Summary Report: Gibraltar City Inventory 2016

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

Report for HM Government of Gibraltar

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Summary of Gibraltar's 2016 City-Scale Greenhouse Gas Inventory

This summary is intended to provide an easily accessible synopsis of the main technical report accompanying Gibraltar's 2016 City-Scale Greenhouse Gas Inventory. This summary provides the background to Gibraltar's city-scale greenhouse gas inventory programme, the results of the 2016 inventory, and changes between the revised 2015 and 2016 inventories. For more information on the background behind Gibraltar's inventories, the data and methodologies used, revisions to the 2015 inventory and recommended future improvements, see the full report.

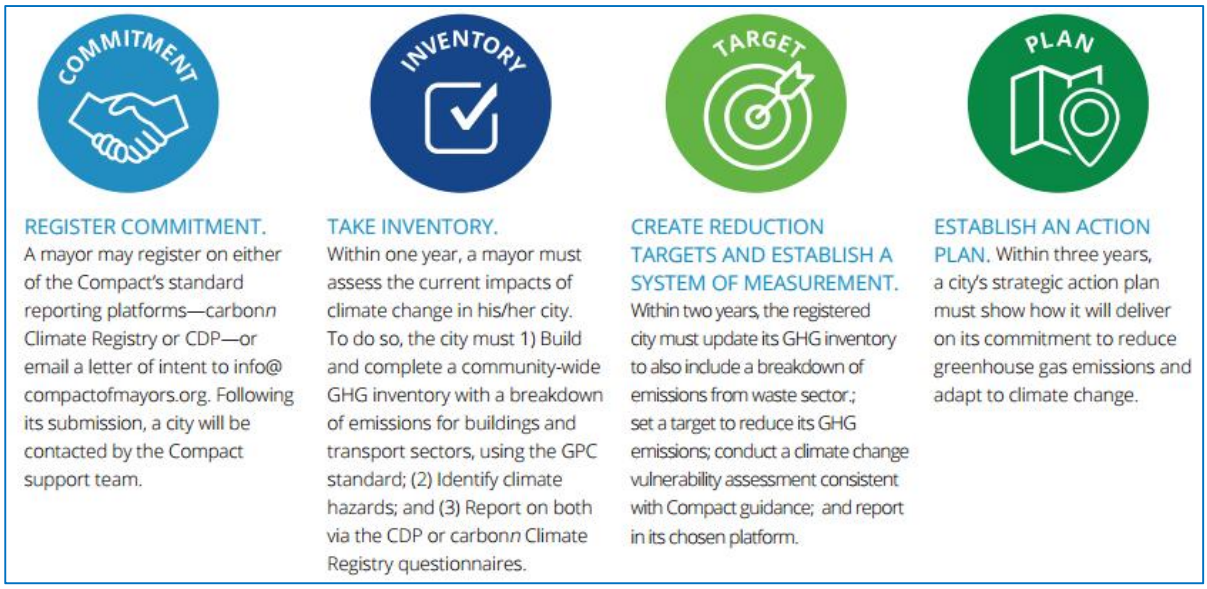
Background

Cities are a large problem and a significant opportunity in the management of global greenhouse gas (GHG) emissions. Accounting and management of emissions at the city scale is becoming increasingly important. At the 21st Conference of the Parties (the COP) in Paris in 2015, almost 200 countries collectively committed to limiting global temperatures to 'well below' 2 degrees and avoiding the worsening effects of climate change. At the same time, more than 360 cities from all continents and regions across the globe announced that the collective impact of their commitments will deliver over half of the world's potential urban emissions reductions by 2020. Since then, the focus has transferred from making promises to taking action. Effective and committed governance at the national level will be key to achieving the Paris Agreement, however it is at the sub-national level where real gains in climate change mitigation will be made.

In October 2015, Gibraltar became a signatory of the Compact of Mayors (CoM), a global coalition of mayors and city officials pledging to reduce local GHGs, enhance resilience to climate change and track their progress transparently. The Compact collects the significant climate action data that cities are already reporting in a single, transparent platform. It therefore represents the greatest opportunity to bring attention to, and quantify, city action. As of January 2017, the CoM merged with the EU's Covenant of Mayors to create the Global Covenant of Mayors for Climate and Energy (GCoM). GCoM brings together the world's two primary initiatives of cities and local governments. The aim is to advance community-level transition to a low emission and climate resilient economy, and to demonstrate the global impact of local action. Gibraltar is now one of over 7,400 cities and communities who have committed to GCoM.

Until December 2018 the requirements of the GCoM will remain the same as they were under the CoM, and, as such, Gibraltar are required to undertake an inventory and vulnerability assessment, set a target, and establish an action plan to reduce emissions and establish a climate change adaptation strategy, as showing in **Figure 1.**

Figure 1: Compact of Mayors commitment requirements



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

Greenhouse gas emission inventories

The first step in managing GHG emissions effectively at the community scale, and making informed decisions to contribute to global mitigation efforts, is to have a good understanding of these emissions; the major sources, activities and relative contributions of different activities. The Global Protocol for Community-Scale Greenhouse Gas Emission Inventories[1] (GPC) was launched in December 2014 for just this, and is a robust, transparent and globally-accepted framework to consistently identify, calculate and report on sub-national GHGs. It is methodologically consistent with national territory-based approaches to emissions accounting, but also provides the flexibility to account for emissions in ways that more accurately reflect local circumstances. The CoM requires that GHG emissions inventories follow the GPC guidelines.

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

Emissions are calculated for seven GHGs, reported as carbon dioxide equivalent[2] (CO_2e) and are categorised by 'scope':

- Scope 1 emissions are directly emitted within the city boundary
- Scope 2 emissions are indirect from in-boundary consumption of electricity
- Scope 3 emissions are indirect and out of boundary emissions

The sources, and scopes, that are included within Gibraltar's GHG inventories are shown in **Figure 2**.

Figure 2: GHG Inventory sources and scopes

Gibraltar has three iterations of the city-scale GHG inventory: 2013, 2015 and 2016. The inventory will continue to be annually updated and reported to CDP[3] to fulfil the requirements of the GCoM.

[1] http://www.wri.org/publication/global-protocol-community-scale-greenhouse-gas-emission-inventories
[2] 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.
[3] https://www.cdp.net/en

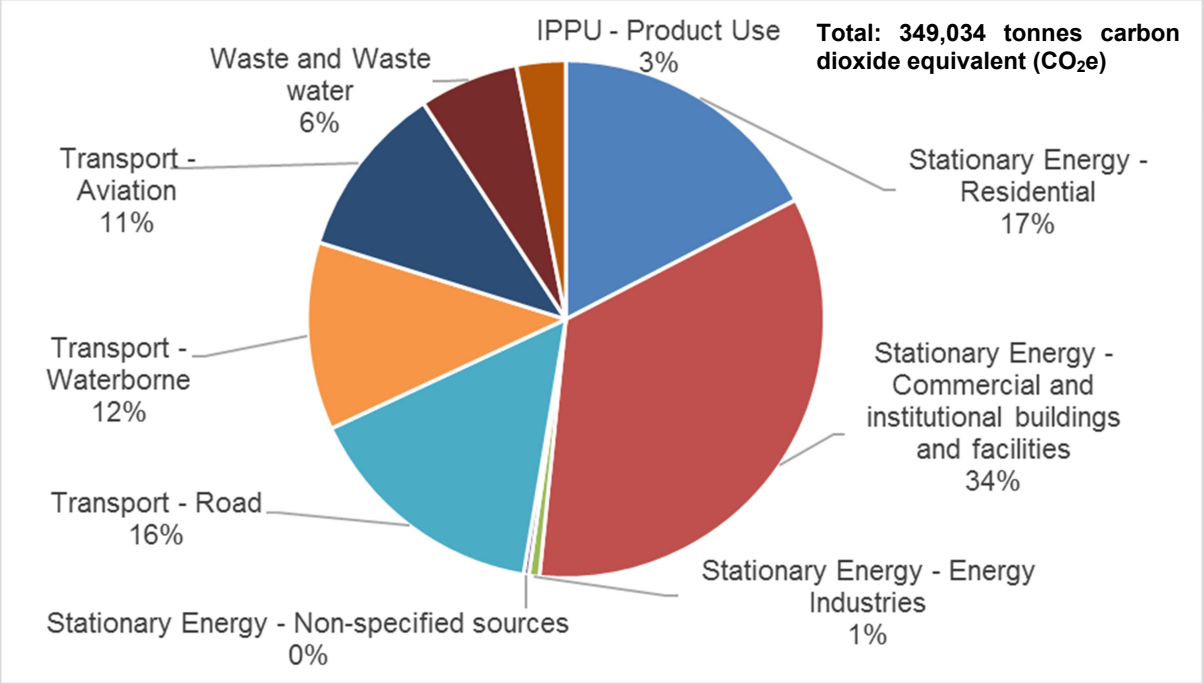
Gibraltar's 2016 inventory

Gibraltar's 2016 GHG emissions are presented, by sector, in **Table 1** and **Figure 3**. 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 2016 city inventory.

Table 1: Gibraltar's 2016 emissions (tonnes CO_2e) by sector

Sector	'Manageable' emissions
Stationary Energy	183,683
Transportation	132,954
Waste	21,689
Industrial Processes and Product Use (IPPU)	10,709
TOTAL	***349,034***

Figure 3: Gibraltar's 2016 'manageable' emissions



Emissions from electricity consumption are the largest source of emissions in Gibraltar, due to the reliance on electricity for nearly all energy needs, the generation technology currently used and the territory's indepdence from other electricity supply networks. Because gas oil is used to generate electricity, the emissions per kilowatt hour (kWh) are considerably higher than, for example, the UK and other European countries, which use a more diverse mix of fuels and technologies. Emissions from electricity consumption will likely decline as Gibraltar's new LNG power station begins operation, supported by an increasing shift towards renewable sources of power.

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 revised 2015 and 2016 inventories

The 2016 inventory has been compared against the revised 2015 inventory (2015r). There are some differences between the original 2015 inventory[4] and the 2015r inventory used as the comparison in this section; this is due to improvements in methodologies and activity data availability during the compilation of the 2016 inventory, which were also applied to the 2015 inventory for consistency and accuracy, following international best practice. Important recalculations are explained in Appendix 2 of the full report accompanying the 2016 inventory.

Emissions from the 2015r and 2016 inventories are presented, by sector, in **Table 2**.

Table 2: Comparison between the 2015r and 2016 inventories

Reporting sector	Emissions (tCO_2e)	
	2015r	2016
Stationary Energy	193,439	183,683
Transportation (all)	313,569	406,237
Transportation (excluding scope 3 shipping)	123,670	132,954
Waste	22,365	21,689
IPPU	11,106	10,709
Other Scope 3	3,082,619	3,206,685
Total Manageable emissions	350,580	349,034

Gibraltar's total manageable emissions are 0.5% lower in 2016 than 2015r; this is a result of the following:

- Emissions from electricity generation have decreased by 5%; this is due to less electricity consumption and therefore reduced production. This reduced electricity production corresponds to less fuel combustion, although proportionally more fuel for the total generation leading to a slightly higher implied emission factor per kWh.
- Emissions from Waste are around 3% lower in 2016 than 2015r due to a reduction in total waste arisings sent to landfill (and composting).
- Emissions from scope 3 waterbourne navigation* are 44% higher in the 2016 inventory than the 2015r inventory, largly due to longer liquid bulk container departing journey lengths in 2016; the reason for this is currently unknown. Trends in other vessel categories were more stable between the two years.
- Emissions from aviation are 30% higher in 2016 than 2015r, likely due to increased number of flights to London Gatwick, London Heathrow and Manchester.

*not included in Gibraltar's 'manageable' emissions

Future inventories

The continuous improvement programme, covering all of Gibraltar's emissions inventories, has identified further data and methodological improvements which will be pursued in collaboration with HM Government of Gibraltar. This will ensure the emission inventories represent the best possible estimate each year, and provide the most accurate information for both international reporting and local policy.

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

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