**Solar Energy’s role in India’s development**

India transitioned from being the world’s seventh-largest energy consumer in the year 2000 to the fourth-largest one within a decade. Despite of this, nearly a quarter of India’s population has limited or no access to electricity. Today, India is one of the lowest per capita consumers of electricity in the world.

The power sector in India is highly diverse with varied commercial sources of power generation such as coal, natural gas, hydro and oil as well as unconventional sources such as solar, wind and bio-gas. The rapid growth of demand has overtaken the supply, leading to power shortages in spite of the manifold growth in power generation over the years. To meet this demand, India plans to ramp up solar power generation to 100GW by 2022. This step in the right direction will help bring sustainable, clean, climate-friendly electricity to millions of Indians. The World Bank Group (WBG) is helping India deliver on its plans with more than $1 billion in lending over FY 2017. This is the Bank’s largest-ever support for solar power in any country.

Solar energy will play a vital role in the development of India and a lot more needs to be done to realize the potential of this sector.

**Challenges in the solar sector**

***Land prices and power generation:*** A 1 MW of solar power plant requires somewhere about 5 acres of land and sometimes more depending on the type of the PV technology used. With land prices rising in India, identifying a land and setting up a plant has become very expensive. Even with the help of the Government if an organization does set up a plant, the capacity utilization is low. The performance of a PV power plant is often denominated by a metric called the CUF (capacity utilization factor). It is the ratio of the actual output from a power plant over the year to the maximum possible output from it for a year under ideal conditions. CUF is usually expressed in percentage. The energy generation of a plant primarily depends on two key parameters; solar radiation received and the number of clear sunny days experienced by the plant’s location. According to Bridge to India, the highest CUF recorded in India for a PV plant is 20 percent, which is very low in comparison with other forms of power generation including wind.

***Lack of Research and Development:*** R&D in this space is on a slow track due to the lack of collaborative efforts on this front between businesses and the Government. Technological innovations to improve the efficiency, storage mechanism and transmission of solar energy is necessary to exploit the solar energy potential in India.

***Lack of standardization:*** Another factor restricting the growth of this sector is the lack of standards, resulting in the fragmentation of the market among manufacturers, suppliers and installers. Standardization of systems will lead to rationalization of cost as companies can invest in R&D and newer technologies to meet common specifications.

***Consumer Awareness:*** Lack of consumer awareness on the benefits and utility of adopting solar energy is also one of the major challenges in this industry. The technological advancement also needs to be communicated to the consumers. Similarly, schemes like net metering offered in few states are not fully understood and utilized.

**Action Steps**

Given these challenges, the Indian solar energy industry can receive a major boost with the following action steps:

***Efficient implementation of Renewable Energy Certificates (RECs):*** With RECs, low potential RE states can purchase RECs from high potential states and meet the National Action Plan on Climate Change’s (NAPCC) demands. Additionally, the purchases will incentivize the high potential RE states which will in turn motivate higher production and enable overall increase in total RE production.

***On-grid application implementation:*** Solar power is generated at 15-20% efficiency rate, as compared to other power sources. It is important to make high radiance land resources available through governmental support. India needs a framework for faster deployment of floating PV plants across ideal waterbody resources.

***Off-grid application:*** A major number of villages in India suffer severe electricity shortages throughout the year, which provides huge opportunities for off-grid solar application. Some of the applications that could be considered are solar power micro-grid, irrigation pumps and street lighting.

**Lapp’s contribution to the Indian solar sector**

Lapp has been making a name for itself as a driving force for innovation in the photovoltaic (PV) industry. For over ten years, the company has been successfully developing cabling & connectivity solutions for photovoltaic systems and has regularly pushed the market forward with its intelligent innovations. Since 2012, Lapp India has catered to over 4 GW of grid connected projects with an array of highly efficient and reliable products like cables, connector, splitters and other accessories. For this financial year (Oct ’16-Sept ’17), we hope to cater over 1 GW of PV projects. At present, we cater to about 25 % of the total 13GW of installed grid-connected PV base in India.

Our PV system solutions around the solar module include:

* **ÖLFLEX® SOLAR XLR/XL WP:** These cables are very apt for the cables that are routed through conduits during installations and are exposed to water for a longer duration and during flood or natural calamity. The water proof cable guarantees continuous system.
* **SOLAR AL FLEX®:** These cables are flexible, lightweight and cost-competitive with aluminum fine wire stranded conductor. SOLAR AL FLEX® cables are UV, ozone and weather resistant with double insulated construction for outdoor DC applications. They are used for the fixed installation of photovoltaic systems.
* **EPIC® CONNECTORS:** EPIC® SOLAR 4 Splitter & EPIC® SOLAR 4 Connector are solar industrial connectors specially designed for weatherproofing cabling of PV systems.
* **SKINTOP® SOLAR**: SKINTOP® SOLAR is a specially designed plastic cable gland for PV applications which are UV and ozone-resistant, halogen-free, highly flame-retardant and are able to withstand extreme operating temperatures.

We also provide complete connectivity solutions with power, control and data cables across industries. Our products are globally certified as per latest standards and widely accepted.