

KPMG unveils report “The Rising Sun”

~A Point of View on the Solar Energy Sector in India~

- Solar power is expected to meet 5-7 percent of India’s total power requirements by 2021-22
- Solar Power can save over 30 percent of India’s coal imports, thereby contributing to energy security. This translates to a saving of US 5.5 bn in imports per year from 2022 onwards
- It can help meet more than 10% of India’s carbon emission reduction targets
- Direct benefits of Solar energy - Help light remote villages with no grid access, power telecom towers that currently run on diesel, power irrigation pumps for farming that consume close 60GW of subsidized electricity, etc.

Mumbai, May 24, 2011: In purview of the significant challenges that India is facing in terms of energy security, action against climate change problems and addressing the issue of inclusive growth within the country, KPMG through its Thought Leadership report “The Rising Sun” has put forth its analysis on how solar energy can contribute to addressing these challenges.

Solar power can meet 5-7 percent of our total power requirements by 2021-22 up from a negligible portion today. This is significant as it could potentially replace around 30 percent of India’s imported coal requirement. “Solar power can help our country move closer to the targeted 20-25 percent reduction in carbon emission intensity of GDP by 2020 by contributing as much as one-tenth of this target, besides playing an increasingly important role in securing India’s energy future”, says **Arvind Mahajan, Head of Energy and Natural Resources, KPMG**.

Decentralised applications refer to the small scale solar power solutions installed at the consumer end. Unlike centralised power generation systems where large power plants are typically set up near fuel sources or far away from load centres, decentralised power systems are situated close to where the demand is. **Santosh Kamath, Executive Director, KPMG** adds “Decentralised systems benefit from lower network losses as power does not have to be transported over long distances. These include applications such as solar rooftop systems, solar-powered agriculture pump sets, solar lighting systems and solar-powered telecom towers.”

Some of these applications could have a transformational impact on the way energy is produced and consumed today. Along with large centralised solar generation, decentralised generation can play a very important role in the next decade.

Solar rooftop systems:

- Today, Germany has total solar installations of around 17 GW and more than 75 percent of the market share is contributed by solar rooftop systems. Solar power already contributes over 2 percent of Germany's power needs. Until now, solar power was expensive compared with conventional power and that is what held it back from rapid scalability.
- Today, in India the cost of conventional power delivered at a consumer's premises is estimated at between INR 5 and INR 5.50 per unit when compared to the cost of solar power which is estimated at around INR 11-13 per unit
- While still high, the solar cost curves are declining rapidly due to technological innovation and supply chain economies of scale
- At the same time, conventional power costs are expected to rise at between 4-5 percent per year over the next decade
- The convergence between the cost of solar power and the conventional power cost, commonly referred to as grid parity is likely to happen during the period 2017-2019.

According to the KPMG report, the rooftop segment would take-off considerably post grid parity when solar power could meet the day time power consumption requirements of the households economically. The cumulative rooftop potential for residential category could be 19,000 MW by 2022. An illustrative analogy can be drawn from the telecommunication sector where technological developments and policy changes helped a rapid scale up in telecom penetration during the last decade.

Solar-powered agriculture pump sets:

- Currently, the agriculture category which uses power for irrigation pumps contributes around 20 percent of the total power demand of India. The grid power tariff to agriculture segment is heavily subsidised. The power supply is staggered and the network performance inefficient in most cases.
- Moreover, the subsidy burden is increasing due to the increase in conventional power costs thus negatively impacting the financial health of the State and power utilities.

Furthermore, there are a large number of agriculture pumpsets that currently use diesel power where there is no grid connection available.

As cost curves come down, solar power is well suited as an alternative solution to meet the power requirements of the agriculture segment. Besides being a clean and convenient source of power, solar power can reduce the subsidy burden on the Government. To start with diesel, pumpsets could be replaced by solar-powered pumpsets due to favourable cost economics.

According to the KPMG report, a cumulative potential of around 16,000 MW from agriculture category could be realised by 2022. Innovative business models such as integrators of pumpset and solar modules may be required to realise this potential”

Solar water heating systems:

China has the largest installed base of solar water heating systems in the world of over 125 million square meters, where 10 percent of Chinese families have adopted solar water heating systems. In comparison, India only has an estimated 3.5 million sq m of solar water heating collectors. India with a higher radiation intensity than China can also achieve a similar success.

According to the KPMG report, around 70 million sq m of collector area could be deployed in India within the next decade. Policy measures that encourage deployment of solar water heating systems along with effective monitoring can go a long way in developing the solar water heating market in India. If deployed effectively, it can save over 11 MTPA of imported coal.

Solar powered telecom towers:

Solar powered telecom towers are already cost competitive with alternatives such as diesel. It is estimated that switching from diesel to solar power would save Indian telecom firms INR 6,440 crores in operations cost. Going forward, with falling solar power prices and increasing diesel prices, solar installations would make greater economic sense. ***According to the KPMG report, over the long term, solar power has the potential to replace about 30 percent of the telecom tower industry’s diesel consumption.***

Solar lighting solutions:

An additional area in the decentralised segment where solar power holds large potential is the area of lighting. Solar power can be used for lighting in areas with limited or no access to the

grid. A simple cost benefit analysis where Government benefits through reduced usage of the highly subsidised kerosene by providing solar lanterns at subsidised rates would show a break-even period of one to two years for the investments made by the Government. Furthermore, access to a clean source of energy could have positive ramifications like the impact on environment - reduced dependence on firewood, improvement in health of women doing household chores, safety etc. besides savings in fuel consumption. The usage of solar lanterns as an alternate to kerosene lighting needs to be earnestly pursued.

Key Imperatives:

- To unleash this potential, the next few years are likely to be critical because that will decide how the solar ecosystem takes shape. The Governments at both the Central and State levels should keep the market creation program going and support aggressively the efforts of private developers in setting up the projects under the first phase of the program.
- The decentralised power generation segment should be given a greater push through announcement of a larger support program for this sector. This segment is likely to reach grid parity earlier.
- In the first phase (upto 2013), the Central Government should also consider providing a more direct funding support to state power utilities to absorb the higher cost of solar power, since the Indian power utilities are cash strapped and do not have the necessary resources to support this.
- Steps such as creation of the National Clean Energy Fund are steps in the right direction and states should be given support from this fund. The funding support should be combined with enforcement of the Solar Renewable Purchase Obligation at the state level.
- In the first phase, the banks should also come forward and support the sector earnestly. Granting of priority sector status by the Government for the solar sector could provide the necessary boost. Provision of suitable backstop by the Central Government for the initial projects can also help allay some their concerns.
- Formulation and enforcement of mandatory regulations such as deployment of Solar Water Heating (SWH) systems can also accelerate their deployment. In the agriculture pumpset segment, the Government should aggressively pursue the right implementation models.

- The investment requirement and opportunity in the next decade could be around USD 110 billion. Furthermore, a million jobs are likely to be created in the sector during this period. Given the significant potential that is possible, steps to encourage investments that enable development of the complete supply chain are important.

“Solar power can provide a clean, secure and distributed source of energy for our country as a whole. It needs to be supported earnestly in the interim period so that we can get its full benefits by the end of the decade, **added Mr. Kamath.**”

About KPMG

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