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NEWS BRIEFS

New Electricity Tariff notified by AERC

The Commission issued Tariff Orders on 7th March, 2020 for the State Generation, Transmission and Distribution utilities for FY 2020-21 against petitions submitted by the Assam Power Generation Corporation Ltd. (APGCL), Assam Electricity Grid Corporation Ltd. (AEGCL) and Assam Power Distribution Company Ltd (APDCL) respectively. The Tariff Orders consist of Chapters on true up for FY 2018-19, Annual Performance Review for FY 2019-20 and revision of Annual Revenue Requirement (ARR) and determination of tariff.

The Commission issued a number of important directives in these orders for compliance by the utilities within specified time frames. The Tariff Orders are available in the link below: <http://www.aerc.gov.in/Orderforutility.htm>.

Draft Assam Electricity Regulatory Commission (Payment of Fees etc.) Regulations, 2020 notified.

AERC notified the draft Assam Electricity Regulatory Commission (Payment of Fees etc.) Regulations, 2020 on 11th March 2020. These Regulations proposes to revise the fees for different types of petitions and applications submitted to the Commission. Comments /suggestions on the draft Regulations were invited from stakeholders. With the coming into force of these Regulations after notification in Assam Gazette, Assam AERC (Payment of Fees etc.) Regulations, 2015 shall stand repealed. The draft Regulations are available in the link given hereunder: http://www.aerc.gov.in/Draft_Regulations.htm.

AERC issued Notification regarding RPO Compliance by CPPs.

AERC notified the AERC Renewable Purchase Obligation Regulations, 2010 on 2nd November, 2010 with subsequent amendments on 15th October, 2015 and 14th March, 2017 wherein, all the Captive Power Producers (CPPs), Open Access (OA) consumers and DISCOM in the State of Assam are required to fulfill the Renewable Purchase Obligations being obligated entities. The

Ministry of Power, GoI issued a notification on 1st February, 2019 pegging the RPO level applicable in the year Captive Power Producer (CPP) was commissioned. The MoP, GoI again issued a notification on 1st October, 2019 vide no. 30/041/2018/R&R in this regard. A number of representations were filed by CPPs to the Commission expressing difficulties in fulfillment of the RPOs and prayed to allow the benefit of the GoI notification to the CPPs in the State of Assam.

Considering the prayers of the CPPs, and in pursuance of the said Government notification the Commission decided to notify RPO for CPPs as below:

a) For CPPs commissioned before 1.04.2016, RPO shall be Solar: 1% and Non-Solar: 3%. For CPPs commissioned from 1.04.2016 onwards, the RPO level as mandated by the Commission for the year of commissioning of the CPP shall be applicable.

b) In case of any augmentation in the capacity, the RPO for augmented capacity shall be the RPO applicable for the year in which the CPP has been augmented.

This will be effective from FY 2019-20 onwards. ([BACK](#))

Aluminium Association of India urges CERC to look into markets for Renewable Energy Certificates *(Source: energy.economictimes.indiatimes)*

The Aluminium Association of India (AAI) has urged the Central Electricity Regulatory Commission (CERC) to look into the market of Renewable Energy Certificates (REC) which, according to it, is resulting in artificial demand and price increase in the power exchange.

The price of solar RECs in the last one year have shot up by more than 125% from Rs 1000/MWhr to Rs 2250/MWhr, resulting in an additional burden of Rs 1.25/kWh of RE energy compliance for all consumers. AAI stated that the huge burden on the consumers is due to non-revision of REC prices since 2017 despite steep fall in RE generation costs.

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Renewable Energy Companies unlikely to resume construction

(Source: energy.economictimes.indiatimes)

Construction of renewable energy projects is among the activities that the ministry of home affairs has permitted resumption of from April 20, but developers maintained it will be a while before they can do so.

Whether or not sufficient labour will return to the site is the biggest concern. Solar rooftop projects are not expected to be commissioned at this time. Restarting construction of wind projects will be a complicated process although movement of goods has been permitted by the Ministry. Whether things take a few weeks or a month or two to resume will vary from site to site depending on the situation there. ([BACK](#))

Discoms to suffer Rs 30K cr revenue loss, face Rs 50K cr liquidity crunch due to lockdown: CII *(Source: energy.economictimes.indiatimes)*

Industry body CII said discoms are likely to suffer a net revenue loss of around Rs 30,000 crore and liquidity crunch of about Rs 50,000 crore due to the coronavirus-induced

nationwide lockdown. According to government data, the discoms owe Rs 92,602 crore to Gencos as of February, 2020. CII has suggested host of measures like easy credit facility for discoms (from PFC and REC) to pay off its dues to Gencos, lower tariff especially for industrial and commercial consumers and deferral of indirect taxes like electricity duty, coal cess etc. The power sector, one of the essential services under the lockdown till May 3, is battling the twin issues of demand and liquidity compression. Latest data from Power System Operation Corporation Limited (POSOCO) indicates that total demand per week between March 23 and April 12 was 18 BU (billion units), compared to 23 BU during the week of March 9-15 (before Janata Curfew and lockdown), 25-28 per cent reduction in demand.

The further extension of the lockdown could result in additional demand compression of 15 to 20 BU, implying a net revenue loss of Rs 25,000 to Rs 30,000 crores for the discoms, This will further increase the liquidity crunch to Rs 45,000 to 50,000 crores, in addition to the Rs 90,000 crore dues pending by the discoms to generating companies' pre-lockdown. Renewable energy generators have been bearing the brunt of power curtailments, overdue payments by state discoms of Rs 10,000 crores and policy uncertainty. Transmission companies are facing delays in on-going projects as lockdown has affected the movement of manpower and supply resulting in delays.

CII's white paper 'Sustaining India's Power and Renewable Energy Sector' analyses impact of COVID-19 on the sector with the demand reduction coupled with delays in collections. The sector is likely to require significant transition financing to mitigate the impact. The Central power finance institutions (PFC, REC, and IREDA) should consider lending directly to discoms or to discount the discoms outstanding dues using funds borrowed from banks or from their regular sources, it suggested. ([BACK](#))

Indian Power Sector adds more capacity in FY 20 vis-à-vis FY19

(Source: www.thehindubusinessline.com)

Renewables' share grows to about one-fourth from 12% in 5 years.

The Indian power sector (including both conventional and renewables) managed to add more new capacity in FY20 than the previous fiscal amid some challenges.

For the third year in a row, the renewable sector added more new capacity than conventional energy sector and the clean energy sector now accounts for close to one-fourth of the total installed energy capacity in the country

The total capacity addition of conventional and renewable segments stood at 15,776 MW in 2019-20 when compared with 14,204 MW in 2018-19.

For 2019-20, the conventional sector (including coal-fired and hydro categories) added a new capacity of 7,065 MW, up 25 per cent from 5,672 MW in 2018-19. In this, the coal-fired sector added a net capacity of 6,765 MW when compared with 5,532 MW in 2018-19. Hydro segment added 300 MW when compared with 140 MW in FY19, according to the data of Central Electricity Authority.

The renewable energy sector's total new capacity addition stood at 8,711 MW in 2019-20 when compared with 8,532 MW in 2018-19. But, in these periods, both conventional and clean energy segments failed to meet the capacity addition targets due to several challenges faced by the respective sectors.

While renewable energy sector achieved only 74 per cent of the target (11,802 MW) for 2019-20, conventional segment's new addition in FY20 was only 58 per cent of the target (12,186 MW) for the fiscal.

Renewables on the rise

Even though the Indian power sector continues to be dominated by conventional sources of energy (coal, diesel, gas, nuclear and large hydro), which accounts for nearly three-quarters of the country's installed power generation capacity, there has been a progressive shift towards renewable sources (wind, solar, bio and small hydro).

In the last five years, the share of renewable energy (wind, solar, biopower and small hydro) in installed capacity has increased from 11.8 per cent (32 GW in March 2015) to 23.5 per cent (87 GW in March 2020). On the other hand, the share of thermal sources viz coal in installed capacity has been on the decline — from 61 per cent to 54 per cent — during this period, according to analysts at CARE ratings.

As of March 31, 2020, India's total installed capacity (including thermal, nuclear, hydro and renewable) stood at 3,70,317 MW. In this, the coal-fired segment's share was 1,98,734.5 MW, while renewable energy sources accounted for 87,028 MW. Though the gap is wide, renewable is the second big segment after coal-fired category in total capacity.

While the western region leads in coal-fired power capacity at 72,935 MW, the southern region leads in renewable capacity at about 42,400 MW.

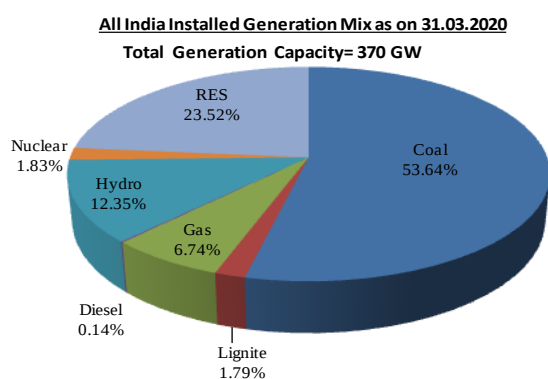
The power sector in the country has been affected by the prevailing slowdown in the Indian economy. The emerging economic disruption caused by the coronavirus pandemic would add to the weakness in the sector. As a result, India's power sector performance is expected to see a significant decline in 2020-21, pointed out CARE Ratings' analysts.

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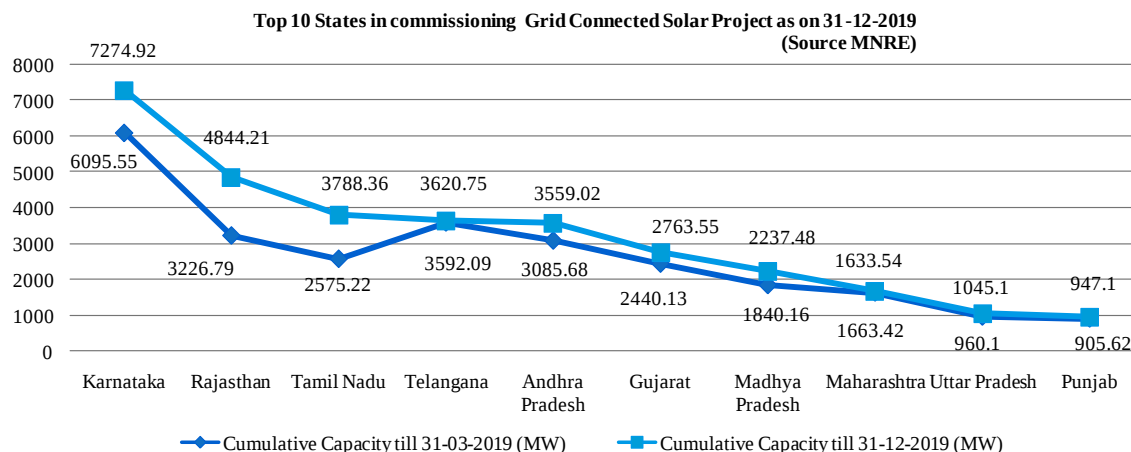
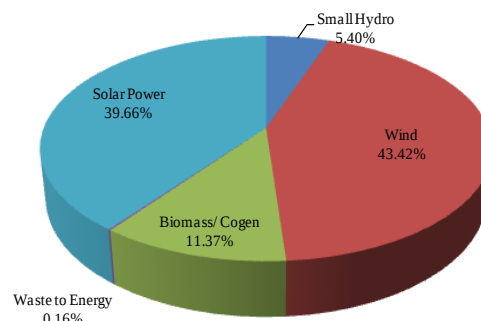
Status of Rooftop Solar Implementation in Assam.

According to statistics available with the Ministry of New & Renewable Energy, Government of India, a decade ending on 31 March 2020, India expanded its installed solar power capacity by 233 times from 161 MW to 37,627 MW. Rooftop solar power accounts for only 2.1 GW, of which 70% is industrial or commercial. It has perhaps, therefore become necessary to have a re-thinking on the development of rooftop solar systems, creating awareness on solar rooftops and making these more popular.

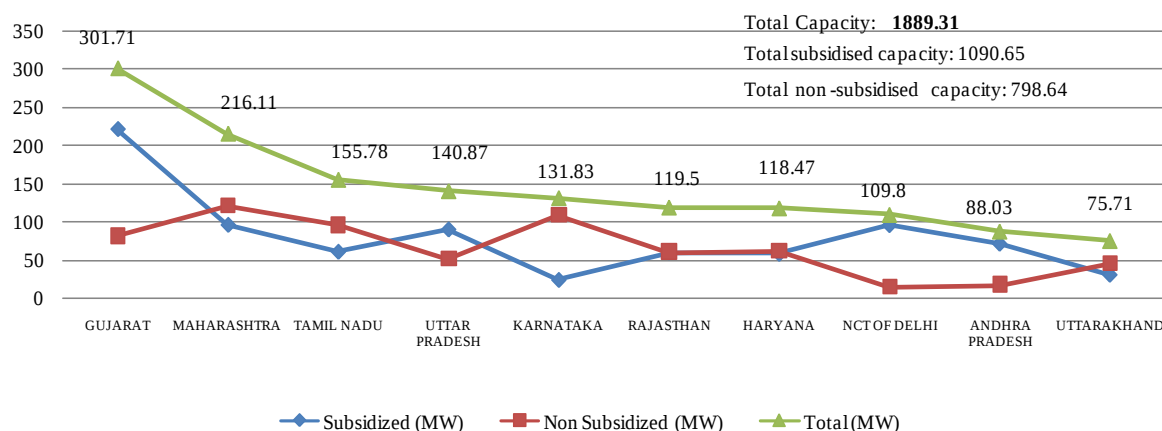
All India Status as on 31.12.2020



All India Generation Capacity Mix from Renewable Sources as on 31.03.2020
Total Installed Capacity : 86.77 GW



Top 10 Statewise RTS Capacity Commissioned as on 31.12.2019 (MW)

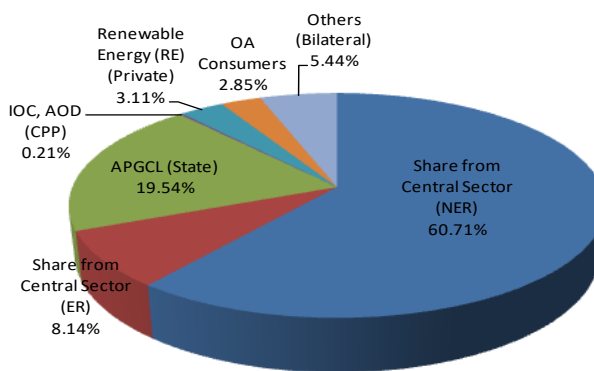
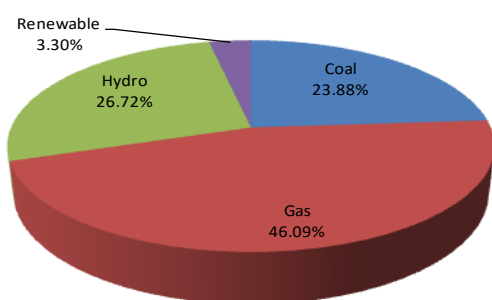


Total all India capacity of grid connected solar projects is above 33,000 MW, Rooftop Solar (RTS) accounts for 1890 MW (i.e. 5.7%)

While Karnataka emerged as the topmost state in commissioning of grid connected solar projects (7274.92 MW), the total rooftop solar capacity is only 131.83 MW i.e. only 1.81%. The States of Gujarat and Maharashtra have 301.71 MW (10.9%) and 216.11 MW (13.22%) of RTS capacity against total grid connected solar projects of 2763.55 MW and 1633.54 MW respectively.

Status of Solar Projects in Assam

Energy Mix of Assam as on 31.03.2020



Renewable Energy Sources	Breakup Target Capacity for Assam MW		
	Potential	MNRE Target by 2022	Target by Assam Solar Energy Policy by 2020-21
Solar	13750	663	590
Wind	112	Nil	NA
Biomass	165.5	Nil	NA
Small Hydro	117	25	NA
Total	14144.5	688	590

Status of Off Grid Solar Application

Sl. No	Technology	Name of Scheme	Installed Capacity (MW)	Nos. of System /Plant	Nos. of HH electrified	Status
1	Micro Grid	*DDG	3.594	268	14254	Completed
2	Standalone Solar Home Lighting System	*DDG	5.304	26523	26523	Completed
		SAUBHAGYA	12.98	43276	43276	In Progress
		Total	21.878	70067	84053	

Out of target capacity of 15 MW, total aggregate project capacity 21 MW under different schemes has already been installed.

Status of Ongoing Off Grid Solar Projects of APDCL

Sl. No	Name of Project	Scheme	Capacity (MW)
1	Off Grid Solar Power Plant in important historical locations, religious places like Satra in Assam	Annual Plan 16-17	0.365
2	Off Grid Solar Power Plant in different Rural PHCs in Assam	SOPD 2019-20	0.470
3	Floating Solar Power Plant		0.015
4	Solar Street Light	Annual Plan 14-15	322

Solar Street lights -322 Nos.

Grid connected solar power plants as on 31.03.2020

Description	Implementing Agency	Target (MW)	Installed Capacity (MW)	Ongoing Capacity (MW)
Solar Park	APGCL	200	0	70
Solar Power Plants for sale of power to APDCL	APDCL/APGCL	200	5	195
Solar Power Plants for sale of power to any entity other than APDCL	APDCL	15	0	5
Solar Power Plants under REC mechanism	APDCL	6	0	20
Solar Power Projects under any scheme of State Government	APDCL	15	0	
Captive Solar Power Plant	APDCL	29	4	0
Sub –Total (A)		465	9	290

Status of Grid Connected Rooftop Solar Projects

Sl. No	Implementing Agency	Source of Fund	Installed Capacity (MW)	Ongoing Project Capacity (MW)
1	AEDA	MNRE	5.5	8
2	APDCL	State (Annual Plan)	0.410	1.233
3	3 rd Party	Private	7	0
			12.41	9.233

Nos. of Consumer (Already installed Rooftop Solar Power Plant)			
Residential	Govt.	Social & Institution	Industrial
120	39	77	23

Status of Ongoing Grid Rooftop Projects of APDCL

Sl. No	Name of Project	Scheme	LOA capacity (MW)	Installed Capacity (MW)
1	Roof top Solar in Govt Building	Annual plan 18-19	0.629	0.095
2	Grid Connected Rooftop Solar under IPDS	IPDS	0.604	0.125
		Total	1.233	

Proposed Grid-Connected Rooftop Projects of APDCL for the FY 2020-21 under Phase-II RTS Program of MNRE (CFA & Incentive)

Sl. No	Sector	Component of Ph-II RTS Program	Mode of Execution	Installed based capacity (MW)	Proposed installed capacity (MW)
1	Residential	Comp. A	CAPEX	12.41	2
2	Social & Institutional	Comp. B	RESCO	(Upto 14 th April, 2020)	3
3	Commercial	Comp. B	RESCO		5
4	Industrial	Comp. B	RESCO		30
				Total	40

Incentive applicable for APDCL : Rs 20,37,78,375

Assam Solar Policy , 2017

- Grid-connected rooftop solar power plant would be set up on gross or EXIM metering basis through CAPEX (Capital Expenditure) and RESCO (Renewable Energy Service Company) Model (Third Party Owned Business Model)

EXIM Metering

- Amount due to the consumer - 75% of the Average Power Purchase Cost (APPC) rate.
- Amount is to be adjusted from the monthly bill
- No payment shall be made by APDCL for any excess energy injected from the RTS Plant to the grid beyond 90% of the energy consumed from the grid during the billing cycle.

Gross Metering:

Tariff for the Grid Connected RTS Plant under gross metering shall be discovered through a competitive bidding process approved by AERC.

AERC (Grid Interactive Solar PV Systems) Regulations, 2019

- The distribution licensee may adopt the provision of either NET metering or EXIM metering arrangement for the consumers, on non-discriminatory and first come first serve basis.

- The metering arrangement as adopted by the Distribution licensee shall be final and will be applicable to all consumers under that Distribution licensee.
- The Solar panel capacity of Grid Interactive Solar System to be installed at any eligible consumer premises shall be between of 1 kWp to 1000 kWp and shall be restricted to 80% of connected load/ contract demand of the consumer.

Phase II of the Grid connected rooftop solar programme of the Government of India

- ❖ With effect from 20th August, 2019 the phase II of Grid connected Rooftop Solar programme has been launched which is being implemented in all States including North East Region states.

Major feature of phase-II programme includes:

- The programme will be implemented with the total central financial support of Rs 11,814 crore through DISCOMs.
- Central Financial Assistance (CFA) for the residential sector
 - 40% CFA for RTS systems up to 3 kW capacity and
 - 20% for RTS system capacity beyond 3 kW and up to 10 kW.
- For Group Housing Societies/Residential Welfare Associations (GHS/RWA), CFA will be limited to 20% for RTS plants for supply of power to common facilities.
- CFA not available for institutional, educational, social, government, commercial, industrial categories.
- Incentives to Discoms for timely implementation.

Challenges in the Indian context

- Rooftop solar is still not an attractive alternative to the subsidised power supplied by the electricity discom for domestic consumers. The upfront investment (cost of the solar panels) is still high for subsidized consumers.
- Discoms usually resist Commercial and Industrial establishments from putting up rooftop solar plants.
- Lack of adequate information on the panels available in the market, credentials of vendors, etc, often deters consumers, particularly domestic consumers from installing a RTS system.

- Other barriers confronting large-scale adoption of RTS system are availability of low cost finance, inadequate domestic manufacturing capacity, and lack of skilled manpower. Strengthening of the T&D network.
- Some states disallow net metering to C&I consumers

Issues faced by APDCL in implementation of rooftop solar

- Field level officers are not familiar with the technology, inadequate knowledge of the Regulations / guidelines.
- Difficulty in assessment of quality of works executed by contractors due to lack of knowledge about standardized system equipments/ BOQs
- Despite mandatory CMC for 5 years, contractors not willing to render post installation service
- Meter suppliers take considerable time for supply
- Delay in issuing NOC for some Government buildings

Way Forward

- ✚ Assam has the potential for solar generation and a 1 kWp solar PV panel can generate upto 4 units of electricity per day considering 5.5 hours of sunlight. NISE has estimated total potential at 13.76 GW.
- ✚ Assam is a State of fertile land, and 63% of the population depends on agriculture for their livelihood. As such, large scale implementation of solar projects which requires hundreds of acres of land is undesirable beyond a certain extent. Therefore, instead of depending on space-intensive solar PV projects; an easier alternative for the land-constrained State would be to install rooftop solar systems.
- ✚ Assam has around 6.41 million households as per the census 2011. Even if half of these households install a 1 KW system per house, this could add up to 3.2 GW of installed capacity.
- ✚ In the aftermath of the Covid-19 Pandemic, many Multi National Companies (MNCs) operating in China want to transfer their businesses to India and the State Government of Assam is trying to woo such Companies to set up business in our State. However, one of the primary infrastructural requirements for setting up big industries is power, which is still not adequate to meet the existing demand. Therefore, a rethinking in development of the power sector in Assam by the State

Government and the Discom has become necessary. And solar rooftop can pave the way for adequate power in Assam.

- ✚ The State Rooftop Solar Attractiveness Index, SARAL, has been developed by the MNRE as a measuring scale, or an index, to evaluate and rank all states according to their performance, growth, level of maturity, policy framework and implementation environment in the rooftop solar segment. In 2019, Karnataka has been ranked first with A++ grade having a score of 78.8 points while Assam has been placed in the 19th position with B+ having 29 points. Therefore, there remains much scope for improvement and earnest efforts are required from all stakeholders in this regard.

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A SHORT NOTE ON PUMPED STORAGE HYDROELECTRICITY

Pumped Storage Hydroelectricity (PSH), or Pumped Hydroelectric Energy Storage (PHES), is a type of hydroelectric energy storage used by electric power systems for load balancing. Pumped hydroelectric storage facilities store energy in the form of water in an upper reservoir, pumped from another reservoir at a lower elevation. During periods of high electricity demand, power is generated by releasing the stored water through turbines in the same manner as a conventional hydropower station. During periods of low demand (usually nights or weekends when price of electricity is low), the upper reservoir is recharged by using low - cost electricity from the grid to pump the water back to the upper reservoir.

India committed to an ambitious transformational target of 275 gigawatts (GW) of renewable energy installations by 2027. The target for new installs of 30-40GW annually puts India on track to be one of the largest developers of renewable globally, potentially second only to China. As the share of renewable energy to the grid increases, there is a higher chance of the grid becoming unstable due to the unpredictable and intermittent nature of renewable energy such as solar and wind. In order to overcome this disadvantage, the grid needs a reliable fallback arrangement to compensate for the variability of wind and solar power, and to store excess energy from renewable sources, and therefore allow for better integration of these types of energy into the grid. This is where PHS comes into the picture and renewable energy can be used to pump water uphill during times of low demand.

According to a report of the Institute for Energy Economics and Financial Analysis (IEEFA) India of March 2019, plans have been formulated for India to become a world leader in PHS. Some 2.6 GW of PHS are already operational with another 3.1GW under construction as shown in table below:

Name of the Project	State	Installed Capacity (MW)	Pumping mode operation
Kadamparai	Tamil Nadu	400	Operational
Bhira	Maharashtra	150	Operational
Srisaillam	Andhra Pradesh	900	Operational
Ghatgar	Maharashtra	250	Operational
Purlia	West Bengal	900	Operational
Poithan (Jayakwadi Dam)	Maharashtra	12	Operational
Sardar Sarovar	Gujarat	1,200	Patially Constructed
Tehri	Uttarakhand	1,000	Patially Constructed
Kadana St.I & II	Gujarat	240	Patially Constructed
Nagarjuna Sagar	Telangana	705	Patially Constructed
Total Operational		2,612	
Total under Construction		3,145	
Total including under construction		5,757	

Source: CEA, IEEFA

ADVANTAGES OF PHS

PHS has a round trip efficiency of 70-80% (meaning 20-30% of electricity is lost), depending upon the distance and gradient separating upper and lower reservoirs.

PHS is designed to time-shift electricity to periods of peak demand so that power is stored when it is least expensive and then used during peak demand when prices are highest.

With its almost instantaneous start capacity, PHS is ideal for meeting evening peaks as well as providing grid frequency stabilisation services. Where and when alternative water demands allow, PHS can also provide longer duration supply – a capacity that lithium ion batteries are not well suited for.

Moreover, in conventional hydro power plants power generation depends upon many factors such as hydrology, reservoir level, irrigation requirements, etc. However, in PHS, the same water can be utilized again and again for power generation, without any constraints. Another advantage is the life time of PHS plants of more than 40 years and its hybrid concepts combining PHS and wind/solar.

In view of India's enormous plans for new low-cost, deflationary, domestic renewable energy also comes with an associated, and critical need to accelerate the deployment of storage, PHS is ideally suited to play a leading role. India amended its 'hybrid wind-solar with storage' policy to clarify that any form of storage – not just batteries – could be used in hybrid projects, including PHS.

Globally, PHS is an established, proven and cost-effective technology for storing electricity at times of high generation and/or low demand, which can then be released into peak demand periods. There is more than 140 GW of PHS capacity installed globally providing well over 95% of global electricity storage capacity.

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