SUMMARY REPORT: GIBRALTAR CITY INVENTORY 2023

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

Report for: HM Government of Gibraltar

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Summary of Gibraltar's 2023 City-Scale Greenhouse Gas Inventory

This summary is intended to provide an easily accessible synopsis of the main technical report accompanying Gibraltar's 2023 City-Scale Greenhouse Gas (GHG) Inventory. It provides some brief background to Gibraltar's climate commitments and inventory, the results of the 2023 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/environment/climate-change

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 Energy[1] (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 Strategy[2].

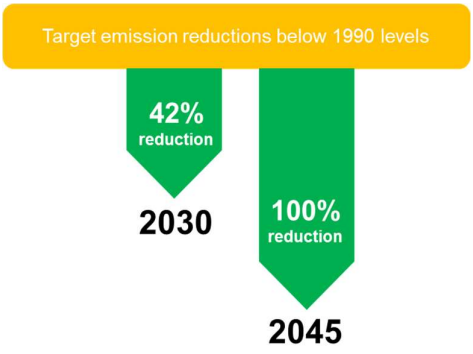


Figure 2: Climate Change Act targets

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 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 Inventories[3] (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 (CO_2e), and are categorised by 'scope', to distinguish where emissions physically occur:

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,

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

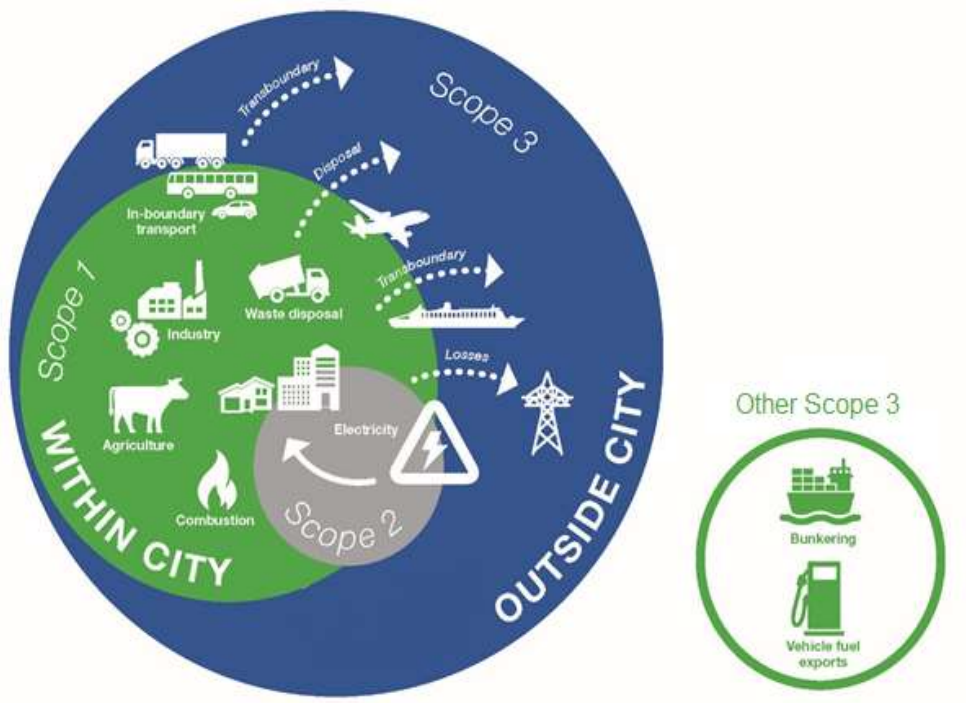
[1] https://www.globalcovenantofmayors.org/

[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] CO_2e values are used to take account of different GHGs having a greater or lesser warming impact that another. A Global Warming Potential (GWP) value is used to convert quantities of different GHGs to a shared unit (CO_2e) that can then be directly compared.

Figure 3: GHG Inventory sources and scopes



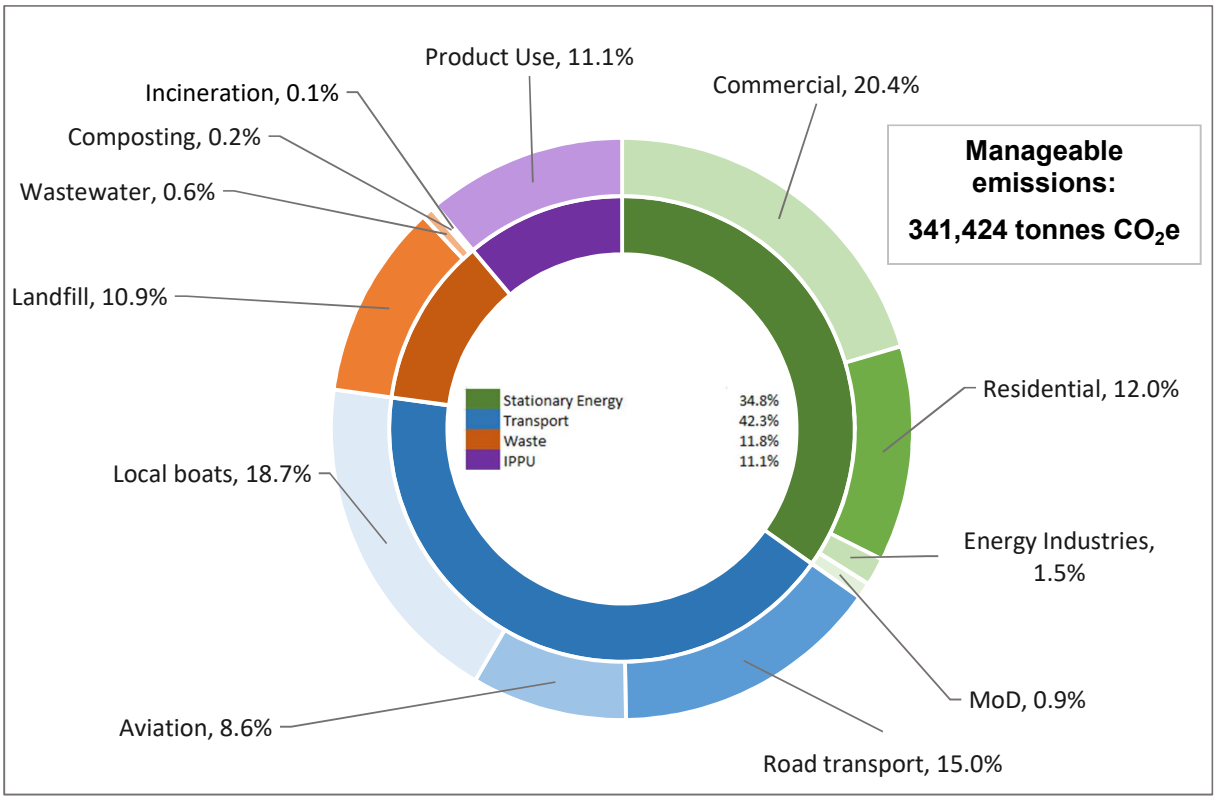
Gibraltar's 2023 inventory

Gibraltar's 2023 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 2023 city inventory.

Table 1: Gibraltar's 2023 manageable emissions (tonnes CO_2e) by sector

Sector	Manageable emissions	
	Tonnes CO_2e	% contribution
Stationary Energy	118,919	34.8%
Transportation	144,534	42.3%
Waste	40,198	11.8%
Industrial Processes and Product Use (IPPU)	37,772	11.1%
TOTAL	**341,424**	***100%***

Figure 4: Gibraltar's 2023 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. Emissions from 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 just over 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.

Timeseries trends

This section presents emission trends over Gibraltar's inventory time series (2015 to 2023). The 2023 inventory results are compared against the revised 2015-2022 (2015r-2022r) inventories. There are some differences between the original 2015-2022 inventories and the revised versions; this is due to improvements in methodologies and activity data availability during the compilation of the 2023 inventory, which have been applied retrospectively to previous year's inventories for consistency and accuracy, following international best practice. Important recalculations are explained in the full report.

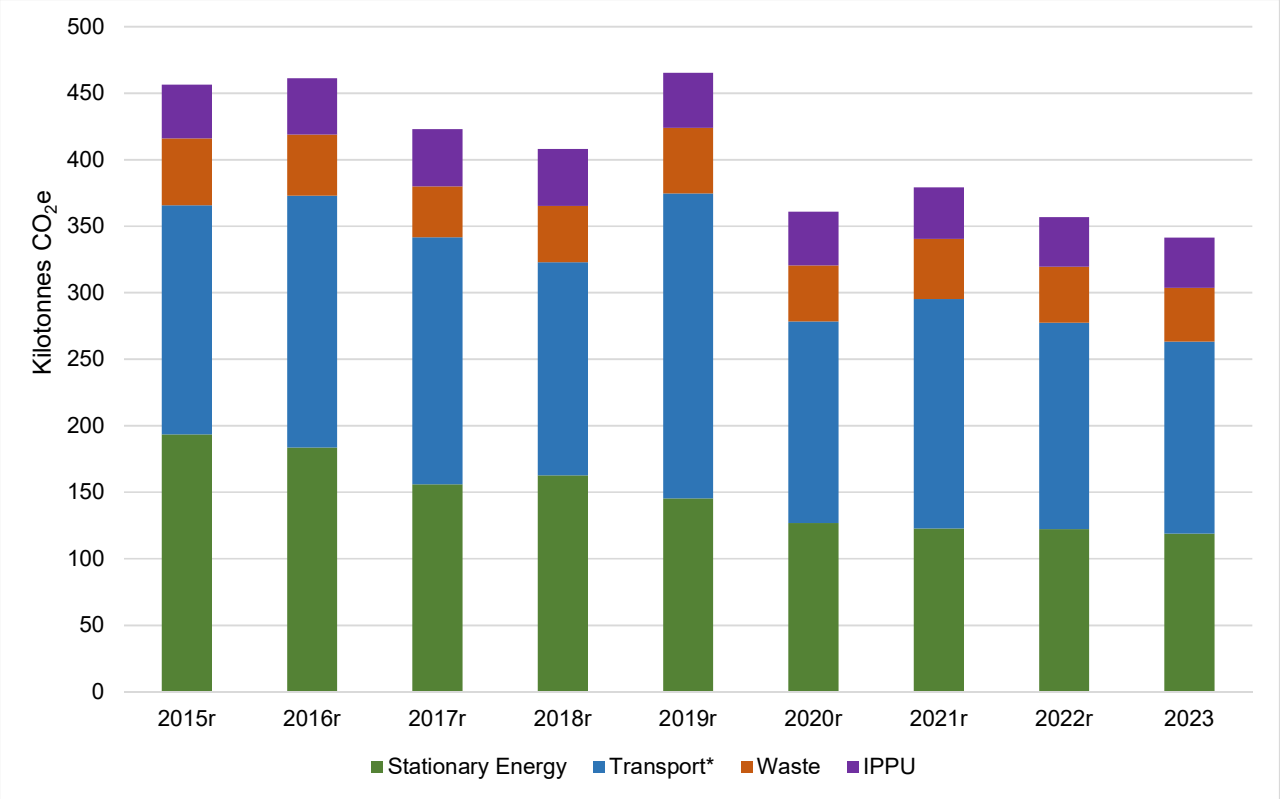
Emissions from the 2015r and 2023 inventories are presented, by sector, in **Table 2** and **Figure 5.**

Table 2: Comparison between the 2015r-2023 inventories

Reporting sector	Emissions (tCO_2e)								
	2015r	2016r	2017r	2018r	2019r	2020r	2021	2022	2023
Stationary Energy	193,540	183,785	155,844	162,740	145,433	126,868	122,786	122,369	118,919
Transportation (all)*	361,232	461,419	447,402	366,010	478,839	378,136	403,737	366,462	348,345
Transportation (excluding scope 3 shipping)	172,238	189,333	185,679	160,054	229,273	151,582	172,415	154,911	144,534
Waste	50,268	45,850	38,483	42,649	49,301	42,159	45,278	42,184	40,198
IPPU	40,375	42,252	43,079	42,697	41,406	40,129	38,706	37,347	37,772
*Other Scope 3**	3,091,625	3,239,638	3,338,441	3,049,309	2,456,727	2,191,086	2,221,647	2,049,349	1,967,550
Total Manageable emissions	**456,420**	**461,219**	**423,084**	**408,140**	**465,413**	**360,739**	**379,185**	**356,811**	**341,424**

*** Not included in Gibraltar's manageable emissions**

Figure 5: Gibraltar's manageable emissions for 2015r-2023



*** Transport emissions excluding scope 3 shipping**

Gibraltar's 2023 manageable emissions have decreased by 25% since 2015r[5], and decreased by 4% since 2022r; this is a result of the following:

- Emissions from electricity generation have decreased by 3% since 2022 (and by 39% since 2015). Decreases since 2015 are due to the new power station using natural gas (LNG rather than gas oil only). The amount of electricity produced/consumed has remained fairly static. There have also been modest increases in renewable energy generation.
- Emissions from local boats in Gibraltar have decreased by 6% since 2022 (and by 6% since 2015) due to less fuel being sold to (and assumed used by) local boats in Gibraltar.
- Emissions from waste decreased by 5% since 2022 (and by 20% since 2015) due to a decrease in total waste arisings sent to landfill.
- Emissions from road transport in Gibraltar have decreased by 12% since 2022 (and by 28% since 2015) due to less fuel being sold to vehicles in Gibraltar, with road transport emissions their lowest since 2021.
- Emissions from aviation increased by 3% since 2022 (but decreased by 12% from 2015), as a result of more flights – this is likely a continuation of rebounds from the effects of the pandemic in 2020. There were no 'international' flights from Gibraltar in 2023.
- Emissions from IPPU increased by 1% since 2022 (but decreased by 6% since 2015). This largely follows trends in UK and Malaga data that is used as a proxy for Gibraltar's emissions from product use.

[5] When compiling the inventory for the latest year for Gibraltar, any improvements in data, methods or understanding are assessed and, where appropriate, are also applied to previous year's inventories to enhance accuracy and consistency across the time series. The 2015-2022 inventories have therefore been revised, referred to as '20XXr'. More details on the revisions are found in the main body of the report.

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