



Indian Solar PV Market

Santosh Kamath

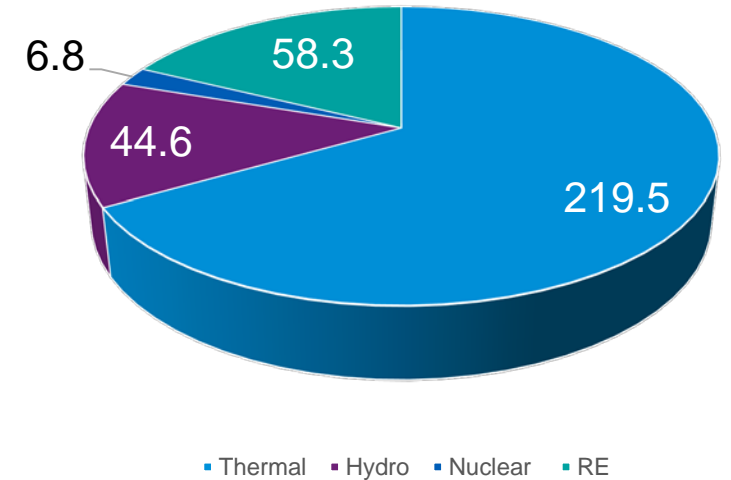
Partner and Lead of Renewable Energy

KPMG in India

Power Sector Overview

- India's total installed power capacity stands at 330 GW in FY 17
- Power demand is estimated to grow at 6.11% in coming years
- The Total Renewable installed capacity stood at 58 GW as of FY 17
- Solar currently stands at approx. 16 GW and the Government target is 100 GW by 2022

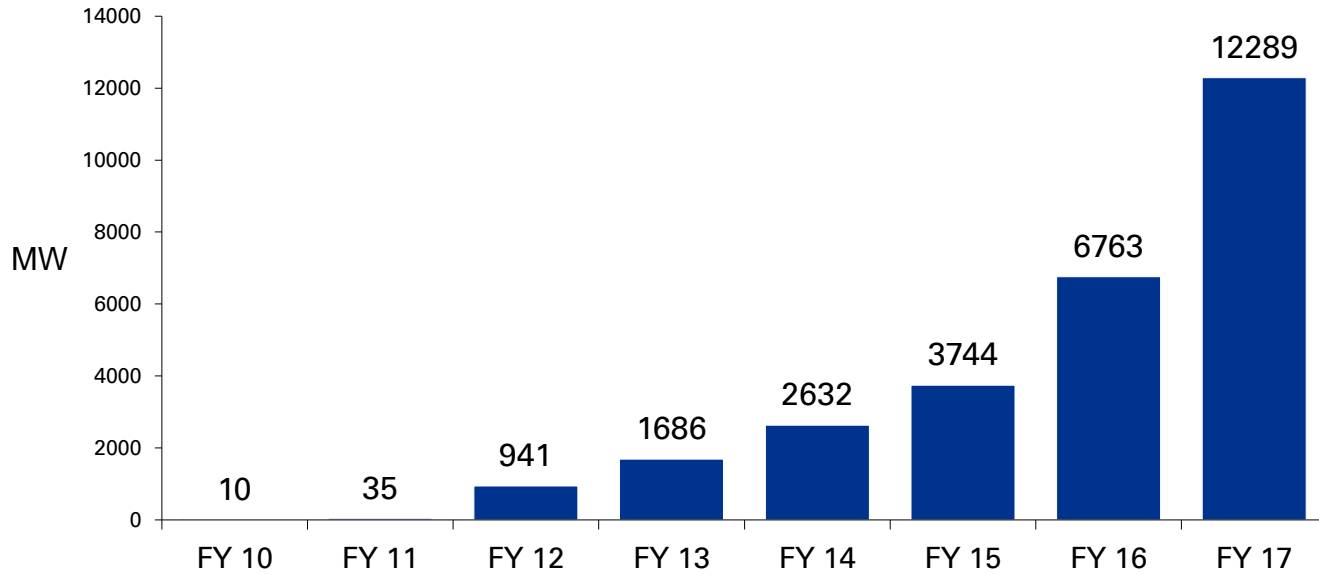
Installed Capacity in FY 17: 330 GW



Source: MNRE

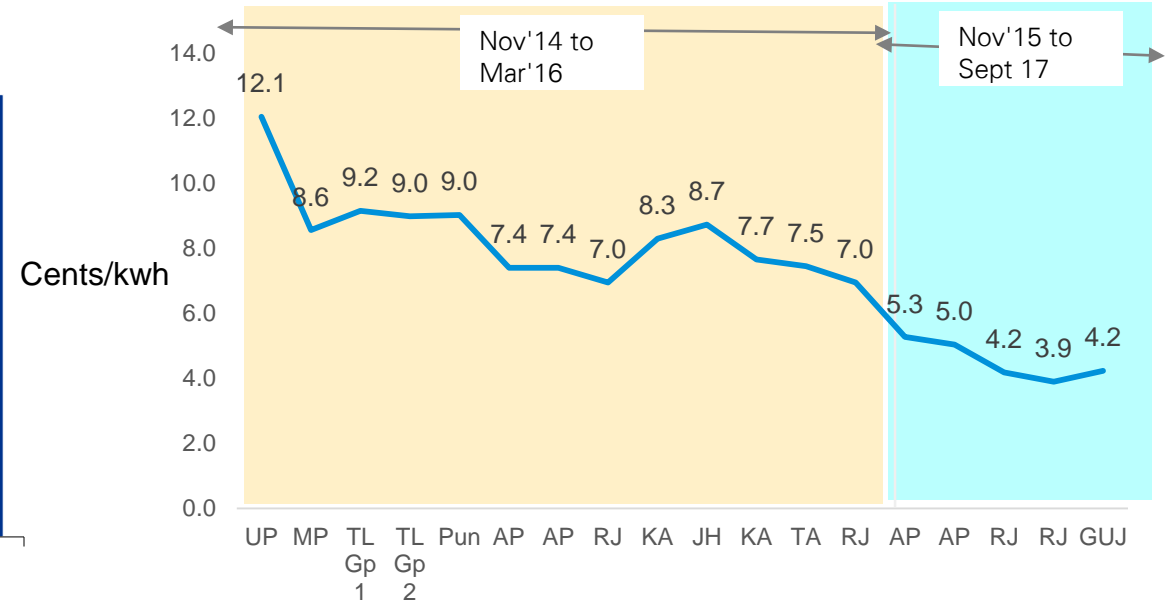
Solar remains the key driver; ~19 GW of solar capacity has been bid out

Installed Capacity (MW)



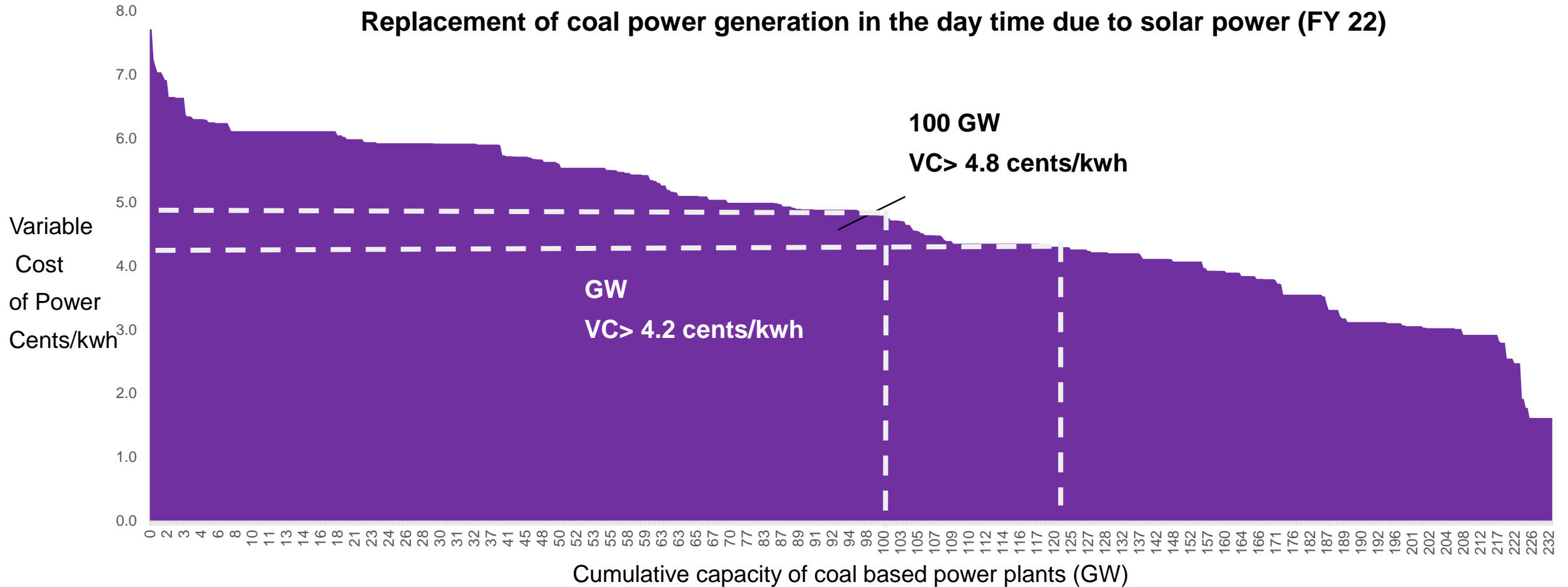
Source: MNRE, KPMG analysis

Tariff Trends



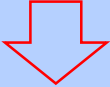
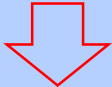
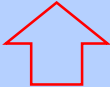
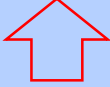
- 5.5 GW of capacity was added in FY 17
- While close to 30-35% decline in tariffs was observed in FY 16, tariff decline has continued in FY 17 and FY 18.
- Falling module cost along with cheaper financing have contributed towards the drop in tariff

Our analysis suggests that coal displacement by solar on fuel cost basis is now possible



Studies also suggest that the grid has the flexibility to take large amount of RE

Key Findings of Study undertaken by National Renewable Energy Laboratory (NREL)

RE INTEGRATION STRATEGIES					
NORMAL OPERATIONS	COORDINATED SCHEDULING AND DISPATCH		COAL PLANT FLEXIBILITY		
STATE LEVEL DISPATCH 55% MINIMUM GENERATION	REGIONAL	NATIONAL	LOWER MINIMUM PLANT GENERATION (40% of Capacity)	HIGHER MINIMUM PLANT GENERATION (70% of Capacity)	LOWER MINIMUM PLANT GENERATION (40% of Capacity) WITH REGIONAL BALANCING AREA COORDINATION
230,000 INR Cr Annual Production Cost	2.8% Savings Annually 	3.5% Savings Annually 	Negligible Savings annually	0.09% Increased Cost Annually 	3.3% Savings Annually 
1.4% Renewable Energy curtailment	1.3% Renewable Energy curtailment	0.89% Renewable Energy curtailment	0.76% Renewable Energy curtailment	3.5% Renewable Energy curtailment	0.73% Renewable Energy curtailment

Source: NREL



Government Programme for Solar

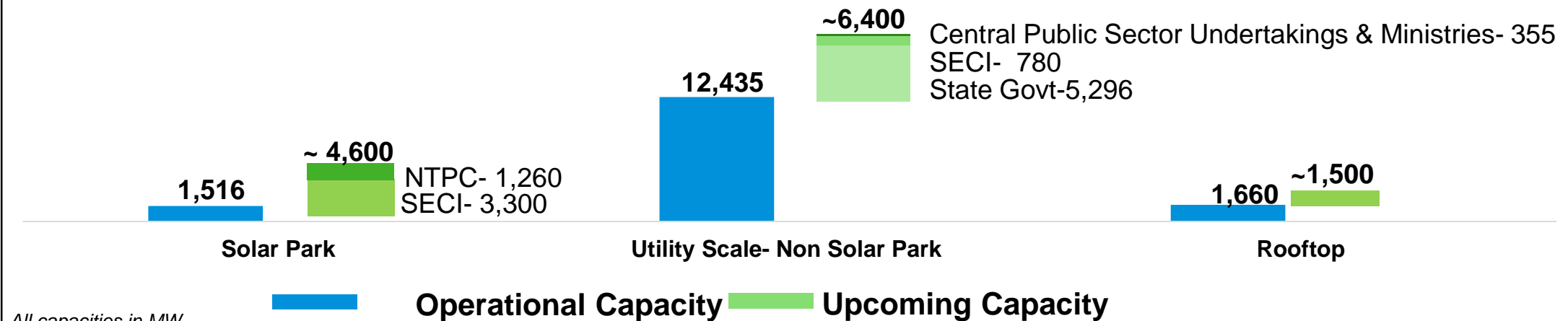
Government Targets for FY 22

Solar Park
40 GW

Grid Connected Stand Alone Solar
20 GW

Solar Rooftop
40 GW

Operational and Upcoming Capacities in Solar Sector (MW)



All capacities in MW

Source: CRISIL, Bridge to India Reports

SECI- Solar Energy Corporation of India

NTPC- National Thermal Power Corporation

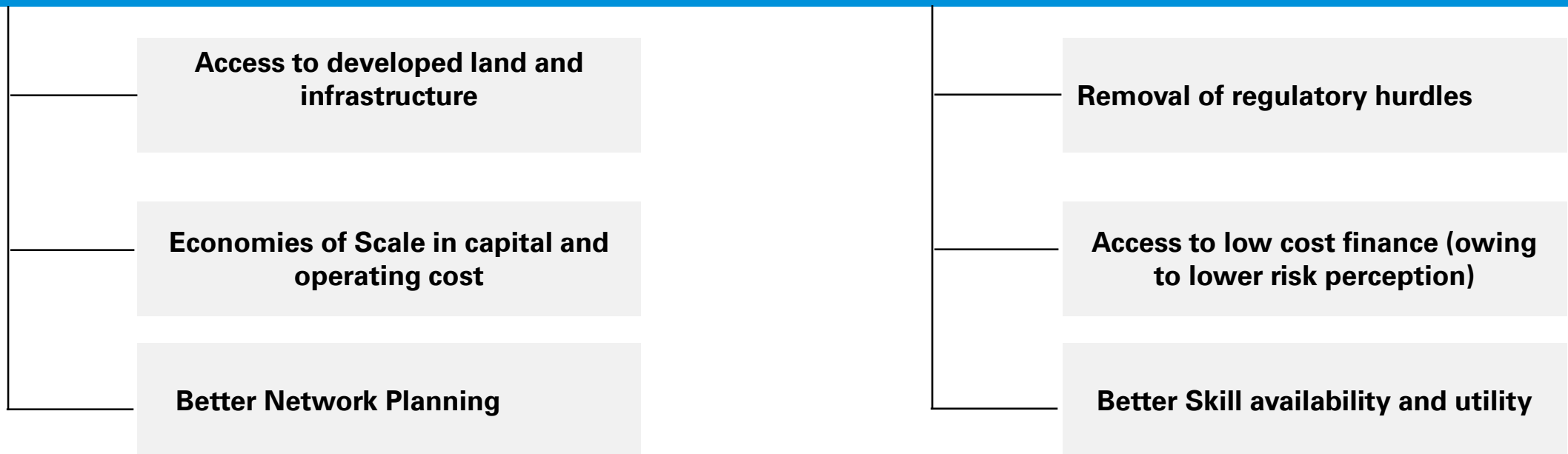
Upcoming Bids

Sr. No.	Tender Invited by	Location	State/Central/Other Scheme	Total Capacity (MW)	Details
1	SECI	Bhadla, Rajasthan	Central	750	Tendered, Bid Deadline is 8 th October. Tender for 500 MW in Bhadla Phase III and 250 MW in Bhadla Phase IV
2	SECI	Andhra Pradesh	Central	650	To be retendered
3	SECI	Andhra Pradesh	Central	100	To be retendered
4	Karnataka Renewable Energy Development Ltd	Karnataka	Central	200	Original Tender cancelled in Q1 FY 17; Fresh tendering expected in Q3-Q4 FY 18
5	MAHAGENCO	Maharashtra	State	150	Tender Released
6	MAHAGENCO	Maharashtra	State	110	Tender Released
7	NTPC	Across India	Public Sector Undertaking	500 (cumulative Capacity)	Tender Released

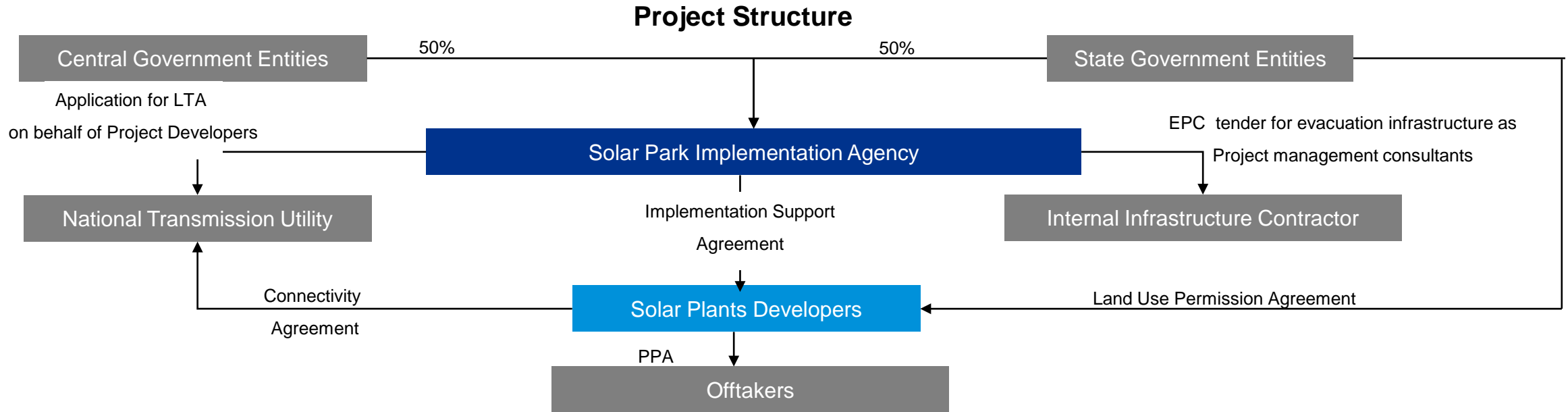
Solar Parks

“Solar Park is a concentrated zone of development of solar power projects and provides developers an area that is well characterized, with proper infrastructure and access to amenities and where risk of the projects can be minimized “

Benefits of Solar Park



Case Study : REWA Solar Park



Payment Risk : State Government payment guarantee if procurer does not pay in time



Curtailment Risk: Non/Partial availability of Transmission system and backing down from RLDC will be considered as deemed generation



Offtake Risk : Guaranteed Energy Offtake by procurer, in case of shortfall, Developer will be compensated for the shortfall

Solar rooftop market: Likely to grow to ~10-to 15 GW over next five years

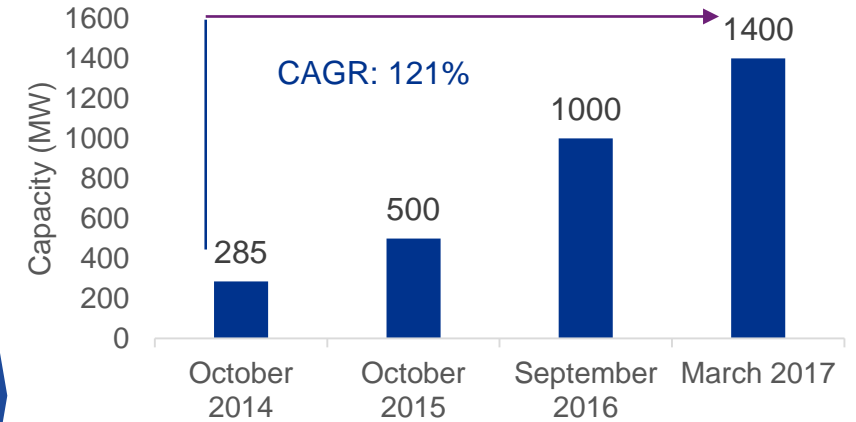
Focus on environmental sustainability

- Green image/ commitment towards environment and the sustainability

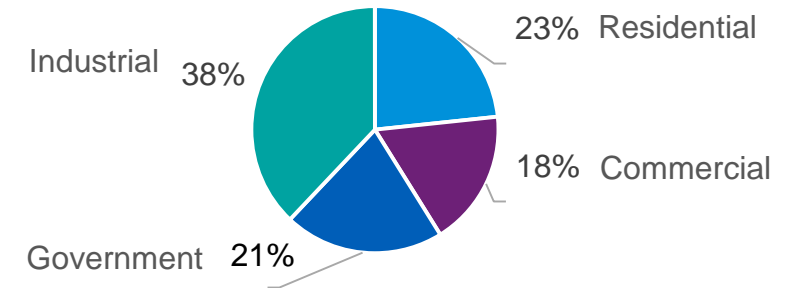
Government focus & conducive policy

- Adoption by Government agencies
- Capital subsidy of 30% for residential/ institutional consumers;
- 20 states have come out with Solar Policy supporting grid connected rooftop systems
- Increasing focus towards incentivizing discoms to support SRT

Rooftop solar capacity growth in India



Estimated Solar Rooftop Market Share in FY21



Source: 'The Rising Sun' by KPMG, BTI, KPMG Research

Drivers for increasing M&A and FDI activities seen and expected to continue

- Rising FDI Investments: USD 1.77 Bn received in last 2 years
- Entry of pension funds, sovereign funds as the sector is scaling and achieving maturity
- Capital raising through InVits
- Large ticket Investments have significantly increased over last 12-18 months
 - ~ Six M&A deals at a total deal value of >USD 2.1 Bn.
 - ~Eight strategic/financial investments at a total deal value of >USD 832 Mn
 - ~Eight asset sale transactions at a total deal value of >USD 178 Mn

Source: mergermarket

Thank You

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