

CEEW-CEF Market Handbook Q1 2023-24

18 August 2023



Image: iStock



CEEW-CEF Market Handbook

India is undergoing an energy transition from fossil-based to clean energy. Evidence-based decision-making can accelerate the process.

CEEW Centre For Energy Finance's Market

Handbook aims to help key investors, executives and policymakers with evidence-based decision-making by:

- Identifying and analysing trends critical to India's energy transition
- Presenting data-backed evidence based on the most relevant indicators
- Connecting the dots and presenting a short-term market outlook

The handbook attempts to comment and answer on some critical questions such as:

1. What is India's generation capacity and energy mix?
2. What are the key trends in renewable energy (RE) tariffs?
3. What is the current situation of the discom payment delay situation?
4. How have the power market reforms progressed?
5. What are key trends in the electric vehicles (EV) and energy storage markets?

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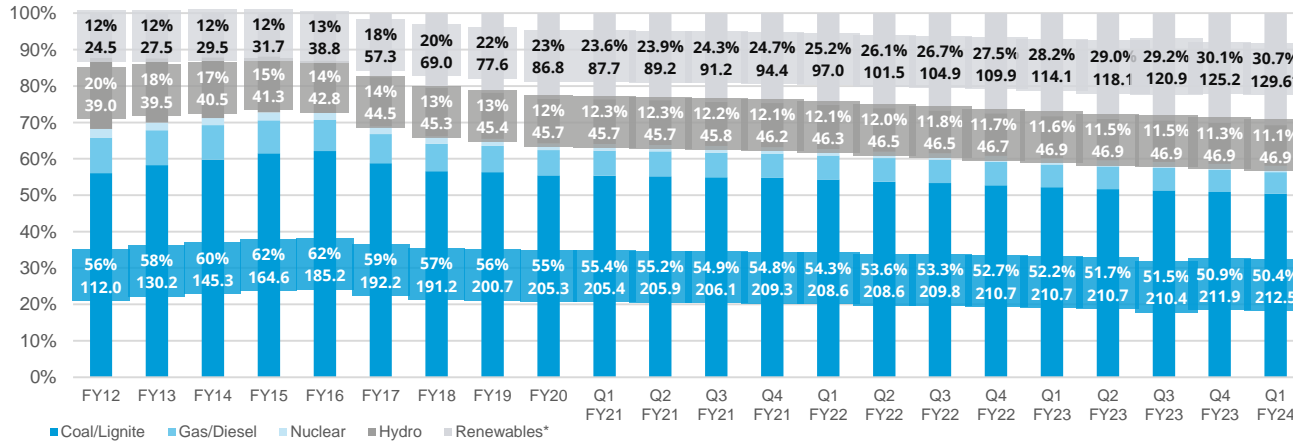
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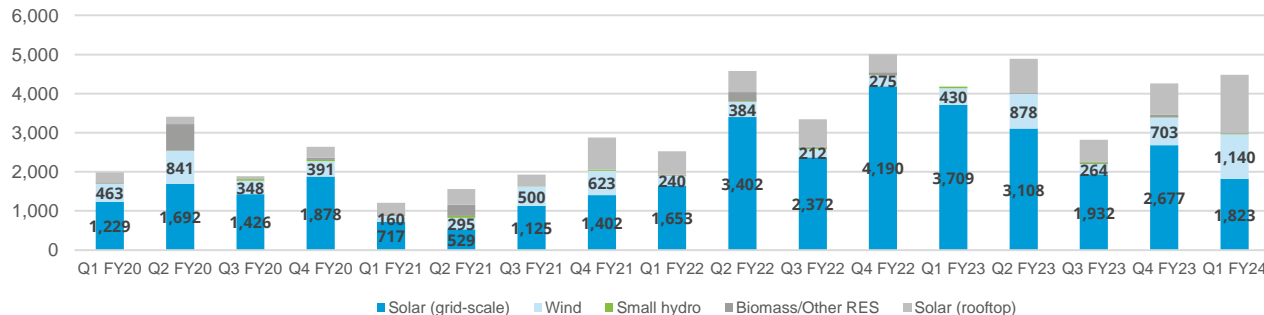
Generation capacity: nuclear capacity was added for the first time since FY2016; 30.7% of the total installed capacity is from non-hydro RE

Installed capacity mix (GW)



Source: Central Electricity Authority (CEA). * Includes solar rooftop capacity (10371.4 MW as of June 2023).

RE capacity addition (MW)



Source: Ministry of New and Renewable Energy (MNRE); #Auctioned capacity = Awarded capacity.

Takeaways & Outlook

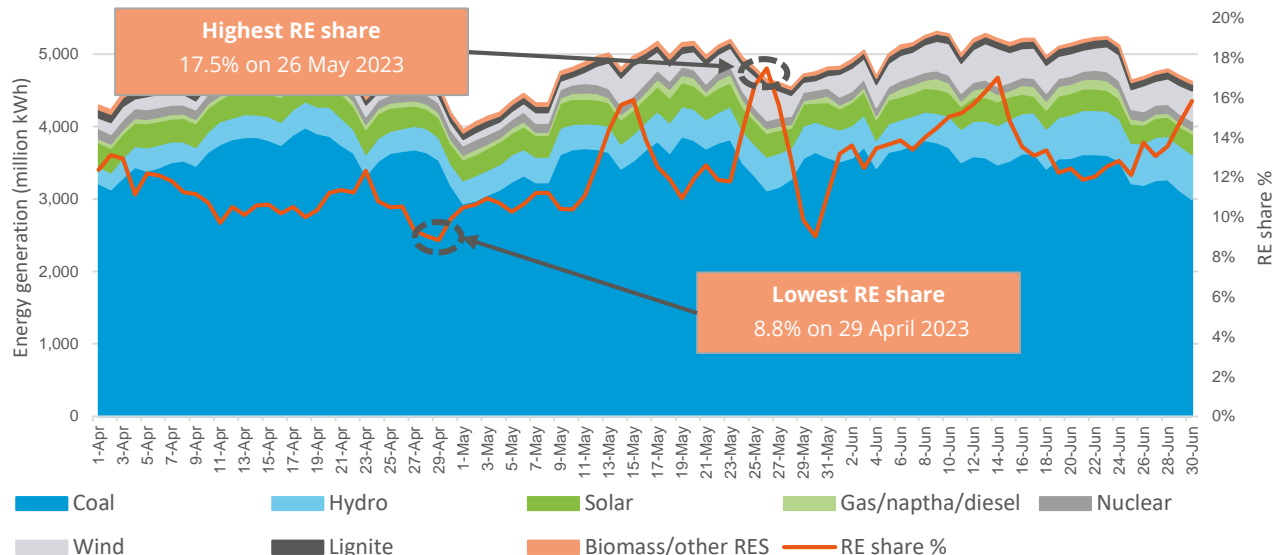
In Q1 FY24, a net generation capacity of 5.8 GW was added (vs 4.3 GW in Q1 FY23). The total net capacity addition comprised renewable energy (RE) (4.5 GW), **nuclear-based (0.70 GW)** and coal-based (0.66 GW) capacity addition. No new hydropower capacity was added in this quarter. **This nuclear capacity is based on an indigenously developed nuclear reactor located in Kakrapara, Gujarat.**

In RE, solar (grid-scale and rooftop) continued to dominate capacity addition, accounting for 3,316 MW (74.0%) (vs 3,709 MW in Q1 FY23) of total RE addition. Wind capacity addition stood at 1,140 MW (25.4%) in Q1 FY24 (vs 430 MW in Q1 FY23). Small hydro (15 MW) and biopower (12 MW) contributed 0.3% each.

In Q1 FY24, the total installed RE capacity reached 129.6 GW, including 70.1 GW of solar, 43.8 GW of wind and 10.8 GW of biopower capacity.

In total, 7.65 GW of RE capacity was auctioned# in Q1 FY24, of which grid-scale solar PV stood at 4.35 GW, wind-solar hybrid with or without storage stood at 2.31 GW, and wind stood at 0.99 GW.

Source-wise daily generation (Q1 FY24)



RE share snapshot

	Q1 FY22		Q1 FY23		Q1 FY24	
	RE share %	Day	RE share %	Day	RE share %	Day
Highest	17.8%	26 May 2021	21.3%	21 May 2022	17.5%	26 May 2023
Lowest	7.7%	13 April 2021	8.9%	22 April 2022	8.8%	29 April 2023
Average (Daily)	11.5%	NA	12.9%	NA	12.4%	NA

Takeaways & Outlook

The total power generation increased slightly by 5.8% in Q1 FY24 (440 billion kWh) compared to Q1 FY23 (415 billion kWh) and by 8.7% in comparison to Q4 FY23 (404 billion kWh) owing to subdued heat-wave days in this quarter versus the same period in the previous fiscal year.

- **April:** Up by 4.0%
- **May:** Up by 4.7%
- **June:** Up by 8.7%
- **Total Q1 FY24:** Up by 5.8%

In Q1 FY24, RE generation increased slightly by 2.5% versus the same quarter in the previous fiscal year (Q1 FY23). Coal/lignite-based generation was up by 8.2%; however, hydro decreased by 9.9% for the same period.

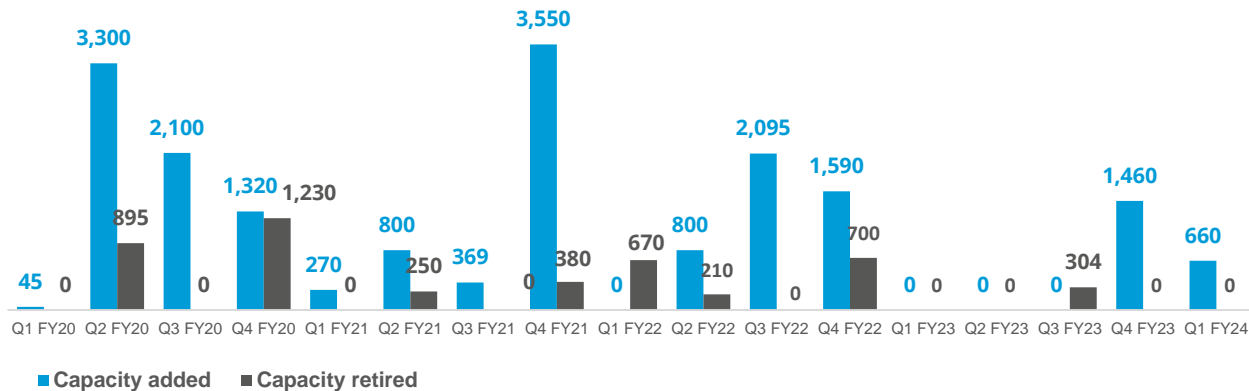
From an average daily generation perspective, the RE and hydro share decreased, whereas coal/lignite share increased in Q1 FY24 compared to Q1 FY23.

- **RE:** Share slightly down from 12.9% to 12.4%
- **Hydro:** Share down from 10.0% to 8.4%
- **RE + Hydro:** Share down from 22.9% to 20.8%
- **Coal/lignite:** Share up from 74.3% to 75.0%

Source: POSOCO. Note: RE technologies include solar, wind, biomass, waste-to-energy, and small hydro and do not include rooftop solar and large hydro (>25 MW) generation.

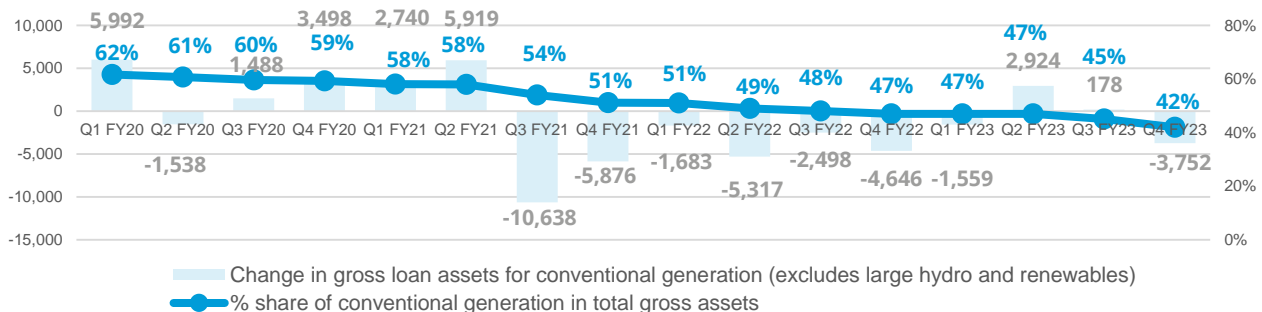
Coal phase-out: 600 MW of new coal capacity added; share of conventional generation in the PFC/REC loan book reduced to 42%

Coal capacity added versus retired (MW)



Source: CEA.

Coal financing by Power Finance Corporation (PFC)/ Rural Electrification Corporation (REC) (INR crore)



Source: PFC investor presentations; figures are derived from the same. Note: Sector-wise PFC loan asset data break-up is unavailable for Q1 FY24.

Takeaways & Outlook

In Q1 FY24, 660 MW of new coal capacity was added, while no coal capacity was retired. The new coal capacity includes NTPC's Barh I (unit-2)'s allocation to the central sector of the eastern, southern and western region states.

PFC/REC, India's largest power financier, continued to show a downward trend in the share of conventional generation, declining to 42% in Q4 FY23 from 47% in Q4 FY22.

PFC/REC continued its diversification trend by financing transmission and distribution (T&D) and RE generation projects (including large hydro). This accounts for around 45% (INR 1,89,803 crore) and 11.4% (INR 48,198 crore) of its total loan book as of Q4 FY23 vs 42% (INR 1,58,507 crore) and 9.9% (INR 36,777 crore) in Q4 FY22, respectively.

In April 2023, PFC sanctioned a debt of INR 2,200 crore (~USD 268 million) to Vibrant Energy for the development of RE projects.

RE auctions: 7.65 GW of RE auctioned in this quarter, highest since Q2 FY22; SECI's wind-solar hybrid with ESS bid concluded at INR 4.64 per kWh

Notable auctions

Capacity allotted (MW)

Least tariff discovered (INR/kWh)

Auction Details	Capacity allotted (MW)	Least tariff discovered (INR/kWh)
SECI, pan India, wind, tranche XIV, 1200 MW (June 2023)	690	3.18
GUVNL, pan India, wind, phase V, 500 MW (May 2023)	300	3.11
RUVNL, Rajasthan, solar, 1000 MW (May 2023)	1,000	2.61
MSEDCL, Maharashtra, solar, phase X, 500 MW (April 2023)	500	2.88
RECPDCL, pan India, solar, 500 MW (April 2023)	500	2.69
GUVNL, Gujarat, solar, phase XIX, 500 MW (April 2023)	500	2.71
REMCL, pan India, RE RTC with or without storage, 1000 MW (April 2023)	1,000	3.99
SECI, pan India, wind-solar hybrid with ESS, tranche VI, 1200 MW (April 2023)	1,200	4.64
RECPDCL, pan India, solar, 1250 MW (April 2023)	1,250	2.55

Bid spotlight: SECI, pan India, wind-solar hybrid with ESS, 1200 MW

Tariff and winner

- **Tariff discovered:** 4.64 INR/kWh
- **Winners:** Amp Energy, Renew Power, Hero Future Energies, and Acme Group

Key provisions

- **Project location:** Pan India subjected to designated delivery points; however, the storage component has to be co-located with either wind or solar project.
- **Delivery point:** ISTS substations connected at 220 kV in Andhra Pradesh, Maharashtra, Karnataka, Tamil Nadu, and Madhya Pradesh.
- **Capacity utilisation factor (CUF)** - declared CUF shall remain above 50% annually.

Comments

- The HPD is mandated to deliver up to 2000 kWh of energy per MW of rated project capacity during peak hours as per the schedule set by the buying entity.
- The project is not eligible for selling the excess generation elsewhere; only SECI, at 75% of the power purchase agreement (PPA) tariff, will buy it if required.

Takeaways & Outlook

RE auctioned capacity stood at 7.65 GW in Q1 FY24 and was dominated by state bidding agencies such as RUVNL's 1000 MW solar, MSEDCL's 500 MW solar, GUVNL's 500 MW wind, GUVNL's 500 MW and 600 MW solar tender. **RECPDCL was a new entrant with two solar tenders. SECI concluded a wind-solar hybrid with energy storage system (ESS) and a vanilla wind tender.** However, for both vanilla wind tenders by SECI and GUVNL, entire tender capacity was not allotted.

Q1 FY24 was a significant quarter in terms of total auctioned capacity, the first quarter after the announcement of the RE bidding trajectory. The share of vanilla solar dominated the auctioned capacity this quarter, followed by wind-solar hybrid and vanilla wind tenders.

- **Q1 FY24: 7.65 GW**
- **Q4 FY23: 1.80 GW**
- **Q3 FY23: 1.96 GW**
- **Q2 FY23: 3.00 GW**

The lowest discovered solar tariff in Q1 FY24 (RECPDCL, 1250 MW) stood at **INR 2.55/kWh**. **For wind, the lowest discovered tariff** (GUVNL 500 MW phase-V) stood at **INR 3.11/kWh**.

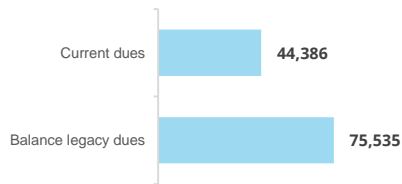
Source: SECI and state renewable agencies.

SECI = Solar Energy Corporation of India; GUVNL = Gujarat Urja Vikas Nigam Limited; RUMSL = Rewa Ultra Mega Solar Limited; MSEDCL = Maharashtra State Electricity Distribution Co. Ltd.; RUVNL = Rajasthan Urja Vikas Nigam Limited; RECPDCL = REC Power Distribution Company Limited; REMCL = Railway Energy Management Company Limited; HPD = Hybrid project developer.

Discom payables: discoms legacy dues reduced by 17% from INR 91,061 crore to INR 75,535 crore in June 2023

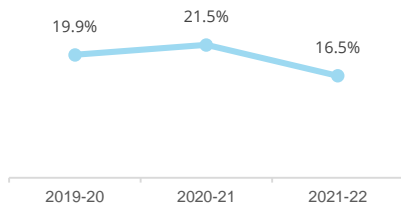
Amount overdue by discoms to power producers (INR crore)

As of June 2023



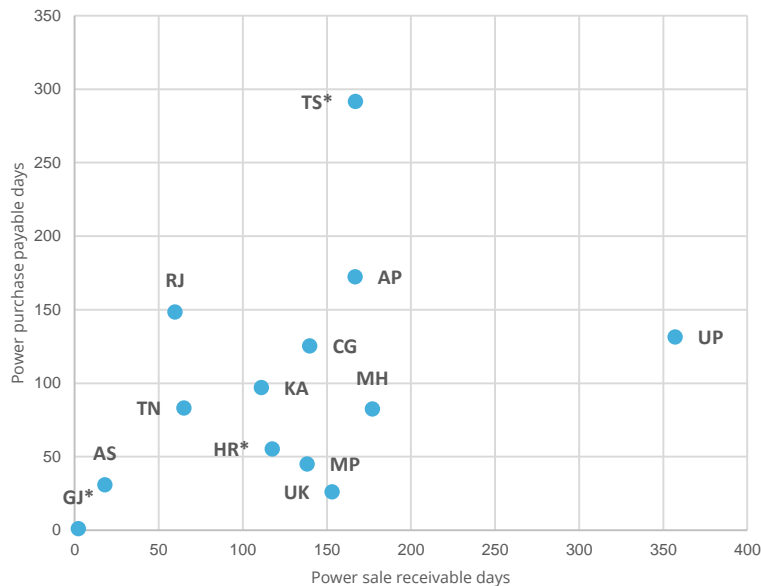
Source: PRAAPTI portal (based on voluntary disclosures from power producers; PIB Press Release.

Overall AT&C losses (%)



Source: Integrated rating and ranking of power distribution utilities.

Discom payable and receivable days for RE-rich states



Source: UDAY portal (based on data disclosed by discoms as of 31 March 2022).

*Data not available for these states; values derived from 2019-20/2020-21 financial reports.

Takeaways & Outlook

As of June 2023, legacy dues[#] of discoms to generating companies reduced by 17% to INR 75,535 crore from INR 91,061 crore (in March 2023) after the implementation of Electricity (Late Payment Surcharge and Related Matters) Rules, 2022. The current dues[#] stood at INR 44,386 crore.

Maharashtra, Tamil Nadu, Karnataka, Rajasthan and Jammu & Kashmir were among the states with the highest legacy dues.

Additionally, according to the Ministry of Power's (MoP) Ujwal DISCOM Assurance Yojana (UDAY) platform, discoms in Karnataka, Andhra Pradesh, Madhya Pradesh, Uttar Pradesh and Assam topped the latest quarterly performance assessment.*

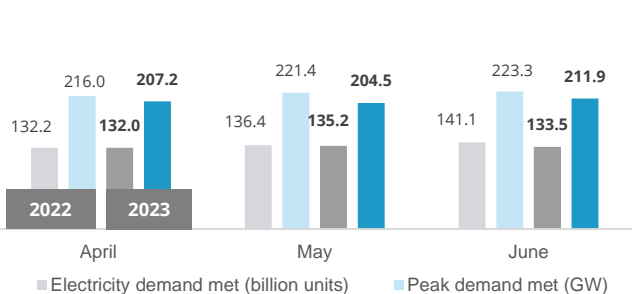
Under the RDSS scheme, ~230 million prepaid smart consumer meters, 5.4 million smart DT meters and 0.19 million smart feeder meters have been sanctioned across 28 states/UTs (46 discoms).

Reforms-based and results-linked, revamped distribution sector scheme (RDSS), approved in June 2021, aims to **reduce AT&C losses at pan-India levels to 12-15% by 2024-25, reduce ACS-ARR gap to zero by 2024-25, and develop institutional capabilities for modern discoms.**

[#]Legacy dues are already past their due date and remain partially or completely unpaid. Current dues are partially or completely unpaid but are still within their respective due dates; * As of March 2023.

Power markets: Q1 FY24 witnessed the highest-ever peak power demand at 223 GW; June 2023 saw the highest-ever monthly volumes traded on RTM

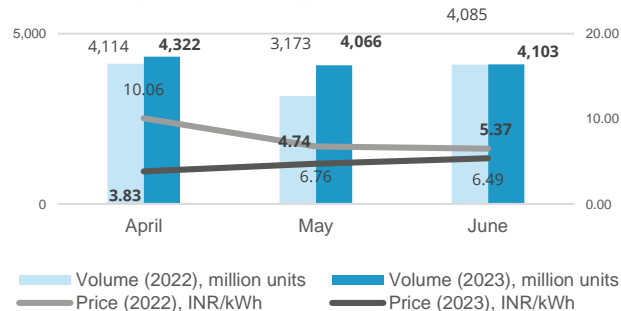
Power supply position (Peak and electricity demand)



Source: CEA.

Peak demand met in Q1 FY24 increased compared to Q1 FY23 through government interventions that ensured supply-side liquidity. In terms of electricity demand met, there was a slight uptick of 2.24% vs that of Q1 FY23.

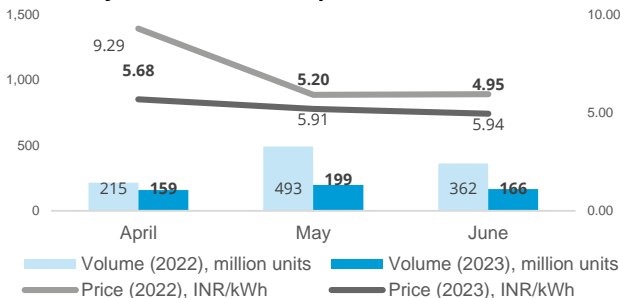
Day-ahead spot market snapshot (IEX)



Source: IEX.

Increased supply-side liquidity resulting from enhanced coal supply led to a decline in market clearing prices (MCP). This resulted in higher traded volumes on the day-ahead market (DAM). May 2023 recorded a significant growth of 26% (vs May 2022).

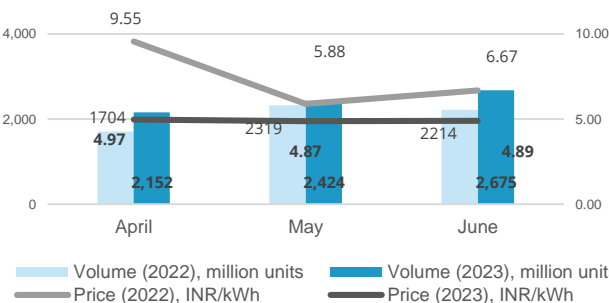
Green day-ahead market snapshot (IEX)



Source: Indian Energy Exchange (IEX). *Day-ahead contingency.

Volumes traded in the green day-ahead market (GDAM) were significantly lower in Q1 FY24 (vs Q1 FY23), and MCP has declined compared to Q1 FY23 levels. In April 2023, GDAM witnessed 202 market participants.

Real-time market snapshot (IEX)



Source: IEX.

Real-time market (RTM) achieved its highest-ever monthly volume trade of 2675 MU in June 2023. Increasing volumes indicate the growing reliance of discoms and industries on RTM to achieve demand – supply balance in real-time efficiently.

Takeaways & Outlook

Q1 FY24 recorded the all-time high peak power demand in the country on 9 June 2023, standing at 223.3 GW. The average monthly electricity demand (met) in Q1 FY24 saw a slight uptick of 2.24% from Q1 FY23, standing at 136.54 billion units.

For Q1 FY24, the Central Electricity Regulatory Commission (CERC) capped the MCP of power market exchanges at INR 20/kWh for the high price (HP) – DAM category and INR 10/kWh for all other categories.

In Q1 FY24, 0.8 million solar RECs were traded at an average price of INR 0.8/kWh on IEX. There was no trading of non-solar RECs. In contrast, in Q1 FY23, 0.39 million solar RECs and 0.8 million non-solar RECs were traded at an average price of INR 1.9/kWh and INR 1.0/kWh on IEX, respectively.

IEX introduced trading in ancillary services through the tertiary reserve ancillary services (TRAS) market segment. TRAS would consist of day ahead market ancillary services (DAM-AS) and real time market ancillary services (RTM-AS) effective from 1 June 2023.

Policy and regulatory developments: MoP notified the guidelines to promote pumped storage projects; green hydrogen-related policy announcement by Andhra Pradesh and Gujarat government

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MNRE issued RE bidding trajectory and designated SJVN as implementing agency

- In April 2023, MNRE designated SJVN Limited as the fourth renewable energy implementing agency (REIA).
- In another office memorandum, MNRE declared the REIA-wise bidding trajectory for FY 2023-24.
- SECI and NTPC are directed to issue bids for 15 GW each, whereas SJVN and NHPC are directed to issue bids for 10 GW in FY 2023-24.

MoP notified the guidelines to promote pumped storage projects

- In April 2023, the Ministry of Power (MoP) issued the guidelines to promote the development of pumped storage projects (PSPs).
- The guidelines outlined advantages, potential, status and barriers to developing PSPs.
- It includes mechanisms for the allotment of PSP sites, project timelines, and exemptions provided for PSPs. It also discussed utilising proceeds from sovereign green bond issuances to develop PSPs.

HERC issues Green Open Access Regulation 2023

- In April 2023, HERC released the Green Energy Open Access Regulations, 2023, in line with MoP's Green Energy Open Access Regulations, 2022.
- The consumer's load requirement is reduced to 100 kW.
- As per the regulations, an additional surcharge will not be applicable if a consumer is paying the fixed charges.
- Banking facility will be available on a monthly basis on payment of 8% of banked energy as banking charges.

MoP orders all the SERCs/JERCs to determine green tariff

- In May 2023, MoP directed the SERCs to determine green tariff as mentioned in the Electricity (Promoting Renewable Energy Through Green Energy Open Access) Rules, 2022, since only a few states have notified the green tariff.

MNRE amended the requirements for registration under ALLMM list-I

- In May 2023, the guidelines for enlistment in the ALLMM list-I were updated.
- The application and inspection fees are updated. The application fee has been slashed. The inspection fee for SAARC nations has been reduced; however, it remains the same if the manufacturing facility is situated in a non-SAARC nation.
- In addition, the threshold efficiency of solar PV modules for enlistment is set at 20%, 19.5% and 19% for grid-scale projects, rooftop and pumping, and solar lighting applications, respectively.

Green hydrogen-related announcement by Andhra Pradesh and Gujarat government

- Gujarat's revenue department framed a policy for leasing the government's fallow land for green hydrogen production using non-conventional energy sources.
- Andhra Pradesh government notified the green hydrogen and ammonia policy, 2023.

Takeaways & Outlook

In April 2023, the MNRE issued a RE bidding trajectory and **designated SJVN as the fourth implementing agency**. Previously, the MNRE had directed the REIAs to conduct RE bids for 50 GW each year till 2027-28.

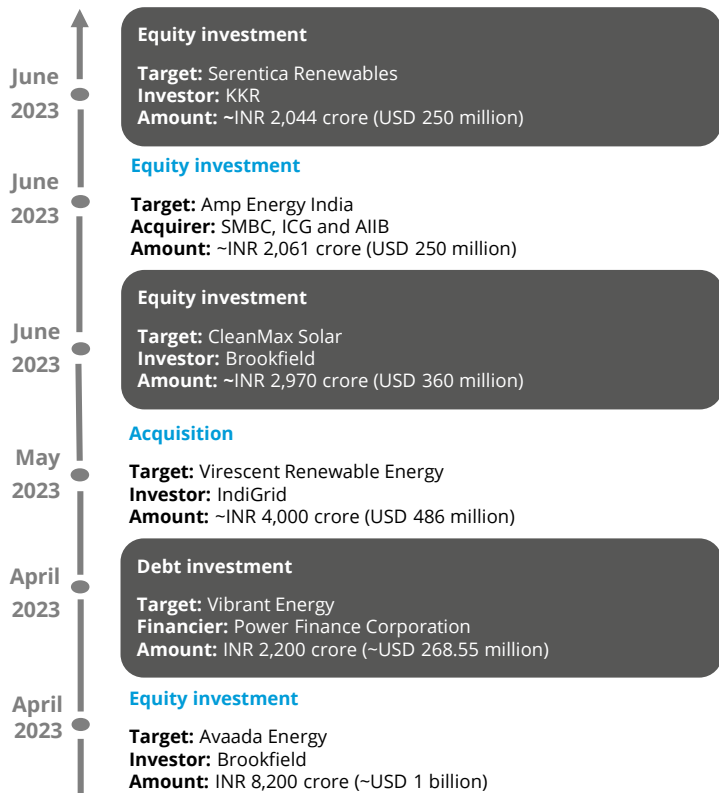
Later in this quarter, the MNRE notified the extension of the Solar Park Scheme till 31 March 2026.

In May 2023, CEA notified the National Electricity Plan for the period of 2022-32. It gave a detailed plan for 2022-27 and a prospective plan for 2027-32. In this, the share of **non-fossil fuel-based generation capacity** is expected to increase to **57.4% by 2026-27 and further to 68.4% by 2031-32**. In monetary terms, ~INR 33.60 lakh crore will be required for power generation capacity addition alone.

On the green hydrogen front, the MNRE announced the guidelines for the implementation of **Strategic Interventions for Green Hydrogen Transition (SIGHT) programme component I (incentives for electrolyser manufacturing) and II (incentives for green hydrogen production)**.

Renewable energy finance: market concentration in RE auctions declined in Q1 FY24 with participation from 21 RE developers

Notable deals (Q1 FY24)



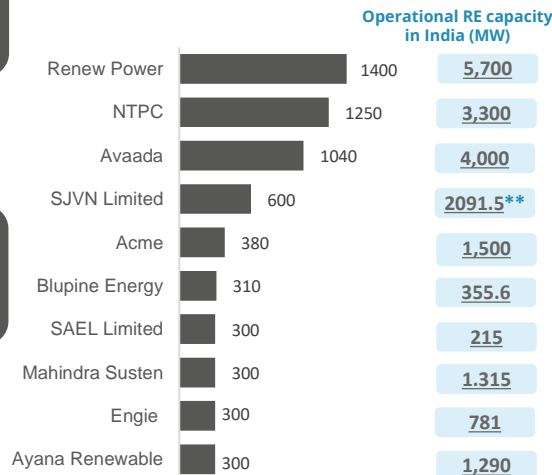
Source: CEEW-CEF Compilation; SMBC = Sumitomo Mitsui Banking Corporation of Japan; ICG = Intermediate Capital Group.

61%

Q1 FY24
Market concentration in
auctioned RE capacity

Note: Market concentration is calculated as the ratio of the top five RE capacities awarded to the total RE capacity auctioned

Developer-wise* RE capacity auctioned during Q1 FY24 (7,650 MW)



Source: CEEW-CEF Compilation. *Note: Includes the top ten developers in terms of auctioned capacity. **Including hydro capacity.

Takeaways & Outlook

In Q1 FY24, 7.65 GW of RE capacity was auctioned. In the private sector, among other developers, Renew Power, Avaada Energy, Acme Group, Blupine Energy Mahindra Susten, SAEL Ltd, and Ayana Renewables emerged as winners. Among public sector undertakings (PSUs), NTPC and SJVN continued to emerge as winning bidders.

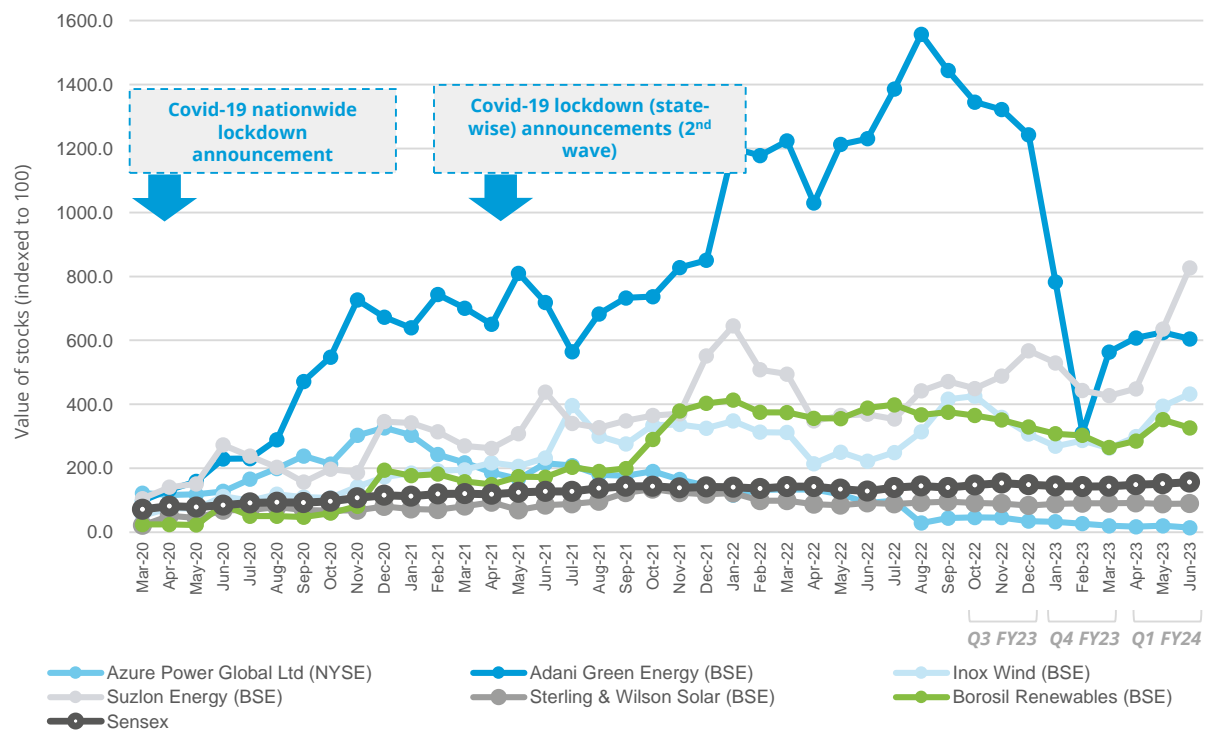
The market concentration saw a decline in Q1 FY24 to 61% (vs 68% in Q1 FY23), with an increase in the diversity of private sector developers participating in the auctions (a total of 18 in Q1 FY24).

In Q1 FY24, the deal activity consisted of both debt and equity investments from domestic and international markets for RE project development in India.

In addition, Waaree Energies and Goldi Solar are planning to increase investments to expand their module manufacturing capacities.

In May 2023, Solar Ladder, a solar supply chain start-up, also raised seed funding of INR 11 crore (~USD 1.3 million).

Change in key renewable energy stock prices (indexed to 100)



Takeaways & Outlook

In Q1 FY24, most listed RE stocks and the Sensex trended upwards.

The share price of RE developer **Adani Green Energy** was up by 7.26%; however, that of **Sterling and Wilson** was marginally down by 0.81% as of June 2023 (vs March 2023).

All the wind developer – manufacturers recorded strong upward trends throughout Q1 FY24. The share price of wind developer-manufacturers **Inox Wind** was up by 64.76%, whereas **Suzlon Energy's** share price was up by 93.67% at the end of June 2023 (vs March 2023). This is a positive signal following the removal of the e-reverse auction mechanism for the allotment of wind energy projects earlier this year.

The share price of **Borosil Renewables**, which holds a near-monopoly position in India's solar panel glass manufacturing, was up by 23.15% at the end of June 2023 (vs March 2023).

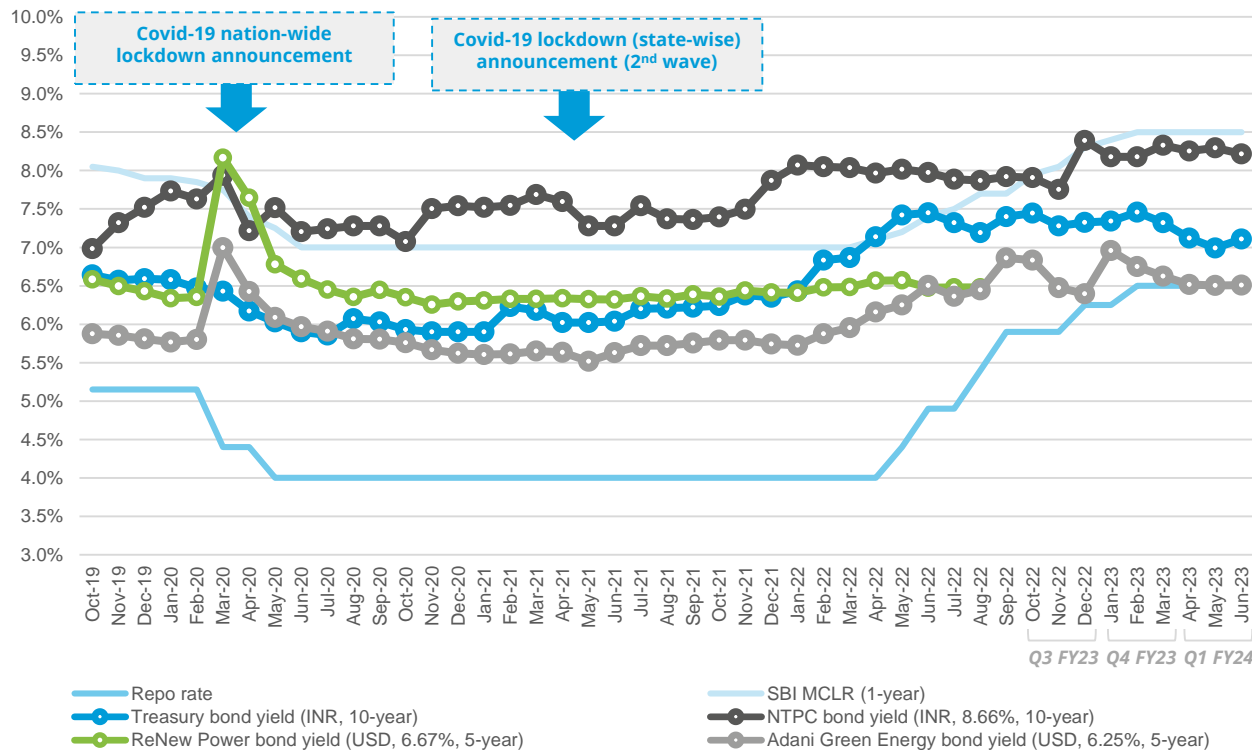
NYSE-listed solar project developer **Azure Power** recorded a downward trend, falling by 28.92% in June 2023 (vs March 2023).

Source: Money Control.

Note: Share prices are the last traded value in each month.

Renewable energy finance: ReNew Power issued the first high-yield green bonds; one-of-its-kind green bonds issued by a waste-to-energy producer

Bond yields* and key financial rates



Source: Reserve Bank of India, State Bank of India, Trading Economics, Money Control and BondEvalue.

Note: Bond prices are the last traded value in each month; * Current yield.

Takeaways & Outlook

In Q1 FY24, two green bonds were issued by RE developers. In April 2023, ReNew Power, through its subsidiary, Diamond II, raised USD 400 million with a coupon rate of 7.95%. The proceeds will be used to finance the company's secured overnight financing rate (SOFR) linked loans. It marked Renew Power's first high-yield green bond issuance. In the same month, SAEL, India's largest waste-to-energy producer, raised INR 1,325 crore (~USD 161 million) with a tenure of 10 years to further promote their biomass energy generation using agricultural residue.

In May 2023, India's leading power financier, REC, undertook an exclusive listing of green bonds worth USD 750 million at the GIFT International Finance Services Center (IFSC) stock exchanges in Gandhinagar. The bond would be used to finance RE projects.

The repo rate was pegged at 6.50% in this quarter after having increased multiple times in the last six quarters.

The key bond yields, including the 10-year treasury bond yield and NTPC's 10-year bond yield,

Pumped hydro storage projects in Madhya Pradesh

RUMSL's 13.8 GW PHS projects – site allotment through competitive bidding (May 2023), Madhya Pradesh

- In May 2023, the government of Madhya Pradesh (GoMP) released a scheme for the implementation of pumped hydro storage (PHS) projects in Madhya Pradesh.
- Based on that, Rewa ultra mega solar limited, a state-based joint venture, released a request for proposal for allotment of PHS sites in Madhya Pradesh.
- 12 sites will be allotted under this tender with a cumulative capacity of 13.8 GW in various districts of Madhya Pradesh.
- The bidders are directed to quote separate PHS charges (above INR 0.10/ kWh) for each PHS site.
- PHS projects allotted under this scheme will have to pay the PHS charges on the sent-out energy from the project as per the GoMP's scheme and are eligible for a 50% exemption on wheeling charges.
- Electricity duty and energy development cess are exempted for PHS projects.

India's recent energy storage tenders

Project location & tender issue date	Application & technology	Details
Pan India (SJVN) June 2023	1500 MW, wind-solar hybrid with ESS	RfS released in Q1 FY24
Madhya Pradesh (RUMSL) May 2023	13.8 GW, PHS	RfS released in Q1 FY24
Pan India (NTPC), April 2023	1500 MW (min) with 9000 MWh ESS	RfS released in Q1 FY24
Pan India (RUVNL), March 2023	1200 MW, solar with ESS	RfS released in Q4 FY23, deadline extended to May 23
Pan India (AEML), December 2022	1500 MW, RE RTC	RfS released in Q3 FY23, deadline extended to May 23
Pan India (SECI), September 2022	2250 MW, RE with storage (RTC III)	RfS released in Q2 FY23; deadline extended
Gujarat (GUVNL), August 2022	500 MW/1000 MWh standalone BESS phase - I	RfS released in Q2 FY23; deadline extended
Gujarat (GUVNL), June 2022	500 MW RE/250 MWh ESS phase XV	RfS released in Q1 FY23; deadline extended

Source: SECI and state renewable agencies. RfS = request for selection; ESS = energy storage system.

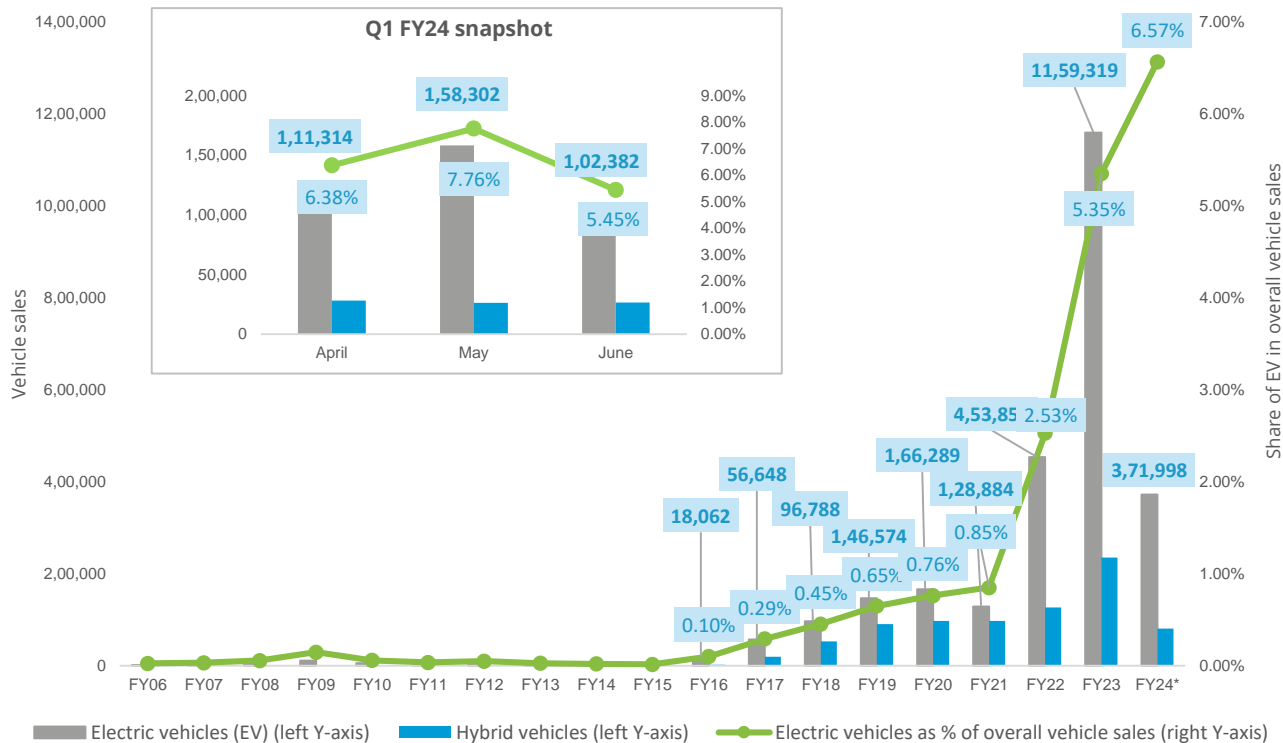
Takeaways & Outlook

In this quarter, three new energy storage tenders were announced. This includes RUMSL's PHS project (sites allotment) for a cumulative capacity of 13,800 MW in Madhya Pradesh, NTPC's 1500 MW with 9000 MWh ESS and SJVN's 1500 MW wind-solar hybrid with ESS. However, deadlines for multiple ESS tenders announced in the previous quarters have been extended and are expected to be concluded in the coming quarter.

In April 2023, SECI's 1200 MW wind-solar hybrid with ESS (tranche VI) was concluded in this quarter. Amp Energy, Renew Power, Hero Future Energies and Acme Group emerged as the winners with the discovered tariff between INR 4.64 – 4.73 per unit.

In this quarter, MoP issued guidelines to promote the development of pumped storage projects (PSPs/PHSs), and CEA introduced a fast-track approval mechanism for PSPs. In addition, NLC signed an MoU with WAPCOS Ltd. to develop PSPs, and Su-Kam Power Systems announced an investment of INR 300 crore to establish an energy storage park in Himachal Pradesh.

Electric vehicle sales in India



Takeaways & Outlook

EV sales continued to grow in Q1 FY24, with an increase of 6.0% vs Q4 FY23 and a gain of 76.0% vs Q1 FY23. May 2023 recorded the highest-ever EV sales, i.e. 7.76% of the total vehicles sold in a month. In Q1 FY24, the share of EVs in overall vehicles sale stood at 6.57%.

Odisha amended its EV policy in April 2023 to increase subsidies for the 2W, 3W and 4W segments.

In May 2023, MHI notified a reduction in subsidies under the FAME II scheme for the 2Ws, reducing the cap on incentives on ex-factory prices of e-2W from 40% to 15%, and the demand incentive will be at INR 10,000 per kWh w.e.f. June 2023. This explains the sharp drop in EV sales in June, dominated by e-2Ws, which declined from 66.6% in May 2023 to 44.9% in June 2023.

OEMs with the highest EV sales* in Q1 FY24 were:

- **2W:** Ola Electric (68,378), TVS Motor (37,034) and Ather Energy (27,807)
- **3W:** Mahindra and Mahindra (11,483), YC Electric (9,554), Saera Electric (6,279)
- **4W:**** Tata Motors (8,839), MG Motors (1,654) and BMW India (705)

Source: Vahan Sewa dashboard (includes only registered vehicles, unregistered vehicles include low-speed vehicles (< 25 km/hr), e-rickshaws (three-wheelers) and electric two-wheelers, Electric Mobility Dashboard (2023), CEEW Centre for Energy Finance. * Based on sales data up to Q1 FY24; **4W represents light motor vehicles and light passenger vehicles.

Thank you

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Date	Company	Size (USD million)	Sector	Coupon rate (%)	Rating	Tenor (Years)	Purpose
April 2023	ReNew Power	400	Solar and wind	7.95%	BB- (Fitch) Ba3 (Moody's)	Not available	Refinancing of existing debt and finance growth initiatives
April 2023	SAEL	161	Biomass	Not available	AA (CRISIL, India Ratings)	10	Finance green initiatives
March 2022	Avaada Energy	192	Solar	6.75	AAA (CRISIL, India Ratings)	3	Refinancing of existing debt
March 2022	Greenko	750	Energy storage	5.50%	Ba1 (Moody's)	3	Refinance existing debt and fund the capital expenditures at asset level
January 2022	ReNew Power	400	Solar and wind	4.50%	BB- (Fitch)	5.25	Refinance existing debt and fund capital expenditure
September 2021	Adani Green Energy	750	Solar and wind	4.375%	Ba3 (Moody's)	3	Fund equity portion of capital expenditure for under-construction projects
August 2021	Azure Power	414	Solar	3.575%	Not available	5	Refinance existing higher cost green bond debt
July 2021	Acme Solar	334	Solar	4.70%	Not available	5	Refinancing of existing debt
July 2021	Vector Green Energy	165	Solar	6.49%	AAA (CRISIL, India Ratings)	3	Refinance existing high-cost debt of solar projects
May 2021	JSW Hydro	707	Hydro	4.50%	BB+ (EXP) (Fitch)	10	Repayment of existing green project-related rupee-denominated debt
April 2021	ReNew Power	585	Solar and wind	4.50%	BB- (Fitch)	7.25	Refinancing of existing debt
March 2021	Greenko	940	Solar and wind	3.85%	BB (Fitch)	5	Redemption of previous fund raise

Source: Climate Bonds Initiative and company press releases.

Date	Company	Size (USD million)	Sector	Coupon rate (%)	Rating	Tenor (Years)	Purpose
March 2021	Hero Future Energies	363	Solar and wind	4.25%	BB- (Fitch)	6	Refinancing of existing debt
February 2021	ReNew Power	460	Solar and wind	4.00%	BB- (Fitch)	6	Refinancing of existing debt
February 2021	Continuum Green Energy	561	Solar and wind	4.50%	BB+ (Fitch)	6	Refinancing of existing debt
October 2020	CLP Wind Farms	40	Wind	Not available	AA (India Ratings)	2 to 3	Refinancing of existing debt
October 2020	ReNew Power	325	Solar and wind	5.375%	BB- (Fitch)	3.5	Refinancing high-cost local debt
January 2020	ReNew Power	450	Solar and wind	5.875%	BB-/Stable (Fitch)	5	Refinancing of maturing debt
October 2019	Adani Green Energy	362.5	Solar and wind	4.625%	BBB- (Fitch)	20	Repaying foreign currency loans and rupee borrowings
September 2019	ReNew Power	90	Solar and wind	6.67%	BB (Fitch)	4.5	Refinancing of existing debt
September 2019	Greenko	85	Solar and wind	5.95%	BB- (Fitch)	6.75	Refinancing of existing debt
September 2019	Azure power	350	Solar	5.65%	BB (Fitch)	5	Refinancing of existing debt
September 2019	ReNew Power	300	Solar and wind	6.45%	Ba2 (Moody's)	5	Capacity expansion and repaying high cost debt
August 2019	Greenko	85	Solar and wind	6.25%	Ba1 (Moody's)	3.5	Refinancing of solar and wind projects

Source: Climate Bonds Initiative and company press releases.

56.60%

FAME-II target met

As of 9 August 2023

Note: Target of selling 1,562,000 EVs (2W, 3W, 4W and buses) under FAME-II scheme by FY22.

540

Number of EV OEMs in India

As of 9 August 2023

137

Total FAME II approved models

As of Q1 FY24

Recent electric vehicle launches



e-Sprinto Amery

Price: INR 1,29,999 onwards

Range: 140 km

Battery capacity: 60V 50AH Lithium-ion



Volton Bajrangi Mover

Price: INR 99,999 onwards

Range: 50-60 km with full load

Battery capacity: 36Ah/48 V LiFePo4



Euler Motors HiLoad

Price: INR 1,21,000 onwards

Range: 170 km

Battery capacity: 13 kWh



MG Comet

Price: INR 7,98,000 onwards

Range: 230 km

Battery capacity: 17.3 kWh Lithium-ion

EV penetration

In Q1 FY24

5.39%

2W sold were EV

54.13%

3W sold were EV

372,017

EVs sold

in Q1 FY24

25

States notified EV policies

As of Q1 FY24

For more updates visit [CEEW-CEF Electric Mobility Dashboard](https://ceew-CEF.Electric.Mobility.Dashboard)



Build evidence

Consistent, reliable, and up to date monitoring & analysis of clean energy markets – investment, payment schedules, market trends, etc.

Create coherence

Periodic convening of multi-stakeholder groups to deliberate on market activities in clean energy

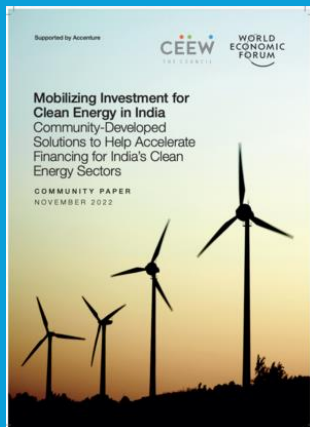
Design solutions

Design and feasibility pilots of fit-for-purpose business models & financial solutions for clean energy solutions

Our recent publications, dashboards and tools



Greening India's Automotive Sector



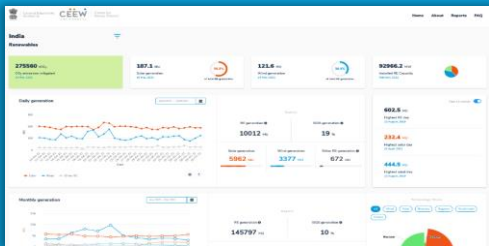
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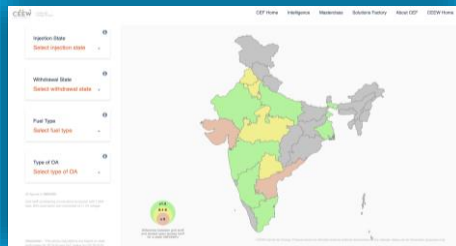
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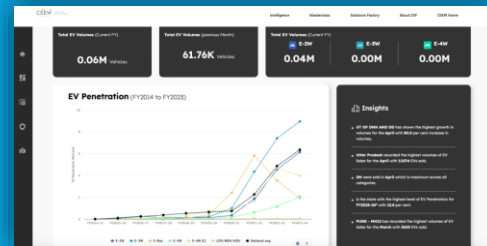
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