

TRANSPORT FOR LONDON

SAFETY, HEALTH AND ENVIRONMENT ASSURANCE COMMITTEE

SUBJECT: **CARBON FOOTPRINTING IN TFL**

DATE: **1 DECEMBER 2010**

1 PURPOSE AND DECISION REQUIRED

- 1.1 This paper reviews TfL's approach to carbon footprinting with a view to current good practice, stakeholder expectations and delivering business benefits.
- 1.2 The Committee is asked to note the paper.

2 ABOUT CARBON FOOTPRINTING

- 2.1 TfL has been measuring and reporting carbon dioxide (CO₂) emissions related to its transport and wider corporate operations for some time now, and is committed to implementing measures to mitigate these and helping the Mayor achieve his target of a 60 per cent reduction in London's CO₂ emissions by 2025 compared to 1990 levels.
- 2.2 To date, organisations have typically only reported on the CO₂ emissions directly associated with their activities but recently there has been a growing interest in the impact of the indirect emissions produced by organisations' supply chain, and increasing pressure from stakeholders to measure and address these. Construction projects such as the 2012 Games have been scrutinised.
- 2.3 There is also an increasing focus on the emissions that are 'embodied' in products purchased by organisations, especially those that are claimed to deliver substantial CO₂ benefits in use. Such embodied emissions can include those arising from mining, manufacture and transport of materials used in the production of the goods that the organisation uses, as well as emissions arising from end of life retirement or disposal. Carbon embodied in products should be considered both during projects (eg for products utilised during construction) and also during the operation phase or service provision (eg products used during operation and impacts from maintenance activities).
- 2.4 The draft Mayor's Climate Change Mitigation and Energy Strategy proposes that the GLA Group leads by example through using 'a comparative methodology for measurement and reporting of CO₂ emissions across the GLA Group' and 'procuring low carbon products and services, working through the GLA Group's Responsible Procurement policy and using the GLA Group's procurement as a model to the wider public sector'. This is being addressed through the development of the footprinting approach and the procurement initiatives on the Carbon Disclosure Project and carbon reduction guidance (see 3.14 below).

- 2.5 The most widely recognised standard used to provide consistent definitions and methodology for the carbon footprinting process is the international Greenhouse Gas Reporting Protocol from the World Resources Institute (WRI). This forms the basis of the UK's Greenhouse Gas Reporting Guidelines. The Protocol covers both direct and indirect emissions and divides them into three 'Scopes'.
- (a) Scope 1 – Purchased gas (including that used for heating), on-site power generation, company owned vehicles;
 - (b) Scope 2 – Purchased electricity; and
 - (c) Scope 3 – CO₂ emissions arising as a consequence of the activities of the company, but arising from sources not owned or controlled by it, for example from product use, production of purchased materials, outsourced activities, contractor owned vehicles, waste disposal and employee business travel. This is an optional reporting category and companies have discretion over which categories they choose to report.

3 TfL'S EXPERIENCE WITH CARBON FOOTPRINTING

- 3.1 For some years, TfL has been measuring and reporting CO₂ emissions in its annual Environment Report and there is a good level of reporting of CO₂ emissions from the three WRI Scopes.
- (a) Scope 1 – TfL reports for purchased gas, Greenwich Power Station and the fuel for the bus network and support fleet vehicles;
 - (b) Scope 2 – TfL reports emissions from all purchased electricity in head office buildings, construction works, stations and depots, street lighting and for rail traction on the London Underground, DLR, Tramlink and London Overground; and
 - (c) Scope 3 – TfL reports CO₂ emissions from fuel use in taxi and private hire vehicles, contracted street operations and the grey fleet (private vehicles used on company business). To date, TfL has not reported on Scope 3 emissions such as embodied carbon in materials, emissions arising from other supply chain operations, waste generation, water consumption and employee business air travel, although it has collected some of the data necessary to do so.
- 3.2 CO₂ emissions for Scopes 1, 2 and 3 currently reported in the Environment Report are of the order of 2m tonnes annually.
- 3.3 TfL is a large organisation that delivers a complex range of transport and related services. Parts of the organisation have undertaken carbon footprints of their services, largely focusing on Scope 1 and 2 emissions. Some were early adopters of the techniques and the footprint methodology has strengthened over time. Carbon footprints have been done for a number of reasons, generally to assist with identifying and costing opportunities for CO₂ reduction but sometimes as a helpful communications tool.
- 3.4 There are a number of examples of carbon footprinting experience in TfL, some of which are outlined below.

London Underground

- 3.5 London Underground has produced a carbon footprint covering Scope 1 and Scope 2 CO₂ emissions and a limited range of Scope 3 emissions (waste management and business travel) since 2007. In addition, a footprint developed by Tube Lines in 2008 established that the embodied carbon in materials accounted for 92 per cent of the overall (direct and indirect) energy used in its track and maintenance works.

Crossrail

- 3.6 Crossrail has commissioned several iterations of its carbon footprint over the last few years, with a new one due out shortly. Until recently, the Crossrail carbon footprint has been entirely predictive, ie forecasting emissions from construction and operational services, neither of which had begun at the time the footprint was calculate. The last Crossrail carbon footprint predicted that during construction, embodied materials-related CO₂ emissions would be in the order of 930,000 tonnes, compared with an anticipated 770,000 tonnes of direct CO₂ emissions from construction activities.
- 3.7 In addition, the footprint model predicts that overall, during operation, compared with the base case, annual savings in the order of 70,000 to 225,000 tonnes of CO₂ may be achieved. This is largely from the displacement of car journeys and replacement of diesel trains on the existing network and the main factor is the replacement of diesel services with modern electric ones. The footprinting exercise has made it possible to promote these positive aspects.

DLR Dagenham Dock extension

- 3.8 In 2008, DLR commissioned a carbon footprint report of the Dagenham Dock extension. This estimated that 66,000 tonnes of CO₂, in the form of embodied carbon in the main construction materials, accounted for 62 per cent of the total construction phase footprint.

Surface Transport Highway Maintenance

- 3.9 TfL has been working in partnership with the three Highways Maintenance and Works Contractors to establish a carbon footprint baseline so that carbon footprint data can be reported to TfL. TfL and the contractors will be exploring the opportunity to report tonnes of embodied CO₂ (Scope 3) from waste, purchased materials and staff commuting, to set CO₂ reduction targets and to develop a Service Performance Indicator.

Tramlink

- 3.10 Tramlink commissioned a carbon footprint to look at primary energy use (including electricity) of the tram system and associated infrastructure and facilities as well as auxiliary transport requirements for general maintenance of the network. The footprint included CO₂ emissions from water and waste management activities. Due to the relative lack of data on procurement of materials, only the key materials associated with planned maintenance were included. The assessment did not include emissions associated with ad hoc use of materials, such as with repairs or accidents.

Surface Transport London Buses

- 3.11 Surface Transport is planning to establish and monitor the CO₂ emissions from the manufacture, operation and disposal of the New Bus for London. It will also monitor the lifetime cost of carbon for the new hydrogen buses.

TfL-wide footprinting

- 3.12 TfL has explored the production of a full carbon footprint for the organisation, looking at a full range of Scope 1, 2 and 3 CO₂ emissions. As indicated above, information in relation to Scope 1 and 2 emissions was already generally available through established reporting processes. To develop a fuller Scope 3 than that previously available, the study used a ‘spend-based’ approach endorsed by the WRI Protocol, whereby expenditure amounts and categories from the TfL SAP finance system were allocated CO₂ emission proxies.
- 3.13 The study identified an additional 692,000 tonnes embodied in purchased materials and services and direct supplier emissions, as well as 22,000 tonnes CO₂ annually from transport, leased assets, waste and water consumption, above the approximately 2m tonnes currently reported in the Environment Report. It was not possible to identify the embodied emissions from materials used for construction purposes or new capital works as central spend data did not provide that level of detail.
- 3.14 The GLA and TfL Responsible Procurement teams are examining the benefits of asking key organisations in TfL’s supply chain to report on their CO₂ emissions through the Carbon Disclosure Project. The Carbon Disclosure Project is an independent not for profit organisation holding the largest database of primary corporate climate change information in the world. Early results show that the main reporting from these companies has covered Scope 1 and 2 CO₂ emission sources. TfL has also recently issued ‘Reducing CO₂ Emissions – Guidance for Procurement Agents’ which covers the range of carbon reduction options and how they can best be delivered at different stages of the procurement process.

4 BUSINESS BENEFITS AND EXTERNAL DRIVERS

- 4.1 TfL has recently been considering its approach to further carbon footprinting, looking at the benefits of measuring and reporting a ‘pan-TfL’ footprint for embodied carbon and fuller Scope 1, 2 and 3 emissions. There is a resource commitment necessary for undertaking any of these further developments and the business benefits that could be achieved should clearly outweigh these, and funding would need to be available.

Reporting to stakeholders

- 4.2 There has been increasing stakeholder interest in aspects of TfL’s carbon footprinting. For example, there has been recent media interest in the carbon impact of projects such as the Barclays Cycle Hire Scheme and hydrogen buses. Carbon footprinting provides a useful means of communicating a fuller picture of the environmental impacts of projects such as these.
- 4.3 Having an approach that shows more comprehensive and detailed measurement and management of CO₂ emissions can help to convey performance, progress and a reflection of the complexity of TfL’s operations. It

is though important to emphasise, that the majority of TfL's overall emissions are direct emissions, even where embodied (materials) emissions add up to a sizeable amount. For example, Crossrail's footprint shows that, over time, by far the majority of CO₂ emissions from the project will occur as a result of the actual running of the railway rather than from construction.

Business opportunities

- 4.4 Organisations carry out a detailed carbon footprint to identify and then deliver CO₂ emissions reductions as part of improvements to products, processes or services. Carbon footprinting can be used to identify energy efficiency or resource management options that can also deliver associated cost savings. It can be used to help demonstrate the benefits of a proposed scheme and to develop a strategy and substantiate claims about low carbon or more sustainable products and services. Organisations can consider discounted carbon management, whereby CO₂ savings are accounted for over the lifetime of an asset, taking into account the embodied carbon savings identified in both project construction and operation.
- 4.5 To achieve such benefits, organisations must be in a position to respond to the opportunities identified in the footprinting process by, for example, changing designs or material specifications. Benefits can be gained from carrying out a carbon footprint at the earlier stages of project development when more opportunities are likely to be available. These early stage footprints need not be unduly detailed to give a broad idea of where material opportunities might be available.
- 4.6 While parts of TfL have been able to show CO₂ emissions reduction through carbon footprinting, there are fewer examples available that have demonstrated cost savings associated with reduced consumption of energy or other materials savings. A good example demonstrating cost savings is where Tube Lines used its carbon footprint to place a monetary value on work to reduce carbon emissions from maintenance and waste management activities.

5 PROPOSED APPROACH

- 5.1 TfL's current approach to carbon footprinting meets good practice as set out by the WRI and the UK's Greenhouse Gas Reporting Guidelines. Relevant Scope 3 and embodied carbon emissions have been analysed for material programmes such as Crossrail, Tube Lines, Surface Transport's highways maintenance and the DLR Dagenham Dock extension.
- 5.2 It is important to ensure that carbon footprint analysis is targeted at initiatives where the likely direct and indirect CO₂ emissions would be material to TfL's total emissions. It is therefore proposed that carbon footprint analysis is only considered for activities where one (or more) of the following criteria arise:
 - (a) Direct and indirect emissions are considered to be clearly material in relation to the two million tonnes of CO₂ emissions currently reported in the Environment Report;
 - (b) There are opportunities for TfL's reputation to be significantly enhanced;

- (c) Support is provided to responsible procurement approaches and initiatives. The analysis should seek to understand and monetise the benefits of energy and materials efficiencies as well as the value of a decrease in CO₂ emissions;
- (d) Significant construction projects or large scale maintenance and improvement works are to be carried out; or
- (e) High profile projects that may face particular scrutiny by external stakeholders are planned. This will have the added benefit of informing a more considered carbon mitigation strategy and deliver cost and carbon savings during construction as well as operation.

6 RECOMMENDATION

6.1 The Committee is asked to NOTE the paper.

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