



# Vietnam's Solar FiT Program Delivers

## *Watch for Progress on the Grid and Wind*

### Executive Summary

#### *Vietnam's Successful Solar Program Proves the Skeptics Wrong*

Vietnam's US\$0.09 per kWh solar feed-in-tariff (FiT) program has just delivered 4.46GW of new capacity for Vietnam's fast-growing power market.<sup>1</sup> This is an impressive achievement that validates the government's step-by-step approach to market development and the ability of domestic and international developers to mobilize capital for scalable renewable energy (RE) portfolios. It also highlights the ability of modular renewable projects to deliver much-needed capacity more rapidly than large scale baseload fossil fuel projects that require large expenditures on associated infrastructure.

#### *Progress on Grid and Wind Come Next*

Vietnam's policymakers have been smart to signal a gradual approach to the next phase of market development with a wind FiT program that is set to build momentum in the coming two years. Most wind projects thus far have been onshore, but Vietnam holds considerable potential for larger nearshore and offshore projects. Now that some promising new regional developers have established themselves in the market, investors will be watching to see how the government defines its renewable ambitions with new targets in the Power Development Master Plan VIII and plans to upgrade the grid.

### Vietnam Embraces Renewables

Vietnam's medium-term plans for its renewable energy sector are now taking shape after two busy years of project development. The need to bring large amounts of new capacity online quickly, coupled with the desire for clean and secure power have been the driving forces spearheading renewables into the country. With 4.46GW of solar power now coming online as the solar FiT program hits its 30 June deadline, attention is shifting to plans for new grid investment and the next phase of the FiT program which focuses on the burgeoning wind sector.

Vietnam's renewables program is gaining momentum at a strategic time. Vietnam has already electrified 99 percent of its population; now demand for electricity is poised to increase. The revised National Power Development Master Plan VII

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<sup>1</sup> EVN, ~ By June 30, 2019: More than 4,460 MW of solar power were connected to the grid. 30 June 2019.

(Master Plan VII) currently forecasts commercial growth to grow at around 10.3 percent annually until 2020. It is then expected to decrease somewhat, but still produce robust growth until 2030. The plan calls for capacity additions of between 6,000-7,000MW per year to meet increased demand.<sup>2</sup>

**Table 1: Increasing Installed Capacity Needed to Meet Demand**

Year	Year	Installed Capacity (MW)
2010	2020	60,000
2020	2025	96,500
2030	2030	129,000

Source: MoIT.<sup>3</sup>

To achieve this, the government has a mix of strategies. They have a large pipeline of foreign-invested fossil fuel IPPs, but many of these baseload projects are facing headwinds due to market developments that are raising doubts about the suitability of old carbon-heavy technology for a young market focused on cleaner growth. To kick start the development of renewables capacity, the government launched the solar and wind FiT programs: the solar FiT was in force from 1 June 2017 to 30 June 2019; the wind FiT, from 1 November 2018 to 1 November 2021. Since implementing them Vietnam has come up the learning curve quickly.<sup>4</sup>

In the current iteration of the Master Plan, the government aims to have renewable sources – including biomass, small-scale hydro, wind, and solar – account for 21 percent of installed capacity by 2030.<sup>5</sup> Of that, solar and wind will comprise approximately 11 percent.<sup>6</sup> The central issue is that the government needs to increase installed capacity rapidly and simultaneously find a way to finance a grid buildout that can accommodate a more diverse generation mix; all the while keeping power prices stable. The next Master Plan is expected to address this, which is anticipated to be finalized in 2020.<sup>7</sup>

## Will Wind Match Solar's Success?

The Vietnamese government initially focused heavily on solar and, despite complaints about the PPA from some quarters, managed to attract hefty investments from an array of actors. Developers expect to bring around 4.46GW of solar power online to qualify for the solar FiT – a figure which is well above early cautious estimates. Credit where credit is due: Vietnam's policy makers have managed to cultivate a flourishing solar market from a low base, turning Vietnam

<sup>2</sup> MOIT PDP VII Progress Report.

<sup>3</sup> Ibid.

<sup>4</sup> Baker McKenzie, [Update to New Draft Policy on Feed-in-Tariffs Post-30 June 2019 for Solar Power Projects in Vietnam](#). 28 February 2019.

<sup>5</sup> MOIT PDP VII Progress Report.

<sup>6</sup> Nhan Dan, [Huge potential for offshore wind power development in Vietnam](#). 10 April 2019.

<sup>7</sup> CAND, [Proposing to set up an Appraisal Council of the Power Planning task VIII](#). 25 March 2019.

into a regional “powerhouse” for solar PV.<sup>8</sup> This is no mean feat and it’s clear that regional developers now regard Vietnam as a market where partnerships for the longer term can be rewarded.

It appears that the government wants to try and replicate this success with wind. The question is: will it be able to? It aims to lay a solid foundation for its wind sector before the 1 November 2021 FiT deadline. By then, the government hopes to have 1GW of installed wind power.<sup>9</sup> Currently, seven wind farms are operational with a joint capacity of 331MW.<sup>10</sup>

**Table 2: Vietnam’s Planned Growth of Wind Capacity**

Year	Capacity (MW)
2020	800
2030	6,200

Source: MoIT.<sup>11</sup>

Much of this new capacity will be in southern Vietnam, where wind speeds are higher – between Qui Nhon and Ho Chi Minh City they average between 7-11m/s.<sup>12</sup> Most projects up to now have been onshore; however, as one panelist at the Global Wind Energy Council (GWEC) Conference in Hanoi in June emphasized: there is simply not enough space for many more onshore projects. The close proximity has given rise to issues such as the wake effect, subsequently reducing capacity factors of wind power plants. By contrast, potential offshore sites are much larger, but they have not been fully studied.

## How Will Offshore Fare?

Indeed, the greatest potential for Vietnam’s wind sector theoretically lies offshore. Of the 6,200MW of wind power the Vietnamese government wants to install, the overwhelming majority would have to come from offshore wind farms. As noted above, wind speeds are higher in the south and with relatively shallow water depths of between 20 to 50 meters, the coasts are ideal for nearshore and offshore projects.<sup>13</sup> Moreover, these projects would be closer to areas where unmet load growth is

**The greatest potential for Vietnam’s wind sector theoretically lies offshore.**

<sup>8</sup> PV Magazine, [Vietnam’s 2019 commissioning rush](#). 23 July 2019.

<sup>9</sup> Vietnam Investment Review, [Boosting financing for Vietnam’s onshore and offshore wind power projects](#). 19 June 2019.

<sup>10</sup> Bao Dautu, [~ 57 solar and wind power plants were put into operation](#). 11 June 2019.

<sup>11</sup> Nhan Dan, [Huge potential for offshore wind power development in Vietnam](#). 10 April 2019.

<sup>12</sup> Ibid.

<sup>13</sup> DNV GL, [Vietnam– the next offshore wind market in Asia?](#) 20 June 2019.

expanding the quickest – Ho Chi Minh City, for instance. Vietnam could also leverage its existing domestic supply chain for offshore wind. Manufacturers such as GE and South Korea's CS Wind already produce wind turbine parts in Vietnam.<sup>14</sup>

However, when and how offshore will proliferate is unclear at this stage. Some developers have committed themselves: Gulf Energy just signed a PPA with EVN for its 310MW offshore wind farm in Bin Tre. Others, like Mainstream Renewable Power, are still investigating the feasibility of a project as large as 800MW.<sup>15</sup> Perhaps the most ambitious project which appears to be progressing is the Ke Ga development backed by Enterprize Energy and a consortium including Vietnamese and international technical partners. The project, which targets 3,400MW of capacity offshore Binh Thuan Province, hopes to commission 600MW as soon as 2023.

The Enterprize project will be important to monitor. Offshore projects require careful coordination with multiple levels of government and the market will watch closely to see how key project milestones are managed. Another factor that merits attention is whether there will be enough transparency around the process to encourage other developers to accept the risks of a long development cycle in exchange for a foothold in one of South East Asia's fastest growing renewables markets.

### *Investment Requirements*

Thus far, local banks have been the main funders of renewables capacity coming online via the FiT program.<sup>16</sup> But with relatively small balance sheets, it's natural to question whether Vietnam's domestic banks will be able to keep up with the funding needs of the RE sector, where funding needs could outpace domestic funding capacity. It is estimated that US\$5.6 billion in debt financing would be needed to construct all planned wind projects by 2030.<sup>17</sup> Consequently, for the wind sector to develop further, projects will likely need access to new sources of capital.

### **The 'Unbankable' PPA?**

New sources of targeted green financing may be one potential source of capital for Vietnam's wind ambitions, but it is notable that traditional international project funders have been reluctant to commit themselves. They have stayed away due to the view that the standard PPA falls short on the guarantees that are common in more developed markets. Complaints by bankers about Vietnam's PPA are not new and there are numerous reasons why players without deep pockets or strong local relationships have perceived it to be 'unbankable':<sup>18</sup>

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<sup>14</sup> Ibid.

<sup>15</sup> [Mainstream Renewable Power](#).

<sup>16</sup> MDI, [Vietnam Energy Update Report 2019](#). July 2019.

<sup>17</sup> GWEC Conference Presentation, the Blue Circle.

<sup>18</sup> DNV GL, [Vietnam– the next offshore wind market in Asia?](#) 20 June 2019.

1. International lenders have lacked confidence in the credit standing of state-backed EVN (the off-taker), Vietnam's monopoly power provider;
2. Inadequate grid capacity and, hence, the risk of curtailment can be high depending on project location; and
3. EVN retains a termination clause in the PPA.

Vietnam's barebones PPA made it difficult to access traditional project financing from conventional overseas project finance banks that are used to settled regulatory regimes in lower risk markets. In an attempt to placate these funders, the Ministry of Industry and Trade (MoIT) issued a revised PPA in January of this year – the new draft Circular No.2. However, only minor adjustments were made, such as clarifying technical curtailments.<sup>19</sup>

While this disappointed some bankers committed to pushing for better risk-adjusted spreads, it has not been a barrier to those players willing to take more risk or with the capacity to balance sheet finance. This new dynamic is evidenced by how the first phase of the FiT process for solar projects has delivered more capacity than expected to the grid. In addition, the emergence of a new group of Southeast Asian corporate investors – especially those looking to build diversified Asian RE portfolios – signals a shift away from the traditional project finance development model. This reflects the strategic significance of Vietnam's market and the ambitions of a new class of regional power and energy companies, who are eager to build a track record in RE.

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### *Wind FiTs*

Although some potential investors have been put off by the lack of investor-friendly incentives on offer, others believe that the slow but steady administration of Vietnam's renewable policies has also built confidence among potential investors. In response to market developments, the FiTs were increased for onshore and offshore projects in November 2018 when Decision No. 391 was implemented, increasing the upside for those capable of accepting market risks.<sup>20</sup>

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<sup>19</sup> Baker McKenzie, [Vietnam Revises Model Power Purchase Agreement for Wind Power Projects](#). 13 February 2019.

<sup>20</sup> Conventus Law, [Vietnam's Draft New Circular Provides Detailed Guidelines On Development Of Wind Power Projects](#). 23 November 2018.

**Table 3: FiTs for Wind Projects**

Project Type	FiT (US\$/kWh)	Previous FiT (US\$/kWh)	Percentage Increase
Onshore	0.085	0.078	8.97
Offshore	0.098	0.078	25.64

Source: Baker McKenzie.<sup>21</sup>

### *The Government's Position*

Though the relative increases to the offshore FiT is substantial, the FiT programs remain frugal compared to headline figures offered in other regional markets. This was the case for solar as well. Despite considerable market risk, investors, focused on growth opportunities, arrived in force, exceeding all expectations. Now, due to the success of the solar FiT program, MoIT is not under the same pressure to hurry capacity additions from the wind FiT.

It's notable that Vietnam's successful solar FiT has caught some regional developers by surprise. As recently as April, market experts at an industry conference in Singapore were still expecting that the FiT would deliver new capacity of only 1.5 to 2.5GW range through the course of 2019. With an added solar capacity of 4.46GW, EVN will need to increase its focus on upgrading grid capacity to reduce curtailment of RE projects, many of which are in isolated areas and need to be connected via new higher voltage transmission lines. These take time to build. In the interim, EVN is looking to buy itself some time by implementing upgrades to its existing grid. One key to this may be EVN's ability to tap into donor funded initiatives such as the partnership with GIZ on the Smart Grids for Renewable Energy and Energy Efficiency (SGREE), which focuses on crafting a sound legal and regulatory framework for smart grids.<sup>22</sup>

In the meantime, it is important to recognize that Vietnam's guarded approach reflects domestic political realities. In 2018, the Vietnamese government launched an anti-graft campaign that have left many officials looking over their shoulders. Any effort that would require substantial political capital – such as revising the wind PPA – could draw additional oversight that might slow down decision-making and increase project completion risk. Officials have, therefore, been reluctant to act and there is an expectation that, for the time being, the PPA will remain in its current form.

### *Vietnam's New Normal for "Project Finance"*

With the surge of solar and wind projects in Vietnam has come a welcome spike in investment from a diverse range of investors. This has disrupted traditional expectations about how RE may develop in the region and makes it clear that a one-

<sup>21</sup> Baker McKenzie, [Vietnam Revises Model Power Purchase Agreement for Wind Power Projects](#). 13 February 2019.

<sup>22</sup> GIZ Energy. [Plans for Viet Nam's Smart Grid Development in 2019](#).

size-fits all project finance recipe will not define either the viability of the PPA nor the funding structures around it.

Alongside the larger, more experienced international players, and offshore specialists like Enterprize Energy, regional companies with track records in the power and energy sector have been very active in the Vietnamese market. B. Grimm with backing from the ADB, Gulf Energy, and Banpu are all present. AC Energy, a subsidiary of the Ayala Corporation, is working with its local partners – AMI Renewables, BMI Group, and the Blue Circle – to enter Vietnam's wind and solar sector.<sup>23</sup> Thailand's Superblock Plc, plans to install 700MW worth of wind capacity and invest US\$1.76 billion.<sup>24</sup> Furthermore, Japanese and South Korean investors and developers are becoming increasingly engaged. For instance, the Japanese Bank for International Cooperation (JBIC) recently established a US\$200 million green credit line with the Joint Stock Commercial Bank for Foreign Trade of Vietnam (Vietcombank) for solar projects.<sup>25</sup>

Chinese actors also appear to be watching the market closely.<sup>26</sup> Chinese companies and banks have played an important role in the market, but not as developers. Though the Vietnamese government is wary of approving Chinese-led projects, they seem more than happy to have them play a crucial, indirect role as providers of new-generation, low-cost equipment with generous funding from Chinese banks. For example, Thailand's B Grimm used a Chinese EPC and Chinese suppliers to construct solar farms in Vietnam. B Grimm paid just 10 percent of what they owed their Chinese partners up front and only needs to begin repaying the rest over a year after construction started. Subsequently, this financial flexibility has given B Grimm room for maneuver in Vietnam's market.<sup>27</sup>

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Chinese players have reportedly gained a solid foothold by offering similar terms to other developers, leveraging the funding capacity of the major Chinese banks. With China slated to become a major offshore wind market, it is not surprising that

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<sup>23</sup> Business World, [AC Energy to start Vietnam wind projects in 2020](#). 30 April 2019.

<sup>24</sup> Vietnam Investment Review, [Thai investors jump into renewable energy sector in Vietnam](#). 30 August 2018.

<sup>25</sup> IJ Global, [JBIC signs off Vietcombank renewables credit line](#). 26 June 2019.

<sup>26</sup> Thomson Reuters Foundation News, [Enter the dragon: China's renewables growth goes global](#). 16 August 2018.

<sup>27</sup> Nikkei Asian Review, [Thai industrial group powers up 2 huge Vietnam solar farms](#). 5 July 2019.

Chinese suppliers are looking to prove their credentials in other markets like Vietnam with a strong development pipeline.<sup>28</sup>

## Next Steps

### *The Push for Competition is Clear*

Vietnam's solar and wind FiT programs have permitted Vietnam's power sector policymakers to conduct a valuable structured market experiment, enabling the government to gauge how much capital they can attract as part of a process of price discovery. When compared to other FiTs in the region, the Vietnamese tariffs are low and complaints about the PPA are routine, but that did not deter investment from experienced Asian developers and new entrants with existing funding capacity. These players have been motivated to enter the market by the competitive benefits that Vietnam is positioned to gain from clean technology and the deflationary effects of RE. It also means that the new group of incumbent developers and equipment suppliers should expect more competitive conditions in the future.

The government is planning its next steps to foster more competition. The first round of solar FiTs has expired, but already a new round of solar FiTs from July 2019 to 2021 has been tabled.<sup>29</sup> However, it has yet to be approved by the central government and it is not yet in force. Initial reports suggest that the new FiT could be designed to encourage more geographic diversity for new solar capacity by offering higher tariffs for solar projects in regions with less solar radiation and less capacity. In regions with high solar radiation, and more existing solar capacity, the new tariff could provide more incentives for developers who also invest in storage to take the pressure off of the grid.<sup>30</sup>

**The government is planning its next steps to foster more competition.**

Moving away from FiTs, the government has signaled that auctions will likely play a role in the future. Though the deadline for wind FiTs is farther down the road – 1 November 2021 – the results of the solar auctions will likely impact how the wind regulatory environment develops – Vietnam's solar and wind sectors are intertwined.

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<sup>28</sup> Greentech Media. [Chinese Manufacturers Could Rule the Offshore Wind Market Without Ever Leaving Home](#). 10 June 2019.

<sup>29</sup> Baker McKenzie, [Update to New Draft Policy on Feed-in-Tariffs Post-30 June 2019 for Solar Power Projects in Vietnam](#). 28 February 2019.

<sup>30</sup> MDI, [Vietnam Energy Update Report 2019](#). July 2019.



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Deputy Prime Minister Trinh Dinh Dung asked MoIT in June of this year to study the feasibility of implementing solar auctions as quickly as possible.<sup>31</sup> Additionally, the World Bank is advising the Vietnamese government on which mechanisms they may implement for solar auctions – their recommendations were presented at the GWEC conference, and focused on two types of auctions:<sup>32</sup>

- **Substation Auctions:** power producers bid for access to a substation
- **Solar Park Auctions:** developers bid to build on land pre-determined by the government

Substation auctions, in effect, would allow for greater coordination between the development of new grid infrastructure and installed capacity. For developers, this would mitigate the risk of curtailment. Solar park auctions, on the other hand, are suited for larger industrial-scale RE power plants and could reduce risks associated with land acquisition. Given the scale of the targeted projects, these auctions could also prove effective in attracting larger project consortia with the ability to mobilize concessionary capital from export credit agencies.

### *Power Development Master Plan VIII*

Another vital planning tool that will shape the next round of market opportunities will be the Power Development Master Plan VIII (Master Plan VIII). This is expected to be released in 2020 and will set the stage for the next phase of Vietnam's RE growth.<sup>33</sup> Key issues will be how grid development is designed to support the growth of RE and how corporate PPAs, behind-the-meter RE, and new storage options will be factored into the plan.

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<sup>31</sup> Tuoi Tre, ~ [It is necessary to divide two radiation zones to encourage solar power](#). 17 June 2019.

<sup>32</sup> GWEC Conference Presentation, The World Bank, Solar Auction Strategy.

<sup>33</sup> CAND, [Proposing to set up an Appraisal Council of the Power Planning task VIII](#). 25 March 2019.

## About IEEFA

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