

Living by a new set of rules



Market update | Japan's solar market has slowed considerably since the early days of its feed-in tariff. But as Andy Colthorpe reports, its fundamentals still look strong and there are plenty of promising policy drivers in the pipeline to keep demand buoyant

What goes up must come down. But while Japan's PV market could be said to have boomed in the immediate aftermath of the 2011 Great East Japan Earthquake, which caused the country's nuclear power stations to be brought offline and sired a rewarding feed-in tariff policy for solar from 2012, the consequent paring down of the industry seen over the last couple of years could hardly be characterised as 'bust'.

The opening period of the FiT programme saw dozens of gigawatts of large-scale solar projects applying for the scheme, leading to the building of at least 20GW of 'megawatt-scale utility plant). Tokyo-based analysis firm RTS PV believes that in 2015 around 10GW of PV was deployed and last year a little less, about 8GW across the various scales.

There has been some dampening down of expectations and market size undoubtedly over the past year or two. Those early years, when the FiT stood as high as ¥42 per kWh (approximately

US\$0.40), as much as 57GW of large-scale projects were applied for that by last year still had not been built. We saw in our analysis published in this journal in early 2016 that there was a concerted effort from government level to avoid a 'boom and bust' scenario where stricter rules were introduced for new projects and deadlines given for developers to secure the necessary rights to proceed with projects in that 57GW backlog.

The latest development, according to RTS PV analyst Dr Hiroshi Matsukawa, is that this year the government has confirmed it will be introducing a tender system for large-scale megawatt projects over 2MW. This year will see just 500MW tendered out and next year another 500MW. As has been seen in Germany, which is taking a similar approach, it's a huge step down from what the industry has been accustomed to and the rules regarding all projects have changed too.

"Equipment certification rules have certainly changed significantly," Matsukawa says. "The biggest change is an increase in the time it takes to gain

certification. Firstly, you have to secure a connection agreement with a power company, or you won't get the FiT or equipment certification.

"Until now, you could get equipment certification without concrete details of a project's development, plans could be vague, but it's become much more difficult, now you need to get a connection agreement before you can get certification. This adds considerable time to project development."

FiT and financing

Due to the projects in the backlog and their still uncertain future, Matsukawa says the size of the market this year will be trickier to call. It is likely the government will impose a strict deadline this year on those unbuilt projects that Matsukawa estimates could lead to two-thirds to half of that full backlog being 'cancelled'.

Moving forward, Matsukawa says it is possible the FiT will be reduced even more significantly this year – degression has been somewhat accelerated over the past couple of years from what was expected at the beginning. From March last year the FiT for projects over 10kW in size stood at ¥24.

"There's a high chance the FiT will be significantly reduced – a cap rate will likely be placed on it and conditions will become strict," Matsukawa says.

"Additionally projects will have to compete for tenders to get their use of distribution lines from power companies; without both of these tenders it could be impossible to receive the FiT."

These conditions will not deter serious companies from continuing in the Japanese market, Soichiro Nakamura, president of domestic vertically integrated PV company, Looop, says. Nakamura, whose company is involved in all areas of the PV supply chain from component development through procurement, construction, O&M and even electricity sales in the newly deregulated retail market, and has developed over 160MW of PV projects in Japan, is adamant that if it can keep reducing costs it will succeed – although rivals may fall by the wayside.

"Japan's FiT price is going lower year by year... under this situation, some small PV companies have gone bankrupt. But the current FiT price is still higher than in other countries. From our view, reducing costs is key," Nakamura says. Nakamura adds that he believes "low quality"

companies will pull out of the market by necessity.

Terry Zhao, CEO of Sungrow Japan, believes the Chinese inverter market leader could also benefit from competitive conditions enforced by the falling FiT. "Reductions in the FiT will force clients to choose PV inverters with innovative technologies which can ensure a profitable yield. We deem this a favourable opportunity for us," Zhao says.

Safe money

With lower returns come lowered expectations, but Japan is still a hungry market for PV. ESR/Redwood is a logistics fund developer based across Asia, currently developing what is expected to be Japan's largest commercial rooftop PV plant, a 5MW project in Osaka. The company's capital officer, Pierre-Alexandre Humblot, explains that the investor profile is changing, but that the liquid capital needed to finance new installations is still very much present.

"Until now you could get equipment certification without concrete details of a project's development, plans could be vague but it's become much more difficult"

"Clearly, future investment returns from solar panels in Japan are not going to be the sort of windfall profits that you could achieve in the early years, but that's ok, the space is going more institutional," Humblot says.

"Interest rates are essentially zero in Japan, lending rates are anything between zero and two per cent."

Solar as an asset class has gained traction in Japan, Humblot says, and projects are bankable: "Three years ago people were looking at 20% returns. Potentially they will have to be satisfied with 8% or 10% returns now and that will mean a different investor base but there's so much capital sloshing around in Japan that there's no need for foreign capital to finance solar."

RTS PV's Hiroshi Matsukawa agrees with ESR's view that commercial rooftops will continue to present an attractive opportunity for PV, even in straitened circumstances.

"There is a big possibility [commercial rooftop] will become a significant target market or market opportunity. They may not even be interested in getting the FiT; there may well be other models such as self-consumption of power onsite that provide ample opportunity for PV development."

Market liberalisation

Also giving hope to the PV market is the expected impact of electricity market liberalisation. Since last April Japanese consumers have been given the freedom to choose electricity suppliers. Looop, involved in that newly created market, is optimistic about its promise, Soichiro Nakamura says.

"Looop started selling electricity for general households in March 2016. The service has some characteristics no base fee, a simple plan and renewable-based electricity. We have got 40,000 customers."

Nakamura says that while the rate of consumers switching to a new preferred tariff is small, still only around 3.7%, market liberalisation could have a positive influence on green energy. There needs to be ongoing "public awareness campaigns" to make the benefits and choices clearer to customers, Nakamura adds.

In the near future, Japan will have 'zero energy' standards on new buildings, especially residential, mandated by law. By 2020, all new residences will have to be built to the regulations, making PV "almost mandatory", as Canadian Solar's CEO Shawn Qu points out. Canadian Solar, which is working to connect as much as 376.2MWp of projects to add to an existing 60MW in operation in Japan, is among those looking to market self-consumption solutions including energy storage to the residential market.

RTS PV's Hiroshi Matsukawa believes that Japan can exceed its – some would say modest – national target, to deploy 64GW of PV by 2030. In fact, RTS believes it will reach this target some 10 years early (see box). While it remains a perceived problem that solar generation has been greatly increased and other options such as wind remained relatively static, the government remains committed to "promoting solar sustainably – but without stirring up the market," Matsukawa says.

"We think we can exceed that (64GW by 2030) quite comfortably, but what we can do beyond that is still hard to gauge." ►

Installed capacity in Japan toward 2020 and 2030

Japan's 2012 FIT programme has been revised under the revised FIT Act (Renewable Energy Act). Based on the new rules of the FIT program, RTS Corporation made a forecast on PV installed capacity by fiscal year (FY, April to March), towards FY2020 and FY2030 in an annual report entitled, "Forecasting PV installed capacity in Japan toward FY 2020 and FY 2030", through research and analysis of the latest trends of the PV power generation in Japan, covering market, industry, technology, policy and business development.

It is expected that Japan's cumulative installed capacity will reach 61 to 68GW by 2020 and 96 to 116GW by 2030. This shows that the "64GW by 2030" estimate set in the "Long-term energy supply and demand outlook" by the national government can be achieved by around 2020, 10 years ahead of schedule.

Figure 1 shows the overview of the forecast of Japan's PV installed capacity (by fiscal year and cumulative) based on the two scenarios - "business as usual" and "accelerated". The "BAU scenario" assumes the cases where policy and deregulation continue on the current trajectory, including the impacts of output curtailment by electric utilities and estimated PV system price trends. The "accelerated scenario" assumes the cases where ambitious new policy is introduced and development of various peripheral technologies advances smoothly. Figure 2 shows the PV installed capacity by fiscal year under the accelerated scenario by capacity range.

Under the accelerated scenario, PV system price, which currently ranges from ¥217-332/W, is forecast to be reduced to the range of ¥95-126/W by 2030 (in terms of power generation cost (LCOE), between ¥7.4 and ¥8.6/kWh). Also, the future PV market with newly added values and expansion of business areas (PV-related market) has also been forecast. The PV market size in terms of revenue of PV systems tends to shrink to the annual size of ¥500 billion to ¥600 billion towards 2030, due to price reduction, contraction and stabilisation of the market. Meanwhile, if the future PV-related market is considered, the market is forecast to grow again. In FY2030, it is estimated that the market size will grow to the range between ¥1.09 trillion and ¥1.52 trillion. Figure 3 shows RTS' estimate on the growth of the PV-related market in Japan under the accelerated scenario.

By Izumi Kaizuka, manager, RTS Corporation

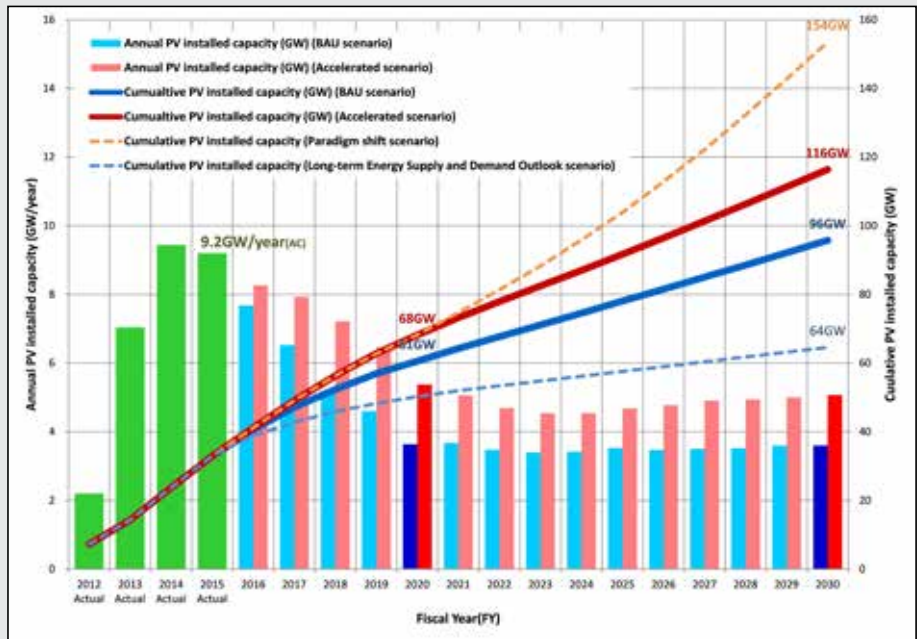


Figure 1. RTS forecast on the PV installed capacity by fiscal year (FY)(BAU scenario/accelerated scenario).

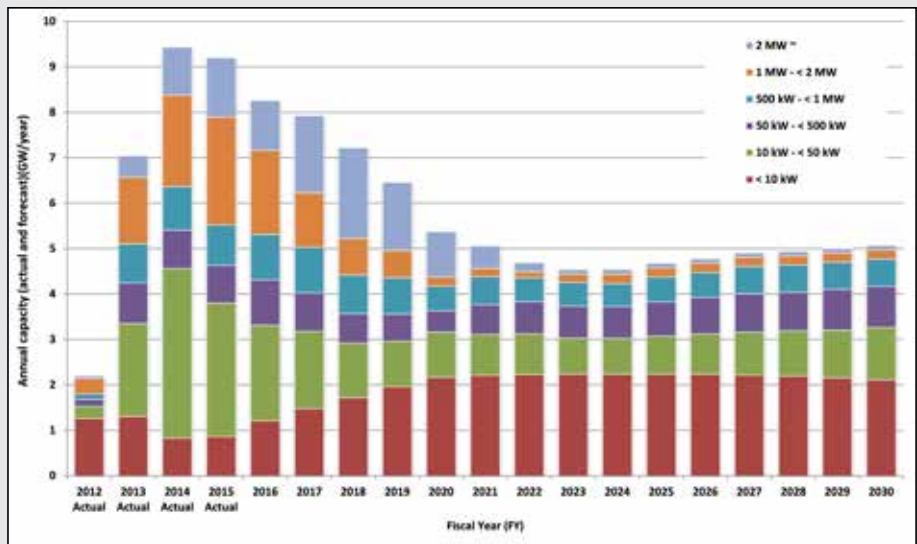


Figure 2. RTS forecast on the PV installed capacity by capacity range by fiscal year (FY).

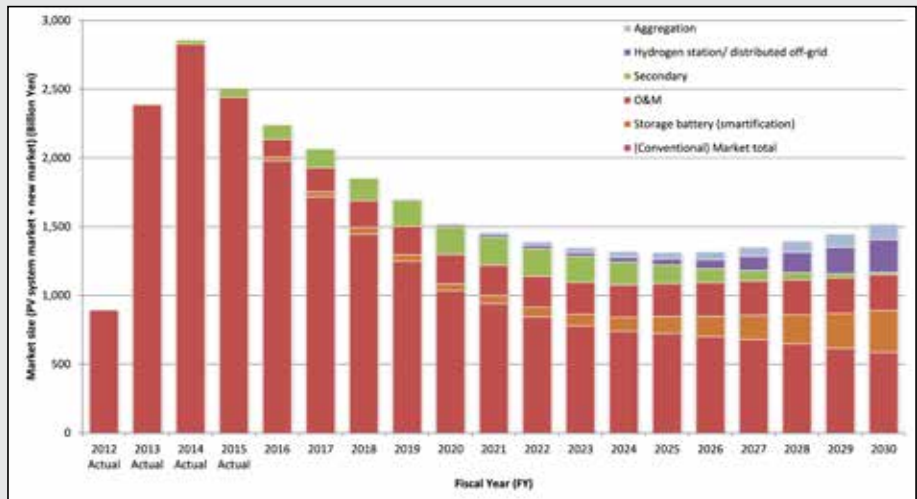


Figure 3. RTS estimate on the growth of the PV-related market in Japan (accelerated scenario)

Source: RTS Corporation

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