Inventory of greenhouse gas emissions

Inventory year: 2022

Karina Industria e Comércio de Plásticos Ltda

Trade name: Karina

CNPJ: 51.254.159/0001-73

Economic sector: Manufacturing

Sub-sector: Chemical manufacturing

Address: Antranig Guerekmezian Avenue - 788 - - Jardim Cumbica - Guarulhos - SP - 07240- 130

Responsible for publishing the inventory: Flavia Cristina Ferreira Lopes (flavia.lopes@karina.com.br)

Institutional information

Karina is one of the leading experts in the production of compounds in the global market. A pioneer in the country and a reference in its segment for more than 40 years, it excels at finding technological solutions that meet the needs of its customers.

Its products and infrastructure comply with the most stringent national and international standards and legislation governing the production of PVC Compounds, Polyolefin Specialties, Masterbatch and Compostable Biodegradables.

We are leaders in the Brazilian market for PVC compounds, we have high production capacity, state-of-the-art technological laboratory and we serve customers in the Brazilian and international markets. We are committed to innovation, sustainability and new product development.

Inventory data

Responsible for preparing the inventory

Flávia Cristina Ferreira Lopes

E-mail of the person responsible

flavia.lopes@karina.com.br

Inventory Year

2022

Verification

The inventory was verified by a third party: Yes

Verifying body: BVQI do Brasil Sociedade Certificadora Ltda

Person responsible for verification: Gisele Morgado (gisele.morgado.ext@bureauveritas.com)

Inventory type

Complete

1. Inventory limits

Organizational Limits

Below is a list of the organization's units and controlled companies included in this inventory. Detailed reporting of emissions from units that have scope 1 emissions equal to or greater than 10,000 tCO_2e per year is mandatory. Reporting the emissions of other units, as well as those of subsidiaries, is optional. Emissions detailed by unit can be found in Section 2.7 - Emissions by operating units.

Key:

H Headquarters C Controlled Company U Unit

[Do the headquarters have operational control? | % of equity interest in the headquarters]

H Karina

- U Karina Extrema
- U Karina Joinville
- U Karina Nova Serrana

1.1 Which consolidation approach was used in the inventory?

Reporting of emissions under the Operational Control approach.

1.2 Organizational chart

Operational Limits

1.3 Operational limits reported in inventory

Scope 1

- Mobile combustion
- Stationary combustion
- Industrial processes
- Solid waste and liquid effluents
- Leakage

Scope 2 - Location-based approach

- Acquisition of electricity

Scope 2 - Purchase-based approach

- Acquisition of electricity

Scope 3

1. Purchased Goods and Services
4. Transportation and distribution (upstream)
5. Waste generated in operations
6. Business travel
7. Employee commuting (home-work)
9. Transportation and distribution (downstream)
10. Processing of products sold

2. Emissions

Operational Control

2.1 Summary of total emissions

GHG	In tons of gas				In tons of CO_2 equivalent (tCO_2e)			
	Scope 1	Scope 2 - Location-based approach	Scope 2 - Purchase-based approach	Scope 3	Scope 1	Scope 2 - Location-based approach	Scope 2 - Purchase-based approach	Scope 3
CO_2	1,147.950	3,882.530	2,505.949	518,207.666	1,147.950	3,882.530	2,505.949	518,207.666
CH_4	0.523	0.000	0.000	6.932	14.644	0.000	0.000	194.096
N_2O	0.050	0.000	0.000	2.273	13.250	0.000	0.000	602.345
HFC	0.090	0.000	0.000	0.000	195.627	0.000	0.000	0.000
PFC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SF_6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NF_3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total					**1,371.471**	**3,882.530**	**2,505.949**	**519,004.107**

2.2 Scope 1 emissions disaggregated by category

Category	Emissions (tCO_2e)	Biogenic CO_2 emissions (t)	Biogenic CO_2 removals (t)
Mobile combustion	1,014.783	122.248	0.000
Stationary combustion	148.101	0.737	0.000
Industrial processes	7.960	0.000	0.000
Solid waste and liquid effluents	4.418	0.000	0.000
Fugitive emissions	196.209	0.000	0.000
Total	1,371.471	122.985	0.000

2.3 Scope 2 emissions disaggregated by category

Location-based approach

Category	Emissions (tCO_2e)	Biogenic CO_2 emissions (t)	Biogenic CO_2 removals (t)
Acquisition of electricity	3,882.530	0.000	0.000
Total	3,882.530	0.000	0.000

Purchase-based approach

Category	Emissions (tCO_2e)	Biogenic CO_2 emissions (t)	Biogenic CO_2 removals (t)
Acquisition of electricity	2,505.949	0.000	0.000
Total	2,505.949	0.000	0.000

2.4 Scope 3 emissions disaggregated by category

Category	Emissions (tCO_2e)	Biogenic CO_2 emissions (t)	Biogenic CO_2 removals (t)
1. Purchased Goods and Services	463,427.803	0.000	0.000
4. Transportation and distribution (upstream)	27,448.632	2,608.588	0.000
5. Waste generated in operations	122.096	46.001	0.000
6. Business travel	138.977	6.993	0.000
7. Employee commuting (home-work)	3,511.244	473.343	0.000
9. Transportation and distribution (downstream)	10,802.435	1,010.602	0.000
10. Processing of products sold	13,552.920	0.000	0.000
Total	519,004.107	4,145.527	0.000

2.5 Other greenhouse gases not covered by the Kyoto Protocol

Gas	Emission (tCO_2e)
HCFC-22 (R22)	336.582

2.6 Emissions outside Brazil

Not reported.

2.7 Emissions per unit

Unit	Scope 1 (tCO_2e)	Scope 2 (tCO_2e)	Scope 3 (tCO_2e)
Karina Nova Serrana	4.898	0.059	0.000

3. Methods

3.1 Intersectoral methods and/or tools

Was any intersectoral method and/ or tool used in addition to those provided by the Brazilian GHG Protocol Program?

None.

3.2 Methods and/or tools for specific industries

Was any method and/ or tool used for specific sectors?

None.

3.3 Emission factors

Was any emission factor other than those suggested by the Brazilian GHG Protocol Program used?

None.

4. Other Elements

Optional fields

4.1 Information on the organization's performance, compared to internal benchmarks (e.g. other units) or external benchmarks (e.g. organizations in the same sector).

For the purpose of comparing with benchmarks and monitoring the organization's performance, the information on the ton of CO2e emitted per ton produced (tCO2e/t) is used as an indicator. In this cycle, the calculated value was 0.012 tCO2e/t. Analyzing the performance in relation to 2021, we have a reduction in the indicator of 70%. Much of this reduction occurred due to the 78% decrease in scope 2, 66% of it due to a drop in the emission factor of the national GRID and the remaining 12% due to internal actions to purchase energy from renewable sources; given that practically the same pattern of energy consumption was maintained. Other internal actions covered scope 1, reflecting an 8% reduction in this scope.

4.2 Description of GHG emission indicators for the organization's activities. For example, tCO_2e/manufactured products.

Karina Plásticos uses the following indicators to monitor its emissions:
• tCO2e per total ton produced, considering scopes 1 and 2;
• scopes 1, 2, and 3 at their absolute tCO2e values.

4.3 Description of strategies and projects for the management of GHG emissions.

Aware of the role it plays on the plastics industry in society and the environment, Karina Plásticos, as a leader and pioneer in developments in the thermoplastic market, seeks to adopt actions that contribute to reducing environmental impacts. More than a philosophy, respecting the environment and creating sustainable alternatives for our production process and raising awareness among our employees are goals for Karina and for all parties involved, focused on actions for "today" and that reflect on the future.
The "Environmental" work theme was then created, represented by the EKO Logo to publicize the actions developed.

Focused on the established goals, we contracted and operated with 26% of the energy from renewable sources; we completed the migration of the company's restaurant and changing rooms, replacing LPG with electricity; and we continue with the replacement of the forklift fleet, expected to be completed as early as 2023.
Goals set:
• Achieve carbon neutrality by 2030 in scopes 1 and 2;
• Operate with 100% renewable energy by 2025;
• Elimination of LPG consumption by 2025.

4.4 Information on contracts with customers and suppliers that include clauses linked to the preparation of GHG inventories and/or the submission of related information.

Currently, there is no contractual clause with our customers and/or suppliers that requests the submission of the GHG Inventory.

4.5 Information on uncertainties, exclusions of data sources and other characteristics of inventory preparation.

The calculation of uncertainties performed for Karina's scope 1 and scope 2 emissions indicate rates below 4%. Karina's industrial process is predominantly mechanical in nature, involving only the emission of some moisture volatiles from the raw material, in such a way that they exert an irrelevant influence on monitoring.

4.6 Description of internal actions to improve the quality of the GHG inventory. For example, systematization of data collection, contracting external verification, etc.

Moving forward in the continuous improvement of the quality of the GHG inventory, we carried out third-party verification, ensuring greater reliability in the process as a whole; and, after systematizing the collection of initial data, we intend to make progress in systematizing the following steps in addition to continuing to improve the quality of scope 3 information.

4.7 Information on the purchase of electricity from renewable sources.

Quantity in MWh	Generation source	Origin tracking instrument	Additional information	Public information
32,216.269	Hydraulics	Bilateral Contracts		No

4.8 Information on the self-production of energy from renewable sources for own consumption.

Quantity in MWh	Generation source	Additional information	Public information

4.9 Information on the carbon stock, in tons, of your organization as of December 31 of the inventoried year.

Not reported.

5. Offsets and reductions

Optional fields

5.1 Emissions offsets

Does the organization have emission offset projects?

Not reported.

5.2 Emission reductions

Does the organization have emission reduction projects?

Not reported.

APPENDIX A

Declaration of Verification of greenhouse gas emissions inventory Brazilian GHG Protocol Program

This Declaration of Verification[1] documents that the Verification Body (VB) mentioned below carried out the verification activities in accordance with the *Verification Specifications of the Brazilian GHG Protocol Program* and the ABNT NBR ISO 14064-3:2007 standard.

All fields are mandatory.

Verification Body (VB)	Inventory Organization (IO)
Name of the VB: BVQI DO BRASIL SOCIEDADE CERTIFICADORA LTDA.	Name of the IO: KARINA INDÚSTRIA E COMÉRCIO DE PLÁSTICOS LTDA
Name of the lead verifier: Gisele Morgado	Name of the person responsible for the inventory: Flávia Cristina
E-mail: gisele.morgado.ext@bureauveritas.com	E-mail: flavia.lopes@karina.com.br

The greenhouse gas (GHG) emissions reported by the Inventoried Organization in its emissions inventory, from January 1 to December 31, 2022, are verifiable and comply with the requirements of the Brazilian GHG Protocol Program, as outlined in the *Specifications of the Brazilian GHG Protocol Program for Accounting, Quantification, and Publication of Corporate Greenhouse Gas Emissions Inventories (BPS).*

Confidence Level

The Verification Body (VB) assigned the following level of confidence to the verification process:

☒ Verification with reasonable confidence level "The greenhouse gas inventory of the reporting organization for the year 2022 is materially accurate, a fair representation of the GHG data and information, and was prepared in accordance with the BPS." The limitations of the verification process were:
☐ Verification with limited confidence level "There is no evidence to suggest that the greenhouse gas inventory of the reporting organization for the year 2022 is not materially accurate, does not fairly represent the GHG data and information, or was not prepared in accordance with the BPS." The limitations of the verification process were:
☐ Unverifiable inventory Include reason, for example: "due to data errors" or "does not comply with BPS":

Verification Scope Description

The inventory for the year 2022 of the reporting organization was verified within the following scope:

Organizational limits	Operational limits
☒ Operational control ☐ Equity interest	☒ Scope 1 ☒ Scope 2 – location-based approach[2] ☒ Scope 2 – purchase-based approach[2] Scope 3 ☒

[1] This Declaration of Verification template can be revised at any time and the updated version will be available on the Brazilian GHG Protocol Program website - www.fgv.br/ghg

[2] For more information, see the Technical Note "*Recommendations for accounting for scope 2 emissions in corporate greenhouse gas inventories under the Brazilian GHG Protocol Program*".

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☐ The following sources / legal entities / operational units / etc. were excluded from the verification:

Facilities visited

List all locations visited during the verification and the date of each visit.

Location name	Relation of the location with	Address	Date of visit
Karina Industria e Comércio de Plásticos Ltda	Headquarters	Av. Antranig Guerekmezian, Nº 788 - Jardim Cumbica Guarulhos, SP	08/04/2023

Total verified emissions throughout the organization, according to the Operational Control approach

	GHG emission in tons of CO_2 equivalent (tCO_2e)			
GHG	Scope 1	Scope 2 Location-based approach	Scope 2 Purchase-based approach	Scope 3 (if applicable)
CO_2	1,147.950	3,882.531	2,505.950	518,207.666
CH_4	14.644			194.096
N_2O	13.250			602.345
HFCs	195.627			
PFCs				
SF_6				
NF_3				
TOTAL	1,371.471	3,882.531	2,505.950	519,004.107
Biogenic CO_2	122.984			4,145.526

Total removals verified throughout the organization, according to the Operational Control approach

	Removal of biogenic CO_2 (tCO_2e)

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GHG	Scope 1	Scope 2 Location-based approach	Scope 2 Purchase-based approach	Scope 3 (if applicable)
Biogenic CO_2				

Total verified issues throughout the organization, according to the Equity Interest approach (if applicable)

	GHG emission in tons of CO_2 equivalent (tCO_2e)			
GHG	Scope 1	Scope 2 Location-based approach	Scope 2 Purchase-based approach	Scope 3 (if applicable)
CO_2				
CH_4				
N_2O				
HFCs				
PFCs				
SF_6				
NF_3				
TOTAL				
Biogenic CO_2				

Total removals verified throughout the organization, according to the Equity Interest approach (if applicable)

	Removal of biogenic CO_2 (tCO_2e)			
GHG	Scope 1	Scope 2 Location-based approach	Scope 2 Purchase-based approach	Scope 3 (if applicable)
Biogenic CO_2				

Additional comments

Emissions of Other Gases not regulated by the Protocol and Kyoto: 336,582 tCO2e for HFC-22.

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Conflict of interest (COI)[3]

I, Gisele Morgado, certify that there is no conflict of interest between the Reporting Organization and the Verification Body, or any of the individual members of the verification team involved in the verification of the inventory, as defined in Chapter 3.2.1 of the *Verification Specifications of the Brazilian GHG Protocol Program.*

Gisele Morgado , [Lead verifier]

08/21/2023
Date

☒ Digital signature recognition[4]

Verifier´s conclusion on GHG emissions inventory[3]

As those responsible for the verification activities of the GHG inventory of the reporting organization, we certify that the information contained in this document is true.

Gisele Morgado, [Lead verifier]

08/21/2023
Date

☒ Digital signature recognition[4]

Thiago Ernani Guinancio Milagres , Independent Reviewer

08/22/2023
Date

☒ Digital signature recognition[4]

[3] If for some reason the lead verifier cannot sign the declaration on behalf of the Verification Body (for legal representation reasons, for example), then the legal representatives of the company can sign/attest on behalf of the company in this field. In this case, it is necessary to change the [lead verifier] field to "Legal Representative".

[4] By checking the "Digital signature recognition" box, I agree that this declaration of verification shall be deemed "made in writing" and "signed" for all purposes and that any electronic records shall be deemed "made in writing". I expressly waive any and all rights to deny the legal obligation, validity or enforceability of this declaration of verification and any documents related to it on the basis that they have been prepared and completed electronically.

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Authorization

I, Flávia Cristina Ferreira Lopes , accept the results of this declaration of verification.

_____

[Signature of the IO´s representative]

08/24/2023

Date

☒ Digital signature recognition[5]

Revision (if applicable)[6]

Revision number:

Justification for the change:

Verification team (optional)

The verification team is composed of the following professionals: Gisele Morgado (Lead Verifier), Patricia Perini (Member Verifier) and Thiago Ernani Guinancio Milagres (Independent Reviewer).

[5] By checking the "Digital signature recognition" box, I agree that this declaration of verification shall be deemed "made in writing" and "signed" for all purposes and that any electronic records shall be deemed "made in writing". I expressly waive any and all rights to deny the legal obligation, validity or enforceability of this declaration of verification and any documents related to it on the basis that they have been prepared and completed electronically.

[6] If the Declaration of Verification has to be redone, this field must be used to inform the revision number of the document and the reason for the change.