Version for 2010

GHG INVENTORY STANDARD for THE POSTAL SECTOR

UPU UNIVERSAL POSTAL UNION

POST EUROP

International Post Corporation

Version for 2010

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FOREWORD

Climate change is regarded as one of the most serious threats to the environment. Scientists are now in agreement that the climate is affected by the accumulation of greenhouse gases such as carbon dioxide and are calling for major commitments to remedy it.

Global warming knows no boundaries: it is a global challenge and one that the international community as a whole (States, businesses and members of the public alike) must address. Combating climate change calls for efforts and synergies at the highest level. And the postal sector has every intention of playing its full part.

In view of the considerable resources used by Posts for transporting, processing and delivering mail, the sector is directly involved, particularly as regards greenhouse gas emissions (GHG). A few figures are sufficient to bear this out:

- at least 660,000 postal premises consuming electricity or heating fuel;

- more than 250,000 motor cycles and 600,000 motor vehicles travelling hundreds of thousands of kilometres each year; and hundreds of aeroplanes flying between the five continents every day.

Against that background, the sector should encourage its various components to take measures to protect the environment. Many Posts today recognize the impact their activities have on the environment and have taken the appropriate steps. But much remains to be done to make the postal sector part of the solution and not of the problem. The first stage in this process is to measure the greenhouse gas emissions produced by the postal sector.

The 191 Universal Postal Union member countries and their designated postal operators (more than 210) - some of which are members of International Post Corporation (IPC) and/or PostEurop – are invited to take part in the exercise of measuring their greenhouse gas emissions. That should make it possible to establish a regional mapping of emissions by the postal sector as a first step towards making the sector more sustainable.

To achieve this aim, the UPU, PostEurop and IPC have decided to join forces and have taken a joint approach, with a calculation method, definitions and principles common to all three organizations for the purposes of this exercise. These are contained in this *GHG Inventory Standard for the Postal Sector,* which is intended as a reference tool for postal operators wishing to evaluate their carbon footprint.

FOREWORD

In this way the postal sector intends to set an example by working closely with its customers, suppliers, subcontractors and other stakeholders to reduce its impact worldwide. By making this commitment, the postal sector wishes to position itself as a responsible sector and to anticipate any regulations and legislative obligations with which it may have to comply in the near future, such as the integration of the transport sector in the Kyoto Protocol mechanisms.

Version for 2010

PART 1
MAIN PRINCIPLES

1. Introduction

Since May 2009, the three postal organizations, Universal Postal Union[1](UPU), International Postal Corporation[2](IPC) and PostEurop[3] have been working together to define a standard to provide their members with common guidelines for GreenHouse Gas (GHG) emissions calculation.
The *GHG Inventory Standard for the Postal Sector* (hereinafter *the* Standard) aims to harmonize the methodology for calculating all direct and indirect GHG emissions resulting from postal activities. The Standard is intended to be a tool for postal operators worldwide and to be accessible to all Postal Operators, Postal Organisations and Postal Associations can design and implement their own specific guidance, keeping this document as a support in order to set up a GHG calculation methodology.

In this Standard postal operators can find:

- The main principles for quantitative reporting (scope, references...) ;
- The explanation of the indicators' calculation. In each indicator sheet, postal operators will find the procedure for its data collection and calculation;
- The references needed to calculate CO_2 emissions (conversion ratio, emission factors). Within References, a glossary defining all terms(a " * " indicates when a word can be found in the glossary) .

1.1 How to update the protocol

UPU, IPC and PostEurop will monitor the evolution of the main references to report GHG Emissions (see paragraph 3, References) and follow up the evolution of the international regulatory framework in order to regularly update the GHG Inventory Standard for the Postal Sector.

1.2 Contact

For more information or for clarification of aspects of this document, please contact UPU, IPC and PostEurop:

UPU : sust.dev@upu.int
IPC : publications@ipc.be
PostEurop: ghg@posteurop.org

1. UPU is a specialized Agency of the United Nations for the postal sector, gathering 191 Member-countries.
2. The International Post Corporation (IPC), is the cooperative association of 24 postal operators in Europe, North America, and the Asia-Pacific region.
3. PostEurop is the Association of 48 European public postal operators and is also an officially recognised Restricted Union of the Universal Postal Union.

2. Principles

2.1 General principles of reporting

Reporting Principles describe how and what to report in a GHG Inventory.
The Principles are intended to ensure both the quality of the reported information and to achieve traceability and transparency. It enables stakeholders to evaluate the information provided.

The Standard is designed to meet five criteria[4]:

1) Relevance: Ensure that the GHG inventory appropriately reflects the GHG emissions of the company and serves the decision-making needs of users – both internal and external to the company.

2) Completeness: Account for and report on all GHG emission sources and activities within the chosen inventory boundary. Disclose and justify any specific exclusion.

3) Consistency: Use consistent methodologies to allow for meaningful comparisons of emissions over time. Transparently document any changes to the data, inventory boundary, methods, or any other relevant factors in the time series.

4) Transparency: Address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.

5) Accuracy: Ensure that the quantification of GHG emissions is systematically neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information.

4. Copyright ©2010 The Greenhouse Gas Protocol®, A Corporate Accounting and Reporting Standard, Revised Edition.

Help Box 1: how to indicate accuracy of reported data

Postal Operators can give an indication of the accuracy of the reported data using 3 categories:

High accuracy: data are based on accurate measurements
Low accuracy: data are based on a computation or an accurate estimation
Not accurate / estimated: data are based on a rough estimation/extrapolation

Moreover, good reporting relies also on:

- A **clear organisational structure**: each role is specified and each task described and assumed to be realised within a specific time frame;
- **Experts** with a good knowledge and understanding of both the criteria of the report and the reporting tools;
- **Data** that can be **sourced**, estimations that can be documented, calculations that can be checked and re-performed;
- **Internal controls** on the data reported and consolidated.

2.2 Inventory Period

Postal operators shall report data yearly in order that assess the progress and monitor the evolution.
The recommendation is to provide data from 1st January to 31st December. However, if the financial reporting cycle is different, the postal operators may report data in line with this financial report period.
In order to compare results from one year to the next, past results, when they are available, should cover the two previous years, with their corresponding methodologies and perimeter.

3. References

3.1 Main existing references

In order to define the relevant indicators for the Postal Sector and to find the best calculation methodology and emission factors, the GHG Inventory Standard for the Postal Sector refers to the most well recognized and accepted GHG reporting norms.

The Standard adopts as main reference the WRI/WBCSD Initiative for Corporate Greenhouse Gas Reporting[5]. The purpose of the proposed postal sector standard is, in particular, to incorporate the Greenhouse Gas Protocol's principles to the postal sector's distinctive features.

Moreover, the indicator sheets have been built using as reference the Global Reporting Initiative's (GRI)[6] Environment Performance Indicators[7].

The Standardmethodology is in line with the IPCC Guidelines for national GHG inventories[8] and with the ISO 14064 and 14065 for greenhouse gas accounting and verification. These two norms provide government and industry with an integrated set of tools for programmes aimed at monitoring and reducing greenhouse gas emissions, as well as for emissions trading.

The Standard refers also to documents that address directly postal sector specific environmental issues, such as the Environmental Product Declaration (EPD) Product Category Rules (PCR) for distribution of messages, letters and parcels[9].

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*5. **The Greenhouse Gas Protocol**, developed by the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD), is the most widely used international accounting tool for government and business leaders to understand, quantify, and manage greenhouse gas emissions. The GHG Protocol's Corporate Accounting and Reporting Standard provides comprehensive guidance on accounting for and reporting corporate GHG emissions and is the most widely used standard for mandatory and voluntary GHG programs. Other international standards, such as the ISO 14064 standard, also are compatible with the GHG protocol. The standards are analogous to the generally accepted financial accounting standards for companies' consistent accounting and reporting practices. The first edition was published in 2001, and the revised edition was relased in 2004. The GHG Inventory Standard for the Postal Sector will monitor further updates of the GHG protocol. For more information about the GHG Protocol visit www.ghgprotocol.org.*

*6. **The Global Reporting Initiative (GRI)** is a network-based organization that has pioneered the development of the world's most widely used sustainability reporting framework and is committed to its continuous improvement and application worldwide. The GRI Reporting is intended to provide a generally accepted framework for reporting on an organization's economic, environmental, and social performance. The Framework consists of the Sustainability Reporting Guidelines, the Indicator Protocols, Technical Protocols, and the Sector Supplements.GRI covers the whole scope of sustainability.*

*7. Each indicator recommended in Postal GHG inventory Standard refers to the GRI environmental indicators **EN16** (Total direct, and indirect greenhouse gas emissions by weight) and **EN17** (other relevant indirect greenhouse gas emissions by weight).*

8. The Intergovernmental Panel on Climate Change (IPCC) has issued guidelines for the national inventories. These guidelines are intended to report emissions from countries and are to a large extent based on national energy statistics and aggregated production data, using specific emission factors per unit fuel- or energy consumption or per unit production of goods

9. EPD PRODUCT-CATEGORY RULES (PCR) for preparing an environmental product declaration (EPD) for distribution of parcels, addressed and non-addressed letters, PCR 2003:7, the Swedish Environmental Management Council Version 2.0 2007-05-23. An Environmental Product Declaration (EPD) is a standardized (ISO 14025/TR) and Linking Climate Adaptation (LCA) based tool to communicate the environmental performance of a product or system, and is applicable worldwide for all interested companies and organizations. It presents quantified environmental data for products or systems based on information from a LCA conducted according to the ISO-standards for LCA. The PCR for distribution of messages, letters and parcels, EPD Version 2.0 is address to companies that deliver messages, letters and parcels.

Finally, it is in line with the simplified methodology developed by the UPU to provide guidelines to all its members in the first phase of the sector-wide survey of greenhouse gas emissions. This simplified methodology, described in the "Greenhouse gas Global Overview and Mitigation project" [10] , can be used as the first step for the UPU's members countries and their designated postal operators initiating GHG reporting process before they can be able to implement the methodology of the GHG Inventory Standard for the Postal Sector.

3.2 Programmes Referring to the Postal GHG Inventory Standard

The Standard is made to become the reference for postal organisations intending to implement GHG emissions programmes in the postal sector. Nowadays, Universal Postal Union, International Post Corporation and PostEurop, have launched three different programmes, addressed to 191 countries and their designated operators, which use this document as a tool. This methodology is designed to support, not replace, existing postal environmental initiatives, such as the individual postal programmes, the UPU's Greenhouse Gas Global Overview and Mitigation Project, the PostEurop's GHG Reduction Programme and the IPC's Environmental Measurement and Monitoring System.

Example Box 1 : Initiatives using the GHG Inventory Standard for the Postal Sector as a main reference

UPU's Greenhouse Gas Global Overview and Mitigation Project[11]
Launched in June 2008 to all the UPU Member-countries, the UPU's Greenhouse Gas Global Overview and Mitigation Programme aims to provide a regional mapping of polluting emissions due to the postal activity and to estimate the impact of the postal sector in climate change. It is a first step whose objective is to encourage Member-countries and their designated operators to implement measures to reduce their carbon footprint.

PostEurop's GHG Reduction Programme[12]
In order to work together to reduce carbon emissions, in 2007 Posteurop launched the Greenhouse Gas Reduction Programme. A protocol has been developed to accompany postal operators to implement a common methodology and a calculation tool implements this methodology and helps them to automatically calculate their CO_2 emissions. The objective is to facilitate the CO_2 emissions inventory and to help postal operators to measure and assess the carbon footprint and reduction efforts of participating postal operators (26 members in January 2010). One of the other aims is to create synergies by exchanging best practices in this field and then to encourage members to implement them.

10. This methodology can be download from the UPU website : http://www.upu.int/climate_change/en/greenhouse_gas_global_overview_and_mitigation_project.pdf

11. http://www.upu.int/climate_change/en/index.shtml

12. www.sustainablepost.eu and www.posteurop.org

IPC's Environmental Measurement and Monitoring System[13]

As part of its environmental sustainability programme, IPC, in close consultation with members' experts, has developed the *Environmental Measurement and Monitoring System* (EMMS). This fully automated web-based tool enables participating postal organisations to measure and illustrate their improvements in carbon management in a consistent manner to their stakeholders. The system was built following an in-depth review of customer approaches to carbon management and consultation with them to understand current and future requirements in terms of environmental reporting. The system has the added benefit of facilitating the monitoring of performance over time, in line with best practice amongst industry leaders and sector peers, thus promoting continuous improvement and the sharing of lessons from best practice.

13. http://www.ipc.be

4. Scope

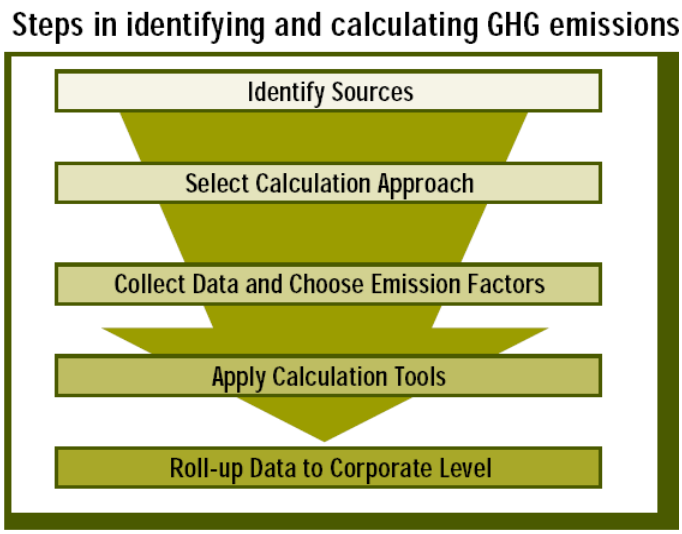
Postal operator should define the Scope of the Inventory in order to ensure the criterion of **completeness** is accomplished**.** Completeness may be reached gradually:

1. Making an inventory to identify all gas sources. Gas sources are business activities consuming energy such as fuel or electricity, and hence liable to generate GHG and other gas emissions.

2.Prioritise the reporting areas according to their impact, taking into account first of all:

a. Own postal activities: considering all postal activities that are under operational control* (see par.4.2).
b. Main sources of gas.

3. After this, gradually extend the perimeter of reporting to other sources to cover at least all postal activities (see part 4.2) and eventually to other activities where postal operators feel a responsibility (see par 4.3).



Source: GHG Protocol

4.1 Reported Gas

Postal Activities can emit all gases mentioned in the Kyoto Protocol[14]:

• **Carbon dioxide (CO_2)***, from the fossil fuel combustion (coal, oil, gas) due to energy consumption and the usage of electricity.
• **Methane (CH_4),** from the consumption of fuel, particularly from vehicles that operate on natural gas and from airplanes, waste dump. It could be also a source from energy consumption in buildings.
• **Nitrous oxide (N_2O)**, from the treatment of exhaust gases in certain catalytic conversion systems[15], and from the combustion when using energy in buildings,
HFCs, which are emitted by leakages in air conditioning and refrigeration equipments.
The other gases (**SF_6, PFCs**) are very slightly emitted in Postal activities.

For the first inventory periods, priority of the Standard is given to carbon dioxide-CO_2. Emissions of CO_2 should be reported as default, and on a mandatory basis. However, if relevant, each operator can decide to measure emissions of other GHGs. The Postal Operator should be able to report these gases separately and must be able to report on them as CO_2 equivalent (CO_2-e) (see 12.2 annex.2 Conversion table).

Units
Gas shall be reported as metric tons equivalent CO_2 (tCO_2-e).

Help Box 2: CO_2 or CO_2e, what relation?

CO_2-equivalent* emission is a metric measure used to compare the emissions of the different greenhouse gases based upon their global warming potential (GWP)*.
The equivalent CO_2 emission is obtained by multiplying the emission of a GHG by its Global Warming Potential (GWP) for the given time horizon (see 12.2 annex.2 table of the GWP for each gas). For a mix of GHGs it is obtained by summing the equivalent CO_2 emissions of each gas. Equivalent CO_2 emission is a standard and useful metric for comparing emissions of different GHGs but does not imply the same climate change responses[16].

Since scope of this inventory are greenhouse gases, this document will refer to CO_2e. However, as a first step, Postal operators can focus their inventory on Carbon dioxide only.

14. The Kyoto Protocol establishes legally binding commitment for the reduction of four greenhouse gases (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride), and two groups of gases (hydrofluorocarbons and perfluorocarbons).
15. Emissions of N_2O may also arise from the combustion of fuels. These emissions are very dependant on the type of vehicle and conditions of use.
16. Core Writing Team, Pachauri, R.K. and Reisinger(2007) Climate Change 2007: Synthesis Report, Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, paragraph 2.1, p.36, A. (Eds.) IPCC, Geneva, Switzerland.

EXAMPLE: how to calculate CO_2e

GWP (on a 100 years time horizon):
$CO_2 = 1$
$CH_4 = 25$
$N_2O = 298$

1500 tonnes of CO_2 = 1500 x 1 =1500 CO_2e
1.2 tonnes of CH_4 = 1.2 x 25 = 30 CO_2e
0.2 tonnes of N_2O = 0.2 x 298 = 59.6 CO_2e
Total = 1589.6 tonnes of CO_2e

4.2 Reported postal activities

Postal operators should report GHG emissions related to all their postal activities. According to the internationally recognized definition of postal activity in the UPU's Act, postal activity is "mail*, parcels*, Express/EMS*, and financial services provided by the postal operators designated by the Member countries of the UPU".

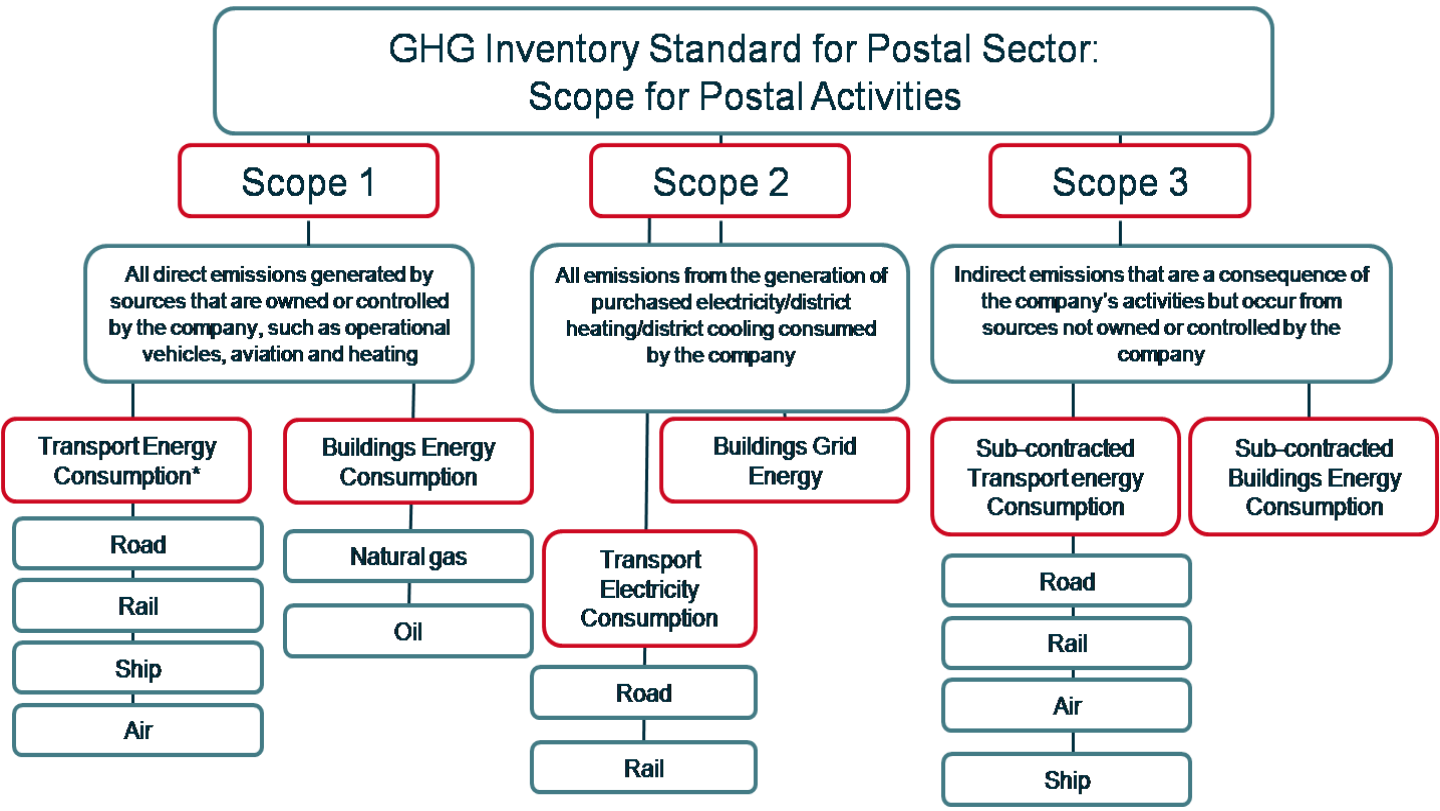
Each Postal operator should keep this definition as a reference when it sets the scope* of its reporting. This scope for a postal operator relates two main sources:
- Transports
- Buildings

The Standard follows the recommendations of the WBCSD's Greenhouse Gas Protocol, and recommends to divide the reporting into three scopes:

Scope 1*: Direct emissions from sources owned or controlled by the postal bodies (i.e. fleet of vehicles, gas and oil heating facilities etc) which means emissions related to direct transport activities (transport activities owned or under operational control* by the company) and heating fuels (gas, fuel oil, LPG, coal, wood, etc.).

Scope 2*: Emissions from grid energy (i.e. electricity, district heating and district cooling consumed by the postal operator in own, rented, leased building).

Scope 3*: All other indirect emissions, such as suppliers and subcontracted transport activities.

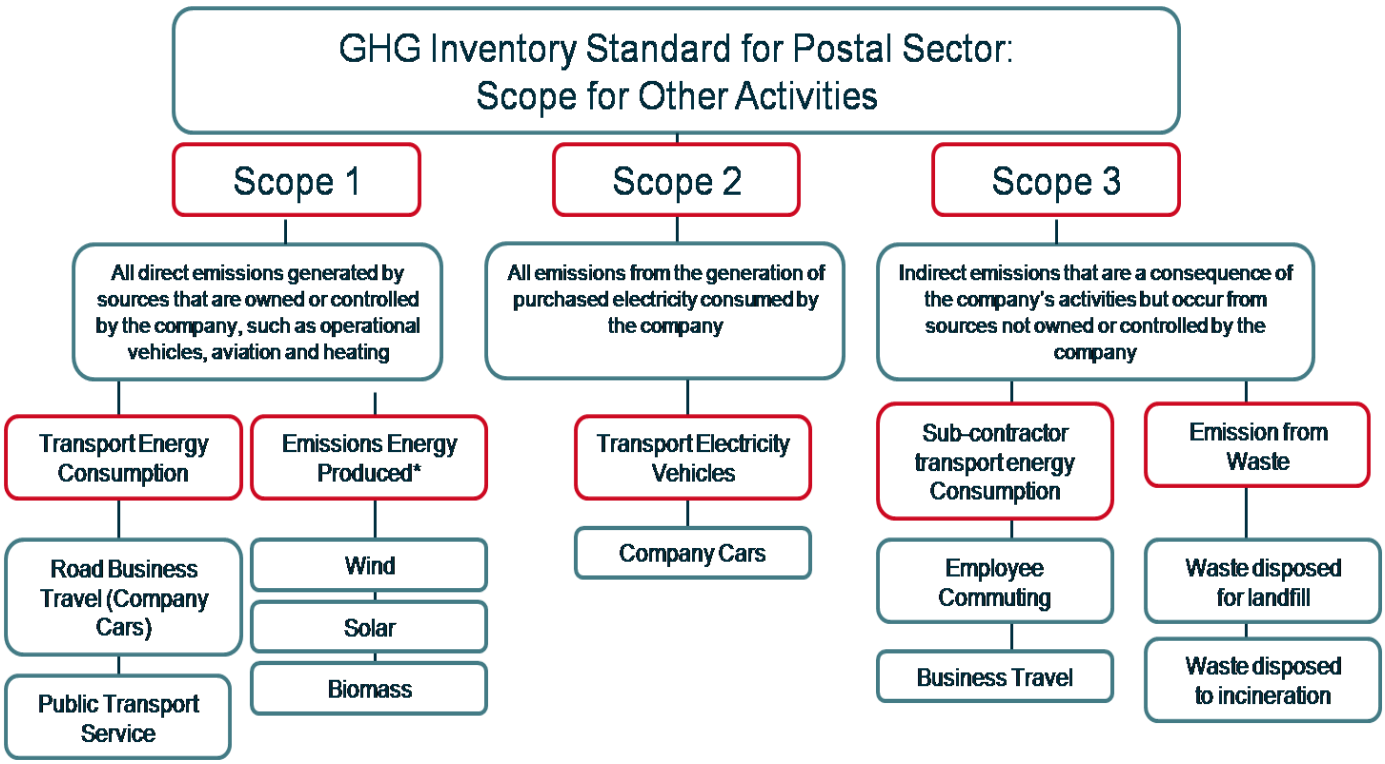


4.3 Reported other activities (linked to postal activities)

Postal operators could extend the inventory to other activities if these ones are considered relevant (to determine if an activity is a relevant source of GHG emission, **see also Help Box 4)**. It could be:

- Business Travel*,
- Commuting* (staff and general public);
- Waste management*.

Postal operators should be able to identify whether the activity should be reported as Scope 1, 2, or 3.



*Emission generated from the production of energy goes for the moment beyond the Scope of this document

To Sum Up the Scope

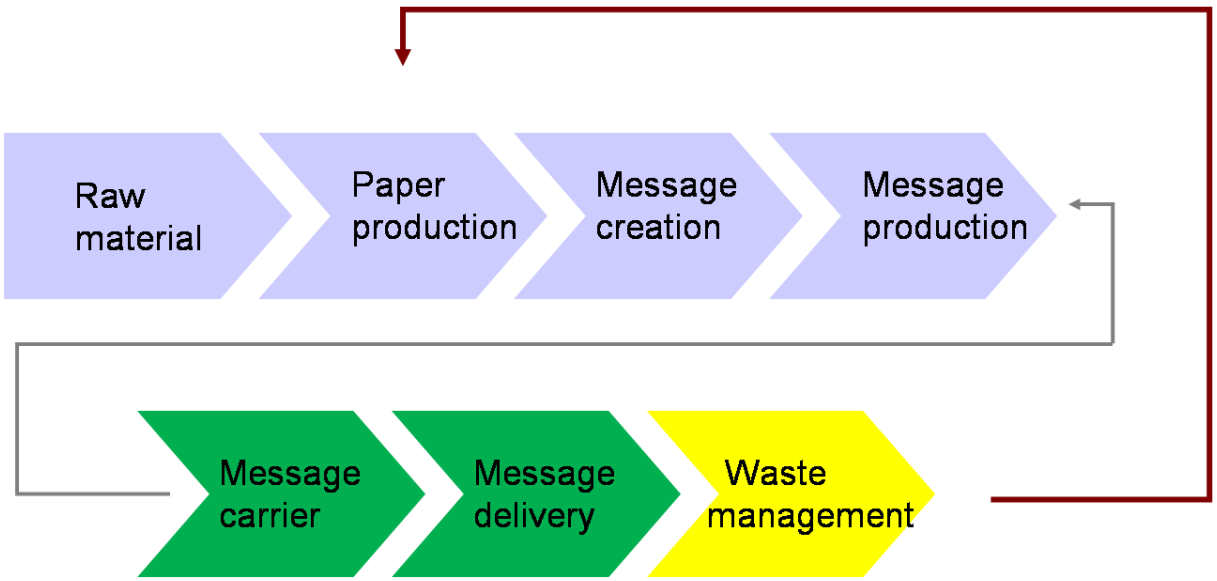
The table defines the activities that **must be included** in the reporting as Postal Activities and the ones that **can be reported-**if postal operators consider it their responsibility- as **other(non postal) activity** . Emissions from these activities should be reported separately in order to be distinguished from the emissions of postal activities.
In the table is also indicated in which scope the emissions from the activity should be reported. The Scope is only an indication since postal operators should follow the "operational control" criteria in order to define if the activity is Scope 1, 2 or 3.

Activities to be reported following the GHG Inventory Standard for the Postal Sector			
Activity	**To be reported as Postal Activity**	**To be reported as Other Activity**	**Scope(indicative)**
Mail	X		Scope 1,2 and 3
Parcel	X		Scope 1,2 and 3
Express	X		Scope 1,2 and 3
Financial Services	X		Scope 1 and 2
Logistics	X		
Goods Transportation/Freight	X		
Business travel		X	Scope 3 and Scope 1(Company Car)
Commuting Employees		X	Scope 3
Public Transport Service		X	Scope 3
Waste Management		X	Scope 3

The Standard does not provide information on how to calculate emissions associated with the whole life cycle of letter and parcel. All the emissions associated with upstream (ie resource extraction, vehicle manufacture) and downstream (ie disposal of mail items) activities goes beyond the scope of this document. However, since the impact and the control that postal operators have on the waste management is recognized, the Standard provides some guidelines for those intending to calculate emissions associated with waste.

Postal Operators interested in covering emissions of the whole life cycle associated with distribution of letters and parcels can find guidelines in the *EPD Product Category Rules (PCR) for distribution of messages, letters and parcels*[17].

Boundaries: emissions associated with mail and parcel, in the scope of the Standard (green colour : mandatory / yellow : optional / grey: out of the scope)



17. EPD (2007). Product Category Rules (PCR) for distribution of messages, letters and parcels, EPD Version 2. The Swedish Environmental Management Council.

4.4 Boundaries and exclusions

4.4.1 Geographical boundaries

The reporting scope corresponds to the reporting boundaries of the activity of the entity, regardless of geographic frontiers.

Help Box 3: How to take into account international activities?

International activity of a postal operator is mainly the shipment of an item from the country of origin until the point of entry in the receiving country.

Delivery of a parcel from country A to country B:
Postal Operator of the country A should take into account emissions of the delivery of the parcel from the country A to **the point of entry** of the parcel in the country B.
If postal operator of country A has no operational control over the entity delivering the parcel in country B, postal operator of the country B should take into account emissions from its sorting center until the **point of delivery.**

Example : CO_2 Calculation of International mail at Post Nordern
The CO_2 calculation covers the transport from the International Hub to the Receiving Station in the recipient country.
Information on international volumes of letters and parcels is obtained from the International Department. Data is available in the form of mail volumes in kilograms for each recipient country. International transport can be carried out by truck, ship or aircraft. Information on how transportation composed of different transports means for each country and type of mail is then recorded. Transportation to a given destination may consist of several types of transport and connected flights.

Furthermore, the distance is found. For truck, this is done via the route planner on internet. For the aircraft and ship the distance is found by calculating the direct distance between the starting point and the end points (in order to calculate the distance the great circle distance methodology indicated in the annex 5 can be used).
By doing this we know the *tonnes per km* for both letters and parcel, and we know the transport means to each country. To get the most appropriate emissions factors for airplanes and ferry Posten Nordern make an estimate of the typical transport methods used depending on the distance. Distances under 500 kilometres will usually be done by trucks.

Transport means	Distance
Small airplane	5 00 < 3.000 km
Bigger airplane	>3.000 - km
Small ro/ro ferry	0 < 500 km
Bigger ro/ro ferry	> 500 - km

To make the final calculation of CO_2 Posten Norden use the following emissions factors:

Transport means	**Gram CO_2 per TonKm**
Truck	62,3

Plane SAS MD-81 Short	1705,0
SAS A340-300 Intercontinental	1265,0
Ro/ro-short (ferry)	136,0
Ro/ro-long (ferry)	115,4

Then it is straightforward to calculate the CO_2 of the international mail volumes. Of course it is necessary to know which recipient country corresponds to the different price zones of the products, so it is easy also to calculate the tons of mail (parcel and letters) belonging to each price zones and the connected amount of CO_2.

4.4.2 Organizational boundaries*

A postal operator accounts for 100% of emissions from operations over which it has operational control. The Inventory boundaries follow the same principles as the financial accounting standards. Therefore, to determine if a postal operator has operational control* of a certain activity, the same rules as for financial consolidation should be applied.
If such rules are lacking, use standard audit rules: an Operator has operational control when it holds 50% of shares or more.

Example 2 : Definition of Operational Control in Australia[18]

This is how the National GHG and Energy Reporting Act provide guidelines to define operational control in Australia:

(a)A controlling corporation or another member of the corporation's group has operational control over a facility if it has the authority to introduce and implement any or all of the following for the facility:

(i) operating policies;
(ii) health and safety policies;
(iii) environmental policies;

and meets the requirements of the regulations;

Only one such corporation or member can have operational control over a facility at any one time. If more than one such corporation or member could satisfy paragraph (a) at any one time, then the corporation or member that has the greatest authority to introduce and implement the policies mentioned in subparagraphs (a)(i) and (iii) is taken to have operational control over the facility.

18. National Greenhouse and Energy Reporting Act 2007, Act No. 175 of 2007 as amended, Australia.

4.4.3 Exclusion

The Inventory should primarily focus on processes that play a significant role in the carbon footprint. Other factors can be omitted initially without distorting completeness. Any exclusion of Greenhouse Gas emissions sources must be justified and documented.

Help Box 4: How to prioritise activities and assess exclusion

Any postal activity over which the operator has operational control should be measured.

Postal Operators should be able to prioritise the activities to be reported in the inventory:
1. Postal operator must report on all postal activities (see par 4.2) over which it has an operational control.
2. It then estimates the impact of the non-postal activities, to extend the inventory to all main emission sources.
3. Finally, it can extend to other activities to be reported on (see par 4.3).

In order to prioritise the activities to be included in the inventory and assess exclusion, postal opertators might estimate the impact considering the volume (i.e. number of items, etc), or, less precise, the turnover of each activity.

Postal operators should be therefore able to include in the inventory all main sources of emissions, and enlarge step by step the scope integrating the activity previously excluded.

Postal operator should justify the exclusions and quantify them.

Postal operators should define the reporting coverage using different methodology as turnover methodology (it is applicable for transport and building activities) or m^2 covered (only applicable for building).

Example: Assess exclusion using turnover
This method is based on respective turnovers of responding entities.

$$\text{Reporting Coverage} = \frac{\text{Turnover of entities that responded}}{\text{Turnover of entities in the target perimeter}}$$

Practice Case:
Post A / Scope 1 / Transport activity:

Post A has 3 major transport activities: mail / parcel / people transport
Mail department turnover = 100 €
Parcel department turnover = 25 €
People transport department turnover = 10 €

Emissions of Mail and parcel department are included
People transport department could not provide figures

Turnover entities included in the inventory= 100 + 25
Total Scope = 100 + 25 + 10

Perimeter covered Scope is : 92,6%

4.5 Offsetting/ Voluntary Compensation of Carbon Emissions

Carbon Offsetting should not be taken into account in the GHG Inventory as a CO_2 reduction. The inventory is focused on the GHG measurement. Offsetting could be seen as CO_2 emission compensation.

The recommendation is to keep offsetting traceability and to define these emissions as green initiatives .

4.6 Green Electricity

Emissions from **Purchased Green Electricity** and **Produced Green Electricity** should be reported separately in the GHG Inventory.

Green Electricity should be considered carefully, because there is a risk of double counting with the national GHG inventories. Postal operators purchasing green electricity should be able to get a third party certificate to ensure that electricity has been produced with renewable energy sources (more information about the calculation of the green electricity is in the indicator sheet).

5. Indicators List

The GHG Inventory Standard should help postal operators to select indicators in order to monitor and analyse their carbon footprint in a consistent way. The main reasons for implementing indicators are:

- Identify the main GHG sources of the activity;
- Measure carbon efficiency;
- Follow and monitor progress of these indicators;
- Analyse changes in carbon emissions;
- Identify the role of key economic and human activities in the carbon emissions production and determine the carbon intensity (relate those changes to economic, technological, and human factors);
- Implement actions to reduce their carbon footprint.

Two kinds of indicators could be used:

1. **"Monitoring indicators"**: total emissions are the basis and give an overview of the carbon footprint in general. In order to identify the main sources of emissions, this figure could be split by activity, scope or issues.
2. **Performance indicators**: To complete monitoring indicators and measure carbon efficiency, some ratio could be implemented. Those one are specific to transportation / buildings and give an assessment of the efficiency for a usage (unit or kilogrammes transported, driven kilometre, building square meter…).

These indicators are complementary. The purpose of this section is to give some direction to postal operators to implement the relevant indicators for postal activities.

5.1 Monitoring indicators

Monitoring indicators are the most basic: postal operators can identify what are the main GHG sources in its activity and where its efforts must be focused in order to reduce its carbon footprint.

These monitoring indicators can be split in:

- Scope, defined in the WBCSD's GHG protocol as for any other sector (see part 4.3).

- Issues:
  - For transport, it could be global and also split under type of transport (Road, rail, air, sea, commuting transport),
  For buildings, it could be global and also split under type of energies (electricity, natural gas, oil consumption, district heating, renewable energy…)

- Activities:
  - Mail,
  - Parcel
  - Express
  - Logistic
  - Financial services
  - Retail Network[19]

Help Box 5: how to allocate emission to different activities?

In order to allocate emissions to different activities, postal operator may choose amongst the used different methodologies based on: **production costs**, **number of items**, **volumetric weight**, **m^3**.

More detailed guidelines about the methodology to adopt to allocate emissions between mail and parcel are available in *the E PRODUCT-CATEGORY RULES (PCR) for preparing an environmental product declaration (EPD) for Distribution of parcels, addressed and non-addressed letters*.

This is an extract from the document. It is recommend to refer to the whole document in order to be guided to allocate between mail and parcel.

Example: Allocation of Mail and Parcel *in the PCR for preparing an EPD for Distribution of parcels, addressed and non-addressed letters*.

When allocations are being made 100% of the relevant service has to be included in the calculations.

a) *When the sorting and storage of parcels and/or addressed and/or non-addressed letters are carried out in the same buildings*, the environmental impact allocation shall be based on the **production costs** relating to the different services or evenly allocated by the m^2 of the building used for the relevant services.

b) *When the sorting and storage of services are carried out in the same buildings*, the environmental impact allocation shall be based on the **mass of the letters/non-addressed letters**.

19. Postal operators can consider retail as an activity as mail or parcel. In that case, corresponding CO_2 emissions are reported separately. Postal operators can divide up the retail emission between mail and parcel applying coefficient of proportion provided at national level(see help box).

c) *When the sorting and storage of different parcel services are carried out in the same buildings*, the environmental impact allocation shall be based on **volumetric weight**

d) *When the letters/parcels/non-addressed mails or other products are mixed in the same vehicles*, the environmental impact allocation shall firstly be evenly allocated by the **m^3 of the vehicle used for the relevant services** and secondly be based on the **production costs** relating to the different services.

e) Environmental allocation *for letters/non-addressed mails mixed in the same vehicles* shall be based on the **mass of the letters/non-addressed letters**.

f) Environmental allocation for parcels *mixed in the same vehicles* shall be based on **cubic weight / Volumetric weight or volume ratio**.

The more the indicators are disaggregated, the more accuracy is achieved to monitor carbon footprint. For example, it is possible for mail activities to split emissions between:

- **Transports**
  - scope 1 direct emissions (from the fleet of vehicles owned by the postal operator)
  - scope 3 emissions from vehicles owned by subcontractors
- **Buildings**
  - Electricity
  - Gas
  - Other fuels
  - Renewable energy

5.2 Performance indicators

Performance indicators are calculated using basic activity data. The most relevant basic data that a Postal operator can use are:

- Kilometre travelled;
- Weight transported goods;
- Weight per kilometre;
- Unit transported / numbers processed / items delivered;
- Turnover;
- Number of employees.

5.2.1 Transport indicators: CO_2/Km, CO_2/Kg, CO_2/Kg per Km

The Postal operator could evaluate the carbon efficiency of its transport with indicators dividing the CO_2 emissions by data related to the distance or/and the loading (km, kg, kg per km).

These three data are complementary to assess the carbon efficiency of transportation:
• **CO_2 / km** could underline the **efficiency of loading optimisation or the efficiency of the implementation of clean means** of transportation.
• **CO_2 / kg driven** is a good indicator to estimate **the carbon footprint of each product** thanks to its weight. This indicator could be useful for clients interested in doing their own carbon footprint or interested in comparing different products sold by their postal operator.
• **CO_2 / kg / km** is an indicator composite that assess both **efficiency of transport and optimization of logistics**. For example, heavy cars probably use more fuel per kilometre than light ones if we only consider the consumption average. But if it is also considered the car's load, the heavy cars may use less fuel per kilogram.kilometre. In that specific case, heavy cars are a more efficient way of achieving the delivery.

These ratios (/kg, /km, /kg.km) could also be split by type of transport (road, ship, air…) to compare the efficiency of each means of transporting regarding the type of activity.
With the calculation divided by scope, postal operators could compare their efficiency to that of their sub-contractors.

5.2.2 Building Indicators: KWh/m^2, CO_2/m^2

In order to be able to assess the energy efficiency of the buildings used, some indicators related to buildings are suggested as relevant for postal operators:
• **CO_2/m^2**. Postal operators could also assess **the carbon intensity of the building with a ratio of CO_2 emissions from building** (caused by electricity consumption/district heating/oil consumption/etc.) by the m^2.
• **KWh/m^2**. To assess the efficiency of **energy consumption** postal operators can use a ratio dividing the number of kWh by m^2. This does **not take into account the national mix of energy** and comparisons could be done to **assess basic energy efficiency**. This could be an useful indicator to increase awareness and encourage employees' green behaviour.
CO_2 from building could also be split by scope (see par.4) or by activity to execute an action plan.

Another indicator that could be used is **kWh / employees.** This indicator does not assess the real efficiency in building management but can be used **to raise employee's awareness**.

5.2.3 Other performance Indicators: Turnover, Unit delivered, Employees

Turnover: CO_2/Turnover

Turnover is a summation of the whole value of a product/service up to the point of sale.

The unit turnover has the advantage of being obligatory in annual reports. Thus, for **widespread application** by postal operators, unit turnover is an attractive denominator. Moreover, turnover may allow a comparison of postal operators with similar profiles and production processes.

Turnover is **not very well correlated** with global warming contribution.

Unit of Production: CO_2/ Unit Delivered

Postal Operators could **assess the carbon intensity** of their activities using as the denominator the units delivered. This indicator assesses "how much CO_2" is emitted for each mail/parcel delivered.

In order to build this indicator, the postal operators should define the unit and relate it to the corresponded CO_2 / unit (parcels, mail, etc.).
This is an indicator that could make the report more **useful to postal clients** and raise their awareness of the carbon emissions of their mail.

Employees: CO_2/Number employees

Employee* as the denominator in the indicator is the number of employees under contract and directly employed by a company. Postal operators using this indicator should specify their definition of employees. Full Time Equivalent employees accounting is preferable to head count. In that case, two "half time" employees are considered as a "full time equivalent".

The number of employees is included as a denominator because of its current use and also its applicability to industry sectors in which added value and unit turnover have limited value (e.g. the banking sector). That means that it could be used for financial activities.
It is more relevant to raise employee's awareness.
As for the other indicators, this indicator could be split into the different postal activities (mail, parcel, express, logistics, and financial services).

To Sum Up relevant indicators for the postal sector

Monitoring Indicators	Benefit	Units	Which performance indicators could be calculated with this Monitoring indicator
Total emissions	Visibility on total carbon footprint	Tonnes eq	• CO_2 / turnover • CO_2 / unit delivered • CO_2/ employees
Emission by scope(scope 1, scope 2, scope 3)	Visibility the repartition between direct and indirect impact		
Emission by activities (mail, parcel, financial services, etc.)	Visibility of the carbon footprint repartition in the Portfolio of the activities	Tonnes eq	
Emission by issues(transport, building)	Visibility of the repartition between transport and building Transportation could be split by type of transport	Tonnes eq	For transports (global and by type of transport) •CO_2 / kg •CO_2 / km •CO_2/ kg.km For buildings •kWh or CO_2/ m² •kWh / employees

Example Box 2: Indicators followed by the IPC EMMS programme members

The IPC EMMS programme has defined indicators in order to assess the performances of its members. The indicators offer an overview of the members' carbon efficiency. Three sector indicators have been selected. Two of them will be understood by customers (tonnes CO_2 per 1000€ turnover, grams CO_2 per item) and one that will be understood within the sector (tonnes CO_2 per kg per km). _All Scope 1, 2 and 3 emissions are included in these indicators.

Total CO_2 in tonnes per 1000 euro turnover

- For each sector the CO_2 emissions from all Scope 1, 2 and Scope 3 sources are included.
- The total CO_2 emissions are divided by the total company turnover for that sector, in € and multiplied by 1000 to get emissions per 1000€.
- For countries that do not operate in €, IPC have supplied an exchange rate.

Total CO_2 in tonnes per kg post per km travelled

-For each sector the CO_2 emissions from all Scope 1, 2 and 3 sources are included.
-The CO_2 emissions are calculated in tonnes and then divided by the weight, in kg, of all post transported and the total distance in km travelled by the land based fleet (includes all van, lorry, car, foot and cycle distance travelled) and also the domestic air fleet (excluded international air travel).

Total CO_2 in grams per item
This indicator is the one that is of the most interest to many customers, according to IPC research.
- This indicator is calculated for Mail, Parcels, Express-Domestic and Express-International services only.
- The emissions of CO_2, is expressed in grams and is then divided by the total number of items processed

SCOPE 1

Owned road transport efficiency in tonnes CO_2 per km travelled
- The CO_2 emissions from all owned or fully controlled road transport vehicles that rely on fossil fuels such as scooters, cars, vans, lorries, planes, trains and ships are included. Emissions from vehicles that are owned by employees and used for the delivery of mail are **not** included in this indicator (these are accounted for under scope 3).
- The figure for total km travelled includes the total km covered by all of the owned fleet including the km travelled by foot/cycle and other non CO_2 emitting vehicles.
- The indicator value is calculated as the total amount of CO_2, in tonnes, divided by the total distance travelled by the road fleet, in km.

Owned air transport efficiency in tonnes CO_2 per kg post per km travelled
- The CO_2 emissions for all air travel where the planes are owned by the member are included.
- For international flights, emissions from outbound flights as far as the exchange office in the destination country are included – these are emissions over which you have direct control.
- All legs of internal flights are included.
- If actual data for the fuel used by company owned aircraft are not available then the national standard emissions factor for air travel is used.
- We anticipate that even if actual fuel use data are not available at present they will become available in the future.
- The indicator is calculated as the CO_2 emissions, in tonnes, divided by the weight of post transported by air, in kg, and then divided by the total distance travelled by air, in km.

Owned rail transport efficiency in tonnes CO_2 per kg post per km travelled
- CO_2 emissions from all rail travel where the trains are owned by the member.
- In the absence of actual fuel use data national standard emissions factors for rail travel may be used.
- We anticipate that even if actual fuel use data are not available at present they will become available in the future.
-The indicator is calculated as the CO_2 emitted, in tonnes, divided by the weight of post transported by rail, in kg, divided by the total distance travelled by rail, in km.

Owned ship transport efficiency in tonnes CO_2 per kg post per km travelled
Included are CO_2 emissions from all ship transport where the ships are owned by the member.
In the absence of actual fuel use data, national standard emissions factors for ship based transport may be used.

- We anticipate that even if actual fuel use data are not available at present they will become available in the future.
- For international transport, emissions from the outbound journey are included – these are emissions over which the member has direct control.
- All legs of internal ship transport are included.
- The indicator is calculated as the total CO_2 emitted, in tonnes, divided by the weight of post transported by ship, in kg, divided by the total distance travelled in km.

Building energy efficiency in tonnes CO_2 per m^2 building floor space
- Included are CO_2 emissions from any gas, oil or other fuel used to provide energy for buildings. For example, fuel used in generators, or heating.
- This indicator includes all fuel used in owned or rented buildings but excludes fuel used in the buildings of sub-contractors.
- This indicator includes emissions from 'stationary purpose combustion' as illustrated in the IPC Overview of Emissions Across the Postal Sector.
- This indicator should includes emissions from renewable and non-renewable electricity generated on site.
- The area of the buildings used in this indicator should be the total area of all buildings owned or rented by your company[20].
-The indicator is calculated as the total CO_2 emitted, in tonnes, divided by the total area of floor space, in m^2, of your owned or rented buildings

SCOPE 2

Purchased electricity efficiency in tonnes CO_2 per m^2 building floor space
- Included are CO_2 emissions from all purchased electricity, district heating and purchased steam.
- This includes emissions from electricity purchased for electric vehicles.
- The area of the buildings used in this indicator is the total area of all buildings owned or rented by your company. This should be the same for this indicator and the Scope 1 building efficiency. In this way the two indicators may be combined to produce a total building efficiency.
-The indicator is calculated as the total CO_2 emitted, in tonnes, divided by the total area of floor space in the company's' buildings, m^2.

SCOPE 3

Sub-contracted road transport efficiency in tonnes CO_2 per km travelled
- Included are all CO_2 emissions from all sub-contracted road transport that relies on fossil fuels.
- The indicator is calculated as the emissions of CO_2, in tonnes, divided by the total distance travelled, in km, by sub-contracted transport.
- Emissions from vehicles that are owned and used by employees to deliver mail are included in this indicator.

20. Although some buildings may only use electricity and therefore strictly only be covered by the Scope 2 indicator, we shall include these buildings in the Scope 1 indicator in order that a total building energy use efficiency may be calculated as the sum of the two building energy use indicators used in the EMMS, indicators B5 and C1.

Sub-contracted air travel efficiency in tonnes CO_2 per kg post per km travelled
- Included are all CO_2 emissions from air travel where the planes are sub-contracted by the member.
- For international flights emissions from the outbound flight as far as the exchange office in the destination country should be included – these are emissions over which the member has direct control.
- All legs of internal flights are included.
- We anticipate that even if actual fuel use data are not available at present they will become available in the future.
- The indicator is calculated as the emissions of CO_2, in tonnes, divided by the weight of post transported by air, in kg, and the total distance travelled by air, in km.

Sub-contracted rail travel efficiency in tonnes CO_2 per kg post per km travelled
- Included are CO_2 emissions from rail travel where the trains are sub-contracted.
- In the absence of actual fuel use data national standard emissions factors may be used.
- We anticipate that even if actual fuel use data are not available at present they will become available in the future.
- The indicator is calculated as total CO_2 emissions, in tonnes, divided by the weight of post transported by rail, in kg, divided by the total distance travelled by rail, in km.

Sub-contracted ship transport efficiency in tonnes CO_2 per kg post per km travelled
- Included are all CO_2 emissions from ship transport where the ships are subcontracted.
- In the absence of actual fuel use data national standard emissions factors may be used.

- We anticipate that even if actual fuel use data are not available at present they will become available in the future.
The indicator is calculated as the total CO_2 emissions, in tonnes, divided by the weight of post transported by ship, in kg, divided by the total distance travelled by ships, in km.

Business travel in tonnes CO_2 per employee
- Included are CO_2 emissions from all employee business travel by air, rail or road.
- The indicator should be calculated as the emissions of CO_2, in tonnes, divided by the total number of employees – defined by total headcount.

Emissions from employee commuting in tonnes CO_2 per employee
- This indicator is calculated by dividing the total quantity of CO_2 in tonnes and dividing it by your organisation's total number of employees.

Emissions from waste disposed to landfill in tonnes CO_2 equivalent per m^2 building floor space
- The indicator is calculated as the emissions of CO_2 divided by the total m^2 of floor space in the company's buildings.

Emissions from non company owned or leased operational vehicles in tonnes CO_2
- This indicator includes all emissions from driver-owned vehicles not owned or leased by the company.

ACTIVITY INDICATORS

The activity indicators are indicators that demonstrate how much low emission technology and other technical improvements you have integrated into your operations.

% of renewable energy used in buildings
- Included in this indicator is the total amount of renewable energy used in buildings.
- Included are all sources of purchased and self-generated renewable energy (e.g. solar, wind, hydro, geothermal). Renewable energy that is sold to the grid is **excluded** from this figure, where this renewable energy can be substantiated by a certificate issued by a provider (other similar documentation).
- Nuclear power, peat, and natural gas are not considered renewable energy sources.
- The total energy includes the energy from all sources including, for example, electricity, oil and natural gas.

% of renewable electricity used in buildings
- Included in this indicator is the total amount of renewable electricity used in buildings.
- Included are all sources of purchased and self-generated renewable electricity (e.g. solar, wind, hydro, geothermal). Renewable energy that is sold to the grid is **excluded** from this figure, where this renewable energy can be substantiated by a certificate issued by a provider (other similar documentation).
- Nuclear power, peat, and natural gas are not considered renewable energy sources.
- The total electricity includes the electricity from all sources – non-renewable and renewable.

% of alternative fuel vehicles in fleet
- Expressed by this indicator is the total number of alternative fuel vehicles within the owned vehicle fleet.

% of delivery km travelled that was on foot/bicycle
Expressed by this indicator is the total number of delivery km that was travelled on foot or by bicycles.

Example Box 3 : Great Circle Distance: methodology to track efficiency of the transportation from Deutsche Post
To track the efficiency of transportation DP DHL is enhancing their carbon accounting systems for the use of Great Circle Distance in the denominator of any efficiency KPI (Road, Air and Sea transportation). GCD stands for the minimum (beeline) connection between origin and destination. Network efficiency and modal shift are best shown when the denominator contains origin and destination GCD(see calculation detail this methodology in the annex 4).

6. Consolidation and Control Recommendations

Data can be controlled and consolidated in order to meet audit criteria. Therefore Postal operators should be able to provide the following information:

- **the list of emissions' sources and any modifications made** to this list during the inventory period (including any possible acquisitions, sales or closures),
- an assessment of the annual emissions
    - for each GHG,
    - for the 3 scopes defined in the present protocol.
    - if it has been estimated, an uncertainty level should be included and perimeter covered (see Help box 1).
- the corresponding activity data .

In order to enable internal controls and external verifications of the reporting data, the following documentation must be produced and kept for each year:

- **the internal procedure put in place by the entity carrying out the reporting**, including the calculation and consolidation methods and the emission factors used. If the entity uses a different methodology than that set out in the present GHG Inventory, it must clearly describe the methodology used in its internal procedure and give reason why this method was chosen,
- **an explanation of the inclusions and exclusions made** when defining the List of source types,
- **an explanation of any changes to the methodology** that could have had an influence on the comparability of reported data with data from the previous year(s),
- **a description of any events** that could have affected the reported data,
- supporting documents on the data used to calculate the emissions (quantitative data, emission factors, activity data),
- supporting documents on the emission data for the reference year,
- any other information that may prove useful in assessing the quality of the data.

The information provided must be clear and concise.

In order to compare results from one year to the next, past results, when they are available, should cover the two previous years, with their corresponding methodologies and perimeter.

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PART 2
INDICATORS CALCULATION

7. Indicators Calculation

7.1 Postal Activity Scope 1

7.1.1 Scope 1 INDICATORS Related to Transport

Scope

The scope applies **to all transport (Road, Rail, Air, Sea)** of owned and controlled vehicles[21]. Commuting [staff and general public] and business travels are not considered in this section (see part 7.4 other indicators).
Business Travels and Commuting are not considered in this indicator.

Definition

This indicator takes into account direct CO_2 emissions of postal activities generated by vehicles that are owned and controlled by the postal operator or one of its subsidiaries (in that case, subsidiary must be specified in the scope).

Data to be collected

Depending on the type of transport and CO_2 calculation methodology, postal operators should choose among this data to be reported:
- Number of vehicles/trains/airplanes/ships owned or controlled
- Number of km (km) travelled by each means of transportation
- Number of Tonne. Kilometre travelled (Tonne.km)
- Fuel consumption (m^3) or electric usage (kWh)

Where to obtain data
Postal Operator control or accounts departments should have records of mileage travelled in vehicles. Potential sources are:
- Fleet records and invoices (fleet department)
- Employee mileage calculations/claims
- Tax returns from declarations and fleet monitoring records
- Freight handler invoices
- Company vehicle log books

21. Business Travellers and Commuting are not considered in this indicator.

Scope 1 TRANSPORT: A/ Direct road transport CO_2 emissions

Data gathering

1. Number of vehicles owned or controlled / category

The Postal Operators should count the number of vehicles as suggested in this table.

Indicator name	Unit	Mail	Parcel	Logistic	Express National	Express International	TOTAL
Small vehicules[22]	km						
Vans	km						
Heavy vehicules	km						
Electric vehicules 1	km						
Other fuel consuming vehicles (Two-wheeld…)	km						
All vehicles	km						

2. Number of km

The Postal Operator must collect the number of kilometres travelled by its own road vehicles as suggested in this table.

Indicator name	Unit	Mail	Parcel	Logistic	Express National	Express International	TOTAL
Small vehicules	km						0
Vans	km						0
Heavy vehicules	km						0
Electric vehicules[23]	km						0
Other fuel consuming vehicles (Two-wheeld…)	km						0
All vehicles	km	0	0	0	0	0	0

22. Vehicle category can be split considering different criteria. An example is to consider Small vehicles as < 3.5 Tonnes, Vans as 3.5<12 t, Heavy Vehicles are > 12t.
The GHG protocol, in the guidance "Calculating CO_2 Emission from Mobile Source", consider as vehicles repartition criteria the litre engine (<1.4,1.4<2.1,>2.1 litre engine).
23. Electric Vehicles emission fall under Scope 2

3. Fuel consumption (m^3)

Fuel Data can be reported in litre consumption (m^3).

An example is provided in this table:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Diesel consumed	m^3						
Petrol consumed	m^3						
LPG consumed	m^3						
Other fuel consumed (specify the fuel)	m^3						

If the postal operator has only the total by type of vehicle or by core businesses, this should be improved in the future.

CO_2 Calculation

CO_2 can be calculated using different methodologies:
• fuel volume calculation method,
• distance travelled and Tonne.km.
For transport CO_2 emissions, **the accuracy of calculating emissions from fuel consumption is higher** and therefore the preferred method wherever possible, instead of a distance based method.

1.Fuel volume calculation method

If fuel consumption is known, CO_2 emissions can easily be calculated according to official fuel emission factors (see annex3 12.43Emission Factors).

In order to calculate the GHG emission from the combustion of fuel, Postal operators need to report the fuel consumption and multiply each fuel by the corresponding CO_2 emission factor(see help box 7).

In the case of electric vehicles, postal operators should evaluate carefully if vehicles are recharged in their own building. In that case, it must avoid double counting with building related emission (reported as SCOPE 2).

2 Other Methods

If fuel volume cannot be calculated or estimated, postal operator can use other methods (see help box 7):

- vehicles.km
- tonne.km

	Km or Km purchased **(C2)**	Vehicle category fuel consumption (m^3 / km or m^3 /) **(C3)**	**CO_2 calculation C2 x C3**
Small vehicles (<3,5t)			
Vans (3,5t – 12t)			
Heavy vehicles -Trucks / Lorries (> 12 t)			
Electric vehicles			
Others			
TOTAL			

Scope 1 TRANSPORT: B/ Direct rail transport CO_2 emissions

Data gathering

1. Number of trains owned or controlled

Postal Operators that own trains, may report the number as suggest in the table:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Diesel trains	Number						
Other fuel trains	Number						
Electricity trains	Number						

2. Number of km or tonne.km

Postal operators need to report the number of km or tonne.km travelled by its own train.
table:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Diesel trains	km or tonne.km						
Other fuel trains	km or tonne.km						
Electricity trains	km or tonne.km						

3. Fuel consumption (m^3) + electric usage (kWh) in case of electric train

Fuel Data can be reported as litre consumption (m^3). An example is provided in this table:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Trains - Diesel	m^3						
Trains - Other fuel(specify the fuel)	m^3						

CO_2 Calculation

CO_2 can be calculated using different methodologies: the fuel volume calculation method, distance travelled method or Tonne.km. For transport CO_2 emissions, **the accuracy of calculating emissions from fuel consumption is higher** and therefore the preferred method wherever possible, instead of a distance based method

1. Fuel volume calculation method

If the fuel consumption is known, CO_2 emissions can easily be calculated according to official fuel conversion ratios (see Annex 3, emission factor). If the postal operator owns an electric train, CO_2 must be calculated taking into account the electricity conversion rate.

2. Other methods

If fuel usage or electricity consumption cannot be calculated or estimated, the postal operator can use other methods:
•Distance travelled
•Tonne.km

Scope 1 TRANSPORT: C/ Direct air transport CO_2 emissions

Data gathering

1. Number of airplanes owned or controlled

Postal Operators that own airplanes may report the number as suggested in the table:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Airplanes	Number						

2. Number of km

Postal operators need to report the number of km or tonne.km travelled by their own airplanes, sorted as suggested in the table.

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Airplanes - short haul (< 1000 km)	km or tonne.km						0
Airplanes - medium haul (1000 to 4000 km)	km or tonne.km						0
Airplanes – long haul (> 4000 km)	km or tonne.km						0
Airplanes – cargo	km or tonne.km						0

3. Fuel consumption (m^3)

Fuel Data can be reported as suggested in this this table:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Airplanes - Jet fuel	m^3						
Airplanes - Other fuel(specify the fuel)	m^3						

CO_2 calculation

CO_2 can be calculated using different methodologies: fuel volume calculation method, distance travelled and Tonne.km. For transport CO_2 emissions, **the accuracy of calculating emissions from fuel consumption is higher** and therefore the preferred method wherever possible, instead of a distance based method.

1. Fuel volume calculation method

If fuel consumption is known, CO_2 emissions can easily be calculated according to official fuel emission factors (see annex 3).

2. Other methods

If fuel volume cannot be calculated or estimated, the postal operator can use other methods:

km or tonne.km
plane category

Scope 1 TRANSPORT: D/ Direct sea or river ferry transport CO_2 emissions

Data gathering

Number of ships owned or controlled
Postal Operators that own ship/ferry may report the number as suggest in the table:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Ships	Number						0

2. Number of km
Postal operators need to report the number of km or tonne.km travelled by its own boats:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Ships	Km or tonne.km						0

3. Fuel consumption (m^3)
Fuel Data can be reported as litre consumption (m^3) as suggested in this table:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Ships - Diesel	m^3						0
Ships - Petrol fuel	m^3						0

CO_2 Calculation

CO_2 can be calculated choosing amongst different methodologies: fuel volume calculation method, distance travelled and Tonne.km. For transport CO_2 emissions, **the accuracy of calculating emissions from fuel consumption is higher** and therefore the preferred method wherever possible, instead of a distance based method.

1. Fuel volume calculation method

If fuel consumption is known, as it's the most precise methodology for CO_2 calculation, CO_2 emissions can easily be calculated according to fuel emissions factors chosen by the postal operator.

2. Other methods

If fuel volume cannot be calculated or estimated, a postal operator can use other methods :

Km or tonne.km
boat category

7.1.2 SCOPE 1 BUILDING INDICATORS

Scope
The scope applies to oil consumption in owned and rented buildings.

Definition
This indicator takes into account CO_2 emissions of postal activities generated by fuel consumption (for their heating or machinery) in all owned and rented buildings by the postal operator or one of thier subsidiaries.

Data to be collected
Many types of fuel could be considered in this scope: heating oil, coal, coal gas.
The main sources are:
• Gas oil consumption (kWh, litres or tonnes)
• Natural gas consumption

For heating or coal, data that should be collected is the kWh produced.

Where to obtain data
The following list indicates sources to collect information for calculating CO_2 emissions from oil consumption (gas, gas oil, coal, etc.) of Postal operators buildings. Normally, accounts or administration departments should have this information; alternatively, it might be held by individual managers.

Potential Sources are:
• Utility providers,
• Invoices for fuel deliveries,
• Gas bills,
• Heating bills,
• Pipeline measurements,
• Energy management software

Scope 1 BUILDINGS: Fuel (oil and Gas) consumption CO_2 emissions

Data gathering

1. Gas consumption

Postal Operators may report the gas consumption as suggested in this table:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Bank	Total
Buildings - Natural gas	kWh (Low Calorific Value)							

2. Oil consumption

Postal Operators may report the oil consumption as suggested in this table:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Bank	Total
Buildings - Oil	kWh							

CO_2 Calculation

If the operator does not have its own CO_2 calculation methods, it should proceed according to the GHG Protocol conversion ratios (see 12.3 annex 3 emission factors).

Scope 1 BUILDINGS: Energy Produced CO_2 emissions

Scope
The scope applies to owned and rented buildings where energy is produced.

Definition
This indicator aims to take into account CO_2 emissions in case the postal operators decide to produce energy (for example energy produced with solar panel). For the time being, the calculation of such emissions goes beyond the scope of this inventory.

7.2 Scope 2

Scope
The scope applies to owned and rented buildings electricity and district heating consumption.

Definition
This indicator includes CO_2 emissions of postal activities generated by electricity procurement (for usage as lighting, heating, computer, machinery...) and district procured heating for all owned and rented buildings by the postal operator or one of its subsidiaries (in that case, subsidiaries must be specified in the perimeter).

Where Postal Operators produce their own energy, the emission due to this production should be reported.
For Green Electricity, Emissions from Purchased Green Electricity and Produced Green Electricity should be reported separately in the GHG Inventory (see Scope 2 BUILDINGS: Green electricity consumption CO_2 emissions).

Data to be collected
- Electricity consumption (kWh)
- District heating consumption (kWh)
- Number of Buildings
- Floor space of buildings (m^2)

Where to obtain data
The following list suggests sources of information for calculating emissions from fuel use.
- Utility provider
- Electricity bills
- Invoices for fuel deliveries
- Gas bills
- Pipeline measurements
- Energy management software
- Meter reading (estimated from invoices if meter readings are not available)

Accounts or administration departments should have this information; alternatively, it might be held by individual managers.

Scope 2 BUILDINGS: A/Electricity consumption CO_2 emissions

Data gathering

1. Number of Building and total floor space

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Bank	Total
Buildings - Number	Number							
Buildings – total floor space	m^2							

2. **Electricity consumption**

Electricity consumption is generally measured in kilowatt hours (kWh) or megawatt hours (MWh).

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Bank	Total
Buildings - Electricity	kWh							
Buildings - Green Electricity purchased (precise which sources of electricity)	kWh							
Buildings - Electricity self produced	kWh							

* sub-division by entities is optional. If a postal operator cannot provide detailed figures, only total figures will be provided.

CO_2 Calculation

GHG emissions are calculated by multiplying a level of activity data by an emission factor.
To convert its electricity consumption in CO_2eq, the postal operator has to multiply its electricity consumption with a conversion factor specific to its country. Indeed, depending on the sources of the electricity (renewable, nuclear, coal…), the conversion factor will be different (See help box 8, building CO_2 calculation methodology). Postal operators could refer to:
• Country specific conversion ratios provided by national energy / environment agencies or by specific electricity producers can also be used by postal operators.
• GHG Protocol country specific electricity conversion ratios (year 2005)

Scope 2 BUILDINGS: B/CO_2 emissions related to district heating/cooling

Scope
The scope applies to district heating usage of owned and rented building.

Definition
This indicator aims to take into account CO_2 emissions of postal activities generated by district heating for all owned and rented buildings by the postal operator or one of its subsidiary (in that case, subsidiary must be specified in the perimeter).

Data gathering

District heating consumption (kWh)

Data on heat used is often collected in British thermal units (Btu), joules (J), therms, or pounds, which can then be converted to kWh (see 12.1 annex 1 for conversion of units). Postal Operators may report directly the kWh as proposed in the table underneath:

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Bank	Total
Buildings - District heating	kWh							

CO_2 Calculation

For district heating, conversion ratios from kWh to CO_2 are country specific. Some countries are able to divide the conversion rations for energy production, and energy and heat from waste treatment into separate factors for electricity and district heating. If so use the separate conversation rations.

If the operator does not have its own CO_2 calculation methods, as district heating often is produced combined with electricity production, the conversation rate could be the same as for electricity.

According to the WBCSD GHG Protocol the country specific's electricity emission factors (see 12.3 annex 3 emission factor) could be used for *both* electricity and district heating.

Scope 2 BUILDINGS: Green electricity consumption CO_2 emissions

Scope
The scope applies to owned and rented buildings where green electricity is purchased.

Definition
This indicator aims to take into account CO_2 emissions of postal activities saved by green electricity. Green electricity is renewable energy that could be purchased by postal operators.

Data gathering

Green electricity (kWh)
For Green energy purchased, emissions should be calculated using the green electricity specific emission factor provided by the energy provider. The energy provider should be able to demonstrate the production of green electricity thanks to a certification by a third party.

Indicator name	Precise the type of sources	Unit	Mail	Parcel	Logistics	Express National	Express International	Bank	Total
Green energy pruchased		kWh							

Scope 2 BUILDINGS: C/ number of owned and rented buildings / surface occupied

Scope
The scope applies to all owned or rented buildings

Definition
In order to be able to compare CO_2 figures yearly, this indicator aims to take into account the number and the surface of owned and rented buildings by the postal operator or one of its subsidiaries (in that case, subsidiaries must be specified in the perimeter).

Data gathering
Two basic data are necessary:
• Number of owned and rented buildings (u)
• Surface occupied (m^2) ➔ used to calculate the performance indicators

1. Number of Building ad Surface

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Bank	Total
Buildings - Number	Number							
Buildings - Surface	m^2							

7.3 Scope 3

7.3.1 SCOPE 3 INDICATORS Related to Transport

The methodology that could be shared with the subcontractors could be the same as the postal operator applies to itself for its own fleet.
The calculation will be based on the same methodology of Scope 1 Transport . The indicators sheet gather the way postal operators should collect data to help it to cooperate with its subcontractors.

Scope
The scope applies to all subcontracted transport.
Scope covered should be mentioned according to Recommendations 8 to assess coverage of the inventory.
Transport data for commuting to the work place may be not included in this indicator record.

Definition
This indicator aims to take into account indirect CO_2 emissions of postal activities generated by road vehicles operated by sub-contractors.

Data to be collected
Depending on the typology of transport and CO_2 calculation methodology, postal operators should choose among this data to be reported:
• Number of subcontractor vehicles/train/airplans/boat
• Number of km travelled (km)
• Number of Tonne. kilometre (Tonne.km)
• Fuel consumption (m^3 + kWh in case of road electric vehicles)

Where to obtain Data
Postal Operator accounts departments should also have records of claims by employees for mileage travelled in their own vehicles.
Potential sources are:
• Fleet records and invoices
• Employee mileage calculations/claims
• Information from car rental firms
• Tax returns from declarations and fleet monitoring records
• Travel agency invoices and records
• Freight handler invoices
• Company vehicle log books

Scope 3 TRANSPORT: A/ Subcontracted road transport CO_2 emissions

➔ See methodology in part 7.1.1 scope 1 ➔ TRANSPORT A/

Data gathering

1. Number of km / vehicle category

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Small vehicles	Number						
Vans	Number						
Heavy vehicles -Trucks / Lorries	Number						
Electric vehicles	Number						
Other fuel consuming vehicles	Number						
All vehicles	Number						

2. Fuel consumption

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Diesel consumed	m^3						
Petrol consumed	m^3						
LPG consumed	m^3						
Electricity consumed	kWh						
Other energy consumed (specify the energy used)	m^3						

NB: As information is external to the postal operator, km and fuel consumption figures can be more difficult to get.

3. Km travelled

Km estimation can be made through the number of km purchased in the contract. Fuel consumption estimation can be made, according to the vehicle category average fuel consumption and the km / purchased km.

Example of table to collect the information:

CO_2 Calculation

CO_2 emissions for subcontracted road transport are calculated or estimated on the same basis as for direct road transport emissions (see 7.1.1 scope 1)

Scope 3 TRANSPORT: B/ Subcontracted Rail transport CO_2 emissions

Data gathering

1. Number of km

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Diesel trains	Km						
Other fuel trains	Km						
Electricity trains	Km						

2. Fuel consumption

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Trains - Diesel	m^3						
Trains - Other fuel	m^3						
Trains - Electricity	kWh						

CO_2 Calculation

CO_2 emissions for subcontracted rail transport are calculated or estimated on the same basis as for direct rail transport emissions (see methodology in part 7.1.1 scope 1 ➔ TRANSPORT B/).

Scope 3 TRANSPORT: C/ Subcontracted air transport CO_2 emissions

Data gathering

1. Number of km

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Airplanes - short haul (<1000 km)	Km						
Airplanes - medium haul (1000 to 4000km)	Km						
Airplanes – long haul (> 4000km)	Km						
Airplanes – cargo	Km						

2. Fuel consumption

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Airplanes - Jet fuel	m^3						
Airplanes - Other fuel	m^3						

CO_2 Calculation

CO_2 emissions for subcontracted air transport are calculated or estimated on the same basis as for direct air transport emissions (see methodology in part 7.1.1 scope 1 ➔ TRANSPORT C/).

Scope 3 TRANSPORT: D/ Subcontracted sea and river transport CO_2 emissions

Data gathering

1. Number of km

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Boats	km						

2. Fuel consumption

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Boats	km						

CO_2 Calculation

CO_2 emissions for subcontracted sea and river transport are calculated or estimated on the same basis as for direct sea and river transport emissions (see methodology in part 7.1.1 scope 1 ➔ TRANSPORT D/).

7.4 Other Activities Indicators

Postal Operators may extend the report to emissions of other activities(see par 4.3) that they consider relevant. This paragraph intends to provide a guideline about the way to report emissions from business travel, commuting (of employees) and waste management.

7.4.1 Business travel

Definition

This indicator includes CO_2 emissions of postal activities caused by business travel. Business travel by train and plane is reported as emissions of Scope 3. Since Postal operators can have operational control over company cars, Business travel of company cars can fall under SCOPE 1 (postal operators own and control its company cars).

Data to be collected

Depending on the type of transport and CO calculation methodology, postal operators should choose among this data :

- Number of km (km) by type of transport (air, train, cars);
- Fuel consumption (m^3) or electric usage (kWh) (cars);

Where to obtain Data

Potential sources are:

- Fleet records and invoices
- Employee mileage calculations/claims
- Employee's expense account
- Gasoline card
- Information from
    - Travel agency
    - Car rental firms
- Tax returns from declarations and fleet monitoring records
- Freight handler invoices
- Company vehicle log books

Data gathering

1. Number of km

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Airplanes Trains Cars	km						

CO_2 Calculation

CO_2 emissions for business travel are calculated or estimated on the same basis as for the other transport emissions.

7.4.2 Commuting (Staff)

Definition
This indicator aims to take into account direct CO_2 emissions of postal activities generated by the commuting of postal operator employees.

Data to be collected
• Number of km travelled

Where to obtain Data
• Potential sources are:
• Fleet records and invoices
• Employee mileage calculations/claims
• Tax returns from declarations and fleet monitoring records
• Freight handler invoices
• Company vehicle log books
• Information from car rental firms

Data gathering

1. Number of km

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Express International	Total
cars bus Subway Others	km						

CO_2 Calculation

CO_2 emissions for commuting are calculated or estimated on the same basis as for the other transport emissions.

7.4.3 Waste Management

Definition

All the waste generated directly by postal activities that are sources of CO_2-e emissions in their end life. Emissions from waste can differ considering the waste type (i.e. normal or hazardous waste) and the waste destination (i.e. if waste is recycled, incinerated, landfilled, etc.).

Data to be collected

- Weight for each type of waste produced (tonnes) which are sources of CO_2-e
  - Paper / Cardboard
  - Plastic
  - Other inert waste
  - Waste compostable/fermentable
- Total amount of waste generated by postal activity on every sites (in tones)
- The real repartition in terms of treatment for waste
  - Incineration
    - ➔ with energy recovery,
    - ➔ without energy recovery,
  - Landfill
    - ➔ with gas recovery
    - ➔ without gas recovery
  - Compost/ferment Stream

Where to obtain Data

Potential sources are:

- Waste invoices from subcontractors who collect the waste
- Local Reporting of waste and consolidation

Data gathering

1. Weight of waste by type

Indicator name	Unit	Mail	Parcel	Logistics	Express National	Total
Type of waste: Normal waste	tonnes					
Hazardous waste	tonnes					

Then postal operator could apply the national ratio of treatment by waste to be able to provide the table underneath.
Where to find this ratio: it could be available in Environment Agency or in ministry dedicated to environment.

2. Weight of waste by repartition by type of treatment

If the data are available, the postal operator can also provide directly the table underneath.

Indicator name			Unit	Mail	Parcel	Logistics	Express National	Express International	Total
Type of waste	Recycling		tonnes						
	Landfill	with gas recovery	tonnes						
		without gas recovery							
	Incineration	with energy recovery	tonnes						
		without energy recovery							
	Other precise		tonnes						

CO_2 Calculation

Once postal operator has the weight by type of waste and treatment:
If a national ratio exists giving the CO_2 emission allocated a waste treatment (example: incineration with energy recovery for plastic), it could apply it; [Where to find this ratio: it could be available in Environment Agency or in ministry dedicated to environment.

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PART 3
REFERENCES

8. Emission Factors

The Emission Factor is a factor allowing GHG emissions to be estimated from a unit of available activity data (e.g. tonnes of fuel consumed, tonnes of product produced) and absolute GHG emissions. The emission factors could be expressed in a different unit as CO_2/m^3, TCO_2/km, etc.
Postal Operators should use emission factors already calculated and internationally accepted by the most well recognized institutions (GHG Protocol, UNEP, IPCC) and they should not have calculated these factors by themselves.
When postal operators choose the emission factors they should be particularly aware of the units.
In order to help the conversion from the sources to the different unit a "conversion unit table" is provided in the appendix.

Help Box 6: Calculation of the Emission Factor

This example show how an emission factor is calculated:
Example: calculation Diesel emission factor
Density (kg/m^3)= 845
PCI (GJ/t)= 43.33
kg CO_2/GJ=74.1
oxidation factor=0.99
Diesel Emission Factor (kg CO_2/tonne)= PCI(Gj/t) * Kg CO_2/Gj * oxidation factor
= **3,177**
Diesel Emission factor (kg CO_2/litre)= density (kg/m^3) * emission factor (kg CO_2/tonne)/1000/1000= **2.685**

8.1 Transport emission factors

In the case of road transportation, companies and other entities have the option to override these defaults of conversion factors if they have appropriate data on the type of fuel used (i.e., the type and proportion of fuel additives) based on fuel characteristics for geographical regions. To do so, companies should specify the location where fuel is purchased and use default emission factors, for that geographic region. Companies may base customized emission factors on company-specific heat rates and/or carbon content coefficients for each fuel combusted. These data may be available from fuel purchase records.
In most cases, default emission factors will be used, based on generic fuel type categories (e.g., unleaded gasoline, diesel, etc.). However, these emission factors may be customized by using company-specific information on fuel characteristics, based on either a) company-specific heat rate and/or carbon content coefficient information; or b) the location of gasoline purchases

Help Box 7: CO_2 Calculation Methodology for Transport[24]
This section describes the methods for calculating GHG emissions from transportation sources. Section I. describes the fuel-based method and Section II. describes the distance-based method for road transportation, air transport, water-borne sources (i.e., boat transportation) and rail transport. Both methods are available for all modes, however the fuel-based method is the preferred approach.

Section I. Fuel-based Method: Calculations Based on Aggregated Fuel Consumption Data
This section outlines the necessary steps for calculating CO_2 emissions from mobile sources using the fuel-based method, which is essentially the same as the fuel-based approach used to estimate GHG emissions from stationary combustion sources (see footnote 1). The major difference between stationary and mobile GHG emissions estimates is the different types of fuels and fuel emission factors for the two sources, although some are similar.
The fuel-based approach is fairly straightforward and requires essentially two main steps:

Step 1: Gather fuel consumption data by fuel type. Fuel use data can be obtained from several different sources including fuel receipts, financial records on fuel expenditures, or direct measurements of fuel use. More detail on choice of fuel use data can be found in Section III.A. When the amount of fuel is not known, it can be calculated based on distance traveled and an efficiency factor of fuel-per-distance(such as miles per gallon, or liters per 100km) using Steps 1.1 and 1.2.
Step 1.1: Collect data on distance travelled by vehicle type and fuel type. Distance traveled data can basically come in three forms, distance (e.g., kilometers) passenger-distance (e.g., passenger-kms), or freight distance (e.g., ton-miles).
Step 1.2: Convert distance travelled data into fuel use values based on fuel economy factors. Fuel economy factors depend on the type, age, and operating practice of the vehicle in question. There are also different fuel economy factors for each of the different types of distance traveled activity data.

Fuel Use= Distance x Fuel Economy Factor

Step 2: Convert fuel estimate to CO_2 emissions by multiplying results from step 1 by fuel-specific factors. There are different methods available to convert fuel use data into CO_2 emissions. The recommended approach is to first convert fuel use data into an energy value using the heating value of the fuel (if fuel use data is not first collected in terms of energy). The next step is to multiply by the emission factor of the fuel. Default or customized factors can be used .
The fuel-based approach is the same for the different modes of transportation; road transport, air transport, water transport and rail transport. Differences arise for different types of fuels used in that the gasoline factors (primarily used for road transport) differ based on geographic area more so than other fuels. The following equation outlines the recommended approach to calculating CO_2 emissions based on fuel use (assuming data is first obtained in terms of mass or volume).

CO_2 Emissions= Fuel Used x Heating Value x Emission Factor

24. Calculating CO_2 Emissions from Mobile Sources, appendix of the GHG Protocol

Section II. Distance-based Method: Calculations Based on Distance Traveled and Distance-based Emission Factors

This section outlines the necessary steps for calculating CO_2 emissions from mobile sources using the distance-based method. This method can be used when vehicle activity data is in the form of distance traveled but fuel economy data is not available. In this case distance-based emission factors will be required to calculate CO_2 emissions.

Calculating emissions requires two main steps:

Step 1: Collect data on distance traveled by vehicle type and fuel type. Distance traveled data can basically come in three forms, distance (e.g., kilometers) passenger-distance (e.g., passenger-kms), or freight distance (e.g., ton-miles).

Step 2: Convert distance estimate to CO_2 emissions by multiplying results from step 1 by distance based emission factors. Several distance based default emission factors are given in Table 5 for different types of mobile sources and activity data.

The following equation outlines the approach to calculating emissions based on distance traveled when fuel economy data is not available.

CO_2 Emissions = Distance Travelled x Emission factor

For transport CO_2 emissions, the accuracy associated with calculating emissions from fuel consumption is higher, and therefore the preferred method wherever possible, reltative to distance based calculations.

8.2 Building conversion ratios

Buildings CO_2 emissions are related to energy consumption, usually indicated in kWh for electricity, and in litres or tonnes for oil consumption.

Emissions factors for electricity, heat, and/or steam vary with season, time of day, and supplier. There is also the issue of whether to use marginal or average rates when calculating CO_2 emissions associated with electricity, heat, and/or steam consumption. As it is usually not practical to take all of these variables into account, and as marginal rates are often not widely available, this tool recommends the use of average rates in the calculation of an entity's indirect emissions. Several options for selecting an electricity, heat, and/or steam emissions factor are provided below. If site-specific emission factors are available, they are generally preferable to more generic or general emission factors.. It is important to remember to express emission factors in the same measurement units as the activity data used in the calculation worksheets. It is also important to document and justify the choice of emission factors used in the inventory.

Site-specific emission factors – This is the most accurate option, but would generally only apply to large industrial customers who have a direct supply and transmission contract with a specific electricity, heat, and/or steam supplier in the vicinity. In this case, the emission factor should be based on the actual fuel fired and the technology employed by the electricity, heat, and/or steam supplier.

Regional/power pool emission factors – If site-specific emissions factors are not available, use a generic regional or power pool emissions factor that has been published by the government in the country where the facility is located. Government statistics may be aggregated by power pool region or state.

National average emission factors – If regional or power pool emission factors are not available, use an appropriate generic national average factor for the entire country's grid(see 12.3 annex 3).

Help Box 8: CO_2 Calculation Methodology for Building[25]

In order to calculate emissions of Building, Postal Operor have to multiply a level of activity data by the above mentioned emission factors. Activity data for building is a quantified measure of an activity, such as electricity consumption, and emission factors convert activity data into emission values.

CO_2 Emissions = Activity Data x Emission Factor

Activity data
The activity data is the quantity of purchased electricity, heat, and/or steam consumed. Electricity consumption is generally measured in kilowatt hours (kWh) or megawatt hours (MWh). Data on heat and/or steam use is often collected in British thermal units (Btu), joules (J), therms, or pounds, which can then be converted to kWh (see worksheet "Conversion Factors" to covert this data to kWh).

A facility-specific method (calculating the heat and/or steam activity data per facility) that uses fuel purchase records is the only approach available for calculating heat and/or steam activity data. However, several methods exist to collect activity data on the consumption of purchased electricity. A facility-specific method (calculating the electricity activity data per facility) that uses electricity bill/meter records is always the preferred approach. This is often the most accurate approach, and also facilitates the identification of opportunities to reduce emissions.

25. Indirect CO_2 Emissions from the Consumption of Purchased Electricity, Heat, and/or Steam Guide to calculation worksheets (January 2007) v 1.2, GHG Protocol.

If calculating activity data for electricity use at the facility level using electricity bill/meter records is not possible, as is often the case in leased, office-based facilities that are not owned by the reporting company, estimation methods to approximate activity data for electricity use may be employed.

Four activity data collection methods are listed below for calculating electricity use, including the preferred method and three estimation methods. It is important to document the choice of activity data collection method in the inventory and to keep records of purchased electricity, heat, and/or steam.

RECOMMENDATION	Order of Preference
1	Actual electricity or fuel use records method
2	Building-specific data estimation method
3	Similar building/facility estimation method
4	Generic building space data method

• **Actual electricity or fuel use records method** – As mentioned above, this is the preferred and in general most accurate data collection method. For purchased electricity, monthly electric bills or electric meter readings should provide the necessary activity data. For tenants of leased space, particularly in office buildings, electricity costs are frequently included as part of rental payments and accurate electricity use data is often difficult to obtain, as monthly electric bills or electric meter readings may not be available. In this instance, it may be necessary to estimate electricity consumption by following one of the three estimation methods provided below.

For heat or steam purchases, purchase records should provide the necessary activity data. Please note that the three estimation methods described below are not applicable for heat or steam purchases.

• Building-specific data estimation method – If fuel purchase records, electricity bills, or meter readings are not available or applicable, often because the reporting company leases office space in a building owned by another entity, the next best method is to estimate electricity consumption using actual data based on building-specific electricity use records. While this method does use actual building-specific data, this data is not specific to the particular office space in the building used by the reporting company, but only to the entire buildings energy use. Another limitation to this method is that it assumes that all occupants of the building have similar energy consuming habits. For these reasons, this method is considered to be an estimation method that is less accurate then the preferred "actual electricity or fuel use records method" described above.

To follow this method, the following information will be necessary, and should be available from the building's property manager:

- Total building area;

- Area of company's space;

- Total building electricity use (in kWh or MWh); and

- Building occupancy rate (i.e., if 75 percent of the building is occupied, then use .75)

Using this information and the following formula, it will be possible to estimate the approximate kWh or MWh of electricity consumption.
Approximate kWh or MWh Electricity Used =(Area of Company's Space ÷ Total Building Area) x Total Building Electricity Use ÷ Building Occupancy Rate =

• Similar building/facility estimation method – If building-specific electricity use data is not available, it may be possible to develop an estimate of a building's/facility's electricity consumption using actual data extrapolated from other similar buildings/facilities owned by the reporting company. This method should only be used if the reporting company has multiple buildings/facilities of a similar type, with similar electricity use patterns, and is able to obtain accurate, reliable electricity use data for some of them using the "actual electricity or fuel use records method" described above.

• Generic building space data method – If building-specific electricity use data or accurate data from other similar buildings/facilities owned by the reporting company is not available, it may be possible to collect default data on kWh used per area of generic office space in a particular country from a published source, such as a government agency.8 This method is only recommended as a last-resort method, as it serves as a very rough estimate that may be significantly inaccurate. Furthermore, this method should only be used by reporting companies whose CO_2 emissions from electricity use in office space represent a small percentage of the company's total GHG emissions. For office-based companies whose CO_2 emissions from electricity use in office space represent a very large percentage of the company's total GHG emissions, this method should not be used.

9. Glossary

This glossary of terms is meant to assist the user of this Standard in interpreting information collected and used in the process of developing greenhouse gas emission estimates. Most of the terms presented here are not explicitly used in this Standard, but may be encountered in the process of its use. The definitions provided below are simply indicative of typical usage, and may not be applicable in a strict (e.g., legal) sense in relation to individual programs or regulations.

Absolute target: A target defined by reduction in absolute emissions over time e.g., reduces CO_2 emissions by 10% below 2007 levels by 2012.

Additionality: A criterion for assessing whether a project has resulted in GHG emission reductions or removals in addition to what would have occurred in its absence. This is an important criterion when the goal of the project is to offset emissions elsewhere.

Airmail distance: the distance used to calculate airmail conveyance remuneration.

Airmail item: in the classification system based on contents, letter-post item conveyed by air with priority.

Allowance: A commodity giving its holder the right to emit a certain quantity of GHG.

Anthropogenic: Resulting from or produced by human beings

Baseline: A hypothetical scenario for what GHG emissions, removals or storage would have been in the absence of the GHG project or project activity.

Base year: A historic datum (a specific year or an average over multiple years) against which a company's emissions are tracked over time.

Base year emissions: GHG emissions in the base year.

Base year emissions recalculation: Recalculation of emissions in the base year to reflect a change in the structure of the company, or to reflect a change in the accounting methodology used. This ensures data consistency over time.

Biofuel: Fuel made from plant material, e.g. wood, straw and ethanol from plant matter.

Biodiesel: a biofuel produced through transesterification, a process in which organically derived oils are combined with alcohol (ethanol or methanol) in the presence of a catalyst to form ethyl or methyl ester. Biodiesel can be made from soybean or rapeseed oils, animal fats, waste vegetables oils or microalgae oils.

Boundaries: GHG accounting and reporting boundaries can have several dimensions, i.e. organizational, operational, geographic, business unit, and target boundaries. The inventory boundary determines which emissions are accounted and reported by the company.

Cap and trade system: A system that sets an overall emissions limit, allocates emissions allowances to participants, and allows them to trade allowances and emission credits with each other.

Carbon dioxide (CO_2): A naturally occurring gas, and also a by-product of burning *fossil fuels* and *biomass*, as well as *land-use changes* and other industrial processes. It is the principal *anthropogenic greenhouse gas* that affects the Earth's *radiative balance*. It is the reference gas against which other greenhouse gases are measured and therefore has a *Global Warming Potential* of 1.

Carbon dioxide equivalent (CO_2 Eq): a metric measure used to compare the emissions of the different greenhouse gases based upon their global warming potential (GWP).

Carbon intensity: The relative amount of carbon emitted per unit of energy or fuels consumed

Clean Development Mechanism: A mechanism established by Article 12 of the Kyoto Protocol for project-based emission reduction **(CDM)** activities in developing countries. The CDM is designed to meet two main objectives: to address the sustainability needs of the host country and to increase the opportunities available to Annex 1 Parties to meet their GHG reduction commitments. The CDM allows for the creation, acquisition and transferof certified emissions reductions (CERs) from climate change mitigation projects undertaken in non-Annex 1 countries.

Certified Emission Reductions (CERs): A unit of emission reduction generated by a CDM project. CERs are tradable commodities that can be used by Annex 1 countries to meet their commitments under the Kyoto Protocol.

Climate: Climate in a narrow sense is usually defined as the "average weather" or more rigorously as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The classical period is 30 years, as defined by the World Meteorological Organization (WMO). These relevant quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the *climate system*.

Climate change: Climate change refers to a statistically significant variation in either the mean state of the *climate* or in its variability, persisting for an extended period (typically decades or longer).
Climate change may be due to natural internal processes or *external forcings*, or to persistent *anthropogenic* changes in the composition of the *atmosphere* or in *land use*. Note that the *United Nations Framework Convention on Climate Change* (UNFCCC), in its Article 1, defines "climate change" as: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." The UNFCCC thus makes a distinction between "climate change" attributable to human activities altering the atmospheric composition, and "climate variability" attributable to natural causes.

Coal: A readily combustible black or brownish-black rock whose composition, including inherent moisture, consists of more than 50 percent by weight and more than 70 percent by volume of carbonaceous material. It is formed from plant remains that have been compacted, hardened, chemically altered, and metamorphosed by heat and pressure over geologic time.

Co-generation unit/Combined: A facility producing both electricity and steam/heat using the same fuel supply.

Commuting: to travel back and forth regularly, as between one's place of work and home.

Compressed natural gas (CNG): CNG is natural gas for use in special CNG vehicles, where it is stored in high-pressure fuel cylinders (typically 2000 to 3600 psi). CNG's use stems in part from its clean burning properties, as it produces fewer exhaust and greenhouse gas emissions than motor gasoline or diesel oil. It is used most frequently in light-duty passenger vehicles and pickup trucks, medium duty delivery trucks, and in transit and school buses.

Consolidation: Combination of GHG emissions data from separate operations that form part of one company or group of companies.

Control: The ability of a company to direct the policies of another operation. More specifically, it is defined as either operational control (the organization or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation – operating and/or health and safety and/or environmental policies) or financial control (the organization has the ability to direct the financial and operating policies of the operation with a view to gaining economic benefits from its activities).

Cubic weight/Volume weight: This refers to the invoiced weight -- the weight that is actually invoiced of the shipment. This means on larger packages that the debited weight may come from the volume of the package instead of the actual physical weight (for packages over a certain cubic measurement). This allows shipping companies to charge for the bulk of larger items.

Direct GHG emissions: Emissions from sources that are owned or controlled by the reporting company.

Direct monitoring: Direct monitoring of exhaust stream contents in the form of continuous emissions monitoring (CEM) or periodic sampling.

District heating: the supply of heat, either in the form of steam or hot water, from a central source to a group of buildings.

Double counting: Two or more reporting companies take ownership of the same emissions or reductions.

Emissions: Releases of gases to the atmosphere (e.g., the release of carbon dioxide during fuel combustion). Emissions can be either intended or unintended releases.

Emissions factor: A unique value for scaling emissions to activity data in terms of a standard rate of emissions per unit of activity (e.g., grams of carbon dioxide emitted per barrel of fossil fuel consumed).

Emission inventory: A list of air pollutants emitted into a community's, state's, nation's, or the Earth's atmosphere in amounts per some unit time (e.g. day or year) by type of source. An emission inventory has both political and scientific applications.

Emission Reduction Unit (ERU): A unit of emission reduction generated by a Joint Implementation (JI) project. ERUs are tradable commodities which can be used by Annex 1 countries to help them meet their commitment under the Kyoto Protocol.

Employees: An Employee denominator is quite simply the number of employees under contract and directly employed by a company. The number of employees is included as a denominator because of its current use and also its applicability to industry sectors in which added value and unit turnover have limited value (e.g. the banking sector).

EMS: EMS is an international postal express service for both documents and merchandise, which aims to provide customers with a high quality competitive express mail product at an affordable price on a global basis. In most countries EMS is the only practical mean of providing universal access to international express services for the private customer.

Estimation uncertainty: Uncertainty that arises whenever GHG emissions are quantified, due to uncertainty in data inputs and calculation methodologies used to quantify GHG emissions. (Chapter 7)

Equivalent carbon dioxide (CO_2) concentration: The concentration of *carbon dioxide* that would cause the same amount of *radiative forcing* as a given mixture of carbon dioxide and other *greenhouse gases*.

Equivalent carbon dioxide (CO_2) emission: The amount of *carbon dioxide* emission that would cause the same integrated *radiative forcing*, over a given time horizon, as an emitted amount of a well mixed *greenhouse gas* or a mixture of well mixed greenhouse gases. The equivalent carbon dioxide emission is obtained by multiplying the emission of a well mixed greenhouse gas by its *Global Warming Potential* for the given time horizon. For a mix of greenhouse gases it is obtained by summing the equivalent carbon dioxide emissions of each gas. Equivalent carbon dioxide emission is a standard and useful *metric* for comparing emissions of different greenhouse gases but does not imply exact equivalence of the corresponding *climate change* responses (see Section 2.10).

Express courier: general terms, refers to an item forwarded and delivered in the most rapid way (includes EMS).

Express items[26] :
Express items are items (documents and merchandise) forwarded and delivered in the most rapid way. At international level, this service corresponds to EMS and other similar services.

26. Reference Letter Post Manual, UPU, 2005

Facility: Includes all buildings, equipment, structures, and other stationary items which are located on a single site or on contiguous or adjacent sites and which are owned or operated by the same person (or by any person which controls, is controlled by, or is under common control, with such person). Also referred to as an "installation." A facility may contain one or more establishments and any number of combustion units.

Fingerprint: The *climate* response pattern in space and/or time to a specific forcing is commonly referred to as a fingerprint. Fingerprints are used to detect the presence of this response in observations and are typically estimated using forced *climate model* simulations.

Fuel: Any material substance that can be combusted to supply heat or power. Included are petroleum, coal, and natural gas (the fossil fuels), and other combustible materials, such as biomass, and hydrogen.

Fugitive emissions: Emissions that are not physically controlled but result from the intentional or unintentional releases of GHGs. They commonly arise from the production, processing transmission storage and use of fuels and other chemicals, often through joints, seals, packing, gaskets, etc.

GHG capture: Collection of GHG emissions from a GHG source for storage in a sink.

GHG credit: GHG offsets can be converted into GHG credits when used to meet an externally imposed target. A GHG credit is a convertible and transferable instrument usually bestowed by a GHG program.

GHG offset: Offsets are discrete GHG reductions used to compensate for (i.e., offset) GHG emissions elsewhere, for example to meet a voluntary or mandatory GHG target or cap. Offsets are calculated relative to a baseline that represents a hypothetical scenario for what emissions would have been in the absence of the mitigation project that generates the offsets. To avoid double counting, the reduction giving rise to the offset must occur at sources or sinks not included in the target or cap for which it is used.

GHG Protocol calculation tools: A number of cross-sector and sector-specific tools that calculate GHG emissions on the basis of activity data and emission factors.

GHG Protocol Initiative: A multi-stakeholder collaboration convened by the World Resources Institute and World Business Council for Sustainable Development to design, develop and promote the use of accounting and reporting standards for business. It comprises of two separate but linked standards—the *GHG Protocol Corporate Accounting and Reporting Standard* and the *GHG Protocol Project Quantification Standard.*

GHG public report: Provides, among other details, the reporting company's physical emissions for its chosen inventory boundary.

GHG removal: Absorption or sequestration of GHGs from the atmosphere.

GHG sink: Any physical unit or process that stores GHGs; usually refers to forests and underground/deep sea reservoirs of CO_2.

GHG source: Any physical unit or process which releases GHG into the atmosphere.

GHG trades: All purchases or sales of GHG emission allowances, offsets, and credits.

Global surface temperature: The global surface temperature is an estimate of the global mean surface air temperature. However, for changes over time, only anomalies, as departures from a climatology, are used, most commonly based on the area-weighted global average of the *sea surface temperature* anomaly and *land surface air temperature* anomaly.

Global Warming Potential (GWP): The index used to translate the level of emissions of various gases into a common measure in order to compare the relative radiative forcing of different gases without directly calculating the changes in atmospheric concentrations. The GWP of other gases is measured in relation to that of carbon dioxide, which, by international scientific convention, is assigned a value of one (1). A GWP compares the radiative forcing of a tonne of a greenhouse gas over a given time period (e.g. 100 years) to a tonne of CO_2. Gases involved in complex atmospheric chemical processes have not been assigned GWPs.

Green power: A generic term for renewable energy sources and specific clean energy technologies that emit fewer GHG emissions relative to other sources of energy that supply the electric grid. Includes solar photovoltaic panels, solar thermal energy, geothermal energy, landfill gas, low-impact hydropower, and wind turbines.

Greenhouse effect: *Greenhouse gases* effectively absorb *thermal infrared radiation*, emitted by the Earth's surface, by the *atmosphere* itself due to the same gases, and by clouds. Atmospheric radiation is emitted to all sides, including downward to the Earth's surface. Thus, greenhouse gases trap heat within the surface-*troposphere* system. This is called the *greenhouse effect*. Thermal infrared radiation in the troposphere is strongly coupled to the temperature of the atmosphere at the altitude at which it is emitted. In the troposphere, the temperature generally decreases with height. Effectively, infrared radiation emitted to space originates from an altitude with a temperature of, on average, –19°C, in balance with the net incoming *solar radiation*, whereas the Earth's surface is kept at a much higher temperature of, on average, +14°C. An increase in the concentration of greenhouse gases leads to an increased infrared opacity of the atmosphere, and therefore to an effective radiation into space from a higher altitude at a lower temperature. This causes a *radiative forcing* that leads to an enhancement of the greenhouse effect, the so-called *enhanced greenhouse effect*.

Greenhouse gas (GHG): Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, but are not limited to, water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrochlorofluorocarbons (HCFCs), ozone (O_3), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). See *carbon dioxide, methane, nitrous oxide, hydrochlorofluorocarbon, ozone, hydrofluorocarbon, perfluorocarbon, sulfur hexafluoride*.

Group company / subsidiary: The parent company has the ability to direct the financial and operating policies of a group company/subsidiary with a view to gaining economic benefits from its activities.

Heating value: The amount of energy released when a fuel is burned completely. Care must be taken not to confuse higher heating values (HHVs), used in the US and Canada, and lower heating values, used in all other countries.

Indirect GHG emissions: Emissions that are a consequence of the operations of the reporting company, but occur at sources owned or controlled by another company.

Insourcing: The administration of ancillary business activities, formally performed outside of the company, using resources within a company.

Intensity ratios: Ratios that express GHG impact per unit of physical activity or unit of economic value (e.g. tonnes of CO_2 emissions per unit of electricity generated). Intensity ratios are the inverse of productivity/efficiency ratios.

Intensity target: A target defined by reduction in the ratio of emissions and a business metric over time e.g., reduce CO_2 per tonne of cement by 12% between 2000 and 2008.

Intergovernmental Panel on Climate Change (IPCC): International body of climate change scientists. The role of the IPCC is to assess the scientific, technical and socio-economic information relevant to the understanding of the risk of human-induced climate change (www.ipcc.ch).

Inventory: A quantified list of an organization's GHG emissions and sources.

Inventory boundary: An imaginary line that encompasses the direct and indirect emissions that are included in the inventory. It results from the chosen organizational and operational boundaries.

Inventory quality: The extent to which an inventory provides a faithful, true and fair account of an organization's GHG emissions

Item; Mail item; Mailpiece; Postal item[27]: Indivisible mailable entity in respect of which a mail service contractor accepts an obligation to provide postal services.

Jet fuel: Includes both naphtha-type and kerosene-type fuels meeting standards for use in aircraft turbine engines. Although most jet fuel is used in aircraft, some is used for other purposes such as generating electricity.

Joint Implementation (JI): The JI mechanism was established in Article 6 of the Kyoto Protocol and refers to climate change mitigation projects implemented between two Annex 1 countries. JI allows for the creation, acquisition and transfer of "emission reduction units" (ERUs).

27. UPU standard glossary, UPU, 2008.

Kyoto Protocol: The Kyoto Protocol to the *United Nations Framework Convention on Climate Change* (UNFCCC) was adopted in 1997 in Kyoto, Japan, at the Third Session of the Conference of the Parties (COP) to the UNFCCC. It contains legally binding commitments, in addition to those included in the UNFCCC. Countries included in Annex B of the Protocol (most Organisation for Economic Cooperation and Development countries and countries with economies in transition) agreed to reduce their *anthropogenic greenhouse gas* emissions (*carbon dioxide*, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride) by at least 5% below 1990 levels in the commitment period 2008 to 2012. The Kyoto Protocol entered into force on 16 February 2005.

Letter Post Items[28] :
Letter-post items* basically consist of letters, postcards, printed paper (newspapers, periodicals, advertising, etc.), small packets, literature for the blind, and, as applicable in the domestic service, commercial papers, samples of mechandise, "phonopost" items, postal packets.
Letter-post items are:
-priority items and non-priority items, up to 2 kilogrammes;
- letters, postcards, printed papers and small packets, up to 2 kilogrammes;
- literature for the blind, up to 7 kilogrammes;
- special bags containing newspapers, periodicals, books and similar printed documentation for the same addressee at the same address called "M bags", up to 30 kilogrammes.
- Letter-post items shall be classified on the basis either of the speed of treatment of the items or of the contents of the items in accordance with the Letter Post Regulations.
-Higher weight limits than those indicated in paragraph 2 apply optionally for certain letter-post item categories under the conditions specified in the Letter Post Regulations.

Life Cycle Analysis: Assessment of the sum of a product's effects (e.g. GHG emissions) at each step in its life cycle,including resource extraction, production, use and waste disposal.

Liquefied natural gas (LNG): Natural gas cooled to approximately –160°C (-256 degrees F) under atmospheric pressure condenses to its liquid form called LNG. LNG is odourless, colourless, non-corrosive and non-toxic.

Liquefied petroleum gases (LPG): LPG are light paraffinic hydrocarbons derived from the refinery processes, crude oil stabilisation and natural gas processing plants. They consist mainly of propane (C3H8) and butane (C4Hl0) or a combination of the two. They could also include propylene, butylene, isobutene and isobutylene. LPG are normally liquefied under pressure for transportation and storage.

Logistics: set of operations involved in the physical distribution of a company's products (such as warehousing, labelling, computerized stock management, deliveries, and possibliy also packaging and billing) and simultaneous management of the corresponding information flows.

Mail flow: volume of mail exchanged between countries.

28.Reference Letter Post Manual(2005), UPU, Berne.

Mail train: set of postal carriages making up a train travelling at times convenient to the postal service

Materiality threshold: A concept employed in the process of verification. It is often used to determine whether an error or omission is a material discrepancy or not. It should not be viewed as a de minimus for defining a complete inventory.

Mobile combustion: Burning of fuels by transportation devices such as cars, trucks, trains, airplanes, ships etc.

Model uncertainty: GHG quantification uncertainty associated with mathematical equations used to characterize the relationship between various parameters and emission processes.

Natural gas. Naturally occurring underground deposits of gases consisting of 50 to 90 percent methane (CH_4) and small amounts of heavier gaseous hydrocarbon compounds such as propane (C_3H_4) and butane (C_4H_{10}). Natural gas does not include the following gaseous fuels: landfill gas, digester gas, refinery gas, sour gas, blast furnace gas, coal-derived gas, producer gas, or coke oven gas.

Operation: A generic term used to denote any kind of business, irrespective of its organizational, governance, or legal structures. An operation can be a facility, subsidiary, affiliated company or other form of joint venture.

Operational boundaries: The boundaries that determine the direct and indirect emissions associated with operations owned or controlled by the reporting company. This assessment allows a company to establish which operations and sources cause direct and indirect emissions, and to decide which indirect emissions to include that are a consequence of its operations.

Operational Control: see **control** definition

Organic growth/decline: Increases or decreases in GHG emissions as a result of changes in production output, product mix, plant closures and the opening of new plants.

Organizational boundaries: The boundaries that determine the operations owned or controlled by the reporting company, depending on the consolidation approach taken (equity or control approach).

Outsourcing: full or partial sub-contracting of tasks hitherto performed internally by a company.

Ozone: Ozone, the triatomic form of oxygen (O3), is a gaseous atmospheric constituent. In the *troposphere*, it is created both naturally and by photochemical reactions involving gases resulting from human activities (*smog*). Tropospheric ozone acts as a *greenhouse gas*. In the *stratosphere*, it is created by the interaction between solar ultraviolet radiation and molecular oxygen (O2). Stratospheric ozone plays a dominant role in the stratospheric radiative balance. Its concentration is highest in the *ozone layer*.

Parameter uncertainty: GHG quantification uncertainty associated with quantifying the parameters used as inputs to estimation models.

Post / Mail: all postal items. Also refers to the carrier.

Postal Administration: Public service responsible for providing postal or even administrative services, in accordance with laws, regulations, etc.

Postal operator: public or private entity providing postal services

Postal parcel :
Postal items between 2 and 20 kg that are neither letter-post items nor postal payment products. Member countries shall also ensure the acceptance, handling, conveyance and delivery of postal parcels up to 20 kilogrammes, either as laid down in the Convention, or, in the case of outward parcels and after bilateral agreement, by any other means which is more advantageous to their customers. Weight limits higher than 20 kilogrammes apply optionally for certain parcel-post categories under the conditions specified in the Parcel Post Regulations.

Postal parcel service: branch of the international postal service dealing with parcel-post items

Postal payment products: postal payment products include postal money orders including cash-on-delivery (COD) money orders and inter-account transfers.

Primary effects: The specific GHG reducing elements or activities (reducing GHG emissions, carbon storage, or enhancing GHG removals) that the project is intended to achieve.

Process emissions: Emissions generated from manufacturing processes, such as the CO_2 that is arises from the breakdown of calcium carbonate (CaCO**3**) during cement manufacture.

Productivity/efficiency ratios: Ratios that express the value or achievement of a business divided by its GHG impact. Increasing efficiency ratios reflect a positive performance improvement. e.g. resource productivity(sales per tonne GHG). Productivity/efficiency ratios are the inverse of intensity ratios.

Parts per billion (ppb): Number of parts of a chemical found in one billion parts of a particular gas, liquid, or solid mixture.

Parts per million (ppm): Number of parts of a chemical found in one million parts of a particular gas, liquid, or solid.

Ratio indicator: Indicators providing information on relative performance such as intensity ratios or productivity/efficiency ratios.

29. Referencial Parcel Post Manual (2005) , UPU, Berne.
30. See Manual of Postal Payment Services, UPU, 2005.

Renewable energy: Energy taken from sources that are inexhaustible, e.g. wind, water, solar, geothermal energy, and biofuels.

Reporting: Presenting data to internal management and external users such as regulators, shareholders, the general public or specific stakeholder groups.

Reversibility of reductions: This occurs when reductions are temporary, or where removed or stored carbon may be returned to the atmosphere at some point in the future.

Rolling base year: The process of shifting or rolling the base year forward by a certain number of years at regular intervals of time.

Scientific Uncertainty: Uncertainty that arises when the science of the actual emission and/or removal process is not completely understood.

Scope: Defines the operational boundaries in relation to indirect and direct GHG emissions.

Scope 1 inventory: A reporting organization's direct GHG emissions.

Scope 2 inventory: A reporting organization's emissions associated with the generation of electricity, heating/ cooling, or steam purchased for own consumption.

Scope 3 inventory: A reporting organization's indirect emissions other than those covered in scope 2.

Sequestered atmospheric carbon: Carbon removed from the atmosphere by biological sinks and stored in plant tissue. Sequestered atmospheric carbon does not include GHGs captured through carbon capture and storage.

Significance threshold: A qualitative or quantitative criteria used to define a significant structural change. It is the responsibility of the company/ verifier to determine the "significance threshold" for considering base year emissions recalculation. In most cases the "significance threshold" depends on the use of the information, the characteristics of the company, and the features of structural changes.

Solar energy: Solar radiation exploited for hot water production and electricity generation, by:
• Flat plate collectors, mainly of the thermosyphon type, for domestic hot water or for the seasonal heating of swimming pools
• Photovoltaic cells
• Solar thermal electric plants.

Stationary Combustion: Burning of fuels to generate electricity, steam, heat, or power in stationary equipment such as boilers, furnaces etc.

Structural change: A change in the organizational or operational boundaries of a company that result in the transfer of ownership or control of emissions from one company to another. Structural changes usually result from a transfer of ownership of emissions, such as mergers, acquisitions, divestitures, but can also include outsourcing/ insourcing.

Target base year: The base year used for defining a GHG target, e.g. to reduce CO_2 emissions 10% below the target base year levels by the target base year 2007 by the year 2010. (Chapter 11)

Target boundary: The boundary that defines which GHG's, geographic operations, sources and activities are covered by the target.

Target commitment period: The period of time during which emissions performance is actually measured against the target. It ends with the target completion date.

Target completion date: The date that defines the end of the target commitment period and determines whether the target is relatively short- or long-term.

Target double counting policy: A policy that determines how double counting of GHG reductions or other instruments, such as allowances issued by external trading programs, is dealt with under a GHG target. It applies only to companies that engage in trading (sale or purchase) of offsets or whose corporate target boundaries interface with other companies' targets or external programs.

Turnover: (also referred to as sales) represents the total value of goods and services sold by the company to third parties in the normal course of trade. Turnover as a denominator is a summation of the whole value of a product or a service up to the point of sale. Unit turnover has the advantage of being an obligatory requirement for annual accounts. Unit turnover is an attractive denominator. However, turnover does not permit inter-sector benchmarking because it does not directly correlate to global warming contribution. On the other hand, turnover may allow intra-sector comparison of companies with similar profiles and production processes.

Uncertainty: 1. Statistical definition: A parameter associated with the result of a measurement that characterizes the dispersion of the values that could be reasonably attributed to the measured quantity. (e.g., the sample variance or coefficient of variation).
2. Inventory definition: A general and imprecise term which refers to the lack of certainty in emissions related data resulting from any causal factor, such as the application of non-representative factors or methods, incomplete data on sources and sinks, lack of transparency etc. Reported uncertainty information typically specifies a quantitative estimates of the likely or perceived difference between a reported value and a qualitative description of the likely causes of the difference.

United Nations Framework Convention on Climate Change (UNFCCC): The Convention was adopted on 9 May 1992 in New York and signed at the 1992 Earth Summit in Rio de Janeiro by more than 150 countries and the European Community. Its ultimate objective is the 'stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system'. It contains commitments for all Parties. Under the Convention, Parties included in Annex I (all OECD countries and countries with economies in transition) aim to return *greenhouse gas* emissions not controlled by the *Montreal Protocol* to 1990 levels by the year 2000. The convention entered in force in March 1994. See *Kyoto Protocol*.

Value chain emissions: Emissions from the upstream and downstream activities associated with the operations of the reporting company.

Verification: An independent assessment of the reliability (considering completeness and accuracy) of a GHG inventory.

Wind energy: Kinetic energy present in wind motion that can be converted to mechanical energy for driving pumps, mills, and electric power generators.

Wood energy: Wood and wood products used as fuel, including round wood (cord wood), limb wood, wood chips, bark, sawdust, forest residues, charcoal, pulp waste, and spent pulping liquor.

10. Useful Information

CLIMATE CHANGE/ KYOTO PROTOCOL:

United Nations Framework Convention on Climate Change
http://www.unfccc.org

UNEP:
http://www.unep.org

ENVIRONMENTAL REPORTING:

WBCSD/WRI-GHG Protcol Intitative:
http://www.ghgprotocol.org/

International Corporate Reporting Site:
http://www.enviroreporting.com

GRI - Global Reporting Initiative
http://www.globalreporting.org/

IPCC Guidelines
http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm

POSTAL SECTOR ENVIRONMENTAL INITIATIVES:

UPU Climate Change
http://www.upu.int/climate_change/en/index.shtml

PostEurop GHG Reduction Initiative
http://www.sustainablepost.eu

IPC, EMMS
http://www.ipc.be/en/Services/Sustainability.aspx

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WBCSD, WRI (2009)GHG Protocol Initiative : GHG emissions from stationary combustion

WBCSD, WRI (2009) GHG Protocol Initiative: GHG emissions from purchased electricity .

WBCSD, WRI (2009)GHG Protocol Initiative: GHG emissions from transport or mobile sources .

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WRI (2003), Renewable Energy Certificates: An Attractive Means for Corporate Customers to Purchase Renewable Energy, World Resources Institute, Washington, DC

12. Annexes

12.1 Annex 1 : Conversion Units

Destination Unit	Destination Unit Code	Conversion Factor	Source Unit	Source Unit Code
kg/l	kg/l	0.001	g/l	g/l
kg/l	kg/l	1	g/ml	g/ml
kg/l	kg/l	1000	kg/cm^3	kg/cm^3
kg/l	kg/l	0.016018262	lb/ft3	lb/ft3
kg/l	kg/l	0.119828729	lb/gal (US)	lb/gal (US)
kg/l	kg/l	0.000001	mg/l	mg/l
kg/l	kg/l	1	t/m^3	t/m^3
Gigajoule	GJ	0.00000106	British Thermal Unit	btu
Gigajoule	GJ	4.19E-09	Calories	cal
Gigajoule	GJ	0.000000001	Joule	J
Gigajoule	GJ	0.00000419	Kilocalories	kcal
Gigajoule	GJ	0.000001	Kilojoules	kJ
Gigajoule	GJ	0.0036	kiloWatt/hour	kWh
Gigajoule	GJ	0.105506	therm	thm
metric ton	t	0.050802302	cwt	cwt
metric ton	t	0.00000177	dr	dr
metric ton	t	0.000001	gram	g
metric ton	t	0.001	kilogram	kg
metric ton	t	0.000453592	pound	lb
metric ton	t	0.050802302	long cwt	long cwt
metric ton	t	1.016049981	long t	long t
metric ton	t	0.000000001	mg	mg
metric ton	t	0.0000283	ounce	oz
metric ton	t	0.045359202	sh. cwt	sh. cwt
metric ton	t	1.016049981	t (av.)	t (av.)
metric ton	t	0.907185018	ton sh.	ton sh.
Days	d	0.041666667	hours	h
Days	d	365	man-year	man-year
Days	d	0.002083333	minutes	min
cubic meter	m^3	0.115626998	barrel US	bl
cubic meter	m^3	0.004546	br. gal	br. gal
cubic meter	m^3	0.00056825	br. pint	br. pint
cubic meter	m^3	0.035239101	bu	bu
cubic meter	m^3	0.000001	cm^3	cm^3
cubic meter	m^3	0.001	dl	dl
cubic meter	m^3	0.001	dm^3	dm^3
cubic meter	m^3	0.00002957	fluid ounce	fl oz
cubic meter	m^3	0.02831718	cubic foot	ft3
cubic meter	m^3	0.003785336	gallon	gal
cubic meter	m^3	0.1	hl	hl
cubic meter	m^3	0.0000164	in3	in3
cubic meter	m^3	0.001	liter	L
cubic meter	m^3	0.000473167	liq. pt	liq. pt
cubic meter	m^3	0.000946334	liq. qr	liq. qr
cubic meter	m^3	0.000001	ml	ml
cubic meter	m^3	0.764563918	y3	y3
Hours	h	160	Full Time Empl.	FTE

12.2 Annex 2 : Conversion ratios for the 6 mains GHG :

Following the IPCC rules[31] :

GHG	formula	Global Warming Power 100-yr
Carbon Dioxide	CO_2	1
Water vapour	H_2O	8
Methane	CH_4	25
Nitrous oxide	N_2O	298
CFC 12		10900
HCFC 22		1810
Tetrafluoromethane	CF_4	7390
Sulfur hexafluoride	SF_6	22800

Source: IPCC 1996

12.3 Annex 3: Country specific electricity emission factors

Country specific electricity emission factor
Source : AIE, 2006

	Country	Emission factor (T CO_2 per KWh) T CO_2 / kWh
1	Albania	0.00003443950
2	Algeria	0.00067094480
3	Angola	0.00034274670
4	Argentina	0.00030644950
5	Armenia	0.00013832900
6	Australia	0.00087331000
7	Austria	0.00022487000
8	Azerbaijan	0.00050485220
9	Bahrain	0.00089010220

31. More guidelines on the GWP are available in Climate Change 2007: the Physical Science Basis. Contribution of Working Group I to the Fourth Assesment Report of the Intergovernamental Panel on Climate Change. Chapter 2.10, pp 210-216.

10	Bangladesh	0.00055687770
11	Belarus	0.00029883400
12	Belgium	0.00026795900
13	Benin	0.00070993460
14	Bolivia	0.00048135200
15	Bosnia-Herzegovina	0.00061865060
16	Botswana	0.00184769410
17	Brazil	0.00008421920
18	Brunei Darussalam	0.00078882840
19	Bulgaria	0.00044800350
20	Cambodia	0.00120593070
21	Cameroon	0.00003909820
22	Canada	0.00019866400
23	Chile	0.00035747570
24	People's Republic of	0.00078786780
25	China (including Hong	0.00078813340
26	Chinese Taipei	0.00063168220
27	Colombia	0.00016319090
28	Congo	NA
29	Democratic Republic of	0.00000295790
30	Costa Rica	0.00002689380
31	Côte d'Ivoire	0.00051812230
32	Croatia	0.00031132640
33	Cuba	0.00098744340
34	Cyprus	0.00079232370
35	Czech Republic	0.00051557300
36	Denmark	0.00028358200
37	Dominican Republic	0.00057399290
38	Ecuador	0.00036909440
39	Egypt	0.00047144380
40	El Salvador	0.00026340970
41	Eritrea	0.00069616610
42	Estonia	0.00066490890
43	Ethiopia	0.00000663820
44	Finland	0.00019355100
45	France	0.00009085900
46	Gabon	0.00036833520
47	Georgia	0.00008923110
48	Germany	0.00034923200
49	Ghana	0.00020376620
50	Gibraltar	0.00074308970
51	Greece	0.00077649300
52	Guatemala	0.00038375880
53	Haiti	0.00030735610
54	Honduras	0.00041071270
55	Hong Kong, China	0.00080978090
56	Hungary	0.00033870300

57	Iceland	0.00000619000
58	India	0.00094336150
59	Indonesia	0.00077073700
60	Islamic Rep. Of Iran	0.00053376640
61	Iraq	0.00070070560
62	Ireland	0.00058417300
63	Israel	0.00076748050
64	Italy	0.00040539300
65	Jamaica	0.00071334880
66	Japan	0.00042854000
67	Jordan	0.00065888200
68	Kazakhstan	0.00113684680
69	Kenya	0.00030676990
70	Dem. People's Republic of	0.00052095460
71	Korea	0.00041818800
72	Kuwait	0.00080748680
73	Kyrgyzstan	0.00008162620
74	Latvia	0.00016203380
75	Lebanon	0.00066734170
76	Libya	0.00089937480
77	Lithuania	0.00012960190
78	Luxembourg	0.00032775600
79	FYR of Macedonia	0.00064479050
80	Malaysia	0.00055700990
81	Malta	0.00089189290
82	Mexico	0.00051547000
83	Republic of Moldova	0.00051572330
84	Mongolia	0.00053321540
85	Morocco	0.00077750210
86	Mozambique	0.00000133840
87	Myanmar	0.00036480270
88	Namibia	0.00002636400
89	Nepal	0.00000140750
90	Netherlands	0.00038666700
91	Netherlands Antilles	0.00071782930
92	New Zealand	0.00027542200
93	Nicaragua	0.00053876940
94	Nigeria	0.00040296300
95	Norway	0.00000550200
96	Oman	0.00085453830
97	Pakistan	0.00037956760
98	Panama	0.00027683610
99	Paraguay	NA
100	Peru	0.00019783840
101	Philippines	0.00049514940
102	Poland	0.00065889900
103	Portugal	0.00049822300

104	Qatar	0.00061796960
105	Romania	0.00039413580
106	Russia	0.00033796060
107	Saudi Arabia	0.00074761150
108	Senegal	0.00063412520
109	Serbia and Montenegro	0.00074792290
110	Singapore	0.00054392960
111	Slovak Republic	0.00023206300
112	Slovenia	0.00032829080
113	South Africa	0.00084835750
114	Spain	0.00039429800
115	Sri Lanka	0.00039763280
116	Sudan	0.00084803470
117	Sweden	0.00004453700
118	Switzerland	0.00002623100
119	Syria	0.00058749820
120	Tajikistan	0.00002741200
121	United Republic of	0.00060656320
122	Thailand	0.00053133970
123	Togo	0.00047406950
124	Trinidad and Tobago	0.00070902960
125	Tunisia	0.00048159210
126	Turkey	0.00043284200
127	Turkmenistan	0.00079512340
128	Ukraine	0.00031431600
129	United Arab Emirates	0.00084361650
130	United Kingdom	0.00047251400
131	United States	0.00057293400
132	Uruguay	0.00010273960
133	Uzbekistan	0.00044303730
134	Venezuela	0.00022522320
135	Vietnam	0.00040559640
136	Yemen	0.00084547290
137	Zambia	0.00000683910
138	Zimbabwe	0.00057233750
139		
142	Other Africa	0.00042014250
143	Other Latin America	0.00051826610
144	Other Asia	0.00036085070
145	Memo: European Union - 27	0.00034086100
146	Memo: Former	0.00057651810
147	Memo: Economies in Transition	0.00036225930
148	World	0.00050174350
149	OECD North	0.00052453700
150	OECD Pacific	0.00048321000
151	OECD Europe	0.00032555900
152	Africa	0.00064273660

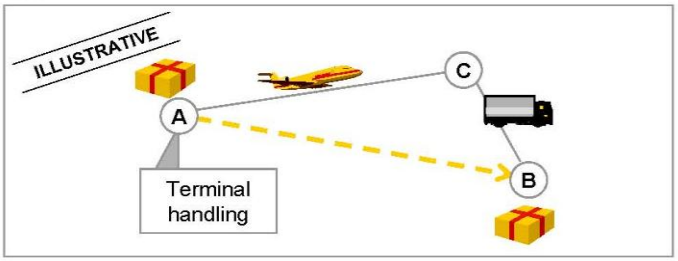
153	Latin America	0.00019696720
154	Middle East	0.00069011380
155	Non-OECD	0.00047859020
156	Former USSR	0.00035147150
157	Asia (excluding China)	0.00072830180

12.5 Annex 4 : Great Circle Distance Calculation Methodology

Deutsche Post DHL

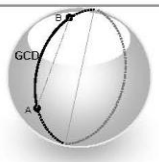
Efficiency KPIs to track energy spent per service delivered

GCD is mandatory to track energy efficiency and identify most efficient lever



GCD is defined as:

The shortest distance between any two points (A to B) on the surface of a sphere measured along a path on the surface of the sphere (as opposed to going through the sphere's interior)[1)]



GCD is calculated as:

$d = r * \Delta\hat{\sigma}$ (Distance (d) between A and B is the product of the radius (r) of the great circle of the sphere and the central angle ($\Delta\hat{\sigma}$))

$$\Delta\hat{\sigma} = \arctan\left(\frac{\sqrt{(\cos\phi_B \sin\Delta\lambda)^2 + (\cos\phi_A \sin\phi_B - \sin\phi_A \cos\phi_B \cos\Delta\lambda)^2}}{\sin\phi_A \sin\phi_B + \cos\phi_A \cos\phi_B \cos\Delta\lambda}\right)$$

with Φ/λ as latitude/longitude of A and B, Δ as their difference and r as the radius of the sphere (r and Δσ are given in radians)

Production View

$$Air_{efficiency} = \frac{CO_{2\ Air\ A\ to\ C}}{\text{Actual Weight of parcel} \times GCD_{A\ to\ C}}$$

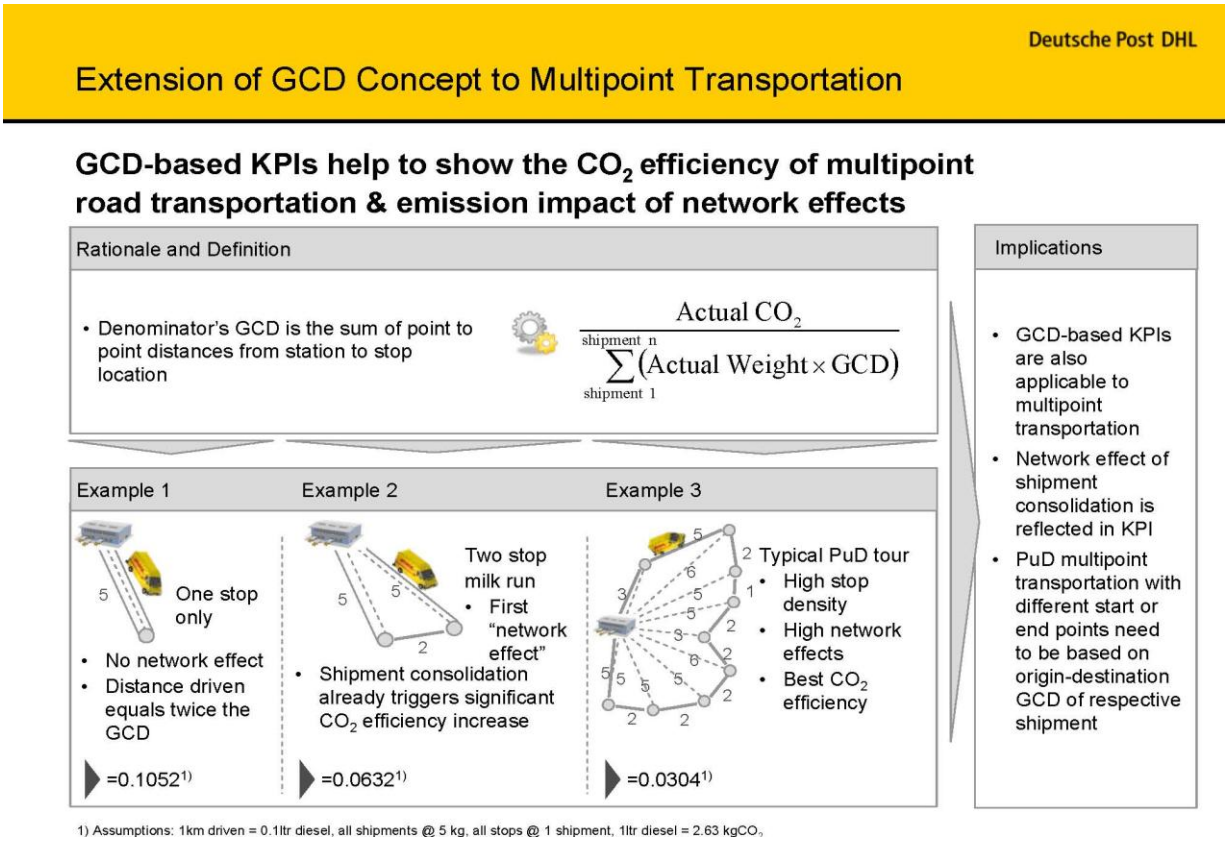
$$Road_{efficiency} = \frac{CO_{2\ Road\ C\ to\ B}}{\text{Actual Weight of parcel} \times GCD_{C\ to\ B}}$$

$$Facility_{efficiency} = \frac{CO_{2\ Facility\ A}}{\text{Actual Weight of parcel}}$$

Product View

$$Product_{efficiency} = \frac{\Sigma\ (CO_{2\ Air} + CO_{2\ Road} + CO_{2\ Facility})}{\text{Actual Weight of parcel} \times GCD_{A\ to\ B}}$$

Source: Deutsche Post DHL



Source: Deutsche Post DHL

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