

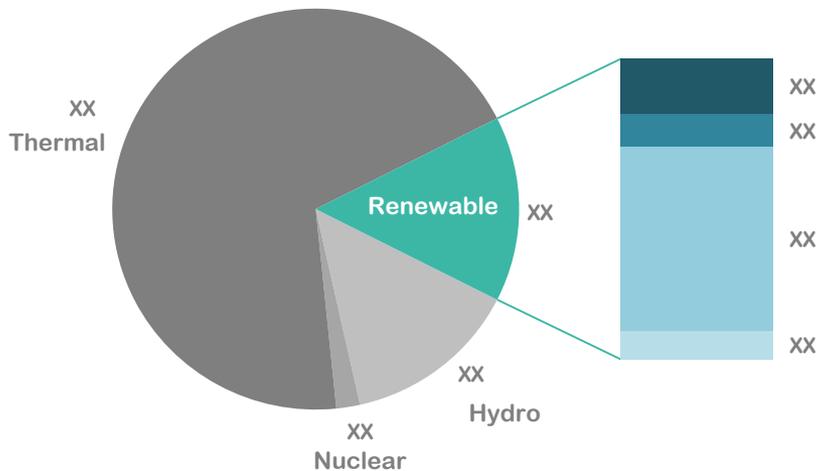


# Segment I Solar Power Development Paradigm in India



# 01 Renewable Energy & India's Energy Future

Exhibit 01: India's Energy Mix as on 31<sup>st</sup> October, 2016 (in GW)



No Power on earth can stop the idea, whose time has come  
-Victor Hugo

## 1.1 India's Energy Mix

Presently, renewable energy accounts for ~XX of India's total installed power generation capacity, and approximately XX of the total generation. The Government of India aims to reach a renewable energy capacity of 175 GW by 2022. 100 GW of this is planned through solar energy, 60 GW through wind energy, 10 GW through small hydro power and 5 GW through biomass based power projects. Of the 100 GW target of solar, 40 GW is expected to be achieved through decentralised rooftop projects, 40 GW through utility scale solar plants and 20 GW through ultra mega solar parks. Considering these targets renewables will account for ~XX% of the entire power consumption in India by, 2022

Source: CEA, enincon research

# 02 Renewable Capacity Addition: Sun Shining Bright

## India 2022: Making Way for the Sun

### 2.1 Ambitious Target: 100 GW of Solar by 2022

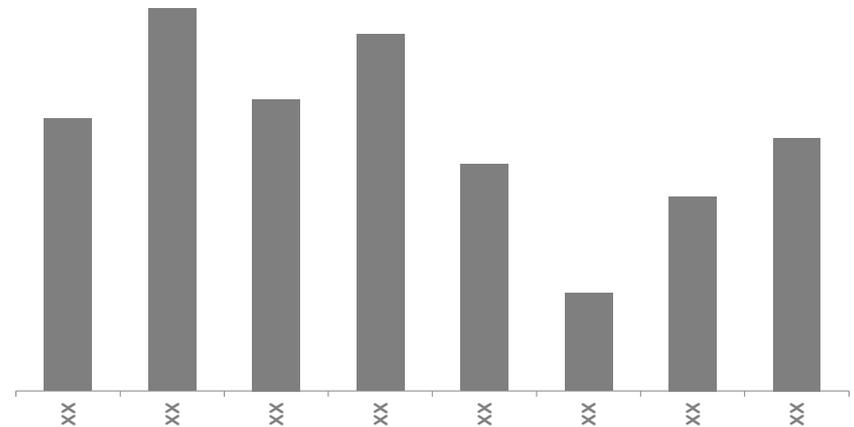
India has made an exceptional commitment to solar energy by raising its 2022 target five-fold to 100 GW. The government has announced an unprecedented policy push and states are providing the necessary infrastructure. This opens up approximately USD 100 Billion investment opportunity over next 5-6 years. Having said that, realistically, challenges of weak financials of distribution companies and grid constraints need to be addressed in order to achieve this target. Cumulatively, India has installed ~XX GW of solar power by October, 2016 end, most of which (approximately XX GW) was installed in last 2 years. Long term potential and favourable regulatory shifts are helping to accelerate growth in the sector.

### 2.2 Cost Parity: Advantage goes to Solar

The government has reintroduced accelerated depreciation, eased duty structures and is providing Viability Gap Funding (VGF) & Infra development funding. Incentives are playing their part, but the most significant change has been the drop in cost.

This has enhanced the project viability. On Life-cycle Cost of Energy (LCOE), solar is more competitive than thermal, although it looks ~XX% expensive initially. However, difficulty is that if there are a large investment in solar/RE, the price of fossil fuels could remain subdued, keeping their attractiveness intact.

Exhibit 02: LCOE of energy sources in India (INR/kWh)



Source: enincon Research & Analysis, Deutsche Bank

## 03 Solar Tariff Trends in last few years

Tariff Parity: Almost there for Consumers, but at generation level it shall take some time

### 3.1 Tariff Parity for Consumers and at generation level

XX and XX India could accept solar readily given their higher tariffs of procurement, hence XX and XX could be the major market. However, a large part of development is being planned in XX and XX including XX, XX, XX and XX given better solar potential. Looking at the tariffs discovered in XX bids for Solar and Coal, it can be said that the parity is almost there for the buyers (Table 01). Importantly, if coal prices increase further in near future, solar could look cheaper in next few years.

Commercial consumers in major states of the country pays highest tariffs. Solar power is already competitive or cheaper than grid power, even without capital subsidies in XX states like XX, XX, XX and XX.

Tariff parity at generation level is some time away and it means that solar needs government support. New solar units generate at INR XX/kWh, whereas coal based plants generate at INR XX/kWh.

This make solar plants XX XX support from government continues, either in form of subsidies of strict implementation of XX.

Table 01: Comparison of Solar and Coal Bids

MP Solar – July, 2015	Tariff (INR/kWh)	AP Coal – June, 2015	Tariff (INR/kWh)
L1 (Sky Power)	XX	L1 (East Coast)	XX
L2 (XX)	XX	L2 (XX)	XX
L3 (XX)	XX	L3 (XX)	XX
L4 (XX)	XX	L4 (XX)	XX
L5 (XX)	XX	L5 (XX)	XX
L6 (XX)	XX	L6 (XX)	XX
L7 (XX)	XX	L7 (XX)	XX

Source: enincon Research, Media Reports