



EPE Protocol for the Quantification of GHG Emissions from Waste Activities

FEAD Conference
Amsterdam, 8 October 2010



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Modern waste management: key to a sustainable use of resources



European Federation of Waste Management and Environmental Services

The carbon constraint is materialising

- **International and national commitments taken by Governments on GHG emissions are being translated into obligations for industry.**
- **Cost as well as image impacts from this factor are already being felt by most sectors:**
 - EU Emissions Trading Scheme (ETS)
 - Waste sector not included in ETS, but is considered in «Effort sharing» for non-ETS sectors
 - Carbon Reduction Commitment programme in the UK for non-EU ETS sectors
 - Various State and Regional trading schemes are emerging in the US
 - Tentative Australian Carbon Pollution Reduction Scheme (CPRS)
 - MSW landfills were to be included, historical emissions excluded
 - Increasing requirements for GHG reporting for regulated installations
- **All industries will eventually be required to « chip in » on GHG mitigation**
- **Companies need to better assess the carbon impact linked to their operations, as a prerequisite for risk mitigation and value creation**
- ! **Step n°1: have a robust system in place for GHG quantification, reporting, and verification**

Need for a common tool for GHG accounting

- The Greenhouse Gas Protocol was established by the WBCSD and WRI to standardise the reporting process for GHG emissions.
- A number of sector protocols have been developed to supplement the GHG Protocol (Aluminum, Forest and Paper, Iron and Steel, Cement, Petroleum)
- The waste sector also needs to converge towards a common Protocol to:
 - Provide a coherent quantification and reporting approach
 - Improve consistency, transparency, and understandability of reported information
 - Evaluate the impact of our activities
 - Permit businesses to manage GHG risks and identify reduction opportunities
 - Demonstrate sector's proactive approach to quantify and report GHG emissions
 - Raise awareness on the sector's contribution and the uncertainty of certain emission estimates.

Original Project Organisation

- **Suez Environnement, Séché Environnement and Veolia Environmental Services joined together through the association Entreprise Pour L'Environnement (EPE) to prepare a waste sector protocol.**
- **The EPE was chosen as the coordinating association in order to:**
 - Guarantee the coherence with other existing sector protocols
 - Work through the french partner of the World Business Council for Sustainable Development



Objectives

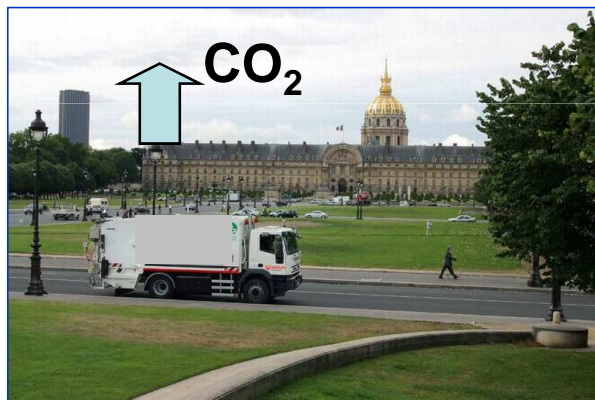
- The **objectives of the Protocol** are:
 - to help companies and local authorities to conduct annual inventories of the GHG emissions from their waste management activities.
 - to become a global reference for the sector. It is intended to **obtain the validation and endorsement of as many national waste management associations** as possible. Support from FEAD and ISWA are also crucial for international recognition.
 - to have the EPE Waste Sector Protocol endorsed by the WBCSD / WRI as the **sectoral reference document linked to the GHG Protocol**.

The EpE Protocol: What it is / What it is not

The Protocol is:	The Protocol is not:
A tool dedicated to annual GHG emissions reporting.	A life-cycle analysis tool (does not consider any other environmental impact than GHG; does not take into account upstream and downstream emissions)
To be used on a voluntary basis.	A binding reporting approach. Each entity is free to report or not its emissions and is free to use or not the Protocol.
Useful to compare alternatives from a GHG emission standpoint.	Aimed at comparing waste management options from a cost-perspective.
A living document. It reflects the current status of knowledge and methods and relies on the latest information from international experts and sector experts.	In its final / definitive version.

Major Direct Emission Sources

CO₂ from fuel
combustion



Collection

CO₂ / N₂O from waste
combustion



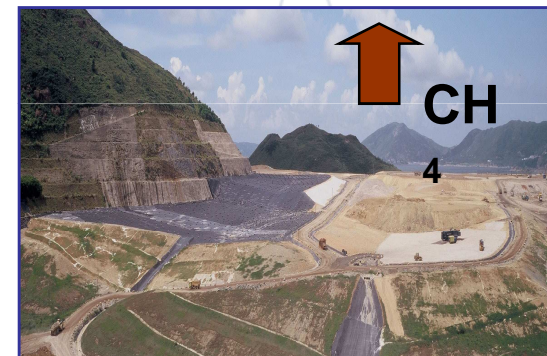
Incineration

CO₂ from fuel
combustion



**All activities :
Onsite Equipment**

CH₄ from landfill
gas



Landfill

Avoided Emissions

- **Recycling :**

- Avoided CO₂ associated with the production of equivalent material from raw materials
- CO₂ avoided through the production of Solid Recovered Fuels (SRF)



- **Waste to Energy Plants :**

- CO₂ avoided due to energy production
- CO₂ avoided due to slag and ash recycling

- **Landfill Gas to Energy :**

- CO₂ avoided due to energy production

- **Biological Treatment :**

- CO₂ avoided through compost use in agricultural recovery
- CO₂ avoided due to energy production (and heat recovery)

- **Mechanical-Biological-Treatment**

- Combination of above based on processes



Actions to reduce GHG emissions

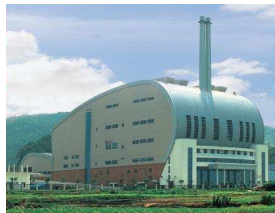


Collection and transportation

- *Rationalization of collection operations and improvement of fuel efficiency.*
- *Use of alternative fuels (biodiesel, bioethanol...)*
- *Development of alternative means of transportation (rail and waterway transport...)*
- *Implementation of driver training programs*

Recycling

- *Increase of the material recovery rate to save energy.*
- *Recovery of substitute fuels (waste oil, refuse derived fuels)*



Waste to energy

- *Substitution of energy produced from fossil fuels by thermal energy and electricity from waste combustion.*
- *Recovery of metals and bottom ashes from incineration.*



Biological treatment

- *Increase the compost production, low emitting treatment solution.*
- *Recovery of the methane from anaerobic digestion processes*



Landfill

- *Installation of active landfill gas collection and treatment systems*
- *Use of landfill gas as a fuel to produce electricity or thermal energy*

Protocol Contents

- **The protocol consists of two distinct parts :**
 - The text presenting the recommended reporting requirements
 - A calculation Workbook (excel)
- **Table of Contents**
 - Waste Management Sector Presentation
 - Objectives and Principles
 - SECTION 1 : Scope
 - SECTION 2 : Annual Inventory
 - SECTION 3 : Emissions Calculation
 - SECTION 4 : Reporting Requirements
 - SECTION 5 : Managing Uncertainty
 - SECTION 6 : Verification
 - ANNEX 1 : Global Warming Potential
 - ANNEX 2 : Comparative Analysis of GhG Models for Landfills
 - ANNEX 3 : Carbon Sequestration in landfills and soil after compost spreading
 - ANNEX 4 : Composting - N₂O and CH₄ Emission Factors
 - ANNEX 5 : Bibliography
- **+ FAQ : document containing a list of responses to frequently asked questions on the EpE Protocol.**



Calculation tool

An excel spreadsheet is provided to calculate GhG emissions from different waste activities.

The following tabs are included in this tool :

- Introduction
- Source Type List
- Transport
- Sorting – Transfer
- Anaerobic Digestion
- Composting
- SRF
- MBT
- Landfill
- Incineration
- Avoided Emissions
- Synthesis
- Factors

Recommended / Default Emission Factors provided

GREENHOUSE GAS EMISSIONS FROM SORTING FACILITIES OR TRANSFER CENTERS

This sheet is intended to be used to assess emissions from energy consumption of sorting facilities or transfer centers. It is up to the user to make sure that all energy consuming points are taken into account.

COLOUR CODE:

- Default values
- Calculated values
- Values to enter

Direct CO2 emissions from permanent combustion facilities and on-site mobile equipment

1 - Calculation from fuels tonnages

fuel type	Used quantities tonnes	Emission factor kg CO2 / t	CO2 gross accounting t CO2	Accounting %	CO2 net emissions t CO2
Gas oil		3.15		100	
Diesel		3.15		100	
Heavy fuel oil		3.10		100	
Natural gas		2.827		100	
Others (to be specified)					
Total					

2 - Calculation from fuels' volume

Fuel type	Used quantities L	Emission factor (°) kg CO2 / L	CO2 gross accounting t CO2	Accounting (0 or 100%) %	CO2 net emissions t CO2
Gas oil		2.662		100	
Diesel		2.662		100	

Future Evolutions

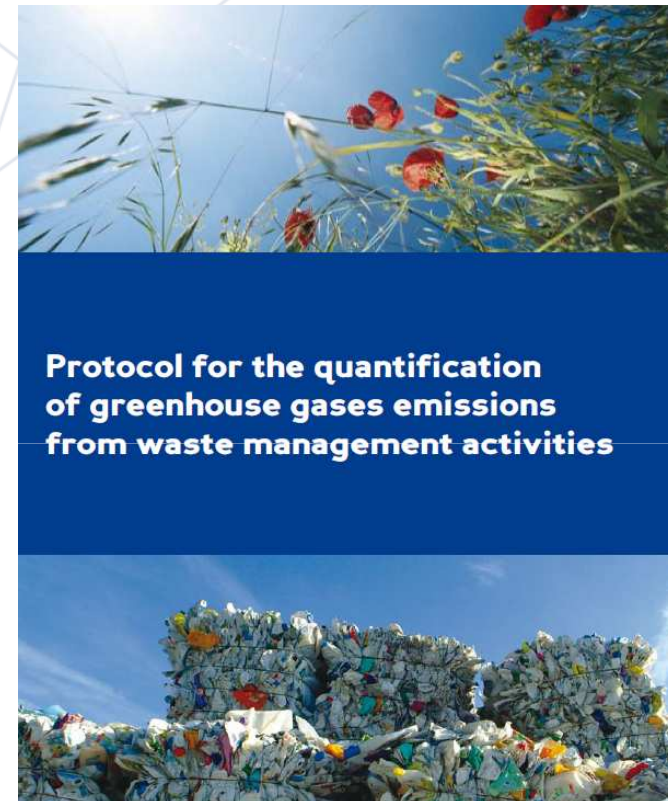
International coordination and recognition:

- We intend to constitute a Working Group or Committee comprised of members from associations that have endorsed the Protocol. The organisation will be adapted to the number of adherents.
- We envisage that the Protocol will be updated regularly (i.e. on an annual basis). Suggested revisions will be sought from the Committee members and other stakeholders.
- The recommended revisions will be consolidated and proposed modifications will be circulated for review, comment and subsequent agreement.
- It is envisaged that the original Working Group will continue to co-ordinate the modifications.
- More specific guidelines for this committee will be discussed in the coming weeks.

The Protocol for the quantification of GHG emissions from waste management activities, as well as the Excel emissions calculation worksheet, can be downloaded :

-on EpE's website (www.epe-asso.org),
in the "Documents and Reports" section

-on the FNADE's website
(<http://www.fnade.com>)



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epe
Entreprises pour
l'Environnement



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Thank you for your attention !

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