JMK Research & Analytics

Green Power Procurement in BULK CHEMICAL (Chlor- alkali) sector in India

July 2025

Case Study:

DCM Shriram Limited

JMK Research & Analytics is a specialist consultancy firm that provides research and advisory services to Indian and International clients across Renewables, Electric mobility, and the Battery storage markets.

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SED Fund is a philanthropic initiative to support the Sustainable Development Goals (SDGs) of clean air, access to energy, clean water, climate action and equity, by backing efforts of governments and civil society on clean energy transition, according to principles of sustainability, diversity and equity. The fund intends to amplify impact by consolidating philanthropic resources, strengthening country level institutions and civil society groups and supporting initiatives that will have the most impact in support of these goals.

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GLOSSARY OF TERMS

Abbreviation	Definition
GHG	Greenhouse Gas
TCO_2e	Tonnes of CO_2 equivalent
TCO_2e/ T production	Tonnes of CO_2 equivalent per tonne of production
FY	Financial Year or Fiscal Year
GJ	Giga Joules
TJ	Terraj Joules
MW	Megawatt Hour
GW	Gigawatt
kWh	Kilowatt Hour
MMT	Million Metric Tonne
TCO_2e	Tonnes of CO_2 equivalent
GJ/ MT	Giga Joules per Metric Tonne
TPA	Tonnes Per Annum
CBG	Compressed Biogas
PLF	Plant Load Factor
CUF	Capacity Utilization Factor
CPP	Captive Power Plant

SECTOR OVERVIEW
BULK CHEMICALS (CHLOR-ALKALI)

Bulk chemicals, also referred to as commodity or basic chemicals, are produced and distributed in large volumes, primarily serving as raw materials for a range of downstream industries. These products are predominantly used as intermediates and form a core segment of the chemical industry. This category includes alkali, organic, and Inorganic chemicals.

Organic chemicals are compounds that contain carbon atoms bonded with elements such as hydrogen, nitrogen, or sulfur, and range from simple hydrocarbons to complex structures. In contrast, inorganic chemicals lack carbon-hydrogen (C-H) bonds and include substances like salts, metal oxides, minerals, acids, and bases.

Within the Indian chemical sector, alkali chemicals (interchangeably referred to as chlor-alkali) represent the largest segment. It accounts for 92.3 lakh tonnes or over 71% of total chemical production in FY2024 and constitute more than 60% of the country's total chemical installed capacity[1].

Chlor-alkali chemicals include chlorine, soda ash, and caustic soda, with caustic soda contributing approximately 39% of the production share in FY2024. In 2023, India had more than 6% share of the global chlor-alkali market size. Industrial growth and construction activity are expected to increase demand in the chlor-alkali sector, with production projected to reach 11.5 million tonnes by FY2030, reflecting an overall growth of approximately 23% from FY2024 levels.

[1] Ministry of Chemicals and Fertilizers | Chemical and Petrochemical Statistics 2024 | January 2025

Amid growing concerns over environmental sustainability, regulatory frameworks are being introduced to manage emissions within high-emission sectors. Reflecting this trend, the Government of India has recently notified the Greenhouse Gases Emission Intensity Target Rules, 2025[2]. These rules mandate major chlor-alkali manufacturers to reduce their greenhouse gas (GHG) emission intensity by an average of 2% to 3% annually, starting from 2026. Based on this trajectory, the emission intensity of India's chlor-alkali sector is projected to decline to approximately 1.65 tCO_2e per tonne of production by 2030, representing an estimated 12% reduction.

[2] Ministry of Environment Forest and Climate Change (MOEFCC) | **Greenhouse Gases Emission Intensity Target Rules** | April 2025

Table 1: Chlor-Alkali Sector Statistics

Parameters	Details
Global market size (2023)	USD 70.8 billion
India market size (2023)	USD 4.34 billion
Installed capacity (FY2024)	11.26 million tonnes • Soda Ash: 3.71 million tonnes • Caustic Soda: 4.31 million tonnes • Liquid Chlorine: 3.21 million tonnes
Actual production (FY2024)	9.23 million tonnes • Soda Ash: 2.98 million tonnes • Caustic Soda: 3.62 million tonnes • Liquid Chlorine: 2.64 million tonnes
Import (FY2024)	1.26 million tonnes
Export (FY2024)	0.89 million tonnes
India's average emission intensity (FY2024)	1.88 (tCO_2e / t Production)
Major Players	DCM Shriram, Tata Chemicals, Aditya Birla Chemicals (Grasim), Chemplast Sanmar, Gujarat Alkalies and Chemicals Limited (GACL), etc.

Source: Industry reports, JMK Research

MANUFACTURING PROCESS

As pointed out in the previous section, alkali chemicals (produced from the chlor-alkali manufacturing process) constitute the largest bulk chemical segment in India.

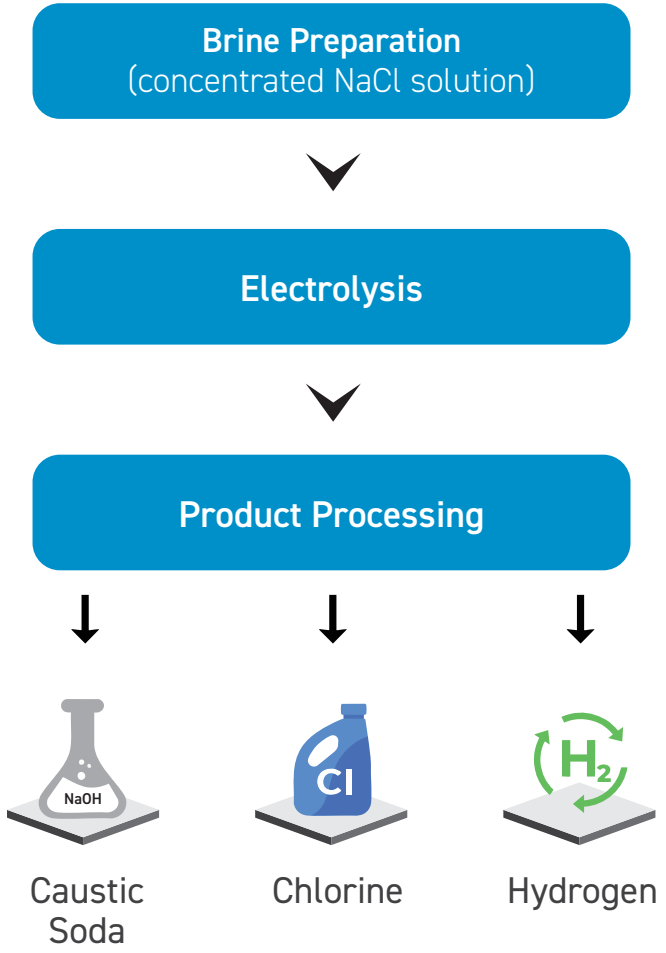
Chlor-alkali manufacturing process is a commercial electrochemical method that uses electricity to break down concentrated sodium chloride solution (brine) into its elemental components. The electrolysis of brine with water results in direct production of chlorine, sodium hydroxide (caustic soda), and hydrogen gas. For every tonne of chlorine produced, the process yields about 1.13 tonnes of caustic soda and 0.028 tonnes of hydrogen[3].

The chlor-alkali manufacturing process can be broadly segregated into three steps:

- **Brine Preparation:** This step prepares the brine solution for the process. This step includes saturating the brine solution, removing impurities and pre-heating before feeding it to the electrolytic cell.
- **Electrolysis:** The brine is electrolyzed in the electrolytic cell producing Chlorine gas (Cl_2) at the anode (positive electrode), Hydrogen gas (H_2) at the cathode (negative electrode) and sodium hydroxide (NaOH)/caustic soda within the solution.
- **Product Processing:** This step includes preparation of main reaction products for further use. Caustic Soda is cooled and concentrated for end use, while chlorine gas is cooled, dried and cleaned (and liquified for transportation, if not used on site).

[3] Energy Star | Energy Efficiency and Cost-Saving Opportunities for the Chlor-Alkali Industry | January 2025

Figure 1: Chlor-Alkali Manufacturing Process



Energy consumption: 2.2 - 2.9 MWh/ ton Cl_2

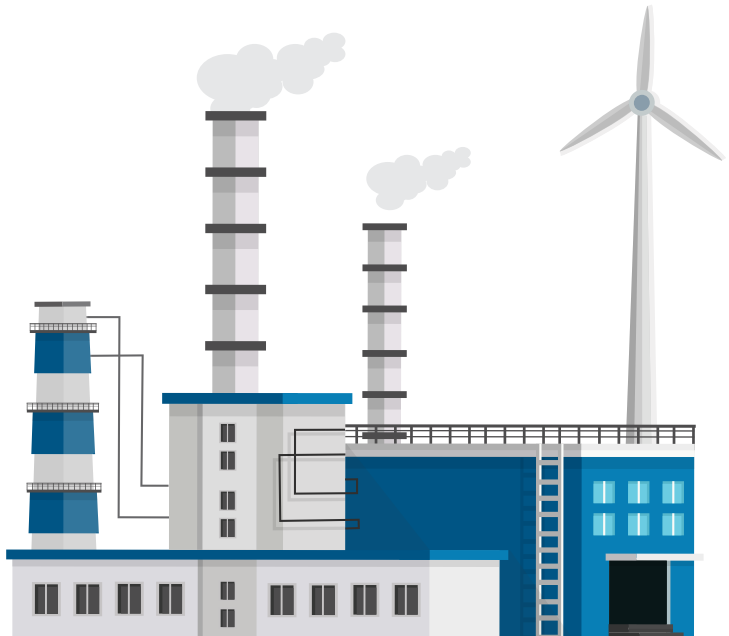
Emissions: 40 - 59 kg CO_2/ ton Cl_2

Source: BEE, JMK Research

ENERGY CONSUMPTION AND EMISSIONS

The chlor-alkali manufacturing process is one of the most energy-intensive bulk chemical process in the world. Overall, the chlor-alkali manufacturing process consumes around 2.2 - 2.9 MWh of electricity and emits 40 - 59 kg CO_2 equivalent per metric ton of chlorine.

Electrolysis alone accounts for approximately 90% of the total energy consumption in the chlor-alkali process, bringing the overall share of electrical energy to around 94%, while thermal energy contributes the remaining 6%.



WAYS TO DECARBONIZE

The chlor-alkali industry, one of India's oldest and hard-to-decarbonize sectors, generates a significant share of its GHG emissions from electricity use. Coal is predominantly used (especially by larger players) for both electricity generation and thermal energy in this sector. Emissions in the industry could potentially be reduced through cleaner alternatives such as renewable energy, low-carbon bio-fuels, or using hydrogen (generated as a byproduct in the process) as a replacement for fossil fuels. These measures present viable pathways to lower the sector's overall environmental impact.

Figure 2: Key Decarbonization levers for the Chlor-alkali sector in India

	Description	Technical Feasibility	Decarbonization potential
Renewable Energy	Transitioning the electricity generation from fossil fuel-based captive power plants to renewable energy sources.	High	High
Utilizing Multiple Effect Evaporators	Conversion of caustic soda concentration plant from double effect to triple effect by utilizing process vapour produced in the second effect is used to promote evaporation in the third effect.	Meduim	High
Energy Efficiency	Utilizing energy efficient technologies for heat recovery and process optimization like high-efficiency transformers, advanced rectifiers, and improved brine feed systems, etc	Meduim	Meduim
Low Carbon Fuels	Fuel switching to lower-carbon fuels like biogas, biomass, bio-ethanol can significantly lower CO2 emissions.	Meduim	Low
Hydrogen as a Fuel in Boiler	Oil-fired burners can be retrofitted to co-fire 15% hydrogen, potentially cutting emissions by about 2,783 tonne CO_2 annually for a 250 TPD plant.	Meduim	Low

Source: National Productivity Council, JMK Research

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Renewable energy adoption is currently one of the most mature and commercially viable decarbonization pathways for the chlor-alkali sector. When integrated with energy storage systems, these solutions can ensure more reliable power supply and significantly reduce dependence on fossil-based captive generation. This shift is particularly important given that electricity accounts for the majority of the sector's energy use.

Hydrogen, generated as a by-product during the electrolysis process, presents an emerging clean fuel opportunity. In principle, this hydrogen can be used to replace furnace oil in burners for steam generation or be diverted to produce other chemical products such as hydrochloric acid. However, the practical deployment of such hydrogen-based solutions is constrained by the early-stage development of compatible technologies, infrastructure readiness, and cost considerations.

Energy efficiency remains another critical route for emission reduction. Technologies such as high-efficiency transformers, advanced rectifiers, and improved brine feed systems, combined with process enhancements like feed preheating and triple-effect evaporation, can reduce both electricity and thermal energy consumption. For instance, utilizing steam from early stages of product processing to increase the product concentration reduces steam requirements, thereby directly contributing to emissions abatement.

Decarbonizing the chlor-alkali sector requires a multipronged approach that balances technological feasibility with economic viability. **The sector’s reliance on coal-based captive power makes the transition to cleaner energy sources particularly urgent.** A phased adoption of these strategies supported by advances in infrastructure, technology readiness, and enabling policies will be essential to reduce the carbon footprint of this hard-to-abate industry.

Case Study

DCM SHRIRAM LIMITED

COMPANY OVERVIEW

DCM Shriram is a diversified conglomerate with operations spanning sugar & ethanol, chemicals, fertilizers, and other businesses. It is the country's second-largest caustic soda producer and ranks fourth in sugar production. It operates the largest single-location chlor-alkali manufacturing unit in Bharuch, Gujarat.

DCM Shriram Limited (a publicly listed entity) was formed in 1990, following the trifurcation of the DCM group. It is incorporated as a public limited entity in India. The company traces its origins back to 1889, when Delhi, Cloth & General Mills (DCM) textiles was set up in Delhi as an integrated textile mill.

Table 2: Company Overview

Parameters	Details
Name	DCM Shriram Limited
Year of establishment	1990 (formed after the trifurcation of the DCM group)
Headquarters	New Delhi
Market Capitalisation in India (June 2025)	INR 190 billion (about US$ 2.22 billion)
No. of plants	India- 11, Philippines- 1
Production capacity (FY2024) *	>1800 tonnes of physical output (Chemicals, Sugar, Fertilizer, etc.)
Chlor-alkali Production (FY2024)	0.675 million tonnes
No. of Employees (FY2025)	6255
Revenue (FY2025)	INR 120.77 billion (about US$ 1.41 billion)
PAT (FY2025)	INR 6.04 billion (about US$ 70.8 million)
Emissions (Scope 1 & 2) (FY2024)	2.71 million $MtCO_2e$
Emission Intensity (Scope 1 & 2) (FY2024)	0.83 $MtCO_2e$/ tonne of production
Total energy consumption (FY2024)	46,139 TJ
Total electricity consumption (FY2024)	1,936 TJ

Source: DCM Shriram Annual Report, JMK Research
*Note: The figure does not include production capacity from DCM Shriram's distillery, fenesta, and bioseed operations

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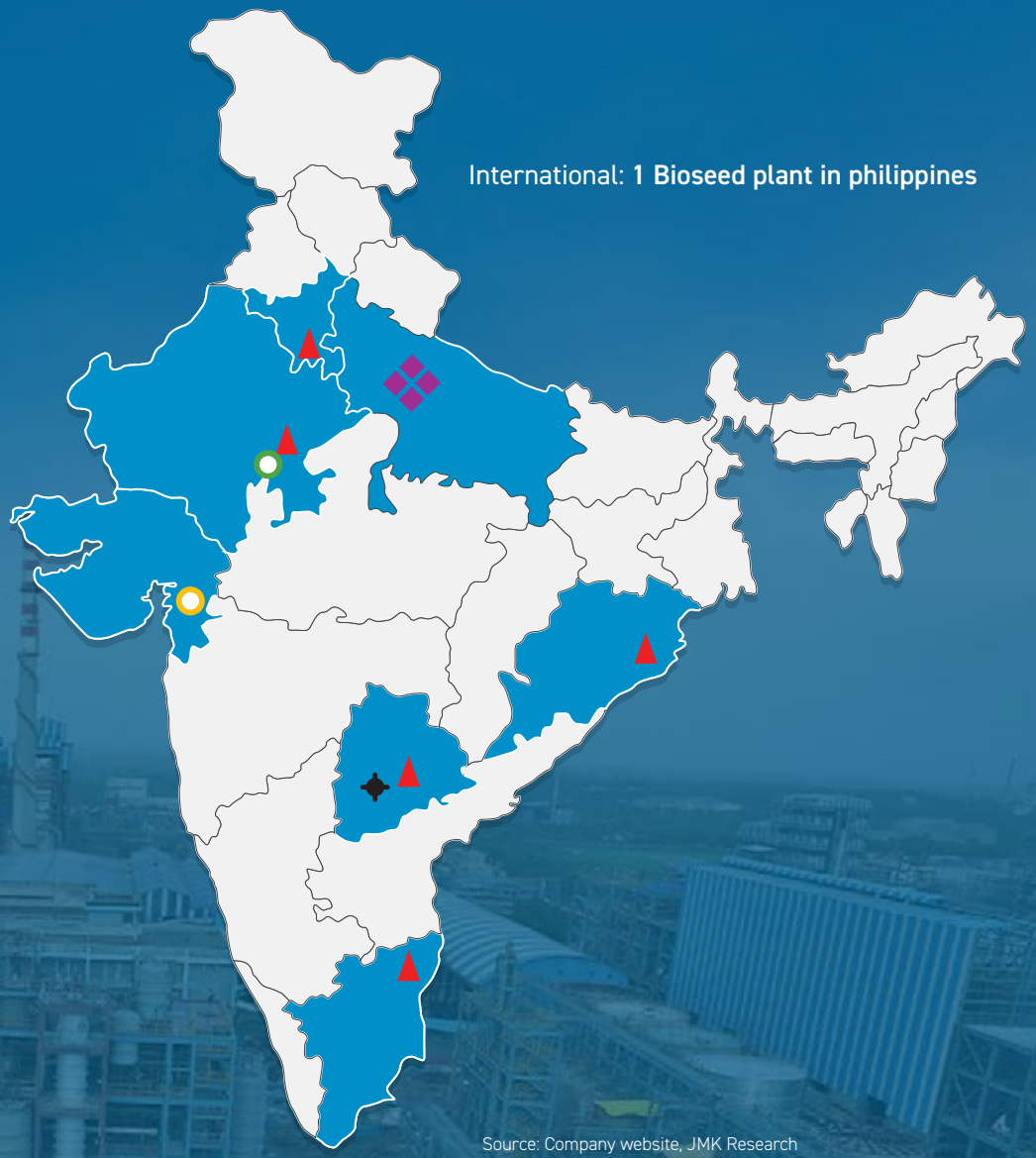
The figure illustrates DCM Shriram's manufacturing footprint, highlighting the specific product segments produced at each site. The company operates major manufacturing units in Kota (Rajasthan) and Bharuch (Gujarat), producing a range of industrial products such as caustic soda, chlorine, urea, and hydrogen. In Uttar Pradesh, the company runs multiple sugar and ethanol manufacturing facilities. It also manages two Bioseed facilities- one in Hyderabad and another in the Philippines.

- Bioseed - Hyderabad & Philippines
- Fertilizers & Chemicals - Kota, Rajasthan
- Alkali & Chemicals - Bharuch, Gujarat
- Sugar & Ethanol - Ajbapur, Rupapur, Hariawan & Loni UP Distillery Units - Ajbapur & Hariawan, UP
- Building Materials (Door & Windows) - Kota, Bhiwadi, Chennai, Bhubaneswar, Hyderabad

Figure 3: Manufacturing locations of DCM Shriram



Source: Company website, JMK Research

BUSINESS SEGMENTS

A significant area of strategic focus for DCM Shriram is its Chemical (Chloro-Vinyl) business, which has evolved into one of the most integrated and high-revenue-generating operations within the group, positioning DCM Shriram as the second-largest chlor-alkali producer in India. The business portfolio under this vertical includes caustic soda, chlorine, aluminium chloride, calcium carbide, PVC resins, and compounds. Its facilities in Kota, Rajasthan, and Bharuch, Gujarat, together support a combined chlor-alkali production capacity of 6.75 lakh tonnes per annum (TPA).

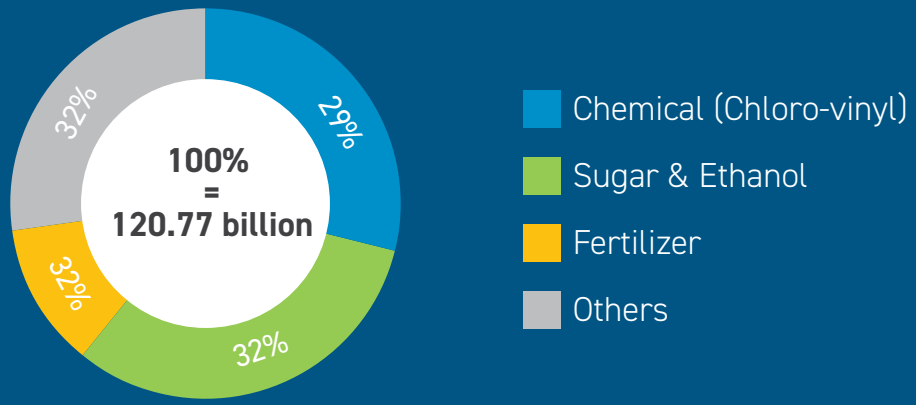
DCM Shriram also operates four sugar mills in Uttar Pradesh, with a cumulative crushing capacity of 42,400 tonnes of cane crushed per day (TCD). These units are supported by distillery units with a capacity of 560 kilo-litres per day (KLD).

Table 3: DCM Shriram Limited business segments

Business segments	Product Segments	Production Capacity
Chemical (Chloro-Vinyl)	Caustic Soda	10,00,000 TPA
	Hydrogen Peroxide	52,500 TPA
	Aluminium Chloride	54,750 TPA
	PVC Resins	80,300 TPA
	Calcium carbide	112,000 TPA
	Polymer Compounds	21,050 TPA
Sugar & Ethanol	Sugar	42,400 TCD
	Distillery	560 KLD
Fertilizer	Fertilizer	379,500 TPA
Other Businesses	Shriram Farm Solutions	-
	Bioseed	-
	Fenesta Building Systems	12,284 TPA
	Cement	400,000 TPA

Source: DCM Shriram Quarterly Reports, JMK Research
Note: We are focusing only on chemical business segment for the case study

Figure 4: Revenue split by product segments



Source: DCM Shriram Quarterly Reports, JMK Research

As of FY2025, the Sugar & Ethanol and Chemical (Chloro-Vinyl) businesses collectively accounted for over 60% of the company's revenue. These two segments have remained the largest two segments (revenue-wise) of DCM Shriram since FY2017. Furthermore, the company plans to add more than 1 lakh TPA of capacity in its chemical business by Q1 FY2027 at Bharuch.

SUSTAINABILITY INITIATIVES AND TARGETS

While DCM Shriram has not declared time-bound sustainability targets, it continues to integrate environmental considerations into its business strategy and reports its performance in line with Global Reporting Initiative (GRI) standards. The company's decarbonization and energy conservation efforts are guided by several focus areas:

1. Renewable energy adoption
2. Stakeholders' engagement on energy-saving measures
3. Process efficiency enhancement
4. Integrating efficient design and technologies in new projects
5. R&D focused on low-carbon product development

At the operational level, the Responsible Care (RC) framework has been implemented at the company's Bharuch chemicals facility, which has also received the ISCC PLUS certification in Q3 FY2025.

Figure 5: Sustainability Initiatives of DCM Shriram

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

RESPONSIBLE CARE™
Driving Safety & Sustainability

Dow Jones Sustainability Indexes

ISCC
International Sustainability & Carbon Certification

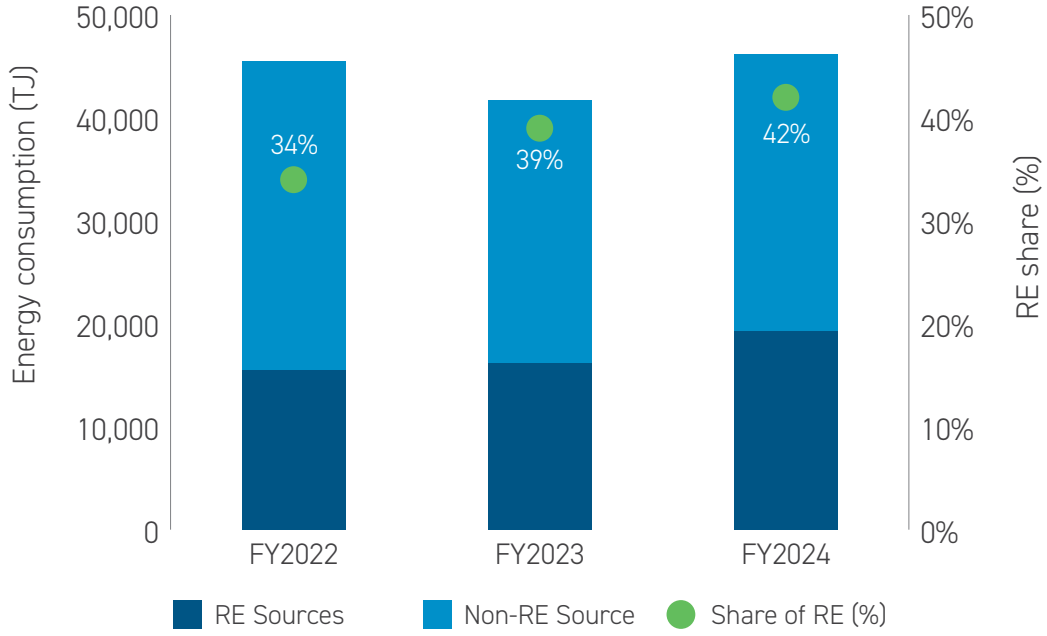
Source: DCM Shriram Annual Report, JMK Research

DCM SHRIRAM ENERGY CONSUMPTION AND EMISSIONS

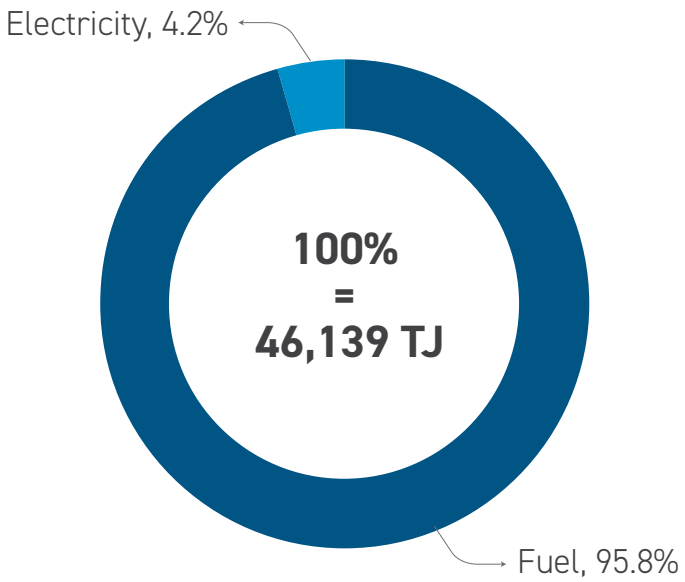
In FY2024, DCM Shriram consumed a total energy of approximately 46,139 terajoules (TJ), with renewable sources contributing 41.8% and non-renewable sources 58.2%. It's RE consumption has increased with a CAGR of 11.5% from 15,508 TJ in FY2022 to 19,290 TJ in FY2024.

The company's energy consumption remains predominantly fuel-based, with fuels accounting for 95.8% and electricity for 4.2% of the total. Renewable fuels (biomass, bagasse, ethanol and compressed biogas) constituted 42.6% of total fuel consumption, while renewable electricity (from wind solar hybrid plant) constituted a minor share of 23.4% of the total electricity consumption in FY2024.

Figure 6: DCM Shriram energy consumption annual trend



FY2024 Energy Mix

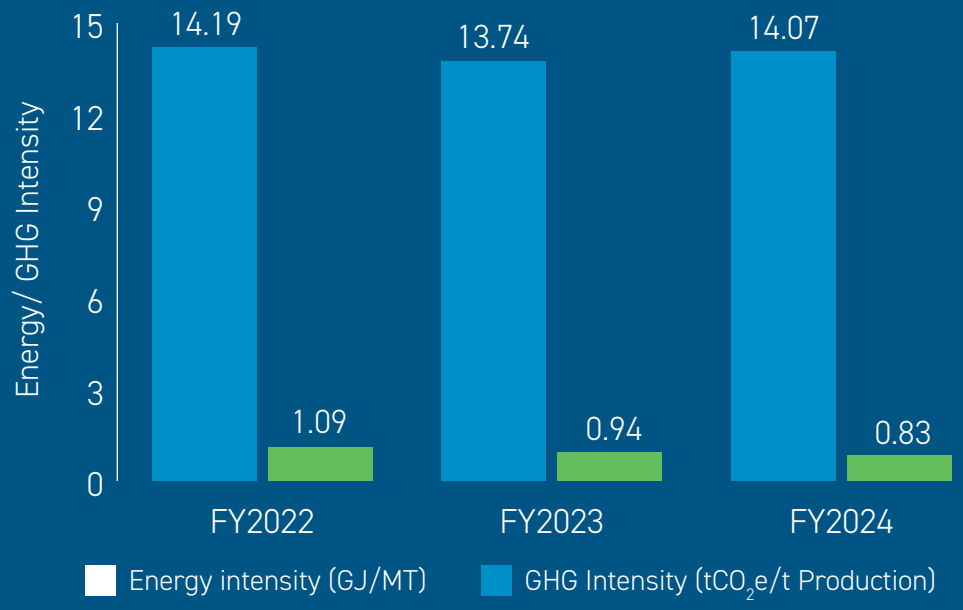


Source: DCM Shriram Annual Report, JMK Research

In addition to renewable energy sources, DCM Shriram's operations are supported by 383 MW coal-based captive power capacity. **This includes 141 MW at the Kota facility and 142 MW at the Bharuch unit (120 MW of the Bharuch capacity was commissioned in June 2024).** These plants ensure a reliable and economically efficient power supply, minimizing dependence on the grid, enhancing self-sustenance and enabling potential cost savings.

DCM Shriram reduced its GHG emissions and energy intensity by more than 20% and 8%, respectively, from FY2022 to FY2024. These reductions were supported by specific interventions including improved process-level energy efficiency, increased utilisation of renewable energy, and expanded use of recycled inputs within manufacturing systems (circular economy).

Figure 7: DCM Shriram's energy and emission intensity (FY2024)

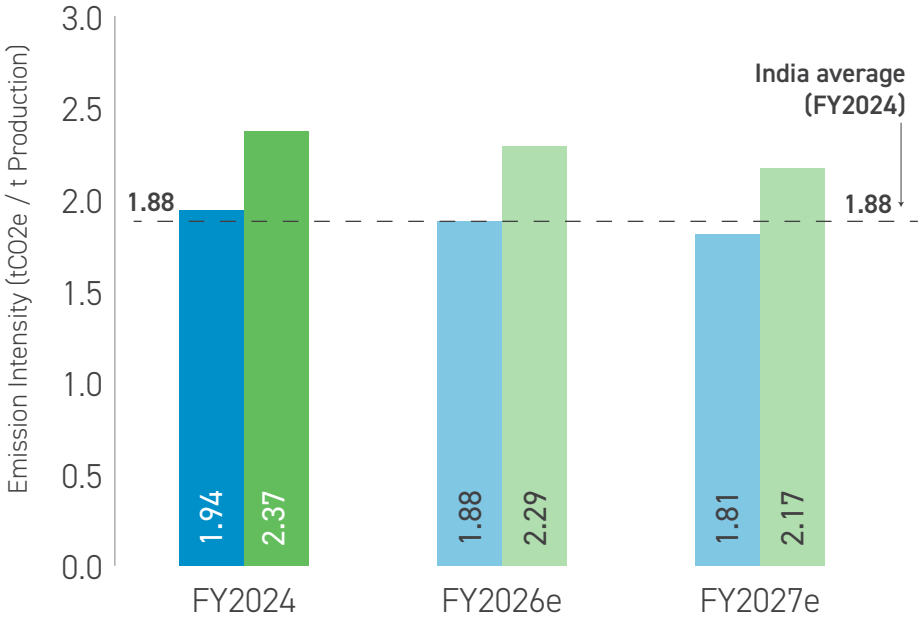


Note: DCM Shriram Annual Reports, JMK Research

In the chlor-alkali segment, DCM Shriram's chemical manufacturing units (i.e., Kota and Bharuch) recorded an average emissions intensity of 2.15 tCO_2e per tonne of production in FY2024, about 14% higher than the national average of 1.88 tCO_2e/t for this segment.

Under the Greenhouse Gases Emission Intensity Target Rules, 2025, DCM Shriram's Kota unit must reduce its GHG emissions intensity by 2.7% by FY2026 and 6.8% by FY2027 from FY2024 levels. Similarly, the Bharuch unit is expected to achieve a 3.3% reduction by FY2026 and an 8.3% reduction by FY2027, relative to its FY2024 baseline.

Figure 8: DCM Shriram chlor-alkali GHG emission intensity trend



Note: BEE, MOEFCC, JMK Research

RE INSTALLATIONS AND CONSUMPTION

As of FY2024, DCM Shriram operates a single wind-solar hybrid plant with a capacity of 43.8 MW, supplying power to its manufacturing facility in Bharuch, Gujarat. Within the company's total renewable energy portfolio, wind and solar accounted for around 2.3%, while the remaining 97.7% was sourced from renewable fuels, including compressed biogas (CBG), biomass, blue hydrogen, and others.

Further, the company commissioned a 12 TPD CBG plant at its Ajbapur unit, Uttar Pradesh, in March 2025.

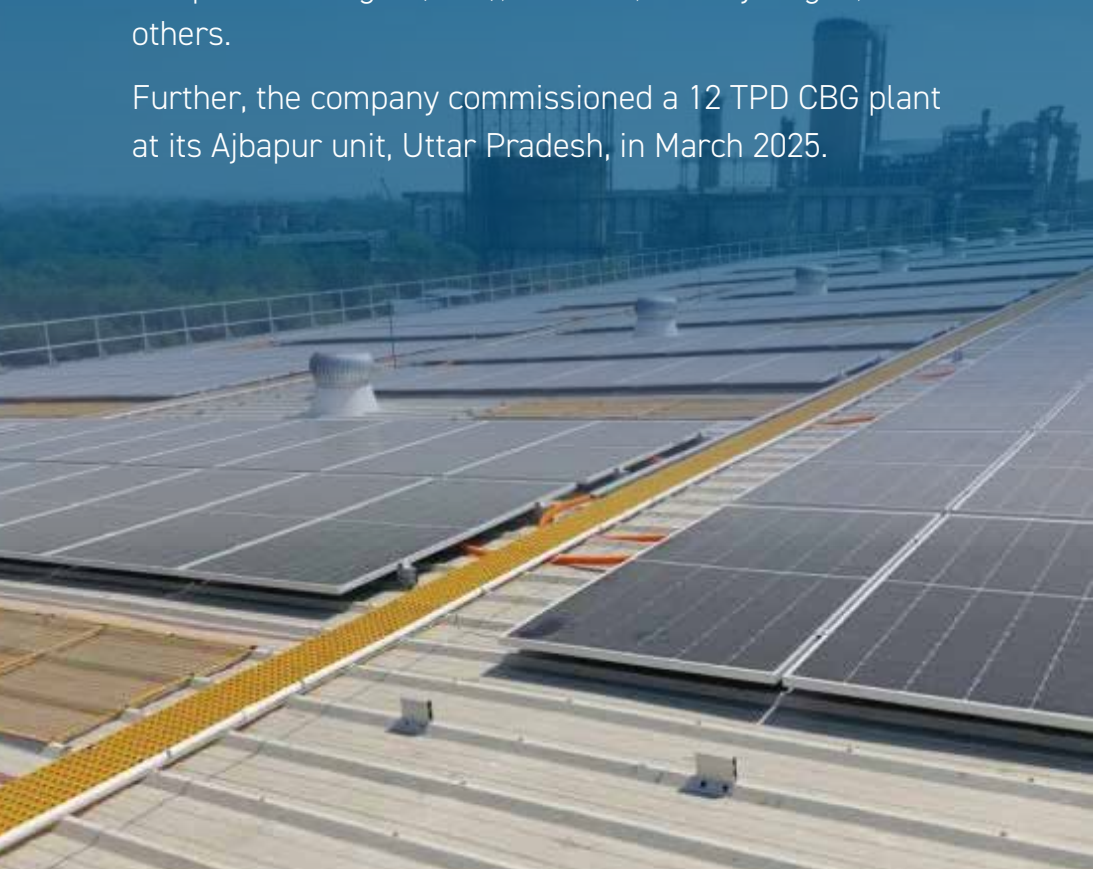
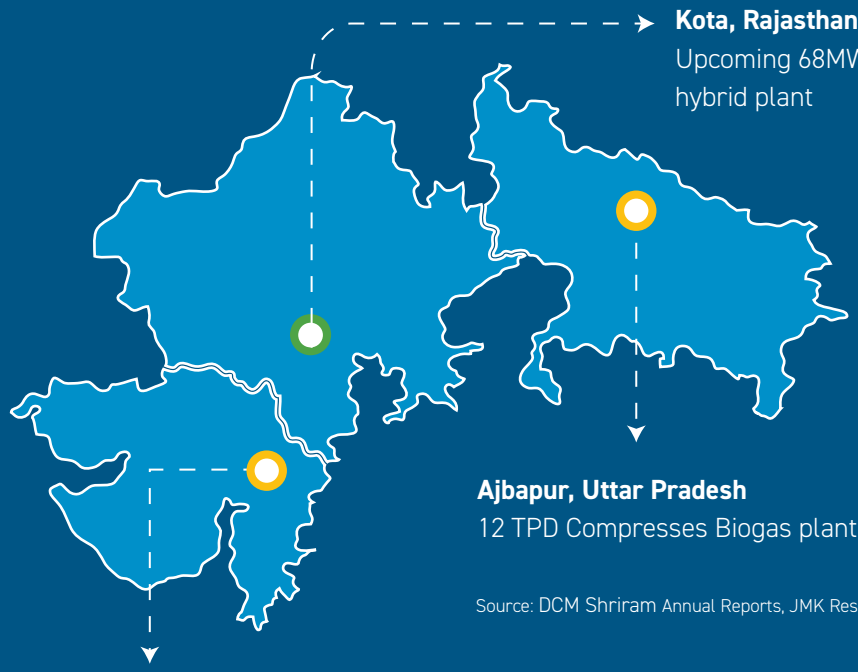


Table 4: DCM Shriram RE plant details

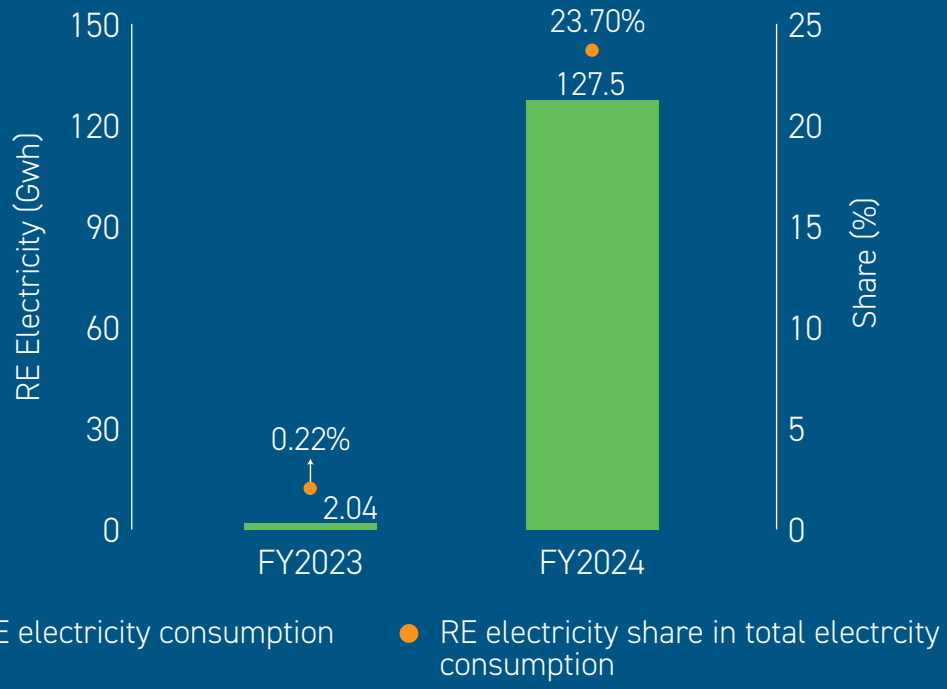
Parameters	Values
Capacity	43.8 MW
Location	Bharuch, Gujarat
Commissioning date	June 2023
SPV	ReNew Green (GJ Ten) Private Limited
DCM's stake in the SPV	31.20%
Project developer	ReNew Power
Business Model	25-year Group Captive PPA based
PPA Tariff	INR 3.55/ kWh
RE Source	Wind Solar Hybrid
Investment	INR 8 billion (approx.)
Annual generation	250 million units (approx)
Estimated CO2 abatement (annually)	2.25 lakh tonnes of CO2
Estimated Plant Load Factor (PLF)	30.50%
Actual PLF (Dec 2023 – Dec 2024)	26.70%
Project off-taker	DCM Shriram
Application	RE power consumption in DCM Shriram's Chlor-alkali production facility in Bharuch, Gujarat

Source: DCM Shriram Annual Report, JMK Research

Figure 9: RE plant locations and electricity consumption



Source: DCM Shriram Annual Reports, JMK Research



The integration of the RE hybrid plant in FY2024 led to a substantial shift in DCM Shriram's energy mix. This has raised the RE plant's contribution to total RE electricity consumption from 2.04 GWh in FY2023 to 127.5 GWh in FY2024, marking a 62-fold increase year-over-year.

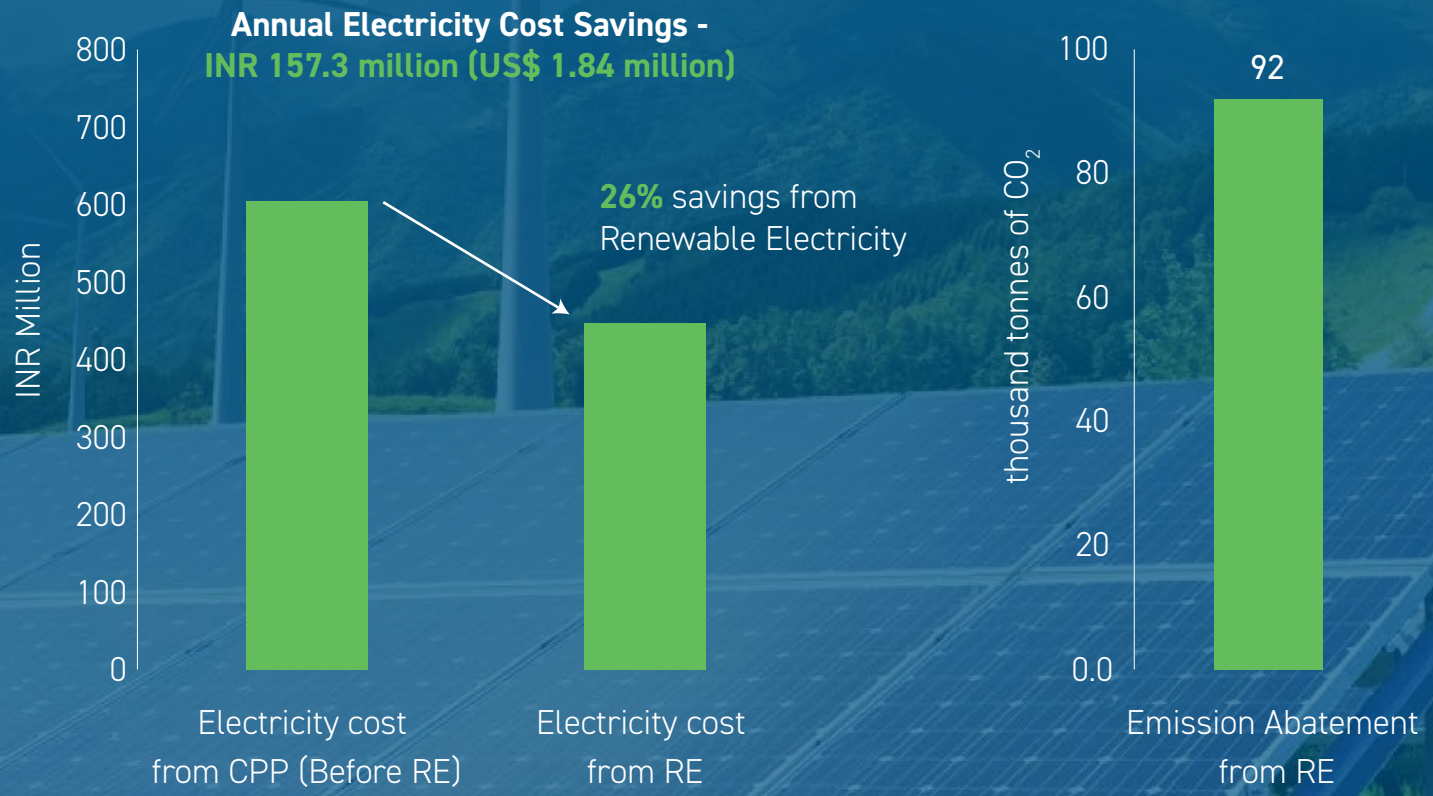
Further, the company is developing a 68 MW wind-solar hybrid project under a group captive structure in partnership with JSW Renewables to supply renewable power to its chemical facility in Kota, Rajasthan. DCM Shriram invested about INR 600 million (US $7.06 million) for 26% equity stake in the project. The project is scheduled for commissioning by Q4 FY2026.

DCM Shriram commissioned 12 TPD compressed bio gas (CBG) facility on March 27, 2025 for its sugar unit in Ajbapur, Uttar Pradesh. The CBG plant produces compressed biogas using 'pressmud', a waste generated in the sugar manufacturing process. A CBG plant is a facility that transforms organic waste into a renewable fuel source. This fuel is produced by decomposing the waste anaerobically (without oxygen), purifying the resulting biogas, and compressing it.

RENEWABLE ENERGY BENEFITS

DCM Shriram's transition from captive coal-based power to a greener energy mix has led to notable environmental and cost benefits. With the commissioning of 43.8 MW wind-solar hybrid capacity in June 2023 at its Bharuch unit, the company achieved annual electricity cost savings of around INR 157.3 million (US$1.8 million), reducing power costs by 26% and mitigating about 92 thousand tonnes of CO_2e emissions.

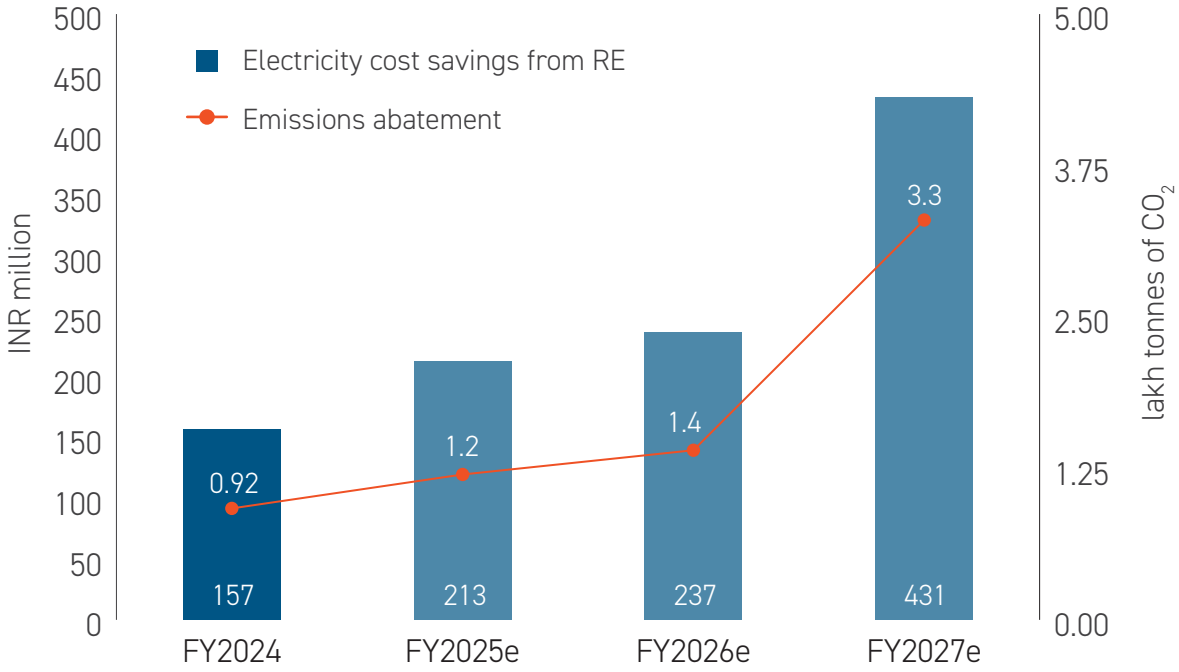
Figure 10: DCM Shriram's Annual Electricity cost savings and equivalent carbon abatement due to RE



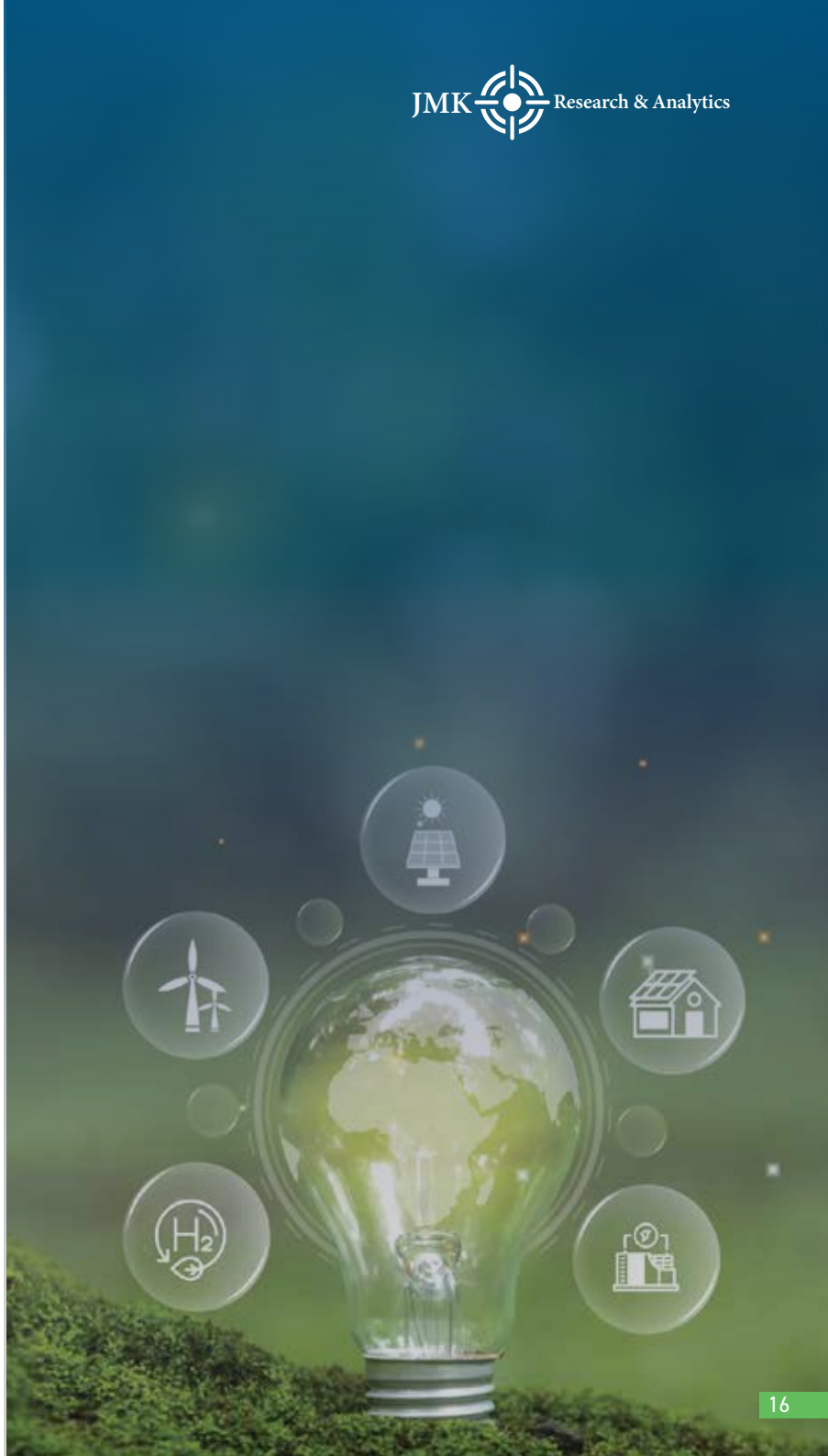
Source: DCM Shriram Annual Report, JMK Research
Assumptions: 1. 1 TJ = 277.8 MWh
2. Average captive thermal cost = INR 4.8/ kWh
3. Capacity Utilization Factor (CUF) and Plant Load Factor (PLF) are assumed to remain constant during the period - June 2023 to March 2024.
4. Electricity generated from the wind-solar hybrid renewable energy plant is assumed to substitute the electricity previously generated by the captive power plant (CPP)

DCM Shriram is set to expand its renewable energy footprint with two upcoming projects - a 6.6 MW plant slated to be commissioned in Q1 FY2026 in Bharuch, Gujarat, and a 68 MW wind-solar hybrid project, targeted for commissioning in Q4 FY2026. Once fully commissioned, these projects could boost annual electricity cost savings to INR 430 million (US$ 5 million), marking a 174% increase over FY2024 levels. In parallel, the company's annual carbon emissions abatement from RE could grow by 259%, reaching an estimated 3.3 $MtCO_2e$.

Figure 11: Annual Energy cost savings and equivalent carbon abatement of DCM Shriram (FY2025-FY2027)



Source: DCM Shriram Annual Report, JMK Research



OTHER DECARBONIZATION AND SUSTAINABILITY MEASURES

DCM Shriram has implemented multiple measures to improve energy management and reduce emissions. These include energy efficiency upgrades, waste and resource optimization, circular economy practices, and introducing green hydrogen as an alternative fuel. The company has also diversified its energy mix by integrating renewable fuels such as biomass and biogas. Building on these emission reduction efforts, the company has achieved a cumulative reduction of 3 million tCO_2e emissions in FY2024[4].

Compressed Bio Gas

In April 2024, DCM Shriram Ltd secured INR 1 billion in sustainable financing from Standard Chartered Bank to support the development of a CBG plant at its Ajbapur Sugar Unit in Uttar Pradesh, involving a total investment of INR 1.31 billion. The 12 TPD CBG facility was commissioned on March 27, 2025. The CBG plant converts a byproduct of sugar production, into renewable biogas, helping to curb greenhouse gas emissions and reduce reliance on conventional fossil fuels.

Blue Hydrogen

DCM Shriram produces blue hydrogen as a by-product of the Chlor-Alkali plant processes. This hydrogen is then used as furnace fuel in place of fossil fuels. In FY2023, 30.2 million Nm^3 of hydrogen was utilized, leading to an estimated abatement of 80,095 tCO_2e.

The term "blue hydrogen" is used in this context because the captive coal-based power plant supplying electricity for the process is equipped with a carbon capture unit. Without carbon capture, the hydrogen would instead be classified as grey due to the associated CO_2 emissions. Alternatively, if the electricity was entirely sourced from renewables, the hydrogen would be considered green.

Others

The company improved its resource efficiency, with 25% of total key raw material input sourced from recycled materials and 100% of plastic packaging waste fully recycled in FY2024. Its waste reduction measures also resulted in a 12% decline in total disposal volumes in FY2024 over the previous fiscal year.

The company also operates cogeneration systems that use a mix of fuels and produces cleaner fuels from by-products to support energy transition efforts. Water resource initiatives focus on reducing consumption, enhancing reuse, and maintaining a water-positive balance across select sites.

[4] DCM Shriram | **Annual Report FY2024** | June 2024

CONCLUSION

As a core component of the hard-to-abate industrial landscape, the chlor-alkali segment is a significant contributor to India's overall greenhouse gas emissions. The industry now stands at a critical inflection point where low-carbon transition is no longer optional but imperative. Major players in the space must articulate and implement strategies that embed sustainability and emission reduction at the center of their growth and competitiveness agenda.

As one of the leading industrial chlor-alkali producers, DCM Shriram recognises this urgency and is shaping its long-term trajectory around sustainability-driven growth. The company is gradually aligning its operational model with decarbonization priorities through cleaner energy adoption, energy efficiency upgrades, and circular economy integration.

A key priority for decarbonizing the chlor-alkali segment, which forms a major part of the company's portfolio, will be to reduce reliance on fossil fuels. Strategic investments in renewable energy, process efficiency, low-carbon technologies, and circular resource flows will be central to this transformation. DCM Shriram is building on its current progress by scaling these efforts across its operations and value chains. Based on the targets set by the Ministry of Environment, Forest and Climate Change, DCM Shriram must reduce its annual emissions from chemical manufacturing operations by approximately 1.2 lakh tonnes of CO_2 by FY2027.

Other major chlor-alkali companies such as Aditya Birla Chemicals (Grasim Industries) and Tata Chemicals have announced ambitious climate goals, including net zero targets by 2045-2050. Their decarbonization strategies focus on expanding renewable energy use, adopting circular economy practices, and improving resource efficiency. Aditya Birla Chemicals targets a 30% emissions reduction from 2017 levels by FY2025 and carbon neutrality by 2050, while Tata Chemicals plans to replace 10% of coal use with biomass by FY2025 alongside scaling up solar and wind installations. Many other industry players are also actively integrating clean energy sources and alternative fuels like Bio-CNG, biogas, and green hydrogen as part of their broader sustainability commitments.

Going forward, greater integration of renewable energy will be critical to decarbonizing the chlor-alkali sector, given its high electricity intensity. Captive solar, wind, and hybrid systems offer a direct means to cut emissions from chlorine and caustic soda production. With tightening regulations like the GHG Emission Intensity Target Rules under the Carbon Credit Trading Scheme (CCTS) and the PAT mechanism, alongside falling renewable costs, clean energy adoption is no longer optional. It is emerging as a key driver of cost efficiency, regulatory alignment, and long-term viability in the sector.

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