



Confederation of Indian Industry

Theme Paper on Solar Power (Focus on Rajasthan)

India is amongst top 5 destinations worldwide for solar energy. Currently, a nascent and evolving industry, this segment has gained considerable momentum over the last two years given the focus on developing clean energy sources and is likely to account for a large proportion of the Renewable Energy (RE) mix in the country.

Though India possesses a very large solar energy resource compared to other renewable resources, its installed capacity share is just 0.23 per cent. It indicates that, huge potential is yet to be tapped. The cost involved in generating power through solar energy is the drawback faced by our nation.

The cost of generating power through solar energy resource is high compared to other resources. Solar plant consumes INR 12 for generating one unit of energy (one KWH). Whereas, Wind power, Natural gas, Coal and Hydro consumes INR 5, INR 4, INR 3.5 and INR 3 respectively.

However, the tariff for solar power is expected to decline 5 per cent to 7 per cent every year due to the development in technology and economy of scale.

The major thrust has come from the government in the form of the Jawahar Lal Nehru National Solar Mission (JNNSM) which was launched in January 2010 and is targeting a capacity addition of 20 GW by 2022. The Mission which focuses on both grid connected and off-grid solar power is aimed at achieving economies of scale to reduce costs.

In fact, the country's grid connected solar capacity has leapfrogged in the last one year driven primarily by the conducive policy framework that has evolved to promote solar power and about 200 MW of solar power is likely to be commissioned within 2011.

The cost of solar power has also shown significant reduction year over year and with increase in supply/production a downward trend continues. It is likely that solar power will be grid competitive around year 2017.

With the launch of JNNSM, the sector has witnessed strong interest from the private sector as well as funding sources like PE and VC. For instance, Azure Power has secured two rounds of funding from PE funds.

Key states which have a huge solar potential include Rajasthan, Gujarat, Maharashtra etc.

Solar Energy in Rajasthan

India is located in the equatorial belt of the earth, thereby receiving abundant radiant energy from the sun. In most parts of India, clear sunny day is experienced 250 to 300 days a year. The annual global radiation varies from 1600 to 2200 KWh/Sq.m. which is comparable with radiation received in the tropical and sub-tropical regions. The equivalent energy potential is about 6,000 million GWh of energy per year.

The highest annual global radiation is received in Rajasthan (Solar insolation ranging between 6-6.4 Kwh/m²/day in about half of Rajasthan). In Rajasthan, large areas of land are barren and sparsely populated, making these areas suitable as locations for large central power stations based on solar energy.

Rajasthan accounts for 80 percent of the total allocation made so far under India's National Solar Mission plan. The state has assigned top priority to stepping up private investment in solar power and has already taken several steps in this direction. India announced the National Solar Mission in January 2010, with a phased implementation approach of working with state governments, policy makers, regulators, and power utilities to help establish solar energy leadership

A growing pipeline of generation projects, broad mineral base, relatively low labor cost, and a significant allied industry base are contributing to the state emerging as one of the leading markets for solar manufacturing

Rajasthan Government Initiatives and Incentives

The Government of Rajasthan supports development of both solar thermal and solar photovoltaics (SPV) power generation. Government of Rajasthan is encouraging private sector projects through fiscal and promotional incentives for the renewable energy sector. Parallel efforts are underway in the area of solar PV in which pilot-scale grid-connected solar PV power systems (25 KW to 100 KW) are under trial operations in addition to stand-alone projects in remote unelectrified areas.

In Rajasthan, the State Government plans to establish a Solar Energy Enterprises Zone (SEEZ) in the districts of Barmer, Jaisalmer and Jodhpur by offering a package of incentives to private investors willing to develop various solar power technologies including solar thermal, solar photovoltaics (SPV), solar chimney etc.

An International solicitation recently issued by Rajasthan has yielded two 50 MW solar PV power stations as well as one solar chimney project (200 MW) to be operated on an Independent Power Production (IPP) basis.

In the month of April, Rajasthan Government has recently cleared the State's Solar Energy Policy 2011, which is expected to give a major push to harnessing solar energy in

the desert terrain. The policy envisages generation of 1,500 MW power through solar energy by 2013-14 with an investment of Rs.15,000 crore from the private sector.

In Rajasthan, the Indian Government is about to complete a huge new power station using hybrid systems. This fossil fuel/solar hybrid power plant is poised to generate a huge 140 megawatts of electric power, out of which 40 megawatt will be produced from a large array of solar parabolic troughs.

Rajasthan is a front runner in solar energy and will scale new heights in harnessing the sun's energy.