C40 CITIES
CLIMATE LEADERSHIP GROUP

EXPLORING THE BENEFITS OF CONSISTENT AND COMPARABLE CITY-WIDE GREENHOUSE GAS EMISSION INVENTORIES

OCTOBER 2018

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Taking action on climate change begins with a thorough understanding of greenhouse gas (GHG) emissions. For this reason, in 2014, C40, ICLEI and the World Resources Institute launched the Global Protocol for Community-scale Greenhouse Gas Emission Inventories (also referred to as the GPC), to support cities to measure and report city-wide GHG emissions in a robust, comprehensive and consistent way.

To date, nearly two thirds of C40 member cities are already measuring GHG emissions in accordance with the GPC, and more are following. Globally, the GPC has also quickly become the most commonly used standard of its kind.

A global standard enables comparison, benchmarking and aggregation, and drives improvements in data quality and transparency. Robust GHG emission inventories help cities make better decisions about the actions they are taking to reduce emissions and enable the tracking of emissions over time.

Through a series of infographics, based on analysis of over 160 GHG emission inventories from 60 C40 cities that have adopted the GPC, this report explores the activities that result in GHG emissions and demonstrates the value of adopting a data-driven approach to tackling climate change.

Each year many more cities are developing city-wide GHG emission inventories using the international best practice standard – the **Global Protocol for Community-scale Greenhouse Gas Emission Inventories** (also referred to as GPC).

City-wide GHG emission inventories enable cities to understand the contribution of different activities and track impact of climate actions. Consistent with IPCC Guidelines, the GPC also allows for credible comparison and aggregation across timescales and geographies, which helps to inform city-wide climate strategies.

NUMBER OF GPC INVENTORIES COMPLETED BY C40 CITIES

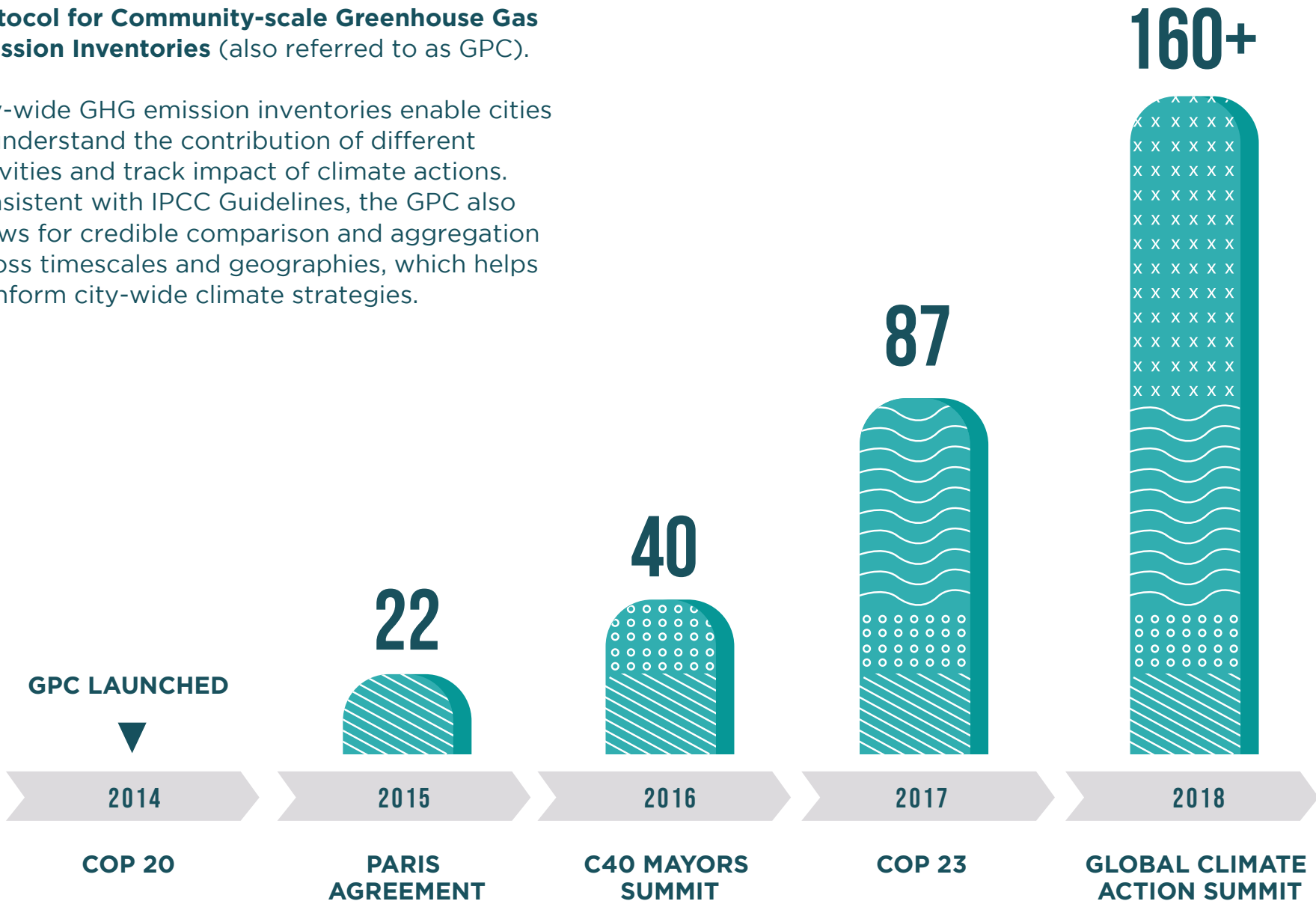
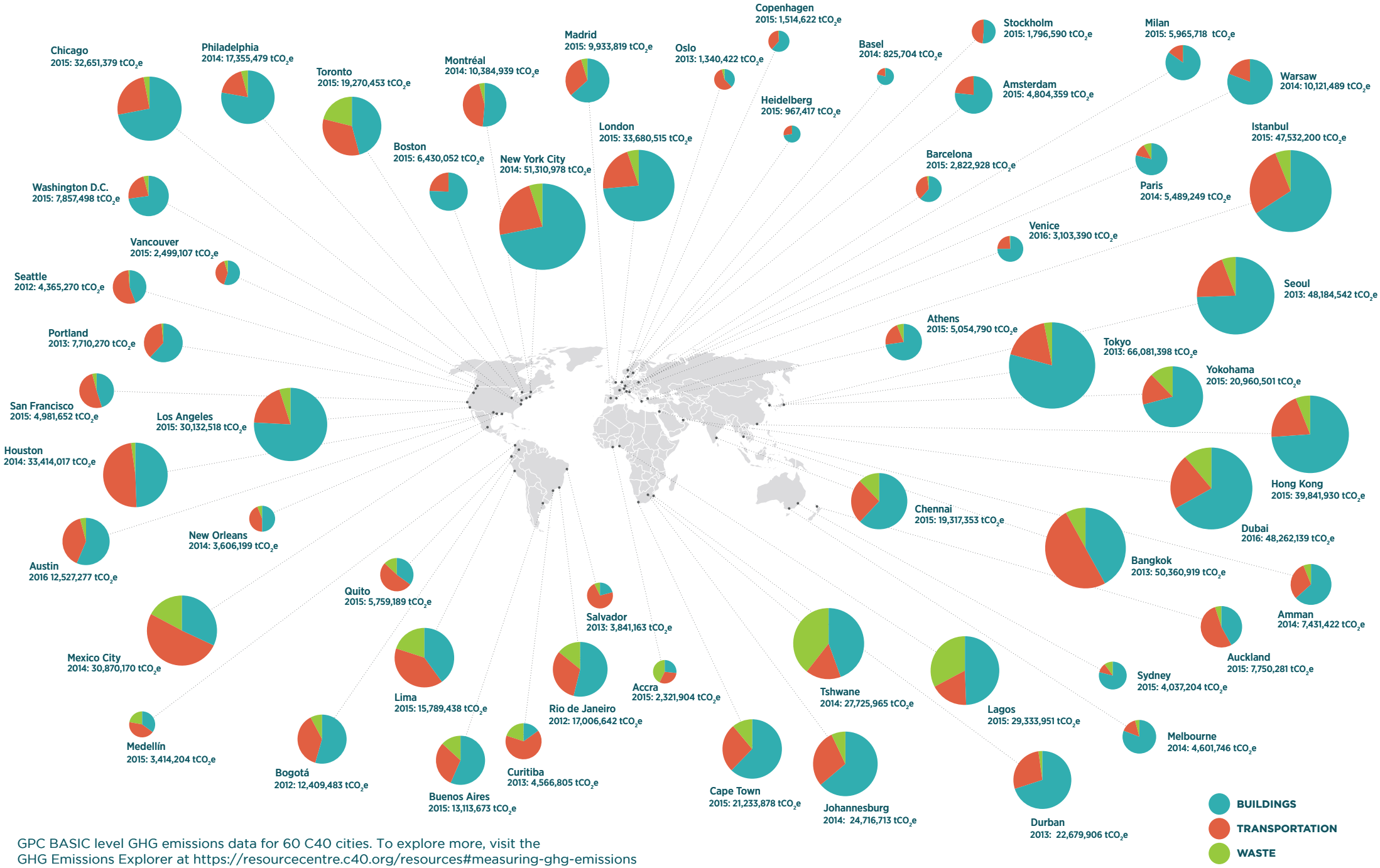


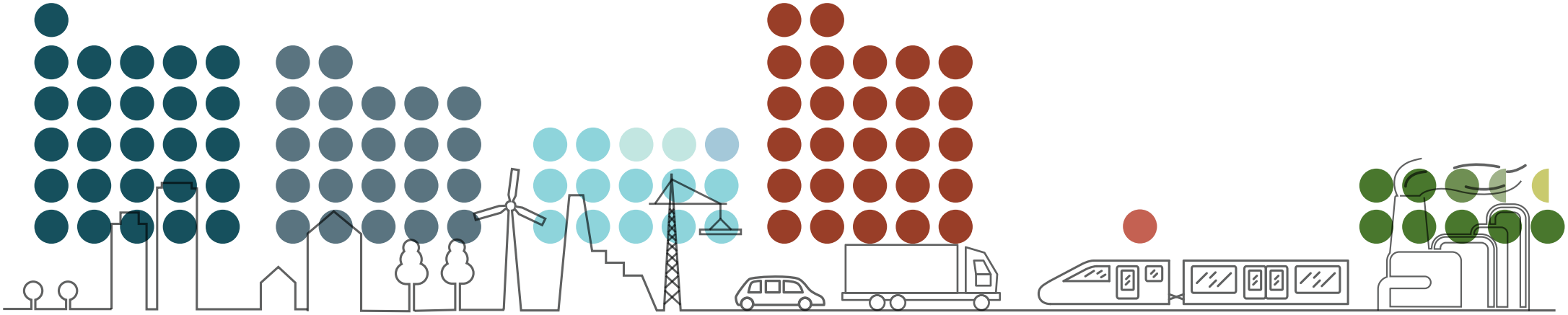
Chart shows the number of inventories reported by 60 C40 cities
Inventories are shown against the year in which they were publicly reported

A global standard for city-wide GHG emission inventories enables comparison, benchmarking and aggregation



GPC BASIC level GHG emissions data for 60 C40 cities. To explore more, visit the GHG Emissions Explorer at https://resourcecentre.c40.org/resources#measuring-ghg-emissions

City-wide GHG emission inventories help us understand where a city's GHG emissions come from. Across 60 C40 cities, buildings represent 60% of the total GHG emissions



= 1%

BUILDINGS

- 26% COMMERCIAL AND INSTITUTIONAL
- 22% RESIDENTIAL
- 12% MANUFACTURING AND CONSTRUCTION
- 2% ENERGY INDUSTRY
- 1% OTHER

TRANSPORTATION

- 27% ROAD
- 1% RAILWAYS

WASTE

- 7% LANDFILL
- 1% WASTEWATER
- 0.5% INCINERATION
- 0.5% BIOLOGICAL TREATMENT

Where incineration is used to generate energy, emissions are captured under buildings scope 2

Emissions from airborne and waterborne journeys that both originate and terminate within city boundaries are negligible. Trans-boundary air and water travel are not captured at GPC BASIC level

Average of latest available GPC BASIC level GHG emissions data for 60 C40 cities. To explore more, visit the GHG Emissions Explorer dashboard at https://resourcecentre.c40.org/resources#measuring-ghg-emissions

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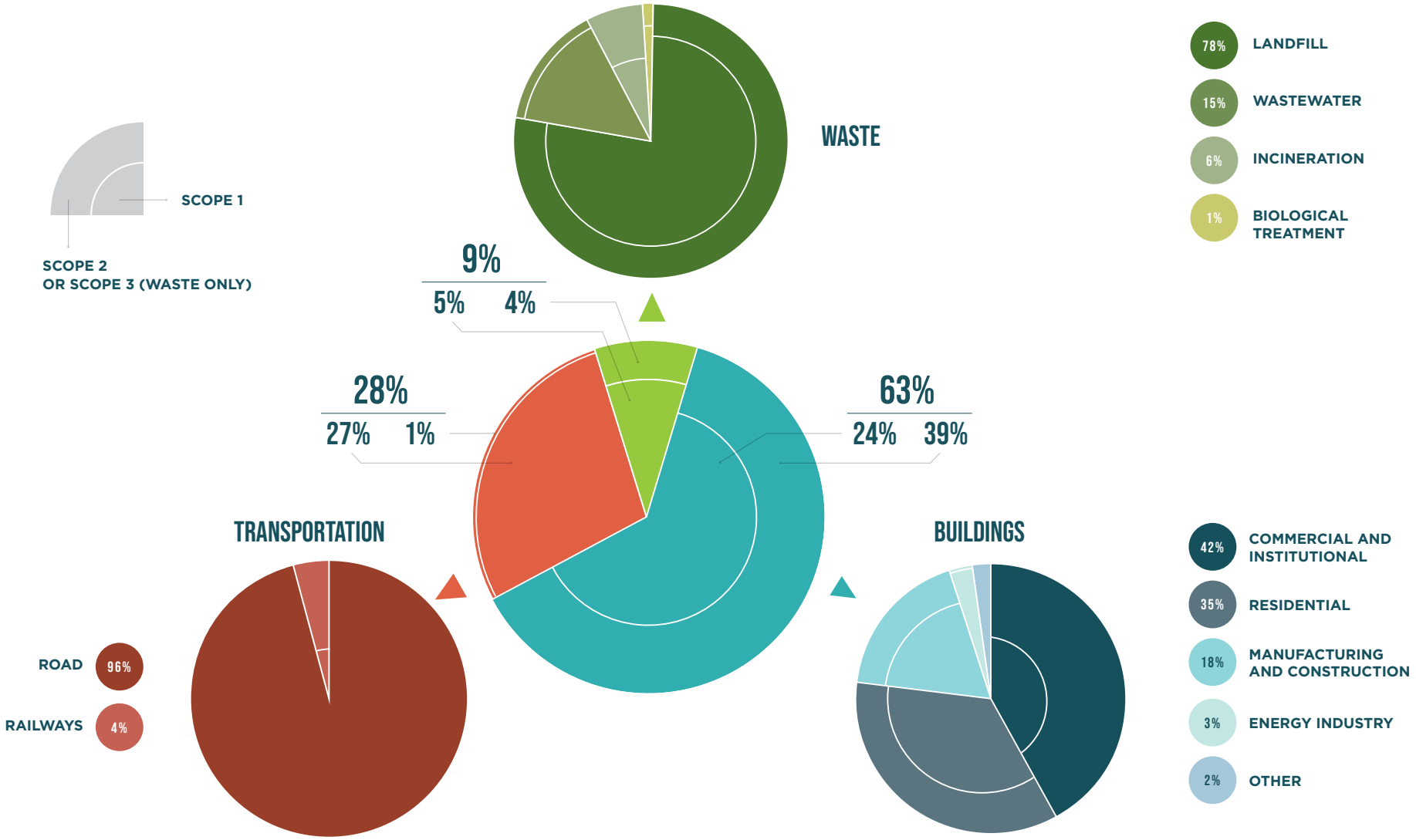

Scope 1: GHG emissions from sources located within city boundary, e.g. direct fuel combustion
Scope 2: GHG emissions from the use of grid-supplied energy
Scope 3 (Waste only): GHG emissions that occur outside city boundary as a result of city activity, e.g. waste exported

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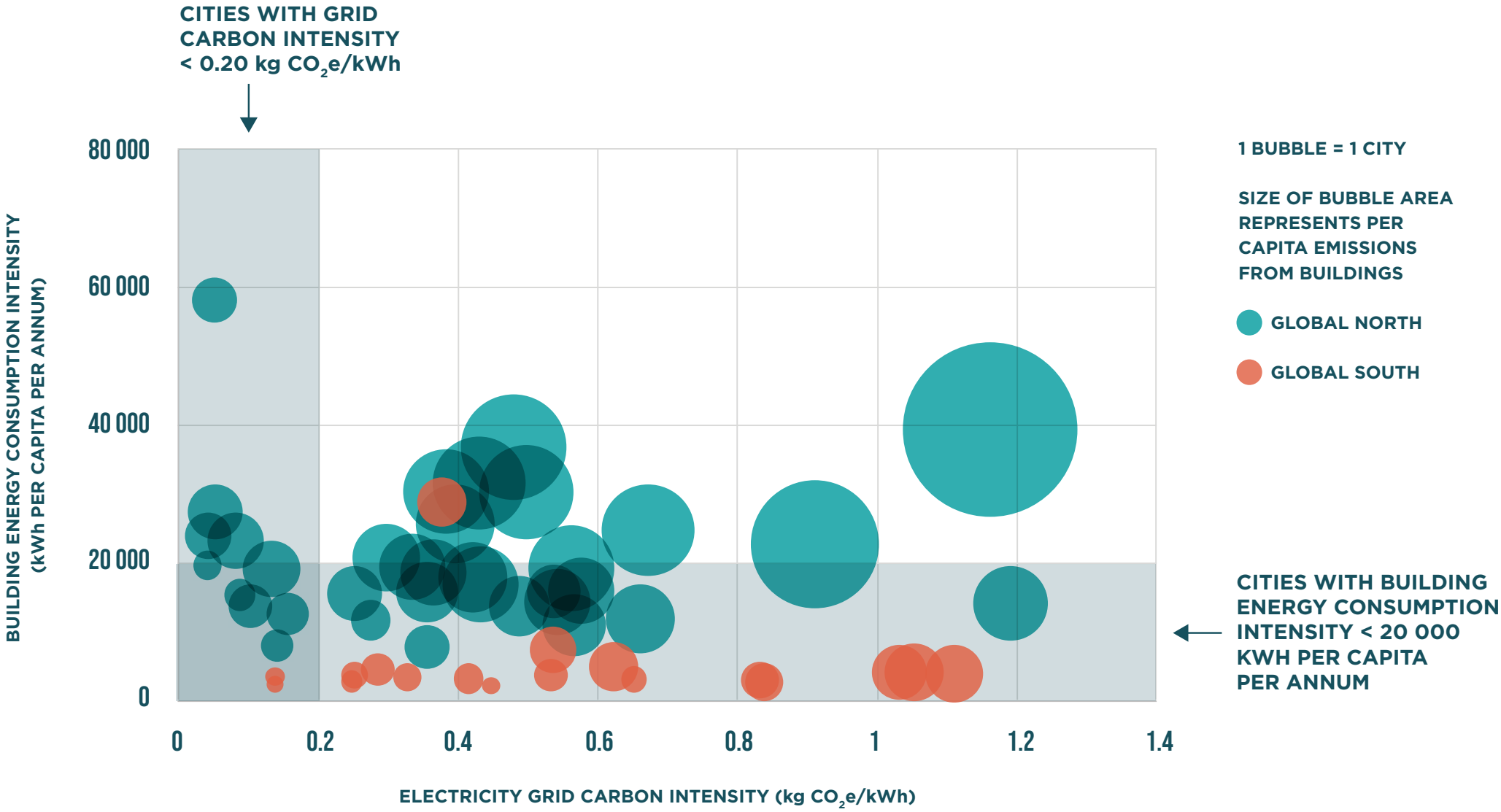
A global standard for measuring city-wide GHG emissions allows differences and similarities between cities to be explored. For example, in the Global South, waste emissions can represent up to 45% of a city's footprint

Latest available GPC BASIC level GHG emissions data, by sector. To explore more, visit the GHG Emissions Explorer dashboard at https://resourcecentre.c40.org/resources#measuring-ghg-emissions

Fossil-fuel based energy use is the dominant source of GHG emissions across C40 cities, noting a greater reliance on petroleum fuels in the Global South and a greater proportion of natural gas and grid energy use in the Global North

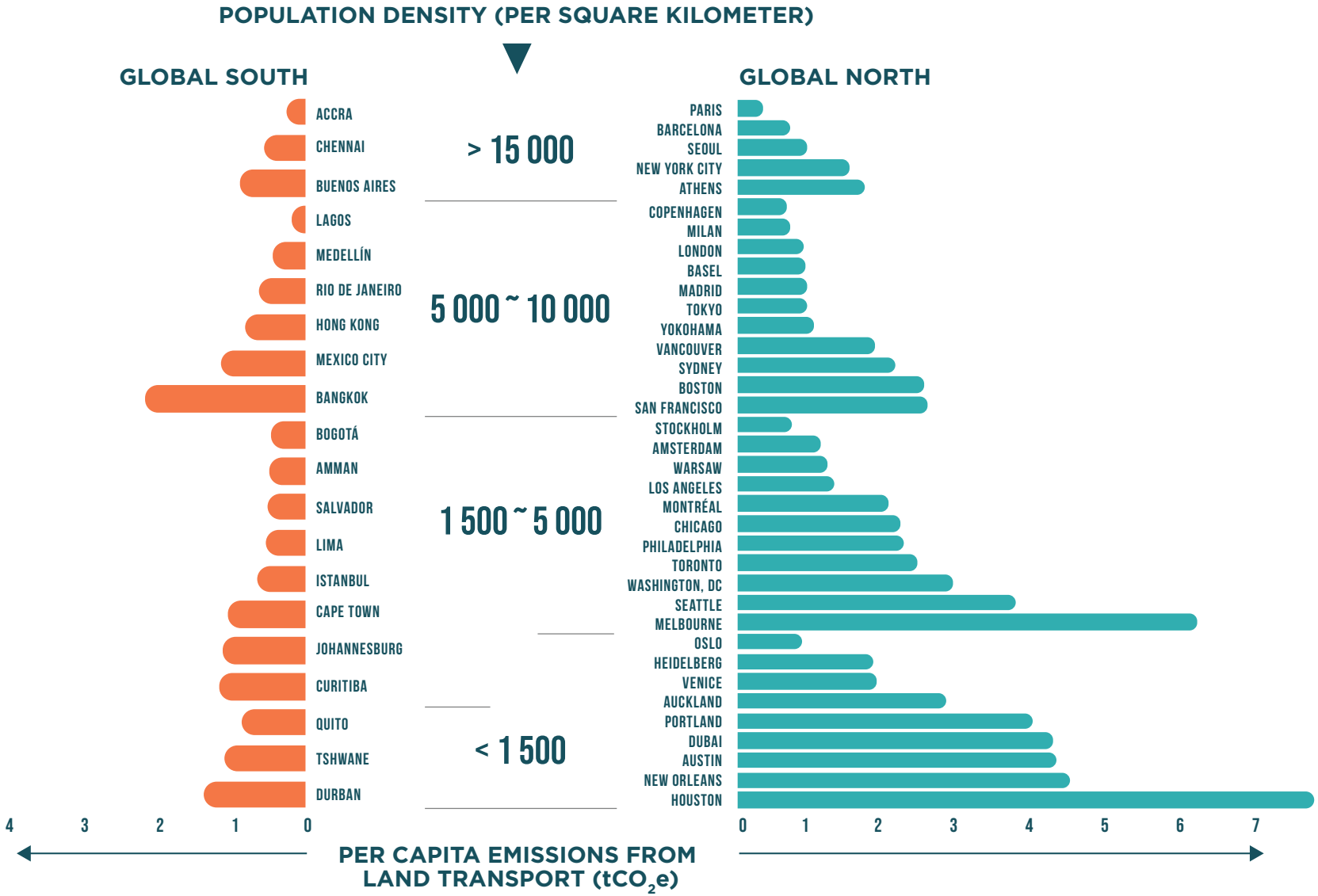
Average of energy consumption profiles reported in latest available GPC BASIC level GHG inventories from 19 C40 cities in the Global South and 35 C40 cities in the Global North, with each city weighted equally. To explore more, visit the GHG Emissions Explorer dashboard at https://resourcecentre.c40.org/resources#measuring-ghg-emissions

GHG emission inventories reveal how improving building energy efficiency and reducing electricity grid carbon intensity can lead to lower building-related GHG emissions



Latest available GPC BASIC level GHG emissions data for 60 C40 cities. To explore more, visit the GHG Emissions Explorer dashboard at https://resourcecentre.c40.org/resources#measuring-ghg-emissions

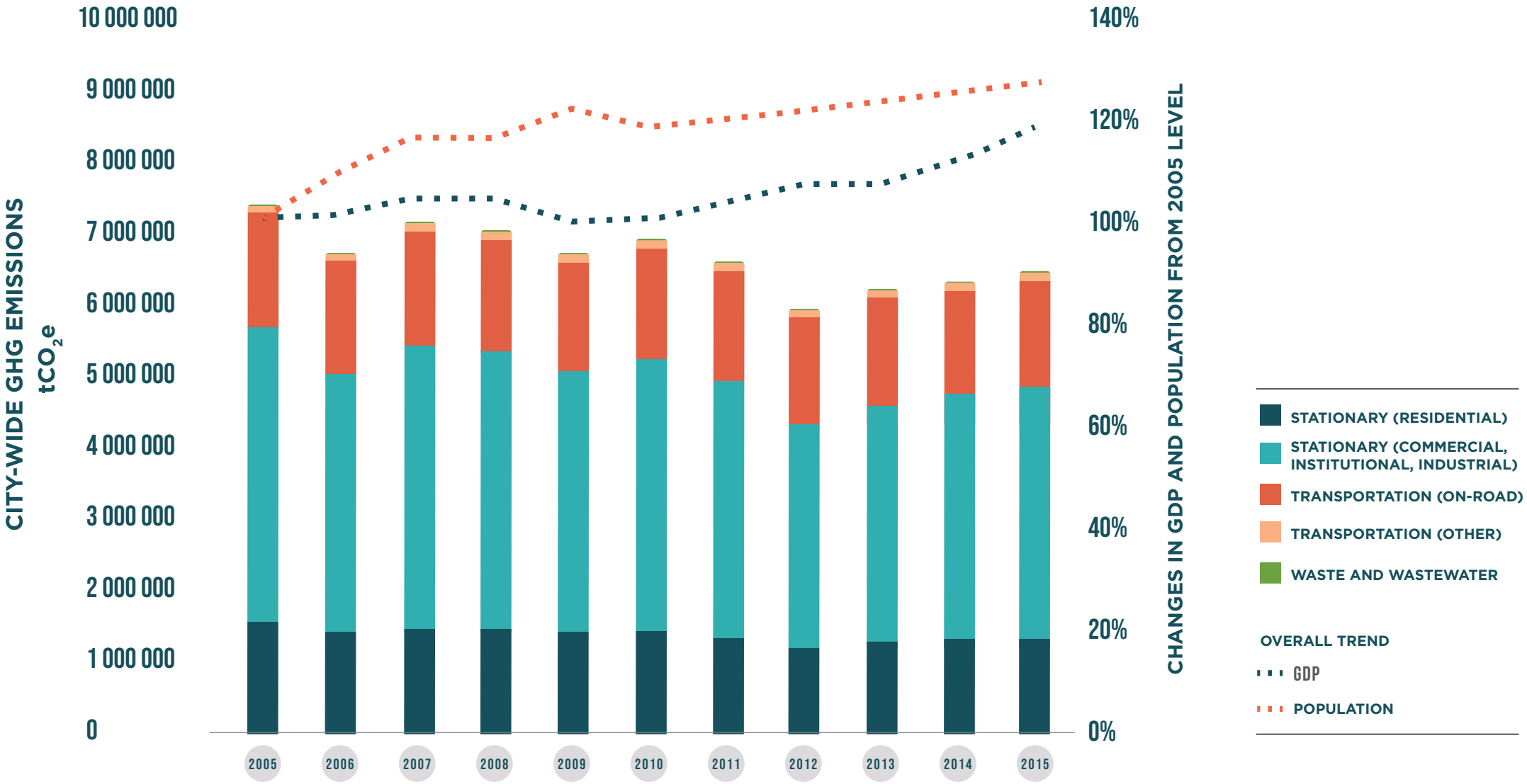
GHG emission inventories reveal how compact and connected city planning can result in lower emissions from land transport



Land transport includes road and rail transport of people and goods

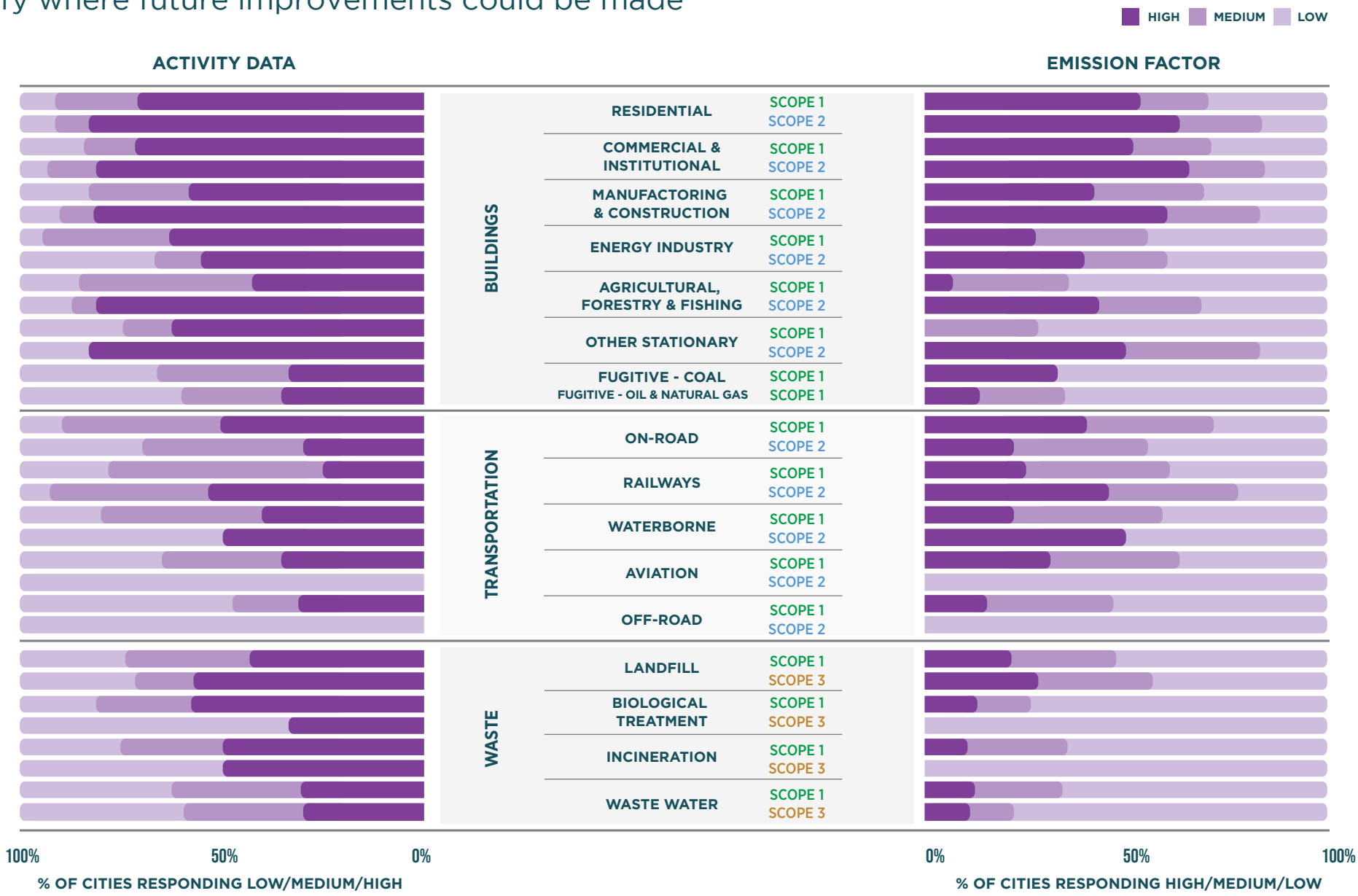
Latest available GPC BASIC level GHG emissions data for 60 C40 cities. To explore more, visit the GHG Emissions Explorer dashboard at https://resourcecentre.c40.org/resources#measuring-ghg-emissions

Regular and consistent reporting of GHG emissions supports monitoring of performance over time. Cities like Boston can demonstrate that emissions have peaked while the population and economy have grown



To explore more, visit the GHG Emissions Explorer dashboard at https://resourcecentre.c40.org/resources#measuring-ghg-emissions

Assessing GHG emission inventory data quality helps identify where future improvements could be made



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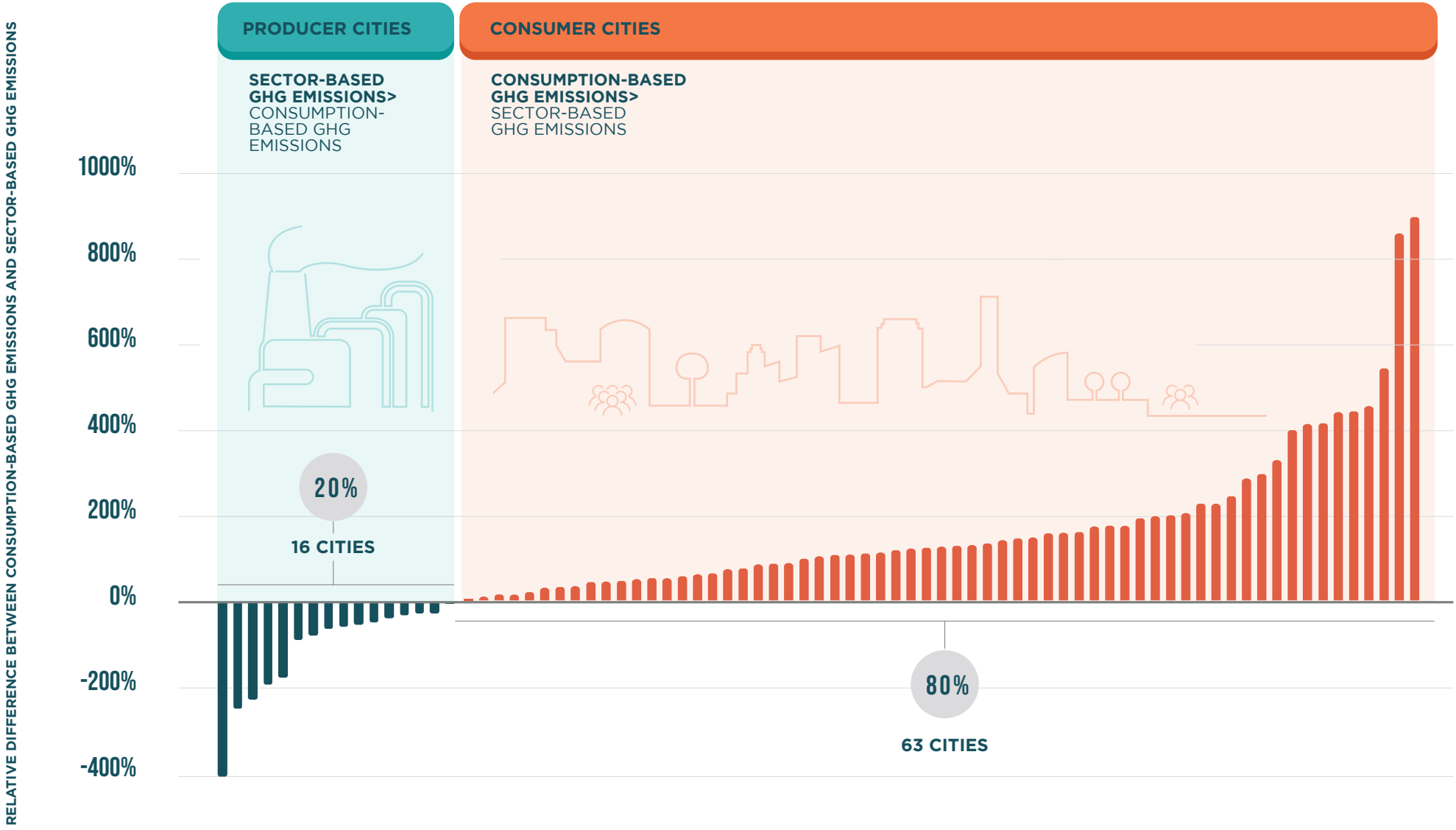
Average data quality reported in latest available GPC BASIC level GHG inventories from 60 C40 cities. To explore more, visit the GHG Emissions Explorer dashboard at https://resourcecentre.c40.org/resources#measuring-ghg-emissions

Assessing the supply chain emissions associated with the goods and services used by a city's residents helps identify opportunities to reduce emissions beyond the city boundary

80% of C40 cities have supply chain GHG emissions that are larger than the emissions occurring within the city itself



View the full report "Consumption-based GHG Emissions of C40 Cities" at:
https://resourcecentre.c40.org/resources#consumption-based-ghg-emissions

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