Confederation of Indian Industry

Analysis of Renewable Energy Policies and Business Models: A ready reckoner to Industry for accelerating RE adoption

Analysis of Renewable Energy (RE) Policies and Business Models: A ready reckoner to Industry for accelerating RE adoption

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Mr Ramesh Kymal

Chairman, RE Council, CII-Godrej GBC &
Chairman, Green Power 2025

India stands at a critical juncture in its energy transition journey. As the country moves decisively towards a low-carbon future, renewable energy (RE) has emerged not only as an environmental imperative but also as an economic and strategic opportunity. With ambitious national targets and a dynamic policy landscape, the adoption of clean energy solutions across states and sectors is gaining unprecedented momentum.

However, the pathway to accelerated RE deployment requires more than just targets. It demands clarity, consistency, and confidence in both policy and business frameworks. It is in this context that this white paper, "*Analysis of Renewable Energy (RE) Policies and Business Models: A Ready Reckoner to Industry for Accelerating RE Adoption*," becomes particularly relevant.

Developed through in-depth analysis of public policy documents, regulatory updates, and sectoral developments, this ready reckoner aims to provide an insight on the evolving landscape of renewable energy in India. The paper offers a state-wise overview of installed and targeted RE capacity, decodes emerging business models, and presents a structured understanding of policy incentives and waivers that can influence project viability.

While the study is based on secondary research, it has benefited greatly from the review and feedback of domain experts, whose perspectives have enriched the accuracy and practical relevance of the insights presented.

I am confident that this white paper will serve as a valuable reference for industry stakeholders including developers, investors, policymakers, and energy users looking to navigate the complexities of India's renewable energy sector. As we collectively strive for a cleaner and more resilient energy future, informed and collaborative action will be the cornerstone of our success.

Yours sincerely

Ramesh Kymal

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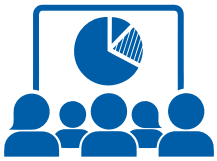


1. Executive Summary

India is implementing one of the largest Renewable Energy (RE) programmes in the world with the following targets:

- Installation of 500 GW of RE installations by 2030.
- Meeting 50% of the country's electricity requirement from RE by 2030.
- Achieving net zero by 2070.

India's ambitious RE targets are driving an urgent need for businesses to adopt cleaner energy sources. Inspired by the country's net zero target of 2070, many Indian companies have voluntarily announced their targets for increased RE adoption and achieving net zero. This analysis has been developed covering state-level RE policies, regulatory frameworks, incentives, business models, and tariff structures, for supporting the industry in their RE journey and providing them with a consolidated, actionable reference guide for RE adoption in different states.

The analysis covers 11 strategically selected states with significant RE potential and industrial activity:

Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, and Uttarakhand.

These states have been selected based on a combination of their renewable energy capacities, industrial relevance, and RE policy. Key insights covered in the analysis include:

- State-wise RE capacity overview, enabling identification of mature and emerging RE markets.
- Target RE capacity by year, offering a forward-looking view of state-level expansion plans.
- Commercial and financial indicators, including typical tariffs, capital costs, and payback metrics.
- Rooftop Feed-in Tariff (FiT) analysis, enabling evaluation of rooftop revenue prospects for RE projects across states.
- Policy exemptions and waivers, such as transmission cost reliefs, banking provisions, and open access benefits for RE procurement.

2. Introduction

The global energy landscape is undergoing a paradigm shift driven by climate imperatives, economic competitiveness, and technological advancement. In India, renewable energy has emerged as a cornerstone of the country's decarbonization strategy, with national targets aiming for 500 GW of non-fossil fuel capacity by 2030. For industrial consumers who account for a substantial share of total electricity demand in the country, the transition to renewable energy sources is both an environmental responsibility and a strategic imperative for reducing operational costs and carbon footprint.

The path to RE adoption depends on central and state-level RE policies (considering India's federal structure), tariff regimes, incentive mechanisms, and implementation timelines. The objective of this analysis is to provide a consolidated and structured reference document that demystifies the complex RE policy environment in India. This analysis of business models and policy frameworks across key Indian states aim to:

- Enhance understanding of state-specific RE policies and market dynamics
- Highlight regulatory enables impacting RE adoption.

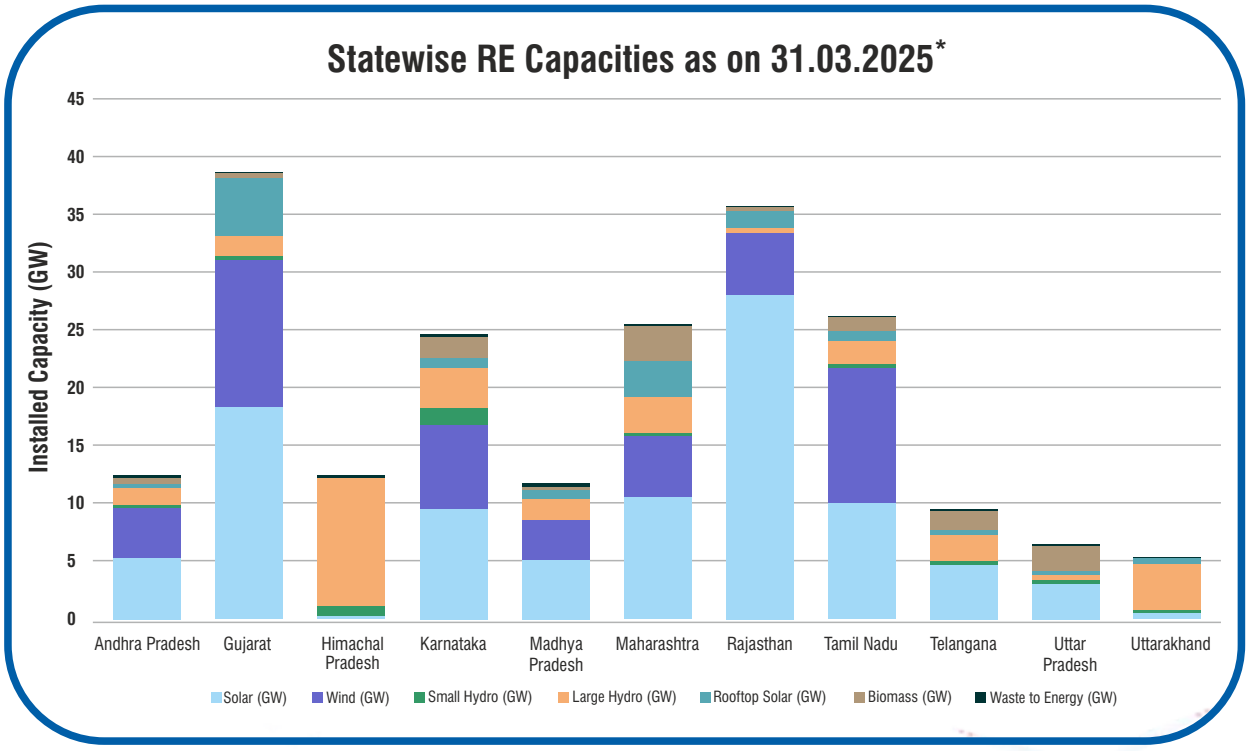
The subsequent sections delve into granular data and policy analysis, including capacity deployment trends, financial metrics, tariff designs, and policy levers. Special emphasis is placed on comparing feed-in tariff structures and identifying fiscal or regulatory waivers that could materially influence RE project economics.

As the demand for reliable, affordable, and sustainable power grows, this analysis aspires to be a valuable decision-support tool for industry stakeholders navigating the evolving RE landscape in India.

3. State-Wise RE Capacity Overview

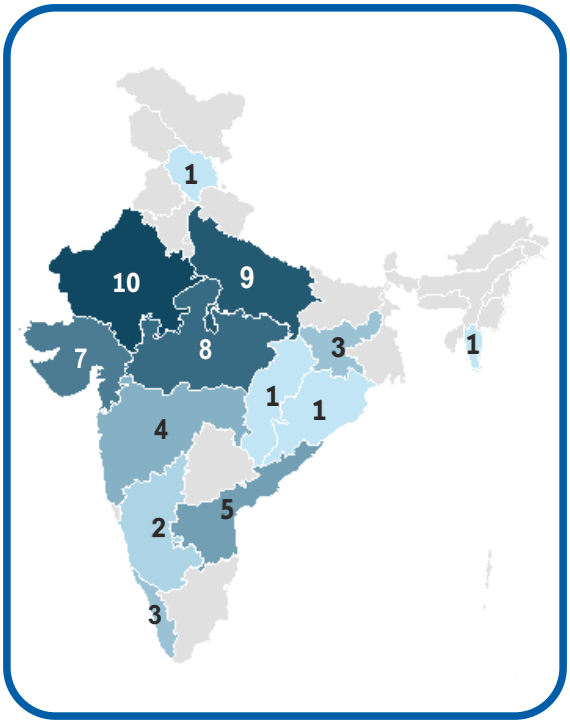
India's Renewable Energy (RE) sector continues to gain momentum, with a total installed RE capacity (including large hydro) of 220 GW, representing a substantial portion of the nation's total installed power capacity of 475 GW, as on 31 March, 2025. Solar energy including the rooftop solar leads the portfolio with 105.6 GW, followed by 50 GW of wind power. Complementing this are 11.1 GW of biomass, 5.1 GW of small hydro, 47 GW of large hydro and 0.8 GW of waste-to-energy (WTE) capacity. Hydropower remains a critical contributor, especially in states like Himachal Pradesh and Uttarakhand, which are naturally endowed with hydro potential. These developments reflect a strategic mix of utility-scale and decentralized renewable solutions aimed at enhancing energy security and reducing carbon emissions.

Figure 1 : State-wise RE Capacity



*MNRE

Figure 2 : Total Sanctioned Solar Parks*



*MNRE

State	No. of sanctioned solar parks
Andhra Pradesh	5
Gujarat	7
Himachal Pradesh	1
Karnataka	2
Madhya Pradesh	8
Maharashtra	4
Rajasthan	10
Uttar Pradesh	9
Chhattisgarh	1
Jharkhand	3
Kerala	3
Mizoram	1
Odisha	1

Solar parks are large tracts of land developed with all necessary infrastructure and clearances for setting up solar power projects. The typical capacity for solar parks is 500 MW and above. However, smaller parks (up to 20 MW) are also considered in certain states and Union Territories.

Approximately 4-5 acres per MW are required for setting up solar projects. Solar parks are developed by government agencies, Central Public Sector Undertakings (CPSUs), and private entrepreneurs. The implementing agency is referred to as the Solar Power Park Developer (SPPD).

Based on the proposals received, 55 solar parks with an aggregate capacity of 39,958 MW have been approved across 13 states. As of 31st 2024 solar projects with a total capacity of 12,209 MW have been commissioned within various solar parks.

4. Target Capacity by State (Year-wise)

India's renewable energy (RE) landscape is undergoing a strategic transformation, driven by dynamic state-level targets and evolving policy frameworks. States are aligning their clean energy ambitions with national goals, but the pathways vary significantly based on local resources, and infrastructure.

A clear trend emerging from the data is the increasing diversification of RE portfolios. While earlier plans focused heavily on solar and wind, several states are now incorporating energy storage systems (Battery Energy Storage System (BESS)/ Pumped Hydro Storage System (PS)) and green hydrogen into their long-term strategies. This signals a maturing energy ecosystem, where reliability and flexibility are becoming as important as generation capacity.

Notably, policy timelines are extending towards 2030 and beyond, reflecting long-term planning and investment horizons. Telangana and Tamil Nadu, for example, have laid out visions that go beyond capacity addition, incorporating innovation in hydrogen and grid integration. On the other hand, smaller states like Himachal Pradesh and Uttarakhand are emphasizing rooftop solar installations, tailoring their approach to geographical and infrastructural constraints.

Overall, the data suggests a shift from quantity-driven targets to quality-driven, diversified renewable strategies, positioning Indian states to meet both decarbonization goals and energy security needs in the coming decade.

Table 1 : RE Targets

Sl. No.	State	RE Targets by 2030 (Unless specified separately)
1	Andhra Pradesh	SOLAR : 78.5 GW; WIND : 35 GW; HYDRO : 22 GW; BESS/PS : 25/22 GWH; GREEN HYDROGEN : 0.5 MMTPA; TOTAL RE : 160 GW
2	Gujarat	SOLAR : 36 GW; WIND : 143 GW; GREEN HYDROGEN : 3 MMTPA; TOTAL RE : 50 % OF RE MIX
3	Himachal Pradesh	SOLAR : 1.9 GW; ROOFTOP : 50,000 RTS INSTALLATIONS; TOTAL RE ADDITION : 10 GW
4	Karnataka	ROOFTOP : 1 GW; HYDRO : 7.6 GW; BESS : 6 GWH ; TOTAL RE : 38 GW BY 2035
5	Madhya Pradesh	TOTAL RE : 50% OF RE MIX.
6	Maharashtra	PS : 15.1 GWH; GREEN HYDROGEN : 0.5 MMTPA TOTAL RE : 38 GW
7	Rajasthan	SOLAR : 90 GW; WIND : 25 GW; HYDRO : 10 GW; GREEN HYDROGEN : 2 MMTPA; TOTAL RE : 125 GW
8	Tamil Nadu	SOLAR : 20 GW; TOTAL RE : 50 % OF RE MIX
9	Telangana	SOLAR : 34GW; WIND : 4 GW; HYDRO : 2.5 GW; BESS/PS : 5.45/2.46 GWH; GREEN HYDROGEN : 0.554 MMTPA; TOTAL RE : 41 GW
10	Uttar Pradesh	SOLAR : 22 GW; ROOFTOP : 8 GW; PS : 22 GWH; GREEN HYDROGEN : 1 MMTPA
11	Uttarakhand	SOLAR : 2.5 GW; ROOFTOP : 40,000 RTS INSTALLATIONS;

GW - Giga Watts ; GWh - Giga Watt hour; BESS - Battery Energy Storage System;
PS - Pumped Storage; MMTPA - Million Metric Tonnes Per Annum; RTS - Rooftop Solar

In addition to new capacities, India has recognized the significant potential of repowering its aging wind energy fleet through the 'National Repowering & Life Extension Policy for Wind Power Projects - 2023' (superseding the 2016 policy). This strategic initiative aims to replace older, less efficient wind turbines many of which are sub-1 MW capacity and located in highly wind-rich areas with modern, multi-megawatt turbines featuring taller hub heights. The impact of successful repowering could be transformative. National Institute of Wind Energy (NIWE) estimates India's repowering potential at over 25 GW for turbines below 2 MW, and studies suggest it could boost energy output from existing sites by four to twelve times. This maximizes land utilization, leverages existing grid infrastructure, and could significantly accelerate India's renewable energy capacity additions without requiring new greenfield land, presenting a compelling pathway to enhance energy security and achieve ambitious decarbonization targets.

Complementing this, India is also heavily investing in Viability Gap Funding (VGF) scheme for Battery Energy Storage Systems (BESS) which aims to boost large-scale energy storage.

VGF Tranche I, approved in September 2023, initially targeted 4 GWh, later scaled up to 13.2 GWh due to falling battery costs. It offered a VGF of INR 46 lakh/ MWh or 30% of capital cost and planned disbursement in five tranches, but faced challenges with no projects achieving financial closure by early 2025.

VGF Tranche II, announced in June 2025, significantly expands the scheme with a INR 5,400 crore outlay from the Power System Development Fund (PSDF) to support 30 GWh of BESS capacity. It offers a reduced VGF of INR 18 Lakh/ MWh, reflecting continued cost declines, and front-loads disbursement into three stages to improve project bankability. This second tranche is crucial for India to meet its ambitious energy storage targets and integrate more renewable energy into the grid.

Table 2 : VGF Tranche I vs Tranche II[1]

Parameters	VGF-Tranche-I, 2023	VGF Tranche - II, 2025
BESS Support	4 GWh (Later increased to 13.2 GWh)	30 GWh
Budgetary Allocation	INR 3,760 Crore	INR 5,400 Crore
Timeline	2023-2026	2025-2028
VGF Amount	INR 96 Lakh per MWh (Later reduced to INR 46 Lakh per MWh) or 30% of capital cost, whichever is lower.	INR 18 Lakh per MWh
Funding Source	Central Grant	Power System Development Fund (PSDF)
Components	Market Component : 2.2 GWh State Component : 6GWh CPSUs : 5 GWh	State Component : 25 GWh NTPC : 5 GWh
Disbursement of VGF	On financial closure : 10% On Commercial Operation Date : 45% Completion of 1st year from COD : 15% Completion of 2nd year from COD : 15% Completion of 3rd year from COD : 15%	On financial closure : 20% On Commercial Operation Date : 50% Completion of 1st year from COD : 30%
Contract Period	10-12 years	12-15 years
Commissioning Period	24 Months from the date of signing of BESPA	18 months from the date of signing of *BESPA[2]
Storage Duration	-	2 hours and 1.5 cycles per day (Preferably)

Battery storage is emerging as the cornerstone of India's energy transition, playing a vital role in both centralized and decentralized power systems. When paired with solar PV, Battery Energy Storage Systems (BESS) significantly enhance the flexibility and reliability of renewable energy, making them increasingly competitive across use cases.

On the utility-scale front, battery storage combined with solar PV allows for efficient charge-discharge cycles and is designed for thousands of cycles, making it suitable for daily use over decades. As costs fall, this combination is rapidly becoming cost-competitive with fossil fuel-based generation. For instance, the global average Levelised Cost Of Electricity (LCOE) - the average cost per unit of

[1] Source : Ministry of Power and JMK Research
[2] Battery Energy Storage Purchase Agreement

electricity generated over a project's lifetime - for a representative 100 MW solar PV project with a 20 MW/ 80 MWh battery is projected to drop from USD 75/ MWh in 2022 to USD 45/ MWh by 2030, and further to USD 35/ MWh by 2050.

However, cost alone doesn't capture the full picture. A more comprehensive metric, the value-adjusted LCOE, includes not just generation costs but also the value a technology adds to the power system - such as flexibility, reliability, and contributions to energy markets. This offers a more accurate measure of overall competitiveness.

As per a recent analysis by International Energy Agency, under this value-adjusted framework, solar PV plus storage is already more competitive than coal and gas-fired power in many regions:

- In India, it is already cheaper than coal and maintains this advantage.
- In China, it would surpass coal by around 2025.
- In the United States, it would out compete new gas plants before 2025.
- In the EU, it already beats gas-fired power, aided by high gas prices and carbon costs.

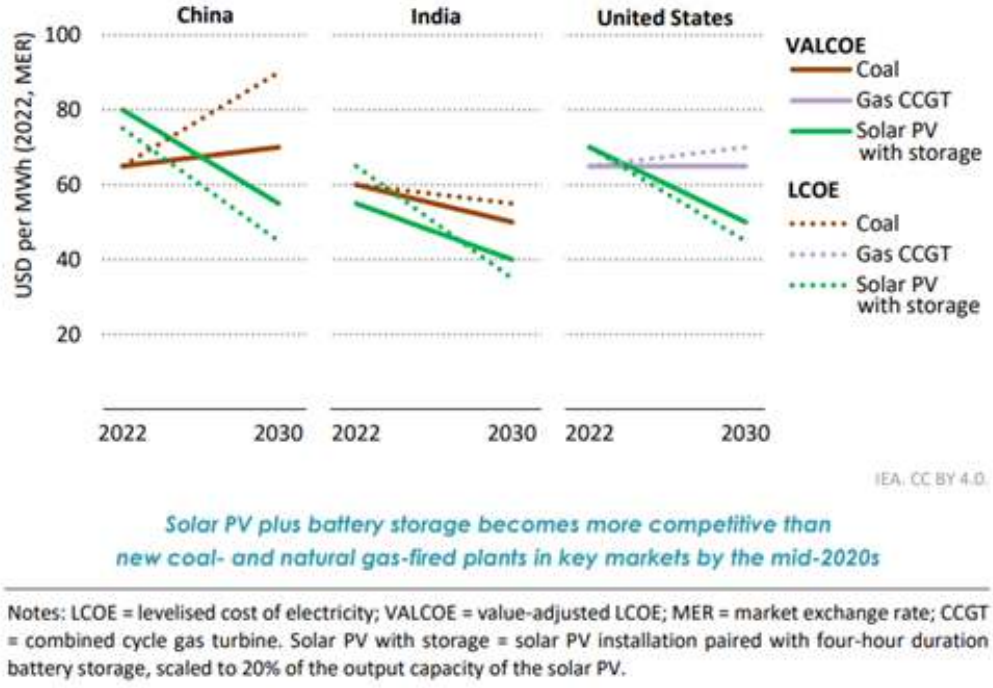
It is also cost-competitive with other low-emission technologies like nuclear, and by 2030, is expected to become the most cost-effective option for new solar PV projects in major markets *(Refer to fig:3)*.

Meanwhile, as per the recent Industry analysis, the Behind-the-Meter (BTM) energy storage segment is rapidly emerging as a key part of India's decentralized energy strategy. Installed on the consumer side of the electricity meter, BTM systems support both Commercial & Industrial (C&I) and residential users.

- The C&I segment, with system sizes ranging from 30 kWh to 10 MWh, serves energy-intensive applications like EV charging, critical infrastructure, mining, and oil & gas. These systems enable peak shaving, load shifting, renewable integration, and backup power. This segment is growing at 13% annually and is projected to reach a market size of 52-70 GWh by 2030.
- The residential segment, with systems typically under 30 kWh, is used for self-consumption, EV charging, and enhanced energy independence. Growing at 14% annually, it is expected to reach around 20 GWh by 2030.

The following section presents a cost analysis of BESS systems across various user categories, focusing on their economic viability in real-world applications.

Figure 3 : LCOE and value-adjusted LCOE for solar PV plus battery storage, coal and natural gas in selected regions, 2022-2030[2] (International Energy Agency)



Solar PV plus battery storage becomes more competitive than new coal- and natural gas-fired plants in key markets by the mid-2020s

Notes: LCOE = levelised cost of electricity; VALCOE = value-adjusted LCOE; MER = market exchange rate; CCGT = combined cycle gas turbine. Solar PV with storage = solar PV installation paired with four-hour duration battery storage, scaled to 20% of the output capacity of the solar PV.

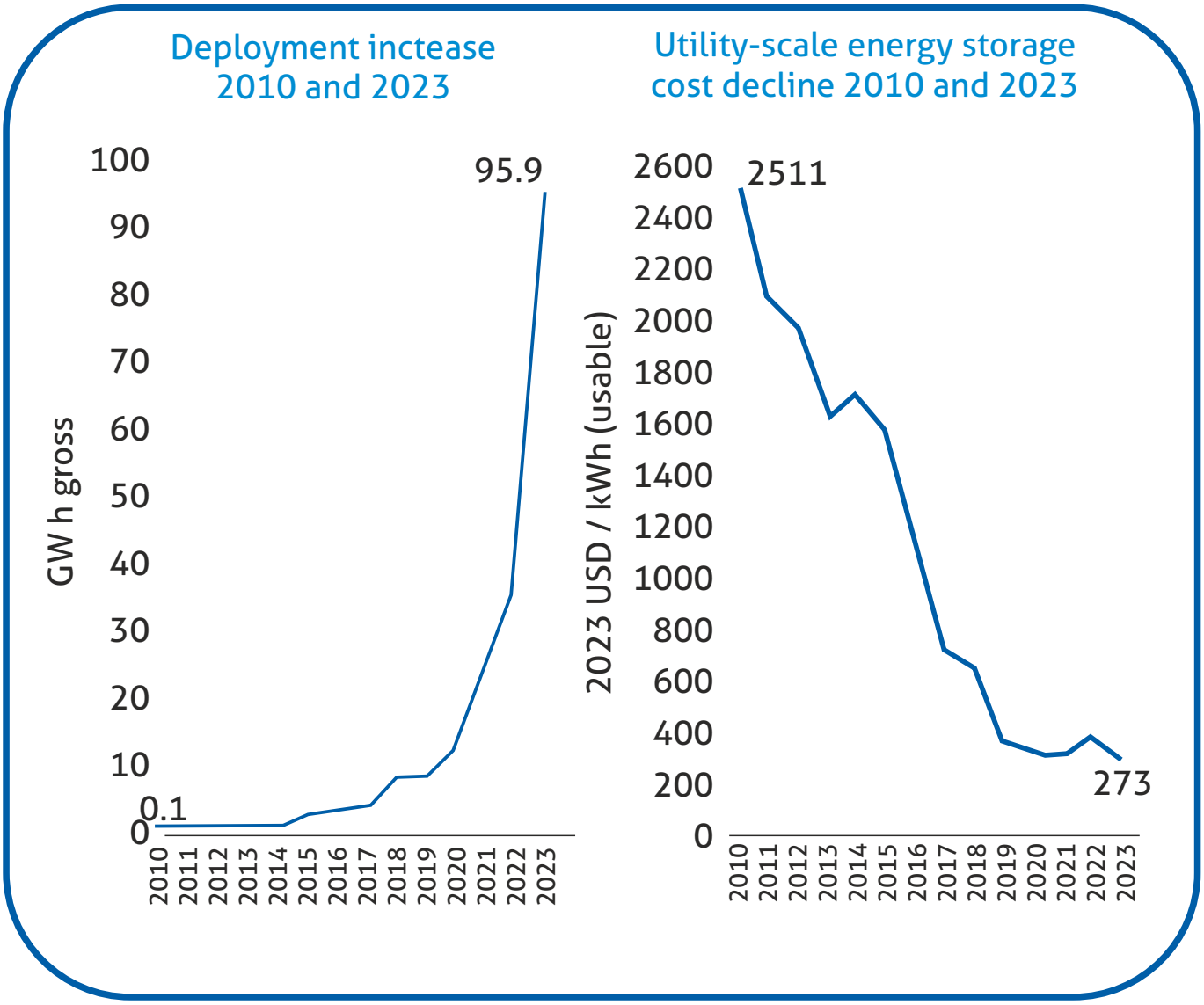
Between 2010 and 2023, battery storage costs fell by 89%, from USD 2,511/ kWh to USD 273/ kWh, driven by scaled manufacturing, better materials efficiency, and improved production processes. Annual capacity additions rose from just 0.1 GWh in 2010 to 95.9 GWh in 2023.

China led global additions in 2023 with 46.5 GWh—nearly half the total—followed by the United States with 22 GWh (about a quarter of global capacity). Energy shifting was the dominant use, accounting for 67% of total storage capacity that year.

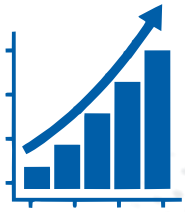
Lithium-ion battery costs alone declined by 82% between 2013 and 2023 due to global manufacturing growth.

[2] Source : IEA- Paper on Batteries and Secure Energy Transitions

Figure 4 : Global Energy Storage Deployment Vs Cost[3]



[3] IRENA - Renewable Power Generation Costs in 2023



5. Business Models and Policy Analysis

The landscape of energy procurement has evolved, offering a variety of business models for consumers to meet their power needs. These models range from traditional approaches to more innovative, market-driven solutions, each with their own investment and operational implications.

Various Business Models for Renewable Energy Procurement:

- Captive/ CAPEX Model: In this model, the consumer owns and operates their own renewable power generation facility. This typically involves significant upfront capital expenditure (CAPEX) for the development and installation of the renewable energy plant. While requiring a substantial initial investment, it offers complete control over power generation and potentially lower long-term operating costs.
- Group Captive Model: Similar to the captive model, a group captive model involves multiple consumers jointly owning and operating a power plant for their collective use. This allows smaller entities to benefit from economies of scale and share the investment burden, making self-generation more accessible. Typically, under group captive arrangement, consumer(s) invest up to 26% in the equity part of the project (~ 7.8% of the overall project cost considering debt-equity ratio of 70:30).
- RESCO/ OPEX/ PPA Model: This model, often seen in renewable energy projects, involves a Renewable Energy Service Company (RESCO) owning and operating the generation facility. The consumer enters into a Power Purchase Agreement (PPA) with the RESCO, paying for the energy consumed on an operational expenditure (OPEX) basis. This eliminates the need for upfront capital investment by the consumer, making it an attractive option for those seeking to avoid large CAPEX outlays.
- Purchase from Energy Exchanges: Consumers can procure power directly from energy exchanges, such as the Indian Energy Exchange (IEX) or Power Exchange India (PXIL). This offers flexibility and the ability to source power based on real-time market prices, often used for short-term or supplementary power requirements. Energy exchanges provide various green solutions including Day Ahead Market, Intraday Market, Day Ahead Contingency Market and Term Ahead Market.

- Purchase of Renewable Energy Certificates (RECs): RECs are market-based instruments that certify that one megawatt-hour (MWh) of electricity has been generated from a renewable energy source. Consumers can purchase RECs to fulfill their renewable purchase obligations (RPOs) or to demonstrate their commitment to green energy, even if they are sourcing conventional power directly. Trading of RECs happen through energy exchanges.
- Green Power Purchase from DISCOMs Distribution Companies: Consumers have the option to purchase electricity directly from their local distribution utility at premium tariffs. 15+ States have announced green tariffs for procurement of power directly from DISCOMs. Premium charged under this mechanism varies between INR 0.25/ kWh to INR 1.50/ kWh over and above the retail electricity tariff.

Green Energy Open Access:

Recognizing the need to accelerate the transition to a green economy and empower consumers with greater choice, the Government of India has introduced Green Energy Open Access. This initiative, particularly strengthened by the Electricity (Promoting Renewable Energy Through Green Energy Open Access) Rules, 2022, allows consumers with a contracted demand of 100 kW or more (or a specific aggregate demand for multiple consumers) to procure renewable energy directly from renewable energy generators. This policy aims to foster a more competitive market for renewable energy, reduce reliance on fossil fuels, and enable industries and commercial establishments to meet their sustainability goals more effectively.

However, leveraging Green Energy Open Access comes with a set of charges and surcharges (for e.g., cross subsidy surcharge, additional surcharge, wheeling charge, banking charge etc. over and above the tariff agreed for power purchase) designed to maintain grid stability, compensate DISCOMs for stranded assets, and support universal service obligations. These charges are crucial considerations when evaluating the economic viability of open access procurement.

Table 3 details the applicable charges for open access consumers and green tariffs applicable in different states:

Table 3: Business Models and Policy Analysis

State	Cross Subsidy Charges (Rs/ kWh)	Banking Charges (Rs/ kWh)	Can bank upto	Wheeling Charges (Rs/ kWh)	Green tariff (Rs/ kWh)
Andhra Pradesh	APSPDCL : 11 kV : industrial - 1.79 commercial - 2.14 33 kV : Industrial - 1.49 commercial - 2.14 APCPDCL : 11 kV : industrial - 1.94 commercial - 2.25 33 kV : industrial -1.53 commercial : 1.85 APEPDCL : 11 kV : industrial - 1.70 commercial - 2.23 33 kV : industrial - 1.46 commercial - 1.91	8% and 12% in kind (peak)	30%	APSPDCL : 11 kV : Industrial and commercial - 1.51 33 kV : Industrial and commercial - 0.57 APCPDCL : 11 kV : Industrial and commercial - 1.23 33 kV : Industrial and commercial - 0.57 APEPDCL : 11 kV : Industrial and commercial - 1.26 33 kV : Industrial and commercial - 0.58	0.75
Gujarat	1.53	MSME : 1.10 Others : 1.5	30%	0.63	0.9
Himachal Pradesh	Long to medium OA : EHT - 2.17 HT2 - 1.71 Short Term OA – Peak: EHT - 0.6 HT2 - 0.52 Short Term OA - Non-Peak: EHT - 0.43 HT2 - 0.34	8% in kind	30%	33 kV - 0.67 11-33 kV - 1.56 <11 kV - 3.47	—
Karnataka	Industrial (66 kV and above and HT): 0.55 Commercial : (66 kV and above and HT) - 2.46 LT3 - 2.09 Lt5 - 0.71	8% in kind	–	BESCOM : HT - 0.32 LT - 0.75 MESCOM : HT - 0.42 LT - 0.96 CESC : HT - 0.37 LT - 0.86 HESCOM/ GESCOM : HT - 0.40 LT - 0.94	0.5

[4]LT: Low Tension , HT: High Tension , EHT: Extra High Tension

State	Cross Subsidy Charges (Rs/ kWh)	Banking Charges (Rs/ kWh)	Can bank upto	Wheeling Charges (Rs/ kWh)	Green tariff (Rs/kWh)
Madhya Pradesh	Industrial and Non industrial - 1.43	8% in kind	100 % with TOD restrictions	11 kV - 0.65 33 kV - 0.16	0.56 (For non RPO compliance)
Maharashtra	Industrial/commercial HT (11,22,33 kV) - 1.79	8% in kind	100 % with TOD restrictions	0.6	0.66
Rajasthan	Industrial : 11 kV - 1.58 33 kV - 1.67 Non domestic : 11 kV - 2.23 33 kV - 2.16	8% in kind	25% for captive. No banking for 3rd party or Behind the meter	11 kV - 0.79 33 kV - 0.15	–
Tamil Nadu	HT Industrial - 1.92 HT Commercial - 2.49	8% in kind	–	LT - 1.6 HT -1.04	10% on regular HT/LT bill
Telangana	TGSPDL : 33 kV - 1.68 11 kV - 1.95 TGNPDCL : 33 kV - 1.81 11 kV - 1.82	8% in kind	30%	TGSPDCL : 11 kV - 0.25 33 kV - 0.06 TGNPDCL : 11 kV - 0.39 33 kV - 0.05	0.66
Uttar Pradesh	1.58	8% in kind	100 % with TOD restrictions	1.012	0.36 (except domestic/ agriculture)
Uttarakhand	LT - 1.16 HT - 0.63	12.5 % in kind	100 % with TOD restrictions for solar captive plants	0.67	0.36

Please refer to the list of abbreviations for full forms of DISCOMs

ToD (Time of Day) Limitations :

- Energy banked during peak ToD hours can be utilized during peak or off-peak hours.
- Energy banked during off-peak hours can only be utilized during off-peak hours.

5.1. Policy Exemptions and Waivers

Several Indian states offer fiscal and regulatory exemptions to promote renewable energy adoption, particularly through captive and group captive models. These exemptions typically cover charges such as Cross Subsidy Surcharge (CSS), Additional Surcharge (AS), wheeling, transmission, and banking charges. Most states, including Andhra Pradesh, Gujarat, Karnataka, and Telangana, provide 100% exemption on CSS and AS for captive use, though often excluding third-party sales. States like Rajasthan and Maharashtra go further by offering additional benefits such as full banking rights and waivers on transmission and wheeling charges under specific schemes. Unique incentives in states like Uttar Pradesh and Uttarakhand extend to group captive and third-party models under certain conditions, underscoring the importance of understanding regional policy variations when planning RE investments.

Table 4: Policy Exemptions and Waivers

State	Exemptions
Andhra Pradesh	100 % exemption for CSS and AS for captive RE (not for 3rd party); 100% wheeling exemption if injection and withdrawal occur at same voltage level
Gujarat	100 % exemption for CSS and AS for captive RE (not for 3rd party)
Himachal Pradesh	100 % exemption for CSS and AS for captive RE (not for 3rd party)
Karnataka	100 % exemption for CSS and AS for captive RE (not for 3rd party)
Madhya Pradesh	100 % exemption for CSS and AS for captive RE (not for 3rd party) AS also exempted if power is procured from OA (Open Access) upto the extent of contract demand.
Maharashtra	100 % exemption for CSS and AS for captive RE (not for 3rd party) Wheeling charges not applicable to generating stations directly connected to the transmission system.
Rajasthan	**RIPS (Rajasthan Investment Promotion Scheme)** (Subjected to registration and approval): 100% waiver on banking , wheeling and transmission for captive PP 100% banking rights, for captive solar projects **GEOS (Green energy open access)** 8% banking charges for OA, no banking for RE plants supplying power to 3rd party, 25% banking rights 100% exemption CSS and AS for captive use

State	Exemptions
Tamil Nadu	100 % exemption for CSS and AS for captive RE (not for 3rd party) Concessional transmission and wheeling charges for open access(exact % not mentioned) for SHP, captive use and third-party sale, wheeling of electricity below 1 MW will be allowed only within the same distribution circle.
Telangana	100 % exemption for CSS and AS for captive RE (not for 3rd party)
Uttar Pradesh	For standalone solar projects >5 MW: 100 % exemption on CSS for intra state 100% exemption on CSS wheeling and transmission charges if power is sold to intrastate (UPPCL) and interstate 50% exemption on wheeling and transmission charges if power sold to 3rd party
Uttarakhand	For solar projects less than 25 MW: 100 % exemption on CSS and AS for captive, group captive and 3rd party 100% exemption on Transmission and wheeling charges for grid connected projects for a period of 5 years (until 2028)

Beyond these state-specific incentives, India's national policy framework provides crucial benefits for Green Hydrogen & its Derivatives Projects: such projects are exempted from Cross-Subsidy Surcharge (CSS) and Additional Surcharge (AS) when sourcing renewable energy through third-party open access within the State, a provision reinforced by the Green Energy Open Access Rules, 2022. Furthermore, they benefit from a 100% Inter-State Transmission System (ISTS) waiver for 25 years for projects commissioned by December 31, 2030, a significant cost reduction for inter-state power evacuation. Additionally, offshore wind projects also enjoy a 100% ISTS waiver for 25 years if commissioned by December 31, 2032, further bolstering green hydrogen production potential from this emerging renewable source.

6. Rooftop Feed-In Tariff Analysis

Rooftop solar systems are deployed in India through three primary models: **Net Metering,** where excess solar energy exported to the grid is offset against the consumer's electricity consumption; **Net Billing**, where exported energy is monetized at a predetermined tariff and credited to the consumer's bill; and **Gross Metering**, where all generated solar energy is fed into the grid and compensated separately from the consumer's own usage. These mechanisms vary widely across states, reflecting localized policy choices and regulatory priorities. For example, Himachal Pradesh adjusts export tariffs based on the level of subsidy received, while states like Rajasthan and Uttar Pradesh tie tariffs to competitively discovered rates plus incentives. Karnataka offers real-time settlement for larger producers, whereas Gujarat provides tiered tariffs based on ownership and consumption models. Andhra Pradesh and Tamil Nadu maintain fixed tariffs depending on system size and voltage level. This state-specific diversity highlights India's decentralized yet progressive approach to solar energy integration and tariff design.

Table 5: Rooftop Tariff Analysis[4]

State	Capacity allowed	Net Metering (Rs/ kWh)	Net Billing (Rs/ kWh)	Gross Metering (Rs/ kWh)
Andhra Pradesh	Net metering: 500 kW Gross metering: 5,000 kW	2.09	2.09	LT : 3.13 HT of max 1.5 MW plant capacity : 2.92 During off-peak hours : 2.71 During peak hours (HT/ EHT) of max 5MW : 4.17
Gujarat	No capacity restrictions upto the contract demand for captive and third party	Self/3rd-party: 2.25 (5 yrs), then 75% of avg non-park solar tariff (last 6 mo* from CoD). Others: 75% of GUVNL avg non-park solar tariff (last 6 mo).		Rs (2.62 to 2.66) / kWh + Rs 0.20

**mo - Months*

[4] KSERC - Kerala State Electricity Regulation Commission

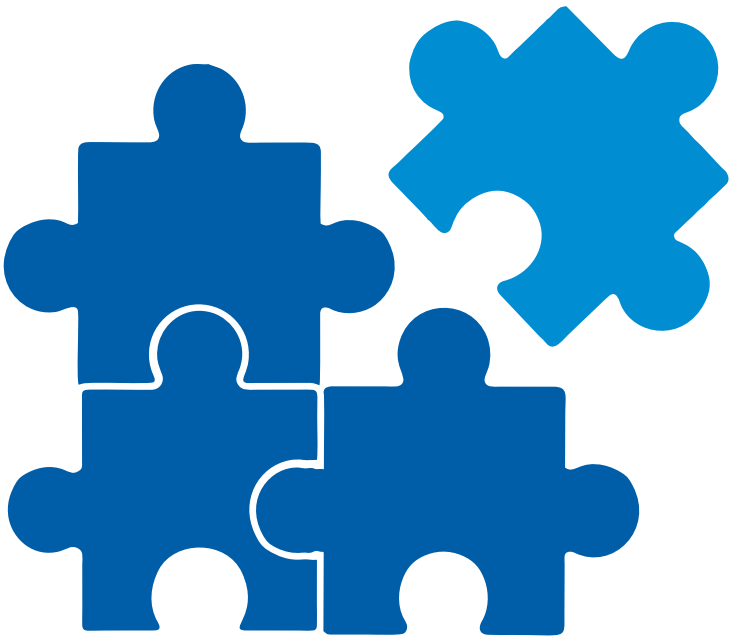
State	Capacity allowed	Net Metering (Rs/kWh)	Net Billing (Rs/kWh)	Gross Metering (Rs/kWh)
Himachal Pradesh	Not to exceed 80% of the approved contract demand	For consumers approved or who opt for solar metering arrangements on or after 01-09-2022 for both net-metering and netbilling: If subsidy / incentive is : <50% Capital cost : 1.402 50-70%: 1.051 70-90%: 0.876 >90%: 0.526		For consumers approved or who opt for solar metering arrangements on or after 01-09-2022 for gross metering: If subsidy / incentive is : <50% Capital cost : 1.402 50-70%: 1.051 70-90%: 0.876 >90%: 0.526
Karnataka	100% of consumer sanctioned load	For residential systems between 1 kW and 10 kW : 3.82 For projects between 10 kW and 2 MW (large-scale) : 2.84		Megawatt-scale Solar Projects: 3.04 Megawatt-scale Solar with BESS: 5.66 Solar Rooftop (1 kW up to sanctioned load, excluding domestic 1 kW - 10 kW): 3.20
Madhya Pradesh	Upto 1,000 kWp	2.14		2.14
Maharashtra	5 MW or sanctioned load, whichever is lower	2.90	2.90	4.88

State	Capacity allowed	Net Metering (Rs/kWh)	Net Billing (Rs/kWh)	Gross Metering (Rs/kWh)
Rajasthan	Upto 200% of contract demand	Weighted average tariff of large-scale solar projects of 5 MW and more, discovered through competitive bidding in previous Financial Year (for entire duration of the project)	Weighted average tariff discovered through competitive bidding for respective technology in previous Financial Year and adopted by the Commission, plus an incentive of 25% (for entire duration of the project)	
Tamil Nadu	Upto Sanctioned load		0-10 kW : 3.61 11-150kW :3.37 >150kW : 3.10	0-10 kW : 3.61 . 11-150kW :3.37 >150kW : 3.10
Telangana	Sanctioned load	Unused credits (monthly) : 0.50		
Uttar Pradesh	100% of sanctioned load	Unadjusted electricity credits at the end of settlement period: 2.00	2.98 +25% incentive (March, 2024)	2.98 +25% incentive (March, 2024)

7. Conclusion and Recommendations

India's renewable energy transition is accelerating, but the state-wise divergence in policies, tariffs, and regulatory structures presents a complex landscape for industrial stakeholders. While some states offer relatively balanced frameworks with moderate charges and robust banking provisions, others impose higher levies or have more restrictive mechanisms that may impact project viability. At the same time, emerging trends such as the integration of storage, green hydrogen, and electric mobility are shaping a more diversified and resilient energy ecosystem.

To capitalize on India's clean energy momentum, businesses must adopt a tailored, state-specific strategy that aligns with local incentives, infrastructure, and policy timelines. Regulatory harmonization and policy clarity, especially around open access, banking, and FiT mechanisms, will be crucial in unlocking broader participation from the private sector. A proactive, informed, and adaptive approach will be key to navigating the dynamic RE landscape and achieving both sustainability and commercial goals in India's energy future.



8. Annexures

1. Ministry of New and Renewable Energy - Annual Reports 2024-25
2. Ministry of New and Renewable Energy - Physical Achievements
3. Ministry of New and Renewable Energy - Policy for Repowering of the Wind Power Projects 2023
4. Determination of Tariff for FY 24-25 : State Electricity Regulatory Commission - Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu ,Telangana, Uttar Pradesh, Uttarakhand
5. Green Energy Open Access for - Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu , Telangana, Uttar Pradesh, Uttarakhand
6. Central Electricity Regulatory Commission (CERC - Terms & Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2024
7. Andhra Pradesh Integrated Clean Energy Policy 2024
8. Gujarat Renewable Energy Policy 2023
9. Karnataka Renewable Energy Policy 2022-27
10. Madhya Pradesh Renewable Energy Policy 2025
11. Rajasthan Integrated Clean Energy Policy 2024
12. Telangana Clean and Green Energy Policy 2024
13. Uttar Pradesh Solar Energy Policy 2022
14. Uttarakhand Solar Energy Policy 2023
15. Maharashtra State Renewable Energy Policy 2020
16. Tamil Nadu Pumped Storage Projects Policy (PSP) 2024
17. Tamil Nadu Repowering, Refurbishment, and Life Extension Policy 2024
18. Tamil Nadu Solar Energy Policy 2019
19. Kerala State Electricity Regulation Commission - Compilation of settlement rates for renewable energy and other important provisions in RE regulations in various states in India

9. List of Abbreviations

APCPDCL	Andhra Pradesh Central Power Distribution Company Limited
APEPDCL	Andhra Pradesh Eastern Power Distribution Company Limited
APPC	Average Power Purchase Cost
APSPDCL	Andhra Pradesh Southern Power Distribution Company Limited
AS	Additional Surcharge
BESS	Battery Energy Storage Systems
BESCOM	Bangalore Electricity Supply Company Limited
BTM	Behind-the-Meter
C&I	Commercial & Industrial
CESC	Chamundeshwari Electricity Supply Corporation Limited (Mysore)
CSS	Cross Subsidy Surcharge
EV	Electric Vehicles
FiT	Feed-in Tariff
GESCOM	Gulbarga Electricity Supply Company Limited
GUVNL	Gujarat Urja Vikas Nigam Limited
HESCOM	Hubli Electricity Supply Company Limited
MESCOM	Mangalore Electricity Supply Company Limited
MW	Megawatts
NIWE	National Institute of Wind Energy
OA	Open Access
PSDF	Power System Development Fund
RPO	Renewable Purchase Obligation
TGNPDCL	Telangana State Northern Power Distribution Company Limited
TSSPDCL	Telangana State Southern Power Distribution Company Limited
UPPCL	Uttar Pradesh Power Corporation Limited
VGF	Viability Gap Funding

Note

Confederation of Indian Industry

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering Industry, Government and civil society through advisory and consultative processes.

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For more 130 years, CII has been engaged in shaping India's development journey and works proactively on transforming Indian Industry's engagement in national development. CII charts change by working closely with the Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness, and business opportunities for industry through a range of specialised services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Through its dedicated Centres of Excellence and Industry competitiveness initiatives, promotion of innovation and technology adoption, and partnerships for sustainability, CII plays a transformative part in shaping the future of the nation. Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes across diverse domains, including affirmative action, livelihoods, diversity management, skill development, empowerment of women, and sustainable development, to name a few.

For 2025-26, CII has identified "Accelerating Competitiveness: Globalisation, Inclusivity, Sustainability, Trust" as its theme, prioritising five key pillars. During the year, CII will align its initiatives to drive strategic action aimed at enhancing India's competitiveness by promoting global engagement, inclusive growth, sustainable practices, and a foundation of trust.

With 70 offices, including 12 Centres of Excellence, in India, and 9 overseas offices in Australia, Egypt, Germany, Indonesia, Singapore, UAE, UK, and USA, as well as institutional partnerships with about 250 counterpart organisations in almost 100 countries, CII serves as a reference point for Indian industry and the international business community.

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