
ASSESSING LONDON'S INDIRECT CARBON EMISSIONS

Summary of the application of the BSI PAS 2070 standard
to London

1. Introduction

London has a history in leading the way in developing city-level emissions inventories. In 2004 it was one of the first cities to develop a comprehensive emissions inventory through the London Energy and Greenhouse Gas Inventory (LEGGI). This inventory set the standard for other inventories and has continued to remain in line with national and international reporting standards and methodologies.

With a growing trend to measure scope 3 supply chain emissions, and a lack of international standards for cities on this, in 2011 the Mayor of London started a process of working with the British Standards Institute (BSI) and a steering group of experts to produce the 'PAS 2070 Specification for the assessment of greenhouse gas emissions of a city'. An initial version of the PAS 2070 was produced in 2013, with a revised version of the PAS 2070 being produced in 2014 (PAS 2070: 2013+A1:2014, herein referred to as 'PAS 2070'). Alongside the revised PAS 2070, a case study was published which set out how the PAS 2070 was applied to London. The PAS 2070 is the UK's first standard produced for wider city-level emissions, and the London case study is one of the first of its kind internationally. Combined they provide an example that other UK, European and global cities can follow.

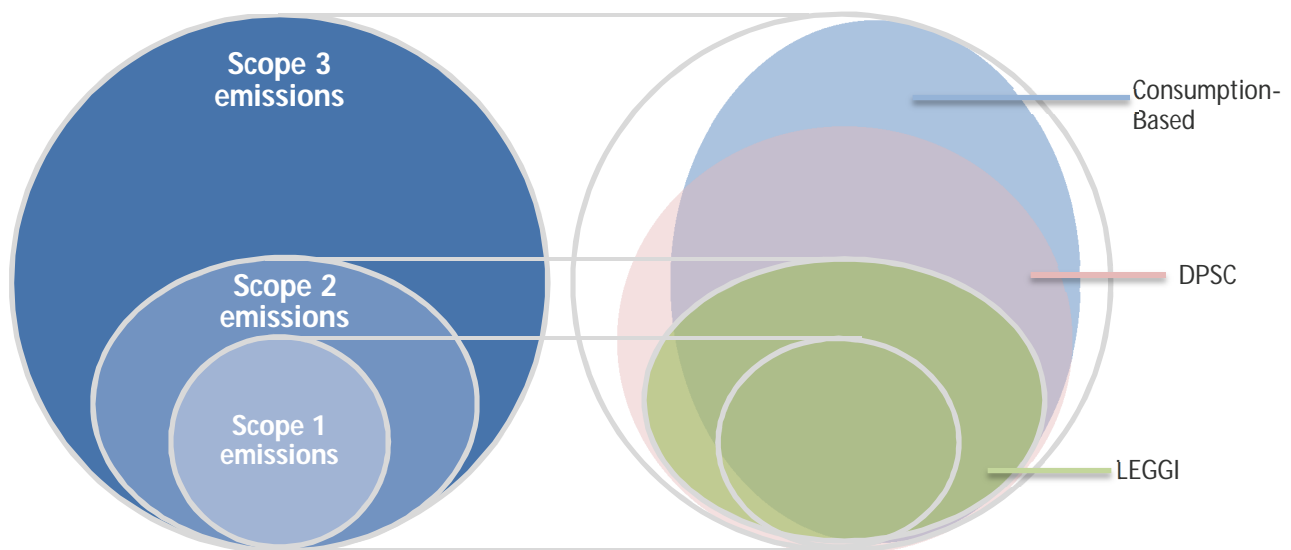
This Executive Summary presents the headline results of the application of the methodology in London. The results are based on greenhouse gas emissions levels from 2010 which was the last year that full data was available for analysis. The results are not a formal measurement of London's emissions and do not assign responsibility for emissions; the LEGGI will continue to serve that purpose. Rather the assessment should be seen as an indication of the potential wider scope of emissions which could be attributable to London, and a tool for local authorities, policy makers and other stakeholders to assess the implications of these.

2. The methodologies

The PAS 2070 provides two methodologies for measuring a city's wider greenhouse gas emissions. Both include the full basket of greenhouse gases and are represented as CO₂ equivalent (CO₂e):

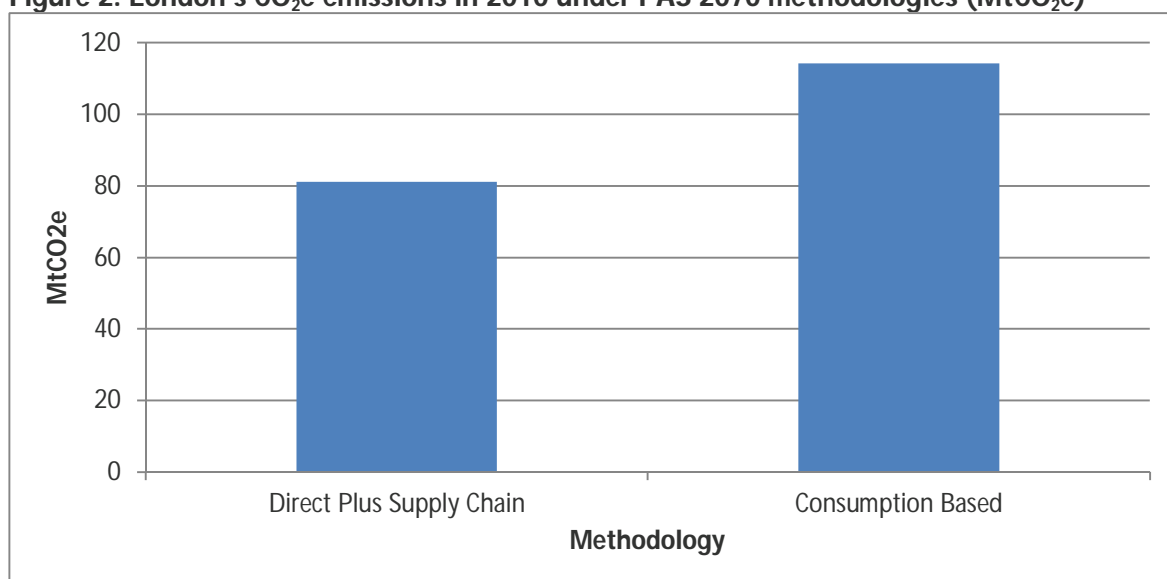
- The Direct Plus Supply Chain (DPSC) methodology includes all greenhouse gas emissions that occur within a city's geographic boundary, as well as the supply chains associated with the city's major products and services including waste and waste water, construction, food and transport.
- The Consumption-Based methodology measures the CO₂e emissions from the products and services that London consumes. Therefore CO₂e emitted as a result of products and services that are produced in London, but not consumed in London, are not included. For the London case study, an Environmentally Extended – Multi Regional Input Output model (EE-MRIO) is applied which uses expenditure data to assess the consumption of different products and services across sectors.

Figure 1 illustrates the different scopes in methodology in comparison to the LEGGI. Further information on both methodologies is available in the PAS 2070 and the London PAS 2070 case study available at <http://shop.bsigroup.com/Browse-By-Subject/Environmental-Management-and-Sustainability/PAS-2070-2013/>.

Figure 1: Comparison of measurement scopes

3. Top level results

Under the DPSC methodology CO₂e emissions attributable to London in 2010 were 81.06 million tonnes (MtCO₂e). Under the Consumption-Based methodology they were 114.1 MtCO₂e (please see Figure 2.) Due to the differing methodologies, particularly boundaries and estimation methods, it is not advised that these are compared directly. Rather they should be seen as two separate indicators of the potential reach of CO₂e emissions attributable to London. They are therefore assessed separately here.

Figure 2: London's CO₂e emissions in 2010 under PAS 2070 methodologies (MtCO₂e)

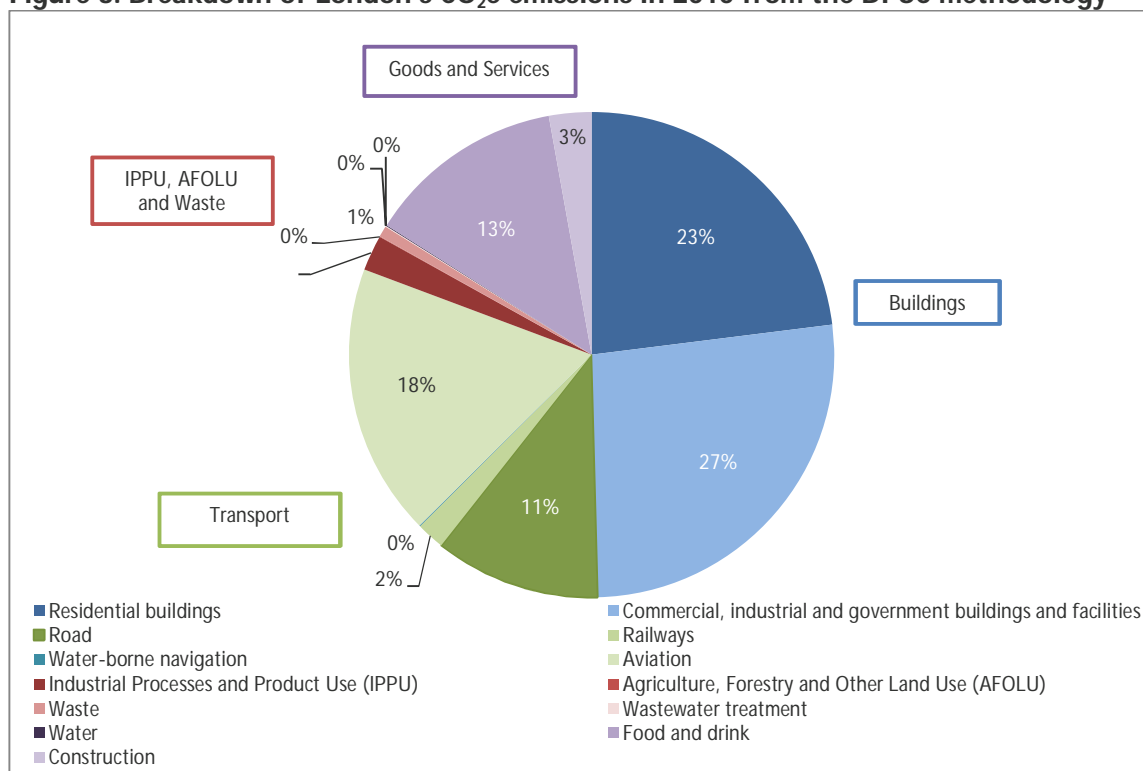
As would be expected, these assessments are higher than the LEGGI results for 2010 which were 44.06 MtCO₂. This is due to the far greater scope of emissions that have been measured, and the

more indicative estimation methods used, particularly in the Consumption-Based methodology. It is therefore not advised to make direct comparisons between the LEGGI and PAS 2070 assessments.

4. Direct Plus Supply Chain (DPSC) methodology

The breakdown of emissions under the DPSC methodology is represented in figure 3. This shows that 40.21 mtCO₂e, or 50 percent of London's DPSC emissions are from buildings. A further 25.21 mtCO₂e (31 percent) are from transport, with road transport and aviation being the major contributors. Goods and services make up a further 18 percent of emissions, with food and drink being the major contributor. Industrial Processes and Product Use (IPPU) is responsible for around 2.4 percent of London's emissions under the DPSC methodology, with Agriculture, Forestry and Other Land Use (AFOLU) and waste and wastewater treatment having only negligible CO₂e emissions at less than one percent.

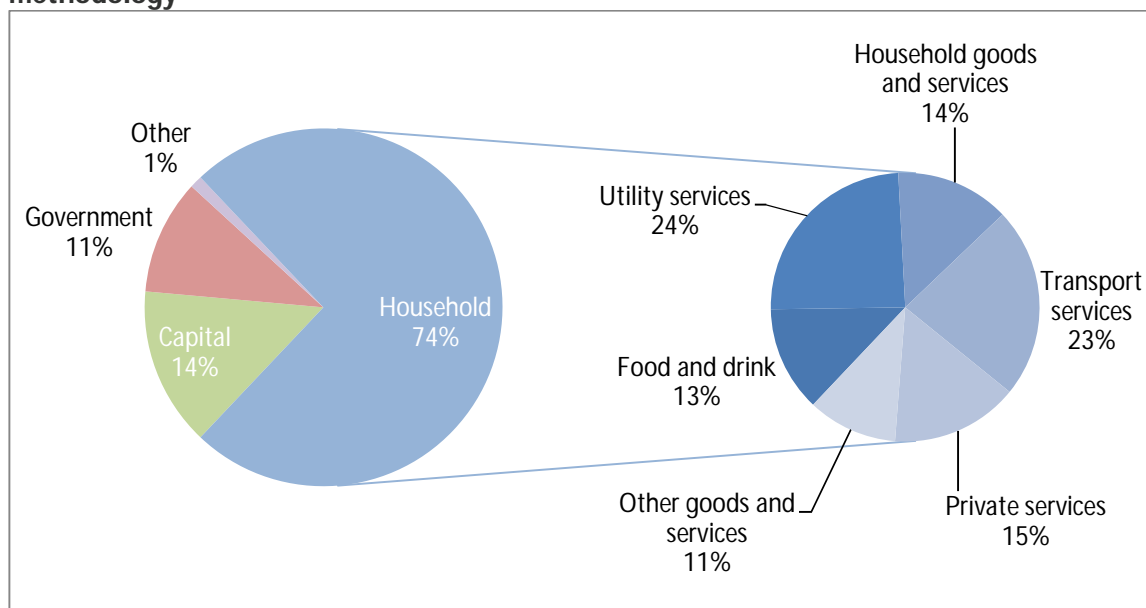
Figure 3: Breakdown of London's CO₂e emissions in 2010 from the DPSC methodology



5. Consumption-Based methodology

The Consumption-Based methodology shows the majority (74 percent) of CO₂e emissions are from household consumption. This comprises a number of sub-sectors, across which CO₂e emissions are fairly evenly distributed. Utility services (predominantly electricity and gas) and transport services are the most significant contributors at 24 percent and 23 percent of that sector's emissions respectively.

Figure 4: Breakdown of London's CO₂e emissions in 2010 from the Consumption-Based methodology

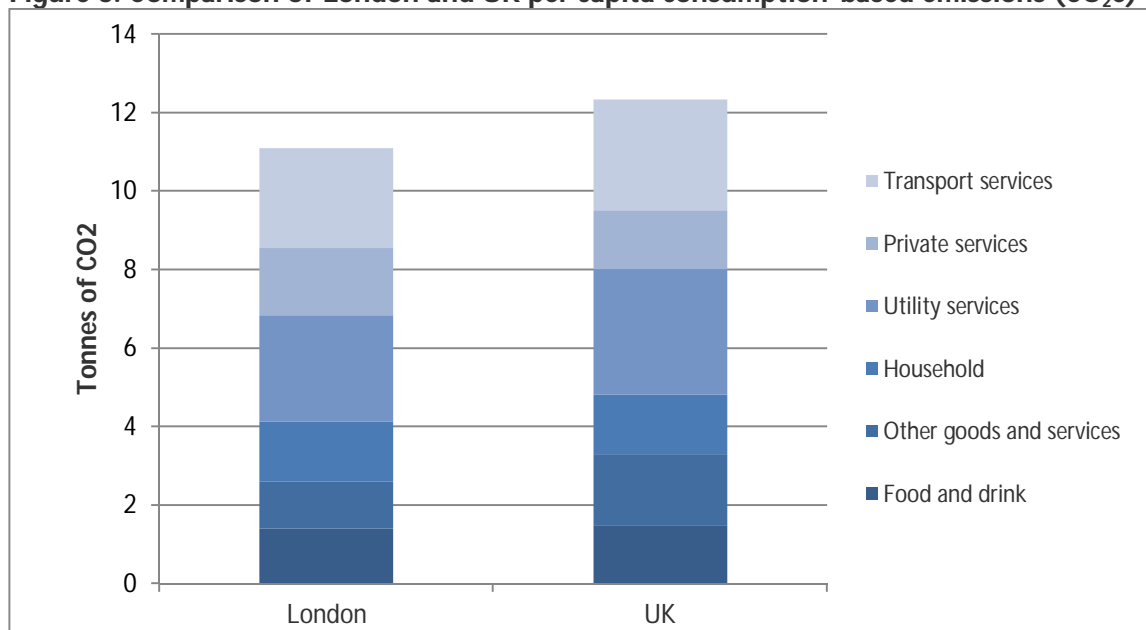


It should be noted that the Government, capital expenditure by businesses and 'other' have not been broken down by spend category in the Consumption-Based methodology, so further analysis has not been provided in this report.

Comparison with UK emissions

Government publishes UK-wide consumption-based greenhouse gas emissions. Comparison of these shows that, as with direct emissions, London's per capita consumption-based emissions continue to be lower than the UK average. Figure 5 shows that in 2010, London's consumption-based emissions were 11.1 tonnes CO₂e per capita, whereas the UK average was 12.34 tonnes CO₂e per capita. This is ten percent lower than the national average.

Figure 5: Comparison of London and UK per capita consumption-based emissions (CO₂e) in 2010



6. Mayoral activity to address greenhouse gas emissions

Through the Mayor's Climate Change Mitigation and Energy Strategy, and his water, waste and food strategies, the Mayor has policies and programmes in place to address emissions from many of the major sources identified in the PAS 2070 case study. These include:

- Buildings energy efficiency – RE:NEW and RE:FIT are reducing emissions from London's homes and public sector buildings.
- Energy supply to buildings – The Mayor's target to supply 25 percent of London's energy from local decentralised sources is supported by the Decentralised Energy Project Delivery Unit (DEPDU) and initiatives such as London's piloting of License Lite.
- Food – The Mayor's Food Strategy and his London Food Board provide support to make London's food system healthier and more sustainable. This includes initiatives to shorten food supply chains and to prioritise local, seasonal produce within public procurement and through London's wholesale markets.
- Transport – Increasing the number of electric buses and electric vehicles on London's roads, as well as improvements to public transport.

Sectors not covered by these policies and programmes, such as aviation, consumed household products and consumed private services are primarily scope 3 emissions which are predominantly outside of the Mayor's current scope of powers, and indeed UK Government powers. Nevertheless, the assessment of these emissions provides a useful indication of the potential wider impacts of the consumption-based emissions from a geographic area. More information on these policies and programmes can be found at www.london.gov.uk.

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