

The future of *solar energy* is

Bright



About Us

| WHO WE ARE

Leading Solar EPC and O&M Solutions Provider in the World

We offer Design, Detailed Engineering, Procurement, Construction, Installation, Commissioning and Operations & Maintenance services under turnkey EPC and BoS (Balance of System) solutions for utility-scale, rooftop and floating solar power projects. We also offer solar plus storage solutions.

OPERATIONAL EXCELLENCE ⁽³⁾

EPC Portfolio
12.9 GWp

O&M Portfolio
7 GWp

Global Manpower
1,300+

GLOBAL RECOGNITION

EPC and O&M of Abu Dhabi
1,177 MWp One of the
world's largest single location
PV plant

Regional presence across
29 countries

Market
Leader



Leading **Solar EPC**
solutions provider in the world

Leading **Solar O&M**
player globally

No. 1 Solar EPC
player in India, Australia, Middle East
& Africa

End-to-end “*concept to commission*” solar EPC

| ACROSS THE GLOBE



Our Projects





The Sweihan power project is a 1,177 MWp solar photovoltaic (PV) independent power project in Abu Dhabi, UAE.

Bid Winners

Jinko^{Solar} **Marubeni**

Stake in Equity



Financiers

BNP PARIBAS
FORTIS

MUFG
Mitsubishi UFJ Bank and Banking

SMFG
Sumitomo Mitsui Financial Group

FAB
First Abu Dhabi Bank

農林中央金庫
The Norinchukin Bank

NATIXIS
BEYOND BANKING

CRÉDIT AGRICOLE

Challenges

- To fit in maximum capacity in given land
- Utilize electricity generation
- Boost time & cost, along with localization
- Automated and low cost O&M

Tariff

- 1,177 MWp Competitive tariff of US\$ 2.42 cents / kWh

Solutions

- East to West design of modules
- Unique eight high set structure design
- Liking to utilize procurements from UAE
- Fully automatic robotic cleaning system: reduced 30% in-use expense

Key Highlights

- 3.2 million solar panels providing electricity to 90,000 homes
- Reducing Abu Dhabi CCO2 emissions by 1 million metric tons
- Aids MENA region to become a global super power
- Trend Setter for low-cost electricity
- Among the worlds most complete tariffs

3.85 MWp Solar PV + 2.58 MWhr BESS integration into existing DG Network Nampala Gold Mines, Mali

Developer



Financiers



Challenges

- Extreme remote location of a mine with a completely off-grid solution
- Integration with 6 existing DGs currently in operation

Solutions

- Single Axis Tracker and Bifacial Modules used to increase the PV generation in the available land area and footprint

Key Highlights

- Saving 2 Mn Liter of diesel per annum which is 30% of the client's diesel consumption per year
- Reduction of Carbon 6000 Ton of CO2 per annum
- Mobile design of the plant, equipment can be moved to another location after 5 years



India's first floating solar project 455 KWp

Developer



Float Supplier



Challenges

- To fit in most capacity in given area
- 10 days to complete manufacturing/delivery and installation of 100 KW
- Non availability of raw material to manufacture in short span
- Anchoring to the bottom /shore have restriction from AAI

Solutions

- Designed based on pond shape
- Imported part material from Taiwan/Vietnam
- Material arranged from IOCL within 3 days
- Shore anchoring done with AAI norms

Key Highlights

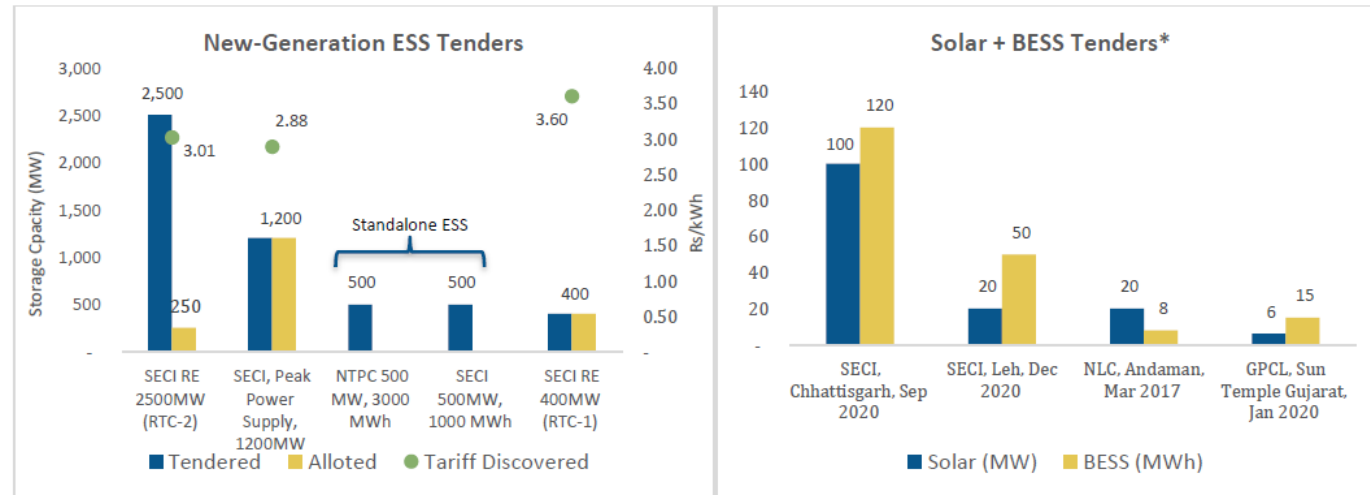
- Experience in proven technology used world wide
- Reduction in water evaporation
- Extra benefits in performance

Battery Energy Storage System- INDIA



Analysis of Past Energy Storage Tenders

- First pilot project by PGC (Power Grid Corporation) in 2017 with a capacity of 500 kWh, 250 kWh li-ion + 250kWh lead acid.
- After that 2 projects commissioned:
 - 20 MW/8 MWh solar+ BESS project
 - 10MW/ 10 MWh standalone BESS project



Source: JMK Research

- Only major grid-scale tenders considered.
- For SECI peak power supply tender, off-peak tariff is shown, the peak tariff for the same is Rs 6.12/unit for Greenko and Rs 6.85/unit for ReNew Power.
- For RTC-1 Tender, the tariff shown is the levelized tariff over the project tenure. The bidding tariff was Rs 2.9/unit vis-à-vis the first year of the PPA.

Energy Storage Tenders

Recent NTPC and SECI Tenders.

- SECI and NTPC came up with standalone ESS tenders of 1.000 MWh and 3.000 MWh, respectively.
- Flexibility regarding sizing, technology and location.
- Energy storage as-a-service.

Comparison of the Tenders

Tender Attribute	NTPC 500MW/3,000MWh	SECI 500MW/1,000MWh
Project Capacity	<ul style="list-style-type: none"> • Total Capacity: 500MW/3,000MWh (6-hour system). • Minimum Project Size: 100MW/600MWh. 	<ul style="list-style-type: none"> • Total Capacity: 500MW/1,000MWh (2-hour system) • Further segregated into two sub-projects each of 500MWh (250MW x 2 hours) capacity.
Project Location	<ul style="list-style-type: none"> • Entirely in developer scope. • Can be located Pan India. • Mandatory to connect the project to the ISTS network at a minimum voltage level of 220kV. 	<ul style="list-style-type: none"> • Both the sub-projects should be in the vicinity of Fatehgarh-III substations of the ISTS network in Rajasthan. • Land will be allocated by the Transmission licensee, facilitated by SECI.
Project Technology	<ul style="list-style-type: none"> • Any technological/financially viable storage technology is acceptable. 	<ul style="list-style-type: none"> • Mandatory to use BESS as the storage technology.
Project Scope (Developer)	<ul style="list-style-type: none"> • BOO, i.e., Build Own Operate 	<ul style="list-style-type: none"> • BOOT, i.e., Build-Own-Operate-Transfer
Tariff Design	<ul style="list-style-type: none"> • Fixed annual payments for the entire ESSA tenure of 25 years. 	<ul style="list-style-type: none"> • Fixed monthly payments for the entire BESPA tenure of 12 years.
Energy Off-taker	<ul style="list-style-type: none"> • NTPC REL 	<ul style="list-style-type: none"> • Final off-taker yet to be identified
Scheduled Commissioning Date (SCD)	<ul style="list-style-type: none"> • 24 months from the effective date of ESSA. 	<ul style="list-style-type: none"> • 18 months from the effective date of BESPA.

Source: NTPC REL, SECI

Current standalone ESS tenders, being the first large-scale tenders of such kind, can be a catalyst for the entire Indian ESS market



O&M

Asset Management

Government targets by 2030

- Increasing the solar and wind capacity of 450 GWs by 2030
- Spur domestic manufacturing in ESS
- Utility scale ESS tenders for the organic development of the ESS industry in India

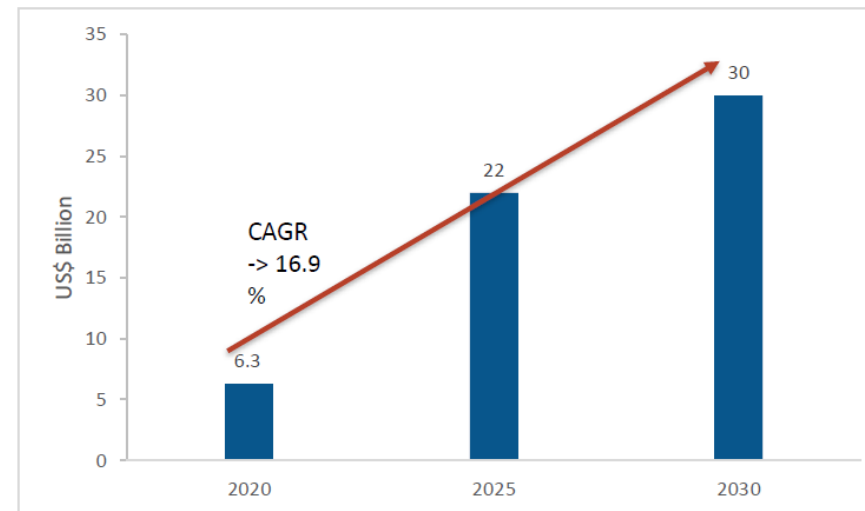
Increasing VRE capacity

- The CEA has predicted that India needs 27 GW/108 GWh of grid scale BESS to meet the VRE target.
- This in addition to ~ 10 GW of PHS (Pump Hydro Storage).
- Grid-scale tendering will be crucial for the BESS market.

Manufacturing segment

- Boost the domestic manufacturing through the 50 GWh PLI (Production-linked incentive) for advanced chemistry cells (ACC).
- The PLI has an outlay of~ US\$ 2.4 billion

Annual Global Investments Growth



Source: NITI Aayog

| Future Tender Types Expected

ESS- as-a-service

- BESS as a subscription/service
- The energy procurer should pay for storage capacity rather than energy delivered.

Domestic content requirement (DCR) condition

- Because of the “PLI scheme in ACC” to boost domestic battery manufacturing.
- Future tenders may have some level of DCR condition for efficient utilization of upcoming facilities

Distribution-specific ESS tenders

- The BESS guidelines of the Indian Ministry of Power emphasize “storage for distribution” as one of the major business cases.
- ESS, connected to the load centers can help to manage peak load, enhance grid resilience and strengthen its operations.

Inclusion Additional Performance Parameters

- Current performance parameters: Availability, round trip efficiency and ramp-up/down response.
- Further details requirements: charging/discharging rate (c-rate) or power surge handling

Focus on PHS and Alternate ESS Technologies

- Li-ion BESS has become one of the most significant ESS technologies.
- The government has realized the importance of alternate ESS technologies like PHS and future tenders specifically for PHS can be expected.

Utilization of ESS for Energy Trading

- To offset the high initial CAPEX of ESS projects, power trading is one such application that can significantly influence revenue generation.
- Future tenders there may be a provision allowing ESS developers to use their assets for energy trading or third-party use during off-peak hours.

Beyond Business



