Environmental Stewardship

Strategic Approach

As part of the strategic approach to sustainability, JSW Energy places strong emphasis on environmental stewardship, considered fundamental to responsible energy generation and long-term value creation. The company remains committed to minimising environmental impact through proactive climate action, resource efficiency, and adoption of clean technologies. Aligned with global sustainability frameworks, environmental considerations are embedded across all operational stages, supporting the transition towards a low-carbon, resilient future.

By embracing clean energy solutions, deploying environmentally responsible technologies, and ensuring full compliance with regulatory norms, JSW Energy actively works to safeguard natural ecosystems. A proactive stance is maintained through continuous monitoring and periodic evaluations to drive improvements in environmental performance. These efforts reflect a broader vision to protect the environment, advance long-term sustainability, and deliver a lasting, positive impact on the planet.

Strategic Business Imperatives

Rapid and enduring expansion towards sustainability

Establish a forward thinking company that leverages advanced technology and innovation

StrengtheningESG practices and generating appealing returns

Ratnagiri Plant

Policies driving Environmental Stewardship

A reselient policy framework underpins JSW Energy's commitment to environmental stewardship, guiding actions across operations to ensure sustainable and responsible resource management. These policies are designed to align with global best practices and regulatory requirements, enabling systematic integration of environmental priorities into strategic and operational decision-making. By establishing clear standards and accountability mechanisms, the framework drives continuous improvement in environmental performance and supports the broader goal of transitioning to a low-carbon, resource-efficient future.

Environmental Stewardship Policies

- Climate Change
- Energy
- Raw Material Consumption
- Biodiversity
- Water Resource Management
- Air Emissions Management
- Wastewater
- Waste Management

Climate Action: Driving Climate Resilience

Key Highlights

- Increased Renewable Energy capacity from 3,737 MW in FY 2024 to 5,217 MW in FY 2025
- Conducted Phase-2 Deep Dive TCFD Physical Risk Assessment for Hydro Power Projects
- Reduced GHG emission intensity by 22% from base year (FY 2020) value (0.76 TCO_2e/MWh)

Strategic Approach

JSW Energy is committed to transforming the future through sustainable development and responsible energy practices. As a key contributor to India's energy landscape, the company recognises the importance of supporting the nation's Net Zero aspirations and advancing a low-carbon economy. In line with the 1.5°C pathway outlined in the Paris Agreement, JSW Energy aims to achieve carbon neutrality by 2050, demonstrating a proactive response to one of the world's most pressing environmental challenges. Performance is continuously evaluated against well-defined Key Performance Indicators, enabling data-driven decisions and timely action in response to evolving climate dynamics.

At the core of this strategy lies the expansion and diversification of the energy portfolio. JSW Energy is actively investing in renewable sources such as wind and solar, targeting a total installed capacity of 30 gigawatts (GW) by FY 2030. In parallel, the company conducts comprehensive assessments to identify climate-related risks, strengthening operational resilience through adaptive planning. Climate governance is firmly embedded within the organisational structure, with the Board of Directors overseeing climate-related matters and a dedicated Sustainability Committee driving the implementation of action plans across operations.

Vijayanagar Thermal Plant : ENERGY CONSERVATION INITIATIVE-AUXILIARY POWER CONSUMPTION

At JSW Energy, we're taking significants strides toward sustainability by making smart changes to how we use electricity inside our plants. Our focus has been on reducing Auxiliary Power Consumption (APC)—the power used by equipment to keep the plant running. These small changes have added up to big energy savings, cost reductions, and a lower environmental impact.

In SBU1 Unit 1, we stopped using one of the vacuum pumps after the improvement of condenser vacuum. This saved 560 MWh of electricity over 5,049 hours and reduced costs by ₹ 30.82 lakhs. Less power used inside the plant means more efficient energy generation.

We also made a small upgrade in the PA fan system by installing a spacer coupling. This simple improvement saved 191 MWh of energy and ₹ 10.63 lakhs. Another change in the same unit was replacing an old cooling pump with a new high-efficiency one. That helped save 101 MWh and ₹ 5.43 lakhs.

In SBU2 Unit 1, we fixed a leak in the Boiler Feed Pump (BFP) recirculation valve. That small repair led to a saving of 101 MWh and ₹ 5.06 lakhs in just over 1,000 hours.

We also installed Variable Frequency Drives (VFDs) on condensate extraction pumps in SBU1 Units 1 & 2, which

now automatically adjust their speed based on demand. These now save around 56 kWh of energy per day, adding up to ₹ 2 lakhs saved every month.

All of these actions together have saved over 950 MWh of electricity and more than ₹ 54 lakhs, while also helping us reduce our carbon footprint. These improvements came up by smart thinking, teamwork, and a strong focus on energy efficiency.

By reducing our auxillary power consumption, we're not only saving money but also helping the environment by offsetting 690 tCO_2 emmision. These changes support our long-term goal of making cleaner, more efficient energy—and show how small improvements can make a big difference.

Renewable Plant : Innovative Green Lighting Initiative: Advancing Low-Carbon Communities with Solar Street Lighting

In line with its sustainability vision and commitment to fostering resilient energy ecosystems, JSW Neo Energy Limited (JSWNEL) has spearheaded a forward-thinking environmental initiative by deploying 121 off-grid solar street lights (30-watt capacity each) across remote sites including Kamareddy, Wanaparthy, Nagar Kurnool, and Jamawanda. This project marks a critical step toward mainstreaming climate-smart infrastructure in under-electrified and environmentally sensitive zones.

Need-Based Innovation with Environmental Focus

Following a detailed site-specific energy access assessment, areas with inadequate or erratic lighting infrastructure were identified as barriers to community safety, biodiversity preservation, and clean energy adoption. Recognizing that conventional street lighting draws heavily on grid electricity or diesel-powered sources—both of which contribute significantly to greenhouse gas (GHG) emissions—JSWNEL implemented decentralized, solar-powered systems that function independently and sustainably.

- Clean Energy Generation & Climate Impact
- The 121 solar lights operate for an average of 10 hours daily, producing:
- 13,246.5 kWh of renewable electricity annually
- Offsetting approximately 9.63 tons of CO_2 emissions per year (based on India's average grid emission factor of 0.727 tCO_2/MWh)

This effort directly contributes to national and global climate goals by reducing reliance on fossil-fuel-based grid power and minimizing light pollution and localized heat zones caused by conventional lighting systems.

Demonstrating Strategic Innovation

This initiative is not merely about lighting—it is about reimagining public infrastructure with environmental intelligence. The project showcases:

- Smart deployment of decentralized solar assets
- Zero O&M burden due to autonomous operations
- Enhanced safety for people and wildlife during night hours
- No carbon footprint during operations
- Improved night-time visibility with no strain on local grid systems

These solar installations are equipped with auto dusk-to-dawn sensors, making them adaptive to seasonal variations and energy-efficient by design. The intervention has increased accessibility and safety for communities while protecting local biodiversity by avoiding light-intensive systems that disturb nocturnal wildlife.

Alignment with Sustainable Development Goals (SDGs):

Energy Management

Key Highlights

- Increased share of RE for decarbonisation - Total RE operational capacity increases from 3,737 MW (FY 2024) to 5,217 MW (FY 2025)
- Addition of 1,480 MW of RE capacity in FY 2025

Strategic Approach

As a key contributor to India's energy sector, JSW Energy plays a pivotal role in supporting the country's economic progress by addressing rising power needs. With a strong emphasis on renewable sources, the company views clean energy as a driver of long-term, sustainable development.

JSW Energy integrates advanced technologies and best-in-class energy management systems to boost operational efficiency and optimise performance throughout its value chain. This approach ensures maximum asset productivity while reducing the company's environmental footprint.

With strategic investments spanning solar, wind, hydro, and green hydrogen projects, JSW Energy is aligning its operations with national climate priorities and accelerating the transition toward a low-carbon economy. Through a combination of innovation, responsible practices, and forward-thinking energy solutions, the company is helping shape a more sustainable and resilient energy future.

JSW Neo Energy

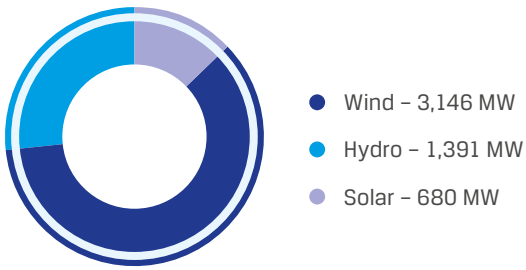
Targets

Increase the share of renewable energy in the total installed capacity by 2030.	Added 1,480 MW of RE capacity
Achieve over 50% reduction in GHG intensity by 2030	Achieved 45.9% of the GHG emission intensity reduction target of 2030

Share of Renewable/Thermal in Energy Mix

KPI	FY 2025
Renewable Energy	48% (5,217 MW – Installed Capacity)
Thermal Energy	52% (5,658 MW – Installed Capacity)

Renewable Energy Mix



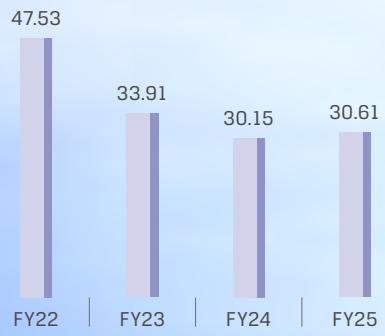
FY 2025*:

Parameter	FY 2025 (GJ)
Total fuel consumption	
Renewable	2,07,230
Non-renewable	21,13,35,962
Electricity, heating, cooling, steam consumed	1,17,559
Electricity, Heating, Cooling, Steam Sold (minus)	-11,06,22,837
Total Energy Consumption within organisation	10,10,37,915

 # Calculation as per GRI-302-1 Indicator
** Rounded off to nearest integer*

Energy Efficiency Initiatives FY 2024-25

Total Energy Savings (MU)



Clean Energy

At JSW Energy, clean energy is central to our growth strategy and sustainability commitment. With a growing portfolio spanning hydro, solar, and wind power, we are driving the transition to a low-carbon future. By investing in scalable renewable technologies and enhancing operational excellence, we deliver reliable, affordable, and environmentally responsible energy. Our clean energy efforts contribute to national climate goals and embody our vision of long-term value creation through innovation and stewardship. JSW Energy is advancing the clean energy transition with a firm commitment to achieving Net Zero emissions by 2050.

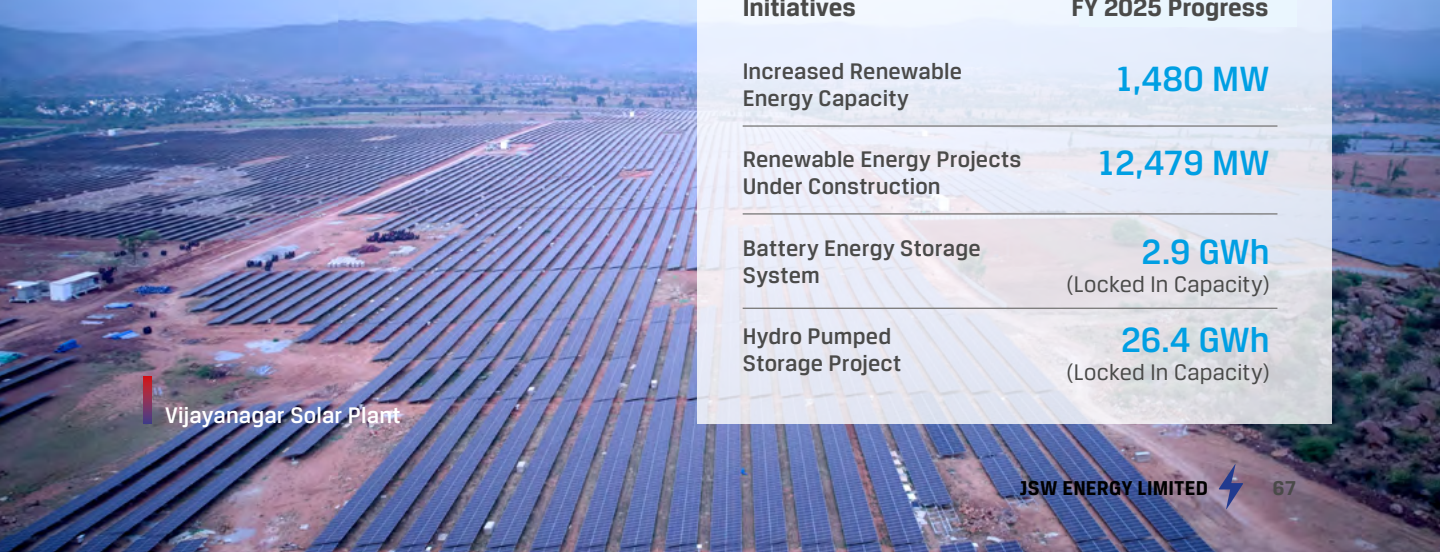
For this, JSW Energy aims to increase its operational capacity to 30 gigawatts (GW) by 2030. This addition is mainly driven by addition of Renewable Energy. Around 5012 MW capacity projects are under construction comprising of Wind, Solar and Hydro technologies. Also, another 3900+ MW capacity projects are in the pipeline and being pursued for finalisation.

This ambitious RE capacity building strategy positions the company as a leader in renewable energy sector.

By steadily expanding clean energy capacity, the company supports India's national carbon reduction targets. Simultaneously, we implement sustainable practices across operations—optimizing water use, improving waste management, and aligning with global sustainability standards. Through these initiatives, JSW Energy leads the path toward a cleaner, greener, and more sustainable future.

New Initiatives Undertaken to increase the share of renewable energy in total energy mix:

Initiatives	FY 2025 Progress
Increased Renewable Energy Capacity	1,480 MW
Renewable Energy Projects Under Construction	12,479 MW
Battery Energy Storage System	2.9 GWh (Locked In Capacity)
Hydro Pumped Storage Project	26.4 GWh (Locked In Capacity)


Vijayanagar Solar Plant

Captive 5.4 MW (AC) Solar Power Plant Installation at Barmer

JSW Energy (Barmer) Limited has commissioned a 5.4 MW (AC) captive solar photovoltaic (PV) power plant near Sheo Village in Barmer district, Rajasthan. This initiative aims to reduce carbon emissions, lower operational energy costs, and enhance energy self-sufficiency.

Barmer, located in Rajasthan, benefits from high solar irradiance throughout the year, making it an ideal location for solar power generation. As a clean and renewable energy source, solar power offers a sustainable alternative to conventional electricity.

The Barmer Thermal Power Plant requires a continuous water supply for electricity generation, which is sourced from the Indira Gandhi Nahar Project (IGNP) canal at Mohangarh, Jaisalmer, under a Water Supply Agreement with the Government of Rajasthan. To facilitate this, JSWEBL operates several pump houses powered by electricity.

To reduce the cost associated with grid electricity used for these pump houses, JSWEBL installed the 5.4 MW (AC) solar power plant. The plant is designed to meet the energy demands of the pumping stations, replacing expensive grid power with cost-effective solar power.

This shift is expected to yield substantial savings on energy costs.

Conclusion:

The captive solar power plant enhances JSWEBL's energy security, reduces operational costs, and lowers environmental impact. By harnessing solar energy, JSWEBL strengthens its sustainability credentials and reinforces its appeal to environmentally conscious investors and stakeholders.

Digitization in Energy Management

In a rapidly evolving energy landscape, JSW Energy leads by embracing digital innovation to optimize operations, enhance sustainability, and deliver superior value. Since launching its digital transformation journey in 2022, JSW Energy has committed to becoming an insights-driven organisation centred on customer focus and operational excellence.

As pioneers in deploying digital technologies across thermal, renewable, hydro, and manufacturing businesses, JSW Energy has implemented advanced platforms such as the JSWE PI System and Integrated Digital Command Centre (IDCC) for real-time data and analytics. Complemented by in-house analytics models and innovative tools, these initiatives have improved operational visibility, asset reliability, and cost efficiency.

From AI-driven asset monitoring and AR/VR applications to IoT-based predictive maintenance and advanced forecasting, JSW Energy leverages cutting-edge technologies and fosters internal innovation to transform the energy sector.

Beyond technology, the company emphasizes capability building and change management, investing in workforce upskilling and cultivating digital champions to ensure sustainable, large-scale value creation aligned with strategic business goals.

Barmer Plant

Transforming Renewable Asset Management: JSW Energy's Integrated Digital Command Centre (IDCC) Platform

JSW Renewable Energy, a leading clean energy producer in India, has successfully deployed the IDCC solution across 46 solar and wind sites nationwide, managing 2.13 GW of capacity via a centralized command centre in Hyderabad. This landmark digital initiative consolidates asset monitoring, diagnostics, analytics, and planning into a unified platform, setting a new standard for real-time management, predictive maintenance, and business integration of renewable assets.

Background & Objectives

Rapid growth in JSW's renewable portfolio introduced operational challenges due to geographically dispersed sites and heterogeneous asset types, resulting in siloed operations and delayed fault responses. To overcome these, JSW developed the IDCC application with key goals to:

- Enable real-time centralized monitoring
- Implement advanced analytics and condition-based maintenance
- Integrate Operational Technology (OT) with Information Technology (IT) systems
- Enhance asset reliability and availability
- Seamlessly connect with ERP systems for maintenance and long-term planning

IDCC at a Glance

- **Sites Covered:** 46 renewable energy plants
- **Assets:** Utility-scale solar PV and wind turbines
- **Geography:** Pan-India, diverse climates and grid zones
- **Connected Equipment:** 805 wind turbines and 2,006 solar inverters
- **Tag Configuration:** Approximately 1.95 million data points

Technical Innovations

The platform ingests real-time data via SCADA, OPC, ODBC, and Modbus protocols, standardized through a unified tag dictionary. AI/ML algorithms detect anomalies in inverters, transformers, and turbines by benchmarking against theoretical yields and historic trends. The shift from time-based to condition-based maintenance, powered by live fault and operational data, has increased uptime and lowered O&M costs. ERP integration automates work orders, inventory management, and maintenance scheduling.

Strategic Outcomes

- **Unified Operational View:** Centralized access to asset health, dispatch, maintenance, and energy forecasting
- **Proactive Maintenance:** Predictive analytics enable early fault detection, minimizing downtime
- **Scalable Architecture:** Cloud-ready platform allows seamless addition of new assets and microgrids
- **Regulatory Compliance:** Streamlined reporting aligned with CEA standards

Next Steps

- Extend integration to thermal, storage, and hybrid assets
- Deploy drone-based inspections linked with IDCC
- Expand digital twin modules for design-performance optimization
- Enable new renewable sites with the IDCC platform

Real-Time Operational Excellence Across Thermal and Hydro Power through the JSWE PI Platform

Driving Smart, Data-Driven Decisions Across Thermal and Hydro Power Assets

At JSW Energy, digital transformation is fundamental to our operational strategy. A key initiative in this journey is the JSWE PI Platform, an advanced real-time data infrastructure that delivers actionable insights and drives performance excellence across our power generation portfolio.

Since its launch in 2015 at the Vijayanagar plant, the JSWE PI Platform has expanded rapidly to cover our entire 5.5 GW integrated thermal and hydro capacity. It has significantly boosted productivity, enabled predictive maintenance, and strengthened data-driven decision-making.

Key Milestones in Our Digital Evolution:

2015
JSWE PI Platform launched at Vijayanagar

2017
Implemented at Barmer and Ratnagiri

2018
Expanded to Karcham Wangtoo

2022
Rolled out at Baspa and centralized servers at Vijayanagar

2023
Integrated Vijayanagar Solar operations

2024
Standardized assets and KPIs, enhanced visualization, digitized logbooks, and launched digital monitoring

Barmer Power Plant

Comprehensive Energy Management System (EMS) for Optimized Energy Use

JSW Energy Limited initiated its digital energy management transformation by implementing a comprehensive Power Monitoring System. The JSW Energy Management System (EMS) platform was deployed to monitor over 1,092 energy meters across the Vijayanagar, Ratnagiri, and Barmer plants. This foundational infrastructure provides real-time energy visibility and enhances operational intelligence across sites.

Project Highlights

- Deployment of a unified software platform to manage and analyse data from 1,092+ energy meters.
- Seamless integration with existing LAN infrastructure enabling continuous data acquisition and real-time monitoring.
- Strategic rollout of Power Advisor, an analytics-driven service that improves system awareness and proactively detects anomalies before escalation.

Functional Benefits of JSW EMS Platform

- Drives energy efficiency and optimization by modelling and trending energy consumption to identify inefficiencies.
- Mitigates penalties through effective power factor and peak demand management.
- Supports demand response initiatives and fosters internal energy accountability.

Key Outcomes

- Significant energy savings in pumps, compressors, CHP, and AHP systems.
- Conservative improvement in Average Power Consumption (APC) by 0.09%, translating into operational cost efficiency.
- Estimated payback period of 5.4 months, reflecting a high-return investment.
- Long-term cost avoidance enabled by proactive maintenance and enhanced system reliability.

Thermal Power Plant, Vijayanagar

Enhancing Power System Reliability through Digital Rectifier Retrofitting

Location	Unit	Capacity	Technology
JSW Energy Ltd., Ratnagiri	1	300 MW	Coal-based

To strengthen critical power system reliability, JSW Energy undertook a digital retrofitting project during the Annual Overhaul (AOH) of Unit-1. The initiative involved upgrading outdated analog rectifiers in the Uninterruptible Power Supply (UPS) systems to advanced digital rectifiers. Each unit operates with two 150 kVA parallel redundant UPS systems that power Distributed Control Systems (DCS), PLCs, and key auxiliaries.

Challenges with legacy analog systems

- Inability to adjust voltage/ current without shutdown
- Low precision and delayed response to load changes
- Obsolescence of OEM spares and service support

Execution Highlights

- Analog rectifiers replaced with digital rectifiers offering real-time diagnostics, enhanced control precision, and energy efficiency
- Collaborative planning with OEM ensured early completion—executed in 5 days against a 6-day schedule
- Zero load interruption during the entire upgrade process

Outcomes

- Improved reliability and maintainability of UPS systems
- Increased operational flexibility and system responsiveness
- Future-ready infrastructure with smarter diagnostics and scalability

Strategic Alignment

The project advances JSW Energy's digital transformation and operational excellence journey while reinforcing energy reliability across its operations.

Thermal Power Plant, Ratnagiri

Karcham Dam, JSW Hydro Sholtu

JSW Hydro Energy's Green Bond Framework

JSW Hydro Energy has established a robust Green Bond Framework to guide the issuance of sustainable finance instruments. Aligned with the International Capital Market Association's Green Bond Principles (2018), the framework ensures transparency, accountability, and integrity in mobilizing capital for renewable energy projects.

Green bonds issued under this framework are instrumental in financing the development and expansion of hydro-based power plants, supporting carbon reduction and climate resilience. The framework rests on four key pillars:

Use of Proceeds:

- The net proceeds from the green bonds will be allocated toward financing and refinancing Eligible Green Projects.
- Eligible Projects include the development, construction, and operation of run-of-the-river hydro projects and associated infrastructure.

Process for Project Evaluation & Selection

- A Green Bond Committee, comprising members from Finance & Accounts and Sustainability, convenes annually to assess the portfolio of Eligible Green Projects.

Management of Proceeds

- A portfolio approach is adopted to allocate an amount equivalent to the net proceeds from the green bond to Eligible Projects.
- Net proceeds will be fully allocated either immediately or within 24 months of issuance. Until full allocation, the funds will be managed in accordance with general liquidity guidelines.
- Unallocated proceeds will not be knowingly invested in assets with high greenhouse gas intensity.

Reporting

- JSW Hydro will publish a Green Bond Report, which will be made publicly available on the investor relations page and updated annually until the full allocation of proceeds is achieved.
- The Green Bond reporting will be structured in two parts: (i) Allocation Reporting and (ii) Impact Reporting.

This structured approach underscores JSW Hydro Energy's commitment to sustainable finance and environmental stewardship, enabling responsible investments and accelerating the transition to a low-carbon future. For more details, refer to the Annual Green Bond Allocation and Impact Report

Internal Carbon Pricing

JSW Energy is actively addressing the global challenge of climate change by embedding an Internal Carbon Pricing (ICP) mechanism into its sustainability strategy. This forward-looking approach plays a critical role in reducing greenhouse gas (GHG) emissions and accelerating the transition towards a low-carbon economy.

Leveraging the shadow pricing method, JSW Energy has set an internal carbon price range of USD 10–12 per tonne of CO_2e, derived from an in-depth analysis of global carbon pricing trends and regulatory frameworks. This internal benchmark reflects the potential cost of emissions and enables strategic planning aligned with future carbon market realities.

Key Highlights of the ICP Framework:

- Incorporation of carbon costs into investment and operational decision-making
- Promotion of low-carbon technologies, including targeted investments in energy-efficient systems such as Variable Feed Drives (VFDs)
- ROI-based evaluation of emission-reducing technologies, guided by the shadow carbon price

By integrating carbon pricing into core business functions, JSW Energy drives:

- Greater accountability for emissions
- Enhanced energy optimisation across operations
- Innovation in clean energy solutions

The ICP framework empowers the organisation to make informed, climate-conscious financial decisions, strengthens long-term resilience, and creates stakeholder value. Through these actions, JSW Energy reinforces its commitment to environmental stewardship while charting a path toward a more sustainable and climate-resilient energy sector.

Way Forward

JSW Energy is steadfast in aligning its energy portfolio with national climate goals, advancing steadily toward deeper decarbonization. Committed to innovation and sustainability, the company continues to lead transformative change in the energy sector by integrating cutting-edge digital technologies and renewable solutions. Through these efforts, JSW Energy is fostering a greener, more resilient energy future that supports environmental stewardship, enhances operational excellence, and delivers sustainable value for all stakeholders.

Ratnagiri Plant

Emission Management

Key Highlights

- Achieved 5% reduction in GHG Emissions Intensity as compared to previous year
- Achieved 22.4% reduction in GHG Emissions as compared to Base year (2020)emissions

Strategic Approach

At JSW Energy, managing greenhouse gas (GHG) emissions is not just an operational priority, it is a strategic imperative. With a clear vision for a low-carbon future, the company has embedded decarbonization at the core of its business strategy. Through a combination of real-time emissions monitoring, process optimization, and adoption of cutting-edge clean technologies, JSW Energy is proactively working to reduce its carbon footprint across all assets. The company has set ambitious climate targets and is driving innovation across its value chain to accelerate the transition to a net-zero economy. This commitment reflects not only environmental responsibility but also a future-ready approach to energy leadership, resilient, sustainable, and aligned with global climate goals.

Targets

Reduce our carbon emissions by more than 50% (baseline 2020) by 2030.

FY 2025 Progress

Achieved 22.4% reduction in carbon emissions upto FY 2025 as compared to FY 2020 value of 0.76 TCO_2e/MWh

GHG Emissions

KPI	Unit	FY 25	FY 24	FY 23
Scope 1	tCO_2e	2,05,22,777.86	1,85,24,363.70	1,60,62,495.59
Scope 2	tCO_2e	36,661.40	36,577.71	26,401.42
Scope 3	tCO_2e	26,64,131.43*	17,88,821.65	16,34,696.75

- Scope 3 increases from last Financial year due to use of new emission factors used for calculation (EPA – 2024, DEFRA 2024 & GaBi 2025)

Categories considered under Scope 3 Emissions

Categories	FY 2025 (tCO_2e)
Purchased goods and services	69,043.58
Capital goods	2,158.72
Fuel and energy	25,57,582.59
Upstream transportation and distribution	12,952.61
Waste generated in operations	20,425.26
Business travel	1,677.24
Employee commuting	291.45
Total	**26,64,131.43**

*Note: * Categories 8 - 15 are not applicable to the business.*

Increase in scope 3 emissions is mainly due to use of emission factors of EPA, DEFRA and GABI-2025

Emission Intensity

		Actuals			Target
Env Parameter	KPI	FY 25	FY 24	FY 23	FY 30
Climate Change	GHG Emissions (Scope 1+2) – tCO_2e/MWh	0.59	0.62	0.685	0.39

Energy Reduction & GHG Emission Savings FY 2025

Location of Plant	Energy Reductions in GJ	GHG Emissions Reduced ($MTCO_2e$)	GHG Emissions Avoided ($MTCO_2e$)
Barmer	85,299.98	8,615.30	-
Ratnagiri	6,925.00	15,552.62	-
Vijayanagar	12,255.31	9,502.46	7,13,812.38
Nandyal	3,328.84	2,393.44	-

Emission Reduction Initiative:

JSW Energy is committed to reducing its environmental impact through focused emission reduction initiatives. By adopting advanced technologies and optimizing operations across its facilities, the company works to decrease greenhouse gas emissions and improve energy efficiency. These initiatives align with JSW Energy's sustainability goals and contribute to broader efforts in combating climate change. Continuous monitoring and implementation of best practices ensure effective management of emissions, reinforcing the company's role as a responsible leader in the transition to cleaner energy.

Energy Conservation Initiative – Dynamic Spray Set Point Automation

Location:
Vijayanagar Plant, Karnataka

Savings Achieved:
₹ **77.76** lakhs per unit

JSW Energy implemented a smart automation solution at its Vijayanagar thermal plant to enhance efficiency and sustainability. The initiative focused on optimizing Superheater (SH) and Reheater (RH) spray systems, which previously relied on manual intervention due to outdated PID controllers.

A new automated logic system was introduced to dynamically adjust spray levels based on real-time steam temperature fluctuations. This led to:

- Improved heat rate and fuel efficiency
- Significant reduction in water consumption for sprays
- Enhanced equipment life and reduced operational stress
- Lower emissions and a reduced carbon footprint

The solution delivered clear operational and environmental benefits and was successfully scaled across all 300 MW units at the plant. This initiative highlights how intelligent, low-cost automation can drive measurable gains in performance, resource conservation, and climate impact mitigation.

Switch yard, Vijayanagar Plant

Energy Efficiency in Action – Reducing Auxiliary Power Consumption at Vijayanagar Plant

JSW Energy continues to drive operational efficiency and emissions reduction by optimising Auxiliary Power Consumption (APC) at the Vijayanagar plant. A series of targeted improvements across SBU1 and SBU2 have led to significant energy and cost savings while lowering the plant's environmental footprint.

Key initiatives and outcomes:

- Vacuum Pump Optimization (SBU1, Unit 1): Eliminating one vacuum pump post-condenser vacuum enhancement saved 560 MWh and reduced costs by ₹ 30.82 lakhs.
- PA Fan Spacer Coupling Upgrade: Improved energy efficiency yielded a saving of 191 MWh and ₹10.63 lakhs.
- High-Efficiency Cooling Pump Replacement: Delivered savings of 101 MWh and ₹5.43 lakhs.
- BFP Recirculation Valve Leak Fix (SBU2, Unit 1): Prevented energy loss of 101 MWh, saving ₹5.06 lakhs.
- Installation of Variable Frequency Drives (VFDs): Condensate extraction pumps in SBU1 Units 1 & 2 now save 56 kWh per day, translating to ₹2 lakhs monthly savings.

Total Impact:

Over **950 MWh of electricity saved** and more than **₹ 54 lakhs in cost reduction**, alongside measurable emission reductions by **691 tCO_2** through decreased internal power consumption.

This initiative highlights how process optimisation and small, focused upgrades can collectively contribute to cleaner operations, cost efficiency, and progress towards JSW Energy's broader decarbonisation goals.

Vijayanagar Plant

Innovative Green Lighting at Renewable Sites – Empowering Communities with Climate-Smart Infrastructure

As part of its commitment to sustainability and inclusive energy access, JSW Neo Energy Limited (JSWNEL) has implemented a pioneering solar street lighting initiative across remote locations such as Kamareddy, Wanaparthy, Nagar Kurnool, and Jamawanda. A total of 121 off-grid solar-powered street lights (30-watt capacity each) have been installed, enabling safer, greener, and more resilient public spaces.

Driving Low-Carbon Development with Need-Based Innovation

The initiative was driven by a comprehensive assessment of site-specific lighting challenges in under-electrified and ecologically sensitive regions. Conventional lighting solutions often rely on grid electricity or diesel generators—both high emitters of greenhouse gases. JSWNEL's solar-based solution offers a decentralized, clean energy alternative that operates independently of the grid, reducing environmental impact and improving community resilience.

Clean Energy Generation and Climate Benefits

- **Annual Renewable Energy Generation:** 13,246.5 kWh
- **Annual CO_2 Emissions Avoided:** Approximately 9.63 tonnes (based on India's average grid emission factor of 0.727 tCO_2/MWh)

This transition to solar lighting directly supports India's clean energy ambitions and global climate targets by lowering reliance on fossil fuels and minimizing both light pollution and localized heat emissions.

Smart, Sustainable Infrastructure for the Future

This initiative goes beyond basic electrification—it exemplifies how innovation can transform public infrastructure:

- Autonomous operation with dusk-to-dawn sensors
- Zero operational carbon footprint
- Enhanced safety for communities and nocturnal biodiversity
- No dependency on local grid infrastructure
- Maintenance-free design for long-term sustainability

Supporting the Global Sustainability Agenda

This project reflects JSWNEL's strategic vision of integrating environmental intelligence into core infrastructure, reinforcing the company's role in building a low-carbon, inclusive energy future.

"Lighting the way to a low-carbon future, one community at a time."

Digitization in Emission Management

Green Hydrogen Optimization Engine – Accelerating Decarbonisation through Smart Investment Decisions

To enable a low-carbon future, JSW Energy has developed a state-of-the-art Green Hydrogen Optimization Model that redefines investment planning for clean hydrogen projects. The traditional spreadsheet-based approach was replaced with a robust, automated optimization engine that delivers faster, more reliable, and scalable decision-making.

Built using advanced mathematical modelling, Python-based computation, and seamless data integration, the tool determines optimal plant sizing, renewable mix, and storage configurations, ensuring cost efficiency and operational viability. The model has improved the speed of analysis by over 50%, enhanced IRR visibility, and delivered actionable risk insights, empowering confident, investment-grade decisions.

By aligning with national decarbonisation goals, this solution provides a strong digital foundation for the sustainable scale-up of green hydrogen. Looking ahead, the platform is set to evolve with AI-powered forecasts, real-time market inputs, and policy scenario integration, guiding JSW Energy's transition toward a cleaner, more resilient energy future.

Green Hydrogen Plant, Underconstruction at Vijayanagar

Way Forward

JSW Energy remains steadfast in advancing its journey toward a low-carbon future by embedding innovation, efficiency, and accountability into every facet of emission management. With a commitment to achieving Net Zero by 2050, the company aims to further scale up clean energy adoption, strengthen its GHG accounting practices, and integrate digital solutions for real-time emissions monitoring. Future efforts will focus on accelerating the deployment of carbon-reducing technologies, increasing the share of renewables in the energy mix, and investing in green hydrogen, carbon capture, and energy efficiency solutions. Through proactive policy alignment, cross-functional collaboration, and science-based target setting, JSW Energy is positioned to lead a resilient, responsible transition to a climate-secure tomorrow.

Water Management

Key Highlights

- Barmer plant certified as 'Water Neutrality Aspiring' plant through a water risk assessment
- Dry Robotic Cleaning of Solar Panels included in majority of the New Solar power plants installations to minimise water use
- Maintained Zero Liquid Discharge across all locations

New Water Reservoir at Ratnagiri Plant

Strategic Approach

JSW Energy acknowledges the critical importance of water in supporting both operational efficiency and ecological integrity. Water is vital to essential processes such as cooling, ash handling, and fire protection across its power generation facilities. In response to increasing water-related challenges, JSW Energy has established structured frameworks to monitor, assess, and mitigate associated risks. The company continues to focus on enhancing water use efficiency and ensuring sustained availability for operational requirements as well as for surrounding communities. These initiatives reflect JSW Energy's broader commitment to responsible resource management and long-term environmental stewardship.

Targets

Reduce our water consumption per unit of energy produced by one third by 2030

FY 25 Progress

Water consumption per unit of energy production has reduced by 11% against base year of 2020

Water Withdrawal

Source	Unit	FY 25	FY 24	FY 23
Groundwater	kl	516695.67	614920.19	28017
Surface water	kl	34854014.73	28178602.14	2,88,27,036
Third-party water	kl	39357.73	43059.57	0
Seawater	kl	91268315	80971172	5,84,11,696
Total	**kl**	**126,678,383**	**109807753.90**	**8,72,66,750**

Water Intensity

		Actuals			Target
Env Parameter	**KPI**	**FY 25**	**FY 24**	**FY 23**	**FY 30**
Water Security	Sp. Freshwater intake (m^3 /MWh)	0.99	0.95	1.116	0.68

Water Stress Management

Managing water stress is a critical priority for JSW Energy, especially for plants operating in high-risk regions facing increasing scarcity and extreme weather variability. With growing incidents of chronic water shortages and acute events such as floods and cyclones, the organisation has adopted a proactive approach to safeguard operational stability. Key measures include implementing zero liquid discharge across all sites, reducing specific freshwater consumption, and strengthening on-site water storage capacity. These efforts are supported by weather monitoring systems to track rainfall trends and enable timely risk assessments. Together, these strategies enhance operational resilience and promote responsible water use across the energy value chain.

Water withdrawal from Water Stress Area (kl)

JSW Energy's key operational sites: Barmer, Ratnagiri, Vijayanagar, and Hydro, are situated in regions with varying levels of water stress, making efficient water management essential for sustainable power generation. At the Ratnagiri plant, seawater is utilized in a closed-loop system exclusively for cooling purposes and is not used in any production processes, minimizing freshwater consumption. Water consumption and discharge practices at these plants are aligned with the principles outlined in Principle 6 of the BRSR

Water Management Initiatives

Aiming for Water Neutrality in Operations

In the face of rising environmental challenges such as water scarcity, pollution, and increasing waste generation, sustainable development has become a global imperative. Alongside the United Nations Sustainable Development Goals, there is growing momentum to restore and give back to the Earth. Sustainability is critical as natural resources remain finite while demand continues to escalate. Water scarcity and pollution have emerged as key global risks for businesses today (World Economic Forum, 2017).

Water is increasingly recognized as a financial risk to organizations. Given the shared nature of water challenges, effective solutions must address both site-specific and watershed-level impacts to substantially reduce risks (Reig et al., 2019). Understanding water supply chains integral to operations is essential to addressing water sustainability comprehensively.

In line with these imperatives, JSW Energy has undertaken a comprehensive water assessment at its Barmer power plant, with the long-term goal of achieving Water Neutrality and eventually Water Positivity. The Water Neutrality Scope 1 assessment was conducted as per NITI Aayog guidelines and included an on-site evaluation of the plant's water status.

The Scope 1 Certification under the Water Status Framework covers the following key elements:

1. Actual plant water consumption (real water use-quntity as well as quality)
2. Identification of opportunities to enhance operational efficiency through the 3M7R approach (Measure, Monitor, Manage – Reduce, Reuse, Recycle, Recover, Recharge, Renew, and Replace)
3. Definition of real water resource offsets
4. Mapping, delineation, and characterization of the plant's watershed, including documentation of water conservation interventions implemented

3M

Map
Monitor
Measure

7R

Reduce
Recycle
Recover
Replenish
Recharge
Rejuvenate
Recognize/ Respect

Building on this foundation, from FY 2026 onwards, JSW Energy plans to roll out similar water assessment and management programs across all thermal power plants with significant water usage. The objective is to minimize and optimize water consumption, achieve Water Neutrality, and progressively transition towards Water Positivity through robust water conservation initiatives.

Development of the rainwater harvesting structures/ponds

Biodiversity assessment observed certain risks and suggested risk management to mitigate this risk. One of risk observed is about dependency on fresh water for operations of plant. The JSW Energy Ltd. and the surrounding village area are facing the scarcity of freshwater due to low groundwater level, so in that condition the rainwater harvesting would be a good initiative for runoff water conservation inside the JSW plant and the surrounding village areas.

JSW Energy Ltd constructed a water reservoir inside plant premises to store about 35000 m^3 of with a pumping arrangement to utilize this water for plant use.

Rainwater harvesting is the process of collecting and storing rainwater for later use. It is an ancient practice that has gained renewed attention in recent years due to water scarcity issues and environmental concerns. Here are some key points about rainwater harvesting:

Ratnagiri Plant

Collection Methods

Rainwater can be collected from rooftops, land surfaces, or other impermeable surfaces. Common collection methods include rooftop catchment systems, surface water collection in ponds or tanks, and subsurface collection through infiltration trenches or wells.

Benefits:

- Conservation of Water: Rainwater harvesting helps in conserving freshwater resources by reducing dependence on groundwater and surface water.
- Reduction of Runoff: It reduces stormwater runoff, which can help prevent soil erosion, flooding, and pollution of water bodies.
- • Cost Savings: Using harvested rainwater for non-potable uses such as irrigation, toilet flushing, and laundry can reduce utility bills and strain on municipal water supplies.
- Sustainable Practice: It promotes sustainable water management practices and enhances resilience to droughts and water shortages.

Uses of Harvested Rainwater:

- **Outdoor Use:** Irrigation of gardens, lawns, greenbelt.
- **Indoor Use:** Toilet flushing, laundry, and non-potable uses in commercial buildings.
- **Groundwater Recharge:** Recharging groundwater aquifers through infiltration or direct injection.

Maintenance:

Regular maintenance of rainwater harvesting systems is essential to ensure efficiency and water quality. This includes cleaning gutters and filters, inspecting storage tanks for leaks, and treating stored water if necessary.

Regulations and Guidelines:

Local regulations and guidelines may govern the installation and use of rainwater harvesting systems, including water quality standards and permit requirements.

Overall, rainwater harvesting is a sustainable water management practice that can contribute to water conservation, reduce environmental impact, and provide a reliable alternative water source for various purposes.

Topsoil erosion results in exposed roots of the tree may lead to mortality/stunted growth hence impacts greenbelt and plantations

Exposed roots are covered with soil

Way Forward

JSW Energy will continue to strengthen its water stewardship by expanding water efficiency initiatives across all operational sites, focusing on minimizing freshwater consumption and maximizing recycling and reuse. Emphasis will be placed on adopting advanced technologies and innovative water conservation practices tailored to site-specific challenges, especially in water-stressed regions. The Company will enhance watershed management efforts to secure long-term water availability for both operations and surrounding communities. Continuous monitoring and risk assessment systems will be upgraded to proactively respond to climate variability and water-related risks. Through collaborative stakeholder engagement and alignment with global sustainability frameworks, JSW Energy aims to achieve water neutrality and ultimately water positivity, reinforcing its commitment to responsible and sustainable resource management.

Wastewater and Effluent Management

Strategic ApproachJSW Energy remains committed to the Zero Liquid Discharge (ZLD) strategy, ensuring that all process wastewater is effectively treated, recycled, and reused within plant premises. This closed-loop system eliminates the discharge of effluents outside the facility, significantly reducing freshwater withdrawal and enhancing overall water efficiency.

In FY 2025, approximately 4013964.53 m^3 (or 4013964530 million litre) of water were recycled and reused across operations. Treated water was either redirected into operational processes or repurposed for applications such as horticulture, underscoring JSW Energy's proactive approach to responsible water management and its alignment with long-term sustainability priorities.

Targets

Maintain a 'ZERO LIQUID DISCHARGE' for all our power plants by 2030

FY 2025 Progress

1707207.11 m^3 (or 1707207110 million litre) of process water & domestic water was treated and used in Horticulture

Waste Water Recycled and reused

KPI	Unit	FY 25	FY 24	FY 23
Wastewater Recycled & Reused	kl	40,13,965	41,61,333	42,80,818
Water Recycling & reusing%	%	12%	14.75%	16.33%

Initiatives undertaken to maintain ZLD Status

- 1707207.11m^3 Re-using treated process water and STP water in Horticulture – (Data from Barmer, Ratnagiri & Vijayanagar).
- Rain water harvesting recycled in Cooling tower / Horticulture

Way Forward

Focus remains on strengthening Zero Liquid Discharge practices, expanding water recycling, and deploying real-time monitoring systems. Advanced treatment technologies will be adopted to enhance reuse efficiency. These measures aim to reduce freshwater dependence and support long-term water resilience.

Barmer Plant

Waste Management

Strategic Approach

At JSW Energy, minimizing environmental impact is a core priority that shapes our business decisions. As a major energy producer, we manage complex operations that generate diverse waste streams, including hazardous materials. To address this, we have adopted sustainable waste management strategies focused on safe disposal and resource recovery. Embracing circularity, we undertake initiatives such as recycling rejected coal and hazardous waste, and repurposing ash for use in cement manufacturing. These efforts help reduce our ecological footprint while supporting long-term environmental sustainability.

Waste Generated

Type of Waste Generated	FY 25	FY 24	FY 23
Hazardous Waste (MT)	176.20 (including Biomedical Waste)	166.12	140.6
Non-Hazardous Waste (MT)	21,54,203.07	13,64,733	13,89,038

For detailed information on sources of hazardous and non-hazardous waste, please refer to Principle 6 of the BRSR section in this report.

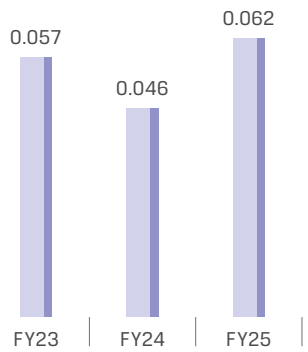
Targets

Maintain 100% recycling of fly ash and wastes generated from our operations

FY 25 Progress

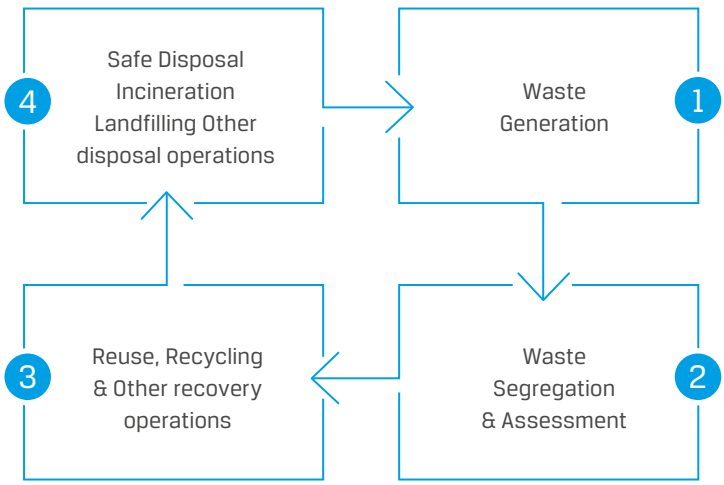
100%

Waste Intensity



Principle of Circularity at JSW Energy

At JSW Energy, circularity is central to waste management practices. The approach focuses on minimizing waste generation, maximizing resource recovery, and ensuring safe disposal. Hazardous and non-hazardous wastes are managed through partnerships with authorised recyclers and co-processors, supporting a regenerative system that reduces environmental impact and supports sustainability.



Management of Hazardous and Non-Hazardous Waste

- JSW Energy ensures safe and compliant handling of hazardous materials such as waste oil, e-waste, used batteries, metal scrap, and plastic waste. These materials are stored in designated, safety-compliant zones and responsibly managed through certified recyclers to ensure minimal environmental impact.
- For non-hazardous waste, particularly ash generated from thermal power operations, robust systems are in place for collection, storage, and repurposing. Ash is stored in silos and supplied to cement and brick manufacturers, supporting circular economy practices. Notably, the Ratnagiri plant has established a 45,000 MT ash silo at a nearby port, enabling efficient export for international reuse and further advancing resource efficiency.

Sewage Waste Management

Sewage Treatment Plant at Sholtu

Sewage Treatment Plants (STPs) have been established at multiple locations, including Sholtu Township (600 KLD), Wangtoo Power House (15 KLD), Baspa Power House (15 KLD), Kuppa Camp (36 KLD), Kilba Camp (45 KLD), and Kaksthal Workshop Site (two units with 15 KLD and 30 KLD capacities). The treated effluent is regularly monitored by the Himachal Pradesh State Pollution Control Board and third-party agencies, with all discharge parameters consistently maintained within the prescribed regulatory limits.

Solid Waste Management

Water Treatment Plant, Sholtu

Solid waste generated from colonies and mess facilities is segregated at source into biodegradable and non-biodegradable categories. Biodegradable domestic waste is processed into manure/ compost using composters installed at each location, with capacities suited to site-specific needs. Non-biodegradable waste is systematically collected, stored, and sent to authorized vendors for appropriate disposal and recycling.

Waste Utilisation & disposal:

KPI	Unit	Waste disposal/diverted (Recycle/Reuse/Incinerate/Landfill)	FY 25	FY 24	FY 23
Non-Hazardous Waste (including Ash)	MT	Recycled:	1,166.90	1,213.76	142.52
		Re-used	21,86,731.81	13,65,192.70	13,78,753.48
		Other recovery operations	4.49	1,997.16	1,511.39
Hazardous Waste	MT	Incineration	0.930	0.135	0.612
		Landfilling	0	0.564	0
		Other disposal operations	166.04	165.42	0.0043

Initiatives undertaken for waste management

JSW Energy is dedicated to transforming waste into valuable energy resources through innovative recovery initiatives. By prioritizing energy recovery from both hazardous and non-hazardous waste streams, the company enhances resource efficiency, reduces landfill dependence, and lowers greenhouse gas emissions. These efforts not only promote sustainable waste management but also contribute significantly to cleaner, more circular energy production.

% of Waste – Ash Utilisation

Waste Ash Recycled

Barmer Thermal Power Plant

Turning Waste into Energy: Powering Progress Through Smart Energy Recovery

In FY 2024–25, JSW Neo Energy Limited demonstrated strong commitment to circular economy principles by recovering 204.41 Giga Joules (GJ) of energy from 9.63 tons of hazardous waste—specifically oil-soaked cotton waste—via co-processing at a CPCB-authorized Alternate Fuel Resource Facility (AFRF). This initiative prevented approximately 27.05 tons of CO_2 emissions, setting a benchmark for sustainable industrial waste management in the renewable energy sector.

Origin of Hazardous Waste in Wind Operations

During routine operation and maintenance of Wind Turbine Generators and associated electrical infrastructure, oil-contaminated cotton rags and absorbents are generated through activities such as:

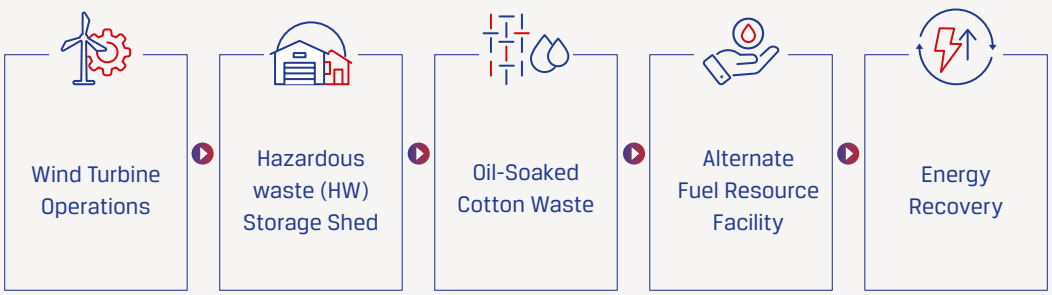
- Oil top-up and replacement
- Hydraulic leak management
- Cleaning and degreasing mechanical components
- Transformer oil inspection and spill containment

Classified as hazardous under Schedule I of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, this waste traditionally undergoes secure landfill disposal—compliant but with long-term environmental risks.

Innovative Co-processing Approach

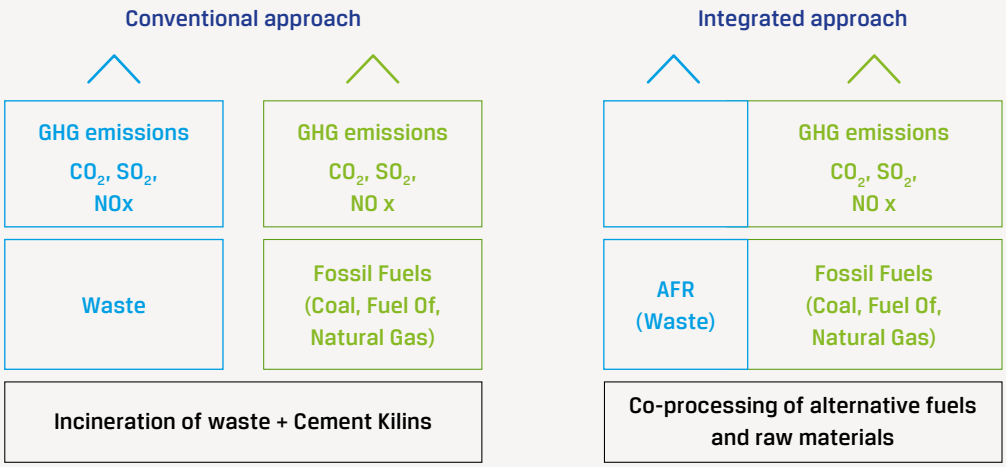
JSW Neo Energy adopted co-processing to harness the high calorific value (~21,230 KJ/kg) of oil-soaked cotton waste as an energy substitute in cement kilns, delivering multiple benefits:

- Eliminates landfill dependency
- Converts hazardous waste into valuable energy
- Reduces fossil fuel consumption in industrial processes
- Prevents environmental contamination
- Supports Extended Producer Responsibility (EPR) frameworks



Waste was safely collected, transported, and processed in full regulatory compliance, exemplifying innovation in sustainable waste management by:

- Shifting from linear disposal to circular resource recovery
- Enhancing industrial symbiosis between renewable energy and cement sectors
- Improving carbon footprint via avoided emissions
- Establishing a scalable zero-waste operational model



Environmental Impact

This strategy significantly mitigates greenhouse gas emissions by:

1. Avoiding direct emissions from landfill/ incineration of hazardous waste
2. Reducing fossil fuel combustion in cement production

JSW Neo Energy's waste-to-energy model underlines its leadership in environmental stewardship, contributing directly to UN SDGs, Responsible Consumption and Production (SDG 12), Climate Action (SDG 13), and Affordable and Clean Energy (SDG 7).

Fly Ash Silo at Ratnagiri Plant

Fly Ash Recycling and Circularity at Ratnagiri Plant

The Ratnagiri thermal power plant has established a 45,000 MT fly ash silo at the adjacent JSW Jaigad port. Fly ash generated onsite is pneumatically transported into this silo and then loaded onto ships for export, primarily to the Middle East and Sri Lanka. There, fly ash serves as a key raw material in cement and concrete production, exemplifying circular economy principles by transforming industrial waste into valuable resources.

Key Circularity Benefits:

- **Waste-to-Resource Conversion:** Fly ash is repurposed as a construction input.
- **Material Efficiency:** Reduces reliance on virgin raw materials such as limestone.
- **Enhanced Product Performance:** Improves concrete durability and lifespan.
- **Environmental Impact Reduction:** Diverts waste from landfills and lowers cement-related emissions.

To further strengthen sustainable practices, JSW Energy is conducting a Life Cycle Assessment (LCA) and Environmental Product Declaration (EPD) for fly ash.

Life Cycle Assessment Highlights:

- Evaluates environmental impacts from fly ash collection through transport and reuse.
- Demonstrates reduced carbon footprint by substituting cement with fly ash in concrete.
- Confirms extended durability benefits, lowering maintenance and end-of-life impacts.

Environmental Product Declaration (EPD):

An independently verified report following EN 15804 A2 and ISO 14025 standards, the EPD validates the environmental credentials of fly ash and supports its use in certified sustainable building projects. This initiative reinforces JSW Energy's commitment to resource efficiency, waste minimization, and advancing circular economy solutions within the energy sector.

Conclusion: Zero Waste to Landfill

JSW Energy Limited demonstrates strong responsibility towards waste management across all plant locations by ensuring waste disposal through authorised agencies, prioritizing recycling and reuse. The primary waste generated is ash, which is collected and supplied to cement manufacturers and construction companies for further use as a raw material. This approach reflects the organisation's commitment to effective waste management.

Building on these environmental practices, JSW Energy Limited has initiated certification of its various plants by reputed agencies under the 'Zero Waste to Landfill' (ZWTL) program. The ZWTL goal means that none of the waste generated at JSW Energy plants is sent to landfills; instead, all waste is diverted through methods such as reuse, recycling, and composting.

Plant teams ensure strict waste segregation and maintain partnerships with authorised waste management agencies, reinforcing the company's dedication to sustainability, resource conservation, and reducing environmental impact.

In the fiscal year 2024–25, the power plants at Barmer, Ratnagiri, and Vijayanagar achieved ZWTL certification. JSW Energy will continue efforts to secure similar certifications for additional plants in the coming financial year.

Air Emissions

Strategic Approach

Recognising the environmental impact of conventional power generation, JSW Energy has embedded air quality management as a core pillar of its sustainability strategy. Emission control is not only aligned with regulatory compliance but also reflects the company's commitment to responsible operations and environmental stewardship.

Targets	Progress FY 2025
Reduce the dust emissions, per unit of energy produced, by 2/3rd	**Achieved an overall 41% reduction of dust emissions intensity per unit of energy produced**
Reduce the emissions of Oxides of Sulphur and Nitrogen, per unit of energy produced, by 60%	**Achieved an overall 39% reduction of SO_2 and 34% of NO_2 emissions intensity per unit of energy produced**

Outcomes through Proven Technologies

JSW Energy maintains stringent air quality standards across thermal operations by deploying advanced emission control technologies. Electrostatic Precipitators (ESPs) at the Barmer plant have been upgraded to enhance particulate matter removal from flue gases.

At the Ratnagiri plant, Flue-gas Desulfurisation (FGD) systems have been installed to effectively reduce sulphur dioxide emissions. These measures ensure compliance with environmental norms while reducing the ecological footprint of operations.

Mercury and SF_6 emissions are not relevant to current processes and therefore not disclosed. Through continuous technological upgrades, JSW Energy ensures regulatory alignment and supports a cleaner, more sustainable energy future.

Air Emission Intensity

KPI	Unit	FY 2025	FY 2024	FY 2023
Sp. PM	Kg/MWh	0.094	0.11	0.12
Sp. SOx	Kg/MWh	1.09	1.18	1.25
Sp. NOx	Kg/MWh	0.67	0.64	0.70

The following represents emission intensity specific to thermal operations only:

SOx: 0.144 Kg/MWh **NOx:** 1.66 Kg/MWh **SPM:** 1.02 Kg/MWh

Air Emission Trend

KPI	Unit	FY 2025	FY 2024	FY 2023
Sp. PM	Tonnes	3275.01	3173.16	2,863.24
Sp. SOx	Tonnes	37815.20	35043.84	29,233.46
Sp. NOx	Tonnes	23191.03	19213.61	16,484.89

To enhance Electrostatic Precipitator (ESP) performance, a new rapping time matrix was implemented, ensuring only one Controller Rapper Module (CRM) operates at a time.

Key Actions:

To resolve this, a new rapper timing matrix was developed to ensure that only one rapper operates at any given time. This revised configuration enhances dust collection efficiency by improving particle retention within the ESP.

In particular, the first two ESP fields, equipped with three-phase rectifiers for maximum dust collection, have been assigned shorter repeat times:

- Field A1, B1: 10-minute repeat time
- Field A2, B2: 20-minute repeat time

Rapper settings have been updated accordingly in the Trustek software, and timings for the remaining fields were also optimized based on performance requirements. Emission checks conducted during the day confirmed the effectiveness of the new settings, with no visible emissions detected. This configuration has now been standardized across all units.

ESP Field	Start Time	Repeat Time
A1, B1	00:07 Hrs	10 Minutes
A2, B2	00:13 Hrs	20 Minutes
A3, B3	00:19 Hrs	1 Hour
A4, B4	01:00 Hrs	4 Hours
A5, B5	02:00 Hrs	8 Hours
A6, B6	00:23 Hrs	24 Hours

Results & Benefits:

- Reduced Emissions: No visible emissions post-implementation
- Enhanced Efficiency: Improved dust captures due to sequential rapping
- Longer Equipment Life: Reduced wear in later fields through extended intervals

Ratnagiri Plant

Biodiversity: Conservation and Restoration

Key Highlights

- 3 Season study for Biodiversity Risk Assessment completed at JSWE Utkal Plant in FY 2025
- Biodiversity Risk Assessment already completed at Barmer, Ratnagiri & Vijayanagar plants
- Biodiversity Management Plan (BMP) in progress at Barmer & Ratnagiri plants

Strategic Approach

JSW Energy recognizes the vital role of biodiversity, the rich variety of plants, animals, microorganisms, and the ecosystems they inhabit, in maintaining ecological balance and supporting human well-being. In line with its commitment to sustainability, JSW Energy has embedded biodiversity conservation into the core of its operational philosophy.

The company takes a proactive approach to minimizing its environmental footprint by safeguarding natural habitats, restoring degraded ecosystems, and fostering the growth of native species across power plants and project sites. Through rigorous biodiversity risk assessments and targeted management strategies, JSW Energy aligns economic development with ecological preservation, contributing to broader global biodiversity goals.

At the Barmer plant, biodiversity conservation is a key focus. Extensive ecological restoration initiatives include year-round plantation drives to sustain local ecological balance. Over 50,000 native trees and shrubs have been planted, converting barren land into green corridors that provide safe habitats for birds, butterflies, and small mammals. Wetland areas have been rejuvenated using treated wastewater, enhancing groundwater recharge and creating nesting grounds for migratory birds. A standout initiative is the Butterfly Garden, a vibrant, biodiverse space that attracts numerous species and stands as a living symbol of environmental restoration and community engagement.

Based on the recommendations of the Biodiversity Management Plan a 3500 m^3 water reservoir has been created at the Ratnagiri plant to support the eco-system around the plant. Also, additional soil cover for identified area in the plant has also been completed in line with the recommendations.

Targets

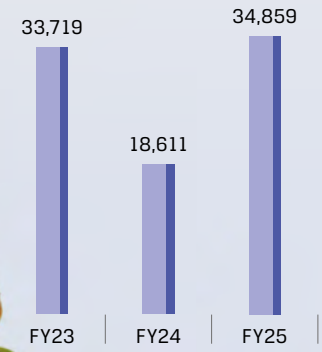
Achieve a 'no net loss' of biodiversity at all our operating sites by 2030

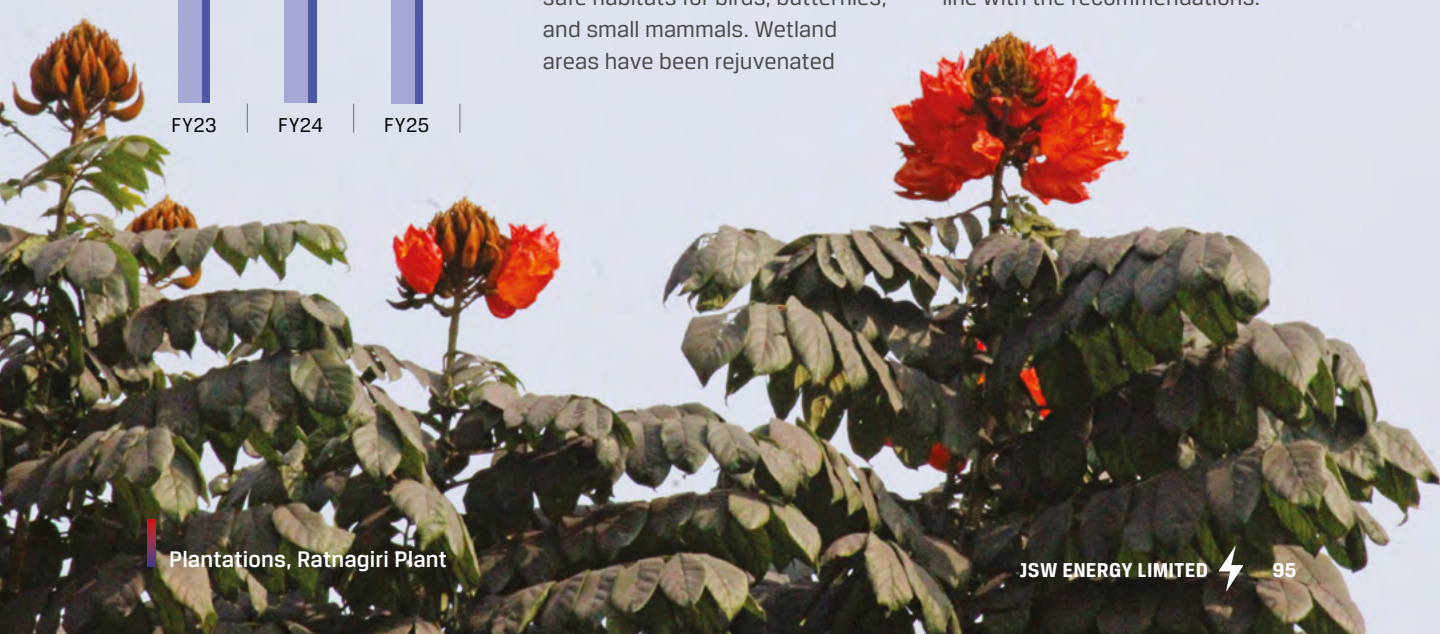
FY 2025 Progress

Biodiversity Risk Assessment completed at major Thermal power plants and recommendations are being implemented.

NNL studies being initiated in FY 2026.

No. of saplings planted





Plantations, Ratnagiri Plant

Biodiversity Risk Assessment and No Net Loss (NNL) Action Plan at JSW Energy

JSW Energy is very keen on maintaining the biodiversity around all its existing operational plants and the upcoming projects. For this, the company has conducted biodiversity risk assessments at almost all its operational locations and achieving a No Net Loss (NNL) of biodiversity by 2030 in all these operational areas is being targeted by the organisation.

Under the biodiversity initiative the company has completed the following steps:

Stage I
Biodiversity Gap Assessment and Risk Mapping

Stage II
NNL Action Plan

Stage I: Gap Assessment and Risk Mapping

The gap assessment was based on desk assessment of the datasets provided by each site in the form of biodiversity Mapping (indicators developed by the consultant and shared with sites in excel format), documents provided such as EIA reports, site specific past biodiversity study reports, secondary data sources. These documents were reviewed and assessed for developing impacts and dependencies matrix.

- Mapping operations located within 10 km radius of protected areas, migratory routes and Ramsar Wetlands sites. Tools like DOPA, e-bird India and Wildlife Protected areas were used.
- JSW Biodiversity Policy and IUCN No Net Loss (NNL) guidance documents and CBD guidance documents i.e., CBD Technical series were referred for the assessment (https://www.cbd.int/ts/)
- IBBI Ecosystem Services Matrix tool (ESM) was used for ecosystem mapping, risk identification for each ecosystem and ecosystem services and measuring the effectiveness of existing management plans. The site-specific risk (impacts and dependencies) was developed as per JSW Biodiversity Technical Standard
- Mapping the present biodiversity management plan at different operations developed as per Environmental Clearance requirement and meeting commitments to IBBI 10-point declaration
- Mapping operations based on International Finance Corporation Performance Standard 6 (IFC PS6), UN CBD's Post 2020 Global Biodiversity Framework targets for 2030 and 2050 goals, DJSI and TNFD Framework
- Consultation with JSW Energy team was undertaken to take inputs on Gap assessment studies and data requirements to finalize the risk areas ad map existing management measures

Stage II: NNL Action Plan

Development of JSW Energy level biodiversity action plan to meet the No Net Loss commitment based on IUCN Mitigation Hierarchy i.e., Avoid, Minimize, Restore and offset was developed with specific action plan which can be implemented by sites.

NNL Action Plan covers:

- Biodiversity & Ecosystem Service (B&ES) - Risk to business
- Guidance document to be adopted at Group level and at site level covering details of impacts of operation during various phases of project i.e., Planning, Construction, Operation and Decommissioning. This guidance document will help in understanding the examples impacts and dependencies and respective mitigation measures which are provided in Biodiversity Action Plan.
- Action Plan by adopting nature-based solutions to meet the No Net Loss commitment.
- Action areas to go for avoidance, minimization, restoration and offsetting B&ES impacts
- JSW Energy specific Monitoring Indicator tool developed to map the progress made by each operation to meet the NNL target

The biodiversity studies have covered the following JSW Energy sites -

1. Ratnagiri Thermal Power Plant
2. Jharsuguda Thermal Power Plant
3. Barmer Thermal Power plant
4. Vijayanagar Thermal power plant
5. JSW Hydro – Karcham Wangtoo Hydroelectric Plant
6. JSW Hydro- Baspa II Hydroelectric Plant
7. Wind – Tuticorin
8. Wind – Dharapuram
9. Wind – Sandur

Subsequent to the above actions, all locations will now start working on the NNL Action plan in the upcoming years so as to ensure to achieve the NNL target on or before 2030.

Initiatives undertaken to conserve and protect biodiversity around operating sites

Alongside on-ground restoration efforts, JSW Energy has focused on preserving and rejuvenating natural features such as ponds and green belts, while also establishing drinking water points to support wildlife near operational sites. At the Barmer plant, a comprehensive seasonal ecosystem study, conducted across all four seasons, provided valuable insights into local ecological patterns, enabling the enhancement of biodiversity management practices. Biodiversity assessments have also been carried out at five key operating and project sites to identify and address potential ecological risks effectively.

These science-led, proactive initiatives reflect JSW Energy's enduring commitment to environmental stewardship. By embedding biodiversity considerations into its operations, the company supports long-term ecological resilience while addressing both immediate and future sustainability challenges. The efforts at Barmer stand as a testament to JSW Energy's broader vision, where industrial advancement goes hand in hand with the protection and enhancement of the natural environment.

Ratnagiri Plant

Biodiversity at Renewable Plants: Protecting Wings, Preserving Nature – Bird Diverters in Action

JSW Neo Energy Ltd integrates environmental responsibility into all operations, recognising that renewable energy must harmonize with biodiversity conservation. Regular inspections and community feedback revealed bird collisions along 33kV transmission lines, especially during low visibility at dawn and dusk. Species such as birds, parakeets, and cranes were vulnerable to collisions and electrocution, also causing power disruptions.

Birds often mistake power lines for branches or fail to see thin conductors, especially in ecologically rich areas like Thoothukudi district, with high year-round avian activity. To address this, a cross-functional team involving HSE, Electrical Engineering, CSR, and consultations with ornithologists and forest officials designed and implemented a Bird Diverter Installation Programme.

A total of 62,877 high-visibility bird diverters, LED and non-LED spiral and flap-type reflectors—were installed on critical spans of the 33kV lines at Nidhi and Maniyachi wind sites. These diverters reflect light, flutter in the wind, and produce visual and audible cues to alert birds, encouraging safer flight paths and perching.

Impact Highlights:

- Significant reduction in bird mortality along transmission corridors
- Improved coexistence of infrastructure and wildlife
- Enhanced ESG performance and strengthened community trust
- Support for India's National Biodiversity Action Plan and UN SDG 15 (Life on Land)
- Zero power shutdowns during installation using hot-stick methods
- Targeted installation based on GIS mapping and field surveys
- Collaborative efforts with the local Forest Department

This initiative exemplifies JSW Neo Energy's commitment to delivering renewable energy that is not only clean but also ecologically sensitive, combining strategic foresight and collaborative innovation to protect avian life.

Plantation activities

JSWHEL Sholtu successfully achieved its plantation target for the financial year 2024-25 by planting a total of 3,050 saplings of various species, predominantly native to the region. Of these, 2,550 saplings were planted at the Karcham Wangtoo Hydroelectric Power Plant (HEP), while the remaining 500 were planted at the Baspa-II HEP. Some plantations were carried out in collaboration with the State Forest Department.

The plantation drive was held on World Environment Day, June 5th, 2024, with participation from the Secretary of the District Legal Service Authority (DSLA), Kinnaur, Himachal Pradesh, along with officials from the Himachal Pradesh State Pollution Control Board. During the drive, 200 Pine saplings were planted within the Sholtu Plant premises. The selected site was chosen to serve dual purposes: biodiversity conservation and slope/riverbank stabilization.

Below are some highlights from the plantation activities conducted during FY 2024-25.

Plantation at Pooling Station, Sandur

Silvi-Pasture Plantation Project – Restoring Grazing Lands in Barmer

The Thar Desert region of Barmer faces acute fodder scarcity, frequent droughts, and degraded land, posing serious challenges to livestock farmers. In response, JSW Foundation initiated the Silvi-Pasture Plantation Project at Nandi Gaushala, located on 15 hectares of community-owned land in Barmer Gadan, to improve fodder availability and ecological resilience.

Project Objectives:

- Conserve and propagate native, economically useful plant species.
- Improve soil and water retention to restore degraded land.
- Establish a sustainable fodder source for stray cattle shelters.

Key Interventions:

- Fencing: 1,490 meters of protective fencing constructed.
- Water Access: Borewell installed to ensure water availability.
- Grass Development: Sevan and Dhaman grasses cultivated across the entire site.
- Tree Plantation: 1,827 native trees (Neem, Khejri, Rohida, etc.) planted and maintained over four years.

Outcomes:

- **Fodder Production:**
  - Green Grass: 180 tons annually (4 tons/ha, three harvests per year).
  - Tree-Based Fodder: Additional 7.5 tons annually.
  - Livestock Benefit: Supports ~2,000 cattle at Nandi Gaushala.
- **Environmental Benefits:**
  - Arrested soil erosion and improved moisture retention.
  - Carbon sequestration through biomass and soil.
  - Formation of microclimates and enhanced biodiversity.
- **Sustainability & Replication:**
  - Project now maintained by Barmer Municipal Council.
  - Serves as a replicable model for pasture development in arid zones.
  - Encouraged community involvement, reviving traditional stewardship of common lands.

This integrated silvi-pasture model demonstrates a holistic approach to ecological restoration, fodder security, and rural sustainability in one of India's most climate-vulnerable regions.