

DEVELOPING A HARMONISED APPROACH TO CARBON REPORTING

ENVIRONMENTAL SERVICES ASSOCIATION

1 Background

ESA and our Members are strongly committed to reducing greenhouse gas emissions associated with managing the economy's waste carbon. As part of this process, we have developed a sectoral approach to carbon reporting.

The waste management industry operates within a dynamic regulated market where technologies to optimise recovery of value from waste will continue to evolve and we hope our annual reporting of greenhouse gas emissions will help policymakers to improve alignment of economic incentives with environmental outcomes.

ESA reviewed the Waste Sector Protocol of EpE (*Enterprises pour l'Environnement*: forty leading French companies pledged to protect the environment) and contributed to its December 2008 version. International support for this Protocol is being sought to provide a common sectoral reporting tool.

In managing wastes generated across the global economy, the world's waste management sector is estimated to account for 3% of greenhouse gas emissions, largely through methane emissions from landfill. However, within the UK, as well as providing a third of the Country's renewable electricity the waste management industry has been one of the most effective sectors in reducing greenhouse gas impacts. According to the UK Committee on Climate Change, the sector's emissions fell by 58% from 1990 to 2006.

By continuing to recover even more materials and energy from waste, the Committee on Climate Change estimates 11% further reductions could be made by 2020, based on decreasing emissions from landfill. The Committee on Climate Change also believes the waste management sector should be able to achieve emission reductions of 80% by 2050, compared to 1990, a full sectoral contribution to the UK's targets in the Climate Change Act.

As well as reducing its own direct emissions, principally by diverting biodegradable material from landfill, the waste management sector's activities also contribute towards indirect carbon savings made elsewhere in the economy.

The use of recycled material in new products, both domestically and abroad, offsets the requirement for energy intensive production from virgin materials, whilst generation of renewable energy helps to reduce the economy's reliance on fossil fuels. To gain a complete understanding of greenhouse gas impact of waste management, it is necessary to have regard to other sectors' carbon savings facilitated by our industry.

ESA believes that any methodology for the allocation of greenhouse gas emissions arising from waste processes should be robust, simple and transparent. To account for the waste management sector's carbon emissions and the associated benefits derived by other sectors from waste management activities, ESA has developed a set of carbon allocation principles which we expect to form the basis of a common industry standard for reporting emissions. This annual reporting is based on the EpE Waste Sector Protocol and is broken down into the following internationally recognised categories:

- direct emissions resulting from an operator's activities;
- indirect energy use emissions arising from an operator's purchase of electricity; and
- avoided emissions resulting from a company's activities, including savings made by other sectors.

The principal greenhouse gases included in this reporting are CO₂, CH₄ (methane) and N₂O (nitrous oxide).

2 Purpose

ESA's purpose is to improve debate on issues surrounding waste management's carbon emissions and to help policy makers to assess how to optimise the economy's greenhouse gas emission profile.

3 Consolidated emissions

On the basis of the allocation principles established in the appendix, and in accordance with internationally recognised standards for greenhouse gas reporting, ESA's Members have estimated both the direct and indirect emissions arising from their activities. Indirect emissions include those arising from the use of purchased electricity. Members have also estimated the carbon saving benefits arising from their activities, principally either through generating renewable energy or collecting and sorting recyclates which are then used in place of virgin materials. These are reported separately for transparency.

ESA's Members represent about 80% of the waste management industry by turnover and for this report ESA has collated information from the sector's largest operators: Biffa, Cory, Shanks, SITA, Veolia, Viridor and WRG. In 2008, the total carbon emissions arising from the activities of these seven operators were 8.8 million tonnes of carbon dioxide equivalent (mtCO₂e)¹. However, about 5.3 mtCO₂e were saved by these operators' activities (with about 2.8 mtCO₂e saved by material recovery and 2.5 mtCO₂e saved by generating renewable energy). This suggests net emissions in 2008 of 3.5 mtCO₂e.

The above figures were estimated on the basis of ESA's carbon allocation principles and the EpE Waste Sector Protocol (version 3, dated December 2008).

4 Policy implications

Waste management operators' activities help to avoid emissions that would otherwise have arisen in their absence. Again, these avoided emissions can result both from an operator's own activities, such as generating renewable energy which offsets the need for fossil-based emissions, and also from other sectors' activities such as use of recycled materials in new products. These avoided emissions introduce complexities which should be considered in designing policy instruments for the waste management sector. Some of the policy questions which might arise include:

how could the waste management sector be incentivised to assist further in reducing society's carbon burden?

is carbon pricing appropriate for the waste management sector given the broader policy and regulatory framework which has already delivered stringent cuts in its greenhouse gas emissions?

if so, how could carbon pricing be applied consistently, both within and between sectors, and what would be the cost pass-through implications for other sectors?

how can equity with other sectors be established so the same incentives to reduce greenhouse gas emissions are faced by all?

how can fiscal instruments be designed to secure carbon benefits from recycling?

how would policy instruments targeting recyclates' carbon benefit potentially affect relationships between the waste management and reprocessing sectors?

¹ ESA's reporting of the sector's emissions adheres to the convention not to report biogenic carbon emissions, in accordance with recognised international standards, such as the proposals contained in PAS 2050. This means that biogenic CO₂ emissions from waste processes are zero-rated but uncaptured landfill methane emissions are included and converted to CO₂e using a global warming potential of 21, as contained in the IPCC Second Assessment Report. The figures are estimated based upon best available data: it is anticipated that data collection will become more robust over time.

APPENDIX: carbon allocation principles

ESA's Carbon Management Committee has discussed how carbon allocation rules could be developed for the industry. As part of this exercise, ESA's Members have agreed that, as set out in the EpE Waste Sector Protocol, common industry standards for reporting emissions should be based on:

- the direct emissions resulting from an operator's activities;
- the indirect energy use emissions arising from an operator's purchase of electricity; and
- the avoided emissions resulting from a company's activities, including those savings made by other sectors.

The principal greenhouse gases included in this reporting are CO₂, CH₄ and N₂O.

These principles should be adopted for the purpose of reporting greenhouse gas emissions to ESA. Operators should report separately on their direct emissions and on the indirect benefits which accrue from their activities to demonstrate that indirect emission savings offset the direct burdens reported by the sector. These benefits should be estimated using standard UK conversion factors.

A Rationale

Any methodology for the allocation of greenhouse gas emissions arising from waste processes should be robust, simple and transparent. This helps the industry to define common principles to allocate emissions and to persuade external counterparties of the validity of underlying assumptions. The following principles for carbon allocation are therefore intentionally simple.

The reporting of the sector's emissions should adhere to international standards and be transparent. For example, according to 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Vol. 1, biogenic CO₂ emissions from waste processes should be zero-rated (the industry should only report net emissions) but uncaptured emissions of landfill methane should be included and converted to CO₂e using a global warming potential of 21.

B Principles for carbon allocation

Principle 1: operational control

An operator should be allocated the greenhouse gas emissions arising from its direct operational activities.

Accounting only for direct environmental impacts would be the best way for the industry to ensure that its carbon accounting system is robust and objective.

Example: an Operator A vehicle collects waste from an Operator A transfer station and delivers it to an Operator B landfill. The emissions from the vehicle are allocated to Operator A and the emissions from the landfill are allocated to Operator B. It is irrelevant whether Operator A has 'responsibility' for the decision to direct the waste to the landfill or otherwise.

Principle 2: shareholder control

Where organisations enter into joint arrangements and operational control cannot be established, emissions arising from the joint activities should, to avoid double counting, *prima facie* be apportioned on an agreed basis according to equity stakes in the joint arrangements.

Example: two companies establish a joint venture to provide waste services. The joint venture should be treated as a single entity and the aggregated emissions arising from that entity's activities should be apportioned on an agreed transparent basis, *prima facie* based on equity held.

Principle 3: contractual interface

An operator's contractual relationship with a third party forms the boundary of carbon ownership.

Example: an operator employs a sub-contractor to transport waste. The emissions associated with such transportation are under the operational control of the sub-contractor. Any potential associated financial implications are addressed by the terms of the contract.

Further examples

The following examples are not exhaustive but are provided for illustrative purposes.

An operator owns a landfill site but not the landfill gas

Fugitive methane emissions are allocated to the entity which owns/operates the landfill. This is because the landfill operator's activities will determine the ability of the gas operator to capture fugitive emissions: the gas operator is already incentivised to maximise capture by revenues from energy sales. (Post flare/generation CO₂ emissions are zero-rated in accordance with PAS 2050.)

Power generation leads to avoided fossil fuel emissions

The operator reports as company owned the direct fossil CO₂ emissions arising from its activity in accordance with the EpE Waste Sector Protocol. Its biogenic CO₂ emissions are zero rated. This captures the renewable benefit associated with the use of biomass fuel and also prevents the double counting of emissions by other sectors. Avoided emissions offset from other sectors' fossil-based generation are reported separately to ensure transparency.

Materials recycling

An operator reports as company owned the direct fossil CO₂ emissions associated with its transport and processing of the materials. The avoided emissions resulting from the reprocessing sector are reported separately for illustrative purposes using standard UK emission factors.

Solid Recovered Fuel (SRF) both produced and burned in an operator's facility

The operator reports as company owned the emissions arising from SRF production. The fossil emissions arising from the end facility are also reported as company owned by the operator. Biomass emissions are zero-rated.

SRF sold into market

The operator reports as company owned the emissions arising from SRF production (and transport if completed by the operator). The fossil emissions arising from the end facility are reported by the third party end user as being within its ownership. As before, biomass emissions are zero rated. The operator can report separately for illustrative purposes the carbon savings associated with the end user's renewable generation.

Sequestered carbon

No atmospheric emissions arise from sequestration. It is therefore not included within the accounting system. The benefits of sequestration are derived from the carbon not being emitted into the atmosphere and so avoiding a direct liability.

Anaerobic digestion (AD)

AD takes place within a sealed unit which has no direct emissions associated with it. The methane produced during the process is used to generate energy and is converted into biogenic CO₂ emissions which are zero-rated. The post-process digestate is subsequently composted: this produces further biogenic CO₂ emissions which are also zero-rated.



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154 Buckingham Palace Road, London SW1W 9TR. 020 7824 8882, info@esauk.org

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