

Stewards of a Greener Tomorrow



At BPCL, we are powering a sustainable future by seeking opportunities to collaborate on climate- and nature-based solutions that conserve critical resources, unlock new revenue streams, and enhance operational efficiency. We continue to deliver on our climate and nature commitments by investing in renewable energy, optimizing processes, adopting clean technologies, and championing environmental causes through regular employee volunteering programs and CSR initiatives.

MATERIAL TOPICS LINKED



Climate Change



Energy Use and Transition



GHG and other Emissions



Clean Tech



Water Management



Availability of Raw Material



Biodiversity



Waste Management



Product Safety and Quality



Asset Integrity and Process Safety

UN SDGs IMPACTED



PERFORMANCE SNAPSHOT

100%

Energy Efficient Lighting (EEL) at Mumbai Refinery, Kochi Refinery, Bina Refinery, Pipelines, Retail, LPG, Aviation SBUs

4.76%

Share of Renewable Energy in total Electricity Consumed by BPCL in Operating Locations

5,551 MT

Plastic Disposal under EPR

10,343 TKL

Wastewater Recycled

1,041 TKL

Rainwater Harvested

Zero

Waste to Landfill Certification for all Operating Marketing and Refinery Locations

30,263 MT

Hazardous Waste Reused

6,563

Locations with EV Charging Infrastructure



Targeting Net Zero by 2040

With the increasing threat of climate change disrupting businesses and their supply chains, it is critical that we act urgently. Failure to act now could pose long-term risks to business continuity, supply chains, and stakeholder value. As a responsible energy leader, we are committed to being part of the solution and will continue collaborating with our stakeholders on climate- and nature-positive actions. In alignment with India's target to become Net Zero by 2070, we aim to achieve Net Zero for our Scope 1 and Scope 2 greenhouse gas (GHG) emissions by 2040. Our climate roadmap prioritizes scaling renewable energy, improving operational efficiency, accelerating technology adoption, and investing in green fuels. Following a detailed assessment across all our Strategic Business Units, we have identified both short- and long-term decarbonization levers.

DECARBONIZATION DRIVERS

Efficiency

To improve furnace efficiency at our refineries, we actively manage steam traps to reduce steam loss and implement waste heat recovery systems, which account for approximately 10% of total emissions abatement at these facilities. In non-operational areas, we reduce emissions through end-of-life replacement of pumps and machinery, along with operational measures such as installing occupancy sensors and optimizing power usage. By replacing outdated equipment, installing occupancy sensors, and minimizing non-essential power consumption, we aim to reduce energy use in non-operational areas.

Environment

We are taking a focused approach to energy conservation. A total of 45 ENCON schemes implemented across our Mumbai (18), Kolkata (15), and Bina (12) refineries resulted in savings of 41,239 MTOE during FY 2024-25.

Renewable Energy

Renewable energy is one of the key enablers for achieving our Net Zero 2040 goal, with approximately 25% of the projected emissions reduction expected to come from shifting from brown energy sources and captive power plants to renewable energy. To enable our refineries to operate at 80 – 85% capacity utilization, we have implemented an Inter-State Transmission System (ISTS) hybrid solution that combines solar and wind energy.

As of FY 2024-25, our installed renewable energy capacity stands at 154.86 MW, including 143.06 MW from solar and 11.8 MW from wind. An additional 171 MW is under development, with a 71 MW solar project in Prayagraj nearing completion and 50 MW wind projects each in Madhya Pradesh and Maharashtra awarded. We also secured 150 MW through NTPC’s solar utility tender, marking a major expansion of our green energy portfolio. A total of 12,244 Retail Outlets (ROs) have been solarized out of 23,642 ROs. Additionally, we have installed solar lights at 7,563 ROs.

Green Hydrogen

We are replacing conventional Steam Methane Reforming (SMR) methods at our Mumbai and Bina refineries by leveraging Green Hydrogen technology. This initiative is expected to contribute approximately 15% to our total emissions abatement.

We are making significant progress in green hydrogen development, with a 5 MW plant commissioned at Bina Refinery to enable in-house production. Under SECI's SIGHT Scheme, we are also developing biomass-based green hydrogen units at Kochi and Bina, with a target production of 2,000 metric tonnes per annum.

Bio-CNG

To further decarbonize operations, we are investing in Bio-CNG generated from biogenic feedstocks. Replacing fuel oil and natural gas with this cleaner alternative is expected to deliver nearly 30% of our total emission reduction target. We plan to develop 200-220 medium-sized Bio-CNG plants with an estimated production capacity of 1.30 MMT per annum, feeding directly into India’s City Gas Distribution (CGD) networks. Four such plants are currently under construction at refinery locations.

We are currently developing 26 Compressed Biogas (CBG) plants and advancing our Biodiesel Blending Program while scaling up CBG infrastructure across key locations. To further

expand our clean fuel infrastructure, we are also establishing both first- and second-generation bio-refineries in Bargarh, Odisha, to process agricultural waste and surplus food grains into cleaner, domestically produced fuels.

Carbon Capture, Utilization, and Storage (CCUS)

We are adopting CCUS technologies to target 20% emission reduction from our refining operations, targeting the capture of 4.20 MMTPA of CO₂, which is equivalent to a significant portion of our net zero commitment. Our in-house R&D team has developed lab-scale Simulated Moving Bed (SMB) technology for CO₂ capture. We are now assessing its techno-commercial viability across diverse emission sources.

We have also showcased an innovative aqua-based Carbon Capture Utilization (CCU) technology, developed in collaboration with M/s. Urjanova C, that captures CO₂ and converts it into calcium carbonate (CaCO₃) under ambient conditions. This technology eliminates the need for CO₂ storage and compression, while offering 10 – 15% higher CO₂ capture efficiency compared to conventional amine-based systems.

Carbon Offsets

To address any residual emissions, we will rely on high-quality carbon offsets generated or sourced through Indian registries. These will focus on afforestation, community-based renewable energy, waste-to-energy, and other verified climate-positive projects. Our offset strategy will remain dynamic and transparent, based on operational priorities, market developments, and our commitment to avoid greenwashing.

Emissions Management

Committed to driving year-on-year reductions in our carbon footprint, we proactively monitor and manage greenhouse gas (GHG) emissions across all our operational sites. We follow the operational control approach for GHG accounting, covering 100% of emissions from our facilities within India.

Our reporting encompasses Scope 1 (direct emissions), Scope 2 (indirect emissions from purchased electricity), and Scope 3 (indirect emissions across the value chain, including the use of sold products).

In FY 2024-25, our total GHG emissions stood at 169.62 million tonnes CO₂e, including:

- **Scope 1:** 9.94 million tonnes CO₂e
- **Scope 2:** 0.86 million tonnes CO₂e
- **Scope 3:** 158.81 million tonnes CO₂e

Emission Intensity

21.25 MTCO₂e /Cr (₹)

Scope (1 and 2) Emission Intensity basis Revenue from Operations

317.38 MTCO₂e /Cr (₹)

Scope 3 Emission Intensity basis Revenue from Operations

Setting Up of Integrated 2G+1G Ethanol Bio-Refinery at Bargarh

We are currently developing an integrated 2G+1G Bio-Ethanol facility at Bargarh, Odisha, which is designed to produce ethanol using agricultural waste such as rice straw and surplus or damaged food grains. This project is a key step in supporting the Government of India’s Ethanol Blended Petrol (EBP) Program and advancing our biofuel leadership.

As the designated industry coordinator for ethanol, we continue to lead India’s transition toward cleaner fuels. By promoting greater biofuel adoption, we not only enhance national energy security but also uplift rural economies by improving farmer incomes, creating jobs, and reducing reliance on imported fossil fuels.

The Bargarh plant, with a designed capacity of 200 KLPD, is scheduled to commence ethanol production in September 2025 and will contribute significantly to building a sustainable and inclusive fuel mix for the country.

1.10 Lakh MTCO₂e/year

Expected Total Emission Reduction

Energy Management

Our energy management strategy emphasizes optimizing energy use, increasing the integration of renewables, and gradually transitioning to cleaner fuels, with the objective of reducing emissions, lowering long-term costs, and enhancing our competitive advantage. These efforts toward environmental sustainability support our long-term value creation and position us for future growth.

In FY 2024-25, we continued to implement targeted Energy Conservation (ENCON) initiatives across our refineries, resulting in a consistent decline in specific energy consumption.

The specific energy usage recorded by our refineries during the year is as follows:

- **Mumbai:** 60.9 MBN
- **Kochi:** 64.8 MBN
- **Bina:** 63.3 MBN

ENABLING A BALANCED ENERGY TRANSITION THROUGH INNOVATION

At the core of our transformation into a future-ready, integrated energy company is our Renewable Energy (RE) business unit, which is accelerating the shift toward greener energy sources by expanding our RE portfolio.

These projects with a capital outlay of ₹ 1,569.58 crore were under various stages of implementation in FY 2024-25:

- Ground-mounted solar project at Prayagraj, Uttar Pradesh
- Windfarm projects in the states of Madhya Pradesh and Maharashtra
- Integrated green hydrogen plant and hydrogen refueling station in Kochi, Kerala
- Green hydrogen production of 1.5 KTPA and 0.5 KTPA through biomass-based pathways at our Bina and Kochi Refineries, respectively
- Our first green hydrogen plant (5 MW) commissioned at Bina Refinery



Water Management

Water is a vital resource in our operations, particularly in refining and cooling processes. At BPCL, our approach to water management reduces environmental impact, enhances efficiency, and addresses risks associated with water scarcity and evolving regulations. We continue to invest in advanced treatment and recycling systems to minimize freshwater consumption while improving cost efficiency. A key focus area in this regard is expanding our rainwater harvesting (RWH) infrastructure to reduce dependence on external sources.

In FY 2024-25, we recycled 10,343 TKL of wastewater and harvested 1,041 TKL of rainwater across our facilities.

Our Mumbai Refinery established a sewage treatment plant (STP) in partnership with Rashtriya Chemicals & Fertilizers (RCF), with a capacity of 22.5 MLD for municipal sewage treatment. This collaboration produced 15 MLD of treated water, of which we consumed 6 MLD and RCF 9 MLD. In FY 2024-25, this initiative helped reduce our reliance on municipal freshwater by 2,283.18 MT.

1,041 TKL

Rainwater Harvested

36,086 TKL

Total Water Consumed

14.33 Lakh sqm

Rainwater Harvesting Catchment Area
6.2% ▲



Biodiversity Management

We are committed to preserving biodiversity and combating climate change through tree plantation drives that support carbon sequestration, improve air quality, and enhance ecological resilience in and around our operational areas.

In FY 2024-25, we planted over 1.78 Lakh trees using techniques such as Miyawaki afforestation, seed bombing, and conventional plantation methods. This expanded our cumulative green cover to 12,17,784 trees, contributing to the sequestration of approximately 25,571 metric tonnes of CO₂ equivalent (MTCO₂e).

To further reinforce our environmental stewardship, we partnered with the Madhya Pradesh State Forest Department to develop a 90-hectare green belt near the Bina Refinery, located in the Kanjia range of Khurai, Sagar district. This initiative was commissioned in July 2024 with an investment of ₹ 1.96 crore, which will be utilized to sustain the initiative over the next five years.

1,78,775 trees

Planted in FY 2024-25

25,571 MTCO₂e

Total Carbon Sequestered

Waste Management

Our waste management strategy, built on the 5Rs—Refuse, Reduce, Reuse, Repurpose, and Recycle—guides our efforts to identify, segregate, treat and safely dispose of waste across all our operations. Efficient waste management in compliance with regulations set by the Ministry of Environment, Forest and Climate Change (MoEF&CC), Central Pollution Control Board (CPCB), and State Pollution Control Board (SPCB) remains a priority for us. Hazardous waste such as spent clay or residues containing oil is responsibly disposed of through safe landfilling methods facilitated by Treatment, Storage, and Disposal Facilities (TSDF).

In FY 2024-25, we launched the Sound Management of Waste Disposal (SMWD) initiative, which emphasizes the timely and compliant disposal of e-waste while enhancing our circularity efforts through increased recycling and resource recovery. In addition, we are setting up a municipal solid waste-based compressed biogas (CBG) plant at Brahmapuram, Kerala. This facility will process 150 metric tonnes of waste daily, generate 6 metric tonnes of CBG, and convert 40 – 50 metric tonnes into organic fertilizer—advancing both our waste-to-energy initiatives and renewable energy goals.

ZERO WASTE TO LANDFILL (ZWL) CERTIFICATION

Zero Waste to Landfill (ZWL) is a recognized benchmark in the waste management industry that promotes environmentally responsible practices aimed at minimizing landfill-bound waste. As a leader in the sector, we are deeply committed to preventing soil contamination and have engaged independent third-party audits to secure ZWL certification across all operational locations of our Refineries and Marketing divisions. Notably, we are the only company in the Oil and Gas sector in India to have achieved this certification—underscoring our dedication to sustainable operations and environmental stewardship.



8,872 MT

Hazardous Waste Recycled

1,17,343 MT

Non-hazardous Waste Recycled

5,551 MT

Plastic Waste Equivalent Reclaimed under EPR

