Summary Report: Gibraltar City Inventory 2018

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 ~~2017~~ 2018 City-Scale Greenhouse Gas Inventory

This summary is intended to provide an easily accessible synopsis of the main technical report accompanying Gibraltar's ~~2017~~ 2018 City-Scale Greenhouse Gas (GHG) Inventory. It provides the background to Gibraltar's city-scale greenhouse gas inventory programme, the results of the ~~2017~~ 2018 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: (insert link to full report).

Background

The management of greenhouse gas (GHG) emissions on a local scale is becoming of increasing importance in the global commitment to limiting the impacts of climate change as cities expand and grow. 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 worldwide 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. 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 with the aim to advance and accelerate 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 9,200 cities and local governments who have committed to GCoM.

Under GCoM, Gibraltar have committed to regularly reporting a GHG Inventory, 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**.

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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

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

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

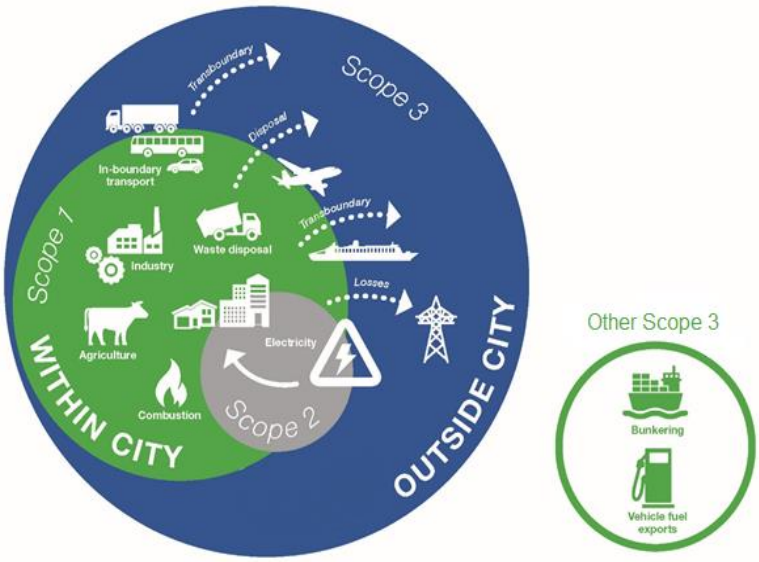
accurately reflect local circumstances. The CoM required that GHG emissions inventories follow the GPC guidelines. Under GCoM, inventories must be reported following the GCoM Common Reporting Format, which is largely based upon the GPC.

For Gibraltar, emissions are calculated for seven GHGs, reported as carbon dioxide equivalent[2] (CO_2e) and are categorised by 'scope', to distinguish where emissions physically occur:

- 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 2.

Figure 2: GHG Inventory sources and scopes



Gibraltar has ~~four~~ five iterations of the city-scale GHG inventory: 2013, 2015, 2016, ~~and~~ 2017 and 2018. The inventory will continue to be annually updated and reported to CDP[3] to fulfil the requirements of the GCoM.

Gibraltar's 2018 inventory

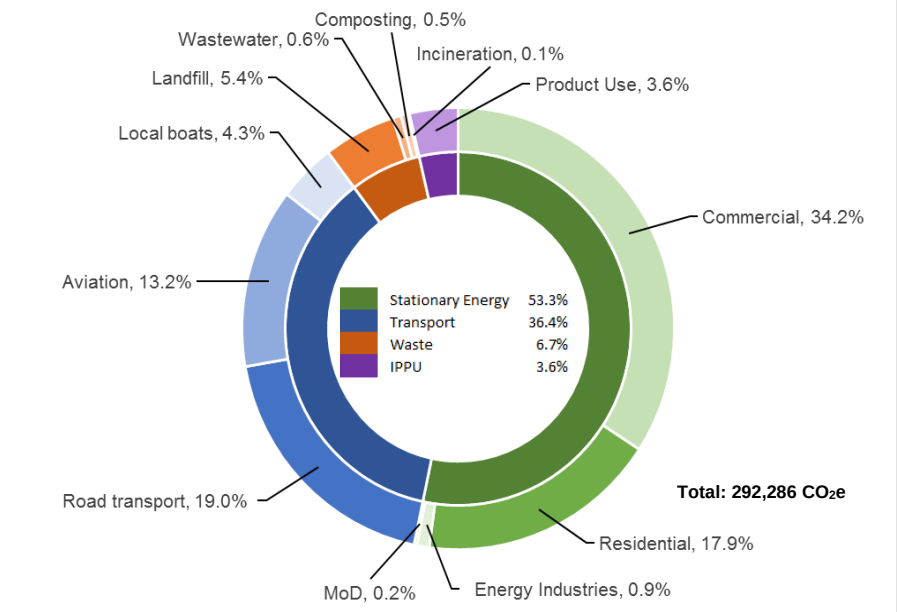
Gibraltar's 2018 GHG emissions are presented, by sector, in Table 1 and Figure 3. Certain sources, such as international shipping (non-bunkering), are excluded from the results presented in this report due to its very large impact on overall totals, and the lack of potential local influence; this sub-set 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 2018 city inventory.

[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

Table 1: Gibraltar's 2018 emissions (tonnes CO_2e) by sector

Sector	'Manageable' emissions	
	Tonnes CO_2e	% contribution
Stationary Energy	155,740	53.3%
Transportation	106,496	36.4%
Waste	19,460	6.7%
Industrial Processes and Product Use (IPPU)	10,591	3.6%
TOTAL	**292,286**	**100%**

Figure 3: Gibraltar's ~~2017~~ 2018 '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 independence 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 previous inventories and ~~2017~~ 2018 inventory

The ~~2017~~ 2018 inventory has been compared against the revised 2017 (2017r), 2016 (2016r) and 2015 (2015r) inventories. There are some differences between the original 2015 inventory[4], 2016 inventory[5], 2017 inventory, insert footnote, 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 ~~2017~~ 2018

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[4] https://www.gibraltar.gov.gi/new/sites/default/files/HMGoG_Documents/20170601-Gibraltar_City_Inventory_Report_Published.pdf
[5] https://www.gibraltar.gov.gi/new/sites/default/files/HMGoG_Documents/2016-GibraltarCityInventory_Report_Final.pdf

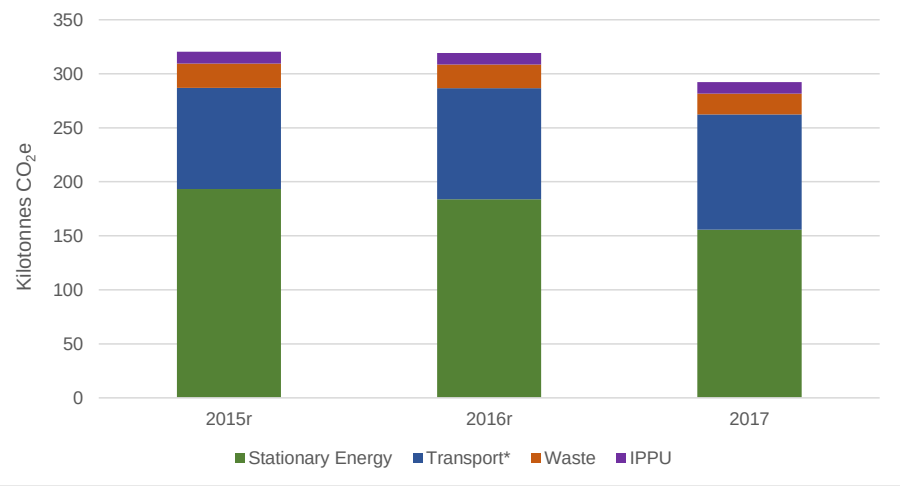
inventory, which have been applied retrospectively to previous year's inventories for consistency and accuracy, following international best practice. Important recalculations are explained in Appendix 2 of the full report accompanying the ~~2017~~ 2018 inventory.

Emissions from the 2015r, 2016r, 2017r and 2018 inventories are presented, by sector, in Table 2 and Figure 4.

Table 2: Comparison between the 2015r, 2016r, 2017r and 2018 inventories

Reporting sector	Emissions (tCO_2e)			
	2015r	2016r	2017r	2018
Stationary Energy	193,439	183,707	155,740	
Transportation (all [6])	283,488	376,318	*369,279*	
Transportation (excluding scope 3 shipping)	93,589	103,035	106,496	
Waste	22,249	21,561	19,460	
IPPU	11,061	10,874	10,591	
Other Scope 3 [6]	3,077,423	3,206,983	*3,324,642*	
Total Manageable emissions	**320,338**	**319,177**	**292,286**	

Figure 4: Gibraltar's 'manageable' emissions for 2015r, 2016r, ~~and~~ 2017r and 2018



* Transport emissions excluding scope 3 shipping

Gibraltar's total manageable emissions have decreased by 9% since 2015r and 8% since 2016r; this is a result of the following:

- Emissions from electricity generation have decreased by 19% since 2015r and 15% since 2016r; this is due to less fuel being used to generate a unit of electricity, implying improvements in efficiency at Gibraltar's electricity power stations. Electricity consumption by residents and activity in Gibraltar remained fairly consistent between 2015 and 2017.
- Emissions from Waste are around 13% and 10% lower in 2017 than 2015r and 2016r (respectively) due to a reduction in total waste arisings sent to landfill (and composting).

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- Emissions from IPPU have decreased by 4% between 2015r and 2017; this follows trends in UK data that is used as a proxy for Gibraltar's emissions from product use (e.g. air conditioning and refrigeration).
- Emissions from road transport in Gibraltar have increased by 5% due to more fuel being consumed by vehicles in Gibraltar.
- Emissions from scope 3 waterborne navigation[6] are 44% higher in the 2016r inventory than the 2015r inventory, largely 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. These emissions have declined slightly since 2016r.
- Emissions from aviation are around 36% higher in 2017 than 2015r, likely due to an increased number of flights to London Gatwick, London Heathrow and Manchester between 2015r and 2016r. Between 2016r and 2017, aviation emissions have increased by 4%, largely due to an increased number of flights to London Gatwick and Manchester.

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.

[6] not included in Gibraltar's 'manageable' emissions

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