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**MAKING LARGE-SCALE SOLAR PROJECTS VIABLE
IN VIETNAM: INNOVATIVE APPROACHES IN
PROJECT DEVELOPMENT AND INVESTMENT**

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AGENDA

- **ENERGY SECTOR OVERVIEW**
- **POTENTIAL OF SOLAR ENERGY IN VIETNAM**
- **CURRENT GOVERNMENT'S POLICIES ON SOLAR ENERGY**
- **INVESTMENT GUIDELINES FOR FOREIGN INVESTORS**
- **RECOMMENDATIONS**

Energy Sector Background

- The Institute of Energy has calculated that commercial electricity will reach 491 billion kWh by 2030, and 877 billion kWh by 2045
- By 2030, the total installed capacity of Vietnam's electricity sources is predicted to be at 137.2 GW, of which **renewable energy: 29%**
- Total investment capital for electricity development in the period 2021-2030 is roughly USD 128.3 billion USD, of which: USD 95.4 billion for the power sources, USD 32.9 billion for the grids. The average structure of capital investment shall be 74% / 26%.



Potential of solar energy in Vietnam

- In Southeast Asia, Vietnam is seen to have the most potential for the growth of solar energy. Vietnam can generate 85 GW of solar electricity by 2030 and 214 GW by 2050, according to the World Bank.
- Vietnam has a lot of potential for solar energy because it receives more than 2,500 hours of sunshine annually. Across the nation, power plants are being developed, mostly in sunny areas like the central and southern regions.
- Possessing huge tracts of undeveloped land is another advantageous circumstance for Vietnam to develop power facilities powered by renewable energy. To encourage investment in this area, the government has also released a number of favorable measures. In addition, Vietnam's growing electricity consumption presents the renewable energy sector with enormous growth prospects.



Solar energy projects overview

- By the end of 2020, the total solar power capacity (including floating) put into operation was about 17 GW, concentrated in the southern provinces and the Central Highlands.
- Transmission grids are not enough in quantity, especially in the South, to accommodate the increasing number of solar power projects. As a result, most projects that have come into operation in those localities are being subjected to daily decrease in generating capacity to avoid overloading the regional grid.
- Binh Thuan and Ninh Thuan are top 2 provinces where projects are being applied for inclusion in the power master plan (136 projects out of 342 projects in the whole Vietnam as of 2019). This is due to the provinces' geographical advantage of having the most sunlight rate during the year in Vietnam

CURRENT GOVERNMENT'S POLICIES ON SOLAR ENERGY



Investors must bid to develop solar power projects soon

- No FiT rate applicable for project with COD from 1 January 2021 onwards.
- In late January 2021, the Ministry of Industry and Trade proposed the implementation of bidding to select investors for solar power projects. Under MOIT's draft, the mechanism would be applicable to projects with grids connected directly to the national power network.
- Once the Draft comes into effect, the Feed-in tariff (FiT) mechanism will no longer apply to solar energy projects. The employment of bidding method will enable for the selection of capable developers through transparent procedures in order to eliminate projects that run behind schedule for years
- Every 02 years, the Ministry of Industry and Trade shall issue a Price Framework for electricity generation in order to determine the ceiling price for bidding of projects with COD in the next 02 years.

DECREE ON DIRECT POWER PURCHASE AGREEMENT IS NOW OFFICIAL

- Scope of Regulations
 - Renewable energy generator owning power plants from solar energy, wind, small hydropower, biomass, geothermal, ocean waves, tides, ocean currents, and other forms of renewable energy, together with rooftop solar power system granted with electricity operating license or rooftop solar power system being exempted from such a license.
 - Electricity retailers in industrial parks, economic zones, export processing zones, industrial clusters, high-tech parks, centralized information technology parks, high-tech industrial parks and other similar models regulated by a competent authority being electricity unit licensed to operate electricity in the field of electricity retail in such area or cluster with an electricity purchase output of 200,000 kWh/month or more connected to the voltage of 22 kV or more.
 - Large power consumer being organizations or individuals buying electricity for their own use without reselling with the average consumption output of 200,000 kWh/month or more.

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- Some key take-aways:
 - **Model 1 - Private Wire Model:** this model envisions the sale of power from a renewable energy generator with large power consumer through a power private wire (not connected to the national power grid).
 - There is no requirement on application/registration for joining this Model but large power consumer shall report the execution of power purchase agreement with the renewable energy generator to local provincial People's Committee, competent local power company, and competent system operator (e.g., A0).
 - Renewable energy generators include owners of energy, solar, wind, small hydro power plants as well as rooftop solar systems. One of key changes from the last draft is that large power consumer now includes all are those who use electricity from 200,000 kWh per month (NB: the last draft requires large power consumer to use at least 500,000 kWh per month).

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- **Model 2 – Grid-connected Model:** this Model envisions the sale and purchase of power under a forward contract between large power consumer and renewable energy generator.
- To implement this Model: (i) large power consumer shall sign a forward contract with renewable generator, (ii) renewable energy generator shall sign a contract with Electricity of Vietnam (EVN) for selling power to spot market (i.e., VWEM – Vietnam Wholesale Electricity Market) and (iii) large power consumer shall sign a retail power purchase contract with EVN or its subsidiary (e.g., local power company) for receiving the power from the local power company.
- Renewable energy generator shall own a renewable energy plant of at least 10 MW. This Model requires registration of participation with competent system operator and will subject to the approval and guidance from the competent system operator for proceeding.

DIRECT POWER PURCHASE AGREEMENT

Principally, subject to the form of DPPA mechanism, a DPPA should cover the following provisions:

- Subject of the agreement
- Price of electricity
- Payment
- Purpose of usage (where applicable)
- Operation of the plan (where applicable)
- Term of the agreement (where applicable)
- Connection and metering (where applicable)
- Rights and obligations of the parties
- Representations and warranties of the parties
- Event of Default
- Termination of the agreement
- Quality and standard
- Indemnification and penalty (where applicable)
- Dispute resolution

BENEFITS OF DPPA MECHANISM

- ✓ Impose take-or-pay obligation on off-takers thus guarantee developer's revenue stream
- ✓ Fixed electricity purchase price regardless of status of national legislation
- ✓ Flexible calculation of monthly exchange rate
- ✓ Increase consumer's environmental commitments

Challenges in solar project development (1)

- **Non-negotiable PPA** and compulsory application for grid connected solar projects
- EVN has the obligation to buy all electricity generated from solar power projects. However, in the Solar PPA, EVN may stop buying electricity in certain circumstances beyond the reasonable control of the seller, without any compensation or payments to the seller/project developer.
- The purchaser must pay the seller only for the electricity that is received by the purchaser. The Solar PPA does not include any provision where the purchaser is unable to take the electricity produced.
- Dispute resolution: by litigation before Vietnamese courts or mediation/resolution at authorized energy state authorities of Vietnam. **No international arbitration is mentioned!**

Challenges in solar project development (2)

- **Grid connection issues**
- Congestion happens in some provinces with the most solar potential (Ninh Thuan, Binh Thuan for example) (generation exceeds transmission capacity)
- High possibility that the projects are ready to come into operation but cannot be fed into the grid
- It takes at least 3-5 years to improve the grid capacity.

But don't worry! We have the EU – Vietnam FTA and CPTPP

- EU – Vietnam FTA (“EVFTA”) and the Investment Protection Agreement (“IPA”):
 - EVFTA came into effect on 1 August 2020, making Vietnam has more legal certainty than even Germany.
 - IPA implements **investor-to-state dispute settlement** (ISDS) mechanisms – investors can claim in case that an investor protection obligation has been breached
 - Domestic courts cannot question the legal validity of the decisions
- Comprehensive and Progressive Agreement for the Trans-Pacific Partnership (CPTPP):
 - TPP continues without the US, effective from 30 December 2018.
 - New TPP accounts for 12.9% of global GDP and 14.9% of global trade.

Rooftop Solar Power Projects

Electricity Buyer can either be:

- (i) Electricity Vietnam (EVN) or an authorized representative of EVN; or
- (ii) *In case the RTS system is not connected to EVN's power grids:* organizations, individuals purchasing electricity from the Seller/RTS developer or an authorized representative of such organizations and individuals.

In case the Buyer is EVN, the Seller and Buyer must sign the standard Power Purchase Agreement (“PPA”) unless agreed otherwise.

Seller and other independent Buyers can discuss and agree on the order of implementation, installation, connection and maintenance as well as electricity purchase price by themselves in accordance with Vietnam laws.

Compared to large-scaled projects, Rooftop Solar Power Projects can be implemented much more easily with different options for implementation being available for investors (including DPPA), subject to provincial's practice and guidance.

Investment guideline for foreign investors



Market access and Forms of investment

- No foreign ownership restriction
- Investment forms:
 - ✓ A wholly-owned foreign enterprise
 - ✓ A joint venture company between a foreign investor and domestic investor
 - ✓ Investment pursuant to the BOT legal framework
 - ✓ Through the purchase of shares in either an EVN subsidiary being or having been equitized or a private IPP holding power assets.



RECOMMENDATIONS FOR INVESTORS

- Public private partnerships (e.g. - BOT) should be the first option.
- Due care on negotiations of the PPA and grid connection agreement with EVN
- Electricity selling in off-grid areas can be a good choice
- Sound financing structure, good business model and great legal assistance are keys to success.
- Accurate prediction of where the market is heading to, in the context of Vietnam's critical power shortage, should be considered.
- More pressure on the government to adequately address key issues on tariff increase, demonopolization of the power market and government guarantee.
- Vietnam's market is extremely in need of financing and EPC capability. There are rooms for cost-effective and high quality EPC contractors and resourceful lenders.
- In many cases, you can "test the water" with a small power plant project.

Key department EVN – Electricity Market Department

- Officials from Ban Thi Truong Dien (Electricity Market Department) are responsible for negotiating Power Purchase Agreements.
- Responsible person:
Mr. Tran Dang Khoa: Head of Market Department

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Thank you very much!

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