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Reduced solar capital costs in India

Mohit Anand, Senior Consultant, BRIDGE TO INDIA, New Delhi, India

ABSTRACT

India is a unique market. As part of an India-specific strategy on the part of the players, solar capital costs in India have significantly fallen in relation to the global average. This paper describes the trend for lower cost modules and services to be offered by module suppliers and EPC companies in order to capture the greatest share of the Indian market. In this context, more importance is being given to gaining a greater market share than earning a higher return.

Introduction

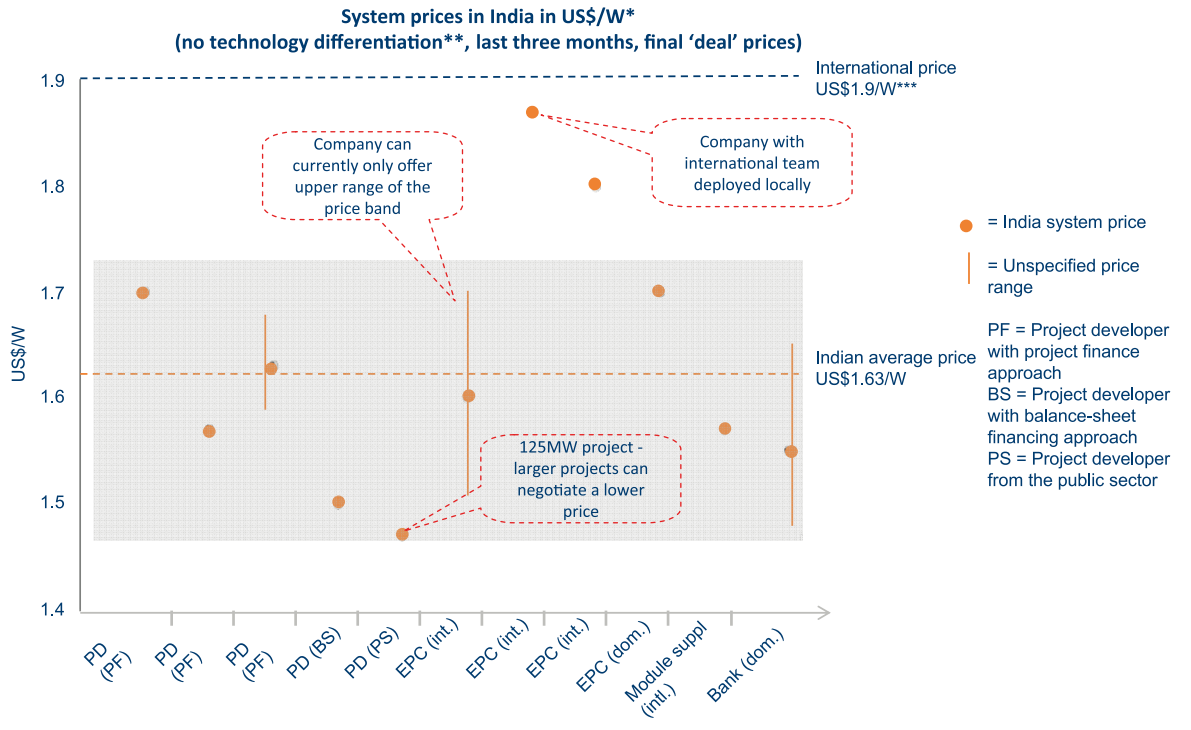
The National Solar Mission (NSM) in India has set installation targets of 20GW of grid-connected and 2GW of off-grid solar power by 2022. In the first of its three phases, from 2010 to 2013, the government is incentivizing the construction of 1000MW of grid-connected power plants, encouraging the more developed PV technology as well as concentrated solar power (CSP) equally with 500MW each [1]. Projects are allocated by a process of reverse bidding under which bidders are selected on the basis of the maximum discount they can offer on the proposed feed-in tariff (FiT). Many Indian states that have allotted solar projects have also adopted a similar reverse bidding procedure.

> "The average system cost in India is now 14% lower than the global average."

A fall in the cost of solar power to the end consumer is indicated by the latest round of reverse bidding under India's NSM Phase I Batch II in December 2011 [2] and in the Indian state of Odisha in February 2012. Tariffs offered for the allotted projects have fallen to as low as INR7 per kWh. This is being attributed to low solar capital investment cost in the Indian solar market. The cost of installing a PV plant of 1MWp was INR120m (€1.76m) in January 2011. Costs fell to about INR90m in January 2012, and there were further falls by about 10% to INR81.5m (€1.2m) in early March 2012. The average system cost in India is now 14% lower than the global average. A precise calculation of solar costs depends on the location and the cost of finance available to the owner of the solar installation, but, on average, global system costs are INR95m per MW.

Gaining strategic market share

This difference between the average Indian system cost and the global average can primarily be attributed to the difference in cost of modules, which typically account for the largest share (about 65%) of solar capital investment. In India, the cost of modules is 10% lower than in global



* All data was gathered in US$/W to avoid effect of fluctuating exchange rates.
** None of the respondents thought a differentiation between thin film and crystalline relevant (if anything, it was pointed out that after recent cost reductions, crystalline is more attractive in India – benefit of thin film (e.g. price/temperature coefficient) is marginal. Project developers were unconcerned with technology.
*** As given by one of the respondents ('current spot price').

Credit: BRIDGE TO INDIA market interviews, 16th to 19th February 2012.

Figure 1. System prices in India.

markets: INR41.5m per MW as opposed to a global average of INR47m per MW.

Module manufacturers see India as a key strategic market for the next few decades. Players want to gain strategic market entry and offer modules at lower prices to gain market share in India. At the current lowest Indian feed-in tariff (FiT) of INR7 per kWh, it is unlikely that these manufacturers are making sufficiently high margins on the sale of modules to the Indian market. Moreover, Indian buyers are aware of the strategic relevance of their market and are therefore using this knowledge to pressurize suppliers to provide them with modules at the lowest cost.

Providing cheap modules can also be seen as a factor of portfolio risk management on the part of the suppliers. Manufacturers designate supply quotas for every country and then allow local sales teams to play with the price in order to drive modules to acquire greater market share. Hence, suppliers prefer to sell a certain number of modules in a new market like India, in order to reduce their dependence on traditional markets.

Certain suppliers treat the Indian market as the last resort: they see it as the last market to sell to in an attempt to unload or dump surplus production capacity. Module suppliers think in terms of a 'merit order' – they first sell to attractive markets with high margins and then work their way down to markets with low margins, such as the Indian market. Manufacturers believe that it is better to sell excess capacity below manufacturing cost than to maintain inventory.

In addition, Indian module sales take place through direct negotiations between project developers and manufacturers. Given the early stage of the solar market in India, new and inexperienced project developers are entering the growing market. In such a scenario, price has become the paramount criterion for these first-time project developers to make their choice, thus increasing the competitive pressure among module suppliers.

> "In the Indian market, project developers procure modules directly from suppliers rather than through EPC companies."

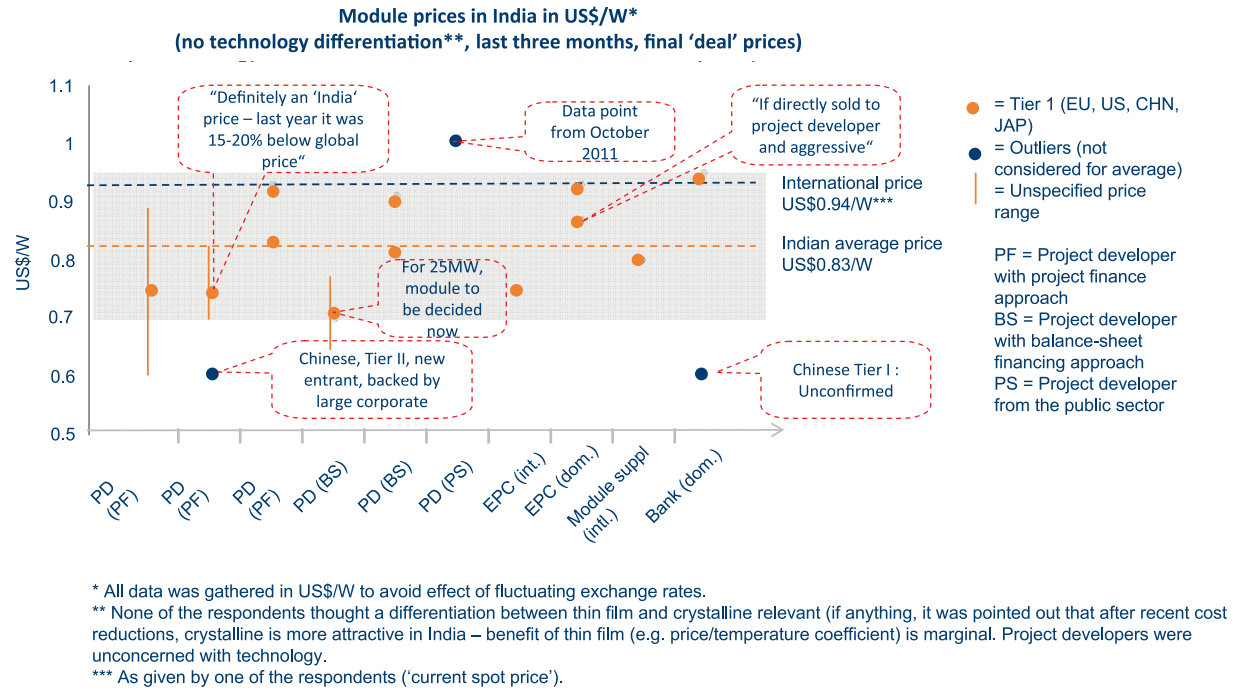
Globally, so far, Engineering, Procurement and Construction (EPC) companies have procured modules and provided a composite solution for developers. From a technical point of view, choosing the appropriate modules for their system design has allowed EPC players to give a comprehensive performance guarantee for their plants. From a commercial point of view, EPC players have charged a margin on the modules to the developer, which has helped cover the cost of the performance guarantees. However, in the Indian market, project developers procure modules directly from suppliers rather than through EPC companies. This has allowed the developers to avoid paying the margin that would have been involved if they were to rely on the EPC companies for the procurement. This has contributed to lower project costs for the developers.

Unawareness of realistic execution challenges

According to EPC players in the industry, tier II and first-time system integrators are setting unrealistic price benchmarks. Some EPC companies are quoting extremely low prices and offering impractical guarantees, without understanding the actual execution challenges. Further, there are project developers in the industry who are vertically integrated and offer EPC services. Such developers are able to drastically bring down capital costs for their projects, which forces pure EPC companies to push down service costs.

Conclusion: the strategy for gaining more projects in India

Project developers are keen to get a foot into the first phase of the NSM. They see this as a crucial opportunity to strategically position



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Credit: BRIDGE TO INDIA market interviews, 16th to 19th February 2012.

Figure 2. Module prices in India.

themselves as leading solar players. At this stage, they see having a place in the NSM as being more important than achieving high returns. Many are also looking to build a portfolio of projects with the option of selling these projects as the market develops further. The reverse bidding procedure of project allotment in India increases the competitive pressure between investors in the Indian market. Investors are compelled to accept a lower internal rate of return (IRR) in order to acquire a greater number of projects. Low system costs, along with competitive pressures in the market, have led to the fall in the overall consumer price of solar power in India.

References

[1] MNRE National Solar Mission 2010. "Guidelines for new grid-connected solar power projects", July.
[2] BRIDGE TO INDIA 2012, "The India solar compass", January, pp. 5–6.

About the Author

Mohit Anand is responsible for the Market Intelligence team at BRIDGE TO INDIA and has significant expertise in analyzing the Indian solar market. With a team of solar experts he leads the development of products like the INDIA SOLAR NAVIGATOR. He also develops solar business opportunities and executes consulting projects on market-entry strategies for international solar companies. Mohit writes regularly for several leading publications about solar power in India.

Enquiries

Mohit Anand
Email: mohit.anand@bridgetoindia.com
Website: www.bridgetoindia.com