# Financing Southeast Asian solar

Credit: Sonnedix

**Finance |** The emerging solar markets of Southeast Asia each present their own unique set of conditions from a financing perspective. Reporting back from the Solar Finance & Investment Southeast Asia conference in Thailand at the end of 2016, Tom Kenning looks at how a promising solar region is bringing in the investors

Theoretically any country in the Southeast Asia region could become a major solar hub in the long term, but most of these PV markets are in their infancy. Thus, it can be a hard task to pick out which of them represent the best investment prospects of today, taking into account unpredictable events such as the recent death of King Bhumibol of Thailand and other political factors.

Delegates at the latest Solar Finance & Investment Southeast Asia conference in Bangkok, Thailand, were mainly optimistic, but at these early stages, there was an appeal for the industry to use high-quality solar equipment from the off to maintain the sustainability of PV in Southeast Asia.

It was revealed that Thailand-based developer PS&S and Indian EPC firm Mahindra Susten would turn a 1MW solar plant, which uses six different combinations of inverter and module technologies, into a test bed to help develop best practice in solar development across the region. It will act as an "open platform" for other renewable energy firms to visit and learn from, with all data published.

Meanwhile, Franck Constant, co-founder of France-based Sonnedix Group, announced that he would be launching an open fund named 'Constant Energy' for solar energy and energy storage that would have a strong focus on the Southeast Asian nations of Thailand, Malaysia, Indonesia, Laos, Cambodia and Myanmar, as well as other Asian and African markets. The fund aims to reach US$100 million by the end of 2017.

These positive news lines at the conference were followed by roundtables on financing solar in some of the most interesting markets with the following key takeaways.

## Thailand facing dry spells

Industry observers believe that although Thailand, the most developed of Southeast Asia's solar markets, will see a natural slowdown for a few months while the country mourns the death of the late king in October last year, it should begin to pick up again from around mid-2017.

The Thailand government recently integrated the alternative energy plan with the country's main Power Development Plan (PDP) and it targets adding 10GW of renewables in the next 15-20 years out of which 6GW is to come from solar.

**Solar has gained a solid foothold in Southeast Asia, but is still some way from fulfilling its potential**

"There is clearly a plan in place which shows seriousness from the government," says Manish Singhal, head of business development at India-based EPC firm Mahindra Susten. "The first driver for solar is the increasing tariff. Currently, it is in the band of THB3-4/kWh (US$0.084) and the expectations are that it will touch to the THB 5-6/kWh range in another three to four years, which is a positive driver for the market.

"The financial system is pretty much developed. Banks have already participated in some of the big ticket-size [solar] developments undertaken. Meanwhile, some of the prominent banks are not averse to participating in the debt schemes.

"The third market driver is an over dependence on gas. At present, 70% of energy is coming out of gas and this fuel is getting costlier, so the country has targeted a reduction in this reliance on gas."

Another factor is the low availability of


Credit: Bouygues Construction

**The completion of a 132.5MW PV plant in the Philippines in 2016 has whetted investor appetites, but some hurdles remain**

coal in Thailand, which means that if the country uses coal-based plants, it becomes dependent on Indonesia, which could lead to import issues.

This all means that Thailand is going to be a strong market over the next decade, adds Singhal. Large-scale projects have been proven possible, illustrated, for example, by a 90MW plant built by Thai firm Energy Absolute and a 63MW project by Asia-Pacific power company CLP. Another Thai outlet, SPCG, has also developed 34 projects of 7MW each. This shows that the market is almost mature.

One of the biggest developers in Thailand, the renewable energy arm of Thai oil refiner Bangchak Petroleum, has already tried green bonds successfully by raising around THB3 billion (US$84 million), proving that such a market is available and developers with large-scale plans can tap into this.

Interest rates are holding at a base rate of around 6.25%, says Singhal. However, if the developer has a strong credit rating and has the right EPC partner, it can expect a reduction from the base rate to around 4.7% to 5.5%. Less strong developers can expect an additional 1% to the base rate, with typical tenures in the range of 10-12 years. Banks can also fund up to 80% of projects, if the cash flows are healthy.

However, the next round of solar FiTs, for which only government agencies and agricultural cooperatives will be eligible, puts restrictions on plant sizes to a maximum of 5MW, so Singhal believes the government must seriously consider another regime where at least 20-40MW size projects are allowed.

Another consideration is the amount of bureaucracy involved in the permitting process. "The biggest challenge facing the Thailand market is the number of approvals that are required before signing the power purchase agreement (PPA)," says Singhal. "The kind of coordination and documentation required is extremely slow and bulky. There has to be some kind of an advocacy required where this problem is brought to the notice of the government and they must simplify these processes and reduce the completion time."

Meanwhile, delays from the government also put the bulk of the pressure on the developer. Other issues include there being no open access policies in place nor any large-scale projects in the current pipeline as of December, says Singhal.

On the plus side, the grid is very stable and there have been no reported examples of curtailment so far, which means that the take-or-pay arrangement, where the utility must take the power supplied or pay a penalty to the developer, is working well in Thailand. However, since the grids are stable and widely available, Singhal claims there will be few opportunities for micro-grids with energy storage in Thailand.

Rooftop solar is considered to be another big thrust area and most of the 6GW of solar targeted is expected to come from rooftop systems. The government has already moved on this by piloting a 100MW self-consumption scheme. Based on the success of this scheme, it may even come out with a net metering policy.

## Philippines banks eager for renewables

The Philippines started last year with Singapore-based firm Equis commissioning a 132.5MW solar project in Cadiz City, Negros Occidental, which it claimed to be Southeast Asia's largest PV plant. It demonstrated the country's great potential for clean energy, but there are various hurdles ahead.

"There are three main concerns," says Celeste A. Burgos, first vice president of Northern and Central Luzon Lending Group, Land Bank of the Philippines. "Firstly, foreigners cannot own land in the Philippines at present. We require investors to set up a company to stay in the Philippines, because we can only lend to those companies that are at least 60% Filipino.

"Secondly, the president has approved a moratorium on the conversion of agricultural lands to other purposes to ensure food security, which will hinder solar developers who will need vast tracts of land to set up projects.

"Thirdly, there are also concerns with the feed-in tariff (FiT) based on the Department of Energy (DOE) [saying], it is not likely that a third round of FiTs will be approved."

At present, DOE figures report that the share of renewables in the energy mix is 25.6%, standing at 90,809GWh generation; however, under the renewable energy programme this capacity should be increased by 200% over the next 20 years, which is a strong driver.

In terms of domestic financing, the Philippines banks are now able to finance large renewable energy projects without having to source funds from foreign multilateral agencies such as the Asian Development Bank (ADB) or the World Bank, says Burgos. Meanwhile, domestic banks are well capitalised and very liquid and are keen to have more exposure to the renewable energy sector, she adds.

"We don't have a minimum or maximum loan," says Burgos. "But, if there are projects which require a huge amount of financing, we can syndicate it with other banks in a form of co-financing."

Land banks can finance up to 80% of the project costs, leaving 20% for equity, she says. For other banks it will be closer to a debt-to-equity split of 75:25 or 70:30, depending on the risk. The cost of debt depends if the interest rate will be fixed or floating.

"For fixed rates there has to be a premium so it bears a higher interest rate," says Burgos. "It could either be fixed for the first five years and then go variable, or fixed for the entire term of the norm which can be 10-15 years. Variable interest rates will be around 7-9%."

To lower the cost of capital, developers need to establish a track record with the bank by being able to pay on time without any instances of default, adds Burgos. The best time to approach local and mainstream banks regarding projects is when a developer already has the documentary requirements, has identified the site and has already made some negotiations with the various agencies involved in renewable energy.

However, Burgos says start-up projects will have more difficulty tapping into the capital market since investors will of course favour project developers with a track record.

## Myanmar's early days

Myanmar looked to be making progress with a date set for the ground-breaking ceremony of a 220MW solar plant at Minbu in December 2016, but this faced delays. In any case, there is a great opportunity in this fast-changing country for both on-grid and off-grid solar, says Wandee Khunchornyakong Juljarern, chairwoman and chief executive, SPCG, the largest solar installer in Thailand. This is because Myanmar's population of 60 million has only around 3-3.5GW of installed generating capacity.

For solar to help meet the evident demand for power in Myanmar, development needs to take place at authority, company and consumer levels. The positive is that there is an enormous willingness to develop and a strong entrepreneurial spirit in the country, says Gert-Jan Monster, senior investment officer, energy, at Dutch development bank FMO. The population is also willing to pay for electricity, although this ability to pay is clearly reduced in rural areas.

"So far there is a focus on larger grid-connected projects," says Monster. "But there is also a strong focus on the mini-grids and the solar home systems, which is having a very important role in the electrification of the country."

However, more work is needed on finding the optimal funding structures for the projects, especially when it comes to mini-grids and the solar home systems to help consumers pay for them. Furthermore, there are suggestions the market is being dumped with cheap Chinese solar equipment of poor quality.

## Indonesia should be ideal market

Indonesia could be the most promising country for solar in the ASEAN region, situated right on the equator with 300 million people and around 18,000 islands – an ideal environment.

The government is targeting having around 25% of renewables in the mix by 2025 with a fifth of that portion coming from PV. The current goal is for 1GW of solar by 2020.

"The biggest issue right now is how to get the governance going so that solar can be progressed via the government," says Sam Yamdagni, chairman and chief executive of Thailand-based developer PS&S. "The country did have many programmes, such as a 1,000-island programme to replace the use of diesel, but these programmes did not work out."

However, the last two years have seen significant policy change and progress. There is now a framework for power purchase agreements (PPAs), which means developers can have a PPA with all the requirements seen in the top global markets. It is also possible to get a concession on off-grid solutions. Developers can also approach the utility PLN about such off-grid projects. The cost of electricity on some islands can also be very high, making solar an attractive option.

However, development finance institutions (DFIs) are not yet participating in the sector, says Yamdagni. The domestic banking system has very little idea about solar and remains risk averse in terms of financing this technology.

"The best chance is for somebody to do an equity-based financing and implement the project. Then look at refinancing the project and thereon build credibility and implement more projects in the country," adds Yamdagni.

There are plenty of risks and the banks are looking to cover 90-95% of that risk so developers must get all the correct insurances, both in construction and operation, with the right contracts.

Ultimately, the best locations to target are those where solar can offer a cheaper price of electricity than that of the grid, says Yamdagni. "While doing that, try to make sure that you have a model wherein you either finance everything by equity or the other option is trying to make sure that you work with the larger EPC companies that can actually take the investment for the entire plant and after commissioning they actually get their money back."

Either way, Indonesia's multiple isolated grids represent opportunities for intrepid solar developers, according to Andre Susanto, Clean Energy Consultant at Bluejay Energy.

A recent Asia Development Bank report found that the country has 600 separate grids, not including the smallest sized systems and mini-grids. Of the 600, Susanto says there are around 150 different isolated grids of 50MW size or larger where renewables could be injected.

"Grid integration is one challenge where you will have to be creative with both the technology and the financial engineering of it," he adds. "You've got to really talk to PLN, which is the state-owned utility company, and figure out how can I be a partner? How can I help you run the grid better and cheaper with my system?"

While developers coming in to build 100MW capacity projects are likely to face problems from PLN due to the limited isolated grid capacities, large solar plants offering tariffs in extreme lows of US$0.04/kWh could sign PPAs with PLN in Java where the grid size is 33GW, claims Susanto. But, this price threshold for PLN to get on board is so low in Java-Bali that PV developers' opportunities are in other areas.

Elsewhere, Sumatra has installed power capacity of 8GW across four separate isolated grids, leaving around 5-6GW in the rest of Indonesia.

The challenge of having to achieve low solar costs then becomes an opportunity, because developers can look at the generation costs on each individual isolated island grid. Some of these island system costs can be as high as US$0.30/kWh. These are in remote areas, but they are not too remote to access by sea to install solar systems.

Susanto says: "Your EPC costs may be increased by 60%, but you can get more than twice on the tariff. If you are willing to do that and take that risk, that's an opportunity for you."

In terms of off-grid there is also potential for 1GW of solar installations given that there are 12,500 un-electrified villages, not including those villages where only a fraction of the population has access to electricity, Susanto says.

"Indonesia is complex and if you are going to back away from it you will be along with the rest of them," adds Susanto. "So you have to be the one who is willing to say I see the challenges and I'm willing to find a solution for [them]." ■