

TOP RUNNER

Technology | China's Top Runner PV auctions are growing from a small base to potentially representing the majority of utility solar deployment by next year. Bloomberg New Energy Finance's Yvonne Liu speaks to John Parnell about the companies and technologies gunning to take advantage

The Chinese government and indeed the Chinese solar sector have long acknowledged the need for consolidation in all parts of the domestic value chain. Aside from refusing to bail out failing companies as and when they reached the brink, it was difficult to see how this might be achieved. When Beijing stepped back, local governments, keen to protect jobs, were liable to step in.

Enter the Top Runner programme. It has received modest interest from overseas but since its inception its influence has ballooned.

Let's go back to the start. What is the point of consolidation? In this instance, it was about improving the quality and so the reputation of Chinese-manufactured solar products and the companies that are charged with the task of building out the 100GW-plus that the government wants to see installed. This appears to be strongly aligned with the objectives of Top Runner as they are viewed by Bloomberg New Energy Finance analyst Yvonne Liu.

"The government's reasons are three-fold," she says. "The first reason is to increase demand for high-efficiency products and also to improve the manufacturing capacity.

"China has been a manufacturing hub for PV and has more than 80% of global module capacity. The government wants to provide a larger market for the higher efficiency products. They are worried that if they do not, high-efficiency products would not be selling well and the manufacturers may not invest in R&D," she explains.

"The second point is project performance. Chinese projects have not been performing very well. A lot of grid-connected projects are under-performing. The global performance ratio is about 80% and it can be higher in markets like Germany. In



Credit: Tina Solar

The Top Runner programme sets minimum efficiencies for modules using mono- or multi-crystalline wafers

China it is usually closer to 70%. That is why Top Runner projects also have a requirement to achieve a performance ratio of at least 81%.

"Thirdly, and this is my personal view, the government is trying to more or less centralise the market for large utility PV projects, similar to what we have with wind. Because we have a lot of developers right now working on utility projects, which actually creates some headaches for the government. If they centralise the utility-scale projects they can push more developers to the smaller scale PV sector, which is another thing they want to do," adds Liu.

The National Energy Administration's Liang Zhipeng, vice director-general of its new and renewable energy division told an industry event in 2016 that the goal of the programme was to accelerate "technology progress". Procurement, construction and operation are monitored by a third-party technical agency he explained, in order to assess whether the standards are being met.

Maverick no more

The initial 1GW phase of Top Runner may have looked like a niche venture comprising a small fraction of the projects built that year. This is changing rapidly and the influence of the programme on deployment in China will be significant this year.

"It is quite possible that in 2017 the quota for Top Runner projects could be larger than for regular utility projects," says Liu.

Citing any reliable data for the Chinese downstream market is a fool's errand but very broadly, in 2015 5-10% of installed solar was through Top Runner, and in 2016 this figure was 15-20%.

"In the second half of 2015 the government announced the first 1GW batch of Top Runner projects. They were all commissioned in the first half of 2016. Then the second batch was released in June 2016 and that was 5.5GW of capacity. These [projects] were awarded via an auction and a lot of low prices emerged. We expect this volume to be increased in 2017 or 2018," she predicts.

This increase beyond 2016's 5.5GW means that there was a significant portion of Top Runner projects versus plain vanilla utility schemes. China grid-connected 34GW of solar in 2016, according to recent government figures, and some of this was thought to have actually been built

in 2015. This year, China is expected to post similar figures with growth stymied by a Beijing mandated slowdown in its PV targets for 2020. If Top Runner grows beyond the 5.5GW and the total end demand remains similar, the share of Top Runner projects will continue to grow. This means it can no longer be ignored and the extent of the influence on manufacturing becomes great enough to have wider implications.

Technical requirements

Increasing standards means setting a benchmark. In the case of Top Runner, the National Energy Administration (NEA) cut right through to the wafer type, setting a minimum efficiency of 16.5% for multicrystalline-based modules and 17% for monocrystalline (see box). In addition, the auction's scoring system further rewards mono-based projects. String inverters are also preferred and, all in all, that performance ratio target needs to be met.

"Manufacturers need a certificate to supply to the Top Runner project. I believe in the first batch there were not many manufacturers getting the certificate but

that number has been increasing slowly in the last few months," says Liu.

"It has been argued that it is quite easy for the mono modules to achieve the standards but not so easy for the multi modules. There are some efficiency standards also for inverters."

Add to this the requirement on performance ratios, and quality – compared to standard projects – is increased right along the value chain.

Enforcing the issue

Liu, like many in the industry, and Beijing itself, are aware that while Top Runner is succeeding in many of its goals, it is not yet the perfect system. One particular concern is whether the rules bedded into the programme will be sufficiently enforced. The NEA's Zhipeng has said: "The bidding method is through competition. The enterprise obtaining the project must adopt the products that meet the technologies of the Top Runner programme. Meanwhile, our country entrusts [a] professional technical agency to monitor and assess from its design and purchase to its construction and final operation in the whole process.

Finally, we find whether it reaches the results of the Top Runner programme."

What he left unsaid was the consequences for any projects that are found to have fallen short in any part of the process from procurement to operation.

"We don't have the project data yet. The major concern, at least for me, is that, yes they have set up a standard for performance ratio, but there is no detailed punishment or penalty if you miss that. So I don't know what would happen, even if they found out that a project is not meeting the requirements," explains Liu.

With less than a year of operation for the first batch of projects, it is possible that this question may be answered in time. With projects already in the ground, could there be retroactive punishments for those that fail to make the grade?

"I think that is something they will do this year. I think they should and a lot of market players would agree," says Liu.

Changes

If the apparent gap in enforcement is not addressed in the contracts each developer has signed, it may be one area that the NEA



GCL has been able to drive down auction prices in the Top Runner programme due its vertical integration

Credit: GCL New Energy

chooses to address as the scheme continues to mature. Liu believes that one other area for adjustment could be the scale of the technologies that are promoted but is wary of the contribution from the industry's rumour mill as interest in Top Runner and its future peaks.

"Previously it was just about efficiency but they are thinking about adjusting the requirements and one possible change is to have a requirement on the manufacturing capacity so that only the technologies with less than 200MW of capacity will qualify. But this is just industry rumours and hasn't been confirmed yet," she warns before acknowledging why such a plan would make sense. "The goal of the project is to support advanced technology, so they do not want to use up the quota on very common technologies.

"There is going to be Top Runner and Super Top Runner and another [rumour] we have heard is that for Super Top Runner, no bidding will be required and the quota will be used for really niche products. It could be that the [rumoured] 200MW rule is for this [Super Top Runner] market."

Why so low?

As with most solar markets, Top Runner's auctions have elicited some very low bids and the industry is growing nervous

"They are required to use better products, they are required to have better construction through the whole EPC process but then they are bidding very low prices, which is not aligned with the original purpose of the government," says Liu.

"We're seeing more significant price reductions in the Top Runner auctions compared to the auctions for the common utility projects. We can't really explain why because from a lot of perspectives the Top Runner one should be more expensive than for common projects. The only lower cost item is the finance because the Top Runner companies are all very large, regardless of whether they are private companies or state-owned, so their financing costs are lower. This is the only cost advantage. Otherwise, on EPC, on equipment, on construction and even land cost they are actually more expensive.

Liu traces the origin of the low prices

Mono winning out



Credit: LONGi Silicon

While the design of the Top Runner auctions did slightly tip the scales in favour of monocrystalline modules, the clear success of mono throughout the scheme's projects is hard to ignore. Materials firms like LONGi Silicon and its related module manufacturer Lerrri Solar are placed in pole position to benefit. But mono and multicrystalline technologies will always be pitted against each other and both are experiencing rapid changes.

Top Runner has marginally favoured monocrystalline modules

"I would say mono PERC modules have been performing well in the scheme. That's because PERC technology is granted additional scores in one of the metrics in the bidding process, there are a lot of metrics, price is one, efficiency is another. Developers want to use PERC, especially mono PERC. Secondly, the price of mono last year was actually quite close to multi," says Liu. With the gap in price closing [using] mono becomes a relatively easy decision. The addition of PERC technology has led to PERC producers running out of capacity according to Liu.

"Right now the manufacturers are expanding their PERC lines and also their mono wafer capacity but the major reason is because they can get a higher score in the Top Runner auction. In terms of how far [those trends can] go out of Top Runner and out of China really depends on the technology development," Liu adds.

"Last year mono wafers were practically the same cost as the multi wafer, so if they can keep that competitive in the future, if you're paying the same price, why not use mono? But at the same time we are seeing higher potential for multi wafers to reduce their costs in the next few years so this advantage may not continue. It will depend on how much lower the multi wafers can go. At the end it is all about cost."

to those developers who also operate a full manufacturing chain in house, calling them "the pioneers" of the rock bottom prices. One company in particular has stood out in her view.

"GCL has everything from polysilicon to modules, they have the entire chain; they have quite a low manufacturing cost and so project cost. They calculated their prices based on a 10% project IRR

then everyone else just followed.

Return is not the only goal for many developers, who were also targeting a certain growth rate in asset size. So when most of them enjoyed more than 20% gross margin in H1, some of them are more willing to focus on expanding their asset portfolio in H2," explains Liu. Effectively, without the pressure on profit in H2, developers were able to focus on scale instead.

"I think most of the projects should be profitable. The average prices are not that crazy, it's just the lowest prices [that are]. If those really do meet the Top Runner standards then I don't think they can be profitable. It could be that they may not meet all the targets and as I said, if you do not meet the 81% target for performance ratio there is no punishment."

Success?

With the aims of the policy targeted at improving quality from factory to final project performance, the sight of such low bids may have had officials concerned that they had failed to put quality ahead of quantity and instead created a new premium race to the bottom. These fears appear unfounded, so far. If the NEA's technical agency is a diligent referee and sanctions for those falling short of expectations are forthcoming, then Top Runner's legacy in 2017 and 2018 could be a double-digit gigawatt volume of downstream projects. These can provide the foundation, and the impetus, for China's PV manufacturers and ensure they aren't caught standing still.

Everything that is wrong with China's PV sector that Top Runner addresses

- ✓ Distributed solar too sluggish
- ✓ Curtailment in regions where grid cannot cope with renewable deployment
- ✓ Concerns over quality of completed projects
- ✓ Crowded manufacturing landscape
- ✓ Limitations on exports of domestic products to US and EU
- ✓ R&D investment reached a new low in 2013