



**GREENHOUSE GASES EMISSIONS
ANNUAL REPORT
2022**

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INTRODUCTION

We are DOLLOOP*, a leading Northern European PET packaging producer focused on global sustainability solutions. For almost 30 years, we have been working with the beverage and food industry to provide them high quality and innovative packaging solutions. Our regenerative design PET packaging meets our customers' expectations, satisfies their needs, and helps them address sustainability challenges throughout the all-product life cycle.

We are guided by the three DOLLOOP values: respect for each other and the environment, courage to act, and improve every day. Guided by these values, we continuously improve our activity. 100% green energy, zero-waste production, and saving energy and raw materials are solutions we've put in place to reduce our environmental footprint.

We are strongly committed to sustainability and the circular economy goals, so we develop regenerative designs PET packaging. We are already providing our clients with 100% recyclable PET packaging solutions made from 100% recycled plastics. This solves the problem of negative footprint throughout the all-product life cycle. In response to our client's demand, we are continuously investing and expanding our range of packaging products, and today we offer PET packaging solutions in the categories of preforms, bottles, and film.

Our focus on sustainability, continuous improvement and cooperation with the food and beverage industry beyond commercial interactions has earned us the trust of clients in dozens of European Union and non-European Union countries.

Today our company is the leading PET manufacturer in the Baltic states with ISO 45001 health & safety, ISO 9001 quality, ISO 14001 environmental management certificates and BRC GS certificate (highest AA rating; product safety management for packaging and packaging materials). Our commitment to sustainability and social responsibility is reinforced by SMETA (v6.0) and EcoVadis Platinum Medal. We belong to the international Circular Plastics Alliance and disclose data to the CDP database. Our scope 1,2 target was approved by the Science Based Targets initiative's (SBTi). As part of its responsible approach to environmental protection and social responsibility, we prepare our annual greenhouse gas (GHG) reports in accordance with the requirements of ISO 14064-1:2018 (later - standard).

This report is the third one, which covers **2022 GHG emissions**.

**DOLLOOP operated as UAB PUTOKŠNIS from 1994 until 26 November 2022.*

SCOPE

Accounting method

The control approach is used to define the scope, therefore GHG emissions from activities for which DOLLOOP carries out operational control are accounted for.

Abbreviations used in the report

PET - polyethylene terephthalate (virgin); RPET - recycled polyethylene terephthalate; GHG - greenhouse gases; Category - GHG inventory category; CO₂e - carbon dioxide emission; HFC - Hydrofluoric-carbons.

Greenhouse gases considered

This report contains information on CO₂, N₂O and CH₄ and HFCs gases emissions.

Emissions of other GHG (PFCs, SF₆) are not accounted for as no significant sources of pollution are identified.

Report scope

This report applies to the Company's main activities (PET preforms manufacturing and warehousing) performed at the following addresses: Aerouosto str. 35, Žemaitės str. 33a and Gamybos str. 14 Šiauliai, Lithuania. PET bottles and PET film production (performed at the address Aerouosto str. 35, Šiauliai) is treated as not significant with respect to CO₂ emission, as PET bottles and PET film production and sales volumes are < 5,0 % from total production.

The report covers Greenhouse gases inventory Categories 1-5 emissions:

- 1. Direct CO₂ emissions** (fuel for boiler room and vehicles, HFC refrigerants);
- 2. Indirect GHG emissions from imported energy** (emissions, related to production of purchased electricity);
- 3. Indirect GHG emissions from transportation** (emissions, related to delivery of raw materials (PET, RPET, Nylon), PET products (preforms, bottles, film) and packages (reusable containers from production);
- 4. Indirect GHG emissions from products used by organization** (emissions, related to raw materials use, lubricants / oils, to water supply and wastewater handling, use of electricity and natural gas for the leased warehouse, transmission and distribution of electricity and fuels).
- 5. Indirect GHG emissions associated with the use of products from the organization** (emissions, related with the use of PET).

The general scope of the report with regards to activities of the company is presented in the Table 1.

Table 1.

No.	Activities	Category 1	Category 2	Category 3	Category 4	Category 5
1.	Use of fuel for boiler room	X				
2.	Use of HFC refrigerants (refilling)	X				
3.	Use of fuel for vehicles (cars, forklifts)	X				
4.	Use of electricity		X			
5.	Downstream transportation and distribution (of PET preforms, PET raw materials, reusable containers by road and ship)			X		
6.	Use of lubricants / oil				X	
7.	Wastewater (domestic) handling				X	
8.	Use of water				X	
9.	Use of raw material (PET, RPET, Nylon)				X	
10.	Use of electricity (leased warehouse)				X	
11.	Use of fuel for boiler room (leased warehouse)				X	
12.	Upstream emissions relevant with production and transportation of fuels (gasoline, diesel, LPG) - well to tank emissions				X	
13.	Transmission and distribution of electricity (electrical losses in the network)				X	
14.	Use of PET					X

Criteria used to decide on the selection of indirect emissions (reason why some potentially relevant GHG emissions, mentioned in the Annex B of the standard *ISO 14064-1:2018*, are not included):

GHG Category	Potentially relevant GHG emissions, mentioned in the Annex B of the standard <i>ISO 14064-1:2018</i>	Reason why some potentially relevant GHG emission is not included to calculation
Category 3	Emissions related to business travel and commuting.	Lack of reliable data; relatively small magnitude / volume of the emissions
	Transportation of solid and liquid waste and auxiliary materials	Lack of reliable data on transport distances until final disposal facility; relatively small magnitude / volume of the emissions
	Transportation auxiliary materials	Lack of reliable data on transport distances; relatively small magnitude / volume of the emissions
Category 4	Some types of purchased capital goods for service providing (e.g., coolants)	Quantity of a substance is considered significant 9000 L / 9t
	Purchased capital goods as additives for PET preforms (dyes, blockers)	No possibility to influence the usage; lack of reliable data
	Cleaning service, external maintenance	Lack of reliable data; no access to information

SELECTION OF BASE YEAR AND RELATIVE INDICATORS

Relative indicators and base year are selected to observe GHG emissions trends and to have a background for objectives setting and to be able to compare the results of the following years.

Selection of relative indicators

The following relative indicators are selected:

Categories 1, 2, 3, 4	tCO ₂ /mln. pcs
	tCO ₂ /t used raw material
Categories 1, 2	tCO ₂ /mln. pcs
	tCO ₂ /t used raw material
Categories 1, 2, 3, 4, 5	tCO ₂ /mln. pcs
	tCO ₂ /t used raw material

Selection of base year**

2019 is selected the base year due to the following reasons:

- this report was the first one;
- 2019 is not exceptional year in terms of level of performance.

Note:

Data of the base year might not be suitable for result comparison due to changed circumstances (for example, due to additional new activities), therefore another base year might be set, or emissions of base year might be recalculated (following the practices provided in chapter 5 of the standard).

CALCULATION OF CO₂ EMISSIONS

Performance data used and factors of emissions

The sources of emissions factors & sources of performance data used to prepare the report are provided in the Table 2. The sources of the emission factors have been selected with a view to ensuring that the data source is relevant, accurate and up to date (priority being given to the latest national reports published).

Qualitative estimation of uncertainty

For all emission sources, the uncertainty associated with the calculation of GHG emissions is a combination of the uncertainties related to the activity data and the emission factors. To minimize the uncertainty related to the activity data, emission sources are monitored inside the environmental management system that conforms to the ISO 14001:2015 standard. The emission factors used are extracted from official sources and specific to each source category. The selection of these emission factors is intended to minimize uncertainty as much as possible.

Calculation of emissions

Emissions of every identified source are calculated using the following formula: **Emissions, t = Performance data (measurement unit) x emission factor****

Note: ** - t CO₂/for the measurement unit; t CH₄/for the measurement unit; N₂O/for the measurement unit.

Calculation results and conclusions

Category 1		272,92	CO ₂ e, t
		In this amount:	
		0,23	CH ₄ (CO ₂ e, t)
		0,51	N ₂ O(CO ₂ e, t)
Category 2	Market based electricity	0,00	CO ₂ e, t
	Location based electricity	7703,20	CO ₂ e, t
Category 3		3673,01	CO ₂ e, t
Category 4		74905,81	CO ₂ e, t
		In this amount:	
		2,34	CH ₄ (CO ₂ e, t)
		3,87	N ₂ O(CO ₂ e, t)
Category 5		63773,75	CO ₂ e, t
Total emissions (Categories 1, 2, 3, 4, 5)	Market based electricity	142625,49	CO₂e, t
	Location based electricity	150328,69	CO₂e, t
		In this amount:	
		2,56	CH ₄ (CO ₂ e, t)
		4,38	N ₂ O(CO ₂ e, t)

Relative indicators of pollution:

		Market based	Location based	
Categories 1, 2, 3, 4	tCO ₂ /mln. pcs	48,819	53,588	PET preforms
	tCO ₂ /t used raw material	2,056	2,257	
Categories 1, 2	tCO ₂ /mln. pcs	0,169	4,938	
	tCO ₂ /t used raw material	0,007	0,208	
Categories 1, 2, 3, 4, 5	tCO ₂ /mln. pcs	88,303	93,072	
	tCO ₂ /t used raw material	3,718	3,919	

Progress (2022 vs 2021...2019):

	ISO 14064-1:2006	ISO 14064-1:2018	Measurement unit	2022	2021	2020	2019	Δ2022 vs 2021, %	Δ2022 vs 2019, %
Preforms	Scope 1,2,3	Categories 1, 2, 3, 4	tCO ₂ /mln. pcs	48,819	48,332	52,478	53,629	+1	-9,9
			tCO ₂ /t used raw material	2,056	2,071	2,129	2,147	-0,7	-4,5
	Scope 1, 2	Categories 1, 2	tCO ₂ /mln. pcs	0,169	0,412	0,249	0,328	-59,1	-48,7
			tCO ₂ /t used raw material	0,007	0,018	0,010	0,013	-59,8	-46,0
	N/A	Categories 1, 2, 3, 4, 5	tCO ₂ /mln. pcs	88,303	90,071	100,767	103,392	-2,0	-17,1
			tCO ₂ /t used raw material	3,718	3,859	4,089	4,140	-3,8	-11,3

Notes:

Emissions in Category 4 (in scope 3) has increased due to the leased warehouse emissions (electricity without guarantee of origin, natural gas for boiler) and more detailed data (transmission and distribution of electricity and fuels were included).

Detailed calculations are provided in the Annex 1 and the file [CO2 skaiciavimas uz 2022](#) .

Table 2

CO ₂ source		Emission factor; GWP	Unit of emission factor	Data source	Title
Fuel	Natural gas for boiler	0,20188	kgCO ₂ /kWh	Greenhouse gas reporting: conversion factors 2022 - GOV.UK (www.gov.uk)	DEFRA greenhouse gas reporting: conversion factors 2022
	Gasoline	2,14805	kgCO ₂ /l		
		0,00720	CH ₄ (kgCO ₂ e/l)		
		0,00660	N ₂ O (kgCO ₂ e/l)		
	Diesel	2,52058	kgCO ₂ /l		
		0,00026	CH ₄ (kgCO ₂ e/l)		
		0,03700	N ₂ O (kgCO ₂ e/l)		
	Liquid gas LPG	1,55491	kgCO ₂ /l		
		0,00121	CH ₄ (kgCO ₂ e/l)		
0,00097		N ₂ O (kgCO ₂ e/l)			
Hydrofluoro-carbons (HFC refrigerants)	R407c	1.774,00	kgCO ₂ /kg		
	R410A	2.088,00	kgCO ₂ /kg		
	R134a	1.430,00	kgCO ₂ /kg		
Electricity with guarantee of origin LOCATION BASED		242,01	gCO ₂ /kWh	https://www.aib-net.org/facts/europe-an-residual-mix	The newest European Residual Mixes, year 2022
Electricity without guarantee of origin MARKET BASED		466,36	gCO ₂ /kWh		
Electricity without guarantee of origin LOCATION BASED		242,01	gCO ₂ /kWh		
Transportation of raw materials by ship		0,01614	kgCO ₂ /tkm	Greenhouse gas reporting: conversion factors 2022 - GOV.UK (www.gov.uk)	DEFRA greenhouse gas reporting: conversion factors 2022
Transportation of raw materials by road		0,96112	kgCO ₂ /km		
Transportation of products by road (PET preforms)		0,96112	kgCO ₂ /km		
Transportation of products by road (PET bottles)		0,80322	kgCO ₂ /km		
Transportation of products by road (PET film)		0,96112	kgCO ₂ /km		

Transportation of products by ship	0,03681	kgCO ₂ /tkm				
Transportation of containers by road	0,78111	kgCO ₂ /km				
Transportation of containers by ship	0,01323	kgCO ₂ /tkm				
Lubricants / Oils	0,95	kgCO ₂ /kg	https://www.biograce.net/content/ghgcalculationtools/recognizedtool/	Biograce v 4d		
Wastewater (domestic)	0,33	kgCO ₂ /m ³				
Nylon	8,40	kgCO ₂ /kg	https://ecoinvent.org/the-ecoinvent-database/	Ecoinvent database (v3.6)		
Water	0,30	kgCO ₂ /m ³	https://www.biograce.net/content/ghgcalculationtools/recognizedtool/	Biograce v 4d		
Raw material production, VPET (virgin)	2,16	kgCO ₂ /kg	https://ecoinvent.org/the-ecoinvent-database/	Ecoinvent database (v3.6)		
Raw material production, RPET (recycled)	1,13	kgCO ₂ /kg				
Electricity without guarantee of origin (leased warehouse)	242,01	gCO ₂ /kWh	https://www.aib-net.org/facts/european-residual-mix	The newest European Residual Mixes, year 2022		
Transmission and distribution of electricity (electrical losses in the network)	0,01750	kgCO ₂ /kWh	Greenhouse gas reporting: conversion factors 2022 - GOV.UK (www.gov.uk)	DEFRA greenhouse gas reporting: conversion factors 2022		
	0,00007	CH ₄ (kgCO ₂ /kWh)				
	0,00012	N ₂ O (kgCO ₂ /kWh)				
Natural gas for boiler (leased warehouse)	2,0119	kgCO ₂ /m ³				
	0,0027	CH ₄ (kgCO ₂ /kWh)				
	0,0011	N ₂ O (kgCO ₂ /kWh)				
Upstream emissions relevant with production and transportation of gasoline (well to tank emissions)	0,6133	kgCO ₂ /l				
Upstream emissions relevant with production and transportation of diesel (well to tank emissions)	0,6099	kgCO ₂ /l				
Upstream emissions relevant with production and transportation of liquid gas LPG (well to tank emissions)	0,1838	kgCO ₂ /l				
Use of PET (polyethylene terephthalate)	2,29	kgCO ₂ /kg	n/a	Self-calculation on a basis of PET stoichiometry		

CO2-01

2022 **CO₂ emission calculation (standard ISO 14064-1:2018)**

Greenhouse gases (GHG) inventory categories:

1. Direct GHG emissions (SCOPE 1)										
CO ₂ source		Measurement unit	Amount	Emission factor; GWP	Unit of emission factor	Data source	Title	CO ₂ e, t	CH ₄ (CO ₂ e,t)	N ₂ O (CO ₂ e,t)
Fuel	Natural gas for boiler	MWh	3,39	0,20188	kgCO ₂ /kWh	Greenhouse gas reporting: conversion factors 2022 - GOV.UK (www.gov.uk)	DEFRA greenhouse gas reporting: conversion factors 2022	0,685		
	Gasoline	L	24.213,64	2,14805	kgCO ₂ /l			52,012	0,17	0,16
				0,00720	CH ₄ (kgCO ₂ e/l)					
	Diesel	L	8.293,50	0,00660	N ₂ O (kgCO ₂ e/l)			20,904	0,002	0,307
				2,52058	kgCO ₂ /l					
				0,00026	CH ₄ (kgCO ₂ e/l)					
	Liquid gas LPG	L	39.860,00	0,03700	N ₂ O (kgCO ₂ e/l)			61,979	0,05	0,04
				1,55491	kgCO ₂ /l					
0,00121				CH ₄ (kgCO ₂ e/l)						
0,00097				N ₂ O (kgCO ₂ e/l)						
Hydrofluoro-carbons (HFC refrigerants)	R407c	kg	57,00	1.774,00	kgCO ₂ /kg	101,118				
	R410A	kg	17,00	2.088,00	kgCO ₂ /kg	35,496				
	R134a	kg	0,00	1.430,00	kgCO ₂ /kg	0,000				
Sum:								272,194	0,225	0,505
Total:								272,924		

2. Indirect GHG emissions from imported energy (SCOPE 2)										
CO ₂ source	Measurement unit	Amount	Emission factor		Unit of emission factor	Data source	Title	CO ₂ e, t		
			Location based	Marked based				Market based	Location based	
Electricity with guarantee of origin, total	kWh	31.830.101,7	242,01	0,00	gCO ₂ /kWh	https://www.aib-net.org/facts/european-residual-mix	The newest European Residual Mixes, year 2022	0,00	7.703,20	
Electricity without guarantee of origin, total	kWh	0,00	242,01	466,36	gCO ₂ /kWh			0,00	0,00	
Electricity with guarantee of origin, PET bottles	kWh	1.777.343,80	242,01	0,00	gCO ₂ /kWh			0,00	430,13	
Electricity without guarantee of origin, PET bottles	kWh	0,00	242,01	466,36	gCO ₂ /kWh			0,00	0,00	
Electricity with guarantee of origin, PET film	kWh	1.341.484,40	242,01	0,00	gCO ₂ /kWh			0,00	324,65	
Electricity without guarantee of origin, PET film	kWh	0,00	242,01	466,36	gCO ₂ /kWh			0,00	0,00	
Electricity with guarantee of origin, PET preforms	kWh	28.711.273,50	242,01	0,00	gCO ₂ /kWh			0,00	6.948,42	
Electricity without guarantee of origin, PET preforms	kWh	0,00	242,01	466,36	gCO ₂ /kWh			0,00	0,00	
Total:								0,00	7.703,20	

3. Indirect GHG emissions from transportation (SCOPE 3)							
CO ₂ source	Measurement unit	Amount	Emission factor	Unit of emission factor	Data source	Title	CO ₂ e, t
Transportation of raw materials by ship	tkm	23.280.575,00	0,01614	kgCO ₂ /tkm	Greenhouse gas reporting: conversion factors 2022 - GOV.UK (www.gov.uk)	DEFRA greenhouse gas reporting: conversion factors 2022	375,75
Transportation of raw materials by road	km	644.105,00	0,96112	kgCO ₂ /km			619,06
Transportation of products by road (PET preforms)	km	1.981.911,00	0,96112	kgCO ₂ /km			1.904,85
Transportation of products by road (PET bottles)	km	124.904,00	0,80322	kgCO ₂ /km			100,33
Transportation of products by road (PET film)	km	83.124,00	0,96112	kgCO ₂ /km			79,89
Transportation of products by ship	tkm	3.273.930,00	0,03681	kgCO ₂ /tkm			120,50
Transportation of containers by road	km	597.109,00	0,78111	kgCO ₂ /km			466,41
Transportation of containers by ship	tkm	469.979,00	0,01323	kgCO ₂ /tkm			6,22
Total:							3.673,01

4. Indirect GHG emissions from products used by organization (SCOPE 3)											
CO ₂ source	Measurement unit	Amount	Emission factor	Unit of emission factor	Data source	Title	CO ₂ e, t	CH ₄ (CO ₂ e,t)	N ₂ O (CO ₂ e,t)		
Lubricants / Oils	L	9.750,62	0,95	kgCO ₂ /kg	https://www.biograce.net/content/ghgcalculationtools/recognisedtool/	Biograce v 4d	9,26				
Wastewater (domestic)	m ³	1.572,20	0,33	kgCO ₂ /m ³			0,52				
Nylon	t	34,93	8,40	kgCO ₂ /kg	https://ecoinvent.org/the-ecoinvent-database/	Ecoinvent database (v3.6)	293,40				
Water	m ³	24,20	0,30	kgCO ₂ /m ³	https://www.biograce.net/content/ghgcalculationtools/recognisedtool/	Biograce v 4d	0,01				
Raw material production, VPET (virgin)	t	27.848,80	2,16	kgCO ₂ /kg	https://ecoinvent.org/the-ecoinvent-database/	Ecoinvent database (v3.6)	60.153,41				
Raw material production, RPET (recycled)	t	12.175,30	1,13	kgCO ₂ /kg			13.758,09				
Electricity without guarantee of origin (leased warehouse)	kWh	88.547,00	242,01	gCO ₂ /kWh	https://www.aib-net.org/facts/european-residual-	The newest European Residual Mixes, year	21,43				
Transmission and distribution of electricity (electrical losses in the network)	kWh	31.918.648,70	0,01750	kgCO ₂ /kWh	Greenhouse gas reporting: conversion factors 2022 - GOV.UK (www.gov.uk)	DEFRA greenhouse gas reporting: conversion factors 2022	558,58			2,23	3,83
			0,00007	CH ₄ (kgCO ₂ /kWh)							
			0,00012	N ₂ O (kgCO ₂ /kWh)							
Natural gas for boiler (leased warehouse)	m ³	38603,00	2,0119	kgCO ₂ /m ³			77,67	0,11	0,04		
			0,0027	CH ₄ (kgCO ₂ /m ³)							
			0,0011	N ₂ O (kgCO ₂ /m ³)							
Upstream emissions relevant with production and transportation of gasoline	L	24213,64	0,6133	kgCO ₂ /l			14,85				
Upstream emissions relevant with production and transportation of diesel	L	8293,50	0,6099	kgCO ₂ /l						5,06	
Upstream emissions relevant with production and transportation of liquid gas LPG	L	39860,00	0,1838	kgCO ₂ /l						7,33	
Sum:							74.899,59	2,34	3,87		
Total:							74.905,81				
Total categories 1-4:							78.851,74	Market based			
							86.554,94	Location based			

5. Indirect GHG emissions associated with the use of products from the organization							
CO ₂ source	Measurement unit	Amount	Emission factor	Unit of emission factor	Data source	Title	CO ₂ e, t
Use of PET (polyethylene terephthalate)	t	27.848,80	2,29	kgCO ₂ /kg		Self calculation on a basis of PET stoichiometry	63773,75

TOTAL CO ₂ e,t:	142.625,49	Market based
	150.328,69	Location based

In this amount:

TOTAL CH ₄ (CO ₂ e,t):	2,56
TOTAL N ₂ O (CO ₂ e,t):	4,38

Category		CO ₂ e, t	CH ₄ (CO ₂ e,t)	N ₂ O (CO ₂ e,t)	Total CO ₂ e, t:
Upstream SCOPE 3	1 Purchased goods and services (PG&S)	74.214,69			74.214,69
	3 Fuel-and-energy-related activities	585,81	2,23	3,83	591,88
	4 Upstream transportation and distribution	994,81			994,81
	8 Upstream leased assets	99,10	0,11	0,04	99,24
Downstream SCOPE3	9 Downstream transportation and distribution	2.678,20			2.678,20
	12 End-of-life treatment of sold products.	63773,75			63773,75
	13 Downstream leased assets	0			0,00