

BHADLA MINIGRID SOLAR 2

Detailed Project Report



Prepared by:

BHADLA MINIGRID SOLAR 2 PRIVATE LIMITED

22 July 2024

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Glossary

COP 26	26th Conference of Parties held in Glasgow, UK
BESS	Battery Energy Storage System
BU	Billion Units
CBD	Central Business District
CFA	Central Financial Assistance
ckM	Circuit Kilometer
Cr	Crore
CTU	Central Transmission Utility
DG	Diesel Generator
DHI	Diffused Horizontal Irradiance
DISCOM	Distribution Company
DPR	Detailed Project Report
GDP	Gross Domestic Product
GHI	Global Horizontal Irradiance
GOI	Government of India
GW	Giga-Watt
GWh	Gigawatt-Hour
IEA	International Energy Agency
IEEE	Institute of Electrical and Electronic Engineers
IMD	Indian Meteorological Department
ISA	International Solar Alliance
ISTS	Inter-State-Transmission-System
kV	Kilo Volt
kWh	Kilowatt-Hour
LOI	Letter of Intent

MNRE	Ministry of New and Renewable Energy
MoEF	Ministry of Environment and Forest
MU	Million Units
MW	Mega-Watt
MWh	Megawatt-Hour
NDC	Nationally Determined Contributions
NISE	National Institute of Solar Energy
NTPC	National Thermal Power Corporation
OSOWOG	One Sun, One World, One Grid
PM KUSUM	Pradhan Mantri Kisan Urja Suraksha Evam Utthan Mahabhiyan
PNP	Plug and Play
PPA	Power Purchase Agreement
PV	Photovoltaic
RE	Renewable Energy
RPOs	Renewable Purchase Obligations
RTC	Round the Clock
RTS	Roof Top Solar
SPD	Solar Power Developer
Sponsor	Mr Tripta Tanwar (51%)
SPPD	Solar Power Park Developer
SPV	Solar Photovoltaic

Executive Summary

Solar Energy has emerged as a breakthrough in the renewable energy sector, particularly for India. Industry data shows India's installed renewable energy (“RE”) capacity has grown significantly. From March 2014 to February 2024, the installed RE capacity has increased by over four times, with solar capacity alone witnessing a remarkable growth of just under 29 times during the same period. As of 31 March 2024, renewable energy accounts for a substantial 32.5% of the total installed capacity in the country, and solar energy capacity was 81.8 GW or 12.5% of the total installed capacity (*Source: MNRE and CEA*).

India, being a tropical country, is blessed with abundant sunshine throughout the year, thanks to its geographic location in the sunny belt of the world. According to the Ministry of New and Renewable Energy (“MNRE”), Government of India (“GOI”), India receives solar energy equivalent to more than 5,000 trillion kWh per year, with a daily average solar energy incident ranging from 4.0 to 7.0 kWh/m² depending on the location. The solar energy potential in India is estimated to be around 6,000 million GWh per year.

Considering the vast availability of non-arable land and abundant solar irradiance in the country, there exists a tremendous solar potential of installing a total of 750 GW.

Though the primary goal of reaching each household has somewhat been achieved — villages were considered electrified if 10 per cent of the households in the village had received a connection — the factors affecting quality and the uptake of electricity in villages had been overlooked. Several villages still reel under darkness. Policies focusing on the utility of quality electricity rather than just connections have been long required (DownToEarth, Feb 2024). Determined efforts must be made to ensure that the task of rural electrification for securing electricity access to all households and also ensure that electricity reaches poor and marginal sections of society at reasonable rates at a sustainable model. In the current scenario, rural settlements receive subsidised, unreliable electricity from debt-ridden discoms. Prices must rise to improve discoms’ financial position, but this will limit the reach.

To address the issue of electricity shortage in the rural sector and aiming to provide electricity in the demand hours, i.e. day time for irrigation purpose, the Government of India introduced the PM-KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan) Scheme, ensuring energy security for farmers in India, along with honouring India’s commitment to increase the share of installed capacity of electric power from non-fossil-fuel sources to 40% by 2030 as part of Intended Nationally Determined Contributions (INDCs). The scheme involves setting up of solar plants by public or private entities and supplying power to 11/33 Kv rural feeders

Recognising the need and potential, Tripta Tanwar (“Sponsor”) aims to play a crucial role in the growth of sustainable rural electrification of the country. Thus, Tripta Tanwar participated in the tender floated by Jodhpur Vidyut Vitran Nigam Limited (JdVVNL) for Design, survey, supply, installation, testing, commissioning, operation & maintenance for 25 years (unless extended by both parties on mutual

agreement) from COD of grid connected solar power plants through RESCO mode, its associated 33kV OR, 11kV line to connect the plant with various 33/11kV sub-stations and RMS of solar power plants in various sub-divisions (AAU & BAP) of PHALODI Division under Jodhpur District Circle - Under PM- KUSUM Scheme – Component C, for 88 nos. of plants of cumulative capacity of 233.34 MWac. JdVVNL issued the NIT Document on 05 Oct 2023.

The tender was opened on 14.03.2024 and JdVVNL, on 16 March 2024, has placed Letter of Award (“LOA”) to Sponsor, of 9.52 MWac at 3 nos. plants. As allowed vide Clause 4 of the LOA, Tripta Tanwar plans to develop the above projects with a total capacity of 9.52 MWac / 13.33 MWdc through an SPV, namely Bhadla Minigrid Solar 2 Private Limited. JdVVNL Approved the SPV for the development of these plants vide Letter No. JdVVNL/SE(RA&C)/ (RE-DSM)/TN-DSM-53/F.Corrsp./ /D.816 Dated 19.06.2024.

The Detailed Project Report (“DPR”) outlines all the critical aspects of the planned solar projects totalling 9.52 MWac / 13.33 MWdc in the district of Phalodi, Rajasthan, India.

The management of Bhadla Minigrid Solar 2 Private Limited has been an integral part in successfully conceptualising, financing, designing, implementing, commissioning, and operating a 175 MW_{dc} solar project located in Bhadla Solar Park, Jodhpur. This Bhadla project, one of the largest in the world, was executed in partnership with listed firms in Singapore and had a Power Purchase Agreement (“PPA”) with the National Thermal Power Corporation (“NTPC”). The power plant demonstrated high efficiency, and robust grid/system protection, and utilised state-of-the-art equipment. The Sponsor has recently spearheaded the implementation of a Solar Park Project of 400 MW_{ac} / 552 MW_{dc}. The evacuation infrastructure of this Solar Park has been completed within a record time of 9 months. The Park was developed in partnership with Brookfield Renewable and commissioned in February 2024. Furthermore, the sponsor is heading the development of another Solar Park of 400 MW_{ac} / 550 MW_{dc} in Nokh, Jodhpur having connectivity secured in Bhadla III ISTS Substation. The Park is planned to be commissioned in August 2025. It is important to note that Sponsor's industry experience extends beyond utility-scale projects to include rooftop solar systems.

The director of BHADLA MINIGRID SOLAR 2 PRIVATE LIMITED, Karan Tanwar, aged 33 years, is an Industrial Engineer from Purdue University. He is a strict believer in fostering sustainable and equitable development. Previously, Mr. Tanwar looked after some of the largest agri-warehousing facilities in India at Globus Warehousing and Trading Private Limited, where he enhanced the security, surveillance, operations and maintenance of facilities capable of storing 40 lakh metric tonnes of foodgrain.

Bhadla Minigrid Solar 2 Private Limited aims to develop solar projects in Rajasthan, the state with the highest solar irradiance in the country. The company has been awarded solar projects under KUSUM Component C, of 9.52MWac / 13.33 MWdc. The said solar projects in Phalodi are projected to cost ₹49.98 Crores, which is to be funded with a debt of ₹34.99 crore. Below are the key terms of the proposed debt.

Borrower	BHADLA MINIGRID SOLAR 2 PRIVATE LIMITED
Shareholders	Ms Tripta Tanwar (99.9%) Mr. Karan tanwar (0.1%)
Project	Solar Projects of 9.52 MWac / 13.33 MWdc
Location	District Phalodi, Rajasthan
Project Cost	₹ 49.98 crore
Equity	₹ 14.99 crore
Debt	₹ 34.99 crore
D:E Ratio	70 : 30
Collateral	All physical assets of the project
Moratorium	1 year
Interest Rate	As applicable to the Priority Sector
Term	15 years (Door to Door)

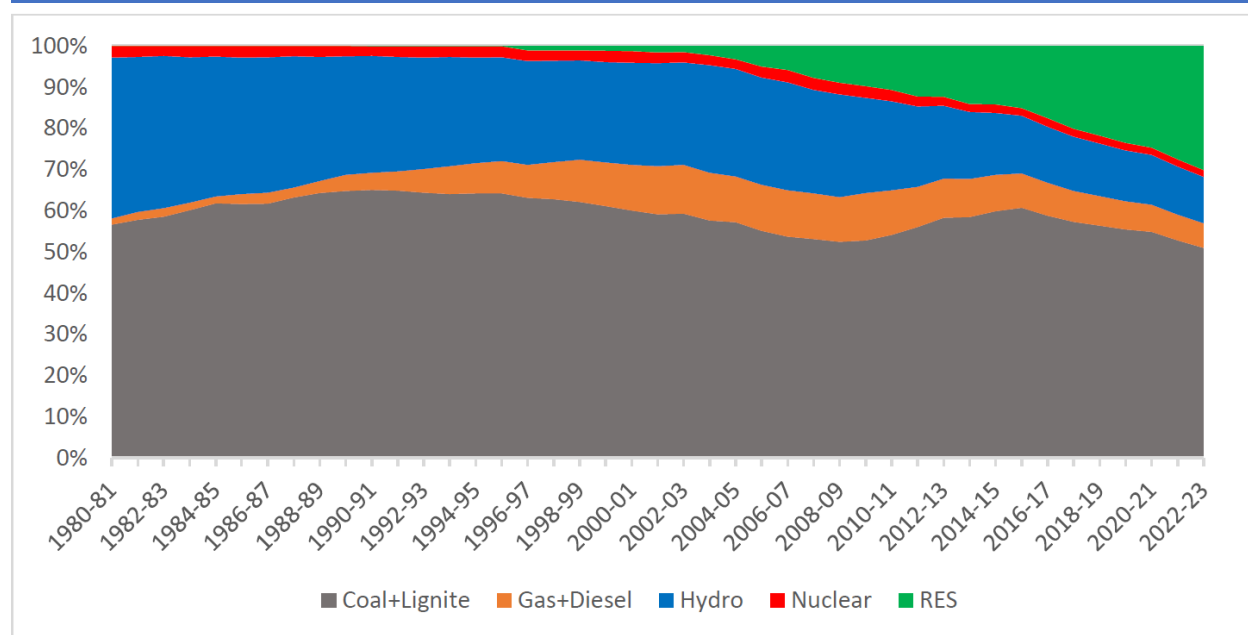
1. Power and Renewable Sector in India

Lack of reliable power is a significant constraint to any country's sustained industrial growth, infrastructure and economic competitiveness. To meet the needs of India's growing economy, providing reliable, affordable, secure, and sustainable energy requires exploring a range of options, including maximising domestic production, diversifying the fuel mix and the source of supply, and maintaining sufficient reserves.

1.1 Power Generation Mix in India

The generation capacity mix of the country has undergone significant changes since independence with increased electricity demand in the country. The share of hydro capacity, which was about 26% by the end of the 10th plan period (i.e., 2006-07), has come down to about 11 % in March 2023, whereas the solar and wind capacity has increased to 26% as of March 2023 from 9% by the end 2011-12. The share of coal (and lignite) based capacity has also reduced marginally from 56% at the end of 2011-12 to 51% as of March 2023. The higher percentage of coal-based capacity in the generation capacity mix has been the abundant availability of domestic coal, shorter gestation period and lower capital cost of coal-based plants compared to hydro and nuclear plants.

Exhibit 1.1: Installed capacity mix of the country since the year 1980

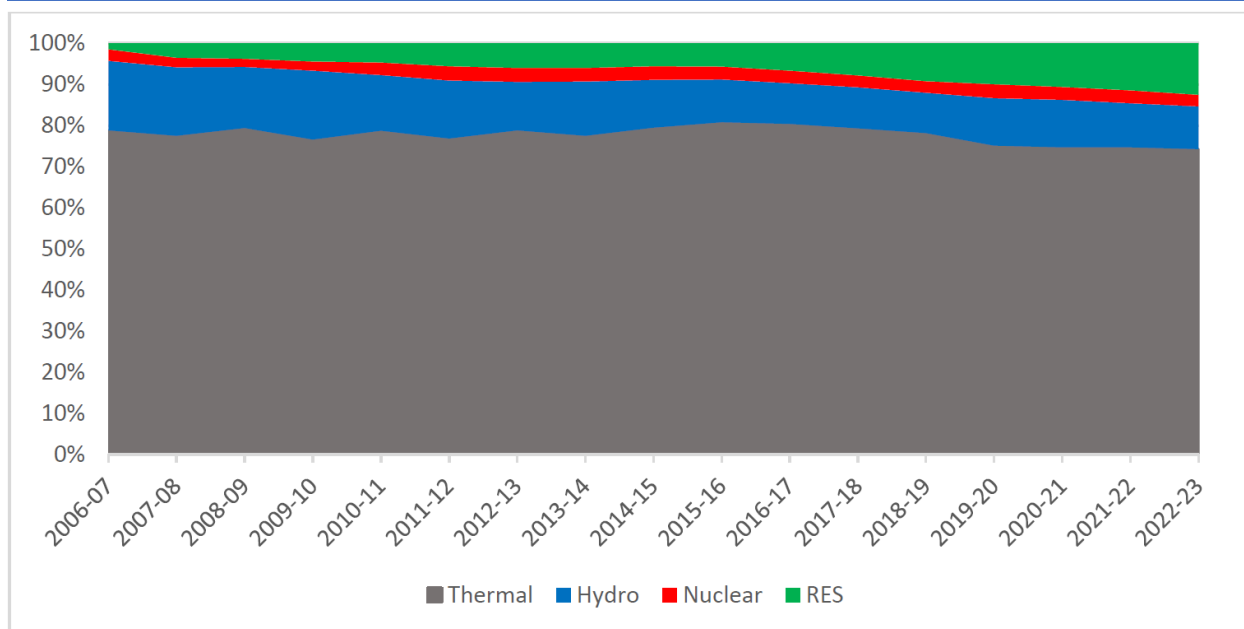


Source: Central Electricity Authority Report on Optimal generation capacity mix for 2029-30

With the enactment of the Electricity Act of 2003, coal-based capacity addition further got a boost with increased participation of the private sector in the generation segment. The private sector's share in the country's installed capacity was about 10% before the Electricity Act of 2003, which has grown to about 50.5% by the end of FY 2022-23. Gas-based generation, which also started picking up new finds of

domestic gas, has slowed down with the reduced production of KG-D6 gas. A significant capacity is presently stranded due to the lack of availability of domestic gas and the high cost of imported LNG. The country's installed capacity mix has seen growth in nuclear-based capacity from 4th five-year plan onwards, which has grown up to 1.6% of the installed capacity as of March 2023, and there are plans to increase this share further.

Exhibit 1.2: Generation mix of the country since the year 2006



Source: Central Electricity Authority Report on Optimal generation capacity mix for 2029-30

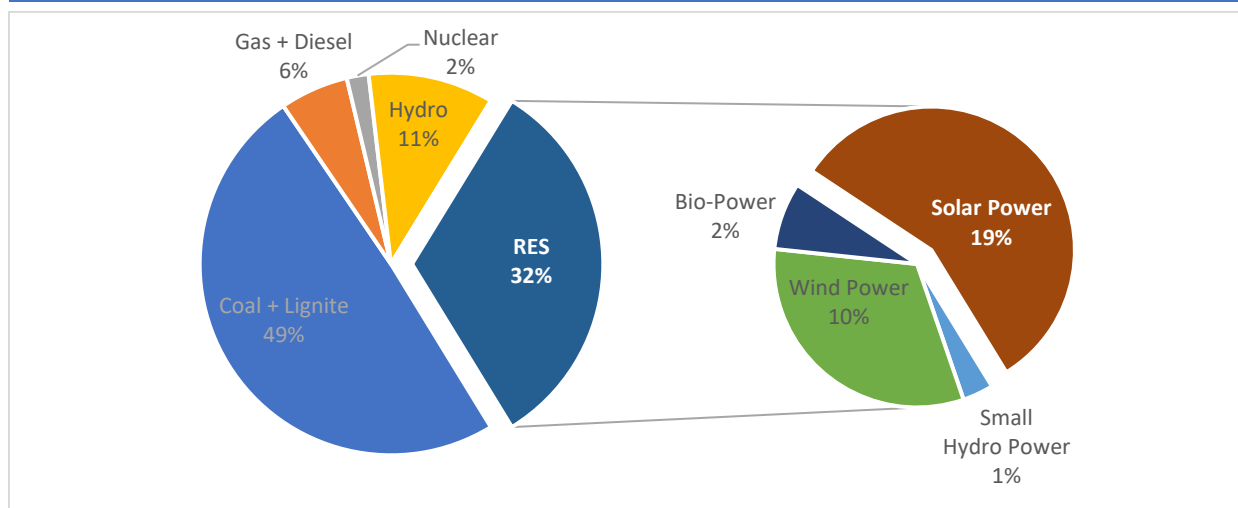
Exhibit 1.1 and Exhibit 1.2 depict the capacity and generation mix historically. It can be seen that the share of hydro in installed capacity has reduced in recent years, though the share of renewable energy has increased. However, given an increasing share of variable renewable sources (wind and solar) in the system, hydropower plants with storage are the best option to address renewables' intermittency as they can quickly ramp up and ramp down.

1.2 Installed Capacity

As at 31 March 2024, the installed capacity of the country was 442.0 GW, which comprised 243.2 GW from thermal (211.0 GW coal, 6.6 GW lignite and 25.6 GW gas and diesel), 8.2 GW from nuclear, 46.9 GW from hydro, and 143.6 GW from renewable energy sources (81.8 GW solar, 45.9 GW wind, 5.0 GW small hydro, 10.9 GW bio-power).

Renewable energy (RE) accounted for 32.5% of the installed capacity, with Solar comprising 18.5%. The detailed fuel-wise breakup of the country's total installed capacity as on 31 March 2024 is given in Exhibit 1.3.

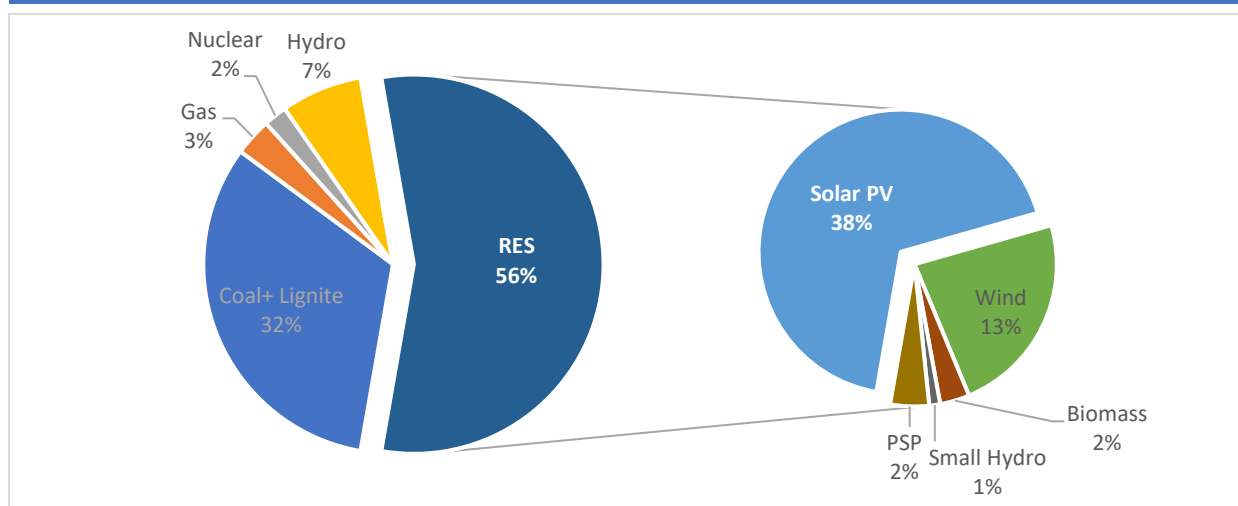
Exhibit 1.3: Installed capacity mix as of 31 March 2024 ¹



Source: Central Electricity Authority

In its report titled 'Optimal generation capacity mix for 2029-30', the Central Electricity Authority projects solar capacity to increase to 292.5 GW by the financial year 2030 and total renewable energy capacity (excluding large hydro) to increase to 431.3 GW.

Exhibit 1.4: Projected capacity mix as of 31 March 2030



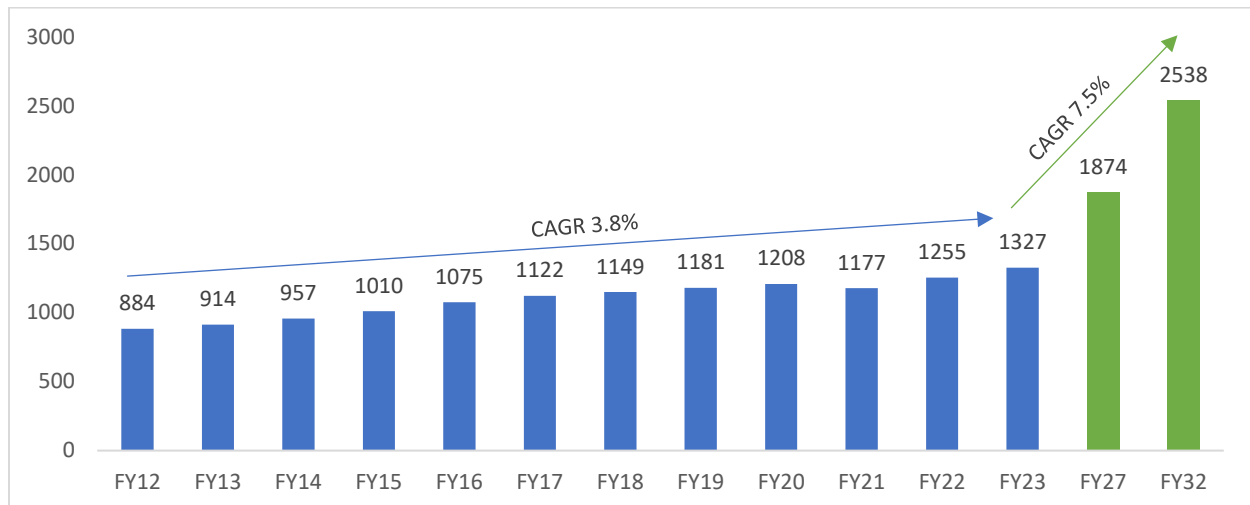
Source: Central Electricity Authority Report on Optimal generation capacity mix for 2029-30

1.3 Electricity Consumption

In the financial year 2022-23, electricity consumption per capita amounted to around 1,327 kilowatt-hours in India, having grown at a cumulative annualised growth rate (CAGR) of 3.8% over the last decade. Electricity access, ownership of appliances, and economic growth are some of the leading drivers for increasing electricity consumption in India. The Central Electricity Authority projects per capita

consumption to grow by an average rate of 7.5% per annum over the next decade to touch 2,538 kilowatt-hours by FY32.

Exhibit 1.5: Electricity Consumption (kWh per capita)

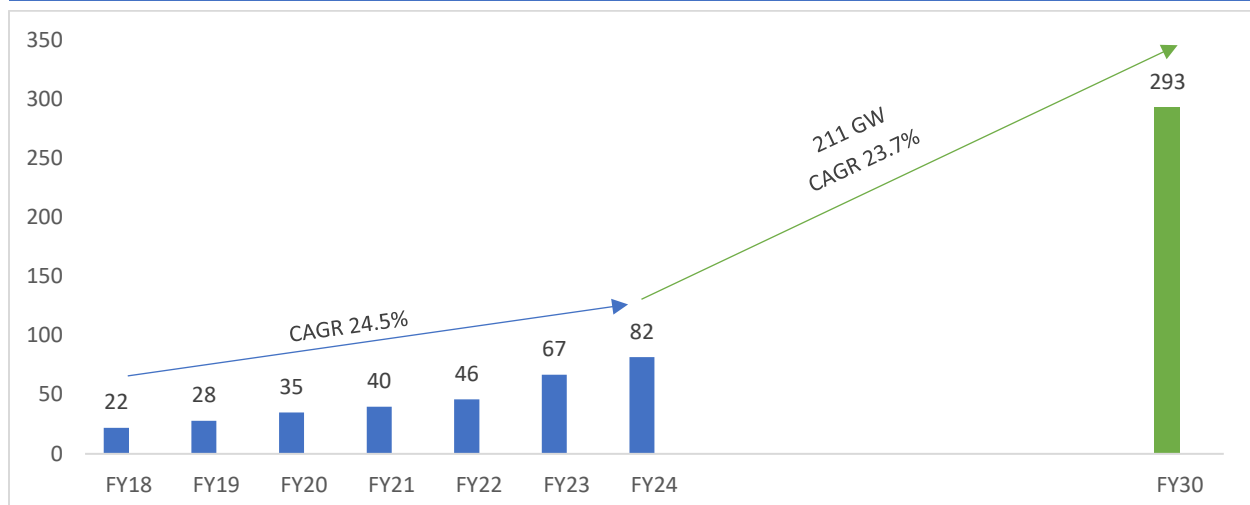


Source: Ministry of Statistics and Program Implementation, Energy Statistics 2023; and Central Electricity Authority

1.4 Solar Capacity Additions

As of 31 March 2024, India's installed solar capacity stood at 82 GW, having grown at an annual rate of 24.5% over the previous five years. The Ministry of New and Renewable Energy projects solar capacity to grow at 23.7%, reaching 293 GW by FY30.






Exhibit 1.6: India's solar installed capacity growth and projections (GW)



Source: Ministry of New and Renewable Energy

Factors driving the growth of solar installed capacity include the economic cost of electricity generated by solar PV plants and India's climate change commitments.

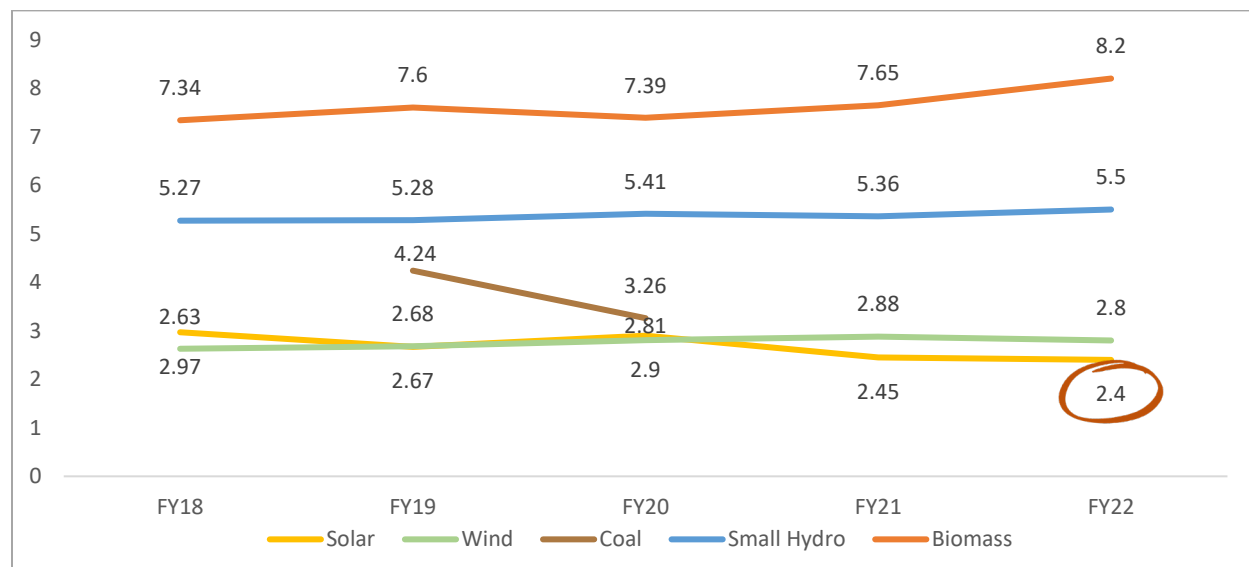
Exhibit 1.7: India's Climate Action Commitments at COP26

	500 GW	non-fossil energy capacity 2030
	50%	energy from renewable sources by 2030
	1 billion tons	reduction in carbon emissions by 2030
	45%	reduction in carbon intensity by 2030 over 2005 levels
	Net zero emissions	by 2070

Source: PIB, Feb 2022

Declining capital costs and favourable policy frameworks have made solar power the most competitive form of electricity in India. An analysis by CRISIL Research of weighted average tariffs of different energy sources arrived at during bidding between FY18 and FY22 has shown that solar, now at ₹ 2.4 per kilowatt hour, is the most economical form of power.

Exhibit 1.8: Weighted average tariffs of bids in India from different sources of electricity (₹/kWh)

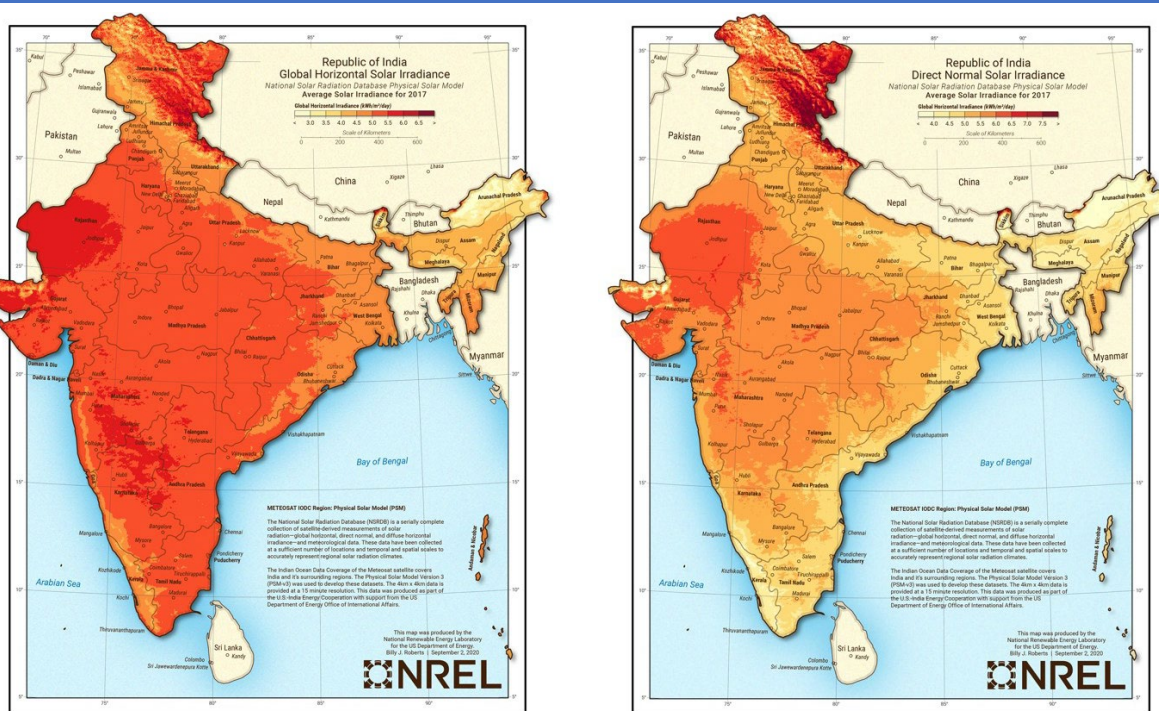


Source: CRISIL Research

1.5 Solar Radiation in India

As a tropical country, India receives good sunshine over most parts, and the number of clear-sunny days is relatively high. As per MNRE and the GOI, India receives solar energy equivalent to more than 5,000 trillion kWh annually; however, the comparable solar energy potential is about 6,000 million GWh annually. In India, the daily Global Horizontal Irradiation (GHI) is around 5 kWh/m² in north-eastern and hilly areas to about 7.0 kWh/m² in western regions and cold desert areas, with the sunshine hours ranging between 2300 and 3200 per year. In most parts, clear-sunny weather is experienced for 250 to 300 days a year. The annual GHI varies from 1600 to 2200 kWh/m². Around 25-30 % of the yearly DNI component has been indicated by the Indian Meteorological Department (IMD) in most Indian locations.

Exhibit 1.9: Global Horizontal and Direct Normal Solar Irradiance in India



Source: National Renewable Energy Laboratory, Estimating Surface Solar Irradiance Using Meteosat-8 Satellite for India and Surrounding Regions (2017–2019)

1.6 PM KUSUM - Pradhan Mantri Kisan Urja Suraksha Evam Utthan Mahabhiyan

The PM-KUSUM scheme is one of the most significant initiatives in the world to provide clean energy to more than 3.5 million farmers by linking their agriculture pumps to solar modules. The scheme was introduced to address the issue of electricity shortage in the rural sector and aiming to provide electricity in the demand hours, i.e. day time for irrigation purposes.

Policies focusing on the utility of quality electricity rather than just connections have been long required (DownToEarth, Feb 2024). Determined efforts must be made to ensure that the task of rural electrification for securing electricity access to all households and also ensure that electricity reaches poor and marginal sections of society at reasonable rates at a sustainable model. In the current scenario, rural settlements

receive subsidised, unreliable electricity from debt-ridden discoms. Prices must rise to improve discoms' financial position, but this will limit the reach.

The Government of India introduced the PM-KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan) Scheme, ensuring energy security for farmers in India, along with honouring India's commitment to increase the share of installed capacity of electric power from non-fossil-fuel sources to 40% by 2030 as part of Intended Nationally Determined Contributions (INDCs). The scheme involves setting up of solar plants by public or private entities and supplying power to 11/33 kV rural feeders

The scheme intends to be implemented under three components:

- Component A: Install grid-connected ground-mounted solar power plants (up to 2 MW) aggregating to a total capacity of 10 GW
- Component B: Install 20 Lac standalone solar pumps
- Component C: Solarise 15 Lac grid-connected agricultural pumps

All components combined would support installing an additional solar capacity of 30.80 GW. Moreover, this scheme will ease the burden on debt-ridden discoms which usually had to purchase the power at higher rates and supply at subsidised rates. This will substantially improve the financials without limiting the reach. It will also reduce the dependence on the state and central grid infrastructure. Transmission and distribution losses are also minimised since power is consumed where it is produced.

1.7 Other Major On-Going Schemes in India's Power Sector

Roof Top Solar (RTS) Programme

Phase I of this program was launched in December 2015, providing incentives and subsidies for residential, institutional and social sectors. Phase II was launched in February 2019 with a target of achieving a cumulative capacity of 40,000 MW by 2022. Under the RTS scheme, a Central Financial Assistance (CFA) of 40% is provided for RTS systems with a capacity of up to 3kW and a 20% subsidy for systems failing between 3kW and 10kW.

Solar Parks

MNRE introduced the Solar Parks programme to facilitate Solar Power Developers ("SPD") to set up projects in a plug-and-play model. The scheme has targeted the development of 40 GW capacity of solar parks. All states and union territories are eligible to avail benefits under this scheme. Solar parks are being developed by agencies of Central/State Governments, Joint Ventures between agencies of Central and State Governments, and private companies.

Green Energy Corridors

To facilitate the evacuation of electricity from RE projects, the Green Energy Corridor scheme was launched in 2015 to set up transmission and evacuation infrastructure. The Inter-State Transmission System ("ISTS") component consisting of 3200 circuit-km transmission lines and 17,000 MVA substations

was completed in March 2020. ISTS component has been sanctioned to 8 RE rich states, Tamil Nadu, Rajasthan, Karnataka, Andhra Pradesh, Maharashtra, Gujarat, Himachal Pradesh and Madhya Pradesh, for the evacuation of over 20,000 MW of renewable power.

Greening of Islands

The GOI intends to fully convert Andaman and Nicobar and Lakshadweep islands to Green Energy to meet its energy needs through RE sources. The 'Greening of Islands' programme aims to deploy 52 MW of distributed grid-connected solar PV power projects by March 2021.

MNRE provides a 40% capital subsidy for projects under the scheme. Projects of 20 MW SPV with 16 MW/8MWh BESS in Port Blair, South Andaman, and a project of 1.95 MW with a 2.15 MWh battery energy storage system in four Islands of Lakshadweep are expected to be commissioned.

1.8 Special Measures to Promote Growth of RE

Ensuring Round-the-Clock-Power (RTC) from RE Power Projects

To overcome the issues of intermittency and low-capacity utilisation of transmission infrastructure, the mechanism of 'bundling' has been introduced by MNRE. RE is bundled with power from other sources or combined storage to ensure uninterrupted power round-the-clock. This bundled power is then supplied to the distribution company ("**DISCOM**"), thereby preventing the need for DISCOMs to balance power.

Hybrid RE Projects

Solar and Wind power, being variable, pose challenges to providing a stable supply. However, in India, solar and wind resources complement each other as wind is stronger during the evening and night when there is limited input from solar power. The hybridisation of these two technologies reduces the variability and optimises the utilisation of land and transmission systems.

Solar Cities

Under this initiative, at least one city (either a capital city or a tourist destination) in each of India's states is being developed as a solar city. All electricity needs of the city will be fully met from RE sources, primarily from solar energy. All houses in the solar town will have a roof-top solar energy system. Every Solar city will also have solar streetlights and waste-to-energy plants. The balance of energy needs will be met by ground-mounted Solar Plants.

Renewable Purchase Obligations (RPOs)

Uniform RPOs have been introduced wherein all electricity distribution licensees have to purchase or produce a specified minimum quantity of their total requirements from RE Sources.

Waiver of ISTS Charges

ISTS charges and losses for inter-state sale of power from solar and wind power projects have been waived for all projects to be commissioned up to June 2025.

Enhancing Domestic Manufacturing Capacity

In compliance with the Aatmanirbhar call given by the Prime Minister and the call “To be Vocal for Local”, several steps were taken to enhance domestic manufacturing of RE machinery, components and equipment. While the country has sufficient manufacturing capacity for wind power, the installed capacity for manufacturing solar cells is only around 2.5 GW. In comparison, the functional capacity of solar modules is around 9-10 GW. However, the annual requirement for the next ten years is around 30 GW, necessitating imports. MNRE has consistently brought out policies to support domestic PV manufacturing to enhance domestic manufacturing capacity.

2. Company Background

Bhadla Minigrid Solar 2 Private Limited is a company registered under the Companies Act 2013, having its registered office at L-11, Ground Floor, Green Park Extension, Delhi.

Exhibit 3.1: List of Directors

S. No.	Name
1	Karan Tanwar
2	Sandeep Jain

Exhibit 3.2: List of Shareholders

S. No.	Name	No. of shares	Percentage of holding
1	Ms Tripta Tanwar	9990	99.9%
2	Mr. Karan Tanwar	10	0.1%
Total		10,000	100%

The Sponsor has received the LOA for the development of solar projects of a total of 9.52 MW from JdVVNL. The Sponsor has incorporated the company to implement the allotted projects.

The management of the company has been a part of the execution of multiple utility-scale RE projects. The group has planned, built, operated and monetized a 175 MW_{dc} solar project with a PPA with NTPC. The project was successfully commissioned in 2017 and monetized to a Singapore-based Equity Fund in 2020. The project was constructed over an area covering 740 acres, comprising over 6 lac solar PV panels installed and handled with less than 0.01% breakage. The project had civil construction of 35,000 sq. ft. for inverter rooms and main control rooms. The project implemented SCADA based on RF/ WiFi with no wiring.

Some other key features are:

- Two 132 KV substations
- 140 inverters of 1 MW each
- 24x7 monitoring with 10 PTZ cameras and 55 CCTVs
- Water reservoir with 8,00,000 litres capacity with RO plant

- Developed in-house Module Washing Robo-System that can wash more than 1 lac panels in one cycle.

The management has recently spearheaded the implementation of 400 MW_{ac} / 552 MW_{dc} solar park. The project was in partnership with Brookfield Renewable. The construction work of the evacuation infrastructure of the Solar Park has been completed within a record time of 9 months and was commissioned in February 2024, with the following jobs in its scope:

- Acquisition of ~1760 acres of land
- Secured connectivity for this capacity in Power Grid's Bikaner II ISTS Substation
- Construction of 32 km boundary wall
- Construction of 220 kV Substation/ Switchyard
- Construction of 11 km 220 kV transmission line

Furthermore, the management is heading the development of another Solar Park of 400 MW_{ac} / 550 MW_{dc} in Nokh, Jodhpur having connectivity secured in Bhadla III ISTS Substation. The Park is planned to be commissioned in August 2025. It is important to note that Sponsor's industry experience extends beyond utility-scale projects to include rooftop solar systems.

3. Project Details

Jodhpur Vidyut Vitran Nigam Limited (JdVVNL) floated the tender for Design, survey, supply, installation, testing, commissioning, operation & maintenance for 25 years (unless extended by both parties on mutual agreement) from COD of grid connected solar power plants through RESCO mode, its associated 33kV OR, 11kV line to connect the plant with various 33/11kV sub-stations and RMS of solar power plants in various sub-divisions (AAU & BAP) of PHALODI Division under Jodhpur District Circle - Under PM- KUSUM Scheme – Component C, for 88 nos. of plants of cumulative capacity of 233.34 MWac. JdVVNL issued the NIT Document on 05 Oct 2023 (TN-DSM-53).

The tender was opened on 14.03.2024 and JdVVNL, on 16 March 2024, has placed the Letter of Award (“LOA”) to Sponsor, for 3 plants with a total capacity of 9.52 MWac at a tariff of Rs 2.97 per kWh for a tenure of 25 years. The plants are detailed below:

S. No.	GSS Name	Plant Name	Capacity (MWac)	PlannedCapacity (MWdc)
1	Dholiya	Plant No. 1(Dholiya)	3.00	4.20
2	Arjunpura	Plant No. 1 (Bhaguba ki Dhani)	2.52	3.53
3	Arjunpura	Plant No. 2 (Khepla)	4.00	5.60
			9.52	13.33

As allowed vide Clause 4 of the LOA, sponsor plans to develop the above projects with a total capacity of 7.00 MWac / 9.80 MWdc through an SPV, namely Bhadla Minigrid Solar 2 Private Limited. JdVVNL Approved the SPV for the development of these plants vide Letter No. JdVVNL/SE(RA&C)/ (RE-DSM)/TN-DSM-53/F.Corrsp./ /D.816 Dated 19.06.2024. Power Purchase Agreement will be signed soon in the next 4 weeks. As per the terms of the LOA, the projects have to be commissioned within 12 months of PPA execution.

3.1 Key Points of PPA

1. PPA will be executed between the SPV, BHADLA MINIGRID SOLAR 2 PRIVATE LIMITED and RAJASTHAN URJA VIKAS AND IT SERVICES LIMITED, (Formerly known as RAJASTHAN URJA VIKAS NIGAM LIMITED/ RUVNL) on behalf of JODHPUR VIDYUT VITARAN NIGAM LIMITED.
2. The tenure of PPA is of 25 years.
3. CUF to be maintained at 19% minimum CUF.
4. RUVITL to provide a monthly unconditional, revolving, and irrevocable Letter of Credit equivalent to an amount of estimated monthly billing, having a term of 12 months which shall be renewed annually.

3.2 Location

RE resources are intermittent and change with location. Solar radiation is a macroscopic energy resource that depends upon the location, day of the year (season), time of the day, etc. The site assessment of solar PV power projects comprises three major dimensions:

1. Land
2. Meteorology
3. Infrastructure availability and connectivity (for power evacuation from Power Grid in the near vicinity)

Areas affected by environmental restrictions (natural parks, protected habitat, etc.), military facilities, armed conflicts, existing human settlements, archaeological conditions, livestock and vegetation must be excluded due to government regulations and non-feasibility issues.

3.2.1 Location: District Jodhpur (Rajasthan)

Rajasthan has been a popular choice for SPDs since the concept came to the country. The land availability and high solar irradiance are two main reasons, especially in Jodhpur, Phalodi, Jaisalmer and Bikaner districts. Consequently, the state has an installed solar capacity of 21.3 GW on 31 March 2024.

3.2.2 Land

Bhadla Minigrid Solar 2 Private Limited has identified ~37 acres of land. The land parcel is in a close proximity of their respective Grid Substations (GSS), i.e. within 700 meters. Majority of this land parcel has been acquired on the long term lease basis for a period of 29 years and 11 months.

4. Environmental and Social Impact Assessment

Every infrastructure or development project is exposed to multiple risks and hazards. To mitigate the associated risks, it is necessary to undertake a detailed study of environmental and social impact.

PV power projects that work on solar energy which is a non-polluting energy source. However, there might be several dimensions of project implementation where ESIA and SIA aspects are essential to address as per the applicable acts. The initial ESIA / SIA aspects of the Solar Park project are briefly discussed in this section.

4.1 Environmental Impact

In India, The Ministry of Environment and Forest (“**MoEF**”) has excluded solar PV-based power projects from their purview of environmental clearance and EIA as such projects are based on clean energy sources. Further, water use for the project's operation is minimal compared with conventional (thermal power projects). The module cleaning is likely to be done through the dry-cleaning process.

4.2 Social Impact

The site is barren and comprises scattered vegetation, mainly scrubs in dry, uncultivated areas. One of the positive aspects of the selected land is the site is free of habitation and does not comprise any permanent structure within the premises. Hence, there is no associated issue of resettlement and rehabilitation. Land development will involve acquiring land that belongs to all private owners.

4.3 Construction Phase

During the construction phase of solar power projects, there will be a lot of employment generation, which will provide livelihood to the local people. The construction would also develop socio-economic activities in the villages/towns near the selected site of Bikaner District. Un-skilled labour will be required in various civil, mechanical and electrical activities associated with implementing Solar Park and furthering the projects.

Nevertheless, during the construction phase, the following key activities will be done which will make an impact on the topsoil during slope grading activity:

- Construction of external and internal roads;
- Drainage system and firefighting arrangements;
- Power evacuation facilities (towers, foundations, switchyard, etc.) and
- Administrative buildings, etc.

Adequate arrangements for labourers, engineers and other workers at the site during the project implementation phase need to be provided, along with suitable health and safety measures.

4.4 Corporate Social Responsibility

To mitigate the social and environmental impacts of the project, i.e., Solar Plants, the following actions have been suggested as a part of corporate social responsibility:

- Training for skilled and semi-skilled activities involved in solar project;
- Support the self-help group in the vicinity;
- Employment to residents for unskilled and semi-skilled achievements. Betterment of local roads within and near the vicinity from the connectivity of locals and
- Exploring the development of green belt/ corridor.

5. Debt Terms

The project cost is projected at ₹49.98 crore. Bhadla Minigrid Solar 2 Private Limited seeks a debt of ₹34.99 crore at a D:E ratio of 70 : 30. The project will need a moratorium of 1 year. All physical assets of the project company will be pledged to the lenders.

Borrower	Bhadla Minigrid Solar 2 Private Limited
Sponsors	Ms Tripta Tanwar (99.9%) Mr. Karan Tanwar (0.01%)
Project	Solar Projects of 9.52 MWac / 13.33 MWdc
Location	District Phalodi, Rajasthan
Project Cost	₹ 49.98 crore
Equity	₹ 14.99 crore
Debt	₹ 34.99 crore
D:E Ratio	70 : 30
Collateral	All physical assets of the project
Moratorium	1 year
Interest Rate	As applicable to the Priority Sector
Term	15 years (Door to Door)

List of Annexures

Annexure 1: Letter of Award

Annexure 2: SPV Approval