

Solar rooftops in South-East Asia A window of opportunity for finance?

by Raymond Schonfeld¹

As the EU celebrates passing the 100GW mark in cumulative PV installations but steadily loses its global dominance of the PV sector, other markets are rising in growth and in potential, and there is no doubt that the 10-country South-East Asian economic grouping (ASEAN)² is among them: its land area is the same as the EU's, it has a 20% larger population (600 million) and, unlike the EU, it lies entirely in the sun-belt. Every ASEAN country displays conviction that solar belongs in its energy mix. This article looks at PV rooftops, and at an emerging bottleneck in finance.

The rooftop market is still small in ASEAN, but growing fast. But most solar finance providers in the region are still focussed on classic project finance for utility-scale solar farms. They have not yet adapted to the requirements of a market with large numbers of individually small installations.

A major spur to growth is grid parity. That was always only a matter of time and it is now being reached. Its first impact is to remove the need for business to wait for round after round of feed-in tariffs or subsidies, and to make installations viable in their own right. Figure 1 is one example of the result for rooftops: a Thai university, without funds for expensive environmental or social investments. Figure 2 mixes utility-scale solar and rooftops, and illustrates the proof emerging of PV's competitiveness, through real PPAs around the world (10 cents/ KWH is a typical retail price in Thailand). Add to that all the classic arguments for PV from climate change to CSR to energy security, and the case becomes overwhelming.

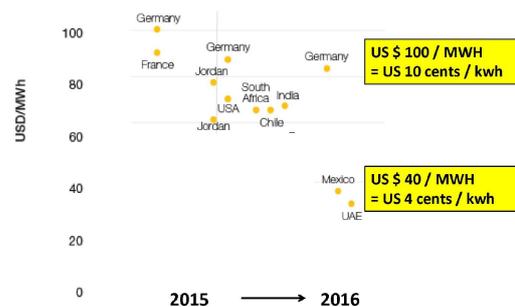
So how can this new environment be exploited? For rooftops, *aggregation* is one key, and it applies to almost everything from marketing to installation/operation and, where rooftops are grid-connected, to load management. Finance is no exception, and that creates an opportunity for suppliers of finance with detailed knowledge to bring global best practice to a new region.

Does the rooftop potential justify the effort? Figures from the International Energy Agency suggest so: the IEA forecasts that globally, solar rooftops will rise from a current 30% share of total PV installations up to around 45%, and possibly within 5 years, making it by far the fastest-growing solar segment. In Thailand alone, around US \$5 billion in capital has already been invested in PV deployment, and top-end forecasts from industry project annual capital investments in rooftops of perhaps \$500 million within five years; and that leaves the other 89% of ASEAN's population to come on top of that (Thailand's population is 67 million).

Figure 1: Part of a 15 MW rooftop programme at Thammasat University's Rangsit campus near Bangkok



Figure 2: 2015/2016 data showing PPA prices reaching a level equal to or below current KWH retail prices in Thailand (10 US cents upwards)



Source: derived from data from IEA and Solar Power Europe

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² See Fig. 4. ASEAN (Association of South-East Asian Nations) includes Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam. The initials AEC are also used by the group.

The sheer size of the rooftop market makes it inevitable that the gaps in supply of finance will be filled, and that makes it appropriate to talk of a *window of opportunity*. Not all will want to seize it: evidence shows that some solar players prefer to follow individual, big-ticket, government-supported infrastructure projects around the world rather than develop more commercial markets. That applies to finance, to developers, and to EPC firms. But many will seize it, including local firms, who will want to exploit growth in their own home market. That in turn creates opportunities for joint ventures with more experienced firms outside. And there may also be spinoff opportunities for work with international firms: energy storage, instrumentation, and software for remote monitoring are emerging areas where foreign firms are likely to have much to offer.

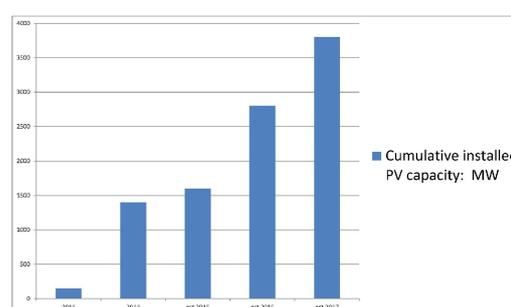
Next, we look at Thailand as a possible test-bed for solar rooftop programmes in the ASEAN region.

Thailand as a pilot for wider ASEAN rooftop growth

ASEAN's population is over 600 million, all of it in the sun-belt. Thailand has only 67 million of that. So why start with Thailand?

- Track record and local infrastructure.** In ASEAN, Thailand is far ahead in actual PV deployment (see Figure 3). Capital investment at the end of 2015 was at least 3 times that of any other ASEAN country. Currently, it is 19th in global tables of cumulative installed PV capacity. It already has installers, supply chains for PV hardware, and EPC companies. It has a strong electricity grid, and is one of the top 2 ASEAN countries in generating capacity. A basic local infrastructure in finance for solar exists.
- Market size and suitability for rooftops.** *Suitability* covers solar irradiance, roof construction practice, and the decisive commercial importance of *grid parity*. Thailand's retail electricity prices of US\$0.10 upwards are within reach of PV. Proof of the appeal of rooftops includes high-profile investments by major groups or institutions (an example is Tesco, which has a superstore network in Thailand). The private sector is pushing for ambitious growth targets. The national solar industries association has proposed a target which could translate into 400 MW per year of new installations of solar rooftops, possibly within 5 years, separate from solar farms.
- Government solar policy.** Solar is an integral part of Thailand's energy strategy, and government has already kick-started solar rooftops through generous temporary support, mainly through FiTs, but also with some tax credits. Thailand is also integrated into the main international, intergovernmental policy forum on solar: the PVPS programme of the IEA. That improves the probability of good regulatory practice in the future.
- Country-level factors.** Beyond solar-specific factors, Thailand has a long track record as foreign-investor-friendly, and for sustained economic growth, even in times of political instability. In some sophisticated industry sectors, foreign investment has already led Thailand to regional leadership; the sector of automotive components is one example. It has a stable and prudent finance sector. In the latest World Bank country rankings of business-friendliness, Thailand ranks far above China and India. Unsurprisingly, Singapore ranks higher than Thailand, but is too small ever to become a major market for solar. And unlike some countries in the region, much of Thailand already functions at the level of developed markets. Although a large agricultural sector depresses per capita GDP, growth of per capita GDP (currently around \$5800) has already raised it beyond the ceiling of many classifications of developing countries.

Figure 3
Growth of PV in Thailand



If Thailand is suitable as a springboard to the larger ASEAN market, what are the keys to exploiting the financing opportunity in rooftops there? They are fundamentally the same as anywhere else: to provide the up-front capital for solar installations which can then be paid for out of savings on electricity bills, to those customers who do not already have the cash. Some do, or are able to borrow from the bank exactly as a private citizen for a new car. But many don't.

Global experience shows that innovative financing can open up significantly larger markets. And there are early signs of innovation in Thailand itself for large rooftops. Financiers cannot offer them alone – they will need specialist non-financing partners who can make the whole package manageable and digestible for buyers who have no ambition or intention to become energy experts, and who can provide the assurances of bankability that the finance sector needs. Again, the size of the potential and the proof of experience elsewhere make it worthwhile. And the existence of a stable financial sector in Thailand, but one with little practical experience of rooftops, is likely to make new ventures with local partners possible.

Figure 4
Thailand and its ASEAN partners



Does the opportunity in Thailand depend on new government support? Not in the way it used to, and that's one of the beauties of it. Since large-scale global deployment of PV started in the early 1990s, feed-in-tariffs or capital grants have been crucial all over the world, including Thailand. But the economic theory behind solar always assumed that the need for them would decline as solar costs declined, and that is now being proved. 2015 figures from the IEA show that the proportion of solar investments which did not rely on FiTs or capital grants rose to nearly 20% in 2015. The most impressive current examples of solar rooftop investments in Thailand are often without subsidy, and based on self-consumption models without any feed-in to the grid, paid or unpaid. Solar is becoming a mainstream commercial activity.

That does not decrease the importance of wider government policy: beyond subsidies, the battles being fought in Thailand over policy are the same as anywhere else, including Europe: for example, over net metering (approved and expected in Thailand, but not yet applied) and over concerns by established utilities that, technically, their networks may struggle to handle the intermittency of large, aggregated volumes of PV, and that, commercially, their decades-old business models are coming under threat. The solar industry globally assumes that, ultimately, those issues will be resolved. Thailand's track record suggests that it will address them as well as any other country. The huge ASEAN region (see Figure 4 above) gives as much cause for confidence as any other, and Thailand is well qualified to act as a springboard.

Followup to this article

The author will be happy to hear from any readers who wish to explore the opportunities suggested by this article. His company has already undertaken research into the financing models for rooftops emerging in Thailand, and into relevant models in more established markets. Contact details:

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