VASI Group Companies (Dönsa Textile)

ISO 14064-1 GHG Inventory Report

For Reporting PERIOD: 2021

Prepared in accordance with part 9.3.1 of ISO 14064-1

Prepared By: Orbit Consulting

Dated: 24 May 2022

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This is the annual greenhouse gas (GHG) emissions inventory report for the VASI Group Companies (Dönsa Textile). Throughout this document "emissions" means "GHG emissions". The inventory is a complete and accurate quantification of the amount of GHG emissions that can be directly attributed to the organization's operations within the declared boundary and category for the specified reporting period.

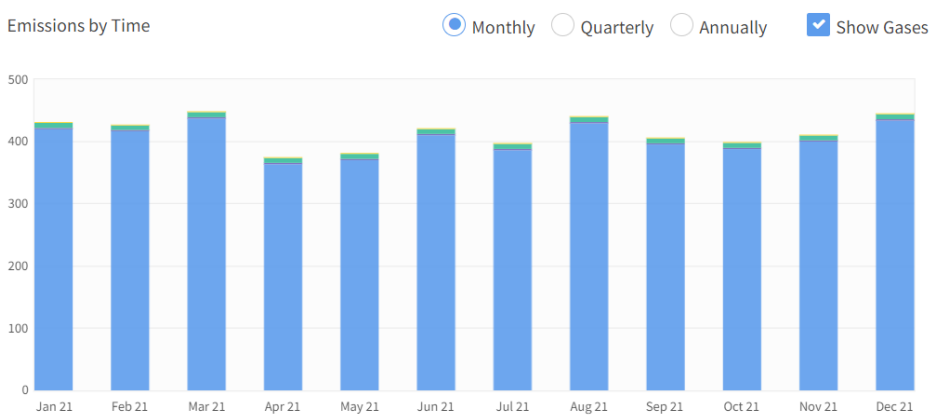
The reporting processes and emissions classifications in this report are consistent with international protocols and standards. This report has been written in accordance with Part 9.3.1 of the requirements of International Standards Organization (ISO) 14064-1 standard. Where applicable discretionary information has been disclosed consistent with section 9.3.2 of the Standard. The inventory has also been prepared in accordance with the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (the GHG Protocol).

This report includes Category 1 (Direct), Category 2 (Indirect – Imported Energy), Category 3 (Indirect– Transportation), Category 4 (Indirect – Products Used by Company) Greenhouse Gas emissions from Head Quarter Istanbul and Yozgat Factory/ Turkey activities between January 2021 and December 2021.

The total of VASI Group (Dönsa Textile) GHG emissions for 2021 is 4,987.334 tons of CO_2-e. A breakdown by category of the reporting year emissions and comparison to the base year can be seen in the below table.

Emissions (tons CO_2-e)	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Total
2021 Emissions	846.194 tons	2,264.146 tons	1,839.756 tons	37.237 tons	-	-	**4,987.334 tons**

A breakdown of greenhouse gas emissions by months is as follows:



INTRODUCTION

Climate change has been identified as one of the greatest challenges facing nations, governments, businesses and citizens today and over future decades. Climate change has implications for both human and natural systems and could lead to significant changes in resource use, production and economic activity. In response, international, regional, national and local initiatives are being developed and implemented to limit greenhouse gas (GHG) concentrations in Earth's atmosphere. Such GHG initiatives rely on the quantification, monitoring, reporting and verification of GHG emissions and/or removals, which can be done within the framework of ISO 14064.

ISO 14064-1 specifies principle requirements at the organizational level for quantification and reporting of greenhouse gas (GHG) emissions and removals. It includes requirements for the design, development, management, reporting and verification of an organization's GHG inventory and it is a tool for greenhouse gas (GHG) limitation and reduction.

ABOUT VASI GROUP

Design, Develop, Manufacture and Export VASI is headquartered in Esenyurt, Istanbul which works on design, develop and export. DONSA-Istanbul is located in Esenyurt, Istanbul based on a 10.000 m2 area which is the main production facility for the group. DONSA-Yozgat is in operation as of May 2020. The facility is 12.000 m2 close area, located in 20.000 m2 land in an Industrial Park at the centre of Turkey. Other companies are Inspirit, Activetime and Demsa with a different function of the group.

Over 30 Years of Experience and Expertise The main strengthen of VASI is; over 30 years of experience with an inspirational team; which design, develop material and socks, in collaboration with customers and other relevant stakeholders. As a socks manufacturer machinery and technology have a big influence on operations. Therefore mechanical and technological adoption is a crucial for being creative, innovative and sustainable on business. Thus, makes VASI desirable and one of the competitive socks manufacturers in Turkey.

More information about Vasi Group: www.vasi.com.tr

VASI GROUP ENVIRONMENTAL POLICY

Dönsa Textile Ind. ve Tic. Ltd. Şti. aspect; by determining the environmental dimensions and effects that arise while performing our activities in the sector in which we operate;

- To eliminate or minimize the damage to the environment,
- To comply with environmental legislation, administrative regulations and legal requirements,
- To create environmental awareness among customers, suppliers, employees and other relevant parties,
- To save money by minimizing the consumption of energy and other natural resources in all activities,
- To be respectful to the environment and to leave a good environment for future generations,
- To aim at a sustainable ISO 14001 Environmental Management System,
- To realize environmental activities based on the United Nations Sustainable Development Goals,

It is not content to maintain our current situation, but to comply with all the conditions of the Environmental Management System with all these goals and policies and to adopt continuous improvement as a goal in its own sector.

1. ABOUT THIS REPORT

1.1 OBJECTIVE

To gain competitive advantage in the market, organizations should determine their impacts on climate change and manage greenhouse gas risks by identifying national and international climate change policies. Organizations that do not calculate greenhouse gas emissions, determine their risks and do not manage them may be subject to legal sanctions in the future with expected changes in legislation. This may end up having significant impacts on both corporate and financial performance.

This report has been prepared for VASI Group (Dönsa Textile) and carries the below objectives:

- Calculation of the impact of activities on climate change
- Preparing for current and future legal regulations
- Determination of risky and problematic issues in carbon management
- Reporting GHGs in accordance with ISO 14064-1
- Contribution to the development of the Company Carbon Management Plan
- Awareness of employees on climate change, energy efficiency and sustainability issues

This study is expected to generate the following benefits to VASI Group (Dönsa Textile)

Internal benefits:

- Transparency of the organization's resource consumption, emissions and energy consumption
- Determination of emission reduction potentials
- Increasing in-house awareness
- Strengthening the sustainability vision of VASI Group

Extracurricular benefits:

- Strengthening the sustainability vision of the company and forefront the environmental identity
- Being a pioneer in its sector

1.2 CATEGORY

The term of "Category" is used in the ISO 14064-1: 2018 to determine the limits between different types of direct and indirect emissions: Category 1 refers to direct GHG emissions of the reporting company; Category 2 is the reporting company's emissions from the generation of acquired and consumed electricity, steam, heat, or cooling; Category 3 refers to the indirect transportation emissions of the reporting company; Category 4 is the emissions associated with goods and services purchased by the reporting company; Category 5 refers to the emissions associated with the use of products from the reporting company result from products sold by the company during life stages occurring after the company’s production process; Category 6 is the indirect emissions of the reporting company that cannot be reported in any other category.

This report includes Category 1 (Direct), Category 2 (Indirect – Imported Energy), Category 3 (Indirect – Transportation), Category 4 (Indirect – Products Used by Company) Greenhouse Gas emissions from Head Quarter Istanbul and Yozgat Factory/ Turkey activities between January 2021 and December 2021.

This report has been prepared in accordance with the principles set forth by the International Standards Organization (ISO) for the calculation and reporting of greenhouse gas emissions (Standard 14064-1: 2018).

1.3 REPORTING ACCORDING TO ISO 14064-1

ISO 14064-1 provides detailed information on the principles and requirements for the design, development, management and reporting of greenhouse gas inventories at the enterprise or company level. This standard includes requirements for the determination of greenhouse gas emission limits to improve greenhouse gas management, the calculation of greenhouse gas emissions for an organization, the identification of mitigation measures and the identification of proposals for company specific activities. This standard also includes requirements for inventory analysis, quality management, reporting, internal audit and organizational responsibilities and guidance information for verification activities.

The ISO 14064 Standard has introduced a systematic approach to the management of greenhouse gases. The ISO 14064 Standards Series consists of three parts and each section contains a separate scope.

ISO 14064-1; specifies principles and requirements at the organization level for quantification and reporting of GHG emissions and removals. It includes requirements for the design, development, management, reporting and verification of an organization's GHG inventory.

ISO 14064-2; specifies principles and requirements and provides guidance at the project level for quantification, monitoring and reporting of activities intended to cause greenhouse gas (GHG) emission reductions or removal enhancements. It includes requirements for planning a GHG project, identifying and selecting GHG sources, sinks and reservoirs relevant to the project and baseline scenario, monitoring, quantifying, documenting and reporting GHG project performance and managing data quality.

ISO 14064-3; specifies requirements for selecting GHG validators/verifiers, establishing the level of assurance, objectives, criteria and scope, determining the validation/verification approach, assessing GHG data, information, information systems and controls, evaluating GHG assertions and preparing validation/verification statements.

The benefits provided by the ISO 14064-1 standard to the firm can be listed as the following:

- Assist organizations to verify greenhouse gas emissions using a standardized approach and principles,
- Provide companies with information to plan and reduce the management of greenhouse gas emissions strategically,
- Ease the process of developing and implementing greenhouse gas reduction projects,
- Provide information that may be needed to participate in voluntary carbon markets,
- Demonstrate consistency, transparency and reliability in the determination, monitoring, reporting and mitigation of greenhouse gas emissions,
- Help establish trust-based relationships with stakeholders.

The greenhouse gas calculation and reporting principles of the ISO 14064-1 Standard is fundamental to ensure that GHG-related information is a true and fair account. The principles of ISO 14064 are the following:

1. **Relevance**: Select the GHG sources, GHG sinks, GHG reservoirs, data and methodologies appropriate to the needs of the intended user.

2. **Completeness**: Include all relevant GHG emissions and removals.
3. **Consistency**: Enable meaningful comparisons in GHG-related information.
4. **Accuracy**: Reduce bias and uncertainties as far as is practical.
5. **Transparency**: Disclose sufficient and appropriate GHG-related information to allow intended users to make decisions with reasonable confidence.

1.4 RESPONSIBLES

In preparing this report, the following individuals have been involved in related processes and were responsible for coordinating the reporting of corporate carbon footprint calculations, in line with ISO 14064-1 standard, resulting from the operational activities of VASI Group. The data provided by VASI Group has been used in the calculations and are based on documented information.

Name of Responsible	Company/Title	Phone	e-mail
Ufuk Dinç	VASI Group/Head of Corporate Sustainability	+90 212 886 28 10	ufuk.dinc@vasi.com.tr
Murat Yalçınkaya	VASI Group /Teamhead Corporate Sustainability	+90 212 886 28 10	murat.yalcinkaya@vasi.com.tr
Yasemin Tatar	Orbit Consulting/Sustainability Consultant	+90 212 227 00 16	yasemin@theorbitconsulting.com
Büşra Suiçmez	Orbit Consulting/ Sustainability Consultant	+90 212 227 00 16	busra@theorbitconsulting.com

2. METHODOLOGY

2.1 GHG INVENTORY BOUNDARIES

2.1.1 ORGANIZATIONAL BOUNDARIES

An Equity Share has been adopted when VASI Group's greenhouse gas emissions are calculated.

EQUITY SHARE APPROACH

Under the equity share approach, a company accounts for GHG emissions from operations according to its share of equity in the operation. The equity share reflects economic interest, which is the extent of rights a company has to the risks and rewards flowing from an operation.

Head Office located in Istanbul/Turkey and factory located in Yozgat/Turkey are included in this report.

2.1.2 REPORTING BOUNDARIES

VASI Group has established and documented its reporting boundaries and identified consistent emissions and removals associated with the VASI Group's operations. GHG Inventory categories included in this report are the following: Category 1 - Direct, Category 2 - Indirect - Imported Energy, Category 3 - Indirect - Transportation, Category 4 - Indirect - Used Products (Upstream)

Detailed classification of the emissions that are caused by VASI Group activities are as follows:

CATEGORY 1 - DIRECT GHG EMMISSIONS AND REMOVALS:

Direct GHG emissions occur from sources that are owned or controlled by the company. Classification of direct emissions can be:

- Stationary Combustion (boiler, oven, turbine, heater, burning oven, etc.)
- Mobile Combustion (cars, etc.)
- Process Emissions (emissions from chemical production in owned or controlled process equipment)
- Fugitive Emissions (Fugitives from equipment connections, cooling kettles, air conditioning gases, fire tubes)

For VASI Group direct emission sources and activities are identified as the following:

Emission Source / Activity	Detail	Data Source
Category 1 - Direct / GHG Sinks	Tree Planting	
Category 1 - Direct / Direct Emissions / Electricity Insulation	SF6	
Category 1 - Direct / Direct Emissions / Fire Extinguishers	HFC-227ea	
Category 1 - Direct / Direct Emissions / Fire Extinguishers	CO2	
Category 1 - Direct / Direct Emissions / Space Cooling / Chillers	R134-A	
Category 1 - Direct / Direct Emissions / Space Cooling / Chillers	R-404A	
Category 1 - Direct / Mobile Combustion / Company Owned Vehicles	Diesel	Bills indicating purchased diesel amounts
Category 1 - Direct / Stationary Combustion / Other Combustion	Gasoline	Bills indicating purchased gasoline amounts
Category 1 - Direct / Stationary Combustion / Other Combustion	Diesel	Bills indicating purchased diesel amounts
Category 1 - Direct / Stationary Combustion / Process Combustion	Natural Gas	Natural gas utility bills

CATEGORY 2 - INDIRECT GHG EMISSIONS FROM IMPORTED ENERGY:

It includes GHG emissions from the generation of purchased electricity, heat or steam consumed by the company.

VASI Group 's indirect greenhouse gas emissions activities are identified as the following:

Emission Source / Activity	Detail	Data Source
Category 2 - Indirect - Imported Energy / Electricity Consumption	Purchased Electricity From Grid	Electricity utility bills

CATEGORY 3 – INDIRECT GHG EMISSIONS FROM TRANSPORTATION:

Category 3 emissions are a consequence of the transportation activities of the company, but occur from sources not owned or controlled by the company.

VASI Group 's indirect greenhouse gas emissions from transportation activities included in this report are:

Emission Source / Activity	Detail	Data Source
Category 3 - Indirect - Transportation / Downstream Transportation and Distribution / Land Transport / Road Transport / HGV (Diesel) / Rigid (>17 tonnes)	Average Laden	
Category 3 - Indirect - Transportation / Downstream Transportation and Distribution / Water Transport / Cargo Ship / Container Ship	Average	
Category 3 - Indirect - Transportation / Downstream Transportation and Distribution / Air Transport	Freight Flights	
Category 3 - Indirect - Transportation / Upstream Transportation and Distribution / Land Transport / Road Transport / HGV (Diesel) / Rigid (>17 tonnes)	Average Laden	
Category 3 - Indirect - Transportation / Employee Commuting / Land Transport / Road Transport / Bus	Shuttle Bus	
Category 3 - Indirect - Transportation / Business Travel / Air Transport / Commercial Flights	Economy Class	

CATEGORY 4 – INDIRECT GHG EMISSIONS FROM PRODUCTS USED BY COMPANY:

Category 4 emissions are a consequence of the activities of the company, which are associated with goods and services used by the company, but occur from sources not owned or controlled by the company.

VASI Group 's indirect greenhouse gas emissions from products used by the company included in this report are:

Emission Source / Activity	Detail	Data Source
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Other / Clothing/Textile Scraps	Closed-loop	
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Paper & Board / Mixed	Closed-loop	
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Paper & Board / Paper	Closed-loop	
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Plastic / Average Plastics	Closed-loop	

Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Refuse / Commercial and Industrial Waste	Landfill	
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Refuse / Municipal Waste	Landfill	

2.2 EMISSION FACTORS AND OTHER VALUES USED FOR CALCULATION

CALORIFIC VALUE: The energy contained in a fuel determined by measuring the heat produced by the complete combustion of a specified quantity of it. This is usually expressed in joules per kilogram. See Appendix 1 for all calorific values used in calculations in this study.

GLOBAL WARMING POTENTIAL (GWP): The emission factors are provided as carbon dioxide (CO_2) equivalents (expressed as CO_2-e). Emissions of greenhouse gases outside of CO_2 are calculated separately and converted to CO_2 equivalents. When this conversion is made, the emission quantities of each greenhouse gas are multiplied by the global warming potentials of that gas. See Appendix 2 for the GWP values used in calculations in this study.

OXIDATION FACTOR: Measure the percentage of carbon that is actually oxidized when combustion occurs. The oxidation factor is used to calculate the amount of the fuel that is contributing to carbon dioxide emissions. The Oxidation Factor is taken as one (1) in all calculations in this report.

EMISSION FACTOR: A representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.

2.3 TIER CONCEPT

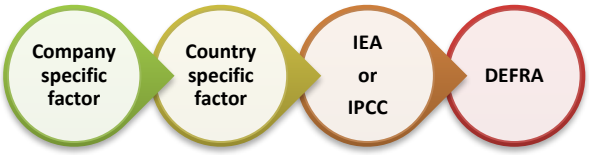
The Intergovernmental Panel on Climate Change (IPCC) has classified the methodological approaches in three different Tiers, according to the quantity of information required, and the degree of analytical complexity.

Tier 1 employs the gain-loss method described in the IPCC Guidelines and the default emission factors and other parameters provided by the IPCC.

Tier 2 generally uses the same methodological approach as Tier 1 but applies emission factors and other parameters which are specific to the country.

Tier 3, higher-order methods include models and can utilize data to address company specific circumstances. Properly implemented, these methods can provide estimates of greater certainty than lower tiers.

In this report, the “highest tier available” approach is used to reduce uncertainty and error in calculations and to achieve a more accurate result. Thus, emission factors used in this study follow a hierarchical path from most specific known factor to the most generic. For any given activity, if the company has a specific emission factor that it can accurately calculate, that factor is prioritized in the calculations. If no emission factor is specified by the company, then the country specific factors reported by the country in which the activity takes place is used. If the activity in subject has no country specific factors, then IEA, IPCC or DEFRA published factors are used in that order, taking into the consideration of the time frame that the activity takes place. Below image shows a diagram of the emission factor hierarchy.



For all the emission factors used in calculation the greenhouse gas inventory of VASI Group with their data sources, please see Appendix 3.

2.4 QUANTIFICATION AND CALCULATION OF GHG EMISSIONS

The followed methodology used to quantify the GHG inventory is in accordance with the ISO 14064-1 guidelines and specifications. All five fundamental principles are addressed adequately: relevance, completeness, consistency, accuracy, and transparency. In summary the quantification methodology can be explained as the following:

1. Identification of GHG sources and sinks,
2. Selection of quantification methodology,
3. Selection and collection of GHG activity data,
4. Selection or development of GHG emission or removal factors,
5. Calculation of GHG emissions and removals.

Identification of GHG sources and sinks

VASI Group's GHG sources and sinks were identified based on all activities within the organizational/reporting boundaries and the determined reporting categories of this study.

Selection of quantification methodology

Due to the fact that VASI Group does not measure emissions directly, calculation methodology has been used for quantification of emissions. Calculations were done based on measured GHG activity data multiplied by GHG emission or removal factors (See below for calculation formula).

Selection and collection of GHG activity data

Once activities relevant to the Company's GHG boundaries were selected, activity data were collected at site level by GHG Site Responsible(s) and consolidated using QuickCarbon software which allows activity data to be entered as soon as its available. Correctness and consistency of the results are kept at the highest possible level by confirmation of collected data via solid evidences such as utility bills and meter readings. Activity data along with evidence documents are all recorded in controlled web based environment of QuickCarbon software.

Selection or development of GHG emission or removal factors

Selection of GHG emission or removal factors were done as explained in the previous (Section 2.2).

Calculation of GHG emissions and removals

All data was calculated using the web-based QuickCarbon Software. This software uses a calculation methodology for quantifying the GHG emissions inventory using emissions source activity data multiplied by GHG emissions factors. The formula for VASI Group 's greenhouse gas emission calculations is as follows:

Greenhouse Gas Emission Amount (tons) = GHG Activity Data x GHG Emission Factor (tons of GHG / activity data) x Oxidation Factor x Global Warming Potential

3. GHG EMISSION INVENTORY

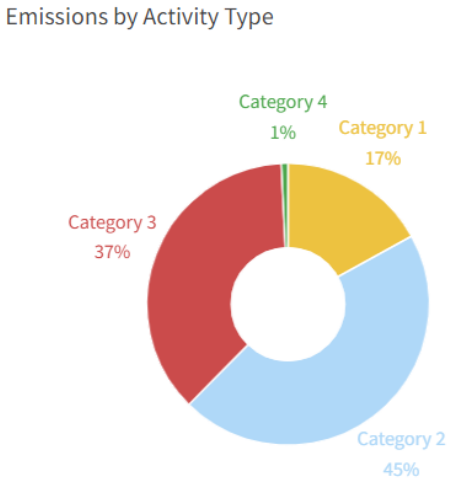
3.1 REPORTING YEAR RESULTS

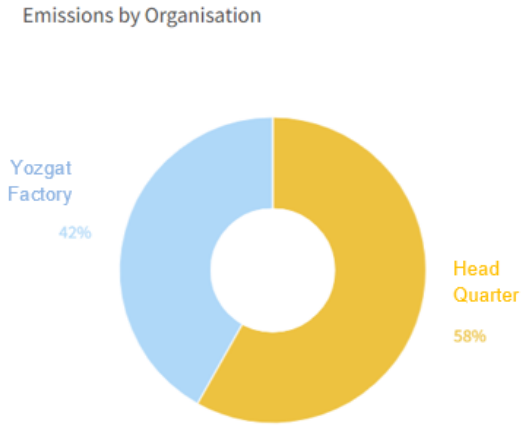
Greenhouse gas emissions resulting from VASI Group's activities within its reporting and organizational boundaries for 2021 is a total of 4,987.334 tons CO_2-e. The distribution of emissions by category and gas is given in the table below:

Emissions (t CO_2-e)	CO_2	CH4	N_2O	HFCs	PFCs	SF_6	NF_3	TOTAL
Category 1 (Direct)	730.233 tons	0.519 tons	2.465 tons	94.834 tons	0 tons	18.142 tons	0 tons	**846.194 tons**
Category 2 (Indirect – Imported Energy)	2,264.146 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	**2,264.146 tons**
Category 3 (Indirect – Transportation)	1,817.337 tons	0.471 tons	21.949 tons	0 tons	0 tons	0 tons	0 tons	**1,839.756 tons**
Category 4 (Indirect – Products Used by Company)	37.237 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	**37.237 tons**
Category 5 (Indirect – Use of Products from Company)	-	-	-	-	-	-	-	**-**
Category 6 (Indirect – Other Sources)	-	-	-	-	-	-	-	**-**
TOTAL	**4,848.953 tons**	**0.99 tons**	**24.414 tons**	**94.834 tons**	**0 tons**	**18.142 tons**	**0 tons**	**4,987.334 tons**

A detailed breakdown of emission subcategories under each category is given in Appendix 5.

The % distribution of Total Greenhouse Gas Emissions by category and organization is shown below:





4. UNCERTAINTIES

Inventory Uncertainties

In this inventory, the activity data used in the calculations is the primary data provided by VASI Group from approved bills and/or measured data via company meters, software and other registered data. If the precision information (ie. error margin) of a measurement equipment or calculation method is known, it is defined as a "Register" in QuickCarbon software with its precision information. This information is then used for calculating the overall uncertainty of the emissions inventory in accordance with the GHG Protocol guidance on uncertainty assessment. For all those other registers, of which a precision information was not available, a default value of 2.000% was used.

Emission Factor Uncertainties

The uncertainties of the emission factors from the IPCC are taken as 7%. The uncertainty of the EIA data used for the Electricity Emission Factor is 5%.

Uncertainty Calculation and Evaluation

As a result of calculations made with VASI Group's data, general uncertainty has emerged as **± 3.709%.** According to the GHG Protocol this uncertainty can be ranked **High**.

Calculated uncertainty levels for specific activities are given in the table below:

Emissions Category	Activity Data Uncertainty	Emission Factor Uncertainty	Calculated Uncertainty	Uncertainty Ranking
Category 1 - Direct / Stationary Combustion / Process Combustion / Natural Gas	2.000%	7.000%	± 7.280%	Good
Category 1 - Direct / Mobile Combustion / Company Owned Vehicles / Diesel	2.000%	7.000%	± 7.280%	Good

Category 1 - Direct / Direct Emissions / Fire Extinguishers / CO2	2.000%	0.000%	± 2.000%	High
Category 2 - Indirect - Imported Energy / Electricity Consumption / Purchased Electricity From Grid	2.000%	7.000%	± 7.280%	Good
Category 3 - Indirect - Transportation / Business Travel / Air Transport / Commercial Flights / Economy Class	2.000%	7.000%	± 7.280%	Good
Category 3 - Indirect - Transportation / Upstream Transportation and Distribution / Land Transport / Road Transport / HGV (Diesel) / Rigid (>17 tonnes) / Average Laden	2.000%	7.000%	± 7.280%	Good
Category 3 - Indirect - Transportation / Downstream Transportation and Distribution / Land Transport / Road Transport / HGV (Diesel) / Rigid (>17 tonnes) / Average Laden	2.000%	7.000%	± 7.280%	Good
Category 3 - Indirect - Transportation / Downstream Transportation and Distribution / Air Transport / Freight Flights	2.000%	7.000%	± 7.280%	Good
Category 3 - Indirect - Transportation / Downstream Transportation and Distribution / Water Transport / Cargo Ship / Container Ship / Average	2.000%	7.000%	± 7.280%	Good
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Plastic / Average Plastics / Closed-loop	2.000%	7.000%	± 7.280%	Good
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Paper & Board / Mixed / Closed-loop	2.000%	7.000%	± 7.280%	Good
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Refuse / Municipal Waste / Landfill	2.000%	7.000%	± 7.280%	Good
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Other / Clothing/Textile Scraps / Closed-loop	2.000%	7.000%	± 7.280%	Good
Category 3 - Indirect - Transportation / Employee Commuting / Land Transport / Road Transport / Bus / Shuttle Bus	2.000%	7.000%	± 7.280%	Good
Category 1 - Direct / GHG Sinks / Tree Planting	2.000%	0.000%	± 2.000%	High
Category 1 - Direct / Stationary Combustion / Other Combustion / Diesel	2.000%	7.000%	± 7.280%	Good
Category 1 - Direct / Stationary Combustion / Other Combustion / Gasoline	2.000%	7.000%	± 7.280%	Good
Category 1 - Direct / Direct Emissions / Space Cooling / Chillers / R-404A	2.000%	0.000%	± 2.000%	High

Category 1 - Direct / Direct Emissions / Fire Extinguishers / HFC-227ea	2.000%	0.000%	± 2.000%	High
Category 1 - Direct / Direct Emissions / Electricity Insulation / SF6	2.000%	0.000%	± 2.000%	High
Category 1 - Direct / Direct Emissions / Space Cooling / Chillers / R134-A	2.000%	0.000%	± 2.000%	High
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Paper & Board / Paper / Closed-loop	2.000%	7.000%	± 7.280%	Good
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Refuse / Commercial and Industrial Waste / Landfill	2.000%	7.000%	± 7.280%	Good

5. APPENDICES

APPENDIX 1 – CALORIFIC VALUES USED IN CALCULATIONS

Fuels	Calorific Value	Reference
Category 1 - Direct / Mobile Combustion / Company Owned Vehicles / Diesel	10,200 kcal / kg	Turkey
Category 1 - Direct / Stationary Combustion / Other Combustion / Gasoline	10,400 kcal / kg	Turkey
Category 1 - Direct / Stationary Combustion / Other Combustion / Diesel	10,200 kcal / kg	Turkey
Category 1 - Direct / Stationary Combustion / Process Combustion / Natural Gas	12,313.43 kcal / kg	Turkey

APPENDIX 2 – GLOBAL WARMING POTENTIAL VALUES

Gas Type	GWP	Reference
CO2	1 kg / kg	IPCC 2014
CH4	28 kg / kg	IPCC 2014
N2O	265 kg / kg	IPCC 2014
HFC-227ea	3,350 kg / kg	IPCC 2014
HFC-143a	4,800 kg / kg	IPCC 2014
HFC-134a	1,300 kg / kg	IPCC 2014
HFC-125	3,170 kg / kg	IPCC 2014
SF6	23,500 kg / kg	IPCC 2014

APPENDIX 3 – EMISSION FACTORS

Emission Factors for Category 1 (Direct) Emissions

Emission Source	EF CO_2		EF CH_4		EF N_2O		Reference
	Base Year	Report Year	Base Year	Report Year	Base Year	Report Year	
Category 1 - Direct / Mobile Combustion / Company Owned Vehicles / Diesel		74,100kg / TJ		3.9kg / TJ		3.9kg / TJ	IPCC 2006
Category 1 - Direct / Stationary Combustion / Other Combustion / Gasoline		69,300kg / TJ		3kg / TJ		0.6kg / TJ	IPCC 2006
Category 1 - Direct / Stationary Combustion / Other Combustion / Diesel		74,100kg / TJ		3kg / TJ		0.6kg / TJ	IPCC 2006

Category 1 - Direct / Stationary Combustion / Process Combustion / Natural Gas		56,100kg / TJ		1kg / TJ		0.1kg / TJ	IPCC 2006

Emission Factors for Category 2 (Indirect – Imported Energy) Emissions

Emission Source	EF CO_2		EF CH_4		EF N_2O		Reference
	Base Year	Report Year	Base Year	Report Year	Base Year	Report Year	
Category 2 - Indirect - Imported Energy / Electricity Consumption / Purchased Electricity From Grid		0.38kg / kWh		0kg / kWh		0kg / kWh	Climate Transparency 2021

Emission Factors for Category 3 (Indirect - Transportation) Emissions

Emission Source	EF CO_2		EF CH_4		EF N_2O		Reference
	Base Year	Report Year	Base Year	Report Year	Base Year	Report Year	
Category 3 - Indirect - Transportation / Downstream Transportation and Distribution / Land Transport / Road Transport / HGV (Diesel) / Rigid (>17 tonnes) / Average Laden		0.95kg / km		0kg / km		0kg / km	Defra 2021
Category 3 - Indirect - Transportation / Downstream Transportation and Distribution / Water Transport / Cargo Ship / Container Ship / Average		0.02kg / tonne.km		0kg / tonne.km		0kg / tonne.km	Defra 2021
Category 3 - Indirect - Transportation / Downstream Transportation and Distribution / Air Transport / Freight Flights		1.01kg / tonne.km		0kg / tonne.km		0kg / tonne.km	Defra 2021
Category 3 - Indirect - Transportation / Upstream Transportation and Distribution / Land Transport / Road Transport / HGV (Diesel) / Rigid (>17 tonnes) / Average Laden		0.95kg / km		0kg / km		0kg / km	Defra 2021
Category 3 - Indirect - Transportation / Employee Commuting / Land Transport / Road Transport / Bus / Shuttle Bus		0.03kg / passenger.km		0kg / passenger.km		0kg / passenger.km	Defra 2021
Category 3 - Indirect - Transportation / Business Travel / Air Transport / Commercial Flights / Economy Class		0.14kg / passenger.km		0kg / passenger.km		0kg / passenger.km	Defra 2021

Emission Factors for Category 4 (Indirect – Products Used by Company) Emissions

Emission Source	EF CO_2		EF CH_4		EF N_2O		Reference
	Base Year	Report Year	Base Year	Report Year	Base Year	Report Year	
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Other / Clothing/Textile Scraps / Closed-loop		21.29kg / tons					Defra 2021
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Paper & Board / Mixed / Closed-loop		21.29kg / tons					Defra 2021
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Paper & Board / Paper / Closed-loop		21.29kg / tons					Defra 2021
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Plastic / Average Plastics / Closed-loop		21.29kg / tons					Defra 2021
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Refuse / Commercial and Industrial Waste / Landfill		467.05kg / tons					Defra 2021
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Refuse / Municipal Waste / Landfill		446.24kg / tons					Defra 2021

APPENDIX 4 – EMISSIONS INVENTORY by BUSINESS UNIT for 2021

Category 1 (Direct) Emissions of VASI Group by Business Unit

Emissions (t CO_2-e)	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	TOTAL
Head Quarter/İstanbul	532.521 tons	0.419 tons	2.369 tons	0 tons	0 tons	0 tons	0 tons	535.308 tons
Factory/Yozgat	197.713 tons	0.1 tons	0.096 tons	94.834 tons	0 tons	18.142 tons	0 tons	310.885 tons
TOTAL	730.233 tons	0.519 tons	2.465 tons	94.834 tons	0 tons	18.142 tons	0 tons	846.194 tons

Category 2 (Indirect – Imported Energy) Emissions of VASI Group by Business Unit

Emissions (t CO_2-e)	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	TOTAL
Head Quarter/İstanbul	941.453 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	941.453 tons
Yozgat Factory/Yozgat	1,322.693 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	1,322.693 tons

TOTAL	2,264.146 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	2,264.146 tons

Category 3 (Indirect - Transportation) Emissions of VASI Group by Business Unit

Emissions (t CO_2-e)	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	TOTAL
Head Quarter	1,393.925 tons	0.291 tons	14.215 tons	0 tons	0 tons	0 tons	0 tons	1,408.43 tons
Factory	423.412 tons	0.18 tons	7.734 tons	0 tons	0 tons	0 tons	0 tons	431.326 tons
TOTAL	1,817.337 tons	0.471 tons	21.949 tons	0 tons	0 tons	0 tons	0 tons	1,839.756 tons

Category 4 (Indirect – Products Used by Company) Emissions of VASI Group by Business Unit

Emissions (t CO_2-e)	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	TOTAL
Head Quarter/İstanbul	16.155 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	16.155 tons
Factory/Yozgat	21.082 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	21.082 tons
TOTAL	37.237 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	37.237 tons

APPENDIX 5 – EMISSIONS INVENTORY by ACTIVITY for 2021

The following breakdown of emissions only includes emissions resulting from activity data input to QuickCarbon software. Activity breakdowns of linked companies whose emissions information were directly entered are not available in the below tables. They can be separately found in Appendix 4 – Emissions Inventory by Business Unit.

Category 1 (Direct) Emissions of VASI Group by Activity

Emissions (t CO_2-e)	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	TOTAL
Category 1 - Direct / GHG Sinks / Tree Planting	-1.445 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	-1.445 tons
Category 1 - Direct / Direct Emissions / Electricity Insulation / SF6	0 tons	0 tons	0 tons	0 tons	0 tons	18.142 tons	0 tons	18.142 tons
Category 1 - Direct / Direct Emissions / Fire Extinguishers / HFC-227ea	0 tons	0 tons	0 tons	80.4 tons	0 tons	0 tons	0 tons	80.4 tons
Category 1 - Direct / Direct Emissions / Fire Extinguishers / CO2	0.022 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0.022 tons
Category 1 - Direct / Direct Emissions / Space Cooling / Chillers / R134-A	0 tons	0 tons	0 tons	0.634 tons	0 tons	0 tons	0 tons	0.634 tons
Category 1 - Direct / Direct Emissions / Space Cooling / Chillers / R-404A	0 tons	0 tons	0 tons	13.8 tons	0 tons	0 tons	0 tons	13.8 tons

Category 1 - Direct / Mobile Combustion / Company Owned Vehicles / Diesel	157.125 tons	0.232 tons	2.191 tons	0 tons	0 tons	0 tons	0 tons	159.548 tons
Category 1 - Direct / Stationary Combustion / Other Combustion / Gasoline	0.027 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0.027 tons
Category 1 - Direct / Stationary Combustion / Other Combustion / Diesel	1.312 tons	0.001 tons	0.003 tons	0 tons	0 tons	0 tons	0 tons	1.317 tons
Category 1 - Direct / Stationary Combustion / Process Combustion / Natural Gas	573.192 tons	0.286 tons	0.271 tons	0 tons	0 tons	0 tons	0 tons	573.749 tons
TOTAL	730.233 tons	0.519 tons	2.465 tons	94.834 tons	0 tons	18.142 tons	0 tons	846.194 tons

Category 2 (Indirect – Imported Energy) Emissions of VASI Group by Activity

Emissions (t CO_2-e)	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	TOTAL
Category 2 - Indirect - Imported Energy / Electricity Consumption / Purchased Electricity From Grid	2,264.146 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	2,264.146 tons
TOTAL	2,264.146 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	2,264.146 tons

Category 3 (Indirect - Transportation) Emissions of VASI Group by Activity

Emissions (t CO_2-e)	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	TOTAL
Category 3 - Indirect - Transportation / Downstream Transportation and Distribution / Land Transport / Road Transport / HGV (Diesel) / Rigid (>17 tonnes) / Average Laden	710.331 tons	0.168 tons	7.958 tons	0 tons	0 tons	0 tons	0 tons	718.457 tons
Category 3 - Indirect - Transportation / Downstream Transportation and Distribution / Water Transport / Cargo Ship / Container Ship / Average	18.743 tons	0.007 tons	0.227 tons	0 tons	0 tons	0 tons	0 tons	18.977 tons
Category 3 - Indirect - Transportation / Downstream	325.337 tons	0.014 tons	1.441 tons	0 tons	0 tons	0 tons	0 tons	326.792 tons

Transportation and Distribution / Air Transport / Freight Flights								
Category 3 - Indirect - Transportation / Upstream Transportation and Distribution / Land Transport / Road Transport / HGV (Diesel) / Rigid (>17 tonnes) / Average Laden	227.377 tons	0.054 tons	2.547 tons	0 tons	0 tons	0 tons	0 tons	229.978 tons
Category 3 - Indirect - Transportation / Employee Commuting / Land Transport / Road Transport / Bus / Shuttle Bus	535.08 tons	0.228 tons	9.774 tons	0 tons	0 tons	0 tons	0 tons	545.081 tons
Category 3 - Indirect - Transportation / Business Travel / Air Transport / Commercial Flights / Economy Class	0.47 tons	0 tons	0.002 tons	0 tons	0 tons	0 tons	0 tons	0.472 tons
TOTAL	1,817.337 tons	0.471 tons	21.949 tons	0 tons	0 tons	0 tons	0 tons	1,839.756 tons

Category 4 (Indirect – Products Used by Company) Emissions of VASI Group by Activity

Emissions (t CO_2-e)	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	TOTAL
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Other / Clothing/Textile Scraps / Closed-loop	0.847 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0.847 tons
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Paper & Board / Mixed / Closed-loop	0.512 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0.512 tons
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Paper & Board / Paper / Closed-loop	0.274 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0.274 tons
Category 4 - Indirect - Used Products (Upstream) / Waste	0.414 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0.414 tons

Generated in Operations / Plastic / Average Plastics / Closed-loop								
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Refuse / Commercial and Industrial Waste / Landfill	20.214 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	20.214 tons
Category 4 - Indirect - Used Products (Upstream) / Waste Generated in Operations / Refuse / Municipal Waste / Landfill	14.976 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	14.976 tons
TOTAL	37.237 tons	0 tons	0 tons	0 tons	0 tons	0 tons	0 tons	37.237 tons

6. REFERENCES:

Report Standards:

- ISO 14064-1 : 2018 / https://www.iso.org/standard/66453.html
- TS EN ISO 14064-1 : 2019 / https://intweb.tse.org.tr/Standard/Standard/Standard.aspx?081118051115108051104119110104055047105102120088111043113104073083084082085104098111116108088069
- Greenhouse Gas (GHG) Protocol Corporate Standard / https://ghgprotocol.org/corporate-standard

Emissions Factors:

- IPCC Guidelines for National Greenhouse Gas Inventories : 2006 / https://www.ipcc.ch/report/2006-ipcc-guidelines-for-national-greenhouse-gas-inventories/
- DEFRA Greenhouse gas reporting: conversion factors: 2017-2018-2019-2020-2021 / https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting
- IEA Emission Factors : 2018 / https://www.iea.org/data-and-statistics/data-product/emissions-factors
- EPA Emission Factors : 2014-2015 / https://www.epa.gov/air-emissions-factors-and-quantification
- T.C. Enerji ve Tabii Kaynaklar Bakanlığı - Enerji Kaynaklarının ve Enerjinin Kullanımında Verimliliğin Artırılmasına Dair Yönetmelik : 2011 / https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=15437&MevzuatTur=7&MevzuatTertip=5
- Climate Transparency Electricity Emission Factors: 2019-2020-2021 / https://www.climate-transparency.org/g20-climate-performance
- Türkiye Ulusal Elektrik Şebekesi Emisyon Faktörü Bilgi Formu: 2019-2021 / https://enerji.gov.tr/evced-cevre-ve-iklim-turkiye-ulusal-elektrik-sebekesi-emisyon-faktoru

QuickCarbon, www.quickcarbon.com