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## ‘We Could Demonstrate our Capability by Developing Something that has not Been Done Before’

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### **How does it feel to be called the Father of Indian solar industry?**

I am not the Father of India's solar industry. A lot of good work in solar in India was started in the 1970s. My contribution to the Indian solar industry is in the concept of distributed generation at the tail-end of the grid that not only strengthens the grid, but also provides reliable peak power to several communities in rural India. Owing to an extremely short gestation period and flexibility of scale and size, we can help solve rural India's energy security needs in a timely manner. These projects also provide for education for the next generation on concepts of clean energy and source of livelihoods in adjacent communities. This is a great way to bring rural India to the forefront of the inclusive economic growth that has been the goal of our Honourable Prime Minister and President.

I entered the sector knowing fully well that solar as a sector didn't exist in India before that. We were happy to go through the difficulties because we knew that solar power had potential and more importantly, solar had to succeed in India for the sake of millions of Indians who have no access to electricity.

As a first mover we could demonstrate our capability by developing something that has not been done before. The fact that we had a project running in Punjab was helpful in getting contracts in states like Haryana, Rajasthan and Gujarat. The second movers always get to learn from the mistakes of the first mover.

### **India showed the world that we could do quality work at low cost with the mobile telephone boom where India enjoys good network at among the lowest prices in the world. Do we see something similar happening in the solar industry? The feed-in-tariffs which India is currently experiencing seem to be among the lowest in the world.**

Absolutely. There are a lot of similarities between the growth of mobile telephony in India and what we see as the potential for distributed solar power generation in India. There are several parallels: both meet the core need of people; they can also both be scaled very quickly; and finally, they can also both be built in any location. In fact, you can power all your telecom towers with solar panels.

Solar power generation is a very capital intensive sector. The value of solar is in the long term, not in the short term. Today, compared to other sources of power generation the cost of solar power is high in the retail market. However, we believe that in the long term the costs will come down.

The trend to quote low prices just to find projects is very common but the temptation to do this is high when cost becomes the only criteria for project allocation. Given the scale that solar can acquire there is a huge potential for cost economies to move forward. Power producers still need to be wary of quoting too low and compromising viability of the projects.

### **Most of the Indian State Governments are following the NVVN's reverse auction policy instead of Gujarat's fixed tariffs. What according to you is the right way of moving ahead for India's solar industry; keeping in account the fact that NVVN's reverse auction resulted in bankers not being very comfortable with the project feasibility?**

There is no one right way. There are things to be said in favour of both methods. However, any methodology should take into account important considerations like technical capabilities, fund raising capabilities and have weightage for on ground experience.

### **Why is that many solar on-grid projects are finding it difficult to achieve financial closure? Is the reverse bidding making projects financially unattractive or is it another part of industry learning?**

We have not had any issues.

### **India has suddenly seen mushrooming of many players branding themselves as solar EPC players. With new inexperienced professionals and low feed-in-tariffs, will India face quality issues on the upcoming solar projects?**

Within a matter of two years we have gone from 20 companies to 400 companies in solar power generation. Like any other new sector there is always a lot of

excitement in the beginning and then things settle down to only serious players. Going forward, I would expect 40-50 good players in the market. So, like in any new sector, the industry will also see its movers and shakers.

**The Indian off-grid market is dependent on diesel abatement policy and on government buildings. We still have not seen common people accepting solar installation? What kind of push is needed to bring this potential on the ground?**

There is a need for solar power generation to be viewed from a developmental perspective. We at Azure Power believe that solar power is ideally suited for the distributed power model which can then help get power to areas that most need it. The distributed model will also mean smaller projects, smaller gestation periods, less demand on land, and therefore better acceptance by the communities. More importantly power generation at the point of consumption makes most economical sense and also avoids high T & D losses. Energy security and rural electrification will get a huge shot in the arm from solar power projects that can come up across the country as part of the NSM policy drive. What can also help are community-based awareness programs on solar power. In fact a planned solar power plant for every 10-20 villages has the potential to create a rural revolution.

**Renewable Energy Certificates (REC) concept was introduced to take away a considerable incentive burden away from the government and make this a market based product? What do you think of the solar REC concept in its present form? Will this work? What are the suggestions/changes that you expect from the government?**

For any financing instrument to work the institution that lends for such products must endorse such instruments. It is too early to comment on the success of the solar RECs.

**Do you see the solar/renewable energy developers playing a role of IPP in the Indian off-grid market? Currently the cost of solar is very high so it cannot**

**compete with grid rates but can certainly be a competitor to the cost of units generated through diesel.**

Today solar energy could be looked at as a complimentary source of power but we strongly believe that when it comes to harnessing solar power, Solar Photovoltaic (SPV) is the world's fastest growing energy technology and holds tremendous potential for India. Solar Photovoltaic Systems (SPV) are experiencing considerable decline in prices year after year due to intense research, commercialization of utility projects and increase in polysilicon production. This source of power could be used during peak demand times, like opportunities where there is a need for energy requirement during the day, like schools and hospitals. Lot of agriculture is also done during day time and not at night time. India has almost 50,000 Megawatt of standby Diesel Genset capacity and this source of power is definitely an answer to replace diesel-based power. Even though it is still expensive in contrast to conventional sources of power in tangible costs but as observed the cost of solar power has shown significant reduction year over year and with increase in production, a downward trend is expected to continue. It is likely that solar power will become grid competitive in costs around the year 2017. The National Solar Mission (NSM) promises rapid growth of utility scale SPV power projects in the country. At present it is a solution where you have high cost of power or there is no power but it would be safe to say that in the near future energy developers would play the role of IPPs in the Indian off-grid market as well and competing the grid.

**What are the challenges that you have faced while implementing the projects on the ground? The industry is currently too involved in PPAs and financial closure that we have seemed not to take into account the problems being faced on-ground during implementation.**

Typically, the projects have to be constructed within 6-8 months. Some of the clearances required for energy projects do not take into account the short gestation period of solar plants, but initiatives like

solar power parks are mitigating some of these challenges. On ground solar installation data from similar solar plants, is also necessary for independent assessment. This is also being addressed by agencies like C-WET. Most of these are teething issues of a new industry and will be addressed over time.

**Which are the current projects of Azure Power and the how does the pipeline look?**

Azure Power has a project under every Solar Policy in the country and has 12 MW capacity in operation. In addition to the 2 MW Solar power plant set up in Punjab, 10MW in Gujarat and 5MW to be commissioned this December 2011 in Rajasthan, Azure Power is also in talks with State Governments in Maharashtra, Karnataka and Rajasthan for additional projects. Azure Power expects to get to 100MW in the next 2 years with cumulative investment of over \$300 million.

**Does Azure have any plans of backward integration-into manufacturing of modules or cells or wafers?**

No, we do not.

**The industry is also reeling under lack of trained man power. How is Azure Power tackling this issue? What is/ should the industry be doing on this front?**

With solar industry being at a very nascent stage yet, there is not much trained talent available. We however recruit talent who have basic qualification like Engineering/Diploma for technical jobs and Management graduates for non-technical jobs and then train them for their positions.

There is a need for more Indian institutions to pick up the trend and train Indian graduates too in the same field so that we can bridge the gap between the requirement and talent pool.

**Any advice/suggestion to entrepreneurs in India trying to follow your footsteps in the solar industry?**

Hard work, focus and diligence always pays. Build business on solid fundamentals and sound ethics. You will be successful regardless of what you do.