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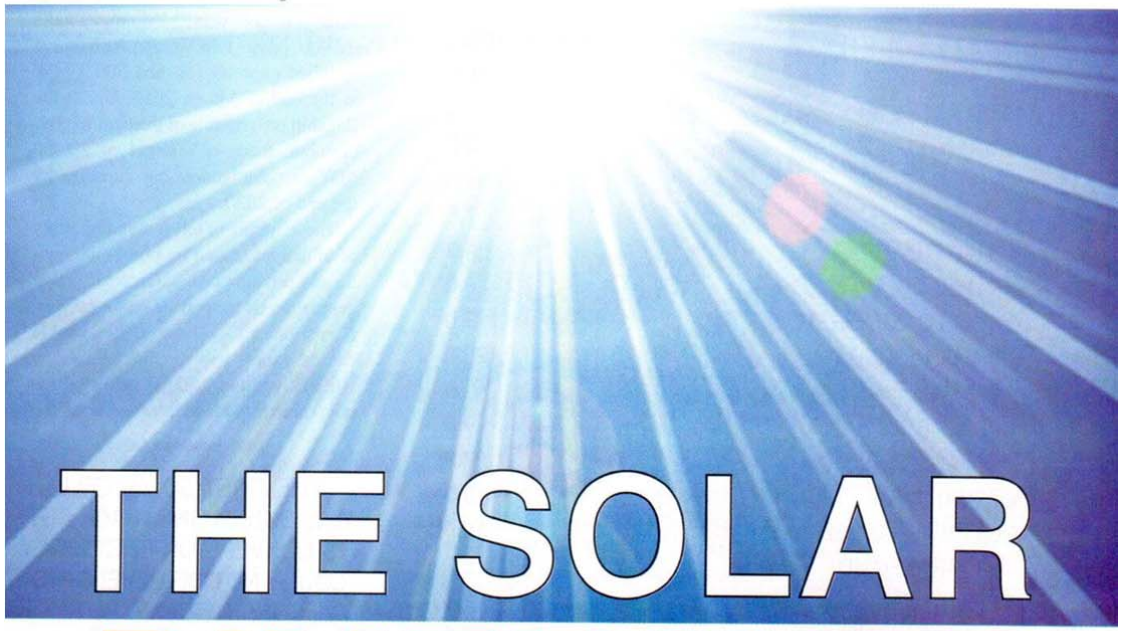
The Power of Now

cover story



THE SOLAR DIMENSION

In less than a decade, solar energy sector has transformed from a cottage industry to a billion dollar business in India. But the stumbling blocks are numerous as the growth entails the challenges of inadequate power generation, slow pace of rural electrification, besides dependency on highly volatile fossil fuel for its energy needs which remains high. **VIVEK RAI** explains how...

THE ISSUE is simple: converting more solar power into electricity is high on the political agenda of various emerging economies like India.

In order to accomplish the bold target, National Solar Mission (NSM) was launched in 2010. It was a highly ambitious plan to use solar energy for modernising underpowered national power generation. Recently, this initiative earned accolades in the United Nations Environment Programme report. This report stated that the NSM helped the country spur an impressive 62 per cent increase in investments to $12 billion during the year 2011, the fastest investment expansion of any large renewable's market in the world.

Speaking to *Sahara Time*, Arunabha Ghosh, a well-known expert on renewable energy and CEO of Council on Energy, Environment and Water, highlighted the factors that accelerated the pace of solar power generation in India. These are:

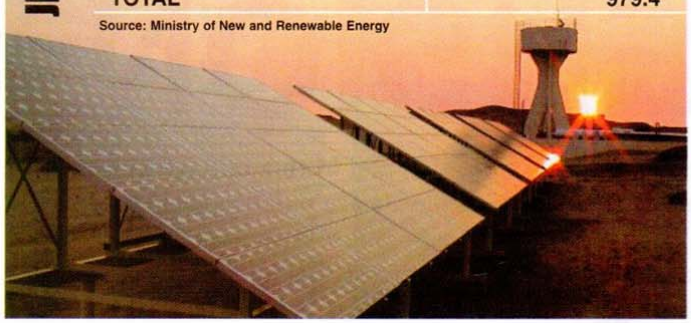
- National Solar Mission has marked out targets for phased increase in solar power deployment during 2012-2022.
- Fall in solar panel and module prices globally.
- Reverse auctions and aggressive bids to drive down benchmark prices for grid-connected solar power.
- Solar Parks established in some states.

The first solar cell was built long back but its conversion efficiency could not be developed considerably. But today, scientists have found

JNNSM: State-wise installed capacity

STATE / UT	CAPACITY (MW)
ANDHRA PRADESH	21.8
CHHATTISGARH	4.0
DELHI	2.5
GUJARAT	654.8
HARYANA	7.8
JHARKHAND	4.0
KARNATAKA	9.0
MADHYA PRADESH	2.0
MAHARASHTRA	20.0
ODISHA	13.0
PUNJAB	9.0
RAJASTHAN	197.5
TAMIL NADU	15.0
UTTAR PRADESH	12.0
UTTARAKHAND	5.0
WEST BENGAL	2.0
TOTAL	**979.4**

Source: Ministry of New and Renewable Energy



innovative ways to harness the power of the sun – from magnifying glasses to steam engines. The cost of the glassy photovoltaic panels that generate most solar electricity is plummeting across the globe. Their average cost has fallen by more than 75 per cent during the past few years.

Everyone wants a reliable and non-polluting energy supply and its appropriate example is Germany. Recently, the German government decided to close its eight nuclear plants immediately after the Fukushima Daiichi nuclear disaster and the remaining nine plants are to be shut down by 2022 that supplied considerable electricity. They will be replaced by renewable energy sources like solar power. This European country has become a world leader in renewable energy sector and gets about 20 per cent of its overall annual electricity from alternative sources. With large tracts of wasteland and higher radiation intensity than Germany's, India can achieve similar success in this capital-intensive sector.

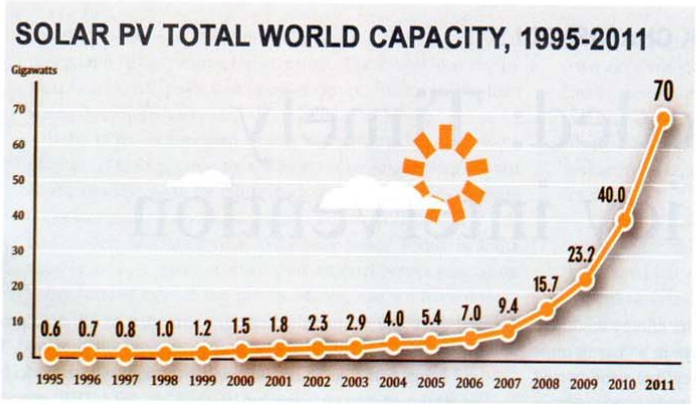
In early 2010, installed capacity of solar energy was 17.8 megawatts (MW). After two years, cumulative installed capacity touched 506.9 MW at the end of March 2012. Under the flagship programme of the central government, there is a target of 20,000 MW of solar generating capacity by the end of 2020.

These numbers tell a stunning story of initiatives shared by both – the public and private players. On solar power generation by the private sector players, Narasimhan Santhanam, renewable energy expert and director of Energy Alternatives India (EAI) said that the government is an enabler as far as the solar industry is concerned. Eventually, for any market to grow, there needs to be private sector participation which seems to be happening in India.

> THE FIRST SOLAR CELL WAS BUILT LONG BACK BUT ITS CONVERSION EFFICIENCY COULD NOT BE DEVELOPED CONSIDERABLY. BUT TODAY SCIENTISTS HAVE FOUND INNOVATIVE WAYS TO HARNESS THE POWER OF THE SUN – FROM MAGNIFYING GLASSES TO STEAM ENGINES

The private players are commercially exploiting large tracts of wasteland, particularly in Gujarat, Rajasthan, Maharashtra and Andhra Pradesh and these are receiving large chunks of investments by global and domestic players. Some leading companies are Moser Baer, Adani Group, Green Infra, Tata Power, Azure Sun and SELCO Solar.

All these companies are not big corporations which are doing business in this sector but some of them are start-ups. These startups are betting big on alternative energy with fledgling ideas. Five years ago, Inderpreet Wadhwa set



Source : Renewables 2012 Global Status Report

up a company – Azure Sun – when solar power sector was in its nascent stage and people were skeptical about its success in such capital-intensive sector. Today, this startup provides electricity to 32 villages and 20,000 people in Amritsar district of Punjab. It has been awarded a 25-year concession to construct and operate a 2.5 MW rooftop solar power unit in Gandhinagar by the government of Gujarat.

On the other hand, there is a social enterprise known as SELCO Solar that provides sustainable energy solutions and services to under-served households. This social enterprise was conceived in an effort to dispel three myths associated with sustainable technology and the rural sector as a target customer base: First is that poor people cannot afford sustainable technologies. Second, poor people cannot maintain sustainable technologies and third that social ventures cannot be run as commercial entities.

Arunabha further said on optimum approach for solar sector: "We need a strategic approach to develop a financing ecosystem for solar power in India. This would imply creating a network of institutions at multiple levels: strategic level (RBI, IREDA, LIC, Indian Banks' Association, and multilateral banks); project level (Indian banks, non-banking financial institutions, overseas funding agencies, venture capital and private equity) and ancillary support level (fiscal support; carbon markets)."

On being asked as to how to popularize usages of alternative technologies at the ground level, Santhanam replied: "The economics are always a challenge when it comes to the large-scale adoption of alternative energy technologies. The intermittency (we can't control nature!) is another issue with respect to some renewable sources." He added further: "Popularization can be achieved by spreading awareness (a lot of people are still under the impression that solar is unproven or extremely expensive) about the long term benefits of solar viz. economic benefits, energy independence and very little operational costs."

Ultimately, it is about pricing. If solar power becomes cheaper than the cost of running diesel generators, consumers will adopt solar energy. Setting up of solar power project in Indian states depends on the intensity and consistency of solar radiation. Then land acquisition or leasing policies vary across states, and that makes a difference in judicious utilization of alternative energies like solar power and wind power. To sum up, some of the factors contributing to its growth are favorable policies of the government, continual innovations and inflow of investments.

As the demand for electricity in India is spiralling and several reports say that power demand will further soar up to a record level in coming years, emerging economies like India should prepare for tougher times and a huge dose of investment is needed in both generation and distribution of power. ■

INDIA'S LEADING SOLAR PHOTOVOLTAIC POWER PLANTS

Adani Group
Gujarat

Moser Baer Solar
Gujarat

Welspun Solar
Rajasthan

Mahindra & Mahindra Solar Plant
Rajastan

Azure Power
Sabarkantha, Gujarat

Green Infra Solar Energy Limited
Rajkot, Gujarat

Gujarat Solar Park
Patan, Gujarat

Tata Power
Maharashtra, Odisha, Gujarat