

## India's Renewable Energy Program

Development agenda will stand true to its enactment only, replete with power efficiency. The power generation dialogue confronts with three main issues unrestricted and stable reach of power to the consumers, power distribution to the remotest Indian human settlement and low level of carbon foot prints in generation of power. Though the energy shortage has been successfully curtailed to 2.1 per cent, which is the lowest ever in a single year in 2015-16 the current power infrastructure in India is still not competently converged to meet the requirements of the above three issues. Facts to be noted in context to the same are, India is the world's third largest electricity producer and consumer of electricity after the United States and China however, the electrical infrastructure is generally considered unreliable. An estimated 27% of energy generated is lost in transmission or stolen, while peak supply falls short of demand by an average of 9%. The nation suffers from frequent power outages that last as long as 10 hours, 400 million people have zero access to electricity since the grid does not reach their areas. India's coal-fired, oil-fired and natural gas-fired thermal power plants are inefficient and offer significant potential for greenhouse gas (CO<sub>2</sub>) emission. India's thermal power plants emit 50% to 120% more CO<sub>2</sub> per kWh produced when compared to the average emissions from their European Union (EU-27) counterparts.

In the present scenario sliding fuel prices have led to stability in power commitments to the existing users. During the fiscal year 2015-16, the electricity generated in utility sector is 1,090.851 billion kWh with a short fall of requirement by 23.557 billion kWh (-2.1%) against the 2.2% deficit anticipated. The peak load met was 148,463 MW with a short fall of requirement by 4,903 MW (-3.3%) against the 2.7% deficit anticipated. Owing to the import of power from Bhutan, promotion of use of renewable energy, commissioning of nuclear and natural gas based power plants the total power output has risen but the ground realities still do not prove the fact that India has at least achieved any kind of power sufficiency in terms of continuity, reach and carbon emissions.

India may produce surplus power from the existing facilities by 2018 but one needs to sincerely examine the quality of power surplus in terms of 24 hours power supply to existing users, reach of power to the remotest villages and near total reduction in carbon foot prints. This will sound more of a success story than just having power surplus. Development without 100% power self sufficiency is an unlikely dream.

Present long term strategies deviate from achieving power efficiency with any reduction in carbon foot print and pollution. India has been bestowed with a 360 day sunshine in addition to abundant water channels. In a scenario such as this India's power policy should have embraced at least 60% power production through renewable sources such as solar, biomass and hydro electric means. Renewable sources of power coupled with highly efficient automation support will be driver of growth not only in terms of power but also in the employment sector. Renewable power sector can turn urban garbage dumps into sprawling area of power production and oxygen rich breathing grounds as the waste product of biomass is an organic fertilizer which can be used to curb deforested and desilted lands to grow more trees. As compared to coal fired thermal power station which produces tons of soda ash which pollutes not only the environment but also arable land and rivers. Moreover, the power generation through thermal means is raw material centric where as power generation through renewable is human resource centric. The only evident problem in case of renewable is the issue of unstable generation of power however the same can be curbed by the use of efficient automation systems that comprise of high batteries and transformers which are used for the storage of excess generated power and to output the same when there is a lag in power production. Moreover installation of renewable supported mini grids in remotely connected human settlements areas will help reach of power to them. Setting up of thermal power stations at remotely connected areas is an issue as most of these are situated close to densely populated areas due to the huge power requirement. Renewable power Mini grids support the power requirement of such small populations thus reaching power to the remotest. In the hilly areas these mini grids are mostly the small hydro electricity power stations where as in the plain forest and rural areas they can be those of solar, biomass or wind based renewable power sources.

Another important aspect of renewable source is that it does not need any changing policy requirement as the one that happens in case of coal prices. A renewable energy project can be installed and involves a one time implementation cost and a fixed servicing cost unlike the thermal power plant whose operating cost of production

changes with changes in coal prices thus leading to huge losses at the generation phase itself. Moreover, 70% of the thermal power generation plants are handled by Government subsidiaries rather than working on a PPP basis. Such is not the case with renewable power generators who can be private players who can sell the generated power to the main grid upon agreement of a price with the government authorities. Thus feature supports the Make in India and start up India initiative. Another advantage renewable energy is that it supports power requirement not only at the grid level but also at the individual consumer level that can set up solar or bio mass machinery at the residence level. Setting up of individual micro solar stations by industrial areas will help curb electricity theft as a stable power supply will be maintained to these units. India's NPAs in the power structure have played a negative role to curb the irregularities in the power sector.

India presently boasts of high service sector enterprises in the hospitality and IT sector. However, the opportunity that lies in the renewable energy service sector is immense. The maintenance of renewable energy micro and mega projects require service engineers as well as other personnel for a round the year activity post implementation this will provide allied jobs in maintenance especially to the rural youth who can dispense their time between farming and service where such projects have been implemented.

More innovation needs to be brought in the renewable power generation sector apart from the stereo type usage of thermal power to suit the requirement merit of the industrial sector. Large industrial infrastructure conglomerates like the MIDC, SEZs , etc have to now start rethinking and make it their policy to include renewable power generation sources to be set up amongst their infrastructure rather than depend on the traditional power supply sources.

A long vision strategy needs to be put in place in consistent to the requirement of the solar power equipment in years to come if India wishes to wipe of its carbon foot pints and aide the climate change protection agenda. This is possible only by setting up Joint technology transfer groups between Indian and International majors to manufacture solar panels and other renewable energy infrastructure requirement in India to cater to the replacement of power generation through the renewable energy means. At the same time, the BEE certification needs to acknowledge the use of renewable power use in its validation process. This certification has currently acquired superior footage in most of the residential and industrial areas which can cater to boosting the renewable energy use at the same time along with energy efficiency.

Moreover thermal power generation expects a bank funded investment of Rs6.12 trillion to produce 175 GW by 2022. Consumers moving to solar means gradual cannibalization of this investment. Hence solar power penetration has to be gradual and non intrusive unless India's economic growth and electricity supply penetration increases dramatically. Hence a policy framework having long vision having provisions for both needs to be put in place.

This innovation drive will boost manufacturing in India for India. Development is impossible without power reach and stability. India needs to perfect its statistics in context to the percentage of power reach and its stability to 60% rural electricfication and this would serve a bench mark for power efficiency to its industrial and urban needs.