

SOLAR ENERGY OPPORTUNITIES

Levine Lawrence | Ecoideaz.com



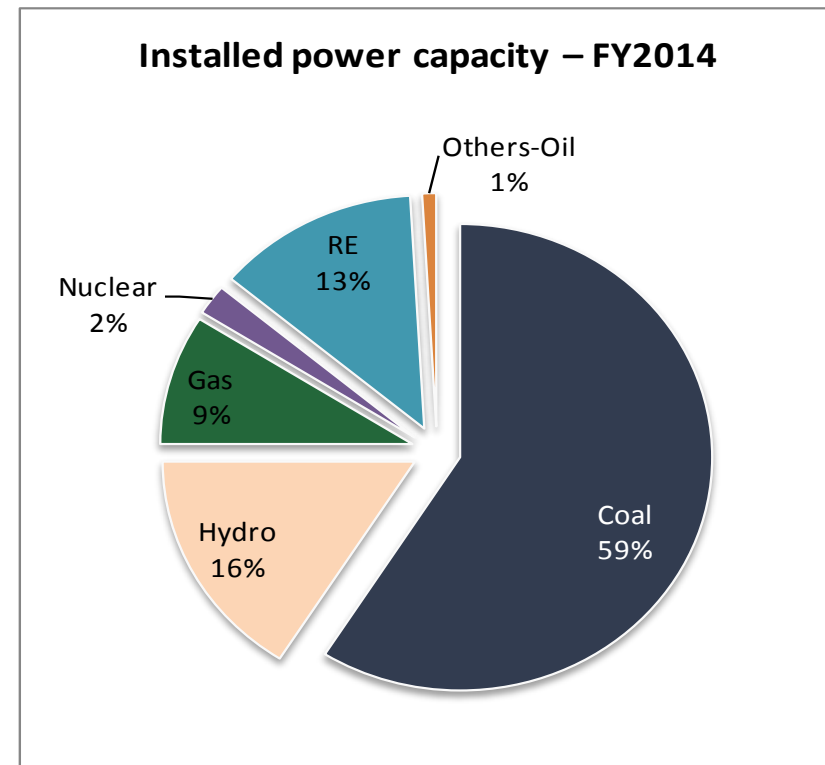
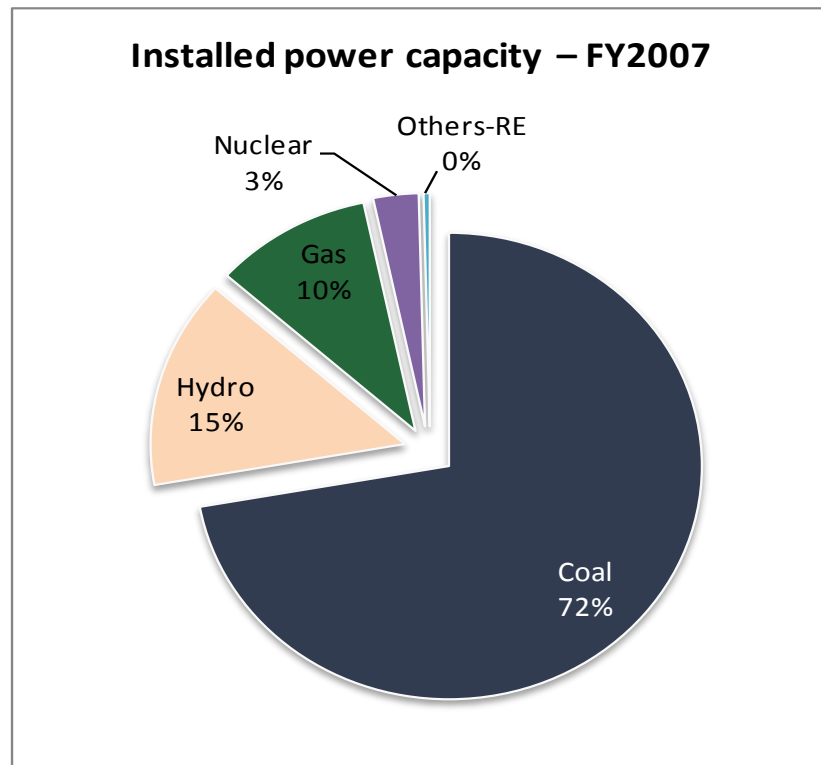
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INSTALLED POWER CAPACITY IN INDIA

- Year-on-year data on the share of various power sources in India clearly indicates that coal is steadily losing its dominant share, while renewable energy (RE) sources have gained rapidly.

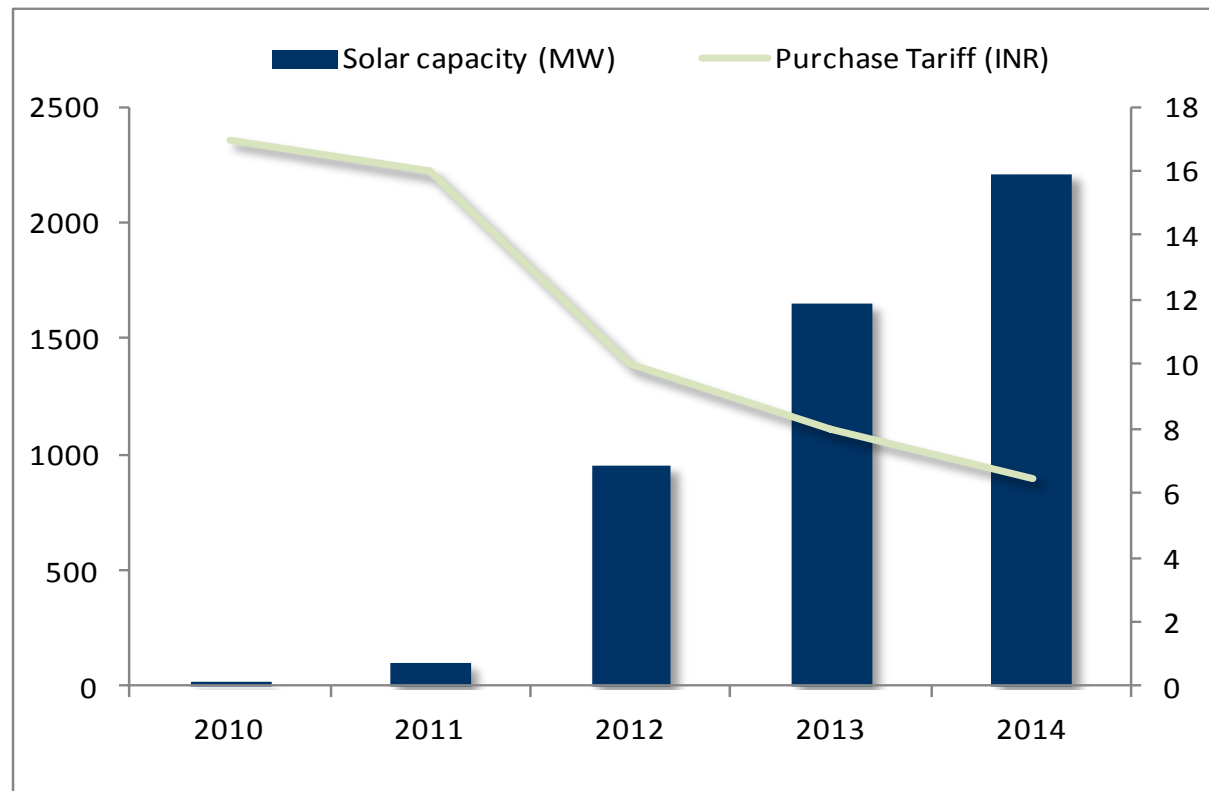


Source: Central Electricity Authority, 2014

RISING SOLAR POWER CAPACITY IN INDIA



- While the installed capacity of solar power has surged, the per unit purchase price has collapsed to reach closer to the price of thermal power. The current solar purchase price of Rs.6.5 per unit is marginally above Rs.5.71 per unit paid by coal power plants in Delhi.

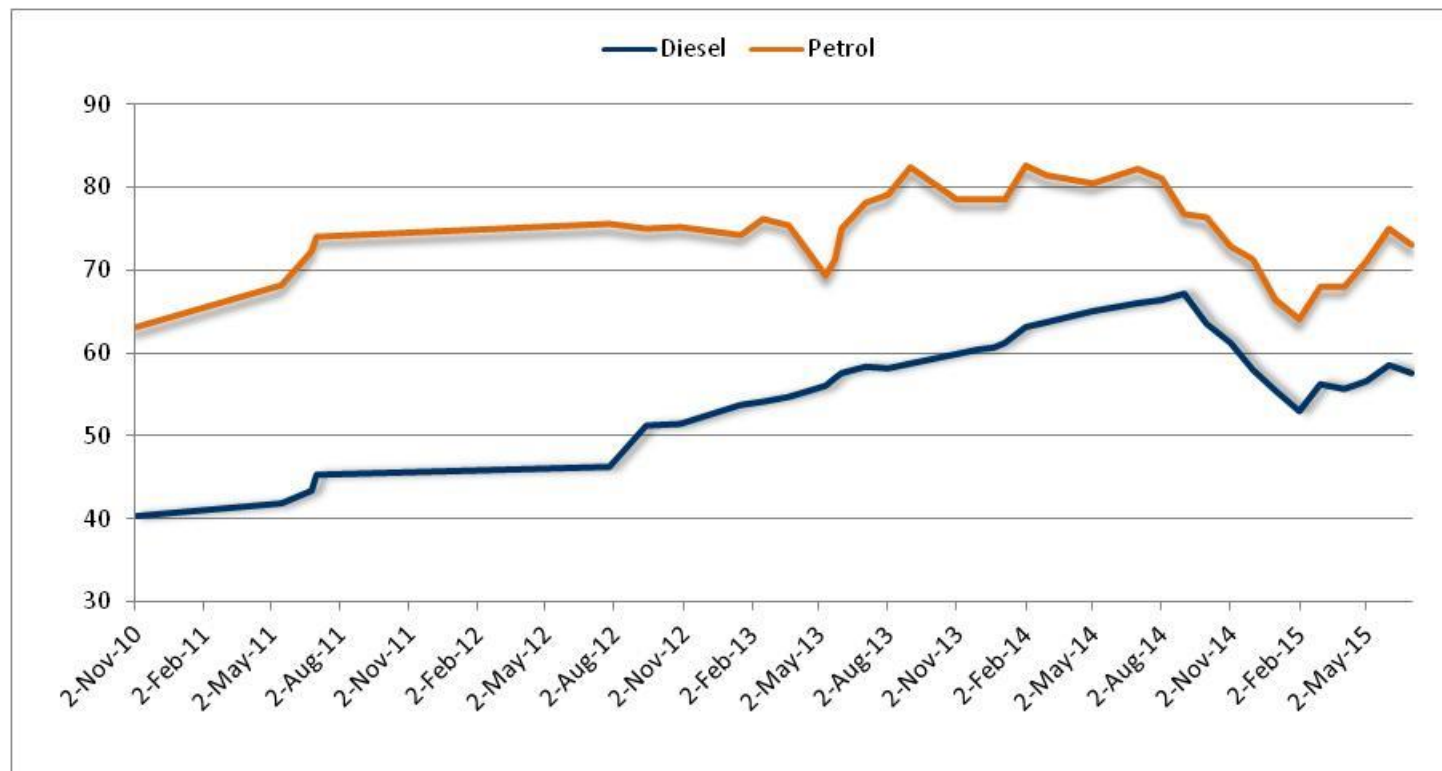


Source: *Economic Times*, 2014



VOLATILITY IN PETROLEUM PRICES

- In contrast to solar power, petroleum prices are quite volatile. Particularly, since the central govt. has dismantled the administered pricing mechanism, prices have gone up and down drastically. After the massive collapse in 2014, petroleum prices are rising again. This kind of volatility is not suitable for any power consumer, which adds value to the steadily falling solar power price.

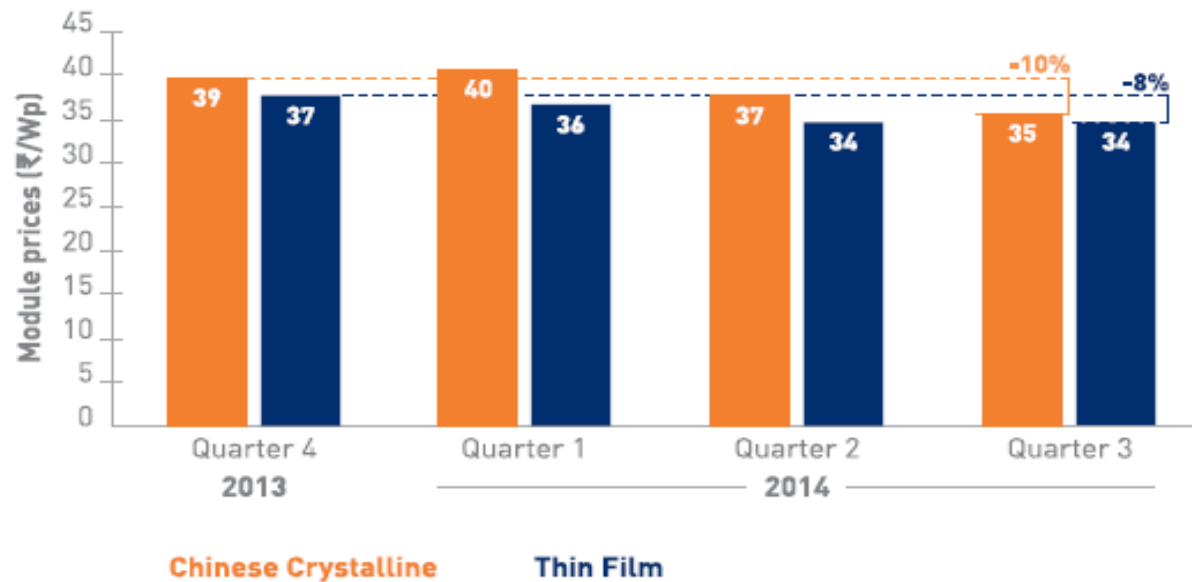


Source: *Mypetrolprice.com, Pune city prices*



FALLING PRICES OF SOLAR PV PANELS

- Similarly, the cost of equipment is falling steadily in recent years, enabling solar power companies to expand their capacities. However, there is a threat of anti-dumping duties being imposed on Chinese solar PV modules, which is the main supplier for the Indian market. The crystalline PV module prices have fallen from INR39 per watt in 4Q2013 to INR35 per watt in 4Q2013.



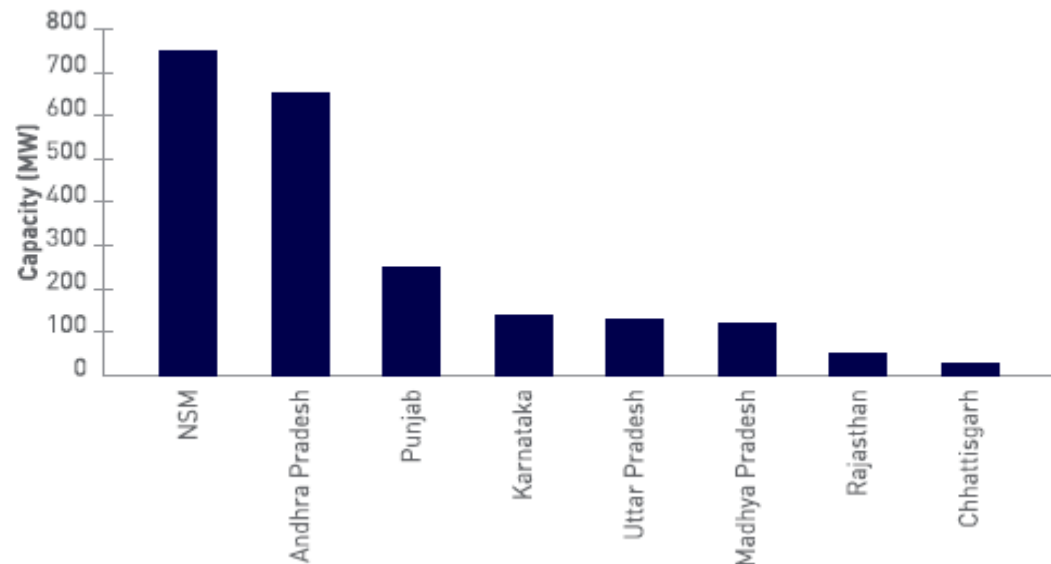
Source: India-Solar-Compass, October-2014



UPDATE ON SOLAR PV PROJECTS – 4Q2014

- The National Solar Mission has been the biggest boost for solar power market to develop since 2010. Gujarat and Rajasthan have emerged leaders among Indian states to offer incentives through state policies. However, Maharashtra has been quite slow in promoting this market, but the new BJP-led government is expected to push forward with the pending projects.

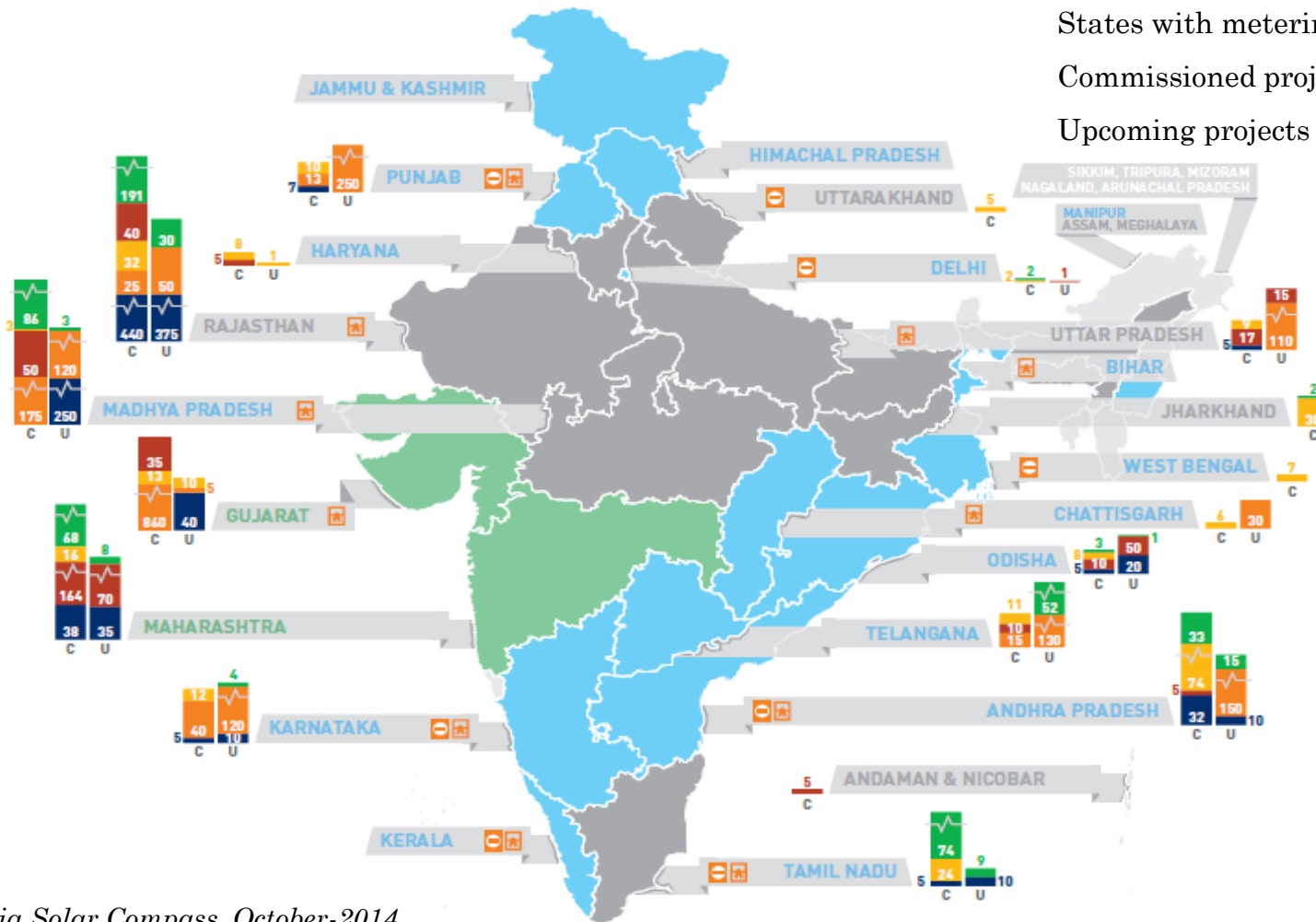
PPAs signed, projects not yet commissioned



STATE-WISE UPDATE ON SOLAR PV PROJECTS



- Credit-worthy states ■
- States with solar policy ■
- States with metering policy ■
- Commissioned projects C
- Upcoming projects U



Source: India Solar Compass, October-2014

OPPORTUNITIES FOR MARKET ENTRY FOR SMEs



- The techno-economic feasibility of solar PV projects is now well established. Numerous private and state-owned companies have entered the market since 2010 and the market is becoming crowded. Yet, three key opportunities are still available for newcomers. They are:
 - EPC contractors for large solar companies
 - Captive power suppliers for industrial parks
 - Independent power distributors for villages
 - Grid connected independent solar project
 - Zero investment rooftop rent





EPC CONTRACTORS FOR LARGE SOLAR FIRMS

- These are Engineering, Procurement & Construction contracts for large solar power plants, where a leading turnkey solution provider will handle the entire work right from govt. liaisoning to final commissioning. Since solar plants mainly require metal framework to place the solar panels and electrical cabling, there is enough opportunities for sub-contractors in metal fabrication and construction work.
- Large EPC contractors appoint sub-contractors to handle the construction work; typically divided into civil, mechanical and activities.



CAPTIVE POWER SUPPLY FOR INDUSTRIAL PARKS



- Many manufacturing companies and telecom tower firms are converting their diesel backup power units to solar power. This is mainly happening in rural areas where grid power is irregular and diesel transportation is difficult. These are the options:
 - Stand-alone Solar PV system
 - Grid-connected Solar PV system
 - Grid-connected Solar PV with battery backup
 - Hybrid Solar PV system with diesel



Source: EAI

INDEPENDENT POWER DISTRIBUTOR FOR VILLAGES



- Solar power can be used by isolated villages that get irregular grid power supply. The power distributor can tie-up with telecom tower for main PPA agreement and sell the excess power to residential consumers in the village.



Source: *Business Today*, Feb 2015

GRID CONNECTED INDEPENDENT SOLAR PROJECT

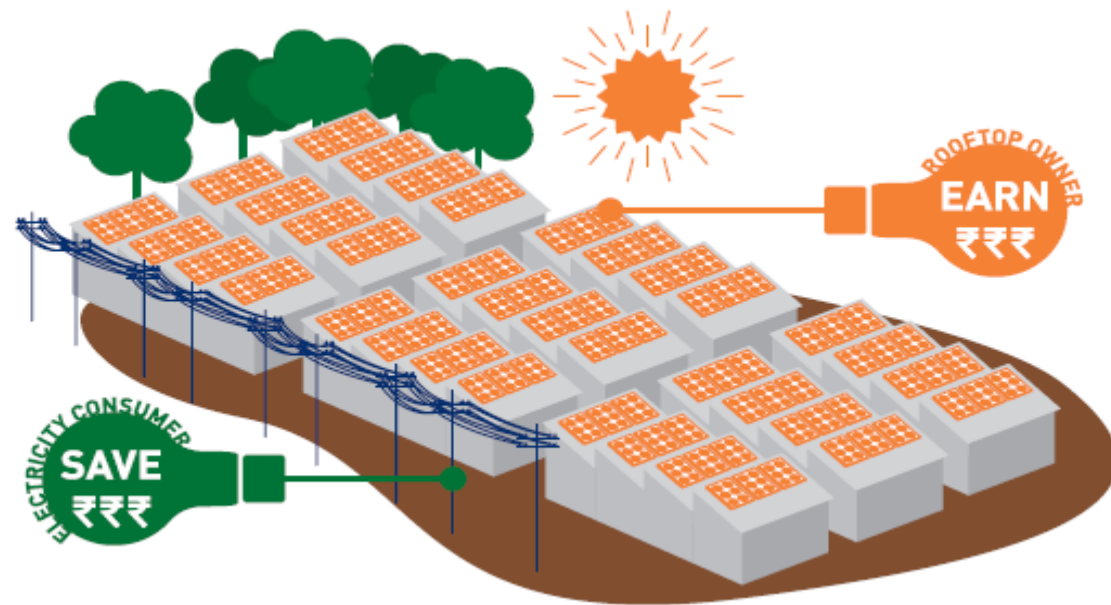


- Solar Energy Corporation of India (SECI) is designated as the nodal agency by MNRE for developing grid-connected solar power capacity through Viability Gap Funding (VGF).
- Project developers have to infuse capital of at least Rs.1.2 crore/MW. The remaining amount can be raised as loan. SECI will provide a VGF of up to Rs.1.0 Cr/MW for the open category.
- The VGF may be used to return part of the loan or the developer's contribution. The VGF will be released in six tranches: 50% on successful commissioning of the project and the balance 50% progressively over next 5 years subject to the project meeting generation requirements.



ZERO INVESTMENT ROOFTOP RENTING

- There is another opportunity where business and residential building owners can utilize their rooftops for renting to solar power companies. Solar power companies will set up the PV panels on the rooftop and provide power to the house and supply the excess to the grid.





CONTACT FOR FURTHER DETAILS –

- Ecoideaz acts as a virtual consultant for SMEs to get expert opinion on various –
 - <http://www.ecoideaz.com/category/expert-corner>
- Solar Energy Corporation of India (SECI) is designated as the nodal agency by MNRE for developing grid-connected solar power capacity through Viability Gap Funding (VGF).
 - <http://www.indiaenvironmentportal.org.in/content/407280/revised-draft-guidelines-for-implementation-of-scheme-for-setting-up-of-2000-mw-grid-connected-solar-pv-power-projects-under-jnnsmbatch-iii/>
- Commissioning status of Grid Connected Solar Power Projects under JNNSM (As on 10.03.2015)
 - <http://www.mnre.gov.in/solar-mission/jnnsmbatch-iii/>
- Investor receives funds from bank / financial entity with or without Rays Power Infra's assistance.
 - <http://rayspowerinfra.com/invest-proceed.aspx>

Thank You

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