

Title: **Capacity building of solar industry in India**

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SPOT LIGHT

# Capacity Building of Solar Industry in India

**T**he current energy consumption pattern in the world is highly dependent on fossil fuels. Around 80% of the world's primary energy consumption is from fossil fuels while renewable energy sources account for only a small proportion (2-3%). Existing statistics of oil and gas reserves indicate that they can support the present level of consumption only for the next 40 to 50 years, while experts suggest that even coal will be depleted in the next 100 years. These figures fittingly indicate that the present energy use pattern will not sustain in the future and that sustainable energy systems based on renewable energy are required. This energy transition will mandate concentrated efforts in capacity building for renewable energy.

As India struggles with chronic power shortages, rising energy prices

coupled with lurking threats of global climate change, solar energy has emerged as the most lucrative sustainable energy option. Today solar modules are being used not only for commercial purposes but also to sustain industrial and residential requirements. Rooftop installations, lighting kits, telecom towers, traffic signals, solar charging stations, streetlights, etc are few examples where solar energy is being utilized. As importantly it is extremely beneficial in rural areas for household lighting, irrigation pumps, street lighting, etc.

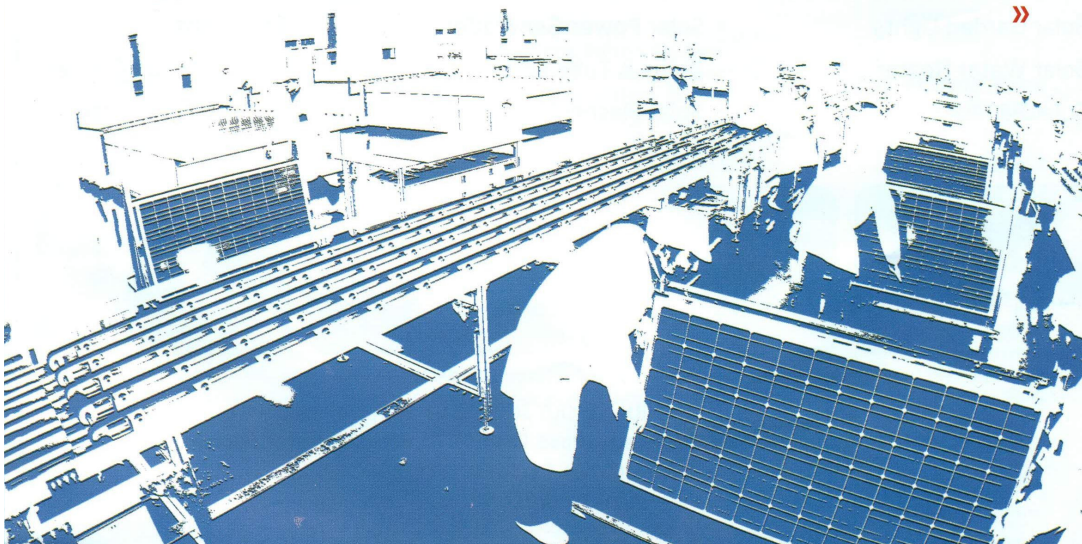
India today has more than 50 module manufacturers all of whom seem bullish about the potential of the market. The main leaders in this market include the likes of TATA BP Solar (India) Ltd, Websol Energy Systems Ltd, Emmvee Solar Systems Pvt LtdXL

Energy Ltd, Titan Energy Systems Ltd, Photon Energy Systems Ltd, etc. As module prices are going down, the cost of generating solar power is also declining. Also, due to the increasing demand primarily out China, Japan and USA, pricing has been stable, profit margins are on track and shipments to markets outside have been steady. Hence players are hopeful that the solar sector in India will take off.

## CURRENT MARKET SIZE AND GROWTH OF SOLAR POWER GENERATION IN INDIA

The importance of alternative energy resources has been duly recognized by the authorities of India which has resulted in Government support for Nuclear Energy and Renewable Energy. India is one of the few

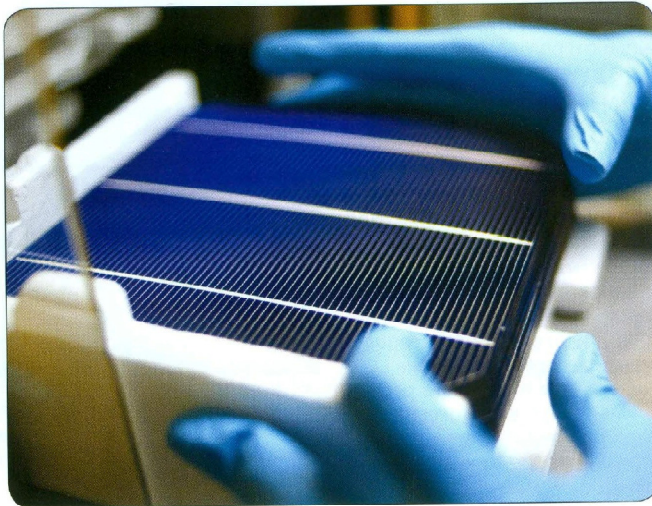
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countries that have a dedicated Ministry for the promotion of non-conventional energy (Ministry of Non-Conventional Energy Sources, MNES). The efforts of MNES have witnessed a steady growth of renewable energy in India. India is slowly building upon its solar power capacity with the joint and comprehensive efforts of the Jawaharlal Nehru National Solar Mission, state solar policies, and increased enforcement of the Renewable Purchase Obligation. A recent research study carried out by Netscribes has found that the Solar PV market in India is mostly an organized one with an installed capacity of 1.8 GW as of 2013 while the market is expected to grow at a CAGR of 55.9% between 2012 and 2018 to reach 17.2 GW. India's solar capacity building potential is thus deemed real enough and is forecasted to reach a USD 6 Billion to 7 Billion in its capital equipment market with close to around 4 Billion in annual revenues for grid connected solar generations in the next decade. The country has added almost 950 MW of solar power capacity between April 2013 and March 2014 (that is, FY2013-14). The 56 percent increase in installed solar capacity witnessed in the financial year 2013-14 was mainly due to projects assigned under the state solar policies and the Renewable Energy Certificate (REC) scheme. Of the 2,632 MW installed capacity till 31 March 2014, 50 percent operates under the state solar policies. During the current financial year (April 2014 to March 2015), capacity is expected to be added mainly under the state solar policies as a number of project developers would line up solar PV projects for commissioning allocated to them through auctions conducted by several state governments.

Gujarat remains the clear leader among all Indian states with an installed capacity of 916 MW, and added about 58 MW capacity during the last financial year. While the Gujarat government has some ambitious and pioneering



plans to cover water canals with solar panels, the official tender documents seeking investments from developers have not been released yet. Thus, following the commissioning of one of the largest solar parks in the world, the Gujarat solar market is still to take off.

Madhya Pradesh on the other hand took the lead in adding capacity in FY2014. The state added almost 310 MW of solar PV capacity, which included the largest solar power plant in Asia. The 130 MW solar PV project owned by Welspun Power was commissioned in February 2014 at a total cost of over USD 170 million. The state government had awarded 175 MW of solar power capacity to project developers under the state policy while over 165 MW capacity was commissioned directly by the project developers under the REC (renewable energy certificate) scheme.

The state of Rajasthan, second in overall installed capacity in India, added almost 180 MW capacity. This included India's largest solar thermal power plant, which has a generation capacity of 50 MW. The project is among the seven solar thermal power projects auctioned under the first phase of the National Solar Mission. A huge majority of the bal-

ance 130 MW capacity was added directly by the project developers through the REC scheme.

#### LOCAL CONTENT REQUIREMENT AND ITS FALLOUT ON THE INDUSTRY

It is a widely accepted fact that increased deployment of renewable energy technologies (RET) for their proper implementation requires government intervention at multiple levels. But this involvement is anything but easy as designing and implementing policy involves negotiation and compromise between a range of decisions and decision makers, each seeking to structure policies in ways that is beneficial to them and promote their own goals. As such, a lot of countries are aiming to make their RET deployment strategies politically acceptable by linking them to other socio-economic goals, such as job creation, economic development and building competitiveness. In this sense, LCRs act as performance requirements that regulate the extent to which certain projects must use locally manufactured products. They are usually tied to government concessions, such as preferential tariffs, tax exemptions low-interest loans, infrastructure support and land



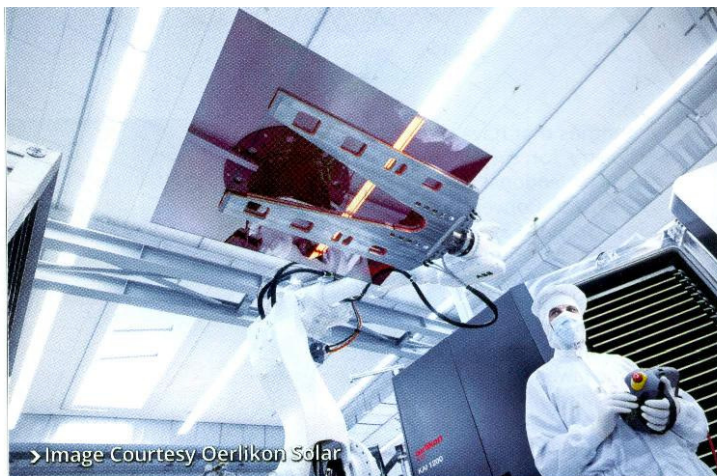


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acquisition support.

### IMPACT OF THE LOCAL CONTENT REQUIREMENT ON THE INDUSTRY

The local content requirements had a significant impact on the solar industry. Initially it had been noticed that companies, rather than supporting the locally manufactured products, were more biased towards foreign manufacturers whose products were exempted from the LCR. For example in the NSM project it was found that foreign thin film PV manufacturers were preferred over the local crystalline silicon manufacturing industry. Another impact was the oversupply in a crowded and competitive manufacturing market which led to price reductions which in turn outpaced reductions in cost. Many companies failed to survive, let alone make profits. The impact of the bias towards foreign thin film technology and falling exports of locally manufactured crystalline silicon technology was considerable. Receiving few local orders and decreasing exports to EU and US, which had previously been their main markets and the reason for their establishment, local manufacturers, such as Tata BP Solar, Indosolar and Moser Baer suffered heavy losses. Some of the PV manufacturers stated that almost 50 per cent of their workforce had been laid off because of closed production. Under these conditions, R&D investments in Indian manufacturing firms were practically non-existent. As the industry consolidated and protectionism rose, tie-ups with foreign firms, which previously were often the basis for R&D, also diminished. Based upon these impacts, the LCR is widely considered to have failed in economic terms. Planned projects are facing significant delays, problems of land acquisition, lack of high quality irradiance data, increasing equipment costs due to rupee depreciation and limited availability of some components have caused set-



backs in all projects. These issues are expected to continue if not adequately addressed by policy changes. The purpose for which local content was imposed has been defeated. To top all this there is also international pressure to eliminate local content requirements.

Despite the promise of LCRs as an instrument to promote local value creation, their increased use is matched by growing vocal concern over trade protectionism. LCRs are generally seen as inconsistent with the WTO's international trade rules which explicitly prohibits local content requirements because they are inconsistent with this provision of GATT (General Agreement on Tariffs) and Agreement on Subsidies and Countervailing Measures. The general philosophy behind this position is that LCRs are considered to be ineffective in promoting overall welfare because they force countries to invest resources inefficiently in sectors where they don't have a competitive advantage as they will artificially improve the competitiveness of local products against foreign products. This is assumed to bring the danger that LCRs may also be pushed by interest groups who seek monopoly rents in the supply of equipment and services for renewable projects. Restricted competition allows local producers to extract monopoly rents and reduces both the number of actors in the sector and competitive pressures on them.

Another disadvantage of LCR is that on their own they are unlikely to help local firms fully develop the technological capabilities needed to globally compete in the long-term. LCRs overemphasise manufacturing, neglecting other equally important, and potentially more value-added, parts of the value chain. In addition, LCRs do little to address barriers to the development of local technological capabilities that local manufacturing firms might face. Although they might create space for learning how to do the necessary to adapt to local conditions and still ensure effectiveness, development of more advanced technological capabilities are required for better competitiveness.

Yet according to a research carried out by Netscribes, things are shaping up and looking better within the PV industry as local manufacturing capacity had increased to around 1.8-2GW. Furthermore, LCRs appear to have given a strong political signal that the government is committed to supporting and protecting the manufacturing sector. Most manufacturers are confident that local industry would be reinvigorated by continued investment in local manufacturing.

### PROBLEMS FACED BY THE INDUSTRY

Poor policies and foreign competition- The underdeveloped and poorly implemented JNNSM federal solar policy is encourag-



ing foreign competition especially from China and USA which is diminishing the chances of the solar building capacity potential to take off. First Solar (FSLR) conquered the JNNRM market boosted by the low cost vendor financing by the US Exim Bank. The state run solar subsidies especially in Gujarat did not have any domestic content requirements (DCR) which meant that Chinese imports dominated that segment of the market. Also the Chinese solar panel companies such as Trina Solar (TSL), Yingli (YGE) and others have 3 times the capacity of the entire Indian industry on their own.

**Manufacturing inefficiencies-** Most of the Indian solar manufacturers have been running at very low utilization and large losses. The slowdown for Indian solar manufacturing is coupled with the general Indian manufacturing slowdown as well. Despite the Indian market growing to more than 1000 MW a year, the Indian solar manufacturers have got less than 30% of the local market. This is greatly affecting the capacity building potential of India.

**Unorganized taskforce-** The solar industry is in dire need of skilled manpower in order to increase efficiency and ensure better productivity which is still not available in India. Most of the India's work force is forced to earn their daily bread in the unorganized and contractual sector. The ones who are already employed in this sector lack proper training and skills which in turn becomes even more disadvantageous.

**Obsolete technology & financial constraints-** India-made solar cells are of poor quality, less efficient and more expensive than imported cells which add to the challenges faced by this industry. It is believed that cell manufacturers have the capacity to produce more than 800 MW of cells while in reality only about 150 MW is available as many units are shut either due to financial constraints or because of outdated equipment.

## CONCLUSION

Despite the several problems, there is light at the end of the tunnel for the solar capacity generation in India. Although India's solar market appears well suited for local players, it's currently opening up its doors to global players as well. Global firms that modify and tailor their broad expertise to serve unique local needs in an economical way could actually extract significant value. At the same time, local players can bridge capability gaps by striking appropriate alliances, or by recruiting strong teams or individuals. A partnership of foreign technology and local EPC (Engineering, Procurement, Construction) can help both parties climb up the steep learning curve fast, but mechanisms will need to be put in place to ensure that the risks and upsides are shared equally. If both parties involved

have a long-term view of the market, lessons learned from initial projects can be built into subsequent ones. Local or global, the leaders in this market will likely be those that get in the thick of things from the beginning, as the cost of entry rises significantly with grid parity nearing. A well-thought-out plan to make can build a growing advantage through planning for long-term scalability which in turn will be an important tool for tapping into the multi-billion-dollar potential of India's solar capacity market

This article is written by Netscribes on request. Netscribes is a knowledge-consulting and solutions firm. Netscribes' focus is on specific Indian industries that offer opportunities for investment, market entry, or have undergone major developments.



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 Akshaya solar Power (India) Pvt. Ltd.  
 Plot No. 60/C/E, Phase-I, IDA Jeedimetla, Hyderabad – 500055, AP, India  
 Phone : +91 9848037227, E-mail: [raju@akshayasolar.com](mailto:raju@akshayasolar.com)  
 URL: [www.akshayasolar.com](http://www.akshayasolar.com)

**Our Branches Offices**

**New Delhi :** Mr. Mukesh Kaushik, 15-3rd Floor, Jangpura Road, Bhogal, New Delhi-110014  
 Contact: +91 99103 83424 E-Mail : [sales.delhi@akshayasolar.com](mailto:sales.delhi@akshayasolar.com)

**Pune :** Mr. Kalyan Desai, Flat no 507, Binawat Paradise, Beside Bhekrainagar, Phursungi, Pune-412308  
 Contact : +91 9421872170, E-Mail: [sales\\_west@akshayasolar.com](mailto:sales_west@akshayasolar.com)

**Kolkata :** Mr. Prasenjit Sarkar, #197, Anandpur, Hossenpur, Kolkata - 700078, West Bengal.  
 Contact : +91 98748 11106 E-Mail : [sales.ez@akshayasolar.com](mailto:sales.ez@akshayasolar.com)