



GREEN HOUSE GAS (GHG)

EMISSIONS REPORT

Index

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INDEPENDENT VERIFICATION STATEMENT

Introduction

DNV Business Assurance India Private Limited ('DNV') has been commissioned by the management of Marico Limited ('Marico' or 'the Company', Corporate Identity Number L15140MH1988PLC049208) to carry out a limited level of verification of its environmental data related to its energy, greenhouse gas (GHG) emissions, fresh water consumption and waste disposed disclosures that shall form part of its non-financial disclosures under natural capital section of its Integrated Report 2022-23 prepared by Marico based on the <IR> framework.

This customised verification engagement has been carried out in accordance with DNV's verification methodology VeriSustain™¹, which is based on our professional experience, international assurance best practice including International Standard on Assurance Engagements 3000 (ISAE 3000) Revised* and the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines. This verification provides a limited level of verification and applies a ±5% materiality threshold for errors and omissions.

Marico is responsible for the collection, analysis, aggregation and presentation of data and information related to its environmental data which has been prepared by the Company based on a) The Marico's GHG emission inventorisation SOP (Standard operational procedure) (SOP/Marico/GHGInventory/FY21/001; dated: April 2021), b) World Resources Institute's/ World Business Council on Sustainable Development's (WRI/WBCSD) GHG Protocol Corporate Accounting and Reporting Standard (GHG Protocol) and c) The Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories (2006) d) GRI standards on energy and emissions (GRI 302: Energy 2016[#], GRI 305: Emissions 2016[#]) e) GRI standards on water and waste (GRI 303: Water and Effluents 2018[#], GRI 306: Waste 2020[#]) and ISO14064-1 'Greenhouse Gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals'.

Our responsibility of performing this work is to the management of Marico only and in accordance with scope of work agreed with the Company. The verification engagement is based on the assumption that the data and information provided to us is complete, sufficient and true. We disclaim any liability or co-responsibility for any decision a person or entity would make based on this verification statement. The verification was carried out during March 2023 - July 2023 by a team of qualified sustainability and GHG assessors.

Scope, Boundary and Limitations of Verification

The scope of work agreed upon with Marico includes the following:

- The verification of energy consumption, energy intensity and reduction in energy consumption, GHG (Scope 1, Scope 2 and selected categories of Scope 3) emissions, GHG intensity and reduction in GHG emissions, Fresh water consumption, Water intensity, Hazardous and Non-hazardous waste disposal covering the period 1st April 2022 to 31st March 2023.
- Verification of consolidated environmental indicators from Marico's manufacturing locations in India, ie Perundurai in Tamil Nadu, Puducherry, Baddi in Himachal Pradesh, Jalgaon in Maharashtra, Guwahati NER 1 and NER 2 (North East Region) in Assam comprising of:
 - Scope 1 emissions due to a) Fossil Fuels used in manufacturing processes; b) Fossil Fuels used like diesel in generators and boilers; c) LPG consumption, d) Fossil Fuels used in mobile sources like company owned vehicles and e) Refrigerants release in air conditioners and refrigerators, f) CO₂ release due to use of fire extinguishers.
 - Scope 2 emissions due to use of purchased electricity from the grid.
 - Scope 3 emissions currently monitored and declared by Marico, comprising emissions due to a) Purchased goods and services; b) Capital goods; c) Fuel and energy related activities; d) Upstream transportation of products; e) Waste generated in operations; f) Business travel; g) Employee commute; h) Upstream leased assets; i) Downstream transportation & distribution; j) End of life treatment; k) Investments
 - Biogenic emissions due to consumption of biomass briquets and rice husk for the boiler operations.

¹The VeriSustain protocol is based on the principles of various assurance standards including International Standard on Assurance Engagements 3000 (ISAE 3000) Revised (Assurance Engagements other than Audits or Reviews of Historical Financial Information) and the GRI Principles for Defining Report Content and Quality, international best practices in verification and our professional experience; and is available on request from www.dnv.com

[#] GRI 302: Energy 2016- 302-1, 302-3; GRI 305: Emissions 2016- 305-1, 305-2, 305-3, 305-4; GRI 306: Waste 2020- 306-5; GRI 303: Water and Effluents 2018- 303-3

- Water withdrawal from the surface water sources like municipal water, tanker water, harvested rainwater, water consumption, water consumption (Product) and water discharge
- Disposal of Hazardous and Non-hazardous waste.

During the verification process, we did not come across limitations to the scope of the agreed verification engagement. Our verification was limited to the reported environmental data presented in the Natural capital section of the Integrated Report 2022-23.

Verification Methodology

We planned and performed our work to obtain the evidence we considered necessary to provide a basis for our limited verification opinion. As part of the verification process, we

- Obtained an understanding of the systems used to generate, aggregate and report energy data at the sites visited by us;
- Onsite verification performed to sample manufacturing locations in India ie. Perundurai and Pondicherry(coconut oil expelling), Sanand (value added hair oils) to verify the Company's internal protocols, processes, and controls related to the collection and collation of its energy and GHG emissions assertions.
- Desk review was conducted for all the manufacturing locations to review the systems for energy and GHG data management.
- Obtained an understanding of energy and GHG data management systems and the Completeness, Accuracy and Reliability of the data;
- Examined and reviewed the following environmental performance data on a sample basis:
 - Direct Energy and fuel sources in the process at various sites.
 - Indirect energy by purchased electricity consumption at various sites.
 - Scope 3 emission categories and basis of estimations.
 - Reductions achieved through energy conservation and consequent emission reductions.
 - Water withdrawal, Water consumption (Utilities and operations), Water consumption (product), Water discharge.
 - Generation and disposal of Hazardous and Non-hazardous waste.
- Procedures and practices for GHG, energy and fuel consumption, measurement, monitoring and review.
- Evaluated the environmental performance data using the reliability principle together with Marico’s methodology on data analysis, aggregation, and measurement and reporting.

Conclusions

On the basis of the work undertaken, nothing has come to our attention to suggest that the GHG and energy performance data of Marico for the year 2022-23 brought out below are not materially correct. Some data inaccuracies identified during the verification process were found to be attributable to transcription, interpretation and aggregation errors and the errors have been corrected.

Emissions:

Performance Indicator	Factors	Value for FY 2022-23
Scope 1 Emissions	a) Fossil Fuel used in Stationary equipment’s - manufacturing processes and standby diesel generators, furnace oil used in boilers b) Fossil Fuel used in Mobile equipment’s - company owned vehicles, c) Fugitive emissions - CO ₂ release due to use of fire extinguishers and Refrigerants release in air conditioners and refrigerators.	779.88 tCO ₂ e
Scope 2 Emissions	Purchased electricity from the grid (Location Based)	11,775.82 tCO ₂ e
	Total Scope 1 & Scope 2 Emissions	12,555.70 tCO ₂ e
Scope 3 Emissions	a) Purchased goods and services; b) Capital goods; c) Fuel and energy related activities; d) Upstream transportation of products; e) Waste generated in operations; f) Business travel#; g) Employee commute; h) Upstream leased assets; i) Downstream	5,47,125.66 tCO ₂ e

	transportation & distribution; j) Investments	
	Total Scope 1, Scope 2 & Scope 3 Emissions	5,59,681.37 tCO ₂ e
Other Scope 1 Emissions	Biogenic emissions [®] released from use of Biomass (Briquette) in boilers	9,240.64 tCO ₂ e
GHG Emission Intensity	GHG Emission Intensity (Total Scope 1 & 2 emissions/ Total revenue for the year)	1.76

Energy:

Performance Indicator	Factors	Value for FY 2022-23
Energy Consumption within Marico	<i>Non-renewable sources:</i> fuel used in manufacturing processes, diesel generators, furnace oil used in boilers, purchased electricity from the grid	58,984.83 GJ
	<i>Renewable sources:</i> Biomass used in boilers, electricity from solar and wind energy	1,15,384.61 GJ
Energy Intensity	Energy Intensity ratio (Total Energy consumption in GJ/ Total revenue for the year)	24.42

Baseline Energy (Restatement due to factor difference/error):

Performance Indicator	Factors	Value for FY 2012-13
Energy Consumption within Marico	<i>Non-renewable sources:</i> fuel used in manufacturing processes, diesel generators, furnace oil used in boilers, purchased electricity from the grid	224931.46 GJ
	<i>Renewable sources:</i> Biomass used in boilers	69,815.01 GJ
Energy Intensity	Energy Intensity ratio (Total Energy consumption in GJ/ Total revenue for the year)	90.61

Water Consumption:

Performance Indicator	Factors	Value for FY 2022-23
Surface water withdrawal	<i>Collected or harvested rainwater</i>	5041.00 KL
Ground water withdrawal	<i>Underground water- borewell</i>	16336.61 KL
Third party water withdrawal	<i>Municipal Supply & Taker water</i>	107453.60 KL
Total water withdrawal	<i>Surface water + Ground water + Third party water</i>	128831.20 KL
Total Water Discharge	<i>Water discharge outside the operational boundary</i>	0.00 KL
Total water consumption	<i>Total water withdrawal -Total water Discharge</i>	128831.20 KL
Water consumption for utility & operations (excluding surface water intake)	<i>Total water consumption- Product water consumption- rain water</i>	114662.23 KL
Water consumption intensity For utility & operations	<i>Water consumption for utility & operations / revenue</i>	16.06 KL
Total water recycled	<i>STP/ ETP treated water used for gardening & domestic purposes</i>	41067.34 KL

Waste Disposed:

Performance Indicator	Factors	Value for FY 2022-23
Waste disposed	Hazardous waste disposed: such as ETP sludge, Spent oil, Oil soaked cotton waste, Ink sludge, E-Waste, Waste containing oil	79,035.50 KG's
	Non-Hazardous waste disposed: General Waste, Boiler Ash, Metal Waste, Paper waste, Plastic Waste, Wood waste, Glass Waste, Scrap Oil - Non Edible, Scrap Oil – CNO, Scrap Cake – CNO, Gunny bag	41,83,446.70 KG's

Note 1: Scope 2 emissions of Purchased grid electricity emission factor is sourced from Central Electricity Authority (CEA) CO2 Baseline Database for the Indian Power Sector (Version 18 dated September 2022) and considers the weighted average factor. GJ conversion factors are based on KWH to GJ which is 0.0036

Note 2: Scope 3 Emissions are sourced from GaBi database 2020 LCI documentation

Note 3: Biogenic Emission factors considered for Briquette 101.93 KgCO2e/GJ

Note 4: The denominator of energy and emission intensity, company has considered total revenue for the year as INR 7141 crore (71410 million) as per the unaudited financials

Note 5: For the baseline year 2012-13 Fugitive emissions caused due to consumption of refrigerants and Co2 based fire extinguishers are not accounted or monitored

Note 6: Emission Factors used are sourced from IPCC 2006 National Greenhouse Gas Inventories.



Note 7: Global Warming Potential (GWP) used in the emissions calculation are sourced from IPCC Assessment Report 5.

Statement of Competence and Independence

DNV applies its own management standards and compliance policies for quality control, in accordance with ISO IEC 17021:2015 - Conformity Assessment Requirements for bodies providing audit and certification of management systems, and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

We have complied with the DNV Code of Conduct² during the verification engagement and maintain independence where required by relevant ethical requirements as detailed in DNV VeriSustain. This engagement work was carried out by an independent team of sustainability assurance professionals. DNV was not involved in the preparation of any statements or data except for this Verification Statement, the GHG, Water and Waste Verification Statement and Management Report. DNV maintains complete impartiality toward stakeholders interviewed during the verification process. We did not provide any services to Marico Limited in the scope of assurance during FY 2022-23 that could compromise the independence or impartiality of our work.

For DNV Business Assurance India Private Limited,

	
Bhargav Lankalapalli Lead Verifier DNV Business Assurance India Private Limited, India	Arun Aravind Technical Reviewer DNV Business Assurance India Private Limited, India.

Mumbai, India, 4th July 2023.

DNV Business Assurance India Private Limited is part of DNV – Business Assurance, a global provider of certification, verification, assessment and training services, helping customers to build sustainable business performance. www.dnv.com

² The DNV Code of Conduct is available on request from www.dnv.com (<https://www.dnv.com/about/in-brief/corporate-governance.html>)

INDEPENDENT VERIFICATION STATEMENT

Introduction

DNV Business Assurance India Private Limited ('DNV') has been commissioned by the management of Marico limited, India ('Marico' or 'the Company', Corporate Identity Number: L15140MH1988PLC049208) to carry out a Customised Data verification of assertions related to Greenhouse Gases ('GHG') emissions and carbon offsets, towards its declaration of Carbon Neutrality of its Perundurai Plant for the period 1st April 2022 to 31st March 2023 ('financial year (FY) 2022-23').

This customised verification engagement has been carried out in accordance with DNV's verification methodology VeriSustainTM¹, which is based on our professional experience, international assurance best practice including International Standard on Assurance Engagements 3000 (ISAE 3000) Revised* and the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines. This verification provides a limited level of verification and applies a $\pm 5\%$ materiality threshold for errors and omissions.

Marico has prepared the Perundurai Plant's GHG assertions in a spreadsheet as per: a) the Marico's GHG emission inventurisation SOP (SOP/Marico/GHGInventory/FY21/001; dated: April 2021), b) World Resources Institute's/ World Business Council on Sustainable Development's (WRI/WBCSD) GHG Protocol Corporate Accounting and Reporting Standard (GHG Protocol) and c) the Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories (2006). Marico is responsible for the collection, analysis, aggregation and presentation of data and information in the spreadsheet including information related to Carbon offsets purchased for carbon neutrality.

Our responsibility of performing this work is to the management of Marico only and in accordance with terms of reference agreed with the Company. The verification engagement is based on the assumption that the data and information provided to us is complete, sufficient and true. disclaims any liability or co-responsibility for any decision a person or entity would make based on this verification statement. The verification was carried out in March- July 2023.

Scope, Boundary and Limitations of Verification

The scope of work agreed upon with Marico includes the following:

- Verification of the GHG emissions (Scope 1 and Scope 2) for the period FY 2021-22 for its Perundurai Plant;
- Remote assessment is conducted at Marico's Perundurai Plant (Tamil Nadu, India) and review of data to verify the Company's internal protocols, processes, and controls related to the collection and collation of the GHG emissions data;
- Emissions from Marico's Perundurai plant comprising of
 - Scope 1 emissions due to
 - Diesel consumption in Diesel Generator (DG) sets,
 - Release of Refrigerants,
 - CO₂ release due to use of Fire extinguishers,
 - LPG consumption
 - Scope 2 emissions due to use of purchased electricity from the grid;
 - Biogenic emissions through combustion of biomass briquettes;
- Review of disclosures and assertions declaring the Plant's Carbon Neutrality.

The operational boundary as set out by Marico is its Coconut Oil manufacturing plant at Perundurai (Tamil Nadu, India), as set out in the agreed scope of work. During the verification process, we did not come across limitations to the scope of the agreed engagement.

Verification Methodology

We adopted a risk-based approach and conducted the remote verifications of the qualitative and quantitative information and data presented to us by the Company. We have conducted onsite assessment at the Perundurai

¹The VeriSustain protocol is based on the principles of various assurance standards including International Standard on Assurance Engagements 3000 (ISAE 3000) Revised (Assurance Engagements other than Audits or Reviews of Historical Financial Information) and the GRI Principles for Defining Report Content and Quality, international best practices in verification and our professional experience; and is available on request from www.dnv.com

GRI 305:1,2,3,4;

site, as part of the assessment we have examined and reviewed documents, records and other information made available to by Marico.

As part of the verification process we:

- Obtained an understanding of the systems used to generate, aggregate and report GHG emissions data at the plant;
- Obtained an understanding of the GHG activity data capturing and recording mechanisms at the plant and the completeness, accuracy and reliability of the reported activity data;
- Examined and reviewed the following:
 - Aggregation of data related to diesel consumption in DG sets, release of refrigerants and CO₂ from the use of CO₂ fire extinguishers at the plant on a sampling basis;
 - Data related to purchased grid electricity consumption (electricity invoice, log records from energy meters) on a sampling basis;
 - Data related to consumption of biomass briquets for combustion to boiler;
 - Procedures and practices for measurement, monitoring and review of GHGs, energy and fuel consumption.
 - Purchase carbon offsets (VERs) by Marico, to offset emissions from its Perundurai plant for FY 2022-23;
- Evaluated the GHG emissions data using the principles of completeness, accuracy and reliability in line with the Company's methodologies on data analysis, aggregation, and measurement and reporting.

Conclusion

On the basis of the work undertaken, nothing has come to our attention to suggest that the GHG emission assertions and carbon offsets of Marico's Perundurai Plant for FY 2022-23, as mentioned below are not materially correct and are not a fair representation of its GHG assertions. A few data inaccuracies identified during the verification process were found to be attributable to transcription, interpretation and aggregation errors and the errors have been corrected.

GHG Data Assertions of Marico - Perundurai Plant:

Scope	Source	GHG Emissions / Offset (tCO ₂ e) for FY 2022-23
Scope 1	<ul style="list-style-type: none"> • Diesel consumption in Diesel Generator (DG) sets • Refilling of Refrigerants • CO₂ release due to use of fire extinguishers • LPG consumption 	27.51 tCO ₂ e
Scope 2	Purchased electricity from grid	551.74 tCO ₂ e
Total GHG emissions of Scope 1 & Scope 2		579.25 tCO₂e
Other Biogenic Emissions from combustion of Briquettes		1966.70 tCO ₂ e
Total GHG emissions of Perundurai Plant		2545.94 tCO₂e
Total GHG offsets (VERs/Carbon offsets purchased bearing serial number: GS1-1-IN-GS7572-2-2021-22226-133655-134254)		600 tons
Carbon Neutrality: Marico Perundurai has offset its GHG emissions for FY 2022-23 by purchasing carbon credits for its residual GHG footprint.		

Notes:

1. Emission Factors used are sourced from IPCC Guidelines for National Greenhouse Gas Inventories (2006).
2. Global Warming Potential (GWP) used in the emissions calculation are sourced from IPCC's Assessment Report 5.

3. Scope 1 GHG emissions do not include direct CO₂ emissions associated with the combustion of 7815.31 MT of biomass (briquettes) in Boiler as per IPCC guidelines "CO₂ emissions from biomass combustion are not included in national totals (National total is calculated by summing up emissions and removals for each gas) but are recorded as an information item for cross-checking purposes as well as avoiding double counting", as these emissions are from biologically sequestered carbon. However, emissions through release of N₂O and CH₄ by burning of briquettes are considered for calculation at a emission factor of 0.0047.

4. Based on the power purchase agreement with Clover Energy Private Limited (Wind) and Amplus Shams Private Limited (Solar), avoided GHG emissions from the purchase of 6868605.0 kWh of wind and solar electricity do not form part of the above GHG emissions calculation. The associated transmission and distribution (T&D) losses are to be included in Scope 3 emissions.



*Purchased grid electricity emission factor of 0.81 is sourced from Central Electricity Authority (CEA) CO₂ Baseline Database for the Indian Power Sector (Version 18 dated December 2022) and considers the weighted average factor.

Statement of Competence and Independence

DNV applies its own management standards and compliance policies for quality control, in accordance with ISO IEC 17021:2015 - Conformity Assessment Requirements for bodies providing audit and certification of management systems, and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

We have complied with the DNV Code of Conduct² during the verification engagement and maintain independence where required by relevant ethical requirements as detailed in DNV VeriSustain. This engagement work was carried out by an independent team of sustainability assurance professionals. DNV was not involved in the preparation of any statements or data except for this Verification Statement, the GHG, Water and Waste Verification Statement and Management Report. DNV maintains complete impartiality toward stakeholders interviewed during the verification process. We did not provide any services to Marico Limited in the scope of assurance during FY 2022-23 that could compromise the independence or impartiality of our work.

For DNV Business Assurance India Private Limited,

 <p>Bhargav Lankalapalli Lead Verifier DNV Business Assurance India Private Limited, India.</p>	 <p>Arun Aravind Technical Reviewer DNV Business Assurance India Private Limited, India.</p>
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Mumbai, India, 4th July 2023.

DNV Business Assurance India Private Limited is part of DNV – Business Assurance, a global provider of certification, verification, assessment and training services, helping customers to build sustainable business performance. www.dnv.com

² The DNV Code of Conduct is available on request from [www.dnv.com \(https://www.dnv.com/about/in-brief/corporate-governance.html\)](https://www.dnv.com/about/in-brief/corporate-governance.html)

1. General Description of the Organization

Marico Limited is one of India's leading consumer goods companies operating in global beauty and wellness categories. We nurture leading brands across categories of hair care, skin care, edible oils, healthy foods, male grooming, and fabric care. In India, we touch the lives of one out of every three Indians through our portfolio of brands, such as Parachute, Saffola, Saffola FITTIFY, Nihar Naturals, Parachute Advansed, Hair & Care, Livon, Set Wet, Mediker, Revive, Beardo, Just Herbs, Coco Soul, Pure Sense and True Elements. Our international product portfolio includes brands such as Parachute, Parachute Advansed, HairCode, Fiancée, Caivil, Hercules, Black Chic, Code 10, Ingwe, X-Men, Mediker SafeLife, Thuan Phat, Isoplus, Purité De Prövence and Ôliv. Headquartered in Mumbai, we are present in 50 countries across emerging markets of Asia and Africa. Currently, Marico has 7 functional manufacturing units in India – Baddi, Guwahati (2 plants), Jalgaon, Perundurai, Pondicherry and Sanand.

During FY 22-23, Marico recorded a turnover of about INR 97.64 billion (USD 1.2 billion) through its products sold in India and chosen markets in Asia and Africa.

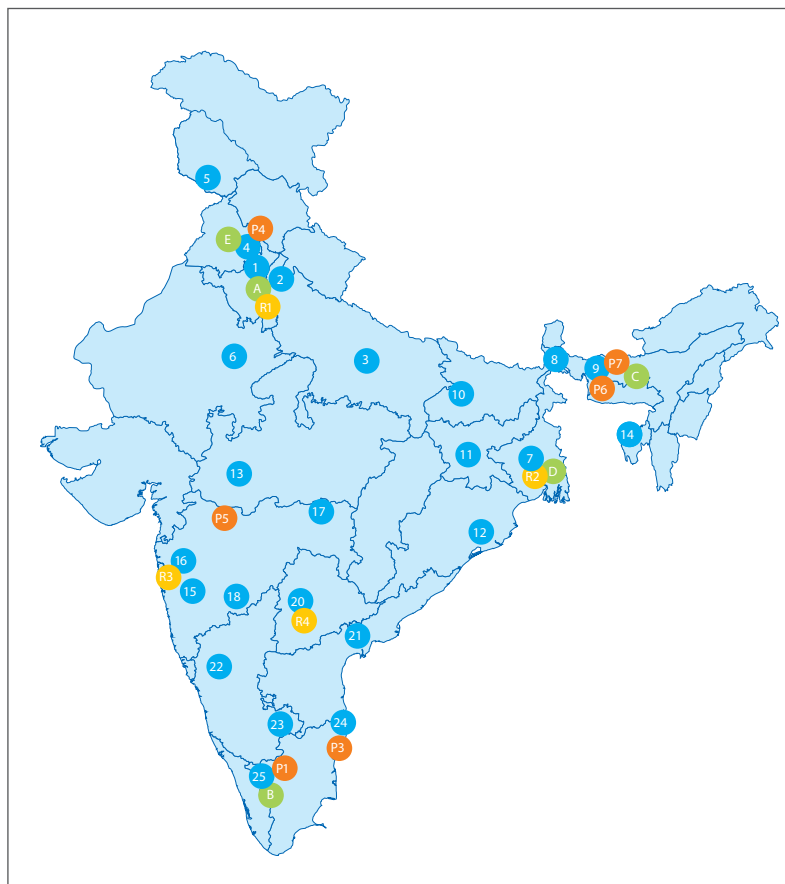


Figure 1: Location of Marico's Manufacturing plants in India

Depots			Redistribution Centres		Plant Locations		Regional Offices		
1	Sonipat	10	Patna	A	Sonipat	P1	Perundurai, Tamil Nadu	R1	New Delhi
2	Ghaziabad	11	Ranchi	B	Coimbatore	P2	Sanand, Gujarat	R2	Kolkata
3	Lucknow	12	Cuttack	C	Guwahati	P3	Puducherry	R3	Mumbai
4	Zirakpur	13	Indore	D	Kolkata	P4	Baddi, Himachal Pradesh	R4	Hyderabad
5	Jammu	14	Agartala	E	Zirakpur	P5	Jalgaon, Maharashtra		
6	Jaipur	15	Pune			P6	NER 1, Guwahati, Assam		
7	Kolkata	16	Bhiwandi			P7	NER 2, Guwahati, Assam		
8	Siliguri	17	Nagpur						
9	Guwahati	18	Solapur						
		19	Ahmedabad						
		20	Hyderabad						
		21	Vijayawada						
		22	Hubli						
		23	Bengaluru						
		24	Chennai						
		25	Coimbatore						

2. Goals and Targets

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

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. We had the goal for FY22 to reduce energy intensity (plant operations) by 50% from FY13 and we saw a reduction by 73.3% in FY22. With the goal of reducing GHG emission intensity (Scope 1 and 2) by 75% from FY13, we noted a reduction of 77.5% in FY22. Our initiatives around water conservation created 263 Crore liters of water capacity for communities (equivalent to 3 times of water consumption in our operations). Hence came into existence our Sustainability 2.0 Roadmap: ESG 2.0. It is a launchpad to achieve our Decade of Action (2030) vision and purpose. It comprises of over 50 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 producers responsibility, water stewardship and forestation.

Targets and commitments

Scope 1 and 2:

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.

Year	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	FY 29-30
Scope 1 & 2 emission reduction targets (tCO2e)	11500	10112.4	8723.2	7334.1	5944.9	4555.8	3166.7	1777.5

Table 1 Scope 1 and 2 emission reduction targets for each year

Our Scope 1 and 2 emissions targets exceeds the expectations set by the Science-Based Targets initiative (SBTi). The SBTi's 1.5 degree scenario (1.5C) necessitates a 42% reduction in emissions from the baseline year FY23. Marico has set a much more ambitious target, aiming for a remarkable 93% absolute reduction in emissions from the baseline year FY13. 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. we have submitted a formal letter to establish our intent on the emissions reduction target to SBTi. We are also aiming to get Scope 1, 2 and 3 emission reduction targets approved by SBTi in the next 12 months.

*<https://sustainability.marico.com/pdfs/Environment%20Policy.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 board 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.

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. All the Environmental related risks and its impact can be find in Annexure 1 of ESG report.

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. Standards

The GHG Inventorization for FY 22-23 was conducted using the 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 centres responsible for operational control. This approach 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. Following is the list of seven manufacturing plants and their operational control:

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 and exclusions

The GHG inventorization is carried out with the underlying business objective of identifying potential areas for reducing GHG 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.

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 organisation (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.

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.
- Process Emissions: Emissions from chemical reactions, such as in the production of aerosols or solvents, emissions of volatile organic compounds (VOCs) or other greenhouse gases.
- Refrigerants & Fire extinguishers: Emissions from refrigeration systems for storing and preserving products, leaks, or improper handling of refrigerants & fire extinguishers

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

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.

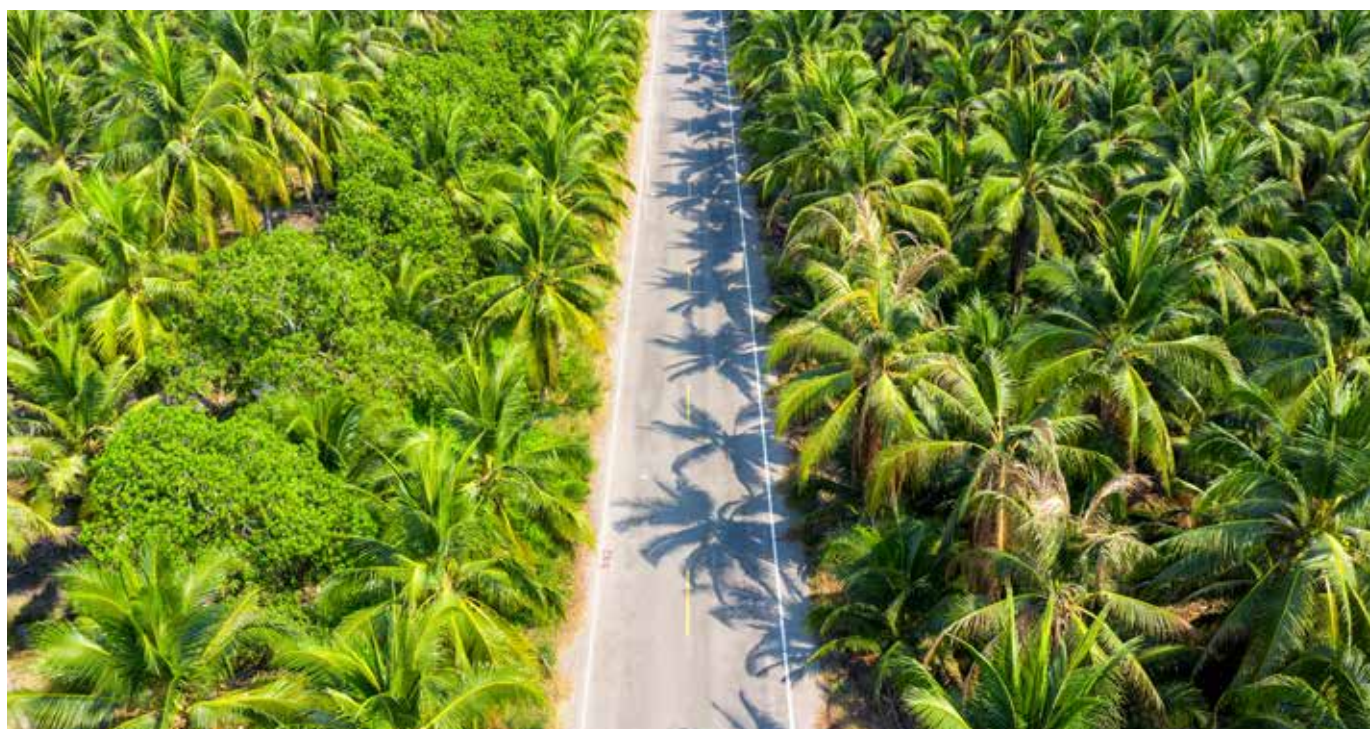
Scope 3 Emissions

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

Sr. 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

Table 3 Scope 3 Emissions categories



7. GHG Emissions Inventory

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.

Reporting Period

The reporting period covered in this report is the GHG inventory for FY 22–23, i.e., 01 April 2022 to 31 March 2023.

Methodology

Step 1	Quantify GHG emissions by identifying specific emission sources within the operational boundaries
Step 2	Collect data on sources/activities resulting in emissions
Step 3	Identify emission factors from established sources
Step 4	Apply standard methodology to quantify emissions from individual emission sources

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 *IPCC (e.g., tones of CH₄):

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



*https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_07_Supplementary_Material.pdf

7.3.1 Activity data, emissions factors, and methodology per emission type

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).

Table 4 Methodology of Emission types

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.



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

*<https://cea.nic.in/cdm-co2-baseline-database/?lang=en>



GHG Emissions

Marico's emission profile for FY 22-23 is described in the sections below:

Scope 1 and 2 emissions:

Sr. no	Type of energy	Emission in tCO ₂ eq. FY 22-23
1	Diesel	333.97
2	Petrol	1.98
3	Natural Gas	134.65
4	LPG	1.57
5	Refrigerants	307.67
6	Fire Extinguishers	0.04
	Total Scope 1	779.88
7	Electricity	11,775.82
	Total Scope 2	11,775.82
8	Biomass Emissions	9,240.64
	Total Biogenic Emissions	9,240.64

Table 5 Scope 1 & 2 GHG emission for FY22-23

Biomass emissions:

Sr. no	Type of energy	Emission in tCO ₂ eq. FY 22-23
1	Biomass Emissions	9,240.64
	Total Biogenic Emissions	9,240.64

Table 6 Biogenic Emissions for FY22-23

Scope 3 emissions

Sr. no	Type of energy	Emission in tCO ₂ eq. FY 22-23
1	Category 1 - Purchased goods and services	4,10,168
2	Category 2 - Capital goods	694
3	Category 3 - Fuel- and energy-related activities	4,421
4	Category 4: Upstream Transportation of Products	53,368
5	Category 5 - Waste generated in operations	8,226
6	Category 6 - Business travel	1,403
7	Category 7 - Employee commuting	910
8	Category 8 - Upstream Leased Assets	34,860
9	Category 9 - Downstream transportation & Distribution	4,799
10	Category 12 - End of Life treatment	27,989
11	Category 15 - Investment	287
	Total Scope 3	5,47,126

Table 7 Scope 3 GHG emission for FY22-23

Trends

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

Table 8 Scope 1,2 and 3 emissions for last 5 years

Emissions	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
Total Scope 3 Emissions (tCO ₂ eq.)	507667	481048	516146	561192	547126

Table 9 Total Scope 3 emissions for last 5 years

Emissions	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23
Total Emissions Scope 1,2 and 3 (tCO ₂ eq.)	524777	494568	525390.5	572122.3	559682
Scope 1,2 and 3 emission intensity (tCO ₂ eq./Revenue)	91.17	87.46	84.89	79.31	78.38

Table 10 Scope 1,2 and 3 emissions intensity

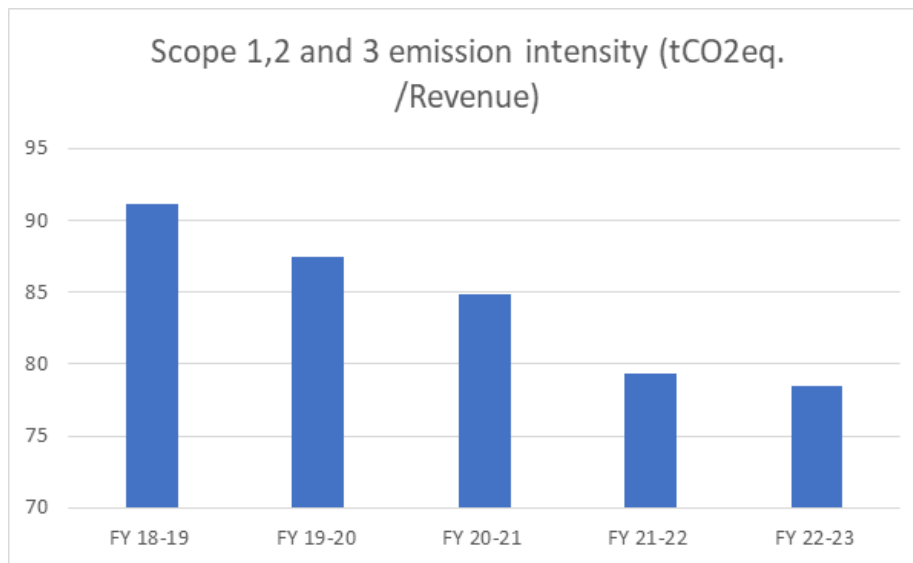


Figure 2: Scope 1, 2 and 3 emission intensity

8. 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.

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:

Category of emissions	Source of emissions	Emissions (tCO ₂ 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

Table 11: Uncertainty ratings for Scope 1 and 2 emissions

The detailed facility wise calculations are shared in Annexure 2.

Uncertainty data for emission factors were taken from the GHG Protocol Uncertainty Calculations Tool. For uncertainty of GWP values of refrigerants, *IPCC recommended value of +/- 35 % was considered.

Uncertainty for Scope 3 emissions

Uncertainty of Scope 3 emissions calculations varies 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.

*https://archive.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html

9. Net Zero Commitment

Marico's net zero emissions' target in global operations has been set for 2040. In India, however, we intend to achieve net zero in operations 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

- Inventorization 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.

Carbon Reduction and Offset

Certified Carbon Neutral Operations

Marico's Perundurai facility has obtained 'carbon neutral' certification. The plant completely operates on renewable energy sources and has been upgraded with smart energy installations that enhance the overall operational efficiency. Furthermore, this plant has a Miyawaki forest spread over 3,000 sq. ft. within the premises.

Afforestation Initiative

Considering 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, arrest soil erosion and create an ambient atmosphere for local flora and fauna to thrive. As part of our afforestation drive, in FY 22-23, plantation of 73,250 trees were initiated, in the districts of Rajasthan, Assam, Himachal Pradesh, Maharashtra, Gujarat and Meghalaya. Around 5,000 farmers benefitted from the planting of 50,000+ fruit bearing saplings. The plantation drives were conducted through two projects: fruit tree distribution and habitat protection.

Energy Consumption

The central energy management cell works on a defined energy reduction strategy in conformance to the business goals and targets set for every year. Energy monitoring systems accurately capture the minutest reduction opportunities across the operational footprint. For the year under review, the capital investment on energy conservation projects was Rs 93.11 crores. These efforts led to power savings of 7,29,025 kWh and fuel savings of 95 MT during the reporting year, across Marico's manufacturing footprint. Going forward, Marico 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 optimisation and effectiveness will be considered for capital investment towards building a carbon neutral future. Furthermore, Marico has already achieved its ambitious target of keeping energy consumption below 17000 MWh from non-renewable energy sources for all its manufacturing facilities. Marico has initiated renewable energy projects in Sanand & Jalgaon units which will help company to achieve renewable energy share more than 70% in FY24.

Reduction in Energy intensity per rupee of turnover (Total energy consumption/ turnover in rupees)

Year	Energy intensity per rupee of turnover
FY 21-22	25
FY 22-23	24.42

Table 12 Reduction in Energy intensity

Annexure 1:

Inclusions and Exclusions in GHG Inventory

The table below describes the inclusion and exclusion of Greenhouse Gases

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, PDRI, 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, PDRI, NER-I, NER-II, Sanand) Use of CO2 fire extinguishers for fire drill and fire incidents and CO2 refilling (at following facilities: Pondicherry, and Sanand) 	Relevant and Reported	HFCs such as R22, 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 facilities with operational control (at following facilities: Baddi, Jalgaon, Pondicherry, PDRI, NER-I, NER-II, Sanand) Emissions avoided through Renewable Energy from- 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 its operations. 	Not-Relevant and Not-Reported	NA
	3. Emissions from generation of purchased steam	✗	<ul style="list-style-type: none"> No purchase of steam for undertaking its operations. 	Not-Relevant and Not-Reported	NA



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 5% of overall Marico 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 5% of total volume sold are not considered for report. (at following facilities: Baddi, Jalgaon, Pondicherry, PDRI, NER-I, NER-II, Sanand) 	Relevant and Reported	CO ₂ , CH ₄ , N ₂ O
	2. Emissions from Capital Goods	✓	<ul style="list-style-type: none"> • CNO, Edible items, Food products, VAHO (at following facilities: Baddi, Jalgaon, Pondicherry, PDRI, NER-I, NER-II, Sanand) 	Relevant and Reported	CO ₂ , CH ₄ , N ₂ O
	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, PDRI, NER-I, NER-II, Sanand) 	Relevant and Reported	CO ₂ , CH ₄ , N ₂ O
Other Indirect Emissions (Scope 3)	4. Emissions from Upstream transportation and distribution	✓	<ul style="list-style-type: none"> • Raw material movement through oad 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, PDRI, NER-I, NER-II, Sanand) 	Relevant and Reported	CO ₂ , CH ₄ , N ₂ O
	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, PDRI, Paonta, NER-I, NER-II, Sanand) 	Relevant and Reported	CO ₂ , CH ₄ , N ₂ O

Other Indirect Emissions (Scope 3)	6. Emissions from Business travel	✓	<ul style="list-style-type: none"> • Travel through road, railway, and air transportation methods • Road transportation includes passenger vehicles (4-wheeled), autorickshaws (3-wheeled), Bus, Luxury bus. • Railway transportation includes suburban and non-suburban trains. • 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, PDRI, NER-I, NER-II, Sanand) 	Relevant and Reported	CO ₂ , CH ₄ , N ₂ O
	7. Emissions from Employee commuting	✓	<ul style="list-style-type: none"> • Travel through road, railway, and air 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. • Distance from office to home is considered as 25 km (one side). (at following facilities: Baddi, Jalgaon, Pondicherry, PDRI, NER-I, NER-II, Sanand) 	Relevant and Reported	CO ₂ , CH ₄ , N ₂ O
	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 dividing the amount paid with standard rate of diesel in that particular month. • 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. (at following facilities: Baddi, Jalgaon, Pondicherry, PDRI, NER-I, NER-II, Sanand, and other areas across the country) 	Relevant and Reported	CO ₂ , CH ₄ , N ₂ O

Other Indirect Emissions (Scope 3)	9. Emissions from Downstream transportation and distribution	✓	<ul style="list-style-type: none"> Finished Goods movement through road transportation. <ul style="list-style-type: none"> Emissions from Depots Most the finished goods are packed in 16 Kg pack size, weight of each case is considered as 16 Kg. <ul style="list-style-type: none"> Considered all Depot and 3 major distributors from each Depot. Average of the distance is considered as distance for all distributors. Distributor to retailer distance is considered as 20 km. Retailer to consumer distance is considered as 5 Km. (at following facilities: Baddi, Jalgaon, Pondicherry, PDRI, NER-I, NER-II, Sanand, and other areas across the country) 	Relevant and Reported	CO2, CH4, N2O
	10. Emissions from Processing of sold products	X	<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	X	<ul style="list-style-type: none"> The eventual end 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
	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 considered to be disposed as land filled and 50% as recycled. (at following facilities: Baddi, Jalgaon, Pondicherry, PDRI, NER-I, NER-II, Sanand) 	Relevant and Reported	CO2
	13. Emissions from Downstream leased assets	X	<ul style="list-style-type: none"> No assets have been leased. 	Not Relevant and Not Reported	NA
	14. Emissions from Franchises	X	<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)	X	<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

Annexure 2:

Scope 1 and Scope 2 emissions calculations

A. Diesel consumption related emissions

Diesel & Biodiesel								
(KL)	Baddi	Jalgaon	Pondy	PDRI	NERI	NER II	Sanand	Total
	HSD	HSD	HSD	HSD	HSD	HSD	HSD	
Apr'22	0.975	0.780	4.178	0.591	1.353	1.713	0.000	9.589
May'22	0.360	1.550	2.679	0.160	1.491	2.833	0.000	9.074
Jun'22	0.970	2.092	1.708	0.712	8.331	2.251	1.200	17.263
Jul'22	0.305	0.994	5.661	1.480	2.020	4.081	0.800	15.340
Aug'22	0.480	2.176	1.176	0.345	0.851	2.106	1.600	8.733
Sept'22	0.425	0.903	3.364	0.649	0.480	2.238	0.000	8.059
Oct'22	0.030	1.276	1.259	0.333	0.741	1.917	0.000	5.555
Nov'22	0.080	0.450	4.697	1.065	1.712	1.915	1.400	11.319
Dec'22	0.190	1.090	3.921	0.050	1.103	2.292	0.800	9.446
Jan'23	0.720	1.610	0.036	0.180	3.274	4.018	0.000	9.837
Feb'23	0.060	0.024	1.504	0.580	4.942	2.583	0.600	10.293
Mar'23	0.2	0.681	4.01	0.34	1.55	0.93	0.8	8.538
Total (KL)	4.830	13.625	34.193	6.485	27.841	28.872	7.200	123.047
Total (kg)	4100.670	11567.506	29030.214	5505.794	23637.425	24512.328	6112.800	104466.737
Total (GJ)	176.329	497.403	1248.299	236.749	1016.409	1054.030	262.850	4492.070
Total tCO2 eq	13.110	36.981	92.808	17.602	75.567	78.365	19.542	333.974

B. Petrol Consumption related emissions

Petrol		
(KL)	Pondi	Sanand
	Petrol	Petrol
Apr'22	0.06226	0
May'22	0.09711	0
Jun'22	0.06227	0.036
Jul'22	0.06674	0
Aug'22	0.06131	0
Sept'22	0.06337	0
Oct'22	0.06253	0
Nov'22	0.03361	0

Petrol		
(KL)	Pondi	Sanand
	Petrol	Petrol
Dec'22	0.08787	0
Jan'23	0.06516	0
Feb'23	0.06584	0.01035
Mar'23	0.05576	0
Total (KL)	0.78383	0.04635
Total (kg)	585.9129	34.64663
Total GJ	25.96	1.53
Total tCO2 eq.	1.873539	0.110787

C. Natural Gas consumption related emissions

(MMBTU)	Baddi	Jalgaon	Pondy	PDRI	NERI	NER II	Sanand	Total
Apr'22							217.430	217.430
May'22							212.580	212.580
Jun'22							296.030	296.030
Jul'22							331.540	331.540
Aug'22							229.200	229.200
Sept'22							202.290	202.290
Oct'22							167.720	167.720
Nov'22							166.790	166.790
Dec'22							180.580	180.580
Jan'23							130.340	130.340
Feb'23							69.730	69.730
Mar'23							68.440	68.440
Total	0.000	0.000	0.000	0.000	0.000	0.000	2272.670	2272.670
Total GJ	0.000	0.000	0.000	0.000	0.000	0.000	2397.794	2397.794
tCO2e	0.000	0.000	0.000	0.000	0.000	0.000	134.649	134.649

D. LPG consumption related emissions

KG	PDRI
Apr'22	0
May'22	0
Jun'22	0
Jul'22	0
Aug'22	0
Sept'22	0
Oct'22	0
Nov'22	52
Dec'22	115
Jan'23	179
Feb'23	180
Mar'23	0
Total (KG)	526
Total (GJ)	24.8798
tCO2e	1.571289

E. Fire extinguisher emissions

Plant	Unit of Measurement	CO2 emitted
Baddi	Kg	0.00
Jalgaon	Kg	0.00
Sanand	Kg	13.50
Pondy	Kg	22.00
PDRI	Kg	0.00
Paonta	Kg	0.00
NER I	Kg	0.00
NER II	Kg	0.00
Total	Kg	35.50
Total	MT	0.036
Plant	Unit of Measurement	CO2 emitted

F. 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	8.800	0.000	12.640	0.000	26.993
Pondy	Kg	0.000	3.000	0.000	4.250	2.130	13.961
PDRI	Kg	0.000	0.800	0.000	0.000	3.000	8.335
NER I	Kg	0.000	18.850	0.000	0.000	0.950	39.089
NER II	Kg	0.000	20.200	0.000	3.900	6.970	58.320
Sanand	Kg	0.000	0.000	0.000	4.000	70.000	160.969
Total Tons	MT	0.000	0.052	0.000	0.025	0.083	
	100-year GWP*	1530.000	1960.000	2023.480	771.000	2255.500	
	Total tCO2 emission	0.000	101.234	0.000	19.113	187.319	307.666

*https://www.ipcc.ch/report/ar6/wgi/downloads/report/IPCC_AR6_WGI_Chapter_07_Supplementary_Material.pdf

Gas	R404a	HFC 125	HFC 134a	HFC 143a
Composition *(%)	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

G. Electricity related emissions

(kWh)	Baddi	Jalgaon		Pondy	PDRI			NER I	NER II	Sanand		Total	
	EB	EB	Solar	EB	EB	Wind Power	IEX	Solar Power	EB	EB	EB		Solar power
Apr'22	21380.0	174983.0	45584.0	325980.0	381369.0	222813.0		29211.0	129749.1	108754.2	492796.0	34316.0	1966935.3
May'22	25740.0	128859.0	43856.0	179200.0	15.0	592625.0		27161.0	131242.9	113930.8	555288.0	34563.0	1832480.8
Jun'22	24660.0	134246.0	45912.0	308960.0	27.0	540305.0		27162.0	114611.3	113309.0	500144.0	20128.0	1829464.3
Jul'22	22060.0	189362.0	35416.0	425720.0	10.0	663058.0		25437.0	141968.2	133254.3	593664.0	4643.0	2234592.5
Aug'22	23060.0	208096.0	37112.0	247100.0	0.0	578022.0		26901.0	142648.2	155460.1	607140.0	19380.0	2044919.3
Sept'22	22700.0	218645.0	35776.0	347060.0	3.6	504264.0		26598.0	135326.6	154915.3	490088.0	26397.0	1961773.5
Oct'22	17800.0	142752.0	34448.0	323800.0	0.0	474066.0		22969.0	104284.7	103346.5	432312.0	15847.0	1671625.2
Nov'22	15900.0	149512.0	27728.0	323440.0	3.0	490129.0		20874.0	111662.5	115832.6	342390.0	25877.0	1623348.1
Dec'22	15940.0	134666.0	24712.0	191100.0	86937.0	496851.0		22913.0	105680.5	109687.4	172390.0	21166.0	1382042.9
Jan'23	17740.0	111459.0	25512.0	308900.0	125081.0	380905.0		24514.0	115076.0	118997.9	348900.0	23692.0	1600776.8

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

G. Electricity related emissions

(kWh)	Baddi	Jalgaon		Pondy	PDRI			NER I	NER II	Sanand		Total	
	EB	EB	Solar	EB	EB	Wind Power	IEX	Solar Power	EB	EB	EB		Solar power
Feb'23	14620.0	79059.0	33416.0	252140.0	2009.0	478609.0		28115.0	105870.7	118149.0	377200.0	27220.0	1516407.6
Mar'23	15680	86275	51864	347400	81874	414044		29956	124914.7	129349.2	352620.0	26538.0	1660514.8
Total(kWh)	237280.0	1757914.0	441336.0	3580800.0	677328.6	5835691.0	0.0	31181.0	1463035.5	1474986.2	5264932.0	279767.0	21324881.3
Total (GJ)	854.2	6328.5	1588.8	12890.9	2438.4	21008.5	0.0	1122.5	5266.9	5310.0	18953.8	1007.2	76769.6
tCO2eq	193.3	1432.0		2916.9	551.7				1191.8	1201.5	4288.7		11775.8

H. Biomass related emissions

(MMBTU)	Baddi	Jalgaon	Pondy	PDRI	NER I	NER II	Sanand	Total
	Biomass	Biomass	Biomass	Biomass	Biomass	Biomass	Biomass	
Apr'22		484.700	93.135	171.710				749.545
May'22		502.000	49.435	185.440				736.875
Jun'22		421.030	90.649	145.060				656.739
Jul'22		570.780	109.321	186.180				866.281
Aug'22		534.400	62.370	163.260				760.030
Sept'22		630.150	87.605	96.541				814.296
Oct'22		433.460	74.534	155.777				663.771
Nov'22		394.010	77.565	121.087				592.662
Dec'22		383.490	46.612	144.735				574.837
Jan'23		316.070	79.261	115.617				510.948
Feb'23		230.000	61.776	92.345				384.121
Mar'23		335.30	84.32	85.6				505.208
Total	0.000	5235.390	916.580	1663.343	0.000	0.000	0.000	7815.313
Total GJ	0.000	60730.524	10632.328	19294.779	0.000	0.000	0.000	90657.631
Total CO2 eq.	0	6190.201581	1083.742561	1966.698	0	0	0	9240.6416

I. Emission factors for GHG calculations

Emission Factor	Calorific Value*		Emission factors CO ₂ + CH ₄ + N ₂ O			Density*	
	Value	Unit	Value	Unit	Emission basis	Value	Unit
Fuel - Diesel	0.04	GJ/Kg	74.35	Kg CO ₂ eq./GJ	Net Calorific Basis*	849	kg/kL
Fuel - Briquette	0.01	GJ/Kg	101.93	Kg CO ₂ eq./GJ	Net Calorific Basis		
Fuel - Bagasse	0.01	GJ/Kg	101.93	Kg CO ₂ eq./GJ	Net Calorific Basis		
Fuel - LPG	0.05	GJ/Kg	63.16	Kg CO ₂ eq./GJ	Net Calorific Basis		
Fuel - FO	0.04	GJ/Kg	77.65	Kg CO ₂ eq./GJ	Net Calorific Basis		
Petrol	0.04	GJ/kg	72.18	Kg CO ₂ eq./GJ	Net Calorific Basis*	747.5	kg/kL
Electricity			0.81	Kg CO ₂ eq./ kWh	Grid Basis*		
Fuel - Biodiesels	0.03	GJ/Kg	71.05	Kg CO ₂ eq./GJ	Net Calorific Basis		
Fuel - Natural Gas	0.05	GJ/kg	56.16	Kg CO ₂ eq./GJ	Net Calorific Basis		

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

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

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

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

*<https://cea.nic.in/cdm-co2-baseline-database/?lang=en>

Annexure 3:

Data accuracy for metering and weighing instruments

Scope	Data point	Data Source		Data Requirements	Plant Location					
		First level	Second level	Check 1 (Share OEM's user manual/spec if available)	Pondicherry	Perundurai	Jalgaon	Sanand	NER-1	NER-2
Scope 2	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	1. Main meter Make-GENUS Serial no - 5993920	Data not available	UGVCL - SECURE/ Apex 150, Solar - SECURE/Premier 300	MAKE-SECURE, MODEL-PREMIER 300, TYPE-E3 M054,3P H,4wire	MAKE-SECURE, MODEL-PREMIER 300, TYPE-E3 M054,3P H,4wire
Scope 1	Diesel	Dip measurement and calculating the volume available in tanks	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 560 S.No - 2718130719	NA	Make:Akshar Agency Model:100/200- E99 Least Count 400 MiliGram	MAKE-EAS SAE SERIAL NO-S1850 C229678 MAX CAPACITY -150KG	Make/Model: Precia Molen Range; upto 100 kg Readability : 0.010 kg S. No/ID: 03F980739/W8150-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-EAS SAE SERIAL NO-S1850 C229678 MAX CAPACITY -150KG	Make/Model: Precia Molen Range; upto 100 kg Readability : 0.010 kg S. No/ID: 03F980739/W8150-A
Scope 1	Refrigerant	Weight of gas filled	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-EAS SAE SERIAL NO-S1850 C229678 MAX CAPACITY -150KG	Make/Model: Precia Molen Range; upto 100 kg Readability : 0.010 kg S. No/ID: 03F980739/W8150-A

Scope	Data point	Data Source		Data Requirements	Plant Location					
		First level	Second level	Check 1 (Share OEM's user manual/spec if available)	Pondicherry	Perundurai	Jalgaon	Sanand	NER-1	NER-2
Scope 1	Natural gas	Natural gas meter	Bill	Make/Model Number of weighing platform	NA	NA	NA	Make:ROMET LTD Model: Adem PTZ Ver:DI Temp: -40 to 50 C Pressure: 0.9 to 10 Bar	NA	NA
Scope 1	Petrol	Petrol meter at petrol pump	Bill	NA	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 weighing platform	NA	NA	ATHENA - ATB Digital Bomb Calorimeter Model-ATB - 5A /6/7	NA	NA	NA

Annexure 4:

Data sources for emission calculations

Data point	Data Source	
	First level	Second level
Electricity	Electricity meter	Electricity meter
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