HELLENIC REPUBLIC
HELLENIC STATISTICAL AUTHORITY

Piraeus, 4 February 2026

AIR EMISSION ACCOUNTS: year 2023

The Hellenic Statistical Authority (ELSTAT) announces data on Air Emissions Accounts, for the year 2023 and revised data for the period 2014 - 2022. Data are collected from administrative sources, are provisional and are revised on an annual basis for the whole period.

Through this Announcement, ELSTAT presents data on national emissions of greenhouse gases and air pollutants resulting from economic activities of resident units and households, both within and outside the national territory. The relevant data are presented by certain economic sections of the Statistical Classification of Economic Activities (NACE Rev.2) and households (Tables 1 - 8, Graphs 1 - 9).

The emissions and the respective percentage distribution by type of gas per main economic activity sectors of the Statistical Classification of Economic Activities (NACE Rev.2) and households, are analysed as follows:

Carbon dioxide (CO_2)

Emissions of CO_2 in 2023 were 61,759.5 thousand tonnes showing a decrease of 7.3% compared with 2022 (66,643.6 thousand tonnes) as shown in Table 1 and Graph 1. This was mainly caused by a notable decrease in the emissions of the "Electricity, gas, steam and air conditioning supply" section (Tables 2 and 3, Graph 2).

- The section of "Transportation and storage" had the most important contribution to the total CO_2 emissions, with a share of 26.8% in 2023. The corresponding share in 2022 was 24.0% (Table 3, Graph 2).
- The energy section of "Electricity, gas, steam and air conditioning supply" contributed to the total CO_2 emissions with a share of 25.3% in 2023, while the corresponding share in 2022 was 28.7% (Table 3, Graph 2).
- The section of "Manufacturing" accounted for 24.8% of total CO_2 emissions in 2023 and 23.6% in 2022 (Table 3, Graph 2).
- Households had also a significant share of CO_2 emissions, accounting for 18.0% of total CO_2 emissions in 2023. In 2022, the corresponding share was 18.8% (Table 3, Graph 2).

The total annual emissions of CO_2 and the year-on-year change (%) from 2014 to 2023 are shown in Table 1 and Graph 1.

Methane (CH_4)

In 2023, 93.6% of total CH_4 emissions derived from two economic sections: "Water supply; sewerage, waste management and remediation" with a share of 50.9% and "Agriculture, forestry and fishing" with a share of 42.8%. In 2022, the respective contributions were 50.5% and 42.5% (Table 4, Graph 3).
Households did not contribute significantly to CH_4 emissions with a share of 2.5% in 2023 and 2.4% in 2022 (Table 4, Graph 3).
The total annual emissions of CH_4 from 2014 to 2023 are shown in Table 1 and Graph 6.

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Nitrous oxide (N_2O)

The section of "Agriculture, forestry and fishing" had the most significant contribution to N_2O emissions, with a share of 75.3% in 2023 and 74.7% in 2022 (Table 5, Graph 4).

Other economic sections that notably contributed to nitrous oxide's emissions were:

- "Transportation and storage" with a share of 10.5% in 2023 and 10.2% in 2022 (Table 5, Graph 4).
- "Water supply; sewerage, waste management and remediation" with a share of 6.6% in 2023 and 6.5% in 2022. (Table 5, Graph 4).

The participation of households in N_2O emissions accounted for 2.2% of total N_2O emissions in 2023 and for 2.1% in 2022 (Table 5, Graph 4).

The total annual emissions of N_2O from 2014 to 2023 are shown in Table 1 and Graph 6.

F-gases category (hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride)

Hydrofluorocarbons' (HFCs) emissions came mostly from refrigeration and air conditioning operations through all economic activities and households. In 2023, the leading emitter of HFCs was the "Manufacturing" section followed by "Other services" with respective shares of 42.4% and 35.9% (Table 6, Graph 5). The participation of households was also notable with 12.9% of total HFCs emissions in 2023 (Table 6, Graph 5).
The total annual emissions of HFCs from 2014 to 2023 are shown in Table 1 and Graph 6.

Perfluorocarbons' (PFCs) emissions came exclusively from the "Manufacturing" section. The total annual emissions of PFCs and the year-on-year change (%) from 2014 to 2023 are shown in Table 1 and Graph 7.

Emissions of **sulfur hexafluoride (SF_6)** came exclusively from the section of "Electricity, gas, steam and air conditioning supply".
The total annual emissions of SF_6 and the year-on-year change (%) from 2014 to 2023 are shown in Table 1 and Graph 8.

Air pollutants (NO_X, SO_X, NH_3, NMVOC, CO, PM10)

In 2023, major emitters of air pollutants were the economic sections of "Transportation and storage" with a share of 33.2%, "Manufacturing" with 11.8% and "Agriculture, forestry and fishing" with 11.6% (Table 8, Graph 9). Households had also a significant contribution to air pollutants' emissions with a share of 24.7% in 2023 (Table 8, Graph 9).
The total annual emissions of air pollutants from 2014 to 2023 are shown in Table 7.

Table 1. Emissions of greenhouse gases, 2014 – 2023* *(in 1,000 tonnes of CO_2 equivalent)*

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Carbon dioxide (CO_2)	85,721.0	83,668.0	81,421.2	86,202.7	85,432.4	80,185.5	69,149.7	70,147.6	66,643.6	61,759.5
Methane (CH_4)	11,712.0	11,504.5	11,134.7	11,486.5	11,651.2	11,420.7	11,410.3	11,777.8	11,787.0	11,669.4
Nitrous oxide (N_2O)	4,113.2	4,100.0	4,186.4	4,260.9	4,195.9	4,214.3	4,325.9	4,284.0	4,010.1	3,987.8
Hydrofluorocarbons (HFCs)	5,505.3	5,641.7	5,844.6	5,806.4	5,559.4	5,137.1	4,816.3	4,675.6	4,558.2	4,491.8
Perfluorocarbons (PFCs)	121.7	108.0	122.0	113.6	122.1	123.6	133.5	111.2	87.4	87.1
Sulfur hexafluoride (SF_6)	5.1	5.2	5.4	5.2	5.1	5.1	5.1	5.0	5.0	5.1
TOTAL	**107,178.2**	**105,027.4**	**102,714.2**	**107,875.4**	**106,966.0**	**101,086.2**	**89,840.8**	**91,001.1**	**87,091.3**	**82,000.7**

*Provisional data.

Table 2. Emissions of carbon dioxide (CO_2) by economic sector, 2014 – 2023* *(in 1,000 tonnes)*

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agriculture, forestry and fishing	839.3	908.7	865.9	845.8	858.2	810.2	1,267.9	1,039.0	1,029.5	908.2
Mining and quarrying	57.8	84.5	87.2	92.2	93.2	78.6	66.3	67.2	39.3	64.9
Manufacturing	17,962.7	17,245.4	18,072.9	18,042.3	17,268.5	16,143.3	14,985.2	16,216.5	15,731.8	15,344.2
Electricity, gas, steam and air conditioning supply	40,782.8	35,967.9	31,800.3	35,385.6	33,724.7	27,849.8	20,210.7	20,366.3	19,120.2	15,597.6
Water supply; sewerage, waste management and remediation	106.3	62.6	85.4	111.2	63.3	81.4	64.6	92.0	72.6	79.6
Construction	258.5	233.1	245.7	165.9	236.4	175.1	206.4	194.4	226.9	186.9
Transportation and storage	12,802.2	14,574.3	16,096.6	17,613.5	20,101.7	21,208.7	19,169.5	18,889.8	15,995.5	16,557.9
Other services	1,632.9	1,876.0	1,759.0	1,648.3	1,524.1	1,688.0	1,714.6	1,540.1	1,896.6	1,882.5
Households	11,278.5	12,715.5	12,408.1	12,297.8	11,562.4	12,150.4	11,464.6	11,742.2	12,531.1	11,137.8
TOTAL	**85,721.0**	**83,668.0**	**81,421.2**	**86,202.7**	**85,432.4**	**80,185.5**	**69,149.7**	**70,147.6**	**66,643.6**	**61,759.5**

*Provisional data.

Table 3. Percentage distribution of CO_2 emissions by economic sector, 2014 – 2023*

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agriculture, forestry and fishing	1.0	1.1	1.1	1.0	1.0	1.0	1.8	1.5	1.5	1.5
Mining and quarrying	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Manufacturing	21.0	20.6	22.2	20.9	20.2	20.1	21.7	23.1	23.6	24.8
Electricity, gas, steam and air conditioning supply	47.6	43.0	39.1	41.0	39.5	34.7	29.2	29.0	28.7	25.3
Water supply; sewerage, waste management and remediation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Construction	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.3
Transportation and storage	14.9	17.4	19.8	20.4	23.5	26.4	27.7	26.9	24.0	26.8
Other services	1.9	2.2	2.2	1.9	1.8	2.1	2.5	2.2	2.8	3.0
Households	13.2	15.2	15.2	14.3	13.5	15.2	16.6	16.7	18.8	18.0
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

*Provisional data.

Table 4. Percentage distribution of CH_4 emissions by economic sector, 2014 – 2023*

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agriculture, forestry and fishing	44.6	44.4	45.1	43.6	43.2	43.6	45.4	43.5	42.5	42.8
Mining and quarrying	10.6	9.8	7.2	8.0	7.7	5.9	3.1	2.6	3.0	2.3
Manufacturing	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Electricity, gas, steam and air conditioning supply	0.7	0.7	0.8	0.9	0.9	0.9	0.9	1.0	0.8	0.8
Water supply; sewerage, waste management and remediation	40.6	41.3	43.4	43.9	44.9	46.2	47.5	49.6	50.5	50.9
Construction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transportation and storage	0.3	0.3	0.4	0.4	0.4	0.5	0.4	0.4	0.3	0.4
Other services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Households	2.8	2.9	2.7	2.6	2.4	2.4	2.2	2.3	2.4	2.5
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

*Provisional data.

Table 5. Percentage distribution of N_2O emissions by economic sector, 2014 – 2023*

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agriculture, forestry and fishing	76.6	75.2	75.4	75.1	73.9	74.4	75.8	75.8	74.7	75.3
Mining and quarrying	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manufacturing	3.9	3.9	3.5	3.5	3.7	3.1	2.9	2.7	3.7	3.0
Electricity, gas, steam and air conditioning supply	2.9	2.6	2.1	2.3	2.2	1.7	0.9	0.9	0.9	0.8
Water supply; sewerage, waste management and remediation	6.7	6.6	6.5	6.5	6.7	6.6	6.1	6.2	6.5	6.6
Construction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transportation and storage	6.0	7.6	8.7	8.9	9.8	10.4	10.8	10.8	10.2	10.5
Other services	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8
Households	2.1	2.3	2.1	2.0	2.0	2.0	1.7	1.9	2.1	2.2
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

*Provisional data.

Table 6. Percentage distribution of HFCs emissions by economic sector, 2014 – 2023*

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agriculture, forestry and fishing	0.5	0.5	0.6	0.5	0.4	0.5	0.6	0.7	0.8	0.7
Mining and quarrying	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Manufacturing	52.0	50.6	50.9	50.9	51.6	49.5	43.7	43.8	37.5	42.4
Electricity, gas, steam and air conditioning supply	0.9	0.9	0.9	0.7	0.6	0.8	0.8	0.9	0.9	0.9
Water supply; sewerage, waste management and remediation	1.0	1.0	1.2	1.1	1.1	1.3	1.5	1.5	1.6	2.0
Construction	4.0	3.9	3.8	3.7	4.0	4.3	4.0	4.1	3.9	3.0
Transportation and storage	2.3	2.1	1.9	2.0	1.7	1.7	1.6	2.0	2.3	2.1
Other services	28.4	29.6	28.5	30.1	29.6	30.6	34.0	33.7	39.3	35.9
Households	11.0	11.4	12.3	10.9	10.9	11.4	13.7	13.2	13.5	12.9
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

*Provisional data.

Table 7. Emissions of air pollutants, 2014 – 2023* *(in 1,000 tonnes)*

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Nitrogen oxides (NO_X)	417.9	439.6	470.1	505.2	540.5	553.4	527.6	488.0	412.1	409.2
Sulfur oxides (SO_X)	230.7	256.2	256.7	293.1	323.5	328.5	198.5	156.6	118.1	117.1
Ammonia (NH_3)	68.7	67.5	67.5	67.0	66.4	66.3	68.6	68.0	64.4	66.2
Non-Methane Volatile Organic Compounds (NMVOC)	177.2	170.6	163.0	158.7	155.4	155.2	147.6	145.8	142.1	141.3
Carbon monoxide (CO)	550.9	526.8	477.7	489.4	475.0	472.0	440.9	436.2	446.9	434.1
Particulate matter (PM10)	85.0	80.4	82.2	82.3	79.1	80.5	80.4	76.0	72.2	76.0
TOTAL	**1,530.3**	**1,541.0**	**1,517.1**	**1,595.6**	**1,639.8**	**1,655.9**	**1,463.6**	**1,370.7**	**1,255.8**	**1,243.8**

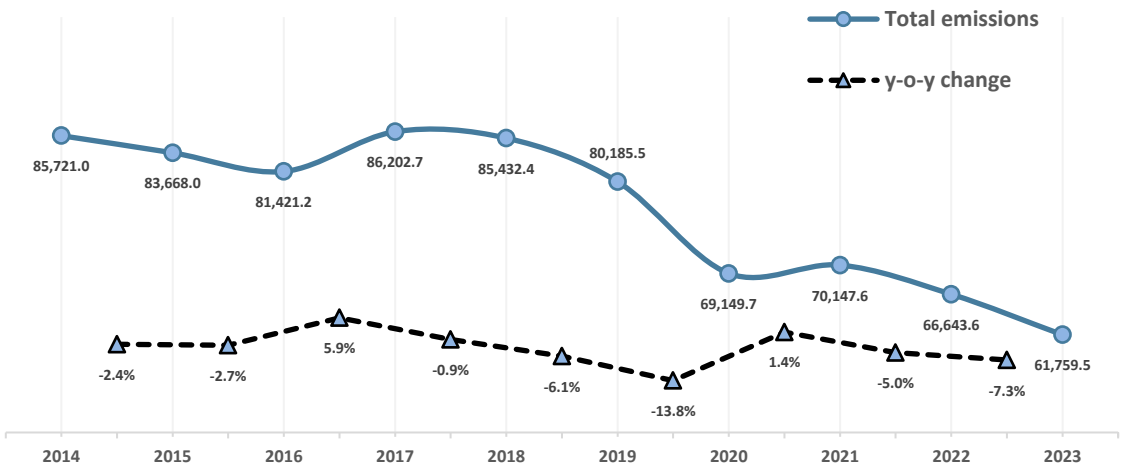
*Provisional data.

Table 8. Percentage distribution of total air pollutants' emissions by economic sector, 2014 – 2023*

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agriculture, forestry and fishing	10.2	9.7	9.8	9.6	8.8	8.8	11.1	11.0	11.9	11.6
Mining and quarrying	1.1	1.1	0.9	0.9	0.9	0.6	0.5	0.5	0.5	0.5
Manufacturing	11.3	10.5	10.9	9.8	10.3	9.9	10.8	11.5	12.3	11.8
Electricity, gas, steam and air conditioning supply	12.2	11.6	9.7	10.4	9.5	8.6	6.8	6.9	7.3	6.6
Water supply; sewerage, waste management and remediation	6.0	5.9	6.0	5.8	5.6	5.6	6.3	6.7	7.4	6.3
Construction	1.5	1.5	1.7	1.2	1.1	1.0	1.2	1.2	1.5	1.8
Transportation and storage	26.9	31.0	35.6	38.0	42.4	44.3	41.1	38.0	31.5	33.2
Other services	2.6	2.7	2.6	2.1	2.0	2.2	3.1	2.3	3.5	3.6
Households	28.2	26.2	22.9	22.1	19.6	18.9	19.2	22.0	24.1	24.7
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

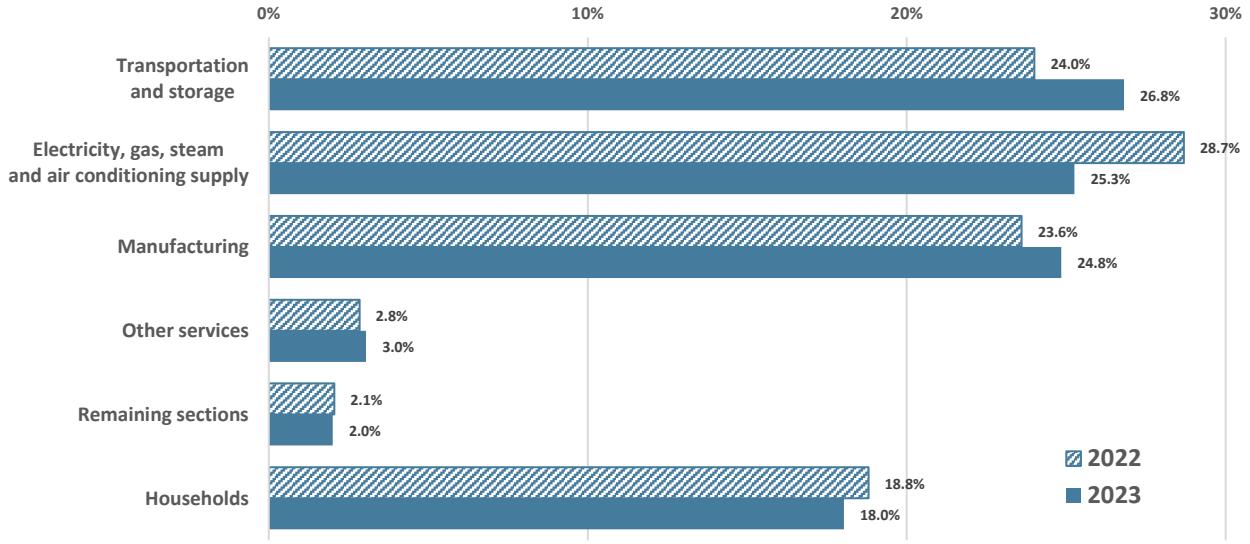
*Provisional data.

Graph 1. Emissions of carbon dioxide (CO_2), in 1,000 tonnes, and year-on-year change (%), 2014 – 2023*



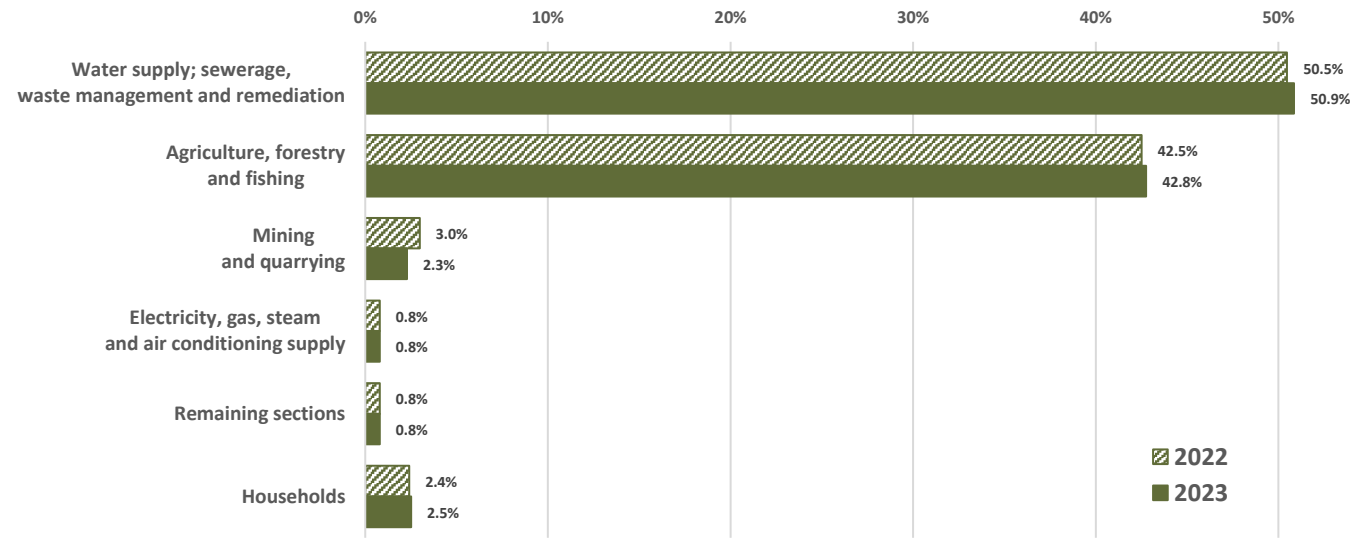
*Provisional data.

Graph 2. Percentage distribution of carbon dioxide (CO_2) emissions to main sections of the Statistical Classification of Economic Activities (NACE Rev.2) and households, 2022* and 2023*



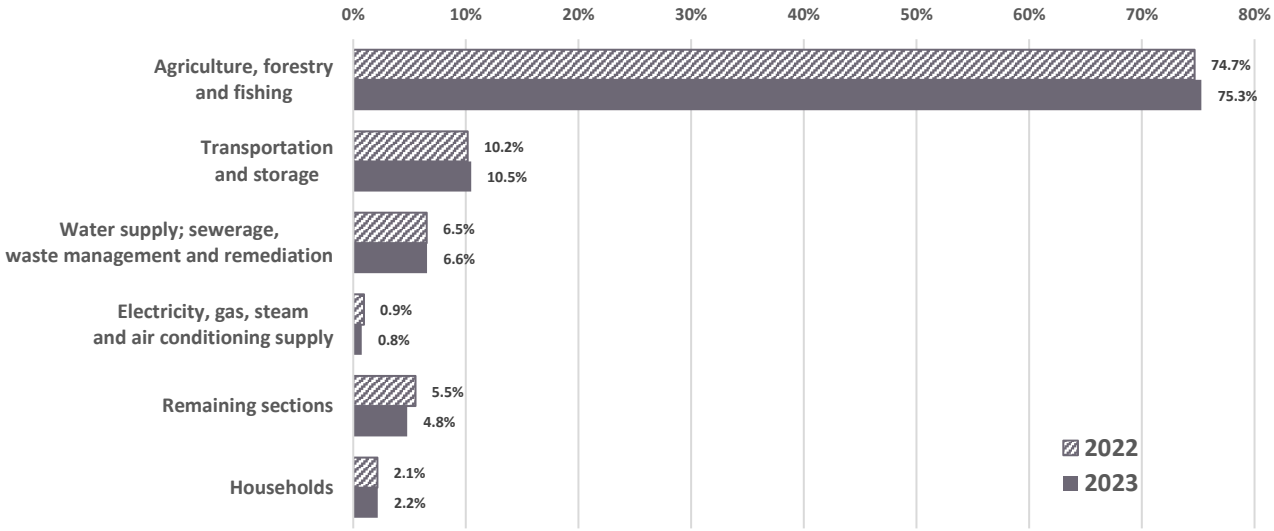
*Provisional data.

Graph 3. Percentage distribution of methane (CH_4) emissions to main sections of the Statistical Classification of Economic Activities (NACE Rev.2) and households, 2022* and 2023*



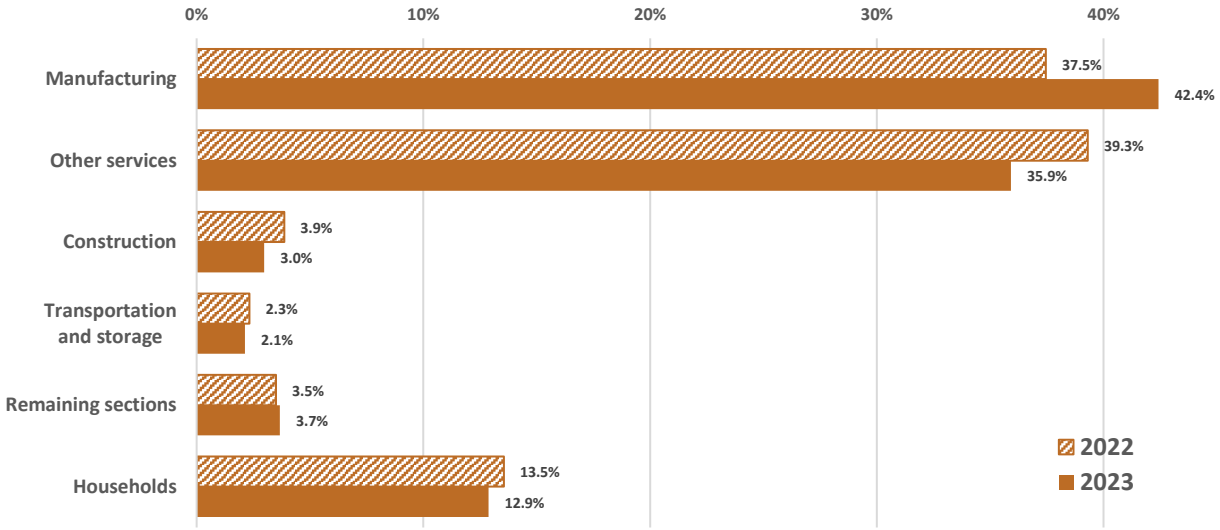
*Provisional data.

Graph 4. Percentage distribution of nitrous oxide (N_2O) emissions to main sections of the Statistical Classification of Economic Activities (NACE Rev.2) and households, 2022* and 2023*



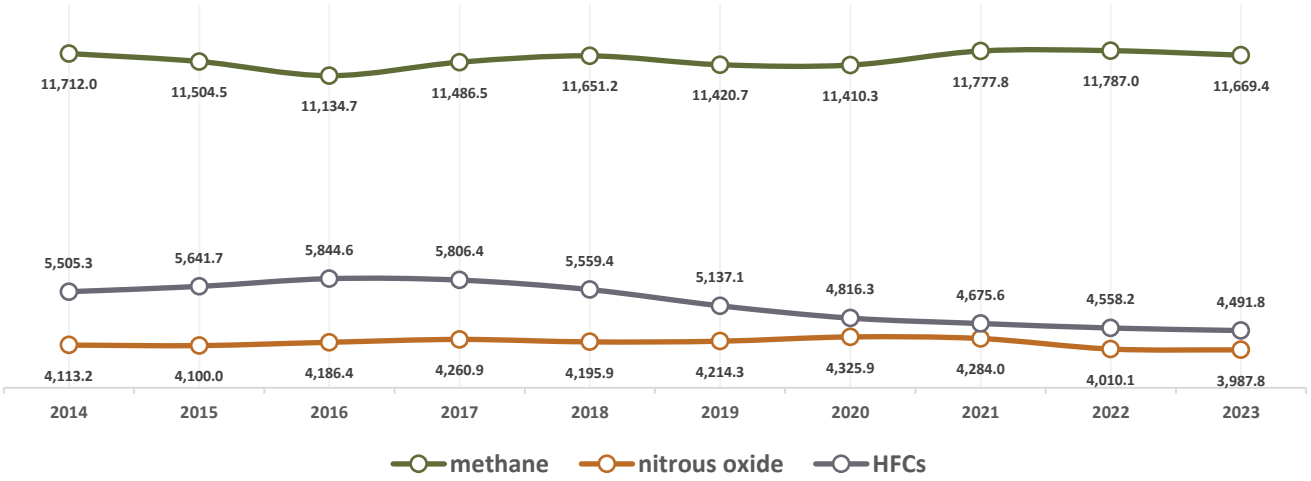
*Provisional data.

Graph 5. Percentage distribution of hydrofluorocarbons (HFCs) emissions to main sections of the Statistical Classification of Economic Activities (NACE Rev.2) and households, 2022* and 2023*



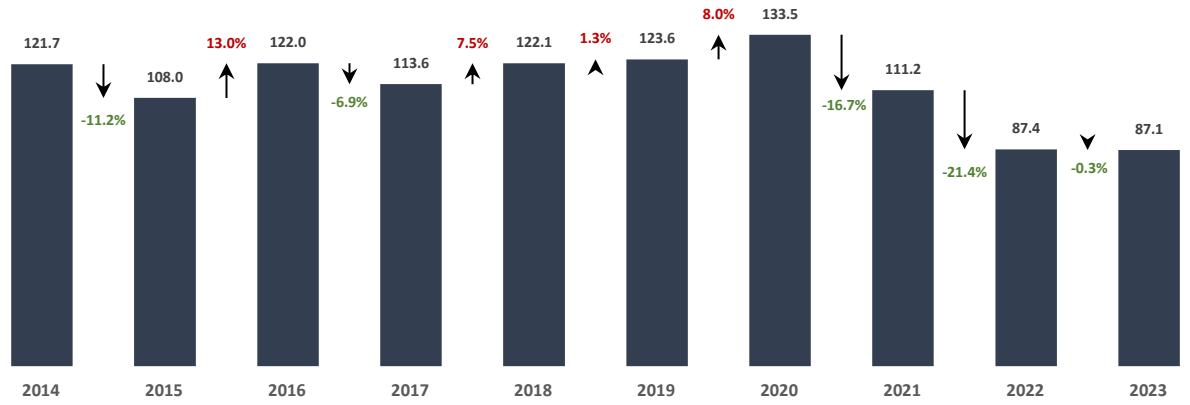
*Provisional data.

Graph 6. Emissions of methane (CH_4), nitrous oxide (N_2O) and hydrofluorocarbons (HFCs), in 1,000 tonnes of CO_2 equivalent, 2014 – 2023*



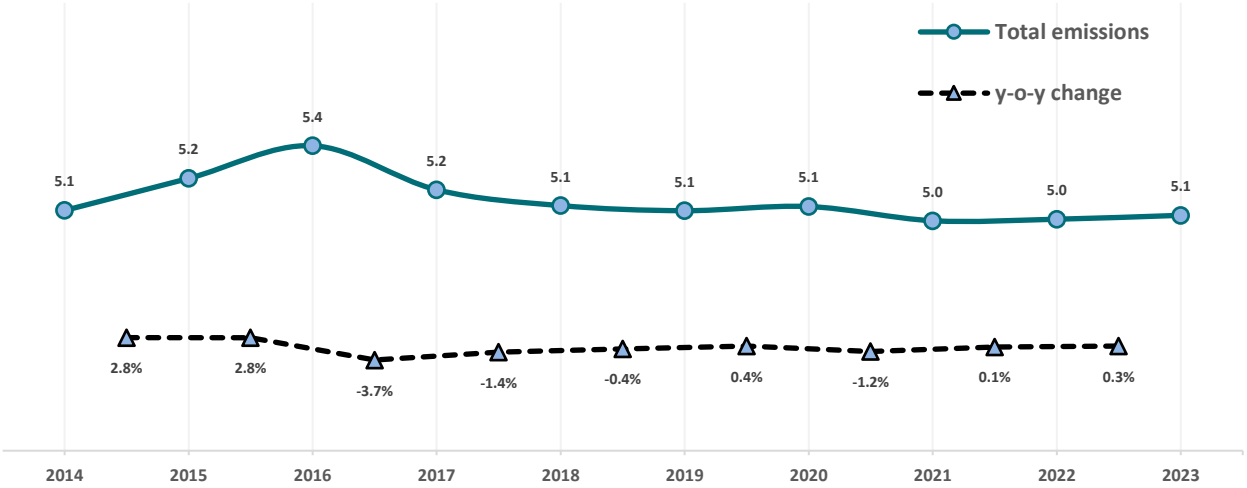
*Provisional data.

Graph 7. Emissions of perfluorocarbons (PFCs), in 1,000 tonnes of CO_2 equivalent, and year-on-year change (%), 2014 – 2023*



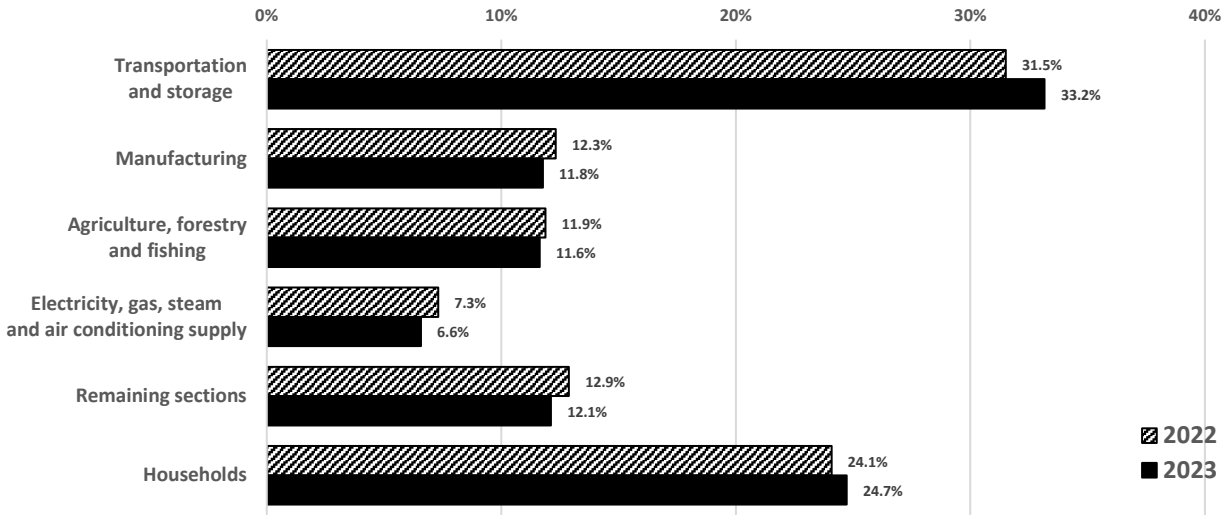
*Provisional data.

Graph 8. Emissions of sulfur hexafluoride (SF_6), in 1,000 tonnes of CO_2 equivalent, and year-on-year change (%), 2014 – 2023*



*Provisional data.

Graph 9. Percentage distribution of air pollutants' emissions to main sections of the Statistical Classification of Economic Activities (NACE Rev.2) and households, 2022* and 2023*



*Provisional data.

EXPLANATORY NOTES

Legal framework: The Air Emissions Accounts are compiled pursuant to Regulation 691/2011 of the European Parliament and of the Council (Section 1) which provides for and lays down the methodological frame for the compilation of Air Emissions Accounts.

Methodology: The main source of primary data on greenhouse gases and other air emissions is the annual inventory submission of Greece for GHG and air pollutants. The inventory is compiled and submitted by the Ministry of Environment and Energy to the United Nations, in the frame of the Kyoto protocol on greenhouse gases and air pollutants (United Nations Framework Convention on Climate Change (UNFCCC) and Convention on Long-Range Transboundary Air Population (CLRTAP)).
Data are presented by certain economic sections of the Statistical Classification of Economic Activities (NACE Rev.2) and households. "Other services" sector corresponds to the NACE Rev.2 sections G, I - U.
Possible small deviations in sums are due to rounding.

Concepts and definitions: Air Emissions Accounts include the following gases:

1. **Carbon dioxide (CO_2)**: Carbon dioxide (CO_2) is the most important of the greenhouse gases because it is emitted in large quantities by several economic sectors. In Greece, the main sources of carbon dioxide emissions are transportation, electricity, manufacturing and households.
2. **Methane (CH_4)**: Methane (CH_4) holds second place as regards air emissions that contribute to the increase of the world temperature. Methane (CH_4) is approximately 28 times more powerful than carbon dioxide (CO_2) in terms of warming the climate system. In Greece, the main sources of methane emissions are agriculture and waste management.
3. **Nitrous oxide (N_2O)**: Nitrous oxide holds the third place as regards air emissions that contribute to the increase of the world temperature. It is expressed in CO_2 equivalents. Nitrous oxide (N_2O) is approximately 265 times more powerful than carbon dioxide (CO_2) in terms of warming the climate system. In Greece, the main sources of nitrous oxide emissions are agriculture and water transport.
4. **Hydrofluorocarbons (HFCs) and Perfluorocarbons (PFCs)**: They are in fourth place as regards air emissions that contribute to the increase of the world temperature. They are expressed in CO_2 equivalents. HFCs and PFCs are approximately 7,390 (CF_4) to 14,800 (HFC-23) times more powerful than carbon dioxide (CO_2) in terms of warming the climate system. In Greece, the main source of these gases is manufacturing.
5. **Sulfur hexafluoride (SF_6)**: Sulfur hexafluoride (SF_6) holds the fifth place as regards air emissions that contribute to the increase of the world temperature. It is expressed in CO_2 equivalents. Sulfur hexafluoride is approximately 22,800 times more powerful than carbon dioxide (CO_2) in terms of warming the climate system. In Greece, the main source of sulfur hexafluoride emissions is the transfer and distribution of electricity.
6. **Air pollutants (NO_X, SO_X, NH_3, NMVOCs, CO, PM10)**: In Greece, the main source of air pollutants' emissions is the transportation sector.

Resident Principle: Air Emissions Accounts follow the Residence Principle for land, water and air transport. In contrast with the Territory Principle, the residence adjustment is applied (a) to record the air emissions arising from activities of resident units, regardless of where these emissions actually occur, and (b) to exclude the emission relevant activities of non-residents on the national territory. This is the reason why the total emissions reported in Air Emissions Accounts following the Residence Principle deviate from those in the Annual Inventory Submission Report of Greece following the Territory Principle.

References: Complete datasets and metadata information are available on ELSTAT's portal (www.statistics.gr), at the following link:
http://www.statistics.gr/en/statistics/-/publication/SOP08/-