LIETUVOS BANKAS
EUROSISTEMA

Bank of Lithuania Carbon Footprint Report

2022

Subject: activities of the building complexes of the Bank of Lithuania at Gedimino pr. 6, Totorių g. 2/4, Žalgirio g. 90, Žirmūnų g. 151, Vilnius, and Maironio g. 25, Kaunas, and the staff working therein.

Goal: to assess the carbon footprint generated by the activities of the Bank of Lithuania.

Period: 2022.

Contents

1. Carbon footprint assessment methodology

Assessment thresholds

The Bank of Lithuania operates in the following building complexes: Totorių g. 4, Vilnius, Totorių g. 2, Vilnius, Gedimino pr. 6, Vilnius (Complex 1), Žirmūnų g. 151, Vilnius (Complex 2), Maironio g. 25, Kaunas (Complex 3), and Žalgirio g. 90, Vilnius (Complex 4).

The carbon footprint is calculated in terms of office activities, excluding activities carried out for the Bank of Lithuania by companies that are not directly controlled by the Bank, such as euro banknote production and euro coin minting, office services, and supply of goods.

To run the offices, electricity is purchased in all the buildings, heat energy is supplied from district heating networks, water is supplied from district water supply networks and wastewater is discharged into district sewage networks and the municipal wastewater treatment plant. To protect against power outages, three building complexes have diesel generators installed. Frost machines are used to meet the need for cooling.

The diagram of carbon footprint-related flows used in the assessment is shown in Figure 1. Input flows are the facilities and natural resources that are used in the activities of the Bank of Lithuania. Output flows are the products, waste generated and greenhouse gas (GHG) emissions from the activities of the Bank of Lithuania.

The red dotted line defines the input and output flows that are included in the carbon footprint assessment (see Figure 1).

The assessment does not include GHG emissions resulting from the production or disposal of acquired fixed or current assets (e.g. GHG emissions from computer production).

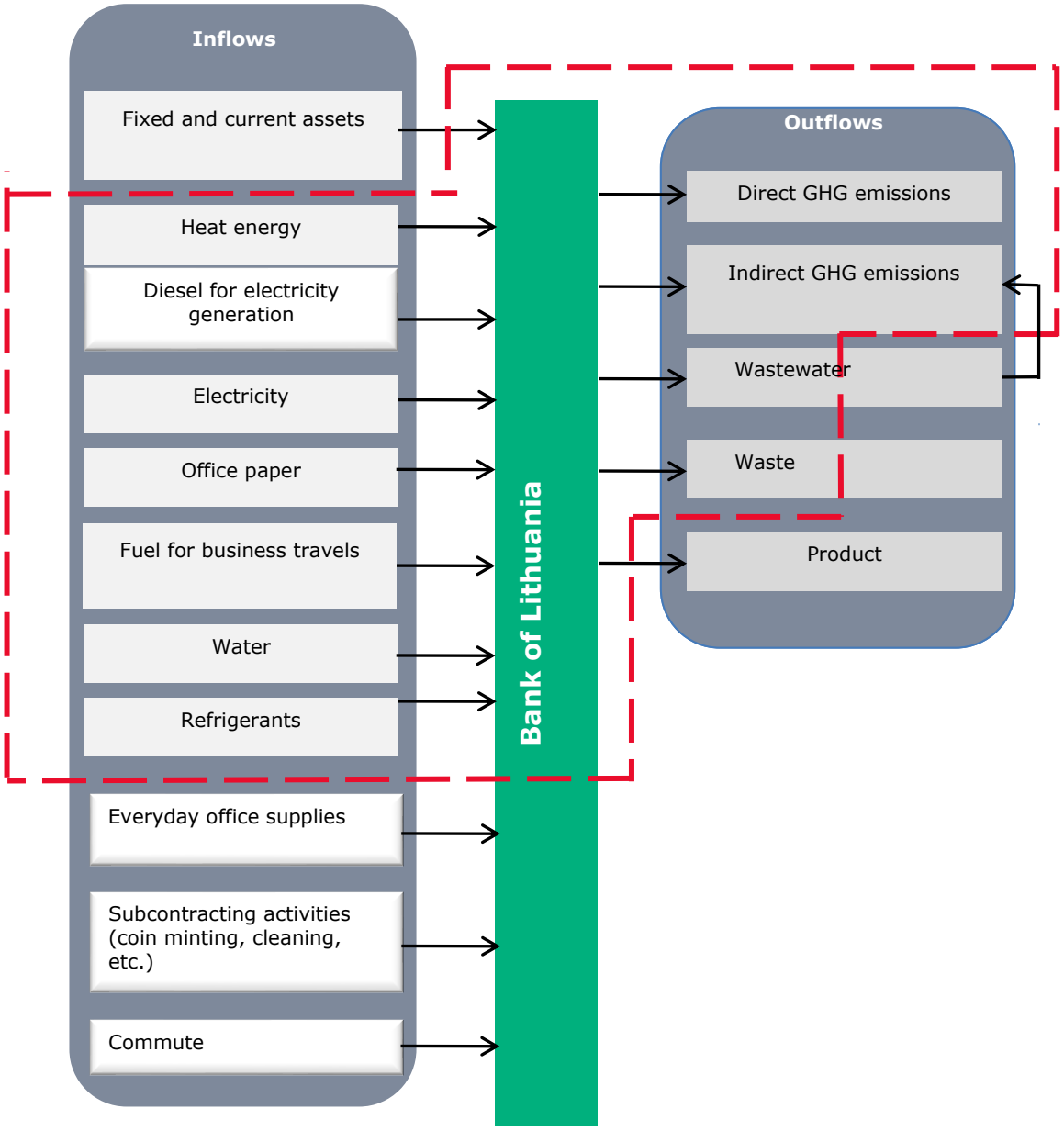
GHG emissions from business travel by land and air are included in the carbon footprint calculation. Only the GHG emissions resulting from the fuel consumed by vehicles are assessed. Emissions occurring during the life cycle of a vehicle (from production to disposal) are not included in the carbon footprint calculation of the Bank of Lithuania. Staff members' commute is not included in the assessment.

Only office paper is included in the assessment for day-to-day office activities, as a significant amount of paper is used for administrative operations. Other supplies (e.g. stationery, coffee) are not included because the generated GHG emissions are relatively low compared to other activities, while the time spent on accounting is disproportionately high.

GHG emissions from subcontractors' activities are not included either, because the Bank of Lithuania is not in a position to assess subcontractors' activities, whereas subcontractors do not calculate their carbon footprint.

The red dotted line (see Figure 1) crosses the output flows 'Wastewater' and 'Waste'; this is because emissions resulting from the electricity consumption of the pumps used to collect the wastewater are taken into account when calculating GHG emissions from wastewater treatment, but emissions from the treatment of the company's wastewater at the municipal wastewater treatment plant are not included in the carbon footprint calculation. For the purpose of calculating GHG emissions, waste management emissions resulting from the transport of waste are taken into account, but emissions resulting from waste management are not included in the carbon footprint calculation.

Figure 1. Flow diagram of the Bank of Lithuania carbon footprint



2. Calculation of GHG emissions

GHG emissions are calculated by multiplying the activity level by the GHG emission factor that characterises the activity in question (fuel combustion, chemical process, etc.):

$E = VL \cdot TR$,

where:

E – GHG emissions, tonnes of CO_2 equivalent;

VL – activity level, unit;

TR – emission factor (GHG emission factor), tonnes of CO_2 equivalent/unit

It is essential that the emission factors (GHG emission factors) used are derived from reliable sources and are relevant to the site under consideration. Where site-specific emission factors are not available, conservative default values must be applied. The values of the emission factors are given in Table 1.

Table 1. Values of the emission factors (GHG emission factors)

Item No	Fuel,[1] energy, activity	Units	GHG factor, tonnes of CO_2 equivalent/unit
1.	Diesel	tonnes	3.1393
2.	Petrol	tonnes	3.2594
3.	Refrigerants: R410A	tonnes	2,087.8
	R407C		1,774.0
4.	Heat energy	MWh	0.17
5.	Electricity (green)	MWh	0.018
6.	Extraction, production, and lifting of drinking water	m^3	0.0002916
7.	Wastewater collection	m^3	0.0006624
8.	Garbage trucks	km	0.002022
9.	White paper	tonnes	0.31

[1] In the absence of precise fuel conversion factors, the following conversion factors shall be used to convert fuel from litres to tonnes: 0.84 for diesel, 0.75 for petrol.

3. Grouping of GHG emissions by emission scopes

The carbon footprint is calculated by dividing GHG emission sources into three scopes:

- direct emissions from energy production or other activities related to the combustion of fuels on the territory of or at facilities owned by the Bank of Lithuania (Scope 1);
- indirect emissions from the consumption of energy produced outside the Bank (Scope 2);
- GHG emissions that occur outside the Bank of Lithuania but are related to its activities, e.g. business travel (air travel, taxi services, etc.), etc. (Scope 3).

The list of GHG emission sources, grouped by scopes, is provided in Table 2. The grouping follows the most popular standards, including: LST EN ISO 14064-1:2012 Greenhouse gases. Part 1; ISO 14064-1:2006 Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals; G305 GRI Sustainability Reporting Standards; WRI-WBCSD The GHG Protocol Corporate Accounting and Reporting Standard.

Table 2. Scopes of GHG emissions

Scope 1	Scope 2	Scope 3
Stationary sources of emission	Electricity consumption	Business travel
✓ Production of electricity by own generators		✓ Taxi services in Lithuania ✓ Flights
Mobile sources of emission	Heat energy consumption	Waste management
✓ Road transport owned by the Bank of Lithuania		✓ Waste removal from the premises of the Bank of Lithuania
Use of refrigerants		Water consumption
✓ Frost machines operated in buildings		✓ Extraction, production, and lifting of drinking water ✓ Wastewater collection
		Administrative operations
		✓ Use of paper

4. Carbon footprint calculation

4.1. Assessment of direct GHG emissions (Scope 1)

4.1.1. Stationary sources of emission

A stationary GHG source is a source with a fixed location. These sources include diesel generators in the buildings. In 2022, diesel power generators used a total of 80 litres (0.068 tonnes) of diesel fuel in all buildings and emitted 0.209 tonnes of CO_2 equivalent.

Table 3. Emissions of stationary sources of GHG

Building complex	Diesel fuel used		GHG factor, tonnes of CO_2 equivalent/tonnes	GHG, tonnes of CO_2 equivalent
	litres	tonnes		
Total	**80**	**0.068**		**0.209**
Building complex 1	30	0.025	3.1393	0.078
Building complex 2	20	0.017	3.1393	0.053
Building complex 3	30	0.025	3.1393	0.078

4.1.2. Mobile sources of emission

Mobile sources are motor vehicles and other fuel-powered moving machinery. These sources include vehicles owned by the Bank. GHG emissions from mobile sources used for business travel are calculated on the basis of fuel consumption.

In 2022, the diesel-powered vehicles and petrol cars owned by the Bank of Lithuania combusted 3.265 tonnes (3,839 litres) of diesel fuel and 5.673 tonnes (6,674 litres) of petrol and emitted 10.250 tonnes and 17.716 tonnes of CO_2 equivalent respectively.

Table 4. Emissions of mobile sources of GHG

Building complex	Fuel used		GHG factor, tonnes of CO_2 equivalent/unit	GHG, tonnes of CO_2 equivalent
	litres	tonnes		
Total	**10,513**	**8.938**		**28.740**
Diesel-powered vehicles	**3,839**	**3.265**		**10.250**
Building complex 1	329	0.280	3.1393	0.879
Building complex 2	3,229	2.745	3.1393	8.617
Building complex 3	281	0.240	3.1393	0.753
Petrol cars	**6,674**	**5.673**		**18.491**
Building complex 1	280	0.238	3.2594	0.776
Building complex 2	6,394	5.435	3.2594	17.715

4.1.3. Use of refrigerants

Refrigerant is a liquid that can boil and evaporate at low temperatures under atmospheric pressure. This material is used to transfer heat from lower to higher temperatures. Refrigerants used in the Bank's equipment include vehicle air-conditioning systems, domestic refrigerators, and air-conditioning systems used in buildings. This assessment only includes the refrigerants used in air-conditioning systems of buildings.

The Bank of Lithuania uses R-410A, R-407C and R-134a refrigerants in the refrigeration units. When calculating refrigerant usage, it is assumed that the amount of refrigerant used is equal to the amount of recharge.

Table 5. Refrigerant emissions

Building complex	Refrigerants	Recharge amount, tonnes	GHG factor, tonnes of CO_2 equivalent/unit	GHG, tonnes of CO_2 equivalent
Total		**0.1205**		**240.28**
Building complex 1	R410A	0.0615	2,087.8	128.40
Building complex 2	R410A	0.0230	2,087.8	48.02
	R407C	0.0360	1,774.0	63.86

4.2. Assessment of indirect GHG emissions (Scope 2)

4.2.1. Electricity

In 2022, the Bank of Lithuania carried out a public procurement and purchased green electricity. From 1 July 2019, the Bank of Lithuania has been using electricity from renewable energy sources.

Table 6. Emissions of electricity bought and consumed

Building complex	Amount, MWh	GHG factor, tonnes of CO_2 equivalent/MWh	GHG, tonnes of CO_2 equivalent
Total	**2,222.33**		**40.01**
Building complex 1	814.38	0.018	14.66
Building complex 2	1,032.59	0.018	18.59
Building complex 3	318.20	0.018	5.73
Building complex 4	57.16	0.018	1.03

4.2.2. Heat energy

In 2022, the Bank of Lithuania consumed 2.249 GWh of heat for space heating and hot water production from district heating networks (in Complexes 1, 2 and 3). Building Complex 4 uses electricity from renewable energy sources to generate heat, which amounts to 75.2 MWh of electricity.

Table 7. Heat energy emissions

Building complex	Amount, MWh	GHG factor, tonnes of CO_2 equivalent/MWh	GHG, tonnes of CO_2 equivalent
Total	**2,324.22**		**383.69**
Building complex 1	920.80	0.17	156.54
Building complex 2	709.99	0.17	120.70
Building complex 3	618.23	0.17	105.10
Building complex 4	75.20	0.018	1.35

4.3. Other sources of GHG emissions (Scope 3)

4.3.1. Taxi services

In 2022, employees of Complexes 1, 2 and 4 of the Bank of Lithuania travelled 2,673 km by taxi.

Taxi services are assessed on the basis of fuel consumption per distance travelled and emissions from fuel combustion. In the absence of data on the type of vehicles used, the fuel consumption is estimated on the following assumptions: taxis use diesel fuel, the engine capacity is 2.0 litres, while the average annual fuel consumption is 6.53 litres/100 km. The corresponding diesel fuel consumption amounts to 174.55 litres (0.15 tonnes) per each building complex.

Based on these assumptions, fuel combustion in taxi engines generated 1.41 tonnes of CO_2 equivalent in 2022.

Table 8. Emissions of taxi services

Building complex	Amount, tonnes	GHG factor, tonnes of CO_2 equivalent/tonnes	GHG, tonnes of CO_2 equivalent
Total	**0.45**		**1.41**
Building complex 1	0.15	3.1393	0.47
Building complex 2	0.15	3.1393	0.47
Building complex 4	0.15	3.1393	0.47

4.3.2. Flights

Business flights are calculated on the basis of the flight route and the number of routes. The calculation is made using the Carbon Footprint Calculator based on economy class routes in 2022.

The estimated GHG emissions from flights in 2022 amounted to 222.36 tonnes of CO_2 equivalent. Building complexes 1, 2 and 4 emitted 74.12 tonnes of CO_2 equivalent each.

4.3.3. Water consumption

Water is supplied to the Bank of Lithuania by water supply undertakings UAB Vilniaus vandenys and UAB Kauno vandenys. In 2022, the total water consumption amounted to 5,458 m^3. The extraction, production and lifting of this water by pumps consumed a certain amount of electricity, thus generating GHG emissions. According to the revised and summarised benchmarking indicators for 2022 provided by the National Energy Regulatory Council for water supply undertakings, the relative electricity consumption by the level of sales of water supply services in 2022 for undertakings in Group I (this group includes UAB Vilniaus vandenys and UAB Kauno vandenys) amounted to 0.050 kWh/m^3 for water production, and 0.436 kWh/m^3 for extraction of water from a 100 m depth and delivery (the previous year's indicator is used, given that data for the current year is published in June). The calculated GHG emission factor for the extraction, production and lifting of water is 0.2916 kg CO_2 equivalent/m^3. The calculations revealed that emissions amounted to 1.59 tonnes of CO_2 equivalent in 2022.

Table 9. Water consumption emissions

Building complex	Amount, m^3	GHG factor, tonnes of CO_2 equivalent/m^3	GHG, tonnes of CO_2 equivalent
Total	**5,458**		**1.59**
Building complex 1	2,856	0.0002916	0.83
Building complex 2	1,250	0.0002916	0.36
Building complex 3	502	0.0002916	0.15
Building complex 4	850	0.0002916	0.25

4.3.4. Wastewater collection

GHG emissions from anaerobic treatment of wastewater at the wastewater treatment plants of UAB Vilniaus vandenys and UAB Kauno vandenys are not included in the calculations because the data on wastewater treatment is not sufficient. However, the carbon footprint includes indirect GHG emissions due to the use of electricity for wastewater collection. Based on the water consumption report, the estimated GHG emission factor for wastewater collection is 0.6624 kg of CO_2 equivalent/m^3. The indirect air emissions from the electricity consumption of 5,458 m^3 for wastewater collection amounted to 3.61 tonnes of CO_2 equivalent.

Table 10. Wastewater emissions

Building complex	Amount, m^3	GHG factor, tonnes of CO_2 equivalent/m^3	GHG, tonnes of CO_2 equivalent
Total	**5,458**		**3.61**
Building complex 1	2,856	0.0006624	1.89
Building complex 2	1,250	0.0006624	0.83
Building complex 3	502	0.0006624	0.33
Building complex 4	850	0.0006624	0.56

4.3.5. Waste removal

GHG emissions from waste collection are due to the fuel consumption of garbage trucks. To calculate emissions, the repeatability and the distance travelled by garbage trucks to the locations of discharge are considered. As it is not possible to identify the specific vehicles used to transport the waste, a conservative European gross air emission factor of 0.002022 tonnes of CO_2 equivalent/km is chosen. The distance travelled is estimated from the location of the relative complex to the regional mechanical biological treatment of municipal waste.

Table 11. Waste removal instances, waste transport distances and emissions

Waste generated	Times per year	Distance travelled, km	GHG, tonnes of CO_2 equivalent
Total			**21.66**
Municipal waste from Complex 1	252	16	8.15
Municipal waste from Complex 2	252	14	7.13
Municipal waste from Complex 3	156	10	3.15
Paper (plastic) from Complex 1	52	16	1.68
Paper (plastic) from Complex 2	52	14	1.47
Paper (plastic) from Complex 3	4	10	0.08

The total GHG emissions from waste removal in 2022 amounted to 21.66 tonnes of CO_2 equivalent. GHG emissions from waste management activities are not included in the calculation of the carbon footprint of the Bank of Lithuania.

4.3.6. Use of paper

In its activities, the Bank of Lithuania uses A4 white paper (assessment data: 80 g/m^2, 500 sheets per pack, pack weight 2.5 kg). According to the Bank of Lithuania, 2 tonnes of it was used in 2022. During the lifecycle of paper, GHG emissions are generated by the production, transportation and disposal phases. For the purposes of the calculation, paper is assumed to be produced in the European Union, and the emission factor of 0.31 tonnes of CO_2 equivalent/t is applied, based on the activity report of the Confederation of European Paper Industries (CEPI). This amount of paper consumption generates 0.61 tonnes of CO_2 equivalent.

Table 12. Emissions of paper used

Building complex	Amount, tonnes	GHG factor, tonnes of CO_2 equivalent/tonnes	GHG, tonnes of CO_2 equivalent
Total	**2.0**		**0.61**
Building complex 1	1.0	0.31	0.31
Building complex 2	0.4	0.31	0.12
Building complex 3	0.4	0.31	0.12
Building complex 4	0.2	0.31	0.06

5. Summary of results

The total carbon footprint per staff member amounted to 1.24 tonnes of CO_2 equivalent. The structure of the carbon footprint by assessment level, activity and building complex is shown in Table 13.

Table 13. Structure of the carbon footprint by scope, activity and building complex

Activity	Complex 1 (G6/T2/T4)	Complex 2 (Z151)	Complex 3 (Kaunas)	Complex 4 (Z90)	Total, tonnes of CO_2 equivalent
Scope 1	**130.133**	**138.265**	**0.831**	**0**	**269.23**
Production of electricity	0.078	0.053	0.078	0	0.209
Road transport of the Bank of Lithuania	1.655	26.332	0.753	0	28.74
Use of refrigerants	128.4	111.88	0	0	240.28
Scope 2	**171.2**	**139.29**	**110.83**	**2.38**	**423.7**
Electricity consumption	14.66	18.59	5.73	1.03	40.01
Heat energy consumption	156.54	120.7	105.1	1.35	383.69
Scope 3	**87.45**	**84.5**	**3.83**	**75.46**	**251.24**
Taxi services	0.47	0.47	0	0.47	1.41
Flights	74.12	74.12	0	74.12	222.36
Drinking water production	0.83	0.36	0.15	0.25	1.59
Wastewater collection	1.89	0.83	0.33	0.56	3.61
Waste removal	9.83	8.6	3.23	0	21.66
Use of paper	0.31	0.12	0.12	0.06	0.61
Total, tonnes of CO_2 equivalent	**388.783**	**362.055**	**115.491**	**77.84**	**944.17**
Average number of staff	314	70	54	225	663
Tonnes of CO_2 equivalent/staff member	**1.24**	**5.17**	**2.14**	**0.35**	**1.42**

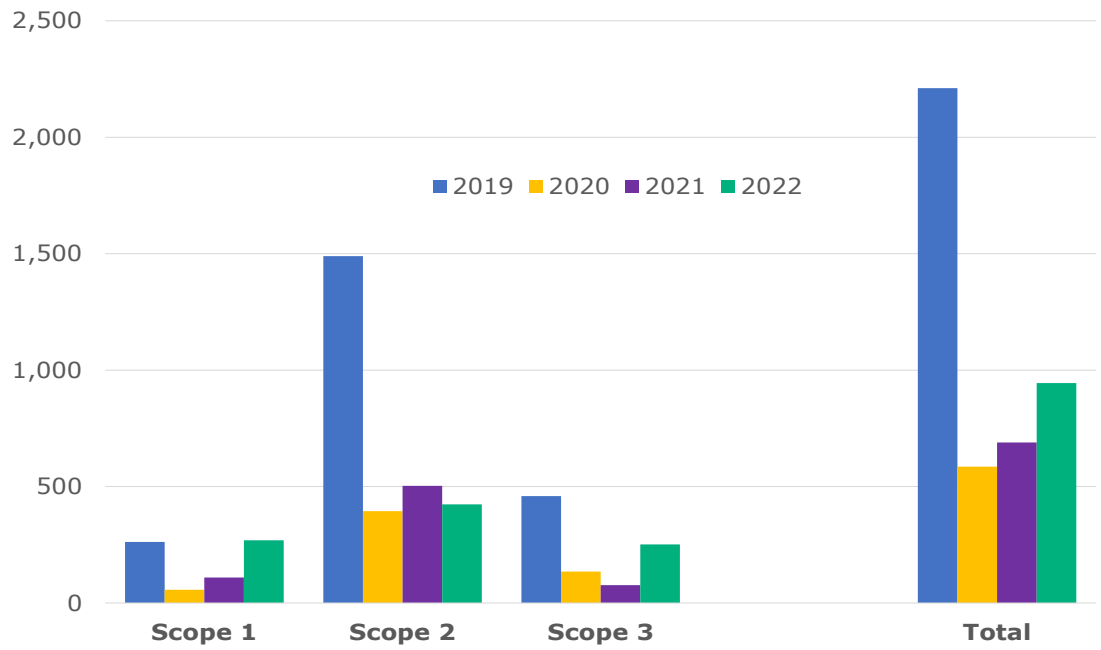
6. Dynamics of the Bank of Lithuania carbon footprint

The Bank of Lithuania monitors its carbon footprint and implements measures to reduce the environmental impact of its activities. The dynamics by scope and activity is shown in Table 14 and Figure 2.

Table 14. Dynamics of the Bank of Lithuania carbon footprint (tonnes of CO_2 equivalent)

Activity	2022	2021	2020	2019
Scope 1	**269.23**	**109.47**	**56.46**	**262.288**
Production of electricity	0.209	0.371	0.18	0.778
Road transport of the Bank of Lithuania	28.74	20.76	18.86	27.23
Use of refrigerants	240.28	88.35	37.42	234.28
Scope 2	**423.7**	**502.944**	**394.43**	**1,489.31**
Electricity consumption	40.01	42.41	50.23	1,031.35
Heat energy consumption	383.69	460.534	344.20	457.96
Scope 3	**251.24**	**76.797**	**134.62**	**459.11**
Taxi services	1.41	0.357	1.29	5.91
Flights	222.36	48.99	105	419.1
Drinking water production	1.59	1.59	1.82	3.25
Wastewater collection	3.61	3.66	4.16	7.4
Waste removal	21.66	21.66	21.66	21.66
Use of paper	0.61	0.54	0.69	1.79
Total, tonnes of CO_2 equivalent	**944.17**	**689.21**	**585.51**	**2,210.71**
Average number of staff	663	613	632	619
Tonnes of CO_2 equivalent/staff member	**1.42**	**1.12**	**0.93**	**3.57**

Figure 2. Carbon footprint developments by scope 2019–2022



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