
Greenhouse gas assessment

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Problematic

A broad scientific consensus attributes the overall temperature rise on a planetary scale¹ to emissions of greenhouse gases of human origin. Given the current rate of emissions and the life-time of these gases in the atmosphere, the phenomenon will continue, and - unless there is a major technological or economical breakthrough - will increase over the coming decades.

This global warming has already had observable effects (increase in the frequency of exceptional climatic events, reduction in agricultural yields...) that affect firstly the most fragile populations.

With the aim of assessing their responsibilities and to guide their reduction efforts, several organisations have carried out an assessment of their greenhouse gas emissions or intend to do so.

Definitions - Methodology

- **Greenhouse gas or equivalent CO₂**

The main greenhouse gases are:

- carbon dioxide (CO₂) produced mainly by combustion reactions (fossil fuels, deforestation...) and lime production (cement industry),
- methane or "natural gas" from gas pipelines, agriculture and fermentation,
- nitrous oxide from agriculture, combustion and some industrial procedures.

Three fluorinated gases, mainly of industrial origin, are also targeted by the Kyoto Protocol.

All these gases have different effects and lifetimes in the atmosphere. For example, methane has a higher warming power than carbon dioxide but a shorter lifetime: over 15 years, a tonne of methane has the same effect² as 80 tonnes of carbon dioxide, as 42 tonnes over 50 years and 23 over 100 years. Greenhouse gas emission assessments are generally expressed in equivalent CO₂ calculated over a time period of one century - one tonne of methane is therefore "equal" to 23TeqCO₂.

¹ See for example: http://data.giss.nasa.gov/gistemp/tabledata_v3/GLB.Ts.txt

² Total radiative forcing, i.e. the power intercepted and reflected to the ground by the gas, over the considered period.

Assessments may be expressed in carbon equivalent, in this case the quantity indicated corresponds to the weight of the carbon atoms and not the total weight of the gas: $1\text{TeqCO}_2 = 0.2727\text{TeqC}$.

- **Assessment process**



An assessment can be divided into 5 main stages:

- The **definition of the scope and the hypotheses** aims to define the emissions to be considered and those to be excluded, as well as the methodology to be used and possible simplifications.
- **Data collection** requires the response to the following questions: what data do we need? Does it exist within the organisation? If not, can we deduce it from existing data? What is the error margin? Several sources can be used: direct on-the-ground measurements, invoices, reporting from different departments, accounting data, surveys, interviews, estimations. This phase is generally the longest.
- The **calculation** is almost always based on the same principle: a data figure (for example the number of kilometres flown in long-range aircraft) is multiplied by an emission factor (in this case, according to ADEME³, 242 grams eqCO₂ per km and per passenger) to obtain an emission assessment.
- The **result analysis** aims to take an inventory of emission sources and measure their impact, then identify sources on which the organisation can act - as they depend on its choices or internal processes - and finally, among these manageable sources, identify those whose overall impact could be reduced significantly.
- The definition of an **action plan** is the final stage of the study. It can propose avoidance actions (for example, using renewable-sourced electricity or reducing travel thanks to video-conference tools), reduction actions (for example, implementing an energy demand management, choosing direct flights or train travel), and as a last resort, compensation.

Subsequently, it is necessary to update the assessment or carry out a new study periodically to monitor the results of actions undertaken.

- **Scope and assessment designation**

The first stage in a greenhouse gas emission assessment is to define the scope. ISO 14064⁴ proposes, for example, 3 scopes:

- "Scope 1": only emissions from sources owned by the organisation (for example the vehicle fleet or electricity generators).
- "Scope 2": scope 1 + indirect emissions from purchased energy (electricity and heat in particular).

³ The ADEME guides for emission factors can be downloaded for free ([link in French](#))

⁴ Standard for greenhouse gases within the ISO 14000 family concerning environmental management
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- "Scope 3": scope 1 + all indirect emissions (for example linked to the production of goods and services purchased, employee travel, treatment of waste produced...)

"Bilan carbone" is a brand owned by the bilan carbone association⁵. It can only be used by people trained in a methodology developed by ADEME. The scope of this methodology is comparable to scope 3 of ISO 14064.

- **Regulatory framework**

The European countries have fixed ambitious objectives in terms of greenhouse gas emissions⁶. These commitments are translated by a rapidly changing and increasingly demanding regulatory framework.

Since 2012, article 75 of the Grenelle II law⁷ requires companies employing more than 500 people in metropolitan France to carry out an assessment of their emissions over a scope close to scope 2 of ISO 14064 (or broader). This assessment must be made public and updated at least every 3 years.

Smaller private organisations do not currently have a legal obligation in this area.

Experiences and feedbacks

Note : the results of studies carried out can be obtained from the organisations involved.

- **Action contre la Faim**

Action contre la Faim carried out a carbon assessment at its head office as well as a mission (Ethiopia) for 2009. These studies were carried out by a specialised consultancy in 2010 and 2011. The project duration is explained by a longer than expected information collection period. The two studies show a strong correlation between the final result and a small number of variables, for example, the number of kilometres travelled by plane (passenger.km), the volume of air freight (kg.km) and purchases of food products and services. The final result has an uncertainty margin of around 30 to 50%.

For these two reasons, the project of an overall carbon assessment was abandoned and in its place indicators targeted on the main items that can be reduced were used (fuel, consumables, purchases...). The periodic conducting of an assessment for head office is still being considered.

The carbon assessment was launched at a moment when ACF was defining its first environmental agenda. Although they do not reflect the totality of the organisation's impacts, the results of the carbon assessment reinforced the chosen orientations, in particular the priority given to logistics.

⁵ www.associationbilancarbone.fr

⁶ In particular the 3x20 (20% reduction in emissions compared to 1990, 20% increase in energy efficiency and 20% share of renewable energy in 2020) and the factor 4 (division by 4 of emissions in 2050).

⁷ [Specific article](#) and [its application decree](#)

- **Médecins sans Frontières – Switzerland**

MSF Switzerland carried out an overall assessment in 2009 based on 2008. The choice was made to carry out the most exhaustive assessment possible, so as to have a complete understanding of the consequences and responsibilities of the organisation's activities. The study scope included the head office and on the ground and covered all impact types - air/water/soil pollution, consumption of energy and natural resources, waste treatment, nuisances... The project included a study of the environmental impacts and an assessment of greenhouse gas emissions, taking into account direct and indirect emissions (including fixed assets) and based on the ADEME emission factors.

Due to lack of time and appropriate skills internally, the study was carried out by an external consultancy over 6 months full time.

MSF's overall activity was divided into fundamental processes with a specific study for each, for example at head office, the buildings (consumption, maintenance) or fundraising and on the ground, transport (freight, vehicles, ground/ground travel) or energy consumption. The data collection was a difficult phase for this first assessment. Due to lack of data, some processes, such as local purchases, direct supplier supply or upstream supply to MSF's central buying service were excluded from the assessment.

The study conclusions gave rise to the recruitment of an environmental project manager and the establishment of an action plan to improve the most significant aspects (strong impact, flexibility), in particular energy consumption on the ground and head office employees' practices (paper consumption, recycling...). MSF Switzerland is now considering implementing a process to establish an annual assessment.

- **Groupe URD**

To fight against climate change and adapt to the reduction in resources, the URD Group is currently finalising an assessment of its greenhouse gas emissions for 2012. This assessment is carried out internally, by a person not recognised by the bilan carbone Association (but monitored by recognised experts), so cannot benefit from certification. This choice of an internal assessment was made for economic reasons (costly training and licences) and also to master an already tested method, adapted to the context of country missions (where the ADEME method is too burdensome) in order to support country missions who wish to commit to this approach in the future.

In addition to calculating emissions, the objective in pursuing this work is to raise awareness of the carbon issue for teams, and to take the time internally to define our priority commitments, associating them with tangible actions over precise time scales, as well as monitoring indicators.

The methodology followed comprises a table provided by the experts, made up of items that refer to pre-recorded calculations (identical to the ADEME method). Once the data had been collected, around 2 weeks were necessary to compile the work.

Outlooks

- **Good practice and recommendations**

These different experiences enable the following recommendations to be made to organisations who wish, in turn, to carry out an emissions assessment:

- In addition to numerical data, an assessment and its interpretation require a good understanding of the humanitarian sector and the organisation, including accounting and financial data flows. If an external consultant is involved, ensure that they have a minimum knowledge in these areas, to avoid time-consuming studies and unusable results.
- When defining the scope, target as a priority the items with a strong impact for which there is real margin for improvement. For example, emergencies (little room for improvement) or maritime freight (negligible impact compared to air freight) could be excluded. The non-availability of data may require modifications to the initially defined scope.
- Identify a person responsible for carrying out the study and contact points in the different organisation departments to collect data, define summary actions and monitor results.
- Take advantage of the assessment to raise staff's awareness. In all cases, plan to do at least two communications: at the start (explain why we are doing an assessment, what is the objective and methodology) and at the end (to thank the different contributors, present the results and launch the action plan).
- Avoid unit confusions (carbon equivalent and CO2 equivalent in particular).
- From the study launch, prepare regular updates of the assessment: the interest of an emissions assessment is to monitor changes and the effects of reduction actions over a several year period. Capitalise on the experience acquired during the first assessment to simplify the following ones.
- Define the indicators that enable the comparison of emissions figures by volume of activity (number of employees, budget, number of beneficiaries...) to evaluate progress in a changing context.
- Interpret the results with caution, as they can vary considerably according to the methodology used, and generally have an uncertainty of several dozen percentage points. The lack of precision of some data figures can also bias the conclusions of the analysis.

- **Proposed actions**

Discussions have revealed the interest of a shared methodology for the humanitarian sector. The existing methodologies are not adapted (data difficult to access and not reliable enough, strong variations in activity...) or incomplete (absence of certain emission factors, no usable ratios...), leading each organisation to define its own calculation rules. The assessments require a considerable investment in time and skills and are not comparable from one organisation to another, significantly reducing their interest.

The network calls for the creation - based on an existing methodology - of a sectorial guide to carry out assessments of greenhouse gases in humanitarian organisations⁸.

⁸ Similar, for example to the [ADEME guide for sanitary and medico-social establishments](#).