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Summary Report: Gibraltar City Inventory 2021

A Summary of the City-Level Greenhouse Gas Emissions Inventory for
Gibraltar

Report for HM Government of Gibraltar

Customer:

Catherine Walsh, Department of the Environment, HM Government of Gibraltar

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Summary of Gibraltar's 2021 City-Scale Greenhouse Gas Inventory

This summary is intended to provide an easily accessible synopsis of the main technical report accompanying Gibraltar's 2021 City-Scale Greenhouse Gas (GHG) Inventory. It provides some brief background to Gibraltar's climate commitments and inventory, the results of the 2021 inventory, and changes between previous inventories. For more information on the background behind Gibraltar's inventories, the data and methodologies used, revisions to previous inventories and recommended future improvements, see the full report, available at:

https://www.gibraltar.gov.gi/uploads/environment/GHG%20Inventory/2021-GibraltarCityInventory_Report_FINAL.pdf

Gibraltar's climate commitments

The Government of Gibraltar has been active in addressing the concerns of climate change and committing to reducing harmful GHG emissions. As well as being a signatory to the Global Covenant of Mayors for Climate and Energy¹ (GCoM) since 2015, Government has passed the Climate Emergency Motion, committed to ambitious emission reduction targets in the Climate Change Act (Figure 2) and published Gibraltar's Climate Change Strategy².

Under GCoM, Gibraltar have committed to regularly reporting a GHG inventory (which has been reported annually since 2015), assessing climate risks and vulnerabilities, defining ambitious climate mitigation, resilience and energy targets, and creating a full climate action plan outlining how targets will be delivered, as depicted in **Figure 1**.

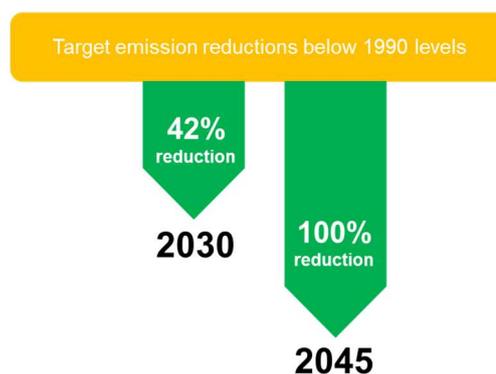


Figure 2: Climate Change Act targets

Figure 1: GCoM commitment requirements



Source: https://data.bloomberglp.com/mayors/sites/14/2015/07/Compact-of-Mayors-Full-Guide_July2015.pdf

Greenhouse gas emission inventories

Gibraltar's GHG inventory is the key tool for tracking changes in emissions over time and reporting progress towards emission reduction targets. The inventory follows the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories³ (GPC), which is a robust, transparent, and globally accepted framework to consistently identify, calculate and report on sub-national GHGs. Emissions are calculated for seven GHGs, reported as carbon dioxide equivalent⁴ (CO₂e), and are categorised by 'scope', to distinguish where emissions physically occur:

- Scope 1 emissions are directly emitted within the city boundary (**direct emissions**)

What is a GHG inventory?

A GHG inventory is an accounting of GHGs emitted to or removed from the atmosphere over a period of time.

Policy makers use inventories to establish a baseline for tracking emission trends, developing mitigation strategies and policies, and assessing progress.

¹ <https://www.globalcovenantofmayors.org/>

² <https://www.gibraltar.gov.gi/press-releases/gibraltars-climate-change-strategy-published-8442021-7430>

³ <http://www.wri.org/publication/global-protocol-community-scale-greenhouse-gas-emission-inventories>

⁴ CO₂e values are used to take account of different GHGs having a greater or lesser warming impact than another. A Global Warming Potential (GWP) value is used to convert quantities of different GHGs to a shared unit (CO₂e) that can then be directly compared.

- Scope 2 emissions are indirect from in-boundary consumption of electricity (**Indirect emissions**)
 - Scope 3 emissions are indirect and out of boundary emissions (**Other direct emissions**)
- The sources, and scopes, that are included within Gibraltar's GHG inventories are shown in **Figure 3**.

Figure 3: GHG Inventory sources and scopes



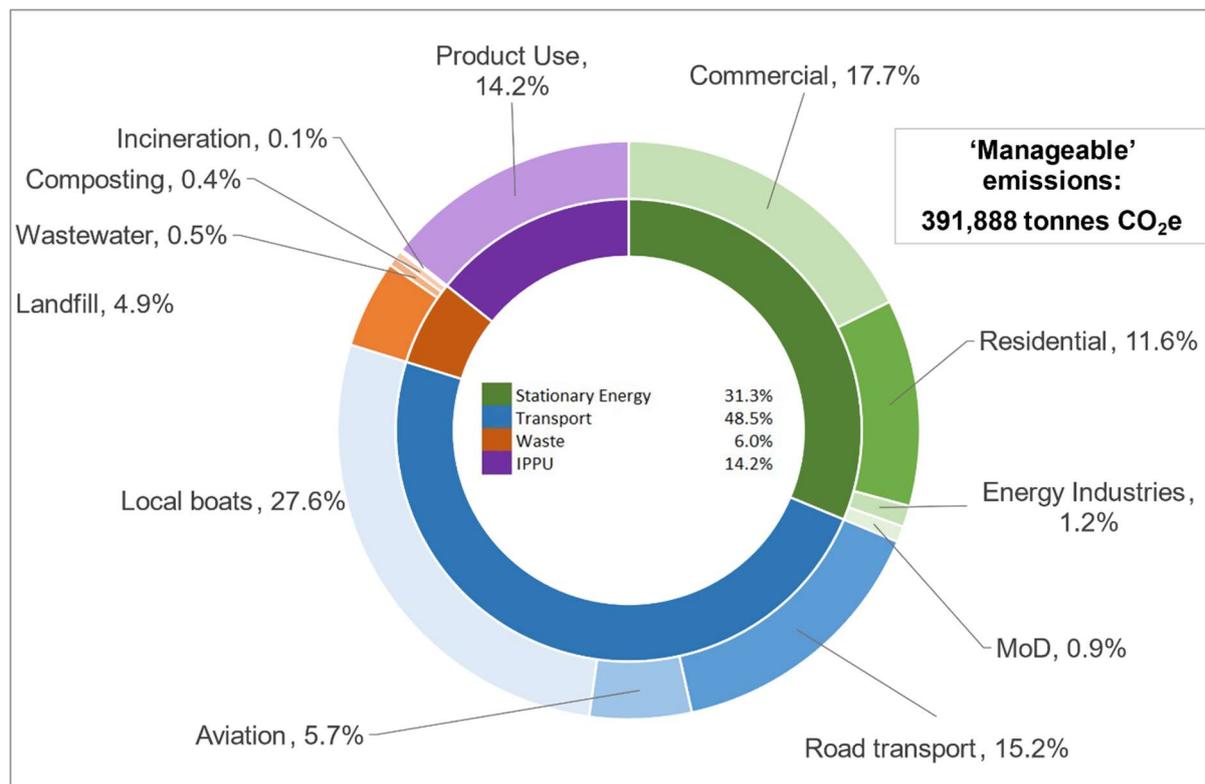
Gibraltar's 2021 inventory

Gibraltar's 2021 GHG emissions are presented, by sector, in **Table 1** and **Figure 4**. Certain sources, such as international shipping (non-bunkering), are excluded from the results presented in this report due to its very large impact on overall totals, and the lack of potential local influence; this sub-set of emissions is considered as **Gibraltar's 'manageable' emissions**. In addition to 'manageable' emissions, there are alternative reporting levels which include/exclude certain sources; these are covered in the full report accompanying Gibraltar's 2021 city inventory.

Table 1: Gibraltar's 2021 'manageable' emissions (tonnes CO₂e) by sector

Sector	'Manageable' emissions	
	Tonnes CO ₂ e	% contribution
Stationary Energy	122,677	31.3%
Transportation	189,978	48.5%
Waste	23,405	6.0%
Industrial Processes and Product Use (IPPU)	55,830	14.2%
TOTAL	391,889	100%

Figure 4: Gibraltar's 2021 'manageable' emissions



Emissions from the transport sector are the largest source of emissions in Gibraltar, accounting for almost half of the “manageable” emissions shown above. Local boats dominate transport emissions, with significant contributions from road transport and aviation also. Emissions from electricity consumption are the second largest source of emissions in Gibraltar (accounting for almost a third of Gibraltar’s “manageable” emissions), due to the reliance on electricity for nearly all energy needs, the generation technology currently used and the territory’s independence from other electricity supply networks. Prior to 2019, diesel/gas oil (with high carbon intensity) was the only fuel used to generate electricity, meaning the emissions per kilowatt hour (kWh) of electricity were considerably higher than, for example, the UK and other European countries. However, in 2019, North Mole Power Station began using natural gas (with a lower carbon intensity than diesel/gas oil) to generate electricity, which has reduced emissions from electricity consumption. Having said this, electricity consumption remains a significant source of emissions in Gibraltar. The majority of electricity consumption comes from the commercial sector, followed by residential use.

Sources that are deemed to be ‘outside of scopes’ (i.e., they are reported for information in the full report, but are not deemed to be within the influence or responsibility of Gibraltar – such as bunker fuel) would dominate emissions overall if included in emission totals.

Changes between previous inventories and 2020 inventory

The 2021 inventory has been compared against the revised 2020 (2020r), 2019 (2019r), 2018 (2018r), 2017 (2017r), 2016 (2016r) and 2015 (2015r) inventories. There are some differences between the original 2015 inventory⁵, 2016 inventory⁶, 2017 inventory⁷, 2018⁸ inventory, 2019⁹ inventory, 2020 inventory¹⁰, and the revised versions used as the comparison in this section; this is due to improvements in methodologies and activity data availability during the compilation of the 2021 inventory, which have been applied retrospectively to previous year’s inventories for consistency and accuracy, following international best practice. Important recalculations are explained in Appendix 2 of the full report accompanying the 2021 inventory.

⁵ https://www.gibraltar.gov.gi/new/sites/default/files/HMGoG_Documents/20170601-Gibraltar_City_Inventory_Report_Published.pdf

⁶ https://www.gibraltar.gov.gi/new/sites/default/files/HMGoG_Documents/2016-GibraltarCityInventory_Report_Final.pdf

⁷ https://www.gibraltar.gov.gi/uploads/environment/GHG%20Inventory/2017-GibraltarCityInventory_Report_Final.pdf

⁸ https://www.gibraltar.gov.gi/uploads/environment/GHG%20Inventory/2018-GibraltarCityInventory_Report_Final.pdf

⁹ https://www.gibraltar.gov.gi/uploads/environment/GHG%20Inventory/2019-GibraltarCityInventory_Report_FINAL.pdf

¹⁰ https://www.gibraltar.gov.gi/uploads/environment/GHG%20Inventory/2020_City-Level_Greenhouse_Gas_Inventory_Report_for_Gibraltar.pdf

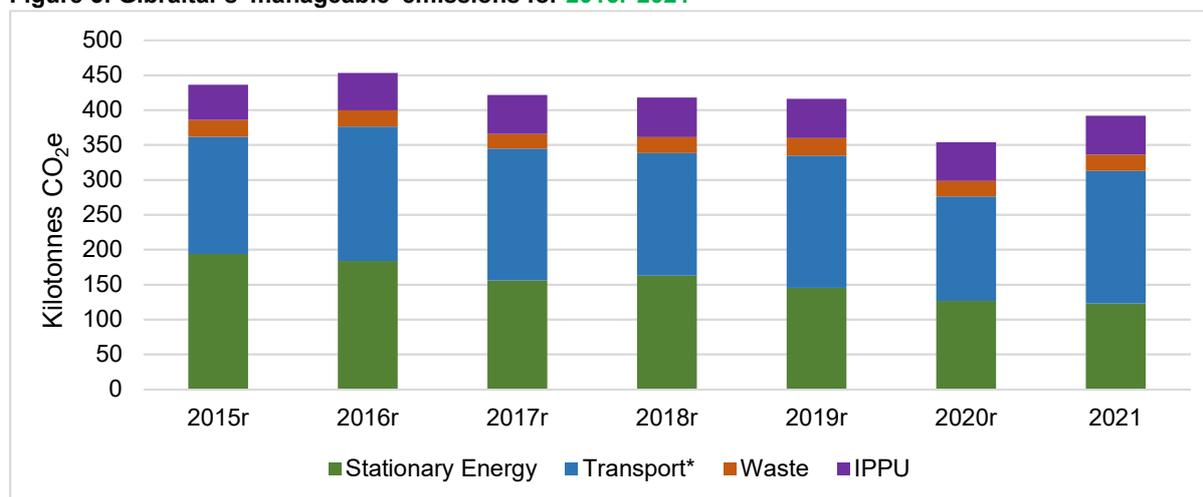
Emissions from the 2015r, 2016r, 2017r, 2018r, 2019r, 2020r and 2021 inventories are presented, by sector, in **Table 2** and **Figure 5**.

Table 2: Comparison between the 2015r-2021 inventories

Reporting sector	Emissions (tCO ₂ e)						
	2015r	2016r	2017r	2018r	2019r	2020r	2021
Stationary Energy	193,540	183,785	155,844	162,740	145,419	126,741	122,677
Transportation (all*)	356,955	464,294	450,390	381,571	438,540	376,065	421,299
Transportation (excluding scope 3 shipping)	167,961	192,208	188,667	175,616	188,974	149,511	189,978
Waste	24,494	23,723	21,388	22,893	25,344	22,364	23,405
IPPU	49,963	53,323	55,640	56,609	56,079	55,219	55,830
Other Scope 3*	3,095,506	3,243,896	3,342,666	3,067,166	2,415,489	2,177,375	2,225,633
Total Manageable emissions	435,959	453,039	421,540	417,858	415,817	353,835	391,889

* Not included in Gibraltar's manageable emissions

Figure 5: Gibraltar's 'manageable' emissions for 2015r-2021



* Transport emissions excluding scope 3 shipping

Gibraltar's total 2021 manageable emissions have decreased by 10% since 2015r, but increased by 11% since 2020r; this is a result of the following:

- ↓ Emissions from electricity generation have decreased by 3% since 2020, and by 37% since 2015. This due to the introduction of natural gas (rather than gas oil only) as a fuel for North Mole Power Station. The amount of electricity produced/consumed has remained fairly static.

- ↑ Emissions from road transport in Gibraltar have increased by 9% since 2020 due to more fuel being consumed by vehicles in Gibraltar. Note that 2020 transport emissions were anomalously low due to the travel effects of the COVID-19 pandemic. Since 2015, road transport emissions have decreased by 23%.
- ↑ Emissions from aviation increased by 55% since 2020 as a result of increased flights. Note that 2020 aviation emissions were anomalously low due to the travel effects of the COVID-19 pandemic. Since 2015, aviation emissions have decreased by 26%.
- ↑ Emissions from waste increased by 5% since 2020, but have decreased by 4% since 2015. This is due to fluctuations in total waste arisings sent to landfill.
- ↑ Emissions from IPPU increased by 1% since 2020, and by 12% since 2015. This follows trends in UK data that is used as a proxy for Gibraltar's emissions from product use.

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