

SUPPORT ON RENEWABLE ENERGY AND CASE OF SOLAR PV IN VIET NAM

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Abstract

The article discusses the Vietnamese governmental support on renewable energy, with focus on financial mechanisms including feed in tariffs, tax exemption, establishment of renewable energy market and other incentives. A case study of solar PV is introduced in the article, with updated information on the draft mechanism on the feed in tariff for solar energy project, including rooftop solar and grid-connected solar project. It is indicated that the mature establishment of supportive mechanism at the very first stage, which will be followed by the formation of a competitive renewable energy market, is crucial factor to encourage the development of renewable energy and solar PV.

Overview

Renewable energy plays an important role in ensuring energy security and combating climate change. Investments in renewable energy contributes to the diversification of energy technology. At the same time, the development of renewable energy reduces energy import and protects the economy from the fluctuation of the global fuel price.

To encourage the development of renewable energy, it is necessary to shape the supporting mechanisms financially and economically, which will help to reduce production costs and encourage the transfer and application of technology, improve production lines, increase the number of piloting projects and encourage the technology deployment at a larger scale.

Vietnam is currently active in developing the policies and mechanisms to support the development of renewable energy. This article will analyse policies and financial mechanisms for renewable energy in Vietnam, focusing specifically on the case of solar PV. Through the analysis and assessment of the effectiveness of the policy and the existing mechanisms, the article indicates some remarks for promoting renewable energy and solar power in Vietnam.

Incentives for renewable energy

In order to support the development of renewable energy, some supportive policies, incentives and financial tools such as feed-in-tariff; renewable energy market; renewable energy standard portfolio; investment insurance; investment, loan and public finance; funding; tax exemption and tax incentives; net metering and environmental fee; have been proposed (Table 1).

Feed-in tariffs

Feed-in-tariff is the most common form of financial support to promote renewable energy. Feed-in-tariffs, actually, is the subsidy for renewable energy to ensure that renewable energy can be competitive to conventional energy. In Vietnam, the feed-in-tariff was established for biomass cogeneration and wind power at 5.4 US cent/kWh and 7.2 US cent/kWh, respectively (excluding value added tax). The feed-in-tariffs are calculated based on the avoided cost tariff, i.e. the hydropower generation cost. The hydropower is the type of renewable energy which has been developed from the very early days, and has completely developed so far;

therefore, the hydropower generation cost is quite low.

According to the renewable energy developers, at the current feed-in-tariffs, it is not feasible for most renewable energy power generation projects. The average production costs of electricity from renewable energy are in the range of 5.8 to 27 US cent/kWh (Pham, 2012). Bio-electricity prices range from 5.8 to 13 US cent/kWh, due to the large differences in raw material costs. Cost for electricity from bagasse and rice husk are the lowest among different types of renewable electricity. Wind power has a slightly higher price, in the range of 6 to 8 US cent/kWh. Solar power has the highest production costs, at 13 to 27 US cent/kWh.

With the existing feed-in-tariffs, the renewable energy projects are economically feasible if it is invested in small hydropower, at the production cost of 1.3 to 4.5 US cent/kWh (Pham, 2012). This also explains why only biomass power and wind power projects are deployed at a moderate scale. The other types of renewable electricity have not yet been favored as the selling price is insufficient to cover its production costs.

Renewable energy market

The government of Vietnam expected to establish and promote the renewable energy market by prioritizing investment in renewable energy. Organizations and individuals under private or public ownership will be encouraged to participate in the development and use of renewable energy. Rights and their legitimate interests will be protected in accordance with law and regulations. So far Vietnam has not yet formed renewable energy market.

Renewable energy portfolio standard

Renewable energy portfolio standard requires renewable energy shall account for a minimum part of the national electricity system. The government planned to apply

Table 1: Financial support, incentives to develop renewable energy

Duty	Regulation	Incentives
Renewables		
Tax	Import tax	Exempted from import tax for imported goods Exempted from import tax for fixed asset
Corporate income tax	25% - 50% (depending on types of energy and location)	Exempted from corporate income tax 10% in 15 years for newly established renewable energy enterprises, may extend to 30 years exempted from corporate income tax in the first 4 years, reducing 50% of tax in the next 9 years.
Loan	Loan from commercial sources at the market interest rate	Loan at 80% of investment capital at the prioritized interest rate within 5 years
Environmental protection fee	Depending on types of waste and quantity of pollutants in wastewater	Exempted from environmental protection
Depreciation	Depending on types of fixed asset	Depreciation period is 1.5 times faster than normal depreciation
Land lease	Depending on location	Exempted from land use and land lease
Bio-electricity		
Feed in tariff		Regulation power purchase price for the project cogeneration is VND1,220 / kWh (excluding value added tax), equivalent to US \$ 0.058 / kWh, the price is adjusted according to the fluctuation of the exchange rate VND / USD
Wind power		
Feed in tariff		Support electricity price for wind power projects through, the buyer is obliged to buy the entire production of electricity from wind power projects with power purchase price at delivery point power is 1,614 VND / kWh (excluding VAT increase), equivalent to US \$ 0.078 / kWh), electricity purchase prices were adjusted according to the fluctuation of the VND / USD

(Extracted from Decision number 24/2014/QĐ-TTg dated 24/3/2014 and Decision number 37/2011/QĐ-TTg dated 29/6/2011, Circular number 96/2012/TT-BTC dated 08/6/2012)

renewable energy portfolio standard on energy users, producers and distributors. Specifically, all distribution, generation companies, and consumers shall meet a certain amount of electricity from renewable energy. For companies with an installed capacity of over 1,000 MW (excluding BOT power projects) must have at least 3% of electricity from renewable energy sources by 2020, 10% by 2030 and 20% by 2050 (not including hydropower plants with a capacity of over 30 MW). Companies generating, purchasing, selling power and power consumers shall buy electricity from renewable energy sources at least 5% by 2020, 10% by 2030 and 20% by 2050 (excluding hydropower sources with a capacity of over 30 MW).

Renewable energy portfolio standard usually allows the commercialization of renewable energy certificates. However, this has not been applied in Vietnam. In

other words, although the government of Vietnam has made clear goals in renewable energy development roadmap, but the market for buying / selling renewable energy certificates has not been established.

The implementation guidelines and policies to support the renewable energy portfolio standard has not been studied and developed. Recently, international donors such as USAID and GIZ have indicated the need for technical support to assist the development of regulations and guidelines for implementing renewable energy portfolio standard in Vietnam. Therefore, it can be predicted that in the near future the policies relating to renewable energy portfolio standard would not yet formed and completed.

In parallel with the regulations on renewable energy portfolio standard, penalties should be established for not com-

plying the regulations. This penalty can be used for financial support for renewable energy production units. However, there is currently no specific fine or penalty for non-compliant facilities.

Investment insurance

Investment insurance for renewable energy requires power facility to buy all renewable power generated and connected to the grid. The purchasing/selling price should be compatible with the location of the project and the applied technology, and include the production cost and a suitable amount of profit for the investor.

Investment, loan and public finance

Investors can mobilize capital from a variety of funding sources as prescribed by laws from domestic or foreign individuals and organizations and have access to loans from the State to invest. In addition, the re-

renewable energy projects are granted with the governmental support to borrow 80% of the investment capital at a preferential interest rates for 5 years.

Funding support

The Vietnam energy system as well as the power system are under the management of the State. To date, it is now at the stage of preparation for competitive energy market in Vietnam. Therefore, all investments in renewable energy projects are funded by the State, which means that funding support is inevitable for sustainable energy project.

Tax exemption and/or reduction

The renewable energy projects are exempted and / or deducted from the corporate income tax under the provisions of the Investment Law, Corporate Tax Law and other legislative documents. Moreover, the newly establish enterprises operating in the field of renewable energy are entitled to 10% of tax rates for 15 years, which can be extended to 30 years. Other enterprises operating in the field of renewable energy are entitled to tax exemption during the first 4 years, and 50% of tax rate for the next 9 years.

Other incentives

Investors are exempted from import duty for goods which are imported to made up fixed assets and commodities used as raw material, input material or semi-finished products; are not available on the market in Vietnam; and serve for the production activities of the enterprises operating in the field of renewable energy, as stipulated in the Import Tax Law, Tax Law and other regulations on the import and export responsibilities

In addition to the above-mentioned incentives, the projects installing generators, transmission lines, substations for grid-connected wind power to the national electricity system is exempted or reduced from land lease fee as stipulated in applicable laws.

According the power development plans at all levels, the provincial People's Committees are responsible for allocating land so that investors can deploy their wind power projects. The recommended compensation and assistance for clear-

ance shall comply with the provisions of the Land Law.

Net metering

End users of power purchasing from the national power system, who generate power from renewable energy sources, for their own needs, can use net meters. The payment of their electricity bills will be calculated based on the principle of net metering. Electricity from renewable energy sources generated by end users will be accounted in their renewable energy portfolio and that of their electricity distributor.

Similar to renewable energy portfolio standard, so far, this mechanism has yet to be established in Vietnam. When the renewable energy market will be formed, it will attract more private investment and household invested projects in renewable energy, especially solar energy and rooftop solar PV. At that time, the net metering mechanism will be essential to encourage the development of renewable energy in general and solar energy in particular, at household scale.

Environmental protection fee

The users of fossil fuels shall pay the environmental protection fees corresponding to the consumed amount of fuel. The environmental protection fee will be used to encourage the development and use of renewable energy. Enterprises operating in the field of renewable energy will be exempted from the environmental protection fee.

Mechanism to support solar energy

Current incentives

Although renewable energy development strategy was ratified in 2015, and accompanied with a list of proposed policies and supportive mechanisms, not many supportive policies have been implemented to support the formation of renewable energy market. Renewable energy market, including solar power market has not formed. Renewable energy portfolio standard and net metering are not applicable. Feed in tariff was approved by the Government for wind energy, biomass energy, but has yet to be applied for so-

lar energy. The developers and investors of solar energy projects only benefit from the same tax incentives, public loan and land use incentives, etc. renewable energy (Table 1).

Incentives under pipeline

MOIT has also prepared a support mechanism for solar projects and submitted to the Prime Minister for consideration and approval. Under this mechanism, investors and developers of solar farm, rooftop solar PV, solar PV on the island and off-grid solar projects will benefit from the preferential price and guaranteed investments.

All electricity from the solar energy projects and the net metering projects shall be purchased by the Vietnam Electricity. Power purchase contract must comply with the standards issued by the Ministry of Industry and Trade and will be valid for at least 20 years. After that period, the seller and the buyer can negotiate to renew the contract or sign a new contract under the provisions of law.

Investors of the solar projects will benefit from investment credit, import tax, corporate income tax and land use tax, land lease fee as prescribed by laws and existing regulations.

Investors of the solar projects will be entitled to reduction of land use and land lease fees. Besides, the provincial People's Committee will be responsible for arranging land use plans to develop solar projects.

Power purchase price is 11.2 US cents / kWh. This price will be applicable to projects using solar PV cells with efficiency more than 16% and an installed capacity of less than 100 MW.

For rooftop solar projects and net metering project, the net amount of the power will be purchased at 15 US cents / kWh (excluding VAT) (Table 2). Power purchase price will be adjusted according to the exchange rate of USD and VND. Net amount of power output will be sold at the (ladder typed) power price in accordance with law.

At the end of 2016, the Vietnamese government has principally agreed with the solar support mechanisms proposed by the Ministry of Industry and Trade, with

some reviews. The solar power purchase price for grid-connected projects will be temporarily applied within the next three years (2016-2018). Besides, only those projects, which have been listed in the national or provincial Power Development Plans, will be eligible to enjoy the preferential tax rate. For rooftop solar project, the Government required the Ministry of Industry and Trade to update the (declining) price of solar PV components and equipment; and propose the appropriate price.

In addition, the government has required the Ministry of Industry and Trade to:

- Prepare and provide specific rules on solar power development planning in Vietnam (e.g. promoting the development of projects according to the solar radiation maps, supplementing solar projects in the Power Development Plan);
- Update and adjust the price of solar equipment to provide consistent power purchase price;
- Conduct research and supplement the provisions on transparent bidding of solar projects to reduce solar power purchase prices;
- Supplement the provisions on Certified Emission Reductions (CERs) of solar power projects;
- Supplement and complete the provisions on exemption of business registration and fees, taxes for rooftop solar projects (with an installed capacity of below 50 kW); and
- Supplement regulations and mechanisms to promote the domestic production of solar components and equipment; increase the localization rate in solar energy projects to reduce the solar power purchase price.

Remarks

The policy framework to support the development of solar PV is underdeveloped. So far, there have been two documents to support for the development of solar PV, including Renewable Energy Development Strategy and Power Development Plan VII-Revised. The lack of action plans to implement this strategy is the biggest drawback in the development process of solar PV projects in Vietnam. Due to the lack of specific

Table 2: Incentive under pipeline to support solar PV

	Regular	Feed in tariff for solar power
Power purchase price	5.8 US cent / kWh	<ul style="list-style-type: none"> • For solar PV project with efficiency more than 16% and an installed capacity of less than 100MW, the power purchase price is 11.2 US cents / kWh. • For the rooftop solar projects or net metering projects, the power purchase price is 15 US cents / kWh.

action plans as well as guidance on the construction, installation, and development of rooftop solar, off-grid solar, grid-connected solar and solar farm projects, the developers and investors of solar PV projects questioned the feasibility of the solar projects and hesitate to invest in these projects.

After the Renewable Energy Development Strategy and Power Development Plan VII-Revised were issued, there has been no mechanisms promulgated to promote solar projects. Although the draft mechanism to support solar PV has been prepared by the Ministry of Industry and Trade, and submitted to the government, the contents of the draft mechanism has not been approved. The government has basically agreed with the draft and required the Ministry of Industry and Trade to review the draft mechanism. The (preferential) power purchase price of solar PV is only applicable to the approved projects (the solar power projects listed in the power development plans) and available within 3 years from 2016 to 2018. The power purchase price of the solar rooftop projects has not been approved by the government and required to be adjusted according to the market price of solar PV components and equipment.

The lack of the policy framework as well as the supportive mechanism indicates the Government's reluctance to support the development of solar PV. On the one hand, the government desires to support the development of solar PV due to its social and environmental benefits. On the other hand, the supportive mechanisms are limited, and the financial incentives for power purchase price will be applicable to a certain number of projects and in very short time period. The existing mechanisms and the draft mechanism are not attractive enough to compensate for the high investment on solar projects.

According to investors on solar PV, one of the barriers to the promotion of solar PV projects in Vietnam is the lack of supportive policies. Many investors and manufacturers of solar PV components and equipment such as the VietTan, SolarBK, SolarVuPhong confirmed that once the support mechanisms for solar energy is ratified, it will encourage the investment on solar energy projects at all levels, from household-sized rooftop solar projects to solar farms.

Orientations for supportive policies

Policies to support renewable energy showed its positive impacts on the investment and deployment of renewable energy projects, contributing to the national energy security and ensuring the energy supply. However, the legal framework and policies, particularly financial mechanism, is immature at the stages of setting goals, developing action plans and monitoring the implementation of policy.

Experience from developed countries indicated that the support from government is essential for to attract investment on sustainable energy. Although there are opportunities to promote renewable energy in the rural and isolated areas, which are favourable place for implementing small projects for the poor community. In that case, the local people are normally incapable of invest into renewable energy themselves. Development of renewable energy in these areas not only bring benefits of ensuring the energy supply, but also contribute to tackle social issues such as implement and income generation.

Moreover, the environmental and social benefit of sustainable energy has not reflected in the energy price on the competitive market. Price competitiveness

becomes more difficult if there is no intervention of the government. The number of renewable energy project will reduce. A lot of research indicates that if the environmental and social benefit is included in the renewable energy price, many types of renewable energy will be economically competitive to the conventional energy.

As being indicated in the previous part, the Vietnam government has established the feed-in-tariffs for some types of renewable energy. However, the existing feed-in-tariffs are not attractive enough to renewable energy developers. Except from small hydropower, the renewable energy developers would not get any profit if they invest on renewable energy. Therefore, Vietnam should make more efforts in the development and promulgation of relevant legislation, improve and enhance the efficiency of the organizational structure and management methods in the field of renewable energy, as follows:

It is essential to develop a completed legislative framework and a focal institution for renewable energy. This will reduce the complexity in management and development of renewable energy, and eradicate administrative barriers so that the renewable energy developer can be accessible to information and supportive mechanism.

In the context that the competitive market has not been established in Vietnam, the regulatory tool should be exploited to promote sustainable energy in Vietnam. For renewable energy promotion, it is essential to develop the renewable energy portfolio standard. The standard shall be applied for energy producers and consumers. It requires the energy producers and consumers that a minimum part of their produced/ consumed energy shall come from renewable energy. This mechanism support the government in achieving the target for renewable energy, especially targets of increasing installed capacity, total power generation and share of renewable energy in the national power system. Moreover, the renewable energy price will eventually be regulated on the basis of the market price, thanks to the competitiveness among renewable energy technologies.

In line with the regulatory tools, it is crucial to create a market for sustainable

energy. With regards of renewable energy, the suitable prices for renewable energy must be proposed. The price should be adjustable to different types of renewable energy. The renewable energy price should be higher than the price of electricity produced from fossil fuels, so will encourage renewable energy and ensure economic benefits for renewable energy. This mechanism minimizes the risks for investors in renewable energy. At the same time this policy also helps the development of different types of renewable energy, regardless of their production costs.

The energy price can be regulated by adjusting the current power price. If the current power price includes the externalities of the fossil fuel and GHG emission, the differences between renewable power price and existing power price will be smaller. This, on one hand, will encourage the development of renewable power. On the other hand, the higher power price will induce the awareness of power saving and power efficiency.

In addition, the preferential mechanism should be clear, transparent and accessible for the developers. This will ensure that they can access to the supportive sources, whether it is financial or non-financial if needed. The assess to information and supportive mechanism is crucial as the support will be useless unless the beneficiaries can access them.

Conclusion

Renewable energy is defined as the effective measures aimed at developing a sustainable electricity system, with the objective of minimizing the environmental impact of burning fossil fuels and ensuring the national energy security. To achieve these objectives, legal framework and financial policies to support renewable energy development in Vietnam should be promoted in terms of implementation and adjustment to fit the technical and economic characteristics each type of renewable energy. In addition to the establishment of the focal institution on renewable energy, completion of financial mechanism as well as the monitor of the policy implementation should be taken attention.

It is also appropriate in the case of solar energy. So far, solar energy has only sup-

ported in the Renewable Energy Development Strategy and Power Development Plan VII- Revised. Although these documents have initiated a range of supportive measures such as preferential corporate income tax and import duty, exemption and reduction on land use and land lease fee, etc., the financial mechanism is, in fact, incomplete, especially solar PV feed in tariff. When the solar PV feed in tariff will be applicable to all approved grid-connected and rooftop solar projects, the solar energy markets are expected to be blooming at different scale from households' rooftop solar project to solar farms.

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