Lanka Leather Fashion (Private) Limited

GREENHOUSE GAS ASSESSMENT REPORT 2024

11th October 2024

Table of Contents

Executive Summary

Organisational Goals and Inventory Objectives

Assessment Boundary and Scope

GHG Inventory of Emissions and Removals

Results by Emissions Category

GHG Reductions and Performance Tracking

GHG Information Management

Observations and Recommendations

References

Nomenclature

ABBREVIATIONS	EXPLANATION
BOD	Biological Oxygen Demand
CO_2	Carbon Dioxide
CEB	Ceylon Electricity Board
COD	Chemical Oxygen Demand
CH_4	Methane
CO_2e	Carbon Dioxide Equivalent
CSR	Corporate Social Responsibility
CCC	Climate & Conservation Consortium
CDP	Carbon Disclosure Project
DECC	Department of Energy and Climate Change
DEFRA	Department for Environment Food and Rural Affairs
GHG	Greenhouse Gas
GWP	Global Warming Potential

ABBREVIATIONS	EXPLANATION
HFC	Hydrofluorocarbon
HVAC	Heating, Ventilating, and Air Conditioning
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisation for Standardization
LPG	Liquid Petroleum Gas
N_2O	Nitrous Oxide
PFC	Perfluorocarbon
SF_6	Sulfur Hexafluoride
SL	Sri Lanka
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute

Project Summary

Client	**Lanka Leather Fashion (Pvt) Ltd**	
Site Location	Phase 1, LPZ, Ring Road, Katunayake, Sri Lanka	
Assessment Type	Organisational Greenhouse Gas Assessment	
Applied Standards	WBCSD/WRI GHG Protocol, PAS 2060, ISO 14064-1, ZeroCarbon® Guideline	
Consolidation Approach	Organisational GHG Assessment - Operational Control	
Assessment Scope	On-Site Energy, Fugitive Emissions, Company Owned/Leased Vehicles, Electricity, Electricity Transmission and Distribution, Third-Party Deliveries, Employee Commuting & Fuel Allowance, Foreign Business Travel and Waste Disposal	
Reporting Period & Frequency	01st January 2023 – 31st December 2023 (Annual)	
Purpose of the Report	This report will mainly be used to communicate the carbon footprint of the company that is offset, monitor internal GHG performance indicators and sustainability activities aligned with the Sustainable Development Goals	
Intended User	Management and Stakeholders of Lanka Leather Fashion (Pvt) Ltd	
Dissemination Policy	No dissemination policy and the Assessment will not be made available to the public. Results may be published for sustainability reporting purposes	
Base Year	2014 (year in which the assessment was first conducted)	
Report ID	CCC/GHG/2024_10/001/V3F	
Assessor	Hisho Ravilojan	external.hisho@carbonconsultco.com
Quality Assurance Assessor	Sajeewa Ranasinghe	external.sajeewa@carbonconsultco.com
Persons Responsible*	Gayan Anthony	gayan@llfonline.com

*Responsible for handling the GHG assessment and liaising with the consultant, and for upholding, overseeing and implementing sustainable related activities

Executive Summary

Climate & Conservation Consortium conducted a comprehensive Organisational Greenhouse Gas (GHG) Assessment for Lanka Leather Fashion (Pvt) Ltd (hereon referred to as LLF) to reassess the GHG emissions of its operations for the 2023 Calendar Year Reporting Period. This GHG Assessment was based on the WBCSD/WRI GHG Protocol and ZeroCarbon® Guideline.

Table 1: GHG Emissions Summary for 2023 Calendar Year Reporting Period

Category 1	Direct GHG emissions released from sources that are owned or controlled by the company	74.04	tCO2e	6.77%
Category 2	Indirect GHG emissions associated from the generation of imported energy	341.03	tCO2e	31.18%
Category 3	Indirect emissions associated with transportation	662.89	tCO2e	60.61%
Category 4	Indirect GHG Emissions from products used by the Organisation	15.82	tCO2e	1.45%
TOTAL GHG EMISSIONS (tCO2e)		**1,093.78**	**tCO2e**	**100.00%**

- The total GHG emissions of the facility are **1,093.78 tCO_2e**
- As seen in the graph, the majority of the emissions are from Category 3, followed by emissions from from Category 2
- Total GHG emissions have increased by **205.71 tCO_2e (23%),** from last year

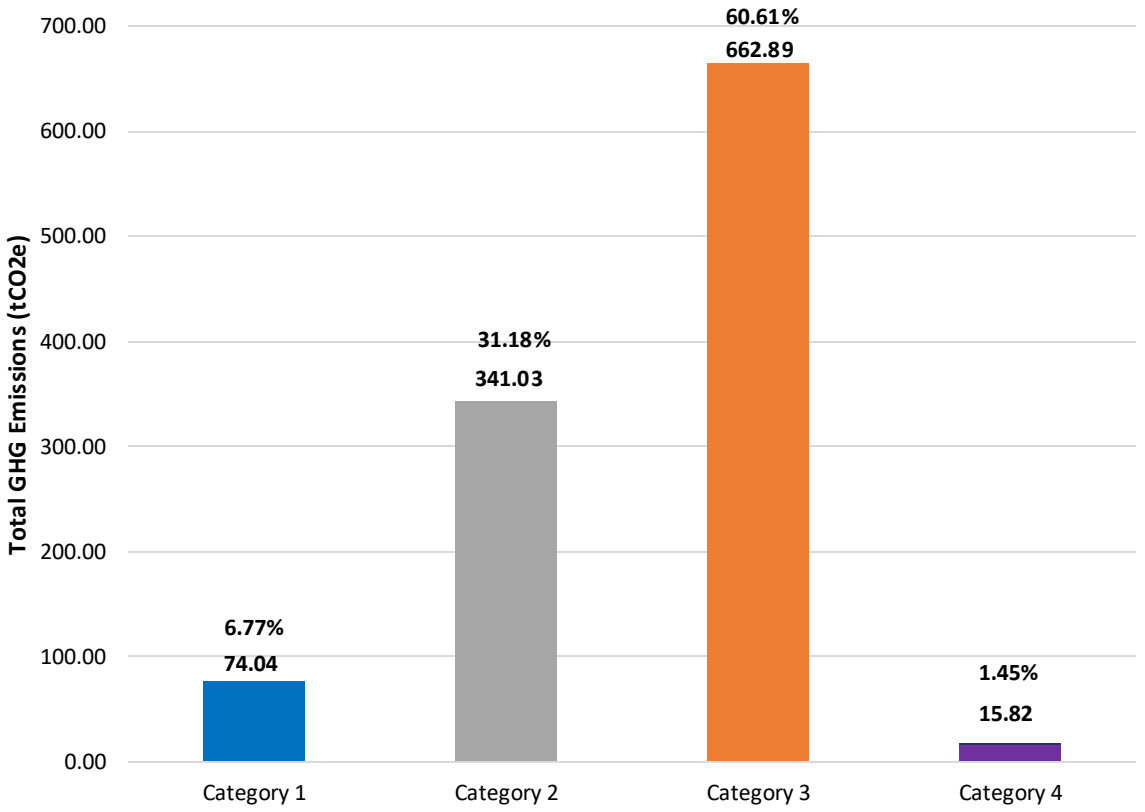

Figure 1: Overall GHG Emissions Summary

About the Company

Climate & Conservation Consortium

Climate & Conservation Consortium (CCC) is a firm dedicated to helping organisations develop and communicate effective sustainability practices. Our consultants are committed to helping companies reduce their environmental impact and maximise the resulting CSR and marketing opportunities. CCC provides professional services based on the fundamental principles of calculation, mitigation and communication and offers the following services:

- Corporate Carbon, Water and Waste Footprints
- Goods and Services Carbon and Water Footprints
- Facilitating the purchase of high quality, ethical carbon offsets
- Providing carbon reduction and implementation strategies
- Life Cycle Analysis (LCA) for products and services
- Sustainable business development consultancy
- Sustainability Product Labelling

1. Organisational Goals and Inventory Objectives

About the Client

Lanka Leather Fashion (Private) Limited

LLF is a European-owned and managed leather garment manufacturer located in Sri Lanka. Established in 1982, the factory is situated in the Katunayake Export Processing Zone and handles the sourcing and development of finished leather products for clients around the globe.

As consumer demand for green products and services increase globally, companies are now beginning to earn sustainability certifications to cater to the needs and wants of clients. This growing sustainability sentiment among environmentally conscious industries has allowed companies such as LLF to set an example in this area.

As an established leather products manufacturer in the country, LLF is committed towards reaffirming its status as an industry leader in environmental sustainability by recalculating the carbon footprint of its operations for a seventh consecutive year. This effort is part of a long-term commitment to reduce the company's environmental impact and become a more responsible corporate citizen, whilst ensuring it reaps the benefits of being a sustainable, ethical and eco-friendly business entity.

1.2 Greenhouse Gases and Impact on Global Warming

The GHGs taken into account are indicated in Table 2 where the Global Warming Potential (GWP) is taken from the Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report, 2014 (AR5).

Table 2: Global Warming Potentials

Greenhouse Gas	Chemical Formula	GWP
Carbon dioxide	CO_2	1
Methane	CH_4	28
Nitrous Oxide	N_2O	265
Hydrofluorocarbons	HFCs	4 - 12,400
Perfluorocarbons	PFCs	6,630 - 11,100
Sulfurhexafluoride	SF_6	23,500
Nitrogen Trifluoride	NF_3	16,100

2. Assessment Boundary and Scope

2.1 Assessment Boundary

As per the GHG Protocol, the Assessment Boundary for a business entity can be set according to its Financial or Operational Control. For this assessment, the boundary is set as Operational Control.

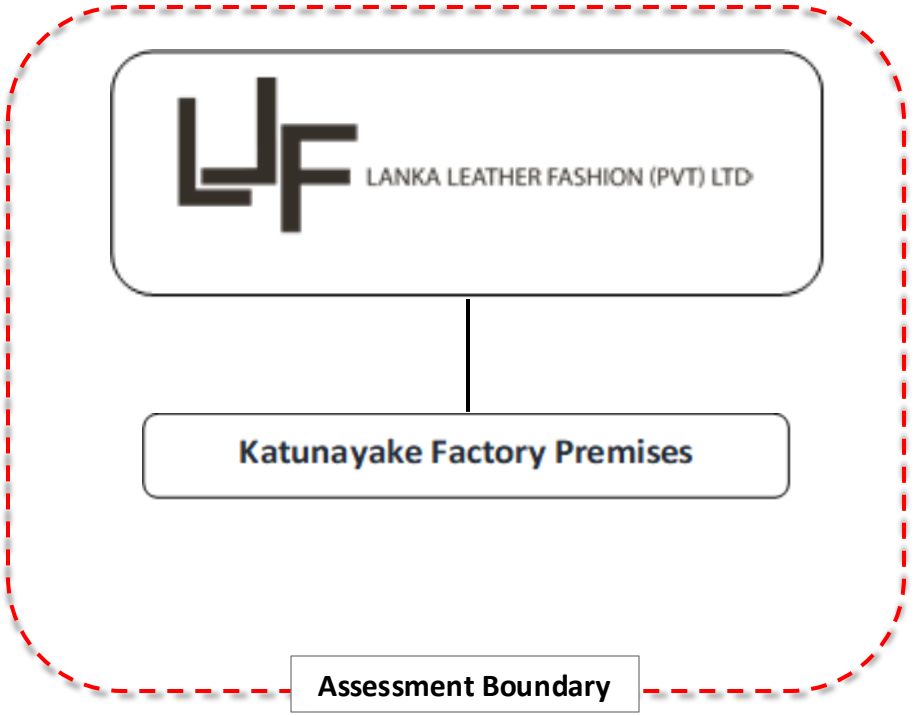

Figure 2: Organisational Structure and Assessment Boundary

2.2 Emissions Sources Included in the Assessment

- **Direct Emissions – Category 1:** Direct GHG emissions and removals (On-site Energy, Fugitive Emissions, Company Owned vehicles)
- **Indirect Emissions – Category 2:** Indirect GHG emissions from imported energy (Purchased Electricity and Electricity Transmission & Distribution[T&D] Losses)
- **Indirect Emissions – Category 3:** Indirect GHG emissions from transportation (Third-party Deliveries, Employee Commuting & Fuel Allowance, Foreign/Local Business Travel, Waste Transportation)
- **Indirect Emissions – Category 4:** Indirect GHG emissions from products used by organisation (Waste Disposal, Water consumption)
- **Indirect Emissions – Category 5:** Indirect GHG emissions associated with the use of products from the organisation *[NOT CONSIDERED/APPLICABLE]*

Figure 3: Emissions Sources

3. GHG Inventory of Emissions and Removals

3.1 Quantification Approach

- **Quantification Methodology**

GHG assessments are generally carried out in accordance with one of two internationally recognised standards for accounting and reporting corporate greenhouse gas emissions. The best known and most widely accepted is the Greenhouse Gas Protocol - Corporate Accounting and Reporting Standard (GHG Protocol), developed in a partnership with the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI). This assessment has been done in accordance with the GHG protocol, ISO 14064-1 and is also compliant with the Carbon Disclosure Project (CDP). Both these standards provide guidelines regarding organisational and operational boundaries, quantification and standard reporting practices. For this study, client-supplied data was analysed, and the GHG emissions were quantified using the most current emission factors in line with the GHG Protocol.

Figure 4: WBCSD/WRI GHG Protocol

- **Selection of Emission Factors**

Emission factors were sourced from DEFRA/DECC's 'Environmental Reporting: Guidelines for Company Reporting on Greenhouse Gas Emissions' (2023), Indian GHG Program (2015), and the U.S. Environmental Protection Agency Inventories (2008/2013) and IPCC Guidelines for National Greenhouse Gas Inventories (2006). The emission factor for electricity was obtained from the Sri Lanka Energy Balance Report published by the Sri Lanka Sustainable Energy Authority (2021).

The aforementioned emission factors were selected for the quantification of all applicable emissions of a business entity. Emission factors have been prioritised according to National, Regional and International categories. National factors were only available for electricity, and Indian factors were used to quantify emissions from passenger transportation to increase accuracy (as it is most appropriate for Sri Lanka) and International factors (DEFRA) have been used for all other emission sources.

3.2 Assessment Results

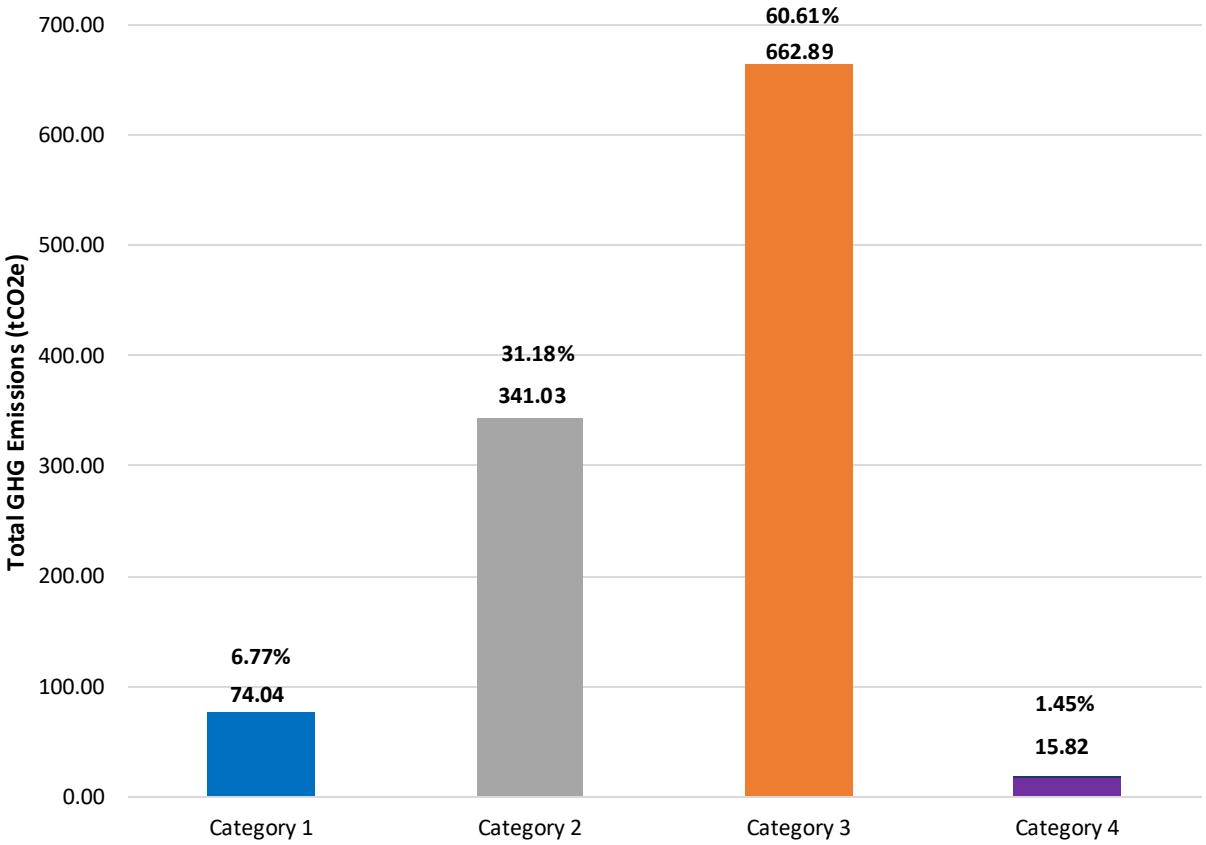

Figure 4: Overall GHG Emissions Summary

- The gross overall emissions for LLF are **1,093.78 tCO_2e**
- As seen in Figure 4, the most significant emissions are from Category 3, which accounts for 60.61% (662.89 tCO_2e) of the total GHG emissions
- Second highest emissions are from Category 2 amounting to 31.18% (341.03 tCO_2e) of the total GHG emissions
- Category 1 and Category 4 combined only account for 8.22% (89.86 tCO_2e) of the total GHG emissions

Category 1: Direct GHG Emissions and Removals
Category 2: Indirect GHG Emissions from Imported Energy
Category 3: Indirect GHG Emissions from Transportation
Category 4: Indirect GHG Emissions from Products used by the Organisation

3.3 Results by Emissions Source

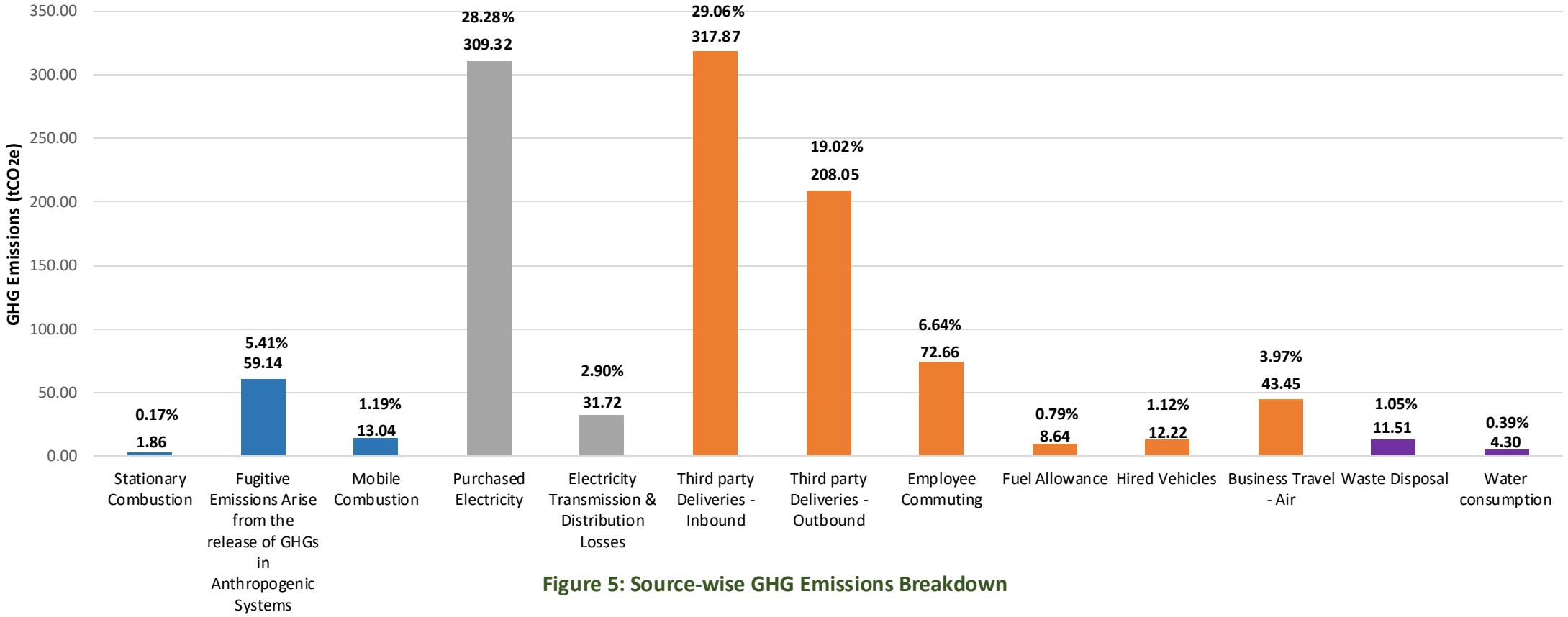

Figure 5: Source-wise GHG Emissions Breakdown

- When considering individual emissions sources, emissions from Inbound Third-Party Deliveries amounts to the highest at 317.87 tCO_2e.
- The Purchased Electricity accounts for 28.28% (309.32 tCO_2e) of the total emissions and Outbound Third-Party Deliveries, the third highest is 19.02% (208.05 tCO_2e) of the total emissions.

3.4 GHG Emissions Comparison

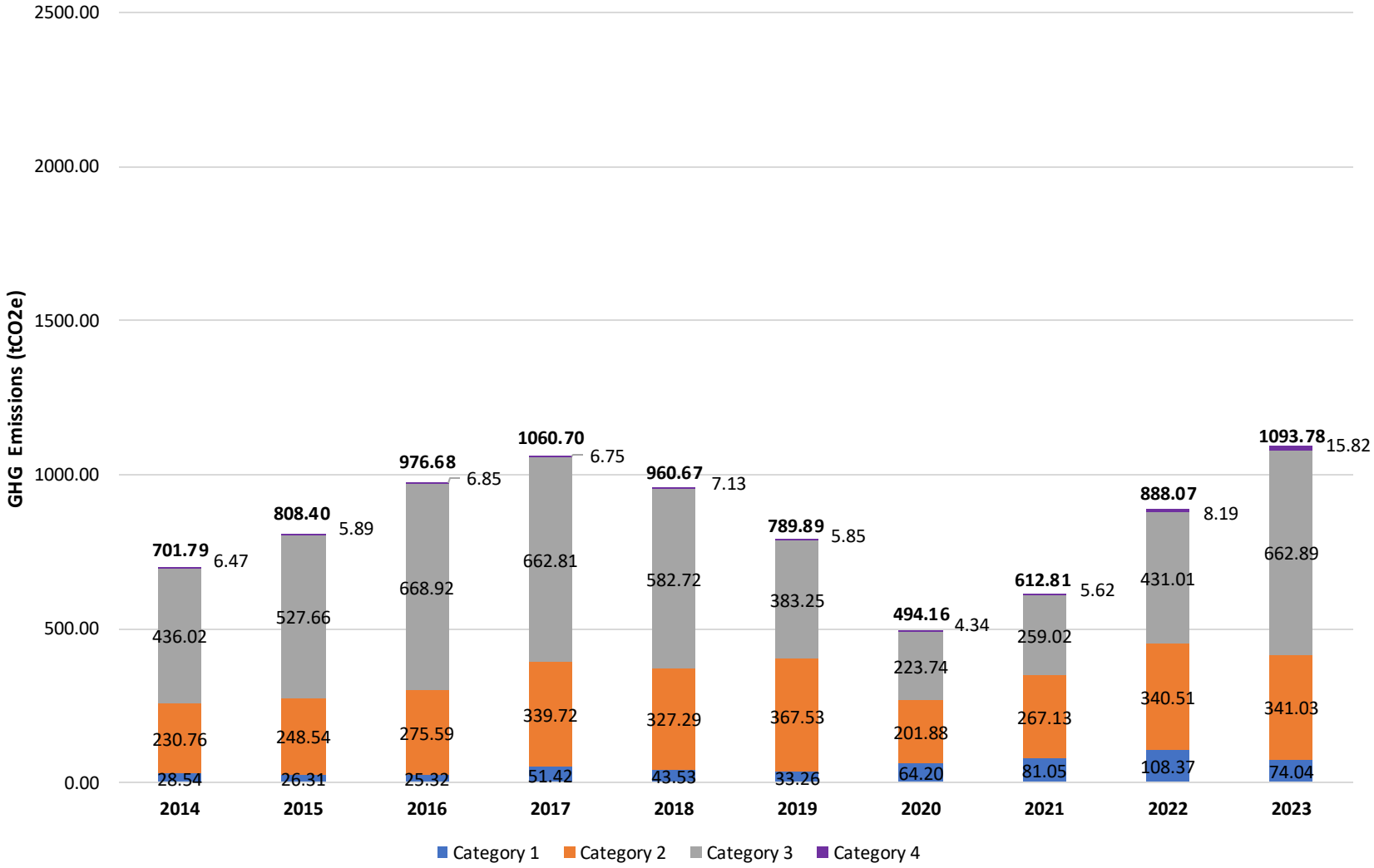

Figure 6: Overall GHG Emissions Comparison

- Figure 6 shows a comparison between GHG assessments from 2014 to 2023. As shown in Figure 6, the total GHG emissions have significantly increased by approx. 205.71 tCO_2e (23%) when compared to the previous year and increased by approx. 391.99 tCO_2e (56%) when compared to the base-year assessments.

- Compared to the previous year, GHG emissions from Category 1 have decreased by 34.33 tCO_2e (103.81%) but all the other categories have increased by the following values:
  - Category 2: 0.52 tCO_2e (0.15%)
  - Category 3: 231.89 tCO_2e (53.80%)
  - Category 4: 7.63 tCO_2e (93.19%)

3.5 Category 1 GHG Emissions Comparison

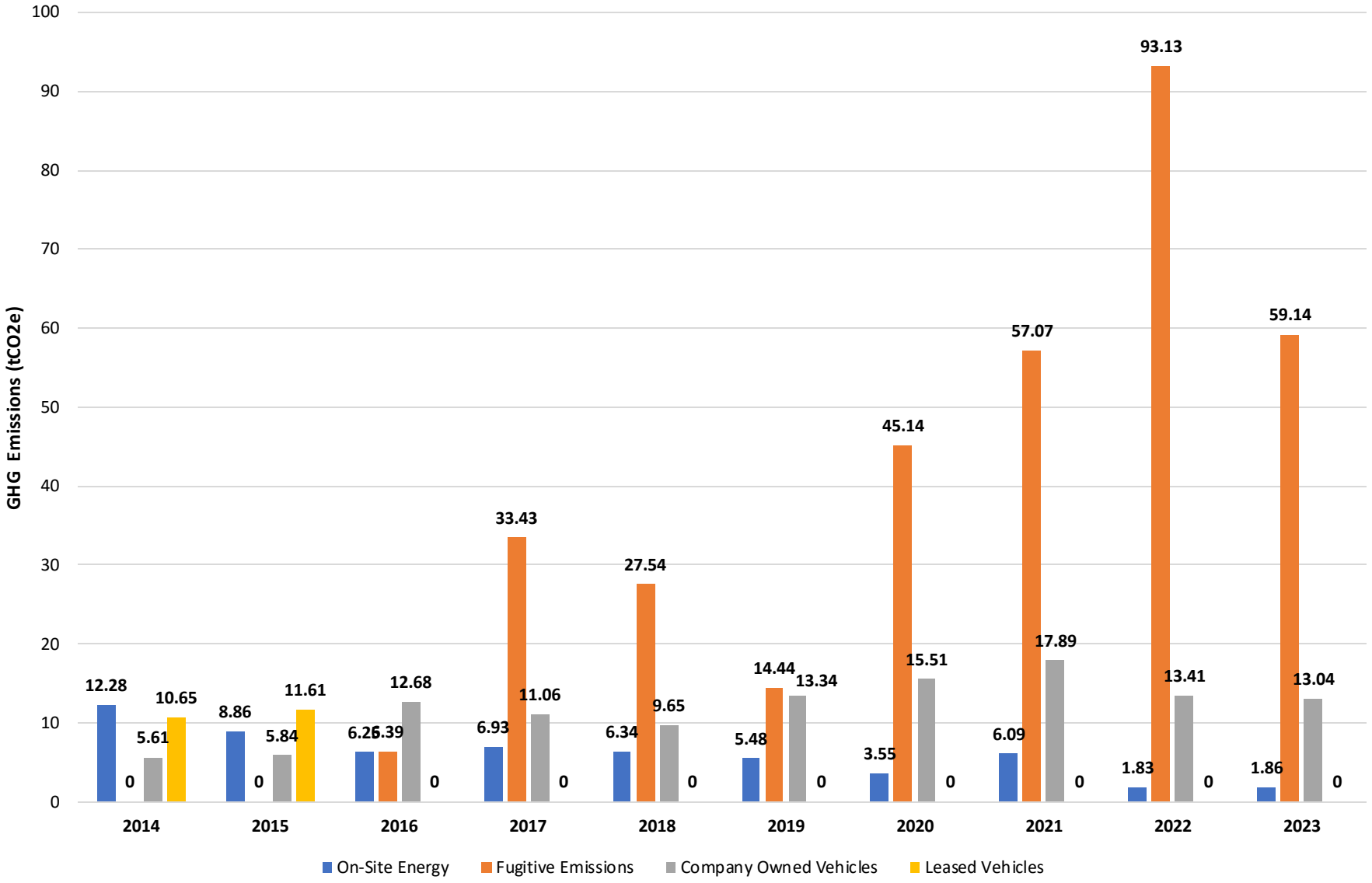

Figure 7: Category 1 GHG Emissions Comparison

- Fugitive Emissions have drastically decreased due to a reduction in air-conditioner refrigerant gas leakages (R410A) compared to the previous years. It has decreased by 33.99 tCO_2e (36%) when compared to last year and is the primary reason for the decrease in Category 1 emissions.
- Company Owned Vehicle emissions have slightly decreased by 0.37 tCO_2e (3%) over the 2022 calendar year.

3.6 Category 2 GHG Emissions Comparison

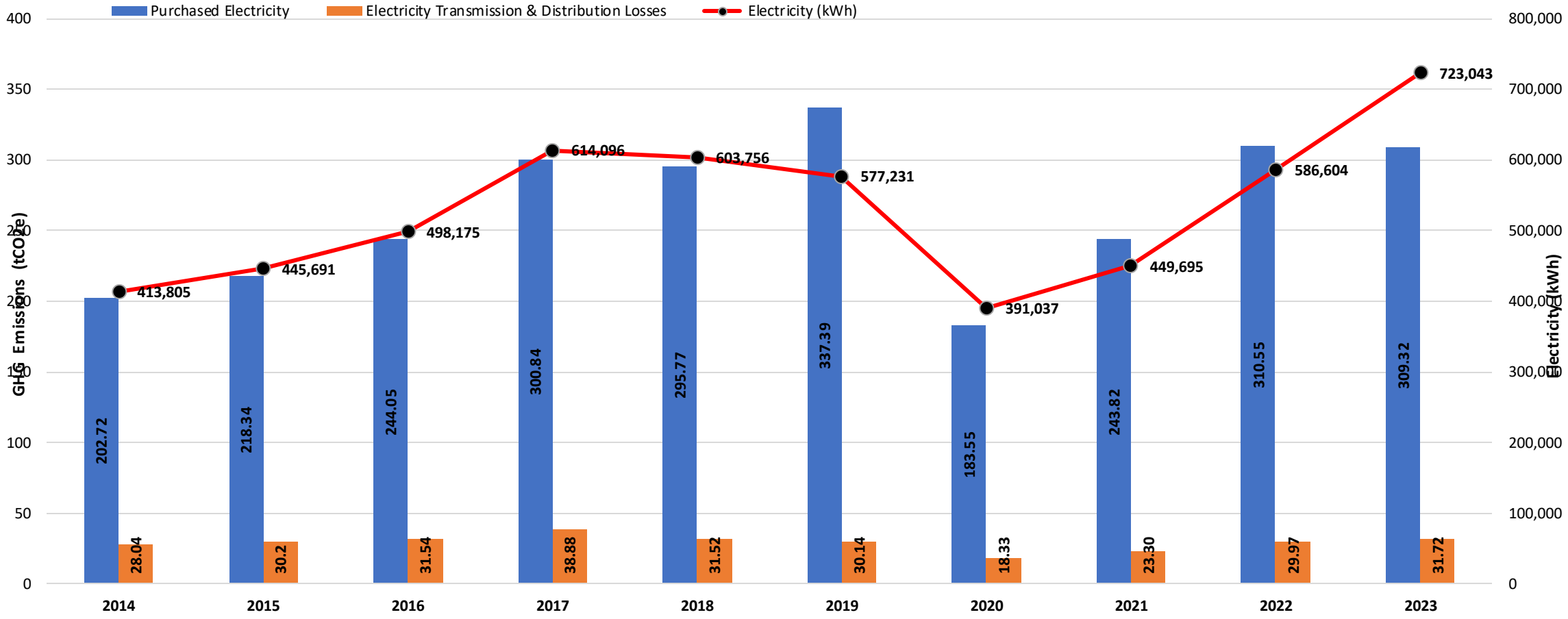

Figure 8: Category 2 GHG Emissions Comparison

- As seen in Figure 8, Purchased Electricity emissions have decreased by 1.23 tCO_2e (0.40%) compared to the previous year even though an increase of 136,439 kWh in electricity consumption is recorded in this reporting period. This is because of the reduction in the emission factor for this reporting period.

3.7 Category 3 GHG Emissions Comparison

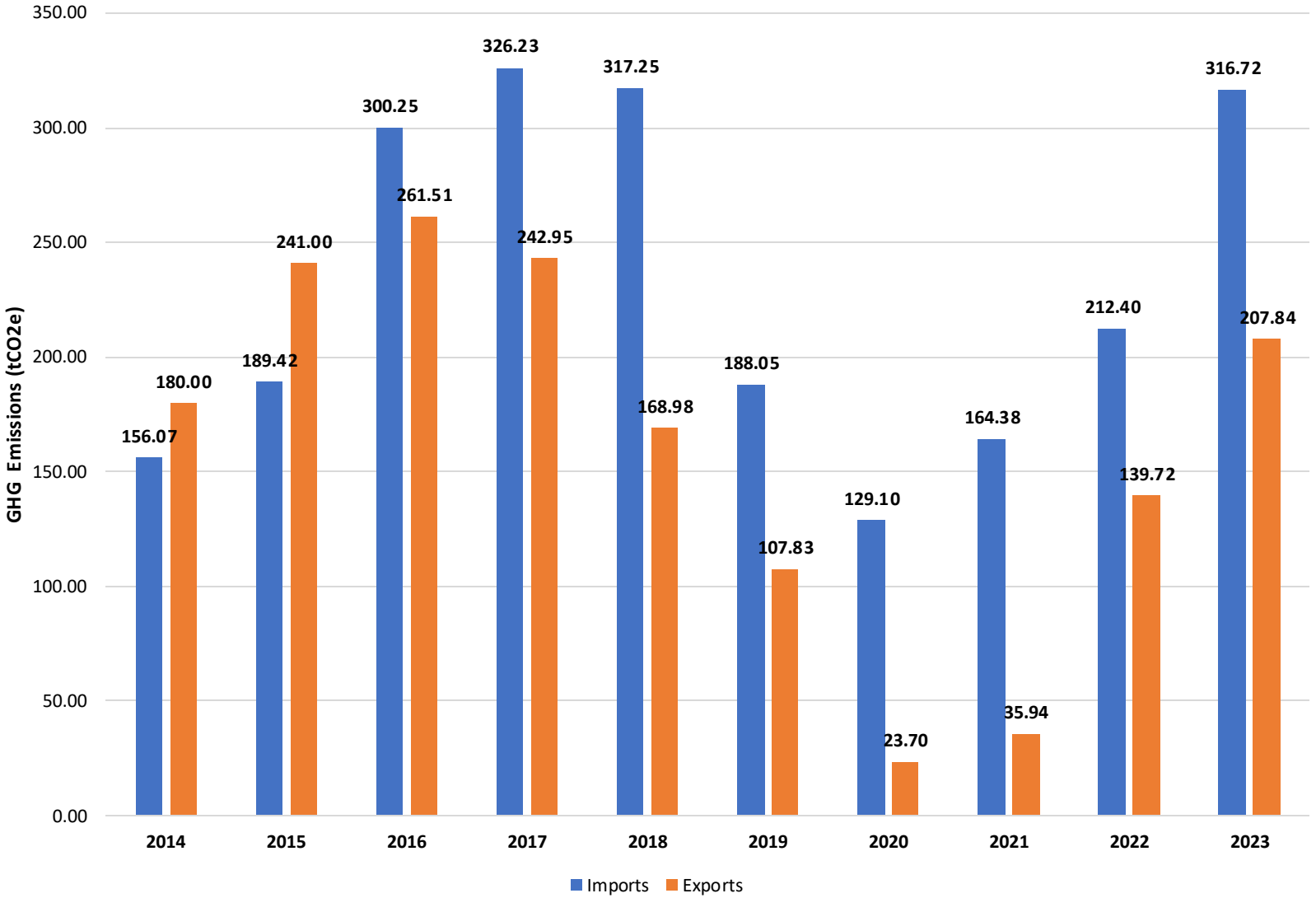

Figure 9: Category 3 Imports & Exports GHG Emissions Comparison

- There is a drastic increase in import emissions of approximately 104.32 tCO_2e (50%) and a significant increase in export emissions of approximately 68.12 tCO_2e (49%) when compared to the previous year.
- This increase in export emissions can be attributed to the usage of more air freight than sea freight, as the air freight will emit more GHG emissions rather than the sea freight.

3.7 Category 3 GHG Emissions Comparison (cont'd)

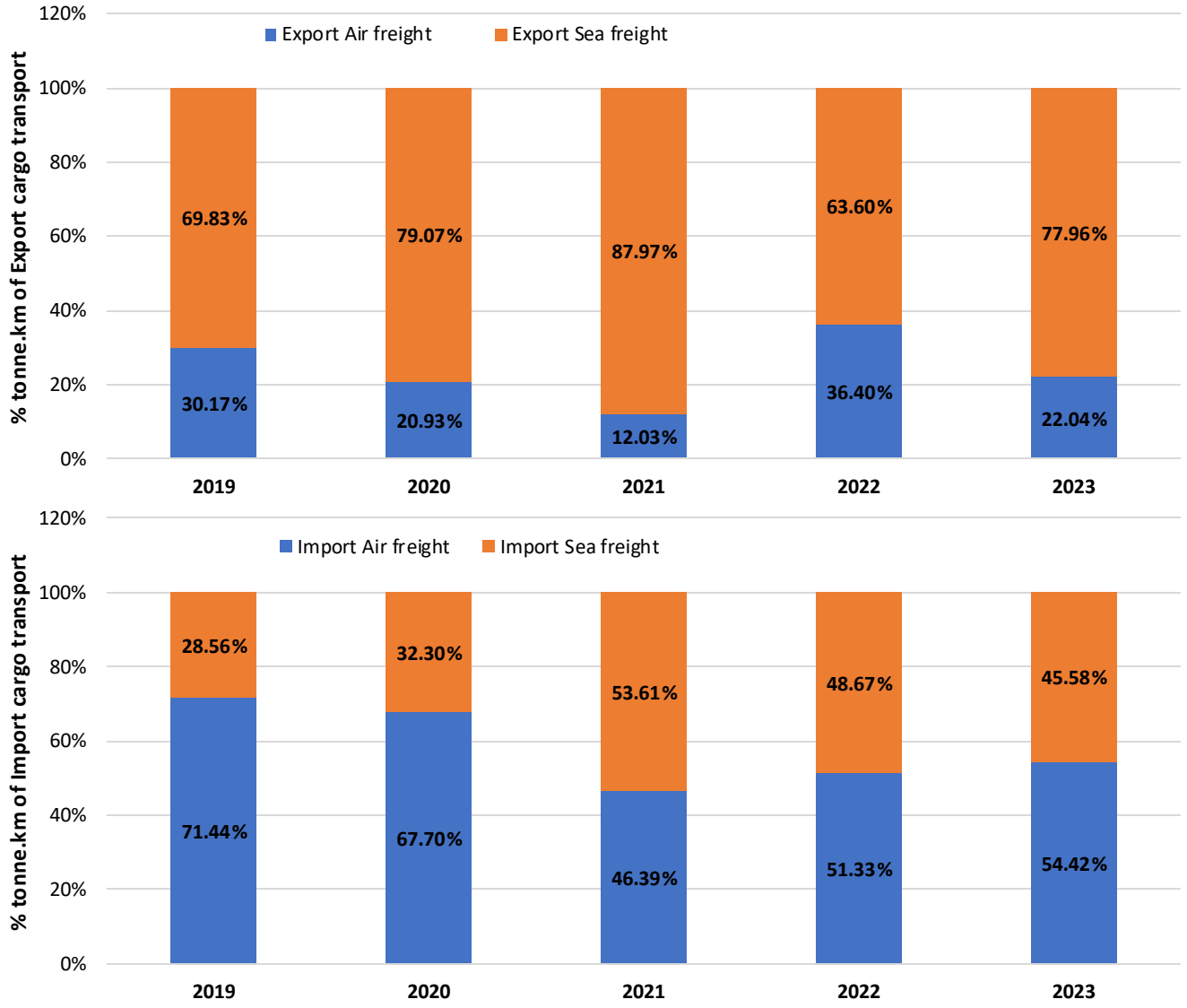

Figure 9: Air Freight to Sea Freight Shift Comparison (tonne.km)

- As seen in Figure 9, there is a 14.36% increase from air to sea freight in exports when compared to the last year. There is also a 3.09% increase from sea to air freight in imports this year when compared to last year.
- The comparison is done using "tonne.km" values. The values for this particular comparison have been used *without filtering incoterms** to better identify the significance of the change in freight transportation method. However, the quantification of import GHG emissions *does account for incoterms.*

** Please refer Lanka Leather Fashion (Pvt) Ltd, Greenhouse Gas Report 2020 for more information on incoterm usage.*

3.7 Category 3 GHG Emissions Comparison (cont'd)

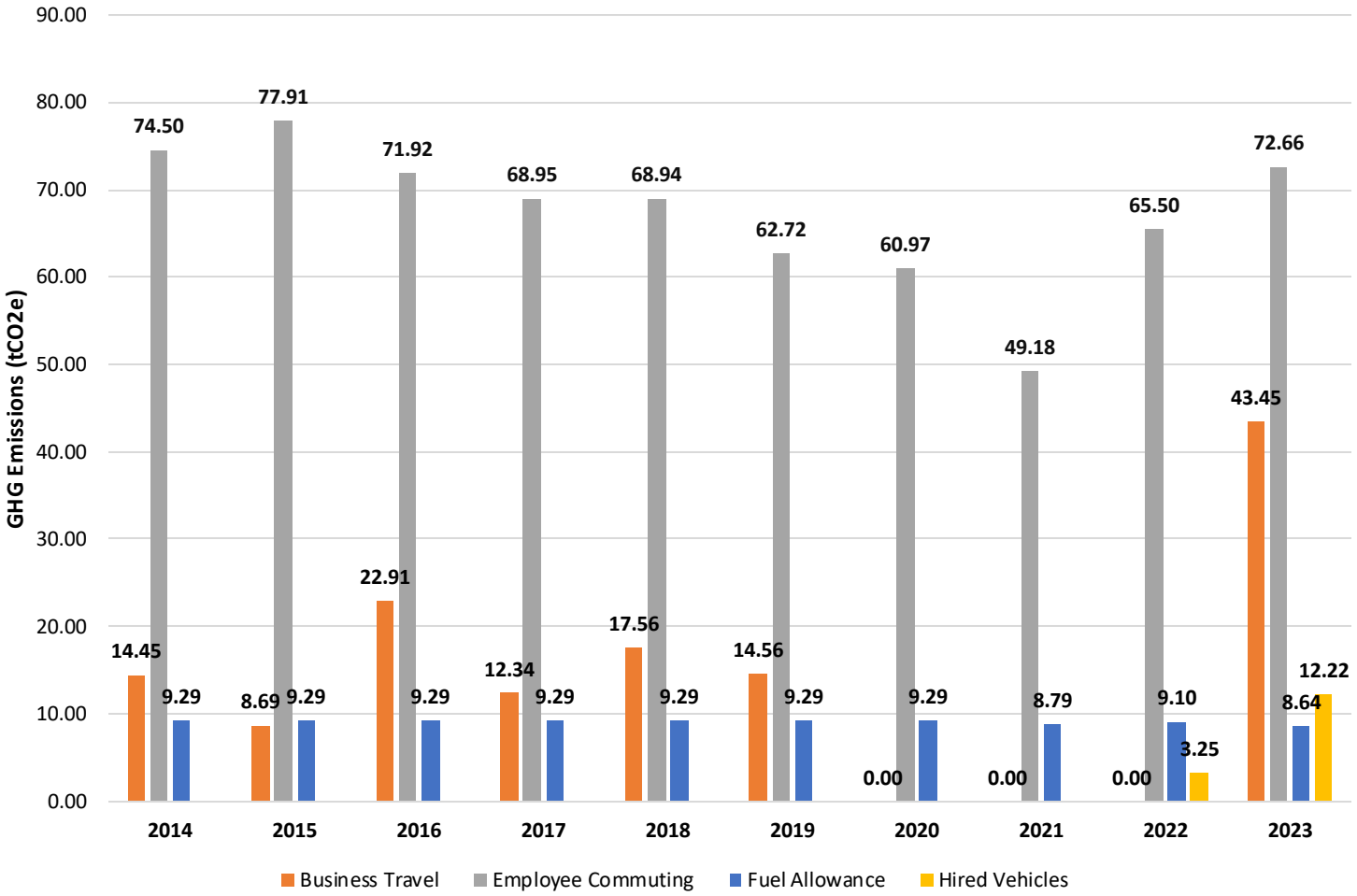

Figure 10: Category 3 Employee Commuting & Fuel Allowance GHG Emissions Comparison

- GHG emissions from Employee Commuting have increased by 11%, as there was a significant increase in employees numbers compared with last year.
- Even though the employee count has increased, there is a 1.84 tCO_2e (3%) reduction compared to the base-year due to the different emission factors used to quantify emissions at the time.
- Fuel allowance-related GHG emissions have slightly decreased (5%) compared to the last year and also decreased (7%) compared to the base year.
- This year 43.45 tCO_2e emissions have been accounted for business travel which was not accounted for the calendar years of 2020, 2021 and 2022.

3.8 Category 4 GHG Emissions Comparison

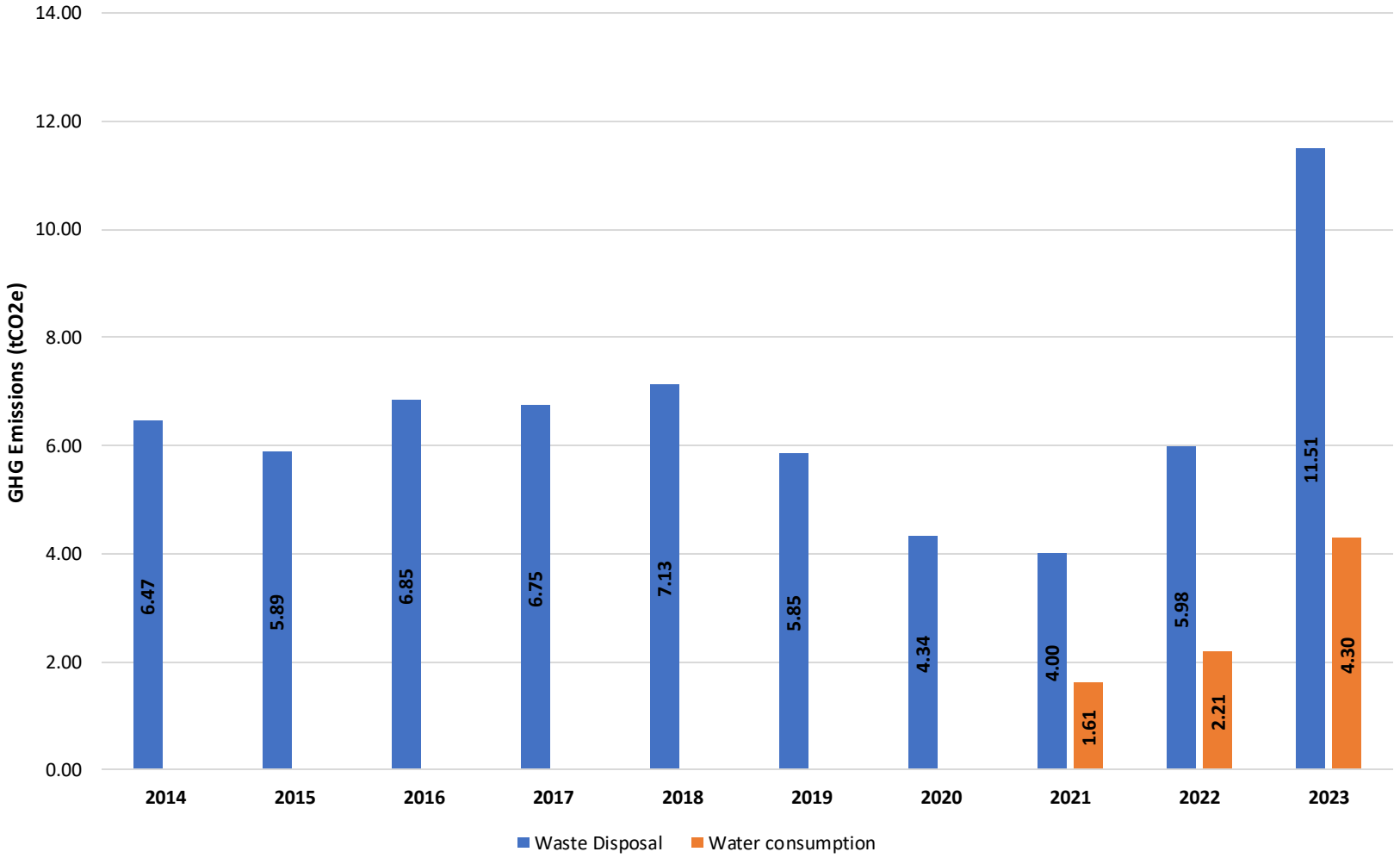

Figure 11: Category 4 GHG Emissions Comparison

- Category 04 includes GHG emissions from Waste Disposal and Water Consumption.
- Category 04 GHG emissions have not exceeded 1% of total emissions over the past the years, but this year Category 04 accounts for 1.45% of the total emissions.
- There is an increase in Waste Disposal GHG emissions of 92.55% (5.53 tCO_2e) due to the increase in employees and production compared to the last year.
- GHG Emissions from Water Consumption have increased by 95% compared to the last year.

3.9 GHG Emission Reduction Projects

Table 3 : Solar Generated Electricity in 2023

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Electricity generated (kWh)	31,100	29,887	34,472	34,498	30,923	28,896	15,238	32,546	24,733	28,456	29,272	25,468	**345,489**

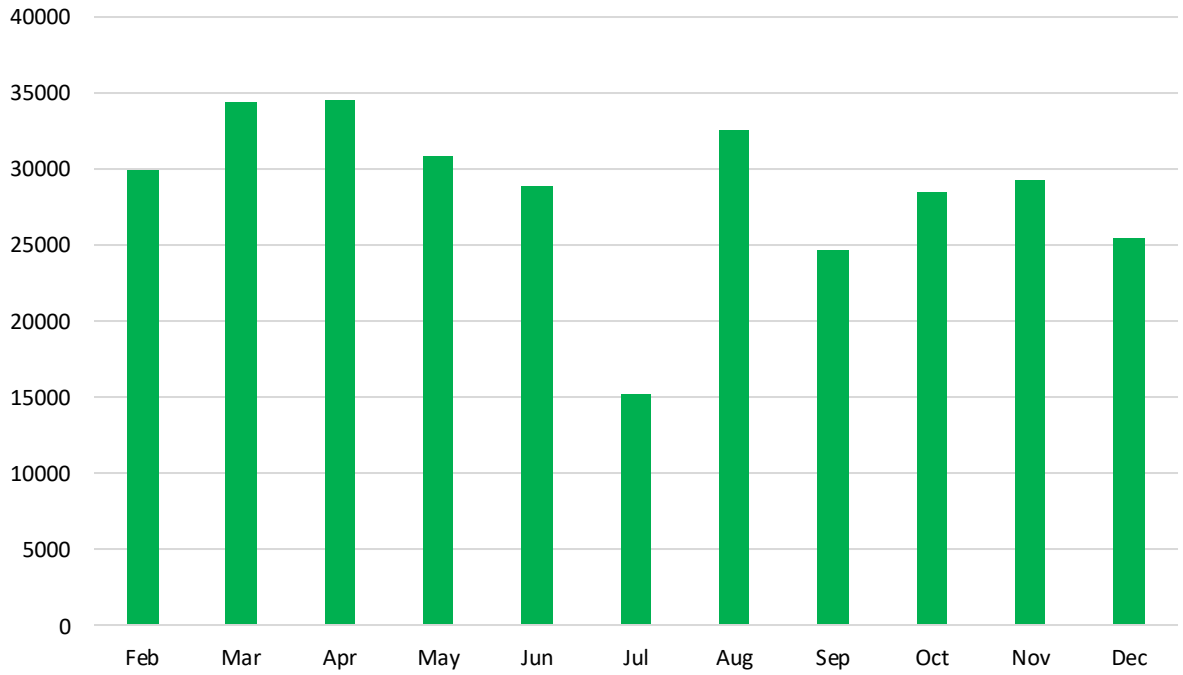

Figure 12: Solar Generated Electricity per Month in 2023 (Jan to Dec)

- Total electricity generated through the rooftop solar installation and exported to the grid was **356,489** kWh.
- GHG emissions avoided due to the displacement of electricity from the National Grid as a result of the above was 244.57 tCO_2e.

3.10 Assumptions and Exclusions

Table 4: Summary of Quality of Data Collected

SCOPE	CATEGORY NAME	EMISSIONS SOURCE	DATA QUALITY
1	Direct GHG emissions and removals	• On-site Energy Generation	Complete
		• Fugitive Emissions	Complete
		• Company Owned & Leased Vehicles	Complete
2	Indirect GHG emissions from imported energy	• Purchased Electricity	Complete
		• Electricity Transmission & Distribution Losses	Complete
3	Indirect GHG emissions from transportation	• Third-party Deliveries	Complete
		• Employee Commuting	Complete
		• Fuel Allowance	Complete
		• Foreign Business Travel	Complete
		• Waste Transportation	Complete
		• Hired Vehicles	Complete
4	Indirect GHG emissions from products used by the Organisation	• Waste Disposal	Estimated
	Water Consumption	• Water Consumption	Complete

3.10 Assumptions and Exclusions (cont'd)

ASSUMPTIONS

Company Owned Vehicles

Company owned vehicle mileage values in litres were calculated using a km/L conversion factor (the same factors were used in the previous assessments). Each vehicle has a separate km/L conversion factor that had been calculated beforehand.

Waste Disposal

Weights of production, polythene and paper/cardboard waste used to quantify emissions were calculated using a percentage from the total waste of the factory (the same percentages from the base-year assessment were used). All waste types were measured separately for one week and the weight-wise percentages of each waste type were calculated. These percentage breakdowns were applied to the total factory waste (not segregated) to quantify emissions for each waste type.

According to professional judgement, there are no notable changes with the aforementioned percentages.

Waste Transportation

Food waste weight values to quantify waste transportation emissions were extrapolated for the reporting year using a per head value.

EXCLUSIONS

Work From Home-related emissions were excluded due to its insignificance as Office Staff had worked more at the facility premises, comparatively.

4. GHG Reductions and Performance Tracking

4.1 Key Performance Indicators

GHG emissions should be monitored against these parameters to gauge Company performance. Notable KPIs to gauge factory performance for the 2023 assessment are indicated in the table below.

Table 5: Key Performance Indicators

KPI	Value
Total Emissions ($kgCO_2e$)/Production Piece	5.70
Total Emissions ($kgCO_2e$)/Export Piece	5.63
kWh/Production Piece	3.77
tCO_2e/Employee	1.75
Import Emissions ($kgCO_2e$)/Production Piece	1.65
Export Emissions ($kgCO_2e$)/Export Piece	1.07

- Primary KPIs are related to the total GHG emissions against production and export quantities.
- A KPI for electricity against production quantity was also developed due to its significant impact on GHG emissions.
- Since the most significant emissions throughout the years have been related to imports and exports, KPIs have been developed for the emissions of the same against production and export quantities.

4.2 Key Performance Indicator Comparison

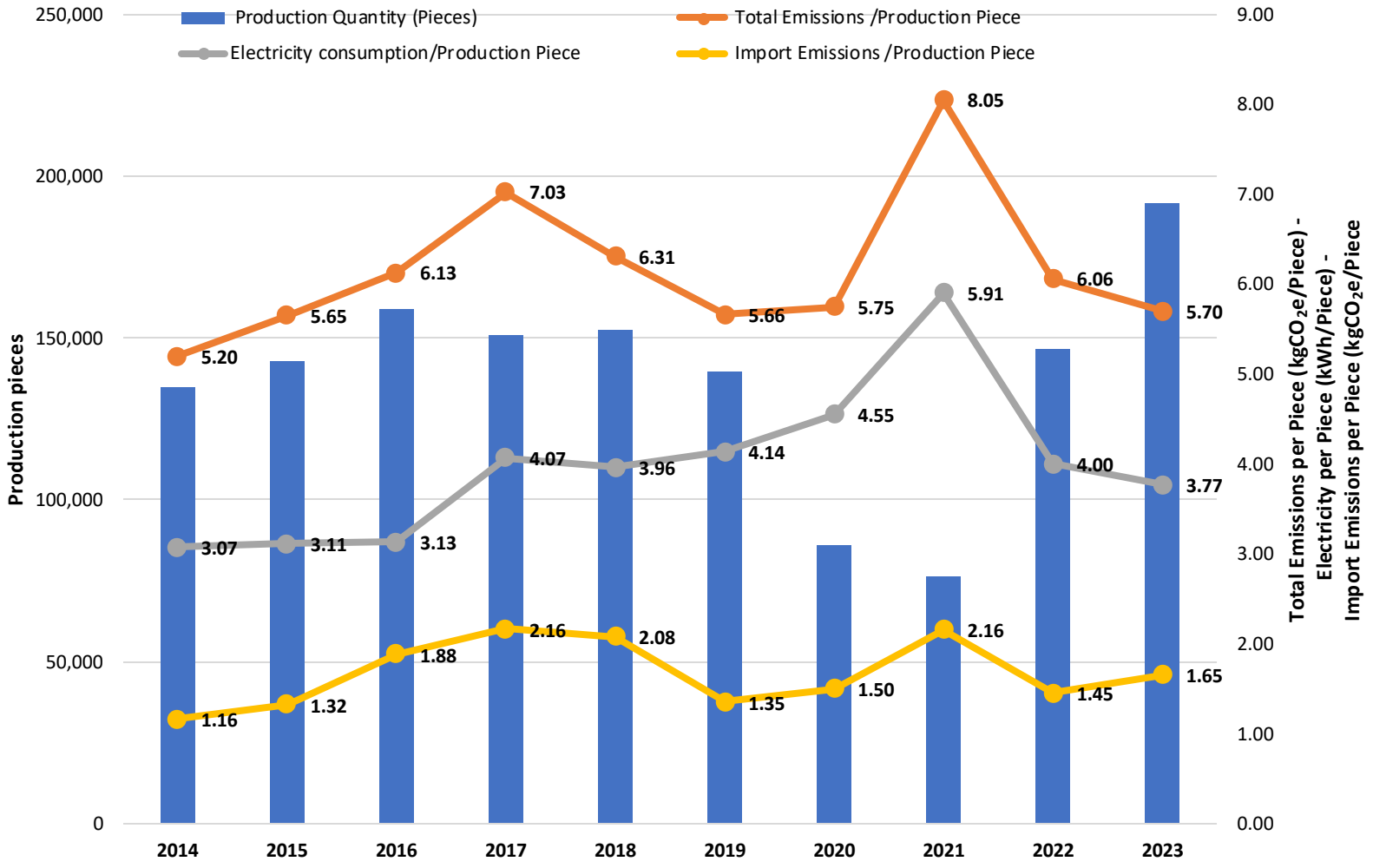

Figure 13: Total Emissions, Import Emissions and Electricity Consumption per Production Piece vs. Production Quantity

- Figure 13 depicts the primary KPIs from Table 5, compared across the past 10 years against the quantities of pieces produced. The KPIs continue to be positive as they have been across all years.
- Compared to last year:
  - Total Emissions per Piece has decreased by 5.97%
  - Import Emissions per Piece has increased by 13.85%
  - Electricity Consumption per Piece has decreased by 5.89%
- Total emissions per piece has decreased with the high production even though electricity consumption is higher compared to last year.

4.2 Key Performance Indicator Comparison (cont'd)

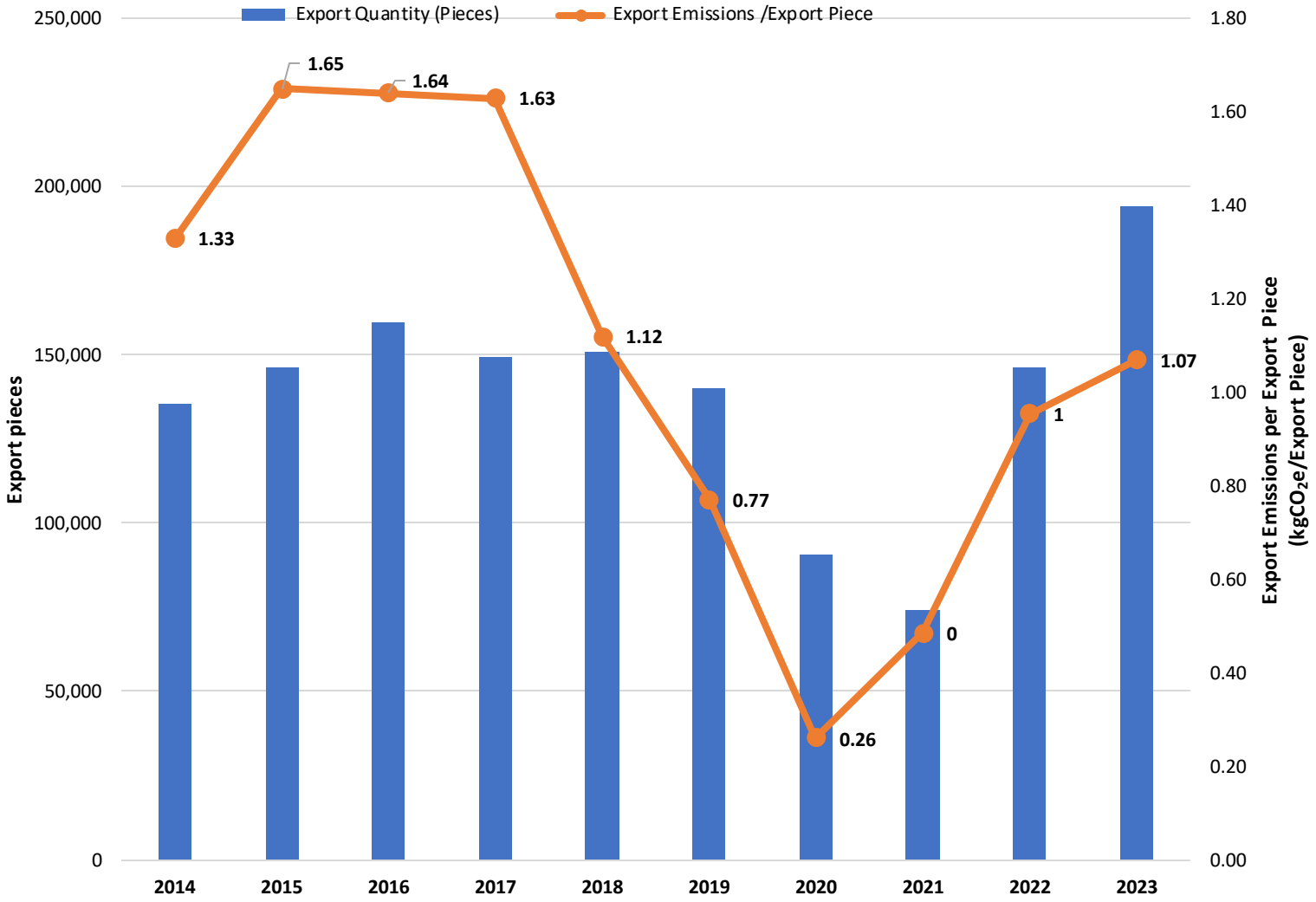

Figure 14: Export Emissions per Export Piece vs. Production Quantity

- The Export Emissions per Piece has significantly increased by 12.08% compared to the previous year.
- Compared to the base-year, the same KPI has decreased by 19.58%
- *Please refer table 3 in the Annexure for a detailed summary of all KPIs across 2014 to 2023*

5. Observations and Recommendations

5.1 Observations and Recommendations

ENERGY

Observation

Since most of the recommendations have already been implemented, measures could now be taken to set department-wise benchmarks at the factory following detailed analyses of energy consumption.

Recommendation

To conduct a Level II Energy Audit to identify further opportunities for energy and cost savings. This can be done following the construction of the new premises, at which point the feasibility of a centralised AC/VRF System can also be analysed.

Observations

- Inefficient light fixtures have been converted to LEDs.
- Automated sensors have been installed for production line lights to automatically switch on and off depending on the sufficiency of natural light from skylights.
- Communication to encourage employee to save electricity *(i.e. stickers near light switches)*

5.1 Observations and Recommendations (cont'd)

WASTE

Observation

Waste is segregated but not measured in the canteen and office areas.

Recommendation

Measure food, polythene, and paper waste in the Canteen and Office areas for a week every month. Regular monitoring of waste through measurement could help identify reduction opportunities and align with company best practices.

KITCHEN LPG

Observation

A solar heater has been installed and as a result Kitchen LPG gas consumption has been reduced from 275 Kgs(2022) to 13Kgs (2023)

THIRD-PARTY DELIVERIES

Observation

An increase in air freight over sea freight in Imports

Recommendation

Gradually communicate with suppliers to provide forecasts with sufficient time to allow raw materials to be transported via sea freight.

6. About the Certification

6.1 ZeroCarbon® Certification

- Following the GHG Assessment of Lanka Leather Fashion (Pvt) Ltd, the company has offset its Organisational Carbon Footprint of **1,093.78** tCO2e for the 2023 Reporting Period by purchasing an equivalent amount of internationally registered Carbon Credits to make the carbon footprint zero.

- Lanka Leather Fashion (Pvt) Ltd has therefore been certified as a 'ZeroCarbon® Company' and retains its Carbon Neutral status.

CERTIFIED

ZERO CARBON COMPANY

sustainablefuturegroup.com

6.2 Carbon Credit Project Supported

Promotion of Renewable Energy Generation in India

Project type: Renewable energy
Region: Asia

Description

This Programme of Activities (REG-PoA) promotes renewable energy generation across India including Karnataka, Rajasthan, Maharashtra, and Madhya Pradesh. Registered under the UNFCC CDM Standard, it supports the development of renewable energy plants and delivers energy to the Indian grids.

Each CDM Programme Activity (CPA) under this REG PoA will comprise of wind and solar renewable energy plants, which will improve the social, economic, environmental and technological wellbeing of those directly impacted.

7. References

7. References

- IPCC (2006). Revised IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual. Intergovernmental Panel on ClimateChange. Cambridge University Press, Cambridge.
- EIA (2010). Energy Explained. Energy conversion calculators. Online: *www.eia.doe.gov/energyexplained/index.cfm?page=about_energy_conversion_calculator. Accessed November 2010.*
- EIA (2013). Carbon Dioxide Emissions Coefficients by Fuel. Released February 14, 2013. Online: *www.eia.gov/environment/emissions/co2_vol_mass.cfm*
- EPA (2008). Climate Leaders. Optional Emissions from Commuting, Business travel and Product Transport. May 2008. U.S. Environmental Protection Agency.
- EPA (2013). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2011. United States Environmental Protection Agency.
- FHWA (2013). Highway Statistics 2011. US Federal Highway Administration. Washington DC 20590. March 2013.
- IEA (2012). CO2 Emissions from Fuel Combustion, 2012 Edition, Highlights. International Energy Agency.
- IPCC (2007). IPCC Fourth Assessment Report: Climate Change 2007. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
- Smith, A., K. Brown, S. Ogilvie, K. Rushton, and J. Bates (2001): Waste management options and climate change. Final Report ED21158R4.1 to the European Commission, DG Environment, AEA Technology, Oxfordshire.
- WRI/ WBCSD. (2010). GHG Protocol. Retrieved October 2010, from The Greenhouse Gas Protocol Initiative: *www.ghgprotocol.org*
- Carbonfund. (2011). How we calculate. Retrieved April 03rd, 2011: *www.carbonfund.org*
- Department of Energy and Climate Change (2023). UK Government conversion factors for Company Reporting. Department for Environment, Food and Rural Affairs.
- India GHG Program (2015). India Specific Road Transport Emission Factors: *www.indiaghgp.org*