 August, 2007 on some financial mechanisms, and policies for investment projects under the clean development mechanism*.

Government of Vietnam. (2007, November). *Decision No. 177/ 2007/QĐ-TTg dated November 2007 on approving the scheme on development of biofuel up to 2015, with a vision to 2025*.

Government of Vietnam. (2007, November 29). *Decree No. 174/2007 ND-CP on November 29 2007 on environmental protection charge on solid waste.*

Government of Vietnam. (2007, December 27). *Decision No. 1855/QD-TTg dated 27/12/2007 by Prime Minister approving the "Viet Nam National Energy Development Strategy up to 2020, Vision to 2050."*

Government of Vietnam. (2008, July 14). *Inter-ministerial Circular No. 58/2008/TTLT-BTC-BTN&MT dated 4 July 2008 by Ministry of Finance and Ministry of Natural Resources and Environment providing guidelines for executing some articles of Decision No. 130/2007/QDTTg dated 2 August 2007, issued by the Prime Minister on a number of financial mechanisms and policies for the implementation of CDM projects.*

Government of Vietnam. (2008, July 18). *Decision 18/QD-BCT dated July 18, 2008 by Prime Minister on promulgation of regulation on avoided cost tariff and standardized power purchase agreement for small renewable energy power plants.*

Government of Vietnam. (2008, September 19). *Decree No. 106/2008/ND-CP dated 19 September 2008 on amending and supplementing some articles of Governmental Decree No. 151/2006/ND-CP dated 20 December 2006 on state investment credit and export credit.*

Government of Vietnam (2008, December 11). *Decree No. 124/2008/ND-CP on Implementing the Law of Corporate Income Tax.*

Government of Vietnam. (2009, January 14). *Governmental Decree No. 04/2009/ND-CP dated 14 January 2009 on incentives and support for environmental protection activities.*

Government of Vietnam (2009, August 19). *Decision No. 105/2009/QD-TTg on promulgating the Regulation on Management of Industrial Complex.*

Government of Vietnam. (2010, August 13). *Governmental Decree No. 87/2010/ND-CP dated 13 August 2010 on detailed stipulations on the implementation of some Articles of Law on export and import taxes.*

Government of Vietnam. (2011a). *Decision 1208/QD-TTg on the National Power Development Master Plan for the period 2011 to 2020, with a vision toward 2030.* Retrieved from <http://phapluattp.vn/20120909032127703p0c1065/tai-quyet-dinh-1208qdtg-ngay-49.htm>

Government of Vietnam. (2011b). *Law on energy efficiency and conservation, 2011.*

Government of Vietnam. (2011, July 21). *Decision No. 1208/QD-TTg on 21 July 2011 (or Power Development Plan 7 for the 2011-2020 period with the vision to 2030).*

Government of Vietnam. (2011, August 8). *Decree 75/2011/NĐ-CP on state investment credit and export credit.*

Government of Vietnam (2012, September 7). *Decision No. 1231/QD-TTg on approving the plan for developing medium and small enterprises 2011 - 2015.*

Ha, N. K. (2012). *Viet Nam energy overview.* Institute of Energy. Retrieved from <http://www.ievn.com.vn/en/index.php/thong-tin-tu-lieu/bai-viet/224-vietnam-energy-overview>

Laykin, J. (2009). *Vietnam promises, promises.* Independent Power Producers Forum. Retrieved from [http://www.ipppowerasia.com/articcles/pdf/nonpublished/Vietnam\\_Promises-Jan11-20090424-updated.pdf](http://www.ipppowerasia.com/articcles/pdf/nonpublished/Vietnam_Promises-Jan11-20090424-updated.pdf)

Lovells. (2009). *Vietnam's independent power producers sector toward market liberalisation*. Retrieved from <http://m.hoganlovells.com/files/Publication/2e8941d8-f8e9-4aeb-88dc-6a80844338a6/Presentation/PublicationAttachment/fc70ab90-eaf1-4c1f-82b4-fb9c782dec90/VietnamsIndependentPowerProducersSectorTowardsMarketLiberalisation.pdf>

Massmann, O. (2012) *Investment in wind energy in Vietnam: The right time has come? A presentation*. DUANE MORRIS VIETNAM LLC.

Ministry of Finance (MoF) (2012, June 8). *Circular 96/2012/TT - BTC on Guiding the Financial Mechanism to Support Electricity Price for Grid connected Wind Power Projects*.

MoIT (2008, December 24). *Decision 74/QD-DTDL on Avoided Cost Tariff for 2009*.

MoIT (2009, December 30). *Decision 73/QD-DTDL on Avoided Cost Tariff for 2010*.

MoIT (2010, December 31). *Decision 66/QD-DTDL on Annual Avoided Cost Tariff for 2011*.

MoIT (2012, January 19). *Decision 06/QD-DTDL on Annual Avoided Cost Tariff for 2012*.

MoIT (2010, May 10). *Circular 18/2010/TT-BCT on Regulating the Operation of the Competitive Electricity Generation Market*.

MoIT (2010, October 18). *Power market developments in Vietnam*. Retrieved from [http://www.theapex.org/images/uploads/Dinh\\_The\\_Phuc-Power\\_Market\\_Developments\\_in\\_Vietnam.pdf](http://www.theapex.org/images/uploads/Dinh_The_Phuc-Power_Market_Developments_in_Vietnam.pdf)

MoIT (2011, December 30); *Circular 45/2011/TT-BTC on the Amendment and Supplementation of a Number of Articles of the Circular No.18/2010/TT-BCT of May 10, 2010 of the Ministry of Industry and Trade on Defining the Operation of a Competitive Electricity Generation Market*.

MoIT (2012, Nov. 12). *Circular 32/2012/TT-BCT Providing the Development of Wind Power Projects and the Model Electricity Trading Contract for Wind Power Projects*.

Nguyen, Q. (2004). *Go Cat Landfill quality improving project*. Energy Conservation Research and Development Center.

Phuong, N., & Huong, H. (2012). *Development of small hydropower in Viet Nam: Existing concerns from investors*. Retrieved from <http://dddn.com.vn/20120711100550605cat7/phat-trien-thuy-dien-nho-nhieu-noi-lo.htm>

PricewaterhouseCoopers (PwC). (2012) *Vietnam pocket tax book, 2012*. Retrieved from [http://www.pwc.com/en\\_VN/vn/publications/2012/assets/PwC\\_Vietnam\\_Vietnam\\_Pocket\\_Tax\\_Book\\_2012\\_English.pdf](http://www.pwc.com/en_VN/vn/publications/2012/assets/PwC_Vietnam_Vietnam_Pocket_Tax_Book_2012_English.pdf)

"Renewable Energy" [in Vietnamese]. (2009). Retrieved from <http://4tech.com.vn/forums/showthread.php/265-Năng-lượng-tái-tạo>

SGGP. (2007). *Thị trường "điện sạch" TPHCM đa dạng nhưng nhiều rào cản* [In Vietnamese]. Retrieved from <http://www.sggp.org.vn/moitruongdothi/2007/5/97707/>

The Office of Government (2005, October 19). *Decision 258/2005/QD-TTg on the Role, Powers, Duties and Organizational Structure of the Electricity Regulatory Authority of Vietnam under the Ministry of Industry and Trade*.

Thomas, K. (2007). *Investment incentives: Growing use, uncertain benefits, uneven controls*. International Institute for Sustainable Development.

Thuy, N. (2012). Investors need financial support [in Vietnamese]. Forum of Development of Small Hydropower plants in Viet Nam. Retrieved from [http://daibieunhandan.vn/ONA\\_BDT/NewsPrint.aspx?newsId=252255](http://daibieunhandan.vn/ONA_BDT/NewsPrint.aspx?newsId=252255)

Tuan, N. A. (2012). *A case study on power sector restructuring in Vietnam*. Pacific Energy Summit. Summit Papers. Retrieved from <http://www.nbr.orgww>

Tung, P., Mai, V., & Wasielke, A. (2012, March). *Status of wind power development and financing of these projects in Viet Nam*. GIZ Wind Energy Project.

United Nations Conference on Trade and Development (UNCTAD). (2004). *Incentives* (UNCTAD Series on Issues in International Investment Agreements). United Nations. Retrieved from [http://unctad.org/en/Docs/iteiit20035\\_en.pdf](http://unctad.org/en/Docs/iteiit20035_en.pdf)

United Nations Industrial Development Organization. (2011). *Viet Nam industrial development report 2011*. United Nations.

U.S. Commercial Service. (2012). *Vietnam market for medical equipment*. Retrieved from [http://export.gov/vietnam/build/groups/public/@eg\\_vn/documents/webcontent/eg\\_vn\\_051777.pdf](http://export.gov/vietnam/build/groups/public/@eg_vn/documents/webcontent/eg_vn_051777.pdf)

Vietnam Electricity (EVN). (2011). Home page. Retrieved from <http://www.evn.com.vn/vi/home.aspx>

Vietnam Electricity (EVN). (2012). *Investment capital for power project: Solutions?* Retrieved from <http://www.evn.com.vn/Home/Detail/tabid/84/TopicId/1/ItemId/4362/View/2/CatId/49/language/vi-VN/Default.aspx>

Vietnam Energy Statistics (2009). Country Energy Profile. Retrieved from [http://www.pub.iaea.org/MTCD/Publications/PDF/CNPP2011\\_CD/countryprofiles/Vietnam/Vietnam2011.htm](http://www.pub.iaea.org/MTCD/Publications/PDF/CNPP2011_CD/countryprofiles/Vietnam/Vietnam2011.htm)

Vietnam Investment Review. (n.d.). *List of power plants scheduled to come online until 2020*. Retrieved from [http://www.vir.com.vn/data/files/electricity\\_list.pdf](http://www.vir.com.vn/data/files/electricity_list.pdf)

"VN wind power capital unattractive to investors." (2012). *TuoitreNews*. Retrieved from <http://www.tuoitrenews.vn/cmlink/tuoitrenews/business/vn-wind-power-capital-unattractive-to-investors-1.92750>

World Bank. (2012). *Trung Son hydropower project: Meeting growing energy demands*. Retrieved from <http://www.worldbank.org/en/news/2012/11/20/trung-son-hydropower-project-meeting-growing-energy-demands>



## *Further details and contact information*

**For further information contact Damon Vis-Dunbar at: [dvis-dunbar@iisd.org](mailto:dvis-dunbar@iisd.org) or +41 22 917 8630.**

---

International Institute for Sustainable Development  
Trade Knowledge Network

International Environment House 2, 9 chemin de Balexert, 1219 Châtelaine, Geneva, Switzerland

Tel: +41 22 917-8373 | Fax: +41 22 917-8054

---