



GREENHOUSE GAS (GHG) EMISSIONS REPORT

June 2024

Marico Limited

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ABOUT THE REPORT

The purpose of this Report is to provide transparent communication to all stakeholders regarding our progress in environmental sustainability while highlighting our continuous efforts to reduce energy and GHG emissions related to our business.

Reporting Boundary

Data provided in the FY2023-24 GHG Report are specific to Marico Limited (Standalone basis).

Reporting Period

FY2023-24 GHG Report covers performance of the Company from 1st April 2023 to 31st March 2024.

Management Responsibility Statement

Marico's management acknowledges its imperative role in ensuring the integrity, transparency, and accuracy of the information conveyed in the Integrated Annual Report. Moreover, the management affirms that the report thoroughly addresses all pivotal material concerns relevant to the organization and its stakeholders while effectively articulating the organization's capability to pursue opportunities and mitigate risks.

Assurance

BDO India LLP¹ has carried out "Reasonable Assurance of BRSR Core Indicators²" and "Limited Assurance of Marico's FY24 Scope 3 Emissions" which covers energy and emissions related indicators mentioned in this report.

Restatements

The reporting scope for some impact areas has been expanded based on the market drivers, value enablers, and social commitments during the year. These as well as other changes have been mentioned in the respective sections of the report.

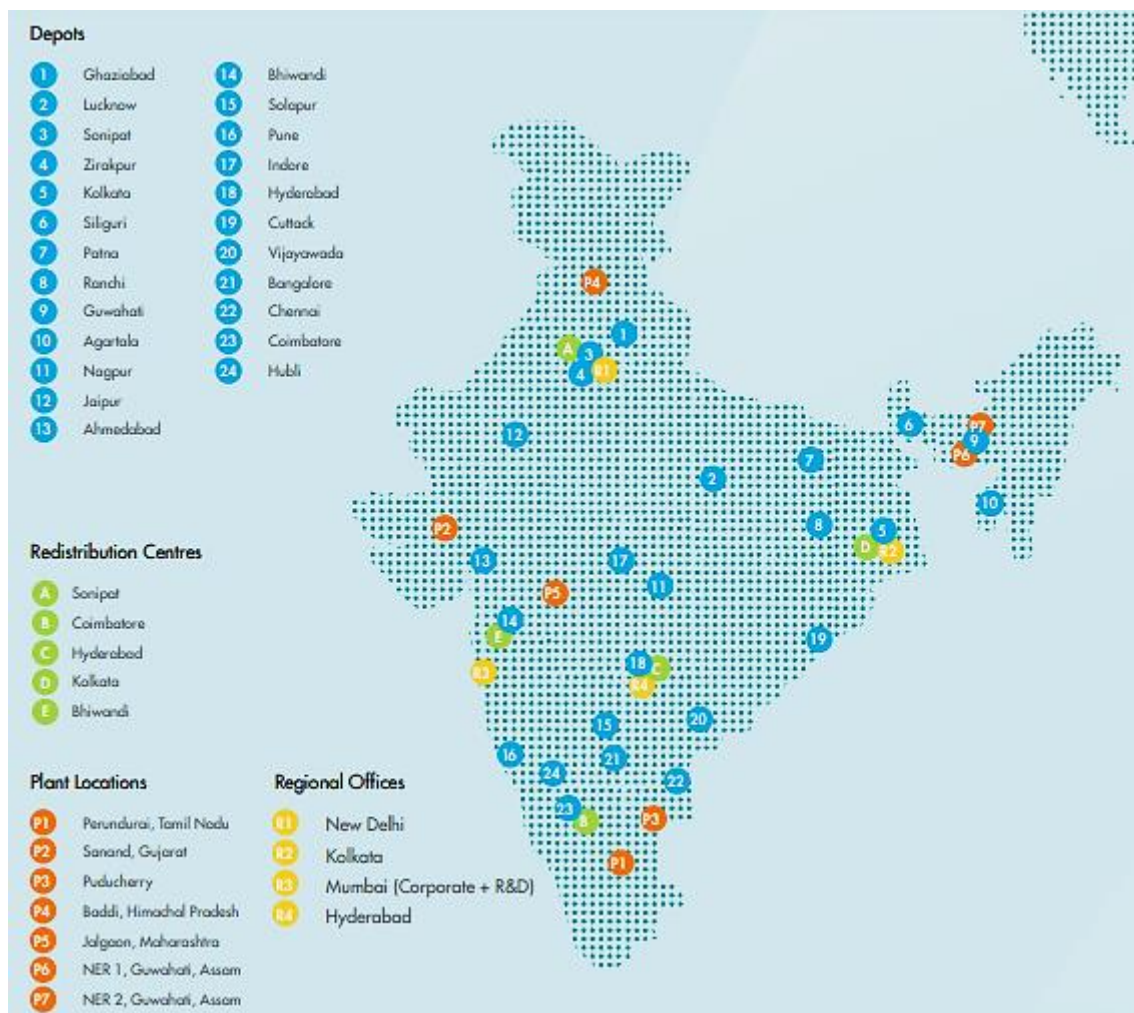
¹ Assurance statement is available in Annexure 5.

² https://www.sebi.gov.in/legal/circulars/jul-2023/brsr-core-framework-for-assurance-and-esg-disclosures-for-value-chain_73854.html Circular No.: SEBI/HO/CFD/CFD-SEC-2/P/CIR/2023/122

1 INTRODUCTION

Marico (BSE 531642, NSE "MARICO") is one of India's leading consumer products companies, in the global beauty and wellness space. Marico touches the lives of 1 out of every 3 Indians, through its portfolio of brands such as Parachute, Saffola, Saffola FITTIFY Gourmet, Saffola ImmuniVeda, Saffola Mealmaker, Hair & Care, Parachute Advansed, Nihar Naturals, Mediker, Pure Sense, Coco Soul, Revive, Set Wet, Livon, Just Herbs, True Elements, Beardo and Plix. The international consumer products portfolio contributes to about 26% of the Group's revenue, with brands like Parachute, Parachute Advansed, HairCode, Fiancée, Purité de Prôvence, Ôliv, Lashe', Caivil, Hercules, Black Chic, Code 10, Ingwe, X-Men, Thuan Phat and Isoplus. Currently, Marico has seven operational manufacturing facilities in India located at Baddi, Guwahati (2 facilities), Jalgaon, Perundurai, Puducherry and Sanand.

During FY 2023 - 24, while Marico recorded a consolidated revenue of about INR 9653 crore (USD 1.2 Billion) through its products sold in India and chosen markets in Asia and Africa, **standalone revenue** which has been considered for computing Marico's GHG Emissions Intensities is INR 7002 crore³.



Marico's Operations landscape

³ Refer to Marico's Integrated report (Board's report section) - https://marico.com/investorspdf/Marico_Annual_Report_FY24.pdf

2 CLIMATE CHANGE

At Marico, we are striving to lead the industry in terms of environmental and social responsibility across every facet of our business operations and value chains. In 2017, we commenced Marico's 5-year Sustainability 1.0 Roadmap and those sustainability goals have been the value-based differentiator for the business. Through a cohesive and structured set of policies, strategies, and interventions, we were able to surpass the 5-year targets that we had set up across our material environmental, social and governance (ESG) related goals up to FY22.

Our Sustainability 2.0 Roadmap launched in 2022, functions as an anchor to achieve our Decade of Action (2030) vision and purpose. It comprises of over fifty key performance indicators across ESG parameters that are of material relevance to us and our stakeholders, now and into the future. To mitigate the environmental risks and climate change, we work extensively towards our emission reduction, energy efficiency, product sustainability and circularity, extended producer's responsibility, water stewardship and forestation.

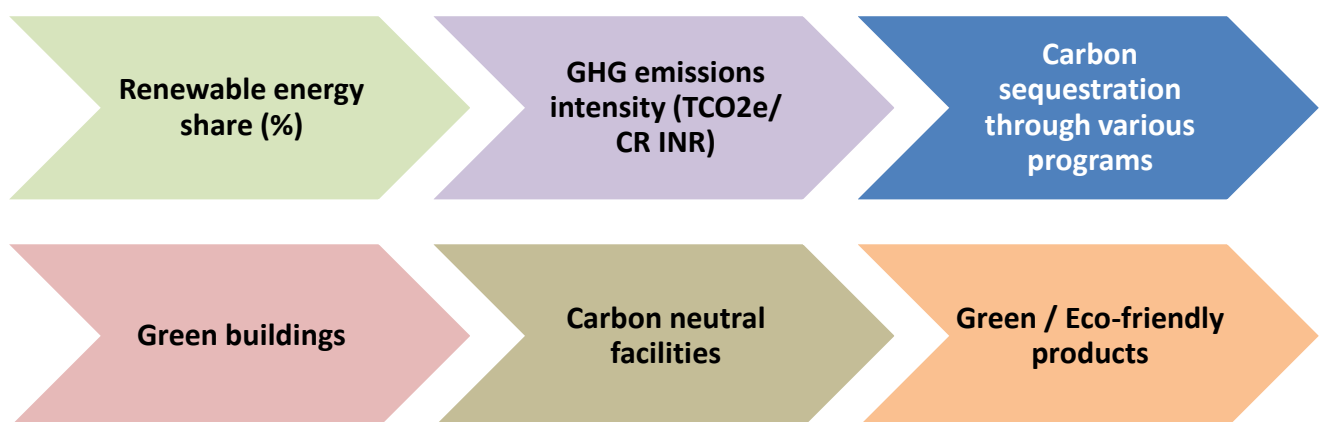
Marico's [Environment Policy](#)⁴ states our commitment towards environmental stewardship and decarbonization. The policy includes our priorities on decarbonization in our operations and value chain. Marico's Responsible Sourcing Framework⁵, '[Samyut](#)' includes greenhouse gas (GHG) emissions as a criterion for supplier engagement and evaluation.

Low carbon transition in operations and value-chain

Conservation of energy and minimization of organizational emissions footprint are comprehended by Marico as the first step towards establishing a climate-first business agenda.

Being cognizant of the climate-related risks that arise from high energy demand, we have developed a robust energy and carbon management strategy that prioritizes actions related to design for low energy process and equipment, energy efficiency, fossil fuel avoidance, renewable energy transition, carbon forestry, and reduction of carbon footprint across our product's life cycle.

The key business imperatives under this area include:



⁴ <https://sustainability.marico.com/uploads/1692554435064-environment-policy-pdf.pdf>

⁵ <https://sustainability.marico.com/uploads/1692587402623-responsible-sourcing-policy-pdf.pdf>

3 GOVERNANCE

Managing Director & CEO of Marico as a part of the Board of Directors oversee the sustainability performance of the company. He is responsible for sharing sustainability progress with other Board of Directors. The MD & CEO leads the ESG vision, agenda, and implementation at Marico that steer climate resilience and strategic risk mitigation efforts at Group Level. He actively tracks the progress against the sustainability targets and commitments of the company.

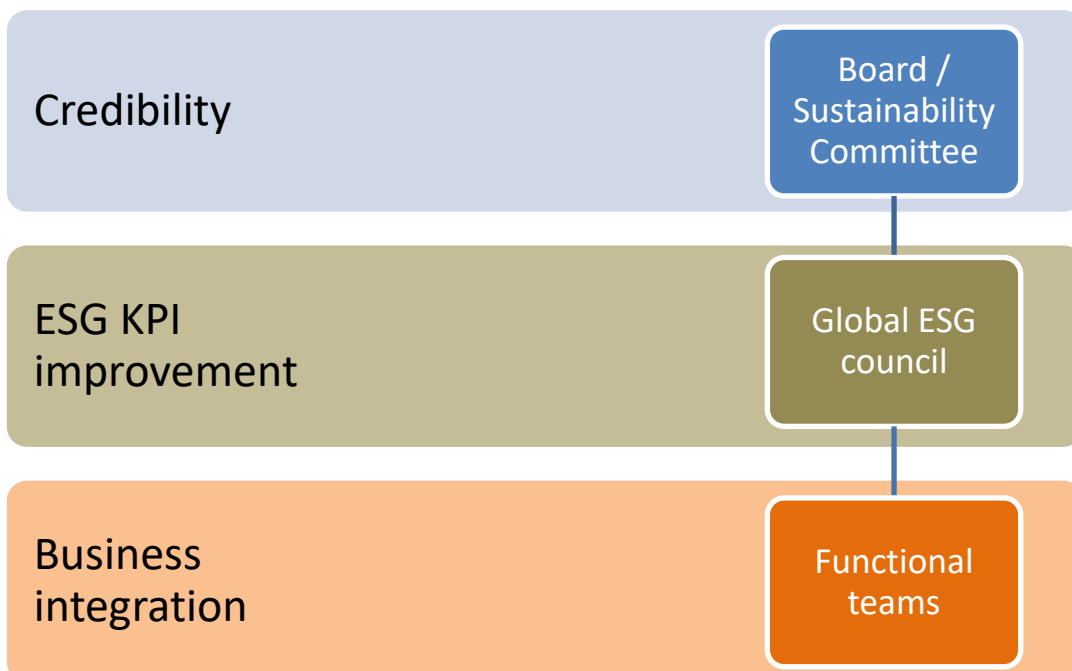
Sustainability Committee, constituted by senior leadership team members to assist MD, is responsible for overseeing the company's approach to climate change, including its strategies, policies, and initiatives. The Committee assesses and manages the risks and opportunities associated with climate change, such as physical risks, regulatory changes, and market shifts. The Committee monitors the company's performance against climate-related targets and ensures accurate and transparent reporting to stakeholders, including shareholders, regulators, and the public. The Committee is supported by the Global ESG Council which comprises of a 10-member functional leadership body that represents functions like Marketing, Procurement and Supply Chain, Technology, Human Resources, Finance & Governance, Manufacturing Operations and international business units. This Council is entrusted with the responsibility of steering Marico's ESG agenda (2030 roadmap) while ensuring timely completion of the YoY targets and milestones. Each Council member is anchored by a set of functional taskforces that work cohesively with the core sustainability team to promulgate the organization's ESG journey and impact.

Risk Management

Our risk management methodology guides us in identifying risks, evaluating their likelihood, estimating their impact, and creating a plan of action to address those risks. We have identified and addressed risks in various areas, including strategy, finance, operations, compliance and governance, and environment and social aspects. We have also implemented appropriate strategies to mitigate these risks.

Disclosure

We actively participate in the Carbon Disclosure Project (CDP) disclosure climate change and water security program. Through these disclosures, the company shares information on its carbon emissions, climate risks, low carbon opportunities, and energy consumption.



4 STANADARDS & REFERENCES

The GHG Inventory for FY 2023 -24 was prepared using **ISO 14064-1:2018** Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals. ISO 14064:1 establishes an approach for quantifying GHG emissions for the inventory.

5 OPERATIONAL BOUNDARIES

In line with the principles of ISO 14064-1, an '**Operational Control**' approach was considered. This approach represents the activities conducted by the work centers responsible for operational control and offers the highest potential for reducing greenhouse gas (GHG) emissions.

Marico's GHG emissions report includes its seven manufacturing plants. The scope of the assessment encompasses all operations carried out within the boundaries of each plant, such as manufacturing, utilities management, loading-unloading, maintenance, and other relevant activities.

List of seven manufacturing plants

Plant	Operational Control
Baddi	100%
Jalgaon	100%
Sanand	100%
Pondicherry	100%
Perundurai	100%
NER I	100%
NER II	100%

Table 2 Operational control percentage facility wise

6 REPORTING BOUNDARIES

6.1 INCLUSIONS & EXCLUSIONS

GHG inventory is prepared with the underlying business objective of identifying potential areas for reducing emissions wherever possible. Given this, it is determined to include any emission category that offers the potential to reduce GHG emissions through a direct reduction option or a market alternative.

GHG Emissions Intensities are computed based on Standalone India business revenue.

The emissions included in this report consist of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), Sulphur hexafluoride (SF₆), and nitrogen trifluoride (NF₃) for the following categories:

- Direct GHG emissions (hereafter referred to as Scope 1)
- Indirect GHG emissions from imported energy (hereafter referred to as Scope 2)
- Indirect GHG emissions from the upstream and downstream activities of an organization (hereafter referred to as Scope 3)

The emissions calculated for Marico pertain specifically to its manufacturing facilities, while the emissions generated by its corporate offices have been excluded from the inventory.

6.1.1 Direct GHG Emissions or Scope 1 Emission

Direct GHG emissions, or emissions that result from activities directly under Marico's control in the seven manufacturing plants, such as the combustion of fossil fuels to generate heat. Sources included are as follows:

- **Combustion of Fossil Fuels:** Emissions from diesel, petrol, natural gas, or coal used in boilers, furnaces, and other equipment within the manufacturing plant.

- **Mobile Combustion Sources:** Emissions from vehicles and mobile equipment operating within the manufacturing plant's premises, such as forklifts, trucks, or delivery vehicles.
- **Refrigerants:** Emissions from refrigeration systems for storing and preserving products, leaks, or improper handling of refrigerants.

Direct CO2 emissions from the combustion of Biomass shall not be included in Scope 1 but are reported separately.

6.1.2 Indirect GHG Emissions or Scope 2 Emissions

Scope 2 emissions account for the indirect emissions arising from the consumption of electricity generated. These emissions are calculated using location-based method. Scope 2 emissions (biogenic) from steam purchase are calculated using location-based method.

6.1.3 Scope 3 Emissions

Scope 3 emissions for this report consist of other indirect emissions across Marico's value chain, including activities such as upstream supply chain, downstream distribution, travel, waste management, and product end-of-life disposal.

The following eleven categories are relevant for Marico while reporting Scope 3 emissions. The detailed description of inclusion and exclusion criteria is given in **Annexure 1**.

Table 3 Scope 3 Emissions categories

No.	Category
1	Category 1 - Purchased goods and services
2	Category 2 - Capital goods
3	Category 3 - Fuel- and energy-related activities
4	Category 4: Upstream Transportation of Products
5	Category 5 - Waste generated in operations
6	Category 6 - Business travel
7	Category 7 - Employee commuting
8	Category 8 - Upstream Leased Assets
9	Category 9 - Downstream transportation & Distribution
10	Category 12 - End of Life treatment
11	Category 15 - Investment

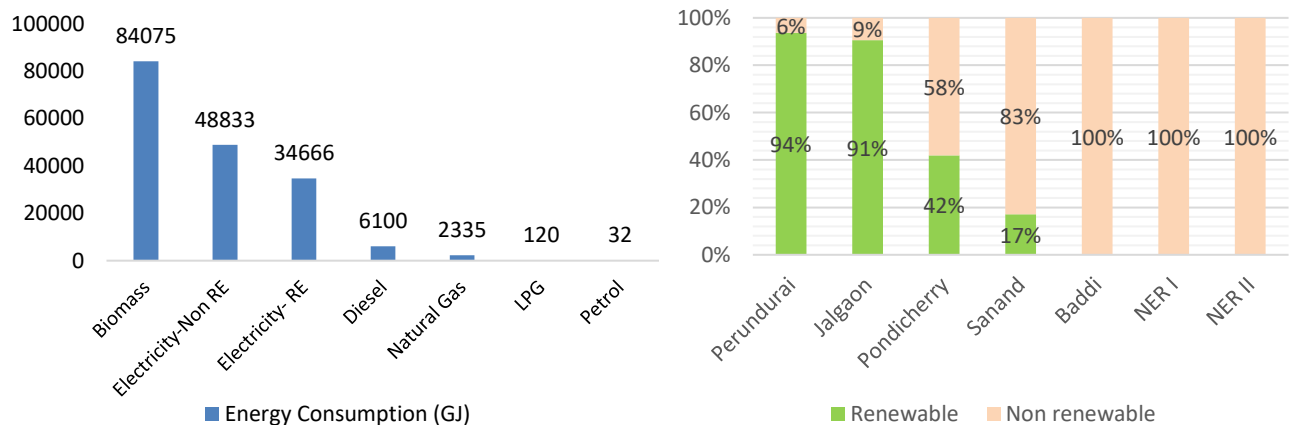
7 ENERGY MANAGEMENT PLAN

7.1 ENERGY PROFILE

Marico has been a pioneer in application of renewable energy into its operations, beginning its journey in 2001 with the introduction of a biomass-based steam boiler. This early adoption marked the company's commitment to sustainability and set the stage for ongoing improvements in its energy mix. Over the years, Marico has diligently worked to enhance the proportion of renewable energy within its operations, striving to balance environmental impact with operational efficiency.

The primary renewable sources include biomass, wind, and solar energy. Biomass, which includes agro-waste materials, provides a substantial portion of Marico's renewable energy, supporting both environmental benefits and operational efficiency. In electrical energy consumption, Wind power and solar power have helped to reduce dependency on grid power to 58%.

On the fossil fuel side, the company's energy consumption is dominated by grid electricity, which represents the highest proportion of fossil fuel use. This is followed by diesel, natural gas, LPG, and petrol for vehicles. While these fossil fuels are integral to certain operations, Marico's strategic focus remains on reducing their proportion over time



7.2 ENERGY MANAGEMENT APPROACH

Every facility has 'Energy Management Cell' which is responsible for developing, implementing, and monitoring energy efficiency initiatives. This cell is comprised of cross-functional members including representatives from Operations, Maintenance, Electrical, and Instrumentation departments. The Energy Management Cell plays a crucial role in strategizing energy reduction measures, overseeing daily energy management activities, and ensuring alignment with Marico's energy policy.

Awareness and Capacity Building

Building awareness and enhancing capacity are essential components of Marico's energy management strategy. The company conducts regular awareness programs to educate employees on the importance of energy efficiency. These programs are designed to foster a culture of energy consciousness and encourage proactive participation in energy-saving practices. Capacity building is further supported through targeted training sessions that focus on advanced energy management techniques, best practices, and industry innovations. Employees are also encouraged to pursue professional certifications in energy management, such as energy auditor or energy manager courses, to deepen their expertise and contribute effectively to energy efficiency projects.

Benchmarking (Internal & External)

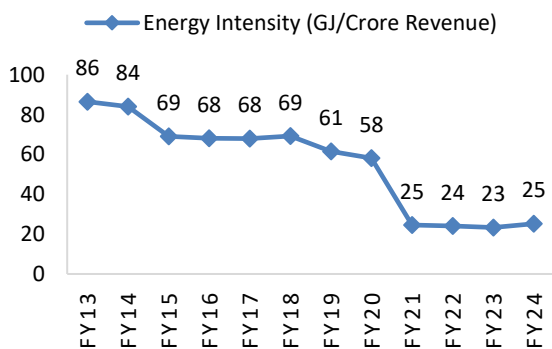
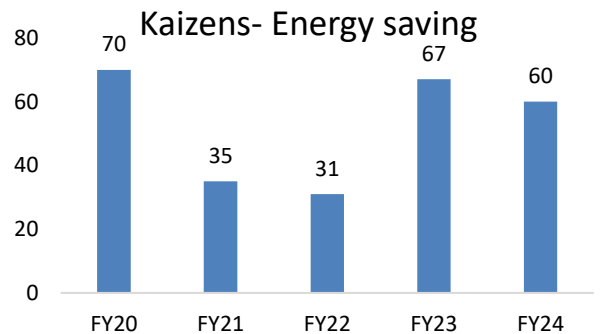
Benchmarking is done to identify best practices across industry and to develop targets. Internal benchmarking involves comparing energy consumption and efficiency metrics across different facilities while external benchmarking is done with industry peers and global standards. This dual approach helps Marico to set realistic targets, adopt effective strategies, and maintain its position as a leader in energy efficiency.

Energy Audit

Regular energy audits are carried out for energy conservation opportunities across all its facilities. The audit process begins with data collection, where information on energy consumption patterns, equipment performance, and operational practices is meticulously gathered. This data is then analyzed to assess the efficiency of current systems and pinpoint areas needing enhancement. Based on this analysis, actionable recommendations are formulated to implement energy-saving measures and process improvements. We have conducted energy audit for 3 units in FY 24 and projects are underway.

Kaizens

Marico has embedded the philosophy of kaizen (continuous improvement) into its manufacturing operations to boost energy efficiency, fostering a culture of ongoing advancement and operational gains. The kaizen process starts with employees proposing improvement ideas, including details on potential benefits and implementation costs. This systematic approach not only enhances energy efficiency but also fosters a proactive and engaged workforce, reinforcing Marico's commitment to sustainable and efficient manufacturing practices.

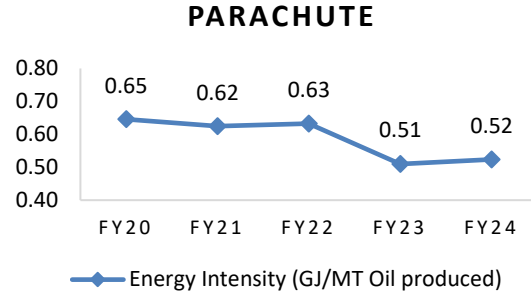
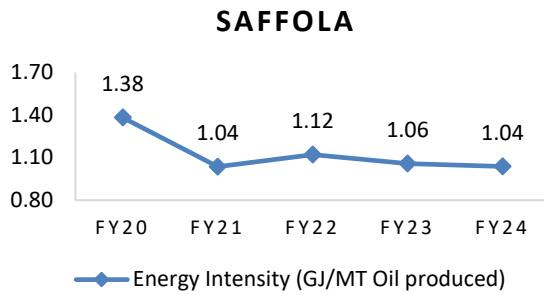


7.3 PERFORMANCE TRENDS

Through a continuous focus on innovation and adoption of new technologies, company has successfully reduced its energy consumption over the years. For FY2023-24, Marico's **energy intensity was maintained at 25.16 GJ per crore of revenue despite of increasing complexities** in manufacturing.

Marico has implemented a range of initiatives to reduce their energy intensity for its flagship products Saffola and Parachute. The company's efforts include optimizing

production techniques and adopting energy-efficient technologies. By balancing consumer needs with environmental responsibilities, Marico strives to minimize the ecological footprint of its operations. These initiatives reflect Marico's commitment to delivering high-quality products while actively working towards a more sustainable and environmentally responsible future.



7.4 ENERGY MANAGEMENT INITIATIVES IN FY 2023-24

Steps taken/impact on conservation of energy:

In pursuit of driving a sustainable business, your Company has pledged to upgrade its operational energy footprint. This commitment encompasses utilizing renewable energy sources in manufacturing facilities, implementing energy efficient technologies, and promoting eco-friendly practices within the environment. By prioritizing energy conservation, your Company aims to lessen its environmental footprint and contribute to a greener future. This year, your Company's resource conservation efforts focused on improving energy efficiency, process optimization and increasing usage of renewable energy. During the year under review, more than twenty-five initiatives were undertaken across the manufacturing locations to save energy of more than 3.2 lakh KWH/ annum. Some of the energy and fuel saving initiatives taken during FY 2023-24 are outlined below:

- Optimization of raw material and in-process material conveying system run hours in Puducherry plant. Installation of variable frequency drives for high-capacity rotating equipment.
- Synchronization of compressor and other utility equipment to reduce losses at lower input production runs at Perundurai plant.
- Usage of high efficiency induction motors at Jalgaon plant. Energy saving measures in expellers, cookers, and conveying equipment deployed at Perundurai plant.
- Variable Speed Drive (VSD) air compressor, timer-based operating system, and Variable Frequency Drive (VFD) installation at Sanand unit to reduce the power consumption for hair oil production. Improvement in physical refining process for Rice bran oil at Jalgaon unit for thermal energy reduction.

Steps taken for utilizing alternate sources of energy:

Marico is committed to achieve 'net-zero emissions' globally by 2040. Transitioning to renewable energy plays the most critical element of this roadmap that the Company has set up to shape a sustainable future. All Marico manufacturing facilities are 100% coal-free and are constantly focusing on transitioning to renewable sources for meeting its operational energy requirements. During the year under review, 67.4% of the total energy requirement (electrical and thermal) for operations were met through renewable sources.

Three significant renewable energy interventions in the year included:

- Increased energy requirements due to capacity expansion of Perundurai unit was catered through solar group captive model by entering into Power Purchase Agreement (PPA) with service provider. This initiative has supported in achieving 94% of Renewable energy consumption at this manufacturing unit.
- Perundurai unit promulgated renewable energy transition in its value chain (one of the third-party filling units) by entering a PPA for Hybrid power under a group captive model starting from February 2024.
- Solar installations at the Sanand unit have created 1MW renewable power for operations.

Capital investment on energy conservation equipment:

For the year under review, the capital investment on energy conservation projects was H 86.55 crores. Going forward, your Company will focus on increased adoption of solar wind hybrid power and deployment of storage capacity to address intermittency issues. Expansion of waste heat recovery technologies and other low-carbon technological interventions for process optimization and effectiveness will be considered for capital investment towards building a carbon neutral future.

8 GHG MISSIONS INVENTORY

8.1 BASELINE YEAR

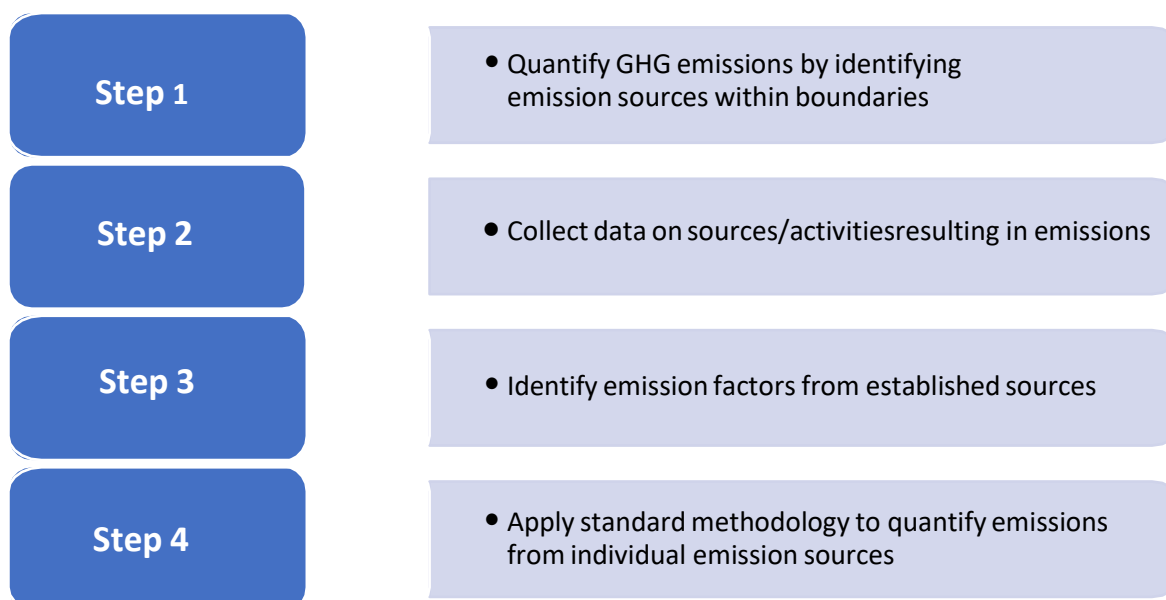
The emissions baseline provides a point against which one can measure any changes in emissions produced by the company in a reporting period. The baseline year considered is when the data for a particular location is available in entirety, and there has not been much change in terms of growth/ decline of products/ services offered by the company.

For Scope 1 and Scope 2, the baseline year of FY 13 is considered for emissions from the seven manufacturing locations. For Scope 3, the baseline year considered is FY 19.

8.2 REPORTING PERIOD

The reporting period covered in this report is the GHG inventory for FY 2023 - 24, i.e., 01 April 2023 to 31 March 2024.

8.3 METHODOLOGY



The quantification is based on two calculation-based methodologies, depending on the type of emission source:

- Emission sources in which there is a chemical transformation process (combustion, fixed or mobile) and indirect emissions from electricity consumption:

$$\text{Emissions of CO}_2 \text{ (t CO}_2\text{e)} = \text{Activity data} \times \text{Emission factor}$$

- Emission sources where there is no chemical transformation process (fugitive emissions), or in case the results in GHG are different than CO₂ are converted to tones of CO₂ equivalent using the Global Warming Potential (GWP) values provided by the IPCC⁶ (e.g., tones of CH₄):

$$\text{Emissions of CO}_2 \text{ (t CO}_2\text{eq.)} = \text{Activity data} \times \text{Global warming potential}$$

⁶ [AR6 WGI Report](#)

Activity data, emissions factors, and methodology per emission type

Table 4 Methodology of Emission types

Emission type	Activity Data	Emission Factor	Emission Basis	Methodology details
Direct emissions (Scope 1)	Energy consumption and Fuel volume	GHG Protocol	Net calorific basis	Fuel volume and energy consumption converted to GJ x Emission Factors Purchased volumes of commercial fuels such as natural gas, LPG, diesel, gasoline, heating oil and jet fuel were converted into Gigajoules (GJ) and multiplied by the published emission factors in the GHG Protocol
Indirect emissions (Scope 2)	Electricity consumption	CEA	Consumption basis	Purchased electricity x Emission Factor District heating x emission factor. Purchased electricity in kWh multiplied by the published emission factors in the CEA website
Indirect emissions (Scope 3)	Supplier Data, Distance Travelled, Energy Consumption	GaBi EF Database, GHG Protocol Cross Sectoral Tool, ICAO Carbon Emissions Calculator, India GHG Program	Distance-based method, Supplier calculations	For detailed information regarding GaBi Emission Factor, please refer to Annexure (1).

8.4 DATA SOURCES

For Scope 1 and 2 emissions, primary data collected directly within Marico's plant boundaries are used. There is no use of secondary data for the emission activities and sources. Regional and nationally available emission factors are used wherever available. Where such emission factors were not available, the emission factor from IPCC, US EPA, is used.

A combination of primary and secondary data with relevant assumptions is used to calculate Scope 3 emissions. GaBi EF Database, GHG Protocol Cross Sectoral Tool, ICAO Carbon Emissions Calculator, and India GHG Program are used for Scope 3 emission factors.

8.5 GHG EMISSIONS

Marico's emission profile for FY 23-24 is described in the sections below:

Scope 1 and 2 emissions:

Table 5 Scope 1 & 2 GHG emission for FY23-24

No	Type of energy	Emission in tCO2 eq.
1	Diesel	453.51
2	Petrol	2.32
3	Natural Gas	131.13
4	LPG	7.61
5	Refrigerants	457.26
6	Fire Extinguishers	0.77
	Total Scope 1	1052.6
7	Electricity	9712.4
	Total Scope 2	9712.4

Biomass emissions:

Table 6: Biogenic Emissions for FY23-24

No	Type of energy	Emission in tCO2 eq.
1	Biomass Emissions	8141.28
	Total Biogenic Emissions	8141.28

Scope 3 emissions:

Table 7: Scope 3 GHG emission for FY23-24

No.	Category	Emission in tCO2 eq.
1	Category 1 - Purchased goods and services	427797.4
2	Category 2 - Capital goods	3946.9
3	Category 3 - Fuel- and energy-related activities	4257.2
4	Category 4: Upstream Transportation of Products	51122.5
5	Category 5 - Waste generated in operations	6851.7
6	Category 6 - Business travel	2011.4
7	Category 7 - Employee commuting	735.7
8	Category 8 - Upstream Leased Assets	29697.9
9	Category 9 - Downstream transportation & Distribution	4770.4
10	Category 12 - End of Life treatment	29060.7
11	Category 15 – Investment	501.1
	Total Scope 3 emissions	560753.4

9 TARGETS & COMMITMENTS

9.1 TARGETS FOR SCOPE 1 & 2 EMISSIONS

We have set targets to reduce Scope 1 and Scope 2 GHG emissions by 93% through internal measures and offset the residual 7% emissions through sequestration and carbon offsets by 2030, from the baseline year FY13. For this, we evaluated several approaches to identify the most appropriate method for setting targets, considering our operational geography and ambition level. With the goal of aligning with the Paris Agreement and limiting climate change to well below 2 degrees, we decided to prioritize a 1.5-degree net-zero ambition, in alignment with the Science Based Targets initiative (SBTi).

Table 11: Targets for energy and emissions

Year	FY23-24	FY24-25	FY25-26	FY26-27	FY27-28	FY28-29	FY29-30
Scope 1 emission reduction Targets (tCO ₂ e)	1000	900	850	750	600	450	350
Scope 2 emission reduction Targets (tCO ₂ e)	9112.4	7823.2	6484.1	5194.9	3955.8	2716.7	1427.5
Scope 1 & 2 emission reduction targets (tCO ₂ e)	10112.4	8723.2	7334.1	5944.9	4555.8	3166.7	1777.5
Energy consumption (MWh)	50000.0	56518.7	59344.6	62311.9	65427.5	68698.8	72133.8
Non-renewable Energy consumption (MWh)	17545.3	17407.8	16972.6	13708.6	10795.5	7556.9	5554.3
Renewable energy share (%)	67.4%	72.0%	74.0%	80.0%	85.0%	90.0%	93.0%

Note- Targets are projected at 10% every year considering manufacturing, expanded product profile and evolving business dynamics.

Our Scope 1 and 2 emissions targets are set with reference to Science-Based Targets initiative (SBTi) principles. This commitment underscores our dedication to substantial and proactive emission reduction measures beyond the established standards. Further, we are in process of setting scope 3 targets in line with SBTi and we are aiming to get Scope 1,2 and 3 emission reduction targets approval by SBTi in near future.

NET ZERO COMMITMENTS:

As a responsible business that aspires to actively contribute to the climate action agenda, we have undertaken bold steps and commitments to go beyond compliance boundaries and proactively reduce our overall emissions' footprint across operations. To enact on this purpose and develop a climate-resilient business agenda now and into the future, we have declared our net zero emissions targets for global operations (own manufacturing facilities) for 2040. In India, however, we aspire to achieve net zero in operations (own manufacturing facilities) by 2030. Transition to renewables, investments in low-carbon technology options, carbon forestry and 100% phase-out of fossil fuels from our operations are the key enablers for the Company to transcend into its net zero, carbon neutral and climate resilient future.

ENABLERS:

- Inventory of direct and indirect emissions across operational footprint
- Thorough analysis of business risks and opportunities to create robust mitigation strategies and action plans.
- Investment in technologically advanced low-carbon innovations and systems towards further decarbonization of operational footprint

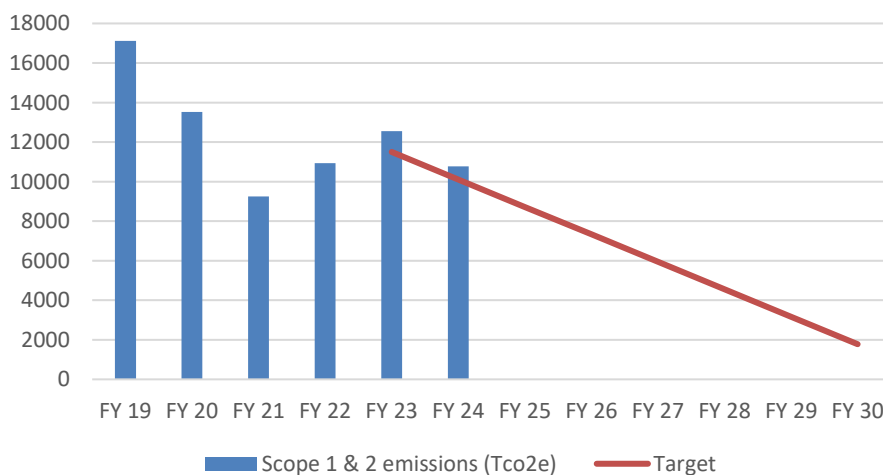
ACTIONS:

- Continue with zero-coal strategy across geographies that enable us to phase out the use of fossil fuel in operations.
- Integrate carbon neutrality across our existing and emerging product configurations.
- Transition to 100% renewable energy mix (electrical and thermal) across global operations
- Transition to 100% externally verified carbon neutral operations in India.
- Switch to certified sustainable built environment (certified green buildings) across corporate and major operational units.
- Track and report carbon sequestration potential from afforestation drives conducted across operational units.

9.2 PERFORMANCE TRENDS

Table 8: Scope 1,2 and 3 emissions for last 6 years

Emissions	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Scope 1 Emissions (tCO2eq.)	2894	1379.60	472.5	621.9	779.9	1052.6
Scope 2 Emissions (tCO2eq.)	14216	12140.40	8772	10309	11775.80	9712.4
Total Scope 1 and 2 Emissions (tCO2eq.)	17110	13520	9244.5	10930.9	12555.7	10765.0



Marico declared "Sustainability Ambition 2030" on **05 June 2022** with 8 focus areas and relevant targets for each for each KPI in focus areas. We continue to disclose our performance against short term and long term targets every year.

Table 9: Total Scope 3 emissions for last 6 years

Emissions	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Total Scope 3 Emissions (tCO2eq.)	507667	481048	516146	561192	547126	560753.4

Table 10: Scope 1,2 and 3 emissions intensity

Emissions	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Total Emissions Scope 1,2 and3 (tCO2eq.)	524777	494568	525390.5	5721223	559682	571518.4
Scope 1,2 and 3 emissions intensity ⁷ (tCO2eq. /Standalone Revenue in INR CR)	87.89	84.47	82.90	76.28	74.84	81.62

9.3 CARBON REDUCTION & OFFSET

Carbon Neutrality

At Marico, sustainability is considered a crucial business enabler that influences key strategic decisions. By embedding sustainability into its culture, Marico has committed to achieving a carbon-neutral future. The Perundurai plant operates entirely on renewable energy sources, supported by smart energy installations that enhance overall operational efficiency. Additionally, the plant hosts a Miyawaki forest spanning 3,000 sq. ft. on its premises. This afforestation initiative aims to create a natural carbon sink, offsetting any minimal environmental footprint from operations. Currently, 94% of the plant's energy needs are met through renewable sources. Rest 6% of energy requirement is met from non-renewable energy.

Energy consumption & emissions generation of Perundurai Plant

Table 11: Perundurai plant emissions

Perundurai- Energy & Emissions FY 2023-24			
No.	Type of energy	Energy in GJ	Emission in tCO2 eq
1	Diesel	967.44	71.93
2	LPG	120.43	7.61
3	Refrigerants	0.00	14.53
4	Fire Extinguishers	0.00	0.00
5	Electricity	30468.30	395.2
6	Biomass Emissions	17200.61	1753.24
	Total Energy	48756.78	
	Total Scope 1 + Scope 2		489.2
	Total Biogenic Emissions		1753.24

Carbon offset

In FY24, we effectively balanced emissions by offsetting 650 tons of CO2 through carbon credits, surpassing our generated emissions of 489.2 tons of CO2. These credits were purchased to support a solar power project located in Bhadla, Rajasthan, aligning our environmental initiatives with sustainable energy practices. With 94% renewable energy share and 6% met through carbon offsets, Perundurai manufacturing unit continues to function as a carbon neutral facility.



⁷ Note: Intensity numbers of past years are changed to align with new BRSR definitions.

Afforestation Initiative

In response to the depleting green cover and its impact on local environmental conditions and biodiversity, we engage in afforestation activities to combat global warming, reduce air pollution, prevent soil erosion, and create a favorable environment for local flora and fauna. The projects aim to increase the green cover around Marico's factory in the eco-sensitive zone. The local panchayat has allocated plots for this initiative, employing about 10 women from landless, SC/ST backgrounds to maintain the afforested site in Maharashtra. The benefits of our afforestation efforts extend far beyond environmental sustainability. These initiatives create socio-economic opportunities for local communities, fostering livelihood development in rural areas. Additionally, healthy forests provide essential ecosystem services such as cleaner air and water, improved soil health, and reduced flood risk. By nurturing these vital ecosystems, we contribute to a healthier planet and a brighter future for generations to come.

In Jalgaon, the afforestation program focuses on planting climate resilient Moringa crops to promote organic farming. In Gujarat, the Miyawaki method is used for planting saplings on GIDC-allocated land. In Perundurai, SIPCOT has allocated approximately 20 acres for Marico green cover projects. This initiative covers multiple states, including Rajasthan, Assam, Himachal Pradesh, Meghalaya, Andhra Pradesh, West Bengal, Maharashtra, Tamil Nadu, and Gujarat.

The most significant contribution of our afforestation efforts lies in carbon sequestration. As trees mature, they act as natural carbon sinks, absorbing and storing atmospheric carbon dioxide – a key greenhouse gas. This process actively mitigates climate change by reducing the overall amount of CO₂ present. In essence, our afforestation program serves as a potent tool for offsetting our operational carbon footprint. By actively removing CO₂ from the atmosphere, the trees we plant add value to our overall decarbonization strategy and futureproof our roadmap towards developing a climate-resilient business agenda.

10 UNCERTAINTY ANALYSIS

The possible areas of uncertainties in GHG emissions calculations have been identified based on the method of estimation/calculation, measurement, aggregation, and assumptions. Scope 1 and Scope 2 emission calculations, uncertainties are introduced through metering accuracy for activity data and emission factors.

Data on the make and model of the instruments used by the Marico team for inhouse metering and weighing of electricity and fuel respectively. Wherever the data on accuracy of these instruments was available, the accuracy range was taken from the specification sheet. Refer to Annexure 3 for the same. Wherever the data on accuracy was not available, and for the uncertainty around emission factors used, IPCC defaults were used from the GHG Protocol Uncertainty Calculation tool.

The GHG Protocol Uncertainty calculation tool intends to facilitate the aggregation and ranking of statistical parameter uncertainties due to random errors related with calculation of GHG emissions. It uses the first order propagation (Gaussian) method. This requires that that the distribution of measurement data converges to a normal distribution and that the individual uncertainties are smaller than 60% of the expected mean.

10.1 UNCERTAINTY OF SCOPE 1 & 2 EMISSIONS

Uncertainties were calculated at the facility level for each category of Scope 1 and Scope 2 emissions and aggregated at the facility level. The uncertainties around Scope 1 and Scope 2 emissions (by virtue of activity data and uncertainty) are summarized in the table below:

Table 12: Uncertainty ratings for Scope 1 and 2 emissions

Category of emissions	Source of emissions	Emissions (tCO2 eq.)	Uncertainty	Certainty Rating
Scope 1	Diesel	333.97	+/- 4.5 %	High
Scope 1	Petrol	1.98	+/- 9.4 %	Good
Scope 1	Natural Gas	134.65	+/- 7 %	Good
Scope 1	LPG	1.57	+/- 9.9 %	Good
Scope 1	Refrigerants	307.67	+/- 20.3 %	Poor
Scope 1	Fire Extinguishers	0.04	+/- 7.3 %	Good
Scope 2	Electricity	11775.82	+/- 3.5 %	High
NA	Biomass	9240.64	+/- 7.1 %	Good

The detailed facility wise calculations are shared in Annexure 2.

Uncertainty data for emission factors were taken from the GHG Protocol Uncertainty Calculations Tool.

10.2 UNCERTAINTY OF SCOPE 3 EMISSIONS

Uncertainty of Scope 3 emissions calculations vary with the source of activity data as well as emission factors. Since the activity data for Scope 3 emissions depends on data estimation methods employed by the supply chain partners (vendors, suppliers, distributors, and consumers), it is difficult to ascertain a quantitative estimate of the accuracy of such data.

This introduces an inherent uncertainty because of the various secondary data sources and assumptions used. These uncertainties have been mitigated by a consistently conservative approach in the calculations.

11 Annexure 1: Inclusions and Exclusions in GHG Inventory

Emission Type	Categories	Relevance	Inclusions/ Exclusions and Sources considered	Inventory Status	GHGs reported
Direct Emissions (Scope 1)	1. Stationary Combustion	✓	<ul style="list-style-type: none"> High Speed Diesel (HSD) for DG sets Natural Gas Liquified Petroleum Gas (LPG) Biomass Briquette (Bagasse based) (at following facilities: Baddi, Jalgaon, Pondicherry, Perundurai, NER-I, NER-II, Sanand) 	Relevant and Reported	CO2, CH4, N2O
	2. Mobile Combustion	✓	<ul style="list-style-type: none"> Petrol consumption by owned vehicles (at following facilities: Pondicherry, and Sanand) 	Relevant and Reported	CO2, CH4, N2O
	3. Process Emissions	✗	<ul style="list-style-type: none"> No direct emission of CO2 and any other GHG during the processing of products. 	Not-Relevant and Not-Reported	NA
	4. Fugitive Emissions	✓	<ul style="list-style-type: none"> Refrigerant usage in HVAC equipment,refilling of refrigerants including R22. (at following facilities: Jalgaon, Pondicherry, Perundurai,NER-I, NER-II, Sanand) Use of CO2 fire extinguishers for fire drill andfire incidents and CO2 refilling (at following facilities: Pondicherry, and Sanand) 	Relevant and Reported	HFCs such asR22, R32, R410A CO2
Energy Indirect Emissions (Scope 2)	1. Emissions from generation of purchased electricity	✓	<ul style="list-style-type: none"> Electricity consumption from grid at facilitieswith operational control (at following facilities: Baddi, Jalgaon, Pondicherry, Perundurai, NER-I, NER-II, Sanand) Emissions avoided through Renewable Energyfrom- IEX, Wind Power and Solar Power 	Relevant and Reported	CO2
	2. Emissions from generation of purchased heat	✗	<ul style="list-style-type: none"> No Purchase of heat for undertaking itsoperations. 	Not-Relevant and Not-Reported	NA

Emission Type	Categories	Relevance	Inclusions/ Exclusions and Sources considered	Inventory Status	GHGs reported
	3. Emissions from generation of purchased steam	✓	<ul style="list-style-type: none"> Purchase of steam for undertaking its operations. (Biogenic) 	Relevant and Reported	
Other Indirect Emissions (Scope 3)	1. Emissions from Purchased goods and services	✓	<ul style="list-style-type: none"> Chemicals used in processing which are having volume of less than 3% of total raw materials are not considered. Raw materials for 2P (produced at vendors end) products contributing less than 0.05% of overall Marico standalone revenue have been excluded from the report. Consumption of packaging materials is calculated basis sales volume. Active Bill of materials is used for calculation of packaging materials quantity. 2P products with volume less than 0.23% of total volume sold are not considered for report. Emissions from services included. Emissions from acquisitions considered under Category 15 as Marico only exercises a Financial Control on these subsidiaries. The computation of direct GHG Emission Intensity (Scope 1+2) is based on standalone India revenue which excludes revenue from acquired businesses. 	Relevant and Reported	CO2, CH4, N2O
	2. Emissions from Capital Goods	✓	<ul style="list-style-type: none"> CNO, Edible items, Food products, VAHO (at following facilities: Baddi, Jalgaon, Pondicherry, Perundurai, NER-I, NER-II, Sanand) 	Relevant and Reported	CO2, CH4, N2O
	3. Emissions from Fuel and Energy related activities (not included in scope 1 or 2)	✓	<ul style="list-style-type: none"> Emissions due to T&D losses in grid electricity transmission. No control over the fuel related upstream emissions of the large oil and gas companies. (at following facilities: Baddi, Jalgaon, Pondicherry, Perundurai, NER-I, NER-II, Sanand) 	Relevant and Reported	CO2, CH4, N2O

Emission Type	Categories	Relevance	Inclusions/ Exclusions and Sources considered	Inventory Status	GHGs reported
	4. Emissions from Upstream transportation and distribution	✓	<ul style="list-style-type: none"> Raw material movement through road transportation, ocean bulk carriers, and container vessels. All domestic raw materials transport is happening in 20 MT truck. Mileage of trucks is considered as same. Data for Materials which got rejected is not considered. (At following facilities: Baddi, Jalgaon, Pondicherry, Perundurai, NER-I, NER-II, Sanand) 	Relevant and Reported	CO2, CH4, N2O
	5. Emissions from Waste generated and disposal	✓	<ul style="list-style-type: none"> Non-hazardous waste considered that includes paper, plastic, wood, glass, metal waste. Hazardous waste considered that includes e-waste, ETP sludge, spent oil, cotton soaked with oil, Ink sludge. Disposal methods considered are recycling, waste going to landfill, and used as by-products. (At following facilities: Baddi, Jalgaon, Pondicherry, Perundurai, Paonta, NER-I, NER-II, Sanand) 	Relevant and Reported	CO2, CH4, N2O
	6. Emissions from Business travel	✓	<ul style="list-style-type: none"> Travel through road, railway, and air transportation methods. However, air emissions cover only CO2. Road transportation includes passenger vehicles (4-wheeled), autorickshaws (3-wheeled), Bus, Luxury bus. Railway transportation includes suburban and non-suburban trains. 	Relevant and Reported	CO2, CH4, N2O

Emission Type	Categories	Relevance	Inclusions/ Exclusions and Sources considered	Inventory Status	GHGs reported
			<ul style="list-style-type: none"> Data for international travel is excluded from calculation as scope is India operation. Data for Domestic business (exports) which is not part of Marico's India business is also excluded from calculation. (At following facilities: Baddi, Jalgaon, Pondicherry, Perundurai,NER-I, NER-II, Sanand) 		
	7. Emissions from Employee commuting	✓	<ul style="list-style-type: none"> Travel through road and railway transportation methods. Road transportation includes 2-wheelers, passenger vehicles (4-wheeled), autorickshaws (3-wheeled), Bus. Railway transportation includes suburban trains. For calculation of data, Highest no of employees working from office in particular month is considered as reference for all months. Actual data for 50% employees collected and extrapolated for all employees. 	Relevant and Reported	CO2, CH4, N2O
	8. Emissions from Upstream leased assets	✓	<ul style="list-style-type: none"> Emissions from Depots and third party Wherever Depot/ 3P is shared by multiple parties and separate energy meters are not available, consumption is calculated basis volume produced and multiplying it with the standard energy requirement which is also mentioned in vendor's agreement. Wherever bills for diesel consumption were not available, consumption is calculated by 	Relevant and Reported	CO2, CH4, N2O

Emission Type	Categories	Relevance	Inclusions/ Exclusions and Sources considered	Inventory Status	GHGs reported
			dividing the amount paid with standard rate of diesel in that month. <ul style="list-style-type: none"> • Wherever electricity bills are received bi-monthly or quarterly, consumption is calculated as average. • Wherever electricity bills are not available, consumption is calculated from electricity expenses and agreed standard electricity rate. 		
	9. Emissions from Downstream transportation and distribution	✓	<ul style="list-style-type: none"> • Finished Goods movement through road transportation. • Emissions from Depots • Most of the finished goods are packed in 12-20 Kg pack size, weight of each case is considered as 16 Kg. • Calculated road distance between Depot to Distributor using google maps. • Distributor to retailer distance- Top 5 cities selected and calculated distance for top 5 retailers. • Retailer to consumer distance is considered as 5 Km. 	Relevant and Reported	CO2, CH4, N2O
	10. Emissions from Processing of sold products	✗	<ul style="list-style-type: none"> • The intermediate use of the products sold is difficult to monitor and record. • No control over the usage and associated emissions. 	Not Relevant and Not Reported	NA
	11. Emissions from Use of sold products	✗	<ul style="list-style-type: none"> • The eventual end use of the products sold is difficult to monitor and record. 	Not Relevant and Not Reported	NA

Emission Type	Categories	Relevance	Inclusions/ Exclusions and Sources considered	Inventory Status	GHGs reported
			<ul style="list-style-type: none"> No control over the usage and associated emissions. 		
	12. Emissions from End-of-life treatment of sold products	✓	<ul style="list-style-type: none"> End of life treatment for 50% of plastic is disposed as land filled and 50% as recycled. (at following facilities: Baddi, Jalgaon, Pondicherry, Perundurai, NER-I, NER-II, Sanand) 	Relevant and Reported	CO2
	13. Emissions from Downstream leased assets	✗	<ul style="list-style-type: none"> No assets have been leased. 	Not-Relevant and Not-Reported	NA
	14. Emissions from Franchises	✗	<ul style="list-style-type: none"> No franchises under control. 	Not-Relevant and Not-Reported	NA
	15. Emissions from Investments	✓	<ul style="list-style-type: none"> Emissions are calculated based on the equity share. 	Relevant and Reported	CO2
Other Indirect Emissions	1. Others (Example: work from home)	✗	<ul style="list-style-type: none"> Most of the employees are working in office space and manufacturing facilities. No control and no influence on the energy consuming devices used by employees at home. 	Not-Relevant and Not-Reported	NA

12 Annexure 2: Scope 1 and Scope 2 emissions calculations

- Diesel consumption related emissions

Diesel consumption (KL)								
Month	Baddi	Jalgaon	Pondicherry	Perundurai	NER I	NER II	Sanand	Total
	HSD	HSD	HSD	HSD	HSD	HSD	HSD	
Apr-23	0.040	1.609	2.220	3.146	1.638	3.690	0.000	12.343
May-23	0.590	0.729	2.610	3.188	1.276	1.506	4.800	14.698
Jun-23	0.020	0.866	6.439	-1.479	1.895	3.040	0.000	10.782
Jul-23	0.830	0.873	6.094	0.532	1.796	2.252	2.800	15.177
Aug-23	0.080	0.870	2.363	2.095	1.085	2.096	3.400	11.989
Sep-23	0.451	1.452	10.571	4.528	2.102	2.425	0.000	21.529
Oct-23	0.000	1.545	5.661	5.537	1.321	2.338	1.000	17.402
Nov-23	0.000	0.000	4.089	3.153	1.450	1.561	0.000	10.253
Dec-23	0.000	0.000	3.016	2.411	4.130	2.927	0.800	13.284
Jan-24	0.000	2.203	6.296	3.130	3.904	3.985	0.600	20.117
Feb-24	0.000	0.215	6.693	0.255	3.405	2.046	0.000	12.614
Mar-24	0.000	1.393	0.000	0.005	1.792	2.512	1.200	6.901
Total (kL)	2.011	11.755	56.052	26.500	25.793	30.378	14.600	167.089
Total (kg)	1707.339	9980.156	47587.800	22498.688	21898.342	25790.925	12395.400	141858.649
Total (GJ)	73.416	429.147	2046.275	967.444	941.629	1109.010	533.002	6099.922
Total tCO ₂ eq.	5.458	31.906	152.135	71.927	70.008	82.452	39.627	453.514

- **Petrol Consumption related emissions**

Petrol consumption (KL)			
Month	Pondicherry	Sanand	Total
	Petrol	Petrol	Petrol
Apr'22	0.065	0.021	0.086
May'22	0.062	0.000	0.062
Jun'22	0.000	0.000	0.000
Jul'22	0.085	0.000	0.085
Aug'22	0.094	0.000	0.094
Sept'22	0.101	0.010	0.111
Oct'22	0.084	0.000	0.084
Nov'22	0.077	0.036	0.113
Dec'22	0.056	0.000	0.056
Jan'23	0.111	0.000	0.111
Feb'23	0.056	0.000	0.056
Mar'23	0.111	0.000	0.111
Total (kL)	0.902	0.067	0.969
Total (kg)	674.566	50.053	724.619
Total GJ	29.883	2.217	32.101
Total tCO2 eq	2.157	0.160	2.317

- **Natural Gas consumption related emissions**

Month	Natural gas consumption at Sanand (MMBTU)	Total natural gas (MMBTU)
Apr-23	63.140	63.140
May-23	125.460	125.460
Jun-23	152.610	152.610
Jul-23	173.090	173.090
Aug-23	286.02	286.020
Sep-23	276.90	276.900
Oct-23	279.91	279.910
Nov-23	268.68	268.680
Dec-23	172.50	172.500
Jan-24	151.880	151.880
Feb-24	137.650	137.650
Mar-24	125.510	125.510
Total	2213.350	2213.350
Total GJ	2335.208	2335.208
tCO2e	131.134	131.134

- **LPG consumption related emissions**

Month	LPG Consumption at Perundurai (Kg)	Total LPG consumption (Kg)
Apr-23	452.000	452.000
May-23	239.000	239.000
Jun-23	228.000	228.000
Jul-23	110.000	110.000
Aug-23	210.000	210.000
Sep-23	0.000	0.000
Oct-23	375.000	375.000
Nov-23	170.000	170.000
Dec-23	0.000	0.000
Jan-24	42.000	42.000
Feb-24	510.000	510.000
Mar-24	210.000	210.000
Total (KG)	2546.000	2546.000
Total (GJ)	120.426	120.426
tCO2e	7.606	7.606

- Fire extinguisher emissions

Month	Jalgaon	Pondicherry	NER I	NER II	Sanand	Total (Kg)
Apr-23	9.000	0.000	0.000	0.000	9.000	18.000
May-23	0.000	0.000	139.500	99.000	0.000	238.500
Jun-23	0.000	0.000	0.000	18.000	40.500	58.500
Jul-23	0.000	0.000	0.000	0.000	0.000	0.000
Aug-23	0.000	36.000	54.000	0.000	0.000	90.000
Sep-23	0.000	0.000	0.000	85.500	0.000	85.500
Oct-23	0.000	0.000	0.000	0.000	0.000	0.000
Nov-23	0.000	0.000	0.000	0.000	0.000	0.000
Dec-23	0.000	0.000	0.000	0.000	40.500	40.500
Jan-24	0.000	0.000	139.500	0.000	0.000	139.500
Feb-24	0.000	0.000	0.000	0.000	0.000	0.000
Mar-24	0.000	103.500	0.000	0.000	0.000	103.500
Total	9.000	139.500	333.000	202.500	90.000	774.000

- Refrigerant related emissions

Plant	Unit of Measurement	R134a	R22	R404a	R32	R410a	Total
Baddi	Kg	0.000	0.000	0.000	0.000	0.000	0.000
Jalgaon	Kg	0.000	3.500	0.000	3.500	0.000	26.993
Pondicherry	Kg	0.000	0.000	0.000	2.750	31.750	13.961
Perundurai	Kg	0.000	3.500	0.000	0.000	3.400	8.335
NER I	Kg	0.000	17.900	0.000	13.000	0.000	39.089
NER II	Kg	0.000	10.000	1.000	11.900	1.710	58.320
Sanand	Kg	0.000	0.000	0.000	0.000	124.000	160.969
Total Tons	MT	0.000	0.035	0.001	0.031	0.161	
	100-year GWP[1]	1530.000	1960.000	2023.480	771.000	2255.500	
	Total tCO2 emission	0.000	68.404	2.023	24.017	362.820	457.264

Gas	R404a	HFC 125	HFC 134a	HFC 143a
Composition ⁸ (%)	100	44	4	52
100-year GWP	2023.48	3740	1530	609

Gas	R410a	HFC32	HFC 125
Composition (%)	100	50	50
100-year GWP	2255.5	771	3740

- Electricity related emissions

(KWH)	Baddi	Jalgaon		Pondicherry	Perundurair			NER I	NER II	Sanand			Total
	EB	EB	Solar	EB	EB	Wind	Solar	EB	EB	EB	Solar	Wind	
Apr-23	15340	89188	58544	393680	285040	69994	32826	113618	107078	458980	31804		1688918
May-23	16200	82891	70168	198280	131826	645984	33989	140941	135748	386600	16212		1892828
Jun-23	20280	129103	58736	430940	4	758596	31451	137236	129645	868970	36346		2632758
Jul-23	18400	173772	36496	467800	0	850964	29525	136944	137280	550040	23731		2454476
Aug-23	20460	172371	38168	277920	6	691954	31556	149502	144509	588180	7613		2153795
Sep-23	18480	155465	35672	191560	401	531799	210405	150937	145590	359080	128212		2138006
Oct-23	13880	122186	45536	278160	0	543163	225546	122710	95311	333620	148888		2154546
Nov-23	12660	140002	37104	212100	2	457926	177480	109817	101103	229660	105510		1760842
Dec-23	15540	146004	40832	384340	0	592930	123088	124070	100282	311120	113902		2075194
Jan-24	15980	89003	41392	307980	5607	157638	172441	101770	89751	284100	119134		1557238
Feb-24	12480	99188	48520	335000	582	466298	260016	115705	109620	227084	121328	77636	2133473
Mar-24	12540	171661	57400	17860	128452	506210	309731	136123	126867	194604	151734	67396	2190309
Total (KWh)	192240	1570834	568568	3495620	551920	6273456	1638053	1539372	1422783	4792038	1004414	145032	24832384
Total (GJ)	692.06	5655.00	2046.84	12584.23	1986.91	22584.44	5897	5541.73	5122.01	17251.33	3615.89	522.11	89396.58
tCO ₂ eq	137.64	1124.71		2502.86	395.17			1102.19	1018.71	3431.09			9712.40

⁸ <https://archive.ipcc.ch/ipccreports/tar/wg3/index.php?idp=144>

- Biomass related emissions**

(MT)	Jalgaon	Pondicherry	Perundurai	Total
	Biomass	Biomass	Biomass	
Apr-23	96.245	112.072	67.161	275.478
May-23	85.615	44.403	154.952	284.970
Jun-23	102.200	130.090	159.266	391.556
Jul-23	149.655	132.907	176.555	459.117
Aug-23	115.795	72.525	135.402	323.722
Sep-23	91.810	70.906	147.599	310.315
Oct-23	96.000	50.412	132.138	278.550
Nov-23	100.915	47.782	108.914	257.611
Dec-23	61.505	78.068	184.292	323.865
Jan-24	65.250	72.645	0.172	138.067
Feb-24	57.010	101.865	86.609	245.484
Mar-24	52.880	0.000	129.752	182.632
Total	1074.880	913.675	1482.811	3471.366
Total GJ	12468.608	10598.630	17200.611	40267.849
Total CO2eq	1270.913	1080.308	1753.241	4104.462

- Steam related emissions**

(MT)	Jalgaon	Total
	Biomass	
Apr-23	1144.190	1144.190
May-23	762.708	762.708
Jun-23	1323.610	1323.610
Jul-23	1630.322	1630.322
Aug-23	1693.556	1693.556
Sep-23	1639.049	1639.049
Oct-23	1157.936	1157.936
Nov-23	1656.924	1656.924
Dec-23	1624.372	1624.372

Jan-24	884.121	884.121
Feb-24	784.666	784.666
Mar-24	1391.172	1391.172
Total	15692.626	15692.626
Total GJ	43807.064	43807.064
Total CO2 eq	4036.814	4036.814

- Emission factors for GHG calculations

Emission Factor	Calorific Value ⁹		Emission factors CO2 + CH4 + N2O			Density ¹⁰	
	Value	Unit	Value	Unit	Emission basis	Value	Unit
Fuel - Diesel	0.04	GJ/Kg	74.35	Kg CO2 eq./GJ	Net Calorific Basis ¹¹	849	kg/kL
Fuel - Briquette	0.01	GJ/Kg	101.93	Kg CO2 eq./GJ	Net Calorific Basis		
Fuel - Bagasse	0.01	GJ/Kg	101.93	Kg CO2 eq./GJ	Net Calorific Basis		
Fuel - LPG	0.05	GJ/Kg	63.16	Kg CO2 eq./GJ	Net Calorific Basis		
Fuel - FO	0.04	GJ/Kg	77.65	Kg CO2 eq./GJ	Net Calorific Basis		
Petrol	0.04	GJ/kg	72.18	Kg CO2 eq./GJ	Net Calorific Basis ¹²	747.5	kg/kL
Electricity			0.72	Kg CO2 eq./ kWh	Grid Basis ¹³		
Fuel - Biodiesels	0.03	GJ/Kg	71.05	Kg CO2 eq./GJ	Net Calorific Basis		
Fuel - Natural Gas	0.05	GJ/kg	56.16	Kg CO2 eq./GJ	Net Calorific Basis		

⁹ https://ghgprotocol.org/sites/default/files/Emission_Factors_from_Cross_Sector_Tools_March_2017.xlsx

¹⁰ https://www.engineeringtoolbox.com/fuels-densities-specific-volumes-d_166.html

¹¹ https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf

¹² https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_3_Ch3_Mobile_Combustion.pdf

¹³ [Carbon Credit](#)

13 Annexure 3: Base data

Scope	Data point	Data Source		Requirements	Plant Location					
		First level	Second level	Details	Pondicherry	Perundurai	Jalgaon	Sanand	NER-1	NER-2
Scope2	Electricity	Electricity meter	Electricity bills	Make/ Model Number of meter	Marico Meter: Make: Schneider Model No: Power logic EM7290 (Marico Energy meter) EB Meter: Make: Secure Model No: Premier 300	Main meter Make-GENUS Serial no. - 5993920	Data not available	UGVCL - SECURE /Apex 150, Solar - SECURE/ Premier 300	MAKE-SECURE, MODEL-PREMIER 300, TYPE-E3M054,3PH, 4wire	MAKE-SECURE, MODEL-PREMIER300, TYPE-E3M054,3PH,4 wire
Scope1	Diesel	Dip measurement	SAP entry							
NA	Biofuel/ Briquette	Weight of material from weigh bridge	SAP entry	Make/ Model Number of weighing platform	Make: Essae Model No: SI-810	Make - Mettler Model No - TMD IND 560Sr. No. - 2718130719	NA	Make: Akshar Agency Model:100/200-E99 Least Count 400 MiliGram	MAKE-EASSAE SERIAL NO-S1850C2 29678 MAX CAPCITY -150KG	Make/Model: Precia Molen Range; upto 100 kg Readability: 0.010 kg S. No/ID: 03F980739/W8 150-A

Scope 1	Fire extinguisher	Weight of fire extinguishers	Service report	Make/Model Number of weighing platform	Make - Ecobright	Make - Extane	Make-Honda	Make: Akshar Agency Model:100/200-E99 Least Count 400 MiliGram	MAKE-EASSAE SERIAL NO-S1850C2296 78MAX CAPCITY - 150KG	Make/Model: Precia Molen Range; upto 100 kg Readability: 0.010 kg S. No/ID: 03F980739/W8150-A
Scope 1	Refrigerant	Weight of gasfilled	Service report	Make/Model Number of weighing platform	Make - Ecobright	Make - Extane	Make-Honda	Make: Akshar Agency Model:100/200-E99 Least Count 400 MiliGram	MAKE-EASSAE SERIAL NO-S1850C2296 78MAX CAPCITY - 150KG	Make/Model: Precia Molen Range; upto 100 kg Readability: 0.010 kg S. No. /ID: 03F980739/W8150-A
Scope 1	Natural gas	Natural gasmeter	Bill	Make/Model Number of meteron site	NA	NA	NA	Make: ROMET LTD Model: Adem PTZ Ver: D1 Temp: -40 to 50C	NA	NA
Scope 1	Petrol	Petrol pump meter	Bill		NA	NA	NA	NA	NA	NA
Scope 1	LPG	Weight of cylinder	SAP entry	Make/Model Number of weighing platform	NA	Make - Extane	NA	NA	NA	NA
NA	Testing of Calorific Value of fuels			Make/Model Number of bomb calorimeter	NA	NA	ATHENA - ATB Digital Bomb Calorimeter Model-ATB – 5A /6/7	NA	NA	NA

14 Annexure 4: Data sources

Data point	Data Source	
	First level	Second level
Electricity	Electricity meter	Electricity bills
Diesel	Dip measurement and calculating the volume available in tanks	SAP entry
Biofuel/ Briquette	Weight of material from the weighbridge	SAP entry
Fire extinguisher	Weight of fire extinguishers	Service report
Refrigerant	Weight of gas-filled	Service report
Natural gas	Natural gas meter	Bill
Petrol	Petrol meter at the petrol pump	Bill
LPG	Weight of cylinder	SAP entry
Production	Annual Production	SAP entry
Carbon Offset	Sequestration report	Vendor Certificate

15 Annexure 5: Assurance statement

Assurance of direct emissions (Scope 1&2) was covered as part of Reasonable Assurance of BRSR Core parameters. The FY23-24 reasonable assurance statement can be viewed [here](#).

Assurance of indirect emissions (Scope 3) was covered as Limited Assurance. The FY23-24 limited assurance statement can be viewed [here](#).