

Guernsey Annual Greenhouse Gas Bulletin

2020

Issue date 31st March 2022

The Greenhouse Gas Bulletin provides annual updates of Guernsey's greenhouse gas emissions inventory. The data is provided by Aether Limited who compile the figures as part of the UK National Atmospheric Emissions Inventory.



States of
Guernsey

1.1 Introduction

The Greenhouse Gas Bulletin provides annual updates of Guernsey’s greenhouse gas emissions inventory. The data is provided by Aether Limited who compile the figures as part of the UK National Atmospheric Emissions Inventory. The methodology behind the calculations is constantly being refined and, as such, the figures published in each of these annual reports should not be compared with those previously published.

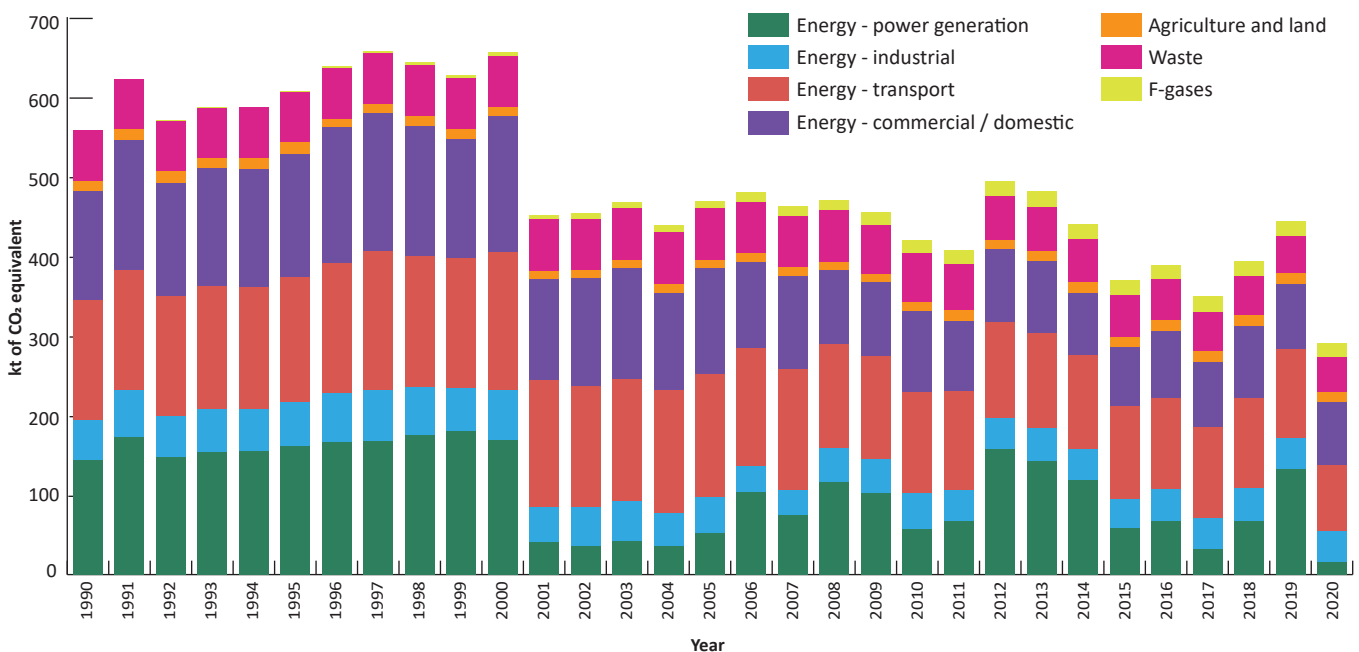
The Kyoto Protocol was extended to the Bailiwick of Guernsey in 2006. The Doha Amendment to the Kyoto Protocol was adopted in 2012 with a commitment period from 2013-2020. The Doha Amendment was extended to the Bailiwick of Guernsey on 1st September 2020, and came into effect on 31st December 2020 following receipt by the Depository of the required number of ratifications.

The analysis provided in this bulletin uses 1990 as a base year for comparison. The inventory is for the island of Guernsey only.

1.2 Headlines

- Greenhouse gas emissions from Guernsey decreased by 34.5% from 2019 to 2020; 290.3kt of carbon dioxide (CO₂) equivalent in 2020, compared to 443.1kt in 2019 and 557.3kt in 1990.
- The cumulative percentage change in Guernsey’s greenhouse gas emissions between 1990 and 2020 was a decrease of 47.9% (or 267.0kt of CO₂ equivalent).
- Transport contributed the largest proportion (28.8%) of the greenhouse gases emitted in 2020, followed by commercial and domestic combustion, at 26.9%
- The majority (73.1%) of the emissions were in the form of carbon dioxide.

Figure 1.2.1 Total emissions by source



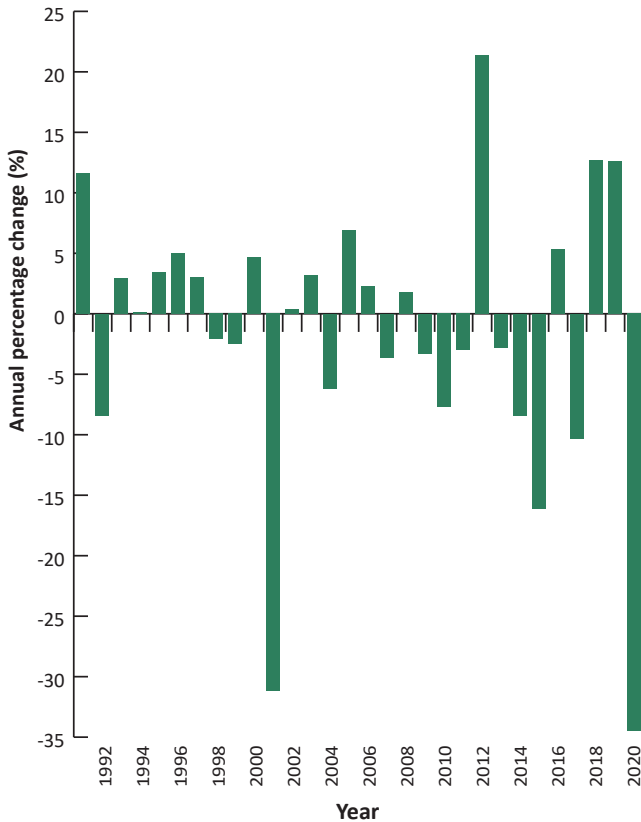
1.3 Key data

Greenhouse gas emissions need to be calculated in a consistent manner across all jurisdictions to ensure comparability and avoid double counting or omissions.

The content and structure of the inventory is based on the categories defined by the United Nations Economic Commission for Europe (UNECE). See www.unece.org for more information.

The methodology behind the calculations is constantly being refined and, as such, the figures published in each of these annual reports should not be compared with those previously published.

Figure 1.3.1 Annual percentage change in total emissions



In 2020, Guernsey's emissions totalled 290.3kt of CO₂ equivalent, which equates to 4.6 tonnes per capita. The total was 34.5% lower than in 2019 (see [Table 1.3.1](#)) and 47.9% lower than in 1990.

Table 1.3.1 Key data

Date	Total emissions (kt of CO ₂ equivalent)	Annual % change	Cumulative % change
1990	557.3		
1991	621.9	11.6%	11.6%
1992	569.6	-8.4%	2.2%
1993	586.3	2.9%	5.2%
1994	587.1	0.1%	5.3%
1995	607.0	3.4%	8.9%
1996	637.5	5.0%	14.4%
1997	656.7	3.0%	17.8%
1998	642.6	-2.1%	15.3%
1999	626.5	-2.5%	12.4%
2000	655.9	4.7%	17.7%
2001	451.4	-31.2%	-19.0%
2002	453.1	0.4%	-18.7%
2003	467.5	3.2%	-16.1%
2004	438.5	-6.2%	-21.3%
2005	468.9	6.9%	-15.9%
2006	479.6	2.3%	-14.0%
2007	462.3	-3.6%	-17.0%
2008	470.6	1.8%	-15.6%
2009	454.9	-3.3%	-18.4%
2010	419.7	-7.7%	-24.7%
2011	407.1	-3.0%	-27.0%
2012	494.3	21.4%	-11.3%
2013	480.5	-2.8%	-13.8%
2014	440.2	-8.4%	-21.0%
2015	369.5	-16.1%	-33.7%
2016	389.2	5.3%	-30.2%
2017	349.1	-10.3%	-37.4%
2018	393.4	12.7%	-29.4%
2019	443.1	12.6%	-20.5%
2020	290.3	-34.5%	-47.9%

2.1 Emissions inventory - type

Emissions of the greenhouse gases; carbon dioxide, methane, nitrous oxide and fluorinated gases (hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride) are all estimated for the inventory. They are all presented in the form of carbon dioxide (CO₂) equivalents for ease of comparison.

In 2020, Guernsey's emissions totalled 290.3kt of CO₂ equivalent, which equates to 4.6 tonnes per capita.

Table 2.1.1 shows that the majority (212.2 kt) of Guernsey's emissions are in the form of carbon dioxide (CO₂). The main source of these emissions is combustion of fossil fuels for power generation, transport and heating i.e. energy.

The variability in recent years as shown in **Figure 1.2.1** is largely due to changes in the amount of power being generated on island. Faults in the electricity cable between Guernsey and Jersey/France were experienced in 2012/13 and again in 2018/19, resulting in more electricity being generated on island using heavy fuel oil.

Table 2.1.1 Emissions by type

Date	Carbon Dioxide (kt)	Methane (kt of CO ₂ equivalent)	Nitrous Oxide (kt of CO ₂ equivalent)	F-Gases (kt of CO ₂ equivalent)
1990	473.6	72.6	11.1	0.0
1991	537.2	73.3	11.3	0.0
1992	484.4	74.1	11.1	0.1
1993	501.9	73.1	11.0	0.3
1994	501.4	73.8	11.3	0.5
1995	520.1	74.4	11.6	0.9
1996	553.6	71.4	11.1	1.4
1997	571.4	72.0	11.3	2.0
1998	556.2	72.3	11.3	2.8
1999	539.6	71.8	11.4	3.8
2000	567.9	72.0	11.3	4.7
2001	363.9	71.2	10.6	5.7
2002	365.9	70.2	10.4	6.6
2003	378.7	70.7	10.5	7.6
2004	348.4	71.0	10.5	8.6
2005	378.6	70.7	10.5	9.2
2006	387.0	70.8	10.4	11.3
2007	368.8	70.7	10.4	12.5
2008	376.9	69.4	10.6	13.6
2009	362.0	66.6	10.5	15.7
2010	325.8	66.6	10.9	16.3
2011	315.0	63.6	10.7	17.8
2012	403.9	61.2	10.8	18.5
2013	389.5	61.0	11.0	19.0
2014	349.3	60.7	11.1	19.0
2015	281.6	58.6	10.6	18.7
2016	301.5	58.2	10.8	18.7
2017	262.4	56.7	10.9	19.0
2018	308.3	55.3	11.1	18.7
2019	360.7	53.7	11.1	17.7
2020	212.2	49.9	10.5	17.7

3.1 Emissions inventory - source

Figure 3.1.1 and **Figure 3.1.2** show the proportions of emissions contributed by different sources in 1990 and 2020. This data is also provided in **Tables 6.1.1 to 6.1.4** in the **Appendix**.

Transport contributed the largest proportion of emissions in 1990 and 2020, at 27.0% and 28.8% respectively.

Power generation contributed the second largest proportion in 1990 at 25.8%. In 2020 this was 5.3%.

Waste contributed 11.3% in 1990 and 15.0% in 2020.

Industrial combustion contributed 8.9% in 1990 compared with 13.4% in 2020, whilst commercial and domestic combustion went from 24.6% in 1990 to 26.9% in 2020.

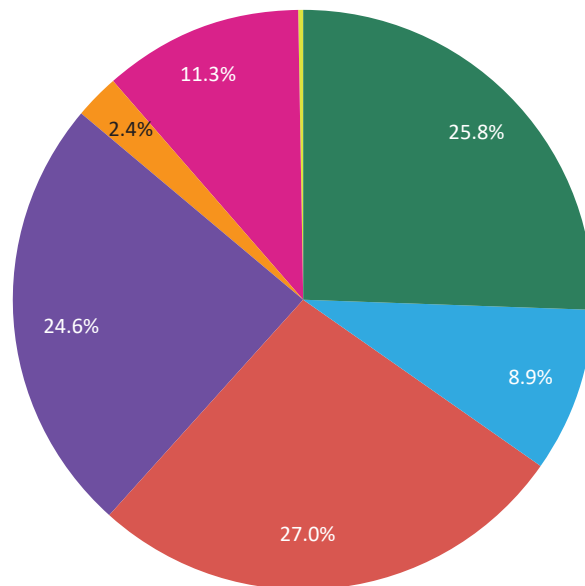
Agriculture, land use, land use change and forestry contributed 2.4% in 1990 and 4.5% in 2020.

F-Gases, which contributed less than 0.1% in 1990, contributed 6.1% in 2020.

In 2020, the total emissions by mass were 290.3kt of CO₂ equivalent. Whereas in 1990, the total emissions by mass were 557.3kt of CO₂ equivalent.

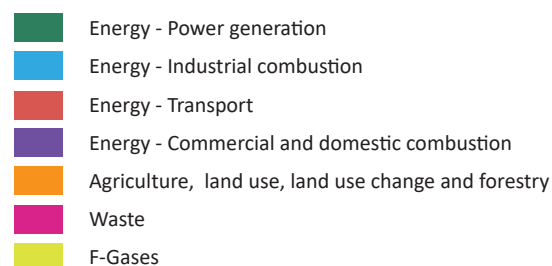
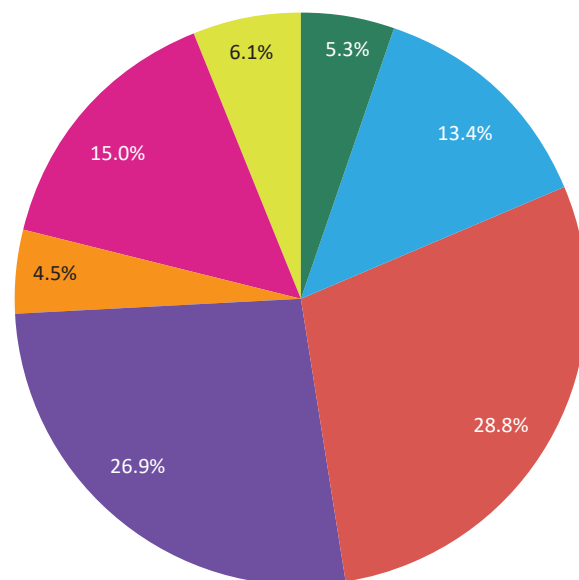
The changes in emissions by mass from each source, are given on **pages 7 to 13** and in **Table 6.1.1** on **page 14**.

Figure 3.1.1 Percentage contribution of emissions by source in 1990



Key below

Figure 3.1.2 Percentage contribution of emissions by source in 2020



3.1 Emissions inventory - source

The emissions inventory is “source based”, which means it reflects only emissions released from Guernsey. As such, emissions resulting from the generation of electricity in Europe, which is imported for consumption in Guernsey, are not included. Electricity has been imported via a cable link to France since 2001, resulting in a significant decrease in the amount of power generated on-island.

Combustion of fuels for energy (including electricity generation, heating, industrial processes and transport) has contributed the largest proportion of emissions since 1990. The majority of the emissions are in the form of carbon dioxide, but methane and nitrous oxide are also released in the combustion processes. In 2020, emissions from fuels for energy constituted 74.4% of the total emissions.

Landfilled waste is the next largest contributor to Guernsey’s total emissions and the proportion it has contributed has changed little since 1990. The emissions are mostly in the form of methane gas, which is released by decomposing material. There was a large reduction in the amount of waste sent to Guernsey landfill in 2019, and the emissions will decrease gradually as the waste decays.

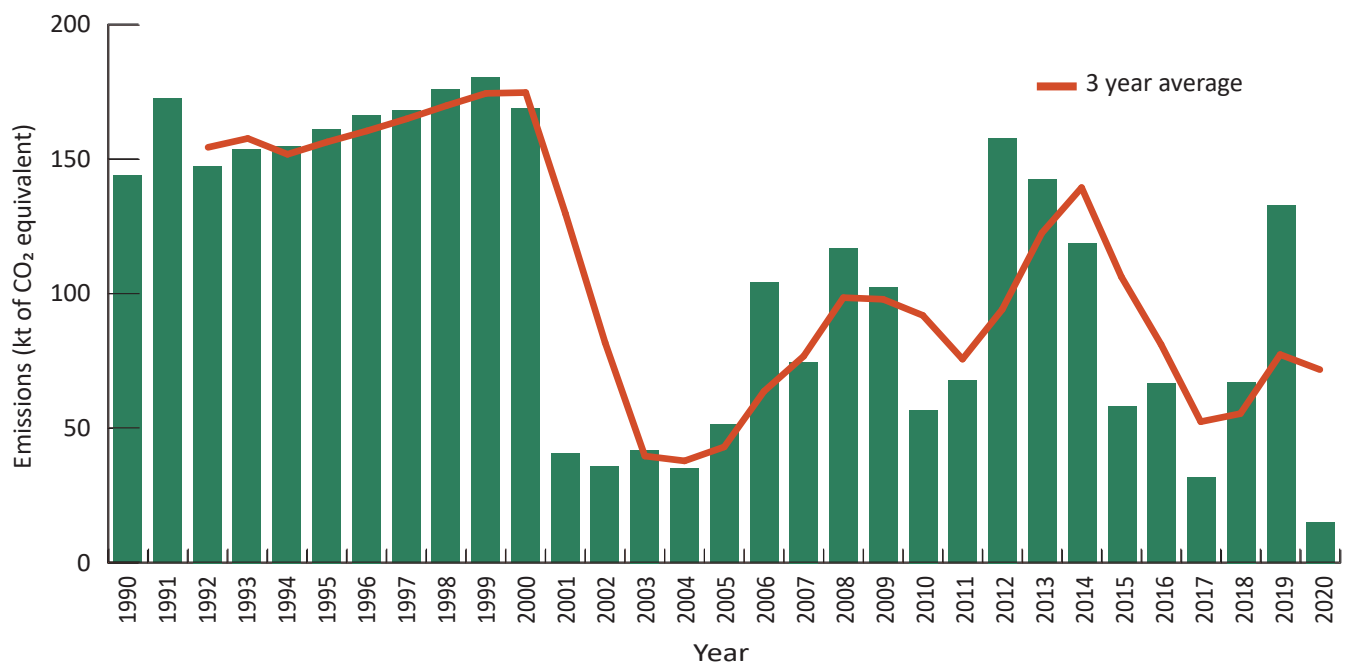
Agriculture, land use, land use change and forestry combined contribute a small proportion of total emissions (4.5% in 2020). The majority of the emissions are methane released by the digestive processes of cattle. Nitrous oxide is also released as a result of the combustion of fuels for energy and as a result of waste disposal and agricultural processes, but at comparatively low levels.

The fluorinated gases (“F-gases”) are not estimated by source in the same way as the other three gases mentioned above. They are associated with chemicals used in refrigeration, air-conditioning and heat pump systems and can be released as greenhouse gases if the systems leak or are disposed of improperly.

More detail and analysis of Guernsey emissions by source is provided over the next pages, with summary tables in the [Appendix on pages 14 to 17](#).

4.1 Emissions by source - energy - power generation

Figure 4.1.1 Energy emissions - power generation



Combustion of fuels for power generation contributed 5.3% of Guernsey's total greenhouse gas emissions in 2020 (see [Figure 3.1.2](#)). The majority (>99%) of the emissions are in the form of carbon dioxide, but small amounts of methane and nitrous oxide are also released in the combustion processes.

Electricity has been imported via a cable link to France since 2001, reflected by a 75.9% decrease in power generation emissions between 2000 and 2001 (see [Figure 4.1.1](#)).

Prior to 2000, when all of Guernsey's electricity was generated on island, power generation was one of the largest component contributors to Guernsey's total emissions. For the years 1990 to 2000 it accounted for between 26% and 29% of total emissions.

Some electricity is still generated on island and it is this amount which impacts most noticeably on the total level of emissions.

The amount of electricity generated on island varies from year to year. In 2012 a fault in the cable link to France resulted in the need to generate electricity on island, resulting in an increase in power generation emissions between 2011 and 2012. In the latter part of 2018 and throughout most of 2019 there was another cable fault, again leading to increased power generation emissions.

In total, the emissions from power generation decreased by 89.3% (or 128.5kt of CO₂ equivalent) between 1990 and 2020.

4.1 Emissions by source - energy - industrial combustion

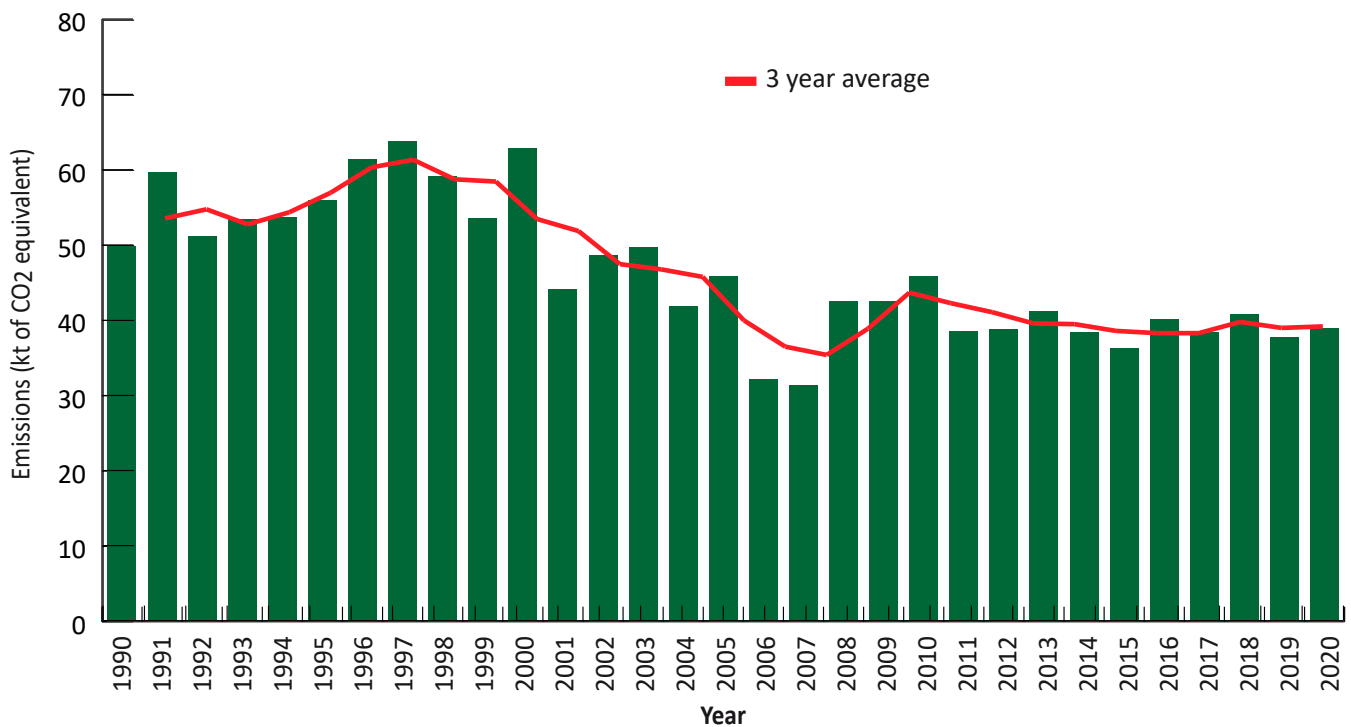
Energy emissions also include industrial combustion emissions (relating to building processes, use of generators etc), which decreased by 21.9% (or 10.9kt of CO₂ equivalent) between 1990 and 2020 but increased by 3% between 2019 and 2020 (see [Figure 4.1.2](#) and [Tables 6.1.1 to 6.1.4](#)). The red line on the chart below shows the historical three year average.

The majority (>99%) of the emissions are in the form of carbon dioxide, but small amounts of methane and nitrous oxide are also released in the combustion processes.

This source was the fourth largest contributor to emissions in 2020, at 39.0kt of CO₂ equivalent.

In 2020, emissions from industrial combustion contributed 13.4% to the total.

Figure 4.1.2 Energy emissions - industrial combustion



4.1 Emissions by source - energy - transport

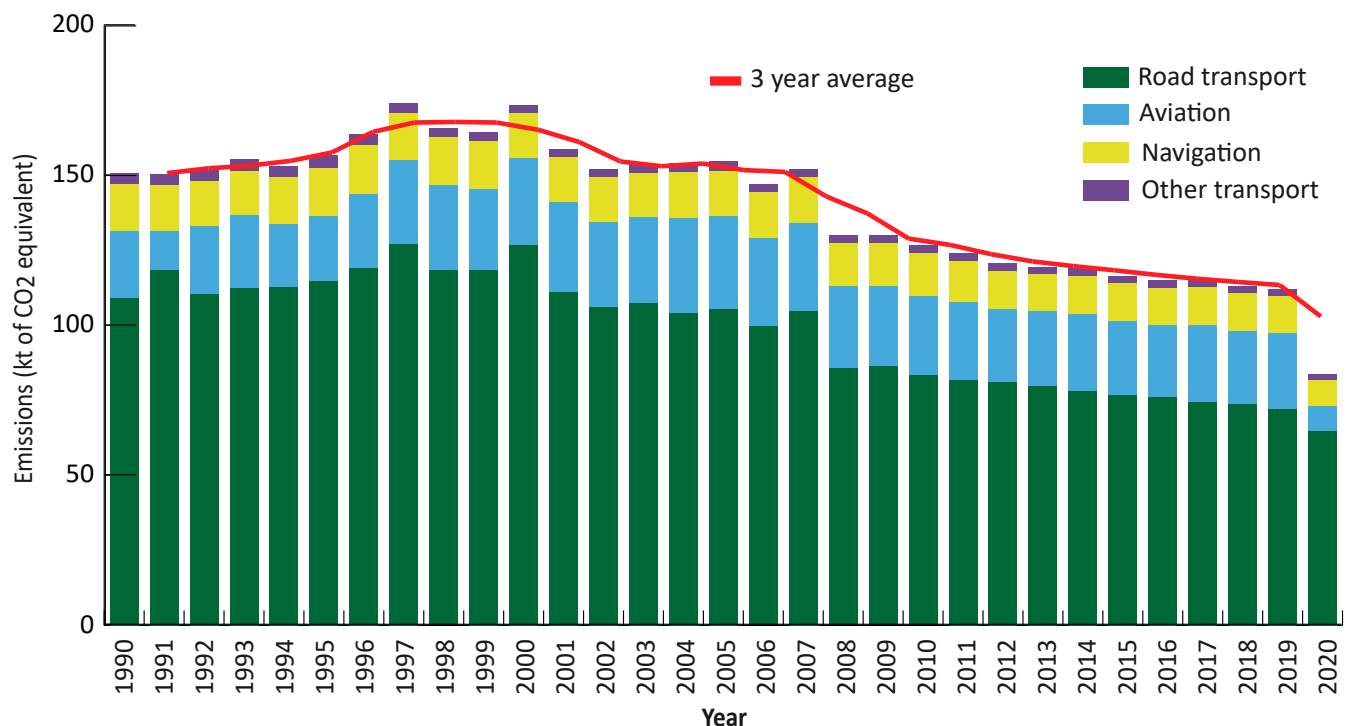
Emissions from transport decreased between 1990 and 2020 by 44.4% (66.8kt of CO₂ equivalent) and between 2019 and 2020 by 25.2% to 83.7kt of CO₂ equivalent (see [Figure 4.1.3](#) and [Tables 6.1.1 to 6.1.4](#)). The air and sea travel restrictions in place throughout most of 2020 to reduce spread of COVID-19 had a significant effect on the number of flights and ferry voyages. There were also decreases in the amounts of petrol and diesel used for road transport and the number of bus journeys taken on Island.

Despite this decrease, there was a larger decrease in the emissions from power generation, so this source moved back to being the biggest contributor of emissions in 2020, when it contributed 28.8% of total emissions. In 2015, 2016 and 2017, it had also been the biggest contributor.

Levels of greenhouse gases emitted as a result of transport have generally been trending downwards since a peak in 2000 (see [Figure 4.1.3](#)), due to decreasing emissions from road transport. The majority of greenhouse gas emissions resulting from transport are carbon dioxide. Other non-greenhouse gas air pollutants, such as nitrogen dioxide, sulphur dioxide are also present in vehicle exhaust emissions.

77% of transport emissions resulted from on-island road transport in 2020, with a further 10% from aviation and 10% from navigation. In 2019 the aviation emissions had amounted to 23% of total transport emissions, navigation amounted to 11% and road transport 65%, highlighting the greater effect the COVID-19 restrictions that were in place in 2020 had on off Island transport compared with on Island travel.

Figure 4.1.3 Energy emissions - transport



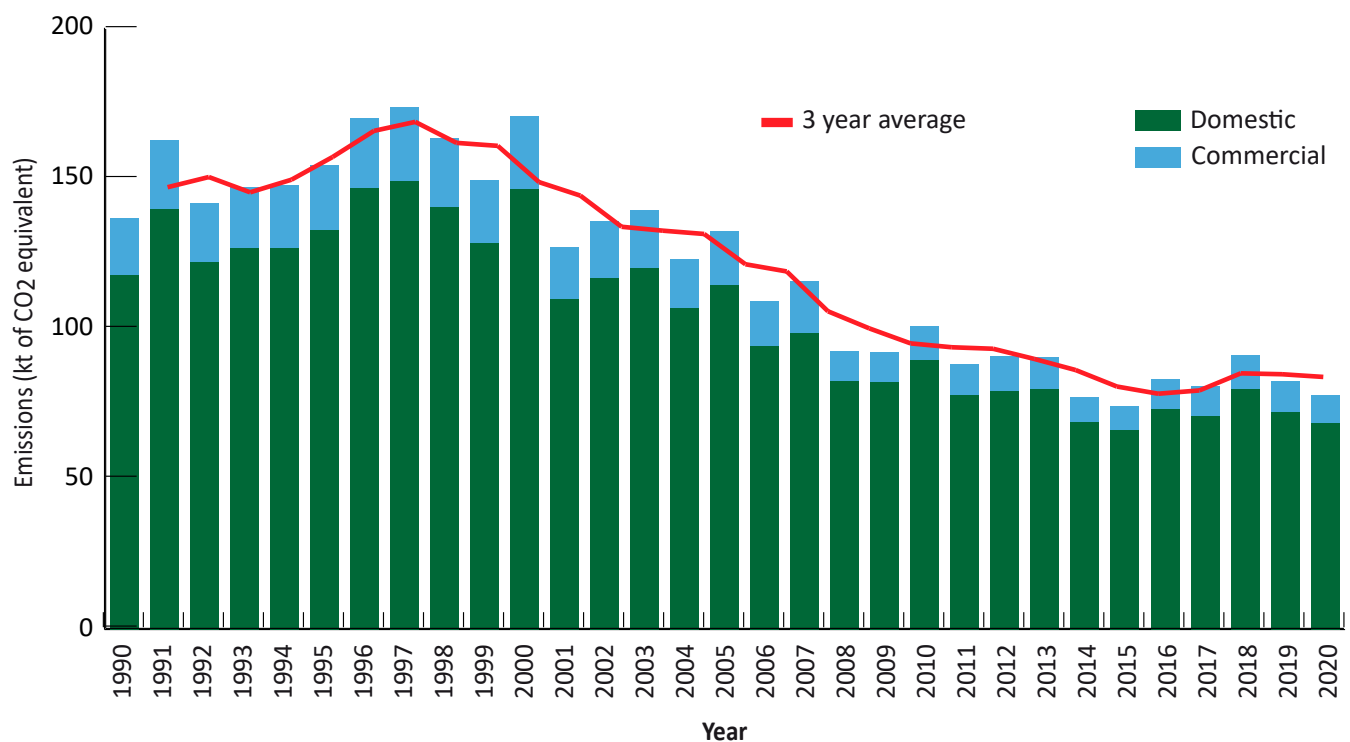
4.1 Emissions by source - energy - commercial and domestic combustion

Commercial and domestic combustion of fuels for heating and hot water in homes and offices etc also contribute a substantial amount of the island's emissions (26.9% of the 2020 total). In 2020, 88% were from domestic sources.

The emissions from commercial and domestic combustion were 77.9kt of CO₂ equivalent in 2020, which was 43.1% lower than in 1990 and 5.5% lower than in 2019 (see [Figure 4.1.4](#) and [Tables 6.1.1 to 6.1.4](#)).

The red line on the chart shows the historical three year average.

Figure 4.1.4 Energy emissions - commercial and domestic combustion



4.2 Emissions by source - agriculture, land use, land use change and forestry

Emissions from agriculture, land use, land use change and forestry (shown in **Figure 4.2.1**) contributed 4.5% of the total emissions in 2020 (13.2kt of CO₂ equivalent). The red line on the chart shows the historical three year average.

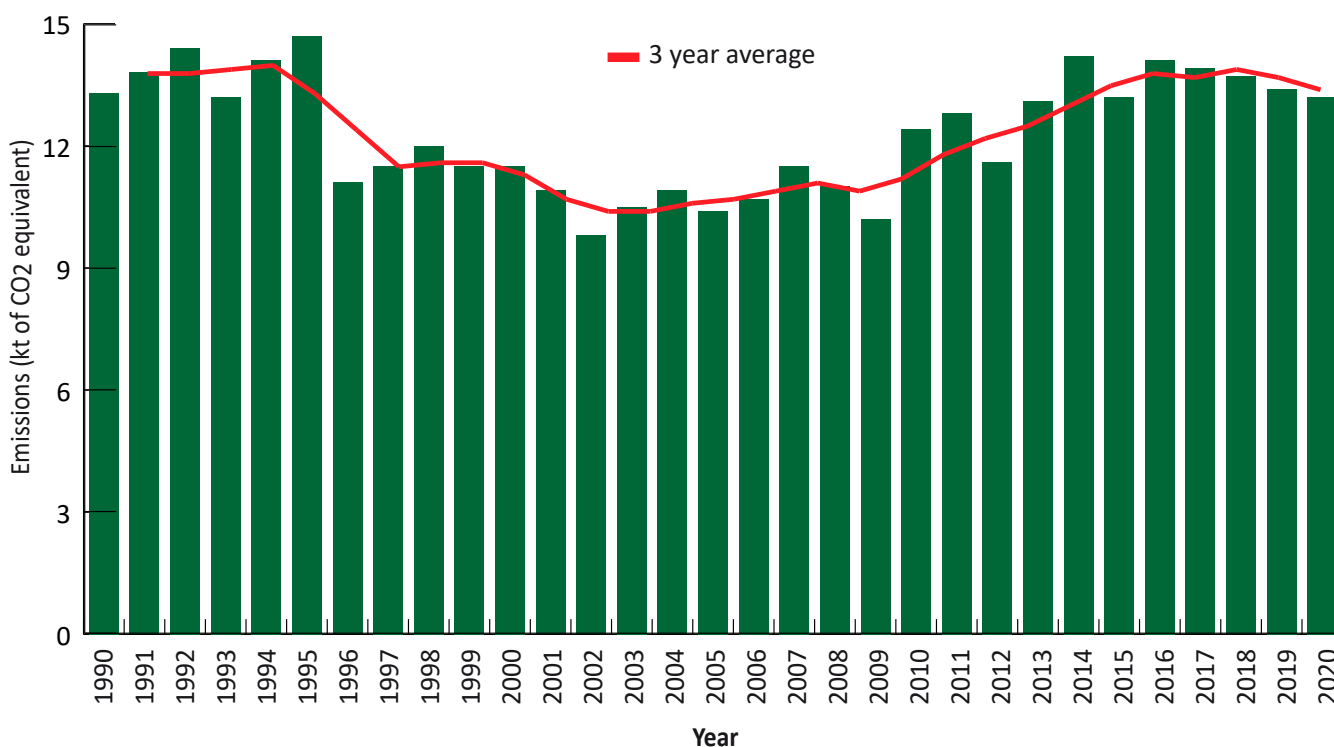
Emissions of methane released by the digestive processes of animals amounted to 14.5kt of CO₂ equivalent. In 2020, emissions from dairy cattle accounted for 85% of total animal emissions. Other cattle accounted for 6%, horses accounted for 7% and other animals accounted for 1%.

Livestock-related emissions are strongly linked to the numbers of animals on the Island. For example, there was a decrease in the number of cattle in the island in 2001, when the milk quota was reduced, resulting in a reduction in emissions from cattle. There has been an increase in emissions from other agricultural activities, such as slurry spreading, since 2002.

Changes in land use in 2020 led to an increase in emissions of 0.2kt of CO₂ equivalent. However, undeveloped land that remained unchanged in use sequestered 1.8kt of CO₂ equivalent, giving a net negative impact in emissions of -1.6kt of CO₂ equivalent in 2020.

The total level of emissions was 0.7% (0.1kt of CO₂ equivalent) lower in 2020 than it was in 1990.

Figure 4.2.1 Energy emissions - agriculture, land use, land use change and forestry



4.3 Emissions by source - waste

Waste was the third largest contributor to Guernsey’s total emissions in 2020. It contributed 15.0% (43.5kt of CO₂ equivalent) of the total emissions in 2020. This was 30.8% lower than in 1990 and 7.8% lower than in 2019.

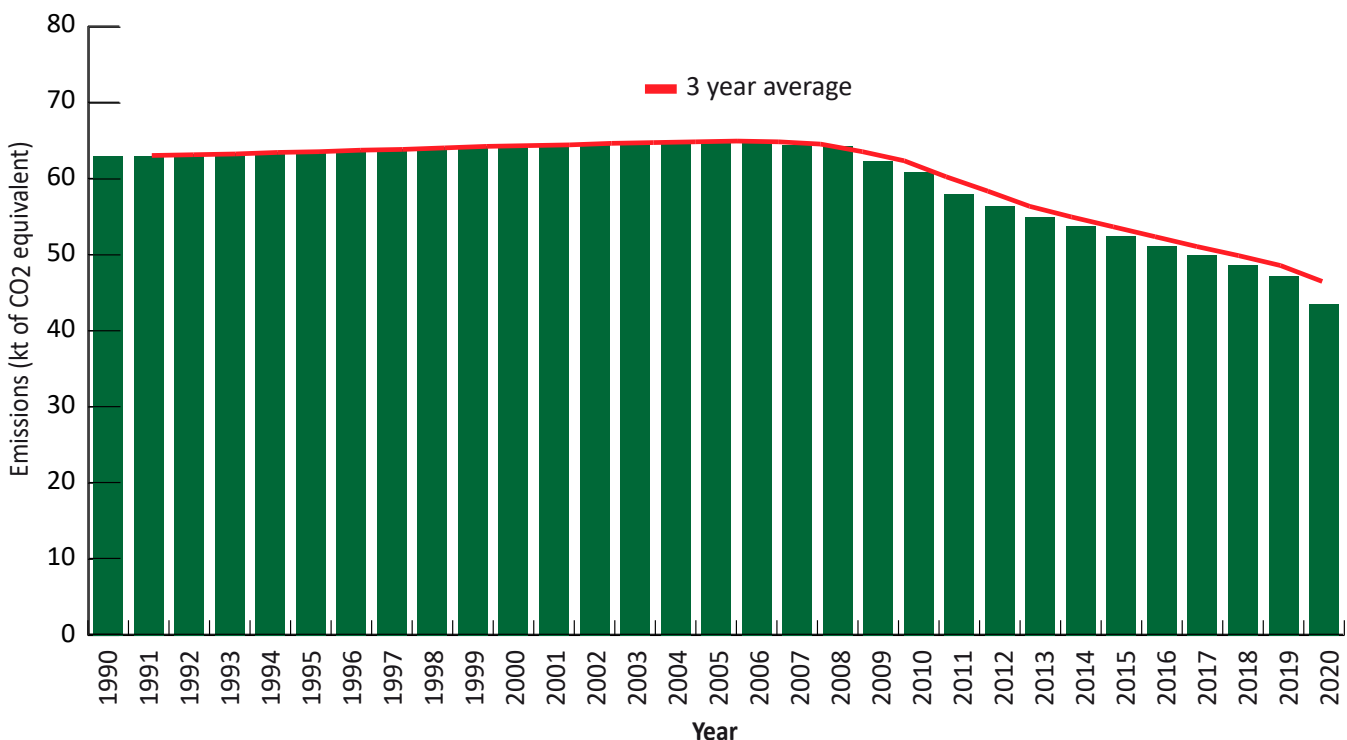
The emissions are mostly in the form of methane gas (86% in 2020), which is released as landfilled putrescible matter decomposes. In a weight for weight comparison, methane has a twenty one times higher global warming potential than carbon dioxide i.e. one kt of methane is equivalent to 21kt of carbon dioxide.

As a result, relatively small changes in the amount of methane emitted equate to considerably larger changes to emissions in terms of CO₂ equivalents.

There have been decreases in the emissions from this source since 2006 (see [Figure 4.3.1](#) and [Tables 6.1.1 to 6.1.4](#)) as less waste has been going to landfill since then. There was a large decrease in 2019 in the amount of waste going to landfill when the Waste Transfer Station started operating. This will be reflected in further decreasing emissions from this source, although previously landfilled matter will continue to decompose and emit greenhouse gases. The emissions of any Guernsey waste now exported for processing are counted within the country where the processing occurs

Other sources of waste emissions are wastewater and composted waste. In 2020, 4% of emissions were from composting and 10% from wastewater processing.

Figure 4.3.1 Energy emissions - waste



5.1 Emissions - F-gases

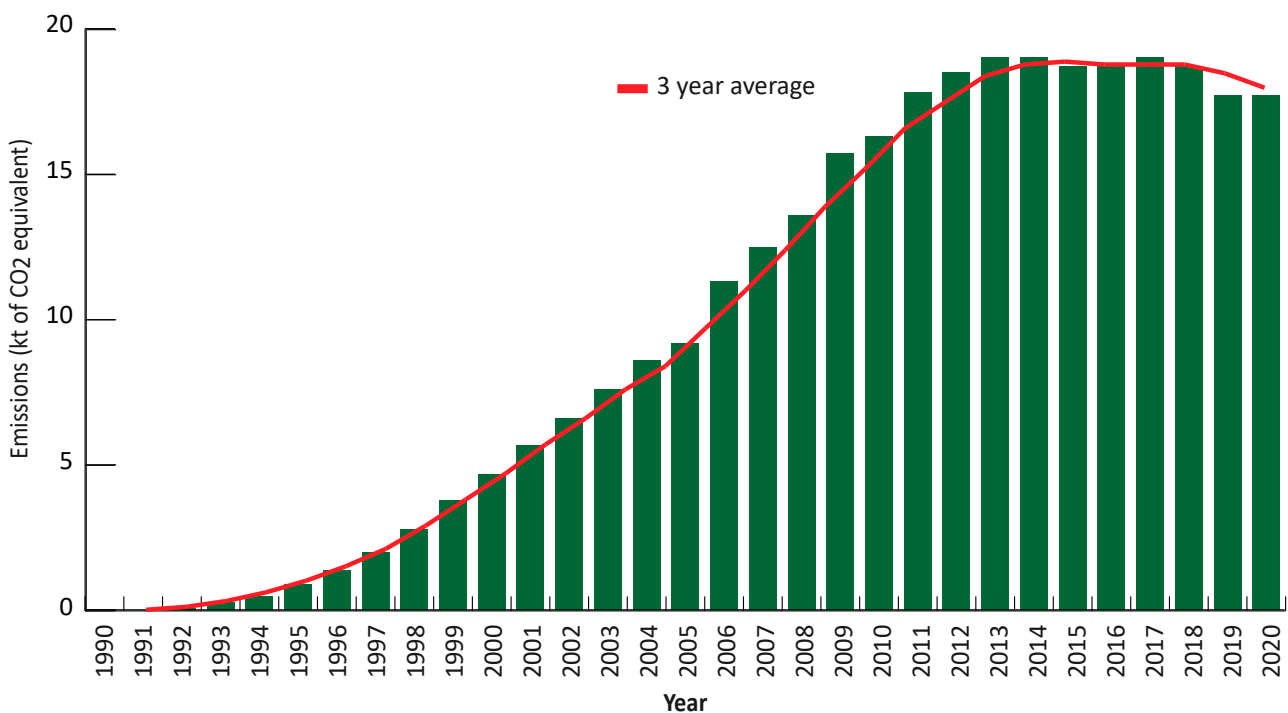
Fluorinated gases (“F-gases”) are not estimated by source in the same way as the other three gases mentioned, but are included in the total greenhouse gas emissions.

F-gases can be released by refrigeration, air-conditioning and heat pump systems if they leak or are disposed of improperly.

In 2020, they were estimated to have contributed 6.1% of the total, compared to less than 0.001% in 1990; an increase of 17.7kt of CO₂ equivalent from a starting point near 0kt of CO₂ equivalent. As a result, the percentage increase from 1990 to 2020 is very high. However, between 2019 and 2020 there was a minimal change (of between minus 0.1% and plus 0.1%). The red line on the chart shows the historical three year average.

F-gases have very high global warming potentials compared to carbon dioxide. As such, amounts in the region of one gram in weight could have the same effect as one tonne of carbon dioxide being released into the atmosphere. The result of this is a highly volatile trend in terms of percentage changes (see [Tables 6.1.3 to 6.1.4](#)).

Figure 5.1.1 F-gas emissions



6.1 Appendix: Emissions inventory - mass contributed by source

Table 6.1.1 Mass of emissions contributed by source

	Energy - Power generation (CO2e)	Energy - Industrial combustion (CO2e)	Energy - Transport (CO2e)	Energy - Commercial and domestic combustion (CO2e)	Agriculture, land use, land use change and forestry (CO2e)	Waste (CO2e)	F-gases (CO2e)
1990	143.8	49.9	150.5	136.9	13.3	62.9	0.0
1991	172.3	59.7	150.2	162.8	13.8	63.0	0.0
1992	147.4	51.2	151.6	141.8	14.4	63.2	0.1
1993	153.6	53.4	155.3	147.2	13.2	63.3	0.3
1994	154.7	53.7	153.1	147.5	14.1	63.5	0.5
1995	161.1	56.0	156.5	154.4	14.7	63.6	0.9
1996	166.2	61.4	163.6	170.1	11.1	63.7	1.4
1997	168.0	63.8	173.9	173.6	11.5	63.9	2.0
1998	175.8	59.1	165.7	163.2	12.0	64.1	2.8
1999	180.1	53.5	164.2	149.2	11.5	64.3	3.8
2000	168.7	62.9	173.2	170.5	11.5	64.4	4.7
2001	40.7	44.1	158.5	127.0	10.9	64.5	5.7
2002	35.8	48.6	151.9	135.7	9.8	64.7	6.6
2003	42.0	49.7	153.6	139.4	10.5	64.8	7.6
2004	35.2	41.9	154.0	123.0	10.9	64.9	8.6
2005	51.5	45.8	154.5	132.5	10.4	65.1	9.2
2006	104.1	32.2	147.0	109.1	10.7	65.1	11.3
2007	74.6	31.4	152.1	115.8	11.5	64.4	12.5
2008	116.8	42.6	130.0	92.4	11.0	64.2	13.6
2009	102.2	42.5	129.9	92.1	10.2	62.3	15.7
2010	56.8	45.9	126.7	100.8	12.4	60.8	16.3
2011	67.8	38.6	123.8	88.4	12.8	57.9	17.8
2012	157.8	38.8	120.5	90.7	11.6	56.4	18.5
2013	142.3	41.2	119.4	90.6	13.1	54.9	19.0
2014	118.5	38.4	119.0	77.3	14.2	53.8	19.0
2015	58.2	36.3	116.4	74.3	13.2	52.4	18.7
2016	66.7	40.2	115.0	83.3	14.1	51.1	18.7
2017	31.9	38.4	115.2	80.7	13.9	50.0	19.0
2018	67.2	40.8	113.0	91.2	13.7	48.6	18.7
2019	132.7	37.8	111.9	82.5	13.4	47.2	17.7
2020	15.3	39.0	83.7	77.9	13.2	43.5	17.7

6.1 Appendix: Emissions inventory - percentage contributed to total by source

Table 6.1.2 Percentage contribution to total emissions by source

	Energy - Power generation (%)	Energy - Industrial combustion (%)	Energy - Transport (%)	Energy - Commercial and domestic combustion (%)	Agriculture, land use, land use change and forestry (%)	Waste (%)	F-gases (%)
1990	25.8%	8.9%	27.0%	24.6%	2.4%	11.3%	0.0%
1991	27.7%	9.6%	24.2%	26.2%	2.2%	10.1%	0.0%
1992	25.9%	9.0%	26.6%	24.9%	2.5%	11.1%	0.0%
1993	26.2%	9.1%	26.5%	25.1%	2.2%	10.8%	0.0%
1994	26.3%	9.2%	26.1%	25.1%	2.4%	10.8%	0.1%
1995	26.5%	9.2%	25.8%	25.4%	2.4%	10.5%	0.1%
1996	26.1%	9.6%	25.7%	26.7%	1.7%	10.0%	0.2%
1997	25.6%	9.7%	26.5%	26.4%	1.7%	9.7%	0.3%
1998	27.4%	9.2%	25.8%	25.4%	1.9%	10.0%	0.4%
1999	28.8%	8.5%	26.2%	23.8%	1.8%	10.3%	0.6%
2000	25.7%	9.6%	26.4%	26.0%	1.7%	9.8%	0.7%
2001	9.0%	9.8%	35.1%	28.1%	2.4%	14.3%	1.3%
2002	7.9%	10.7%	33.5%	29.9%	2.2%	14.3%	1.5%
2003	9.0%	10.6%	32.8%	29.8%	2.2%	13.9%	1.6%
2004	8.0%	9.6%	35.1%	28.1%	2.5%	14.8%	2.0%
2005	11.0%	9.8%	32.9%	28.3%	2.2%	13.9%	2.0%
2006	21.7%	6.7%	30.7%	22.7%	2.2%	13.6%	2.4%
2007	16.1%	6.8%	32.9%	25.0%	2.5%	13.9%	2.7%
2008	24.8%	9.1%	27.6%	19.6%	2.3%	13.6%	2.9%
2009	22.5%	9.3%	28.6%	20.2%	2.3%	13.7%	3.4%
2010	13.5%	10.9%	30.2%	24.0%	2.9%	14.5%	3.9%
2011	16.6%	9.5%	30.4%	21.7%	3.1%	14.2%	4.4%
2012	31.9%	7.9%	24.4%	18.4%	2.3%	11.4%	3.7%
2013	29.6%	8.6%	24.8%	18.9%	2.7%	11.4%	4.0%
2014	26.9%	8.7%	27.0%	17.6%	3.2%	12.2%	4.3%
2015	15.8%	9.8%	31.5%	20.1%	3.6%	14.2%	5.1%
2016	17.2%	10.3%	29.6%	21.4%	3.6%	13.1%	4.8%
2017	9.1%	11.0%	33.0%	23.1%	4.0%	14.3%	5.4%
2018	17.1%	10.4%	28.7%	23.2%	3.5%	12.4%	4.8%
2019	29.9%	8.5%	25.2%	18.6%	3.0%	10.7%	4.0%
2020	5.3%	13.4%	28.8%	26.9%	4.5%	15.0%	6.1%

6.1 Appendix: Emissions inventory - annual percentage change by source

Table 6.1.3 Annual percentage change in emissions by source

	Energy - Power generation (%)	Energy - Industrial combustion (%)	Energy - Transport (%)	Energy - Commercial and domestic combustion (%)	Agriculture, land use, land use change and forestry (%)	Waste (%)	F-gases (%)
1991	19.8	19.7	-0.2	18.9	4.5	0.2	0.0
1992	-14.5	-14.2	0.9	-12.9	3.7	0.2	154.5
1993	4.2	4.2	2.5	3.8	-8.3	0.2	332.5
1994	0.7	0.7	-1.5	0.2	6.9	0.3	107.2
1995	4.1	4.1	2.2	4.7	4.3	0.2	66.0
1996	3.2	9.7	4.5	10.2	-24.6	0.2	58.6
1997	1.1	4.0	6.3	2.0	3.8	0.3	42.4
1998	4.6	-7.5	-4.7	-6.0	4.2	0.3	39.7
1999	2.5	-9.4	-0.9	-8.6	-4.3	0.3	33.0
2000	-6.4	17.6	5.5	14.3	0.1	0.2	23.6
2001	-75.9	-29.9	-8.5	-25.5	-4.9	0.2	21.7
2002	-12.0	10.2	-4.2	6.8	-9.8	0.2	16.2
2003	17.3	2.4	1.1	2.7	6.3	0.2	14.5
2004	-16.2	-15.7	0.3	-11.8	4.0	0.2	13.3
2005	46.4	9.2	0.3	7.7	-4.4	0.2	7.1
2006	102.1	-29.7	-4.8	-17.7	2.7	0.1	23.2
2007	-28.3	-2.3	3.4	6.1	7.9	-1.2	10.0
2008	56.4	35.6	-14.5	-20.2	-4.6	-0.3	8.8
2009	-12.5	-0.3	-0.1	-0.4	-6.8	-3.0	15.8
2010	-44.4	8.0	-2.5	9.5	20.6	-2.4	4.0
2011	19.3	-15.8	-2.3	-12.3	3.3	-4.8	9.0
2012	132.8	0.6	-2.7	2.6	-9.1	-2.6	3.9
2013	-9.8	6.1	-1.0	-0.1	12.7	-2.6	3.0
2014	-16.7	-6.8	-0.3	-14.7	8.7	-2.1	-0.1
2015	-50.8	-5.5	-2.2	-3.9	-7.3	-2.5	-1.6
2016	14.6	10.9	-1.2	12.1	7.1	-2.5	0.1
2017	-52.2	-4.4	0.1	-3.0	-1.8	-2.1	1.5
2018	110.9	6.2	-1.9	13.0	-1.2	-2.7	-1.4
2019	97.3	-7.4	-1.0	-9.6	-2.3	-2.9	-5.7
2020	-88.4	3.0	-25.2	-5.5	-1.7	-7.8	0.0

6.1 Appendix: Emissions inventory - cumulative percentage change by source

Table 6.1.4 Cumulative percentage change in emissions since 1990 by source

	Energy - Power generation (%)	Energy - Industrial combustion (%)	Energy - Transport (%)	Energy - Commercial and domestic combustion (%)	Agriculture, land use, land use change and forestry (%)	Waste (%)	F-gases (%)
1991	19.8	19.7	-0.2	18.9	4.5	0.2	0.0
1992	2.5	2.7	0.7	3.6	8.4	0.4	154.5
1993	6.8	7.1	3.2	7.5	-0.6	0.7	1000.5
1994	7.5	7.8	1.7	7.7	6.2	0.9	2180.0
1995	12.0	12.2	3.9	12.7	10.8	1.1	3684.7
1996	15.5	23.1	8.7	24.3	-16.5	1.3	5901.2
1997	16.8	28.0	15.5	26.8	-13.3	1.6	8442.8
1998	22.2	18.4	10.1	19.2	-9.6	1.9	11835.3
1999	25.3	7.3	9.1	8.9	-13.5	2.2	15769.7
2000	17.3	26.2	15.1	24.6	-13.5	2.3	19510.4
2001	-71.7	-11.6	5.3	-7.2	-17.7	2.6	23763.2
2002	-75.1	-2.6	0.9	-0.9	-25.8	2.8	27639.6
2003	-70.8	-0.2	2.0	1.8	-21.1	3.0	31655.4
2004	-75.5	-15.9	2.3	-10.1	-17.9	3.2	35887.7
2005	-64.2	-8.2	2.6	-3.2	-21.6	3.4	38450.1
2006	-27.6	-35.4	-2.3	-20.3	-19.4	3.5	47407.2
2007	-48.1	-36.9	1.0	-15.4	-13.0	2.3	52165.8
2008	-18.8	-14.5	-13.6	-32.5	-17.1	2.0	56759.7
2009	-29.0	-14.8	-13.7	-32.8	-22.7	-1.0	65715.4
2010	-60.5	-8.0	-15.8	-26.4	-6.8	-3.4	68358.3
2011	-52.9	-22.5	-17.7	-35.4	-3.7	-8.0	74524.0
2012	9.7	-22.1	-19.9	-33.7	-12.5	-10.4	77419.6
2013	-1.1	-17.4	-20.7	-33.8	-1.3	-12.7	79781.0
2014	-17.6	-23.0	-20.9	-43.5	7.3	-14.6	79679.7
2015	-59.5	-27.3	-22.7	-45.7	-0.5	-16.7	78365.0
2016	-53.6	-19.4	-23.6	-39.2	6.6	-18.9	78463.8
2017	-77.8	-22.9	-23.5	-41.0	4.7	-20.6	79665.0
2018	-53.3	-18.2	-24.9	-33.4	3.4	-22.7	78509.3
2019	-7.8	-24.2	-25.7	-39.7	1.0	-25.0	73993.2
2020	-89.3	-21.9	-44.4	-43.1	-0.7	-30.8	73993.2

7.1 Further information

This bulletin has been produced by the States of Guernsey Data and Analysis team. The Guernsey emissions inventory is compiled by Aether, who lead the compilation of the inventories for UK crown dependencies and applicable overseas territories as part of the UK National Atmospheric Emissions Inventory (NAEI), which is developed and maintained by Ricardo Energy & Environment, in collaboration with Aether, CEH, Forest Research, Hartley McMaster and Gluckman Consulting. The NAEI is funded by the Department for Business, Energy & Industrial Strategy (BEIS), Department for Environment, Food and Rural Affairs (Defra), the Scottish Government, the Welsh Government and the Northern Ireland Department of Agriculture, Environment and Rural Affairs.

7.2 Contact details

You may also be interested in other States of Guernsey Data and Analysis publications, which are all available online at www.gov.gg/data. Please contact us for further information.

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