

CO₂ neutrality

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IN 6 STEPS
TO A CO₂ NEUTRAL COMPANY

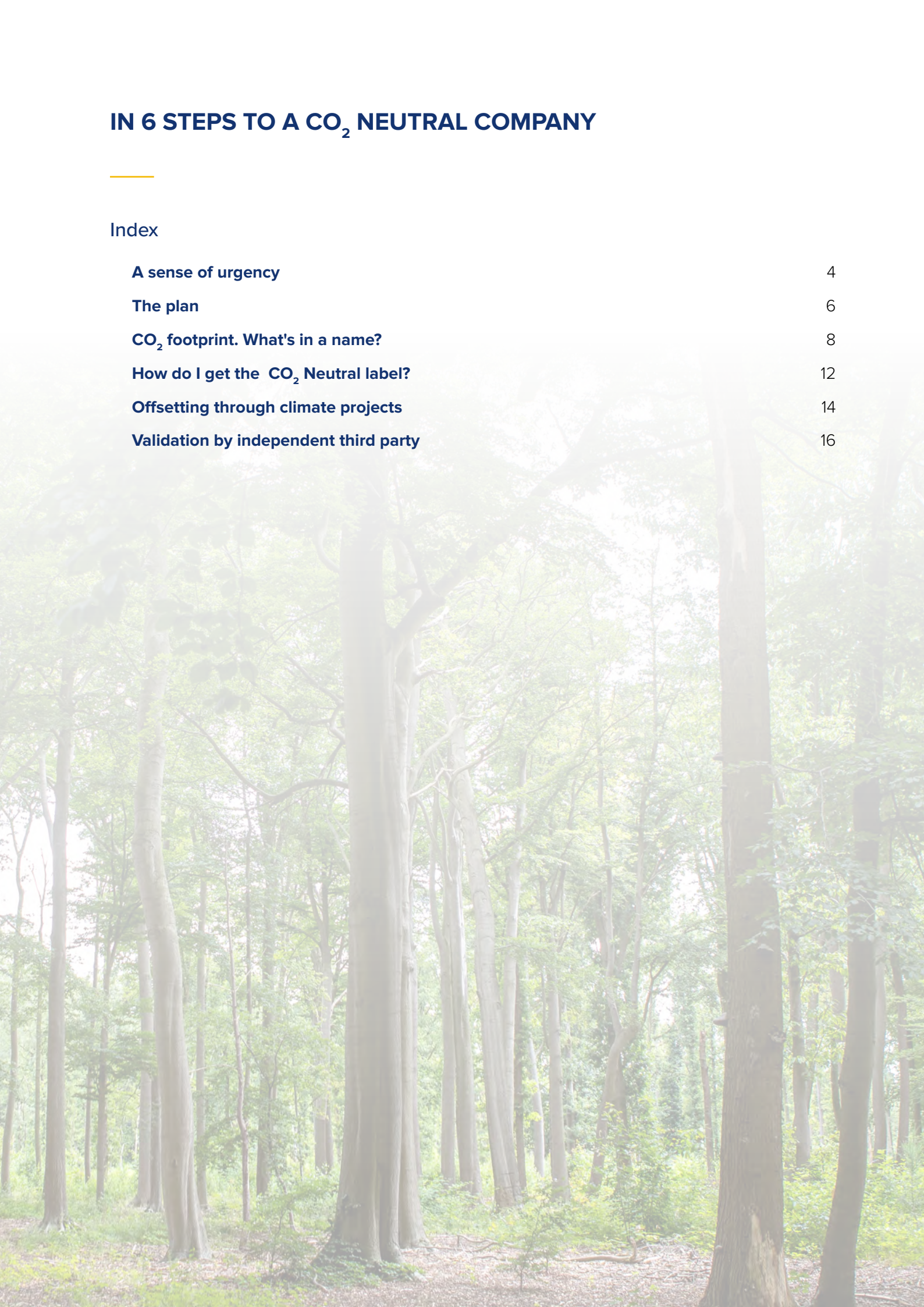




IN 6 STEPS TO A CO₂ NEUTRAL COMPANY

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A SENSE OF URGENCY

Since the 60s of last century, awareness has grown on the impact that our society has on our planet. During recent decades we were able to observe how this impact changes our environment. Climate change is one of the most important challenges for humanity.

Our generation is the first to see the consequences of climate change and is the last that is able to turn the tide. In October 2018, the IPCC (International Panel on Climate Change) warned for an approaching “ Tipping Point”. Tipping points are points beyond which irreversible events take place. Such an event is, for example, the melting of the Greenland ice caps . Most of the surface on earth is occupied by (sea) water or land. Both surfaces absorb heat from the sun. Ice on the contrary reflects sunlight. This is known as the albedo effect. If ice melts, less and less albedo will take place and more land and (sea) water become available to absorb even more heat. This creates a vicious circle that can cause a " runaway global warming". As a consequence the earth can heat up with 4 to 5 ° C.

The melting of the ice sheets in Greenland is just one of the different tipping points. Other tipping points are indicated in the figure below.

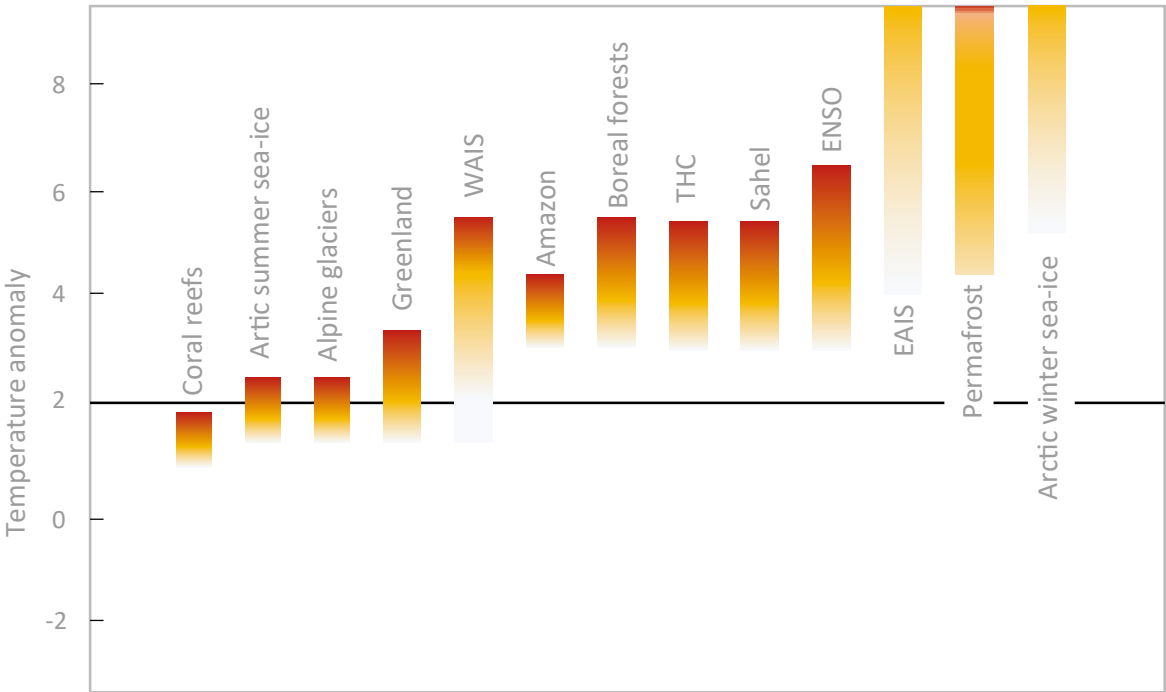


Figure 1: Tipping points

Figure 1: Tipping points

In this figure, the horizontal black line is important as a reference. This line represents how far the temperature may deviate (+ 2 ° C) according to the current Paris climate agreement. The yellow-orange-red bars are shown in relation to this reference. These set the thresholds for the following tipping points:

- **Coral reefs:** The disappearance of coral reefs (e.g. The Great Barrier Reef in Australia)
- **Albedo effect:** The melting of snow and ice will reduce the average albedo effect of the earth. White surfaces have a much higher reflection percentage than dark / black surfaces. This means they will heat up at a slower rate. If we lose these surfaces, the average albedo effect of the earth will go down and the earth will heat up more.
 - Arctic summer sea-ice: sea ice at the North Pole in the summer
 - Alpine glaciers
 - Greenland: Greenland ice sheets
 - WAIS: Western ice cap on the South Pole
 - EAIS: Eastern ice cap on the South Pole
 - Arctic winter sea ice: sea ice at the North Pole in the winter
- **Amazonian forest:** Degradation of this forest reduces the capacity to remove CO₂ from the atmosphere and store it in biomass
- **Boreal forests:** degradation of these forests reduces the capacity to remove CO₂ from the atmosphere and store it in biomass
- **THC:** Thermohaline circulation is the circulation of the seawater in the different oceans. This has an impact on the climate and is influenced by melting of the Greenland ice sheets
- **Sahel:** Greening of the Sahel desert in Africa
- **ENSO:** El Niño Southern Oscillation
- **Permafrost:** Thawing of the permafrost causes the release of methane

The position of the bars for each of the tipping points relative to the black horizontal line is very important. These bars show how high the risk is that a tipping point is reached at a certain temperature (e.g. complete destruction of the coral reefs, complete melting of the Greenland ice sheet, etc.). Beyond the red zone the tipping point is reached with certainty.

THE PLAN

To avoid a scenario of runaway global warming, the Paris Agreement was negotiated in 2015 and signed by 195 countries. The main objectives of this agreement are:

- Ensure that the average temperature on earth does not rise above 2 ° C and implement measures that limit the temperature rise to 1.5 ° C knowing that this can significantly reduce the risks and effects of climate change;
- The ability to adapt to the adverse effects of climate change and to promote resilience of the environment and the reduction of greenhouse gas emissions in a way that does not threaten food production;
- Creating consistent financing for a pathway to low greenhouse gas emissions and a climate-proof development.

Following the Paris agreement, countries had to draw up their own objectives (so called INDCs Intended National Determined Contributions) to meet the criteria of this agreement. Belgium has committed itself to a reduction of CO₂-emissions of 15% compared to 2005 by the year 2020,. By 2030, the federal government wants to achieve a reduction of 35% compared to 2005, which is a very challenging goal that will require ambitious measures . Since end of 2019, the European commission announced the European Green Deal. The European commission aims to be climate neutral in 2050. In other words, there should no longer be any net emissions. This can result in more ambitious goals for Belgium and Flanders as well.

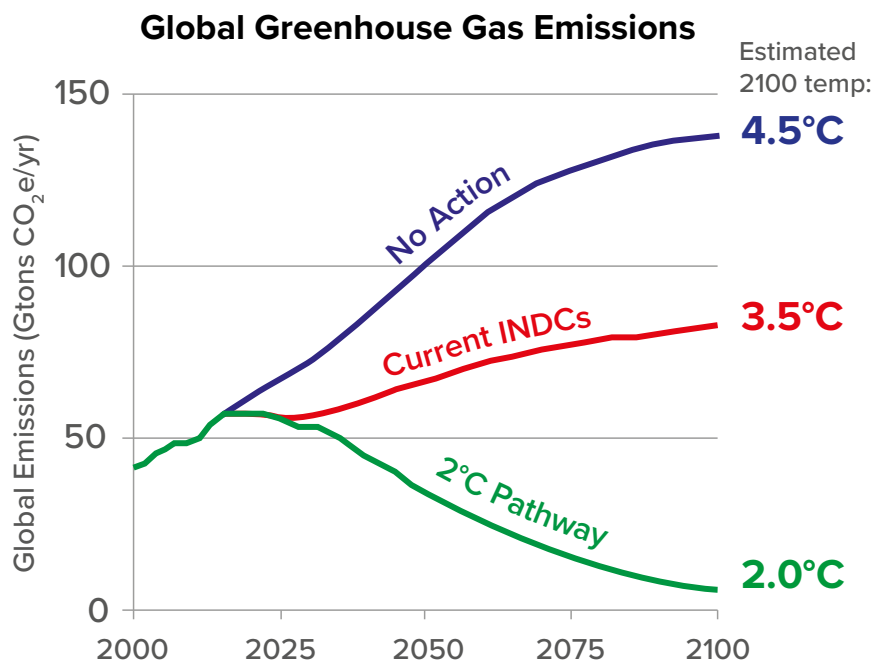


Figure 2: Possible scenarios of greenhouse gas emissions up to 2100



Figure 2: Evolution of global greenhouse gas emissions

This graph shows three scenarios. The blue "No Action" line shows the CO₂ emissions in the following years if we do nothing. This results in a temperature rise of 4.5 °C by 2100. The red line shows the CO₂ emissions in the coming years according to the objectives drawn up by the countries that signed the Paris Agreement.

These objectives are known as the INDCs or the Intended National Determined Contributions. Even in this scenario, a temperature rise of 3.5 °C is still caused. The green line shows the scenario that must be achieved according to the Paris agreement. This is called the 2 °C path. By following this path you can avoid that many of the aforementioned "tipping points" are achieved.

The policy as leverage

Various policy instruments have been developed to reduce CO₂ emissions. Here are some examples:

The EU ETS (EU Emissions Trading System) is a policy instrument that installed a carbon market in Europe through a "Cap and Trade" system. It is the world's first and largest carbon market. Europe sets a threshold for CO₂ emissions and allocates emission rights to different countries and sectors. This is the so-called "cap". Anyone who emits more than allocated has to purchase additional emission rights. Those who remain under their emission target can sell emission rights. Thus emission rights can be traded and it is the market that determines the price of CO₂. This is called the "Trade".

Another policy instrument is the CO₂ tax. The government determines the cost of one ton of CO₂ and the polluter pays principle is applied. You pay a tax for your total CO₂-emissions.

In the Netherlands, the CO₂ performance ladder was developed. This ladder has 5 levels. The higher a company is on the ladder the more a company is aware of its CO₂ emissions. This ladder is often used by governments when tendering infrastructure works. By using the CO₂ performance ladder, a government can award a contract to a contractor who has made the higher price offer as compared to his competitor. But because this contractor is higher on the CO₂ performance ladder he gets a competitive advantage.

CO₂-footprint. What's in a name?

When an organization wants to reduce emissions, it is first and foremost important to know how large the total emission of greenhouse gasses is and to identify the most important emission sources. This is known as the carbon footprint.

In a carbon footprint all the emission sources of the organization are expressed as CO₂ equivalents (CO₂ e). A CO₂ equivalent takes into account the 6 different greenhouse gases listed in the 1997 Kyoto Protocol.

Gas	Greenhouse gas effect (for 100 years time horizon)
Carbondioxide (CO ₂)	1
Methane (CH ₄)	30
Nitrous oxide (N ₂ O)	265
Hydrofluorocarbons (HFC's)	4 – 12400*
Perfluorocarbons (PFC's)	6630 – 17400*
Sulphur hexafluoride (SF ₆)	23500

Table 1: Different greenhouse gases and their global warming potential

**Depends on the HFC or PFC used.*

A CO₂ footprint can not only be drawn up for an organization, but equally for a product, a production site, a process, a fleet, ...

For each of these types of footprints, it is important to define what is included in the calculation. Various standards have been developed for this. The most famous standards are the Greenhouse Gas Protocol, Bilan Carbone , the ISO14064 (for organizations) and the ISO14067 (for products).

For organizations, for example, the Greenhouse Gas Protocol explains how to set the boundaries of an organization if one wishes to calculate a CO₂ footprint :

1. Equity share approach

With this approach, the limits are determined by the percentage of shares that a company or organization has in a certain process that emits greenhouse gasses. It reflects the economic interests of the company in that process.

2. Control approach

With this approach, the boundaries are determined by the processes where a company or organization has control. There are two types of control approaches: operational and financial control.

a. Operational control

A company or organization has operational control over a process if it has full authority to introduce and implement certain matters.

b. Financial control

A company or organization has financial control over a process if it can change the financial or operational policy of the process in order to have the economic benefits from that change For example: If a company is entitled to a majority of the benefits or risks of a process.

In practice, operational control is often used to determine the limits of an organization.

How much is 1 tonne of CO₂?

- 9.500 km with an average car
- 1 return trip by plane from Brussels to Marrakech (1 passenger economy class)
- Heating a house for 2 months (350 liters of heating oil or 450m³ natural gas)

If the boundaries of an organization are set, all emission sources within these boundaries are mapped and subdivided into 3 categories:

Scope 1: Direct greenhouse gas emissions

These are emissions caused by sources that are owned or controlled by the organization. Just think of gas consumption, company cars, cooling gases air conditioning installations, etc.

Scope 2: Indirect greenhouse gas emissions for electricity or heat

These are emissions caused by the consumption of electricity or heat. These emissions don't take place at the organization but at the producer of the electricity or heat.

Scope 3: Other indirect greenhouse gas emissions

These are emissions that come from upstream and downstream sources. They are caused by the activities of the organization, but the organization does not own the resource and has no control over it. Examples are business travel, incoming materials / raw materials, purchase of paper, IT material, service providers, waste generation, use of sold products, etc.

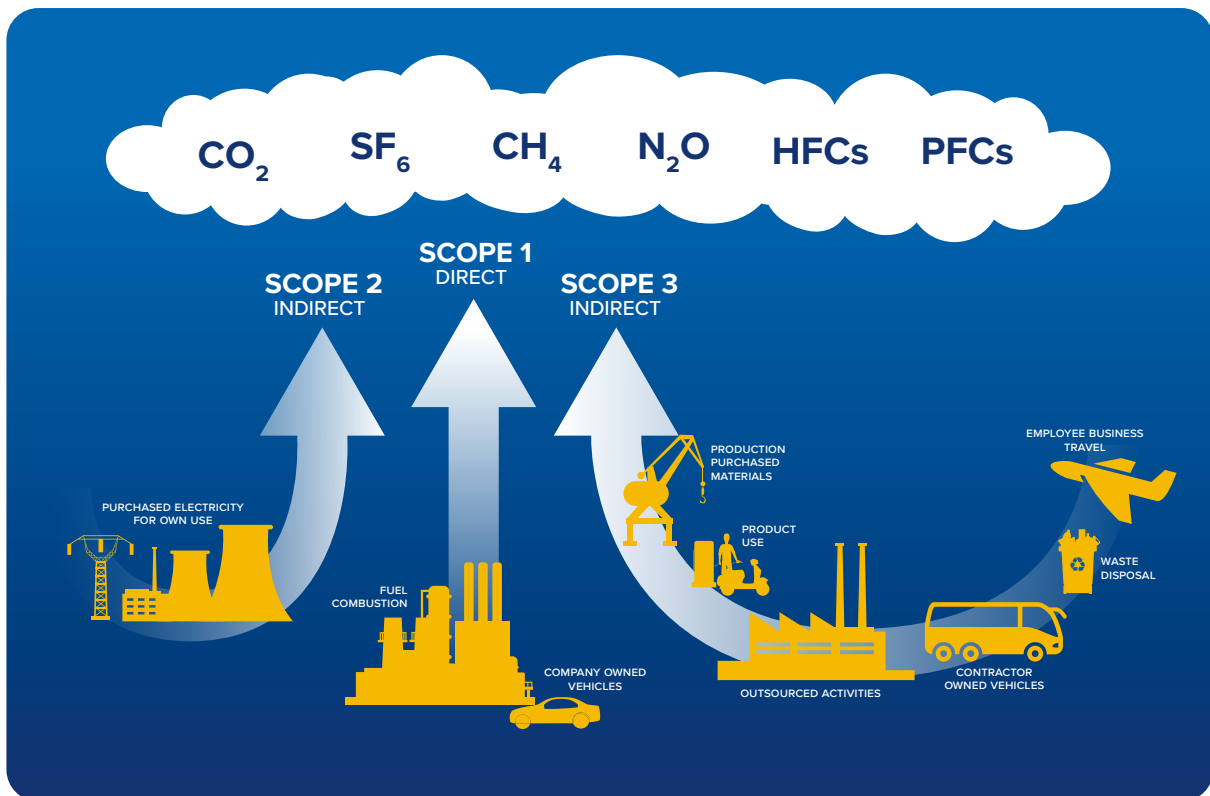


Figure 3: Distribution of emission sources in different scopes

Emission sources all have one or more specific units in which they are expressed. Gas and electricity can both be reported in kWh. But gas is also frequently reported in m³. The use of company cars can be stated in the number of kilometers driven or the number of liters of fuel used. These types of data are known as activity data (primary data).

kWh, l, m³, km ... are of course not yet kg CO₂ e. To convert the activity data to kg CO₂ e, emission factors are used. The emission factor for 1 liter of diesel is for example 3.20 kgCO₂ e / liter. This means that 3.20 kg of CO₂ e is released during the combustion of 1 liter of diesel. The emission factor for the cooling gas R134a is 1430 kgCO₂ e / kg which means that when 1 kg of R134a escapes into the atmosphere there is an equivalent global warming effect that is equal to emitting 1430 kg CO₂ (source emission factors: CO₂ emissiefactoren.nl Diesel (EUR) and R134a, July 2019).

Emission factors can be found in (public) databases. These are provided by suppliers and producers, such as electricity suppliers, railway operators, service providers, ...

It is best that the emission factors are as recent as possible and verified by independent third parties / experts. Emission factors can also differ per country, for example electricity, the emission factor depends on the energy mix: nuclear, fossil, renewables, ...

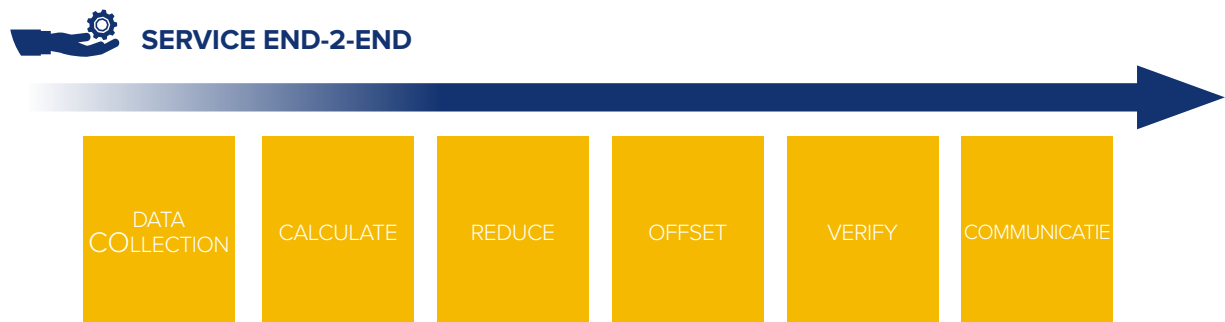
Once all emission sources have been converted into kg of CO₂ e, the various emissions can be added to get the total CO₂ footprint. Emission sources can be compared with each other and hot spots can be identified. This is important to determine reduction options.

“ CO₂ neutrality is always mentioned as an extra engagement for our sustainability policy. There is certainly an added value. ”
Larger customers specifically ask for it.

Sustainability coordinator @ Beyers Coffee

How do I get the CO₂ Neutral Label?

The figure below shows the various steps to obtain the CO₂ Neutral Label.



Figuur 4: 6 steps to become CO₂ neutral

- 1. Data Collection:** In this stage primary data is collected such as gas consumption, kilometers driven, etc. Based on this data, the CO₂ footprint is determined.
- 2. Calculate:** In this step the total CO₂ footprint is calculated, hot spots can be identified and the footprint can be compared with previous years.
- 3. Reduce:** In this stage the options to reduce the footprint are identified and reduction plans are developed and implemented.
- 4. Offset:** The remaining emissions that are difficult to reduce or those that can only be reduced at a high cost, can be offsetted by investing in climate projects.
- 5. Verify:** All calculations of the carbon footprint are checked with internationally accepted standards and norms. It is verified whether the offsetting has been realized with robust climate projects and credits have been cancelled in the registry.
- 6. Communicate:** Finally, one should correctly and transparently communicate on the scope of the CO₂ neutrality.

The reduction of CO₂-emissions can be considered as the most important step towards CO₂-neutrality. How to reduce CO₂ depends strongly on the activities of an organization and the hot spots that were identified. Options for reducing CO₂ emissions are, for example: switching to green energy contracts, switching to a greener fleet, encouraging the use of public transport or a bicycle as a means of transport, switch to LED lighting, change of cooling gas, etc. Of course the gain can also be found in the transformation of very company-specific production processes.

Becoming CO₂ neutral through emission reduction only is often difficult in practice. That's why it is very likely that CO₂ offsetting will play an important role in achieving CO₂ neutrality.

Offsetting all CO₂-emissions without any reduction is not ambitious enough to obtain the CO₂ Neutral Label. The ultimate goal of the label is to encourage companies to achieve maximum emission reduction so offsetting is no longer required



The CO₂ Neutral Label is a collaboration between CO2logic and Vinçotte. The CO₂ neutral label guarantees that the validated organizations actively calculate, reduce and if necessary compensate their CO₂ emissions so that they are effectively CO₂ neutral. This label ensures that the recognized companies have real climate ambitions and take their corporate social responsibility to reach a more sustainable future. More information on the label can be found on [www.CO₂-neutral-label.org](http://www.CO2-neutral-label.org) and via YouTube.

“Drukkerij Van Der Poorten is proud of its CO₂ neutral label and we feel good on taking up our corporate social responsibility.

Commercially it is somewhat more difficult. Awareness is still growing on CO₂ neutral paper”

Filip Van Wezemaal @ Drukkerij Van Der Poorten

OFFSETTING THROUGH CLIMATE PROJECTS

Offsetting is a cornerstone in achieving CO₂ neutrality. For greenhouse gas emissions that are difficult to reduce or only at a very high cost, it is more efficient to support climate projects elsewhere where these emissions can be reduced at a reasonable price. After all, CO₂ knows no borders. CO₂-emissions have impact on global warming regardless of where these emissions take place. Examples of such climate projects are: preventing deforestation, renewable energy projects such as solar parks, wind farms & biogas installations, sustainable forest projects, etc.

For the CO₂ Neutral Label, only climate projects, that meet the highest standards and that are independently certified are accepted for offsetting. These are for example the Gold Standard and the VCS (VerifiedCarbon Standard) certified climate projects.

One of the most important criteria that a climate project must meet is " additionality ". This means that it must be demonstrable that the climate project could be not realized without external financing through the sale of the avoided CO₂ -emissions . A climate project that is profitable in itself will therefore not be eligible. Other criteria that climate projects must meet are: real and measurable reductions, no carbon leakage, permanent reductions, certified and socio-economic benefits (see figure 5).

The purpose of these standards is to ultimately guarantee that climate projects are robust but also that they go beyond simply reducing greenhouse gas emissions. Climate change after all, is not a one-dimensional challenge. Efforts to reduce greenhouse gas emissions must also help the world to develop in a sustainable way. Examples of co-benefits are: facilitating access to clean energy, water, good health, healthy diet, safe environment and a thriving ecosystem. Climate projects are assessed against the 17 Sustainable Development Goals (SDGs) prepared by the United Nations in 2015. This means that climate and development projects are comprehensive and have major impact . This way every euro invested pays off optimally

“ In the beginning it was a prestige project , while it has now become part of our policy strategy. To the clients and the personnel, it is important to show that we are environmentally conscious

Olivier Van Eesbeecq Head of ICT & Facilities @ Stibbe”



Figure 5: The multi-disciplinary facets of a certified climate project
 Source: goldstandard.org



Validation by independent third party

CO2logic developed the label in 2007 and since 2015 Vinçotte and CO2logic have been working together on the CO₂ Neutral Label to include an independent "third party control". CO2logic annually performs the calculations of the CO₂ footprint, helps to develop reduction measures and offers the possibility to offset for the remaining CO₂ emissions.

Vinçotte is responsible for the validation of each awarded CO₂ Neutral Label. It is checked whether the calculations of the CO₂ footprint have been carried out in accordance with a recognized standard. Have measures been taken to reduce CO₂? Have the remaining CO₂ emissions been offsetted through a certified climate project? To carry out this validation, Vinçotte has drawn up a validation protocol that clearly describes the validation process and what is being checked.

Finally, it is also checked that communication about the label is correct. Communication on CO₂ neutrality must always mention the scope : company, fleet , process , etc. The label will also include a reference to the invoice to offset for the remaining emissions as well as the year. A CO₂ label is accompanied by a certificate when the label is awarded. This certificate contains an explanatory statement that offers even more transparency on which processes CO₂ neutrality was achieved





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