# WREC Supply Chain Decarbonization Quick Guide

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## Why this document?

Humanitarian organizations strive to mitigate and control the negative impact that their activities may have on the environment and the climate, following the principle of “do no harm”. This is done while ensuring their capacity to deliver timely and principled humanitarian assistance, recognizing that the adverse effects of climate change represent a driver of escalating humanitarian needs. Commitments to reduce greenhouse gas (GHG) emissions\(^1\) are key to strengthen the preventive and adaptive capacities of individuals, communities, and systems for climate resilience, and the humanitarian sector is moving towards growing commitments in this field\(^2\) – a recent example is the Climate and Environment Charter for Humanitarian Organizations, signed by almost 400 organizations and entities, coupled with guidance and tools for its implementation.

Following the release of the Inter-governmental Panel on Climate Change’s (IPCC) Sixth Assessment Report (AR6) in March 2023, which underscored the urgent need for climate action to combat the impacts of climate change, numerous humanitarian organizations have expedited their plans to address greenhouse gas (GHG) emissions, as confirmed during the WREC Greenhouse Gas Emissions Scope 3 coordination meetings in June and July 2023. The IPCC synthesis report confirmed that human activities are unequivocally causing global warming, leading to increased global temperatures and widespread adverse impacts and losses to nature and people worldwide.

However, compiling emissions data can be challenging, especially for organizations with limited technical capacity. Even within organizations with such capabilities, there is a risk of duplicating efforts and adopting different methodologies, leading to difficulties in comparing data and capturing the overall carbon footprint associated with humanitarian operations. The purpose of this guide is not to propose a universally applicable carbon emissions calculation system, but rather to present a consistent approach towards decarbonization.

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\(^1\) Such as the Kyoto Protocol, which operationalizes the United Nations Framework Convention on Climate Change by committing industrialized countries and economies in transition to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets.

\(^2\) Recent research by the Center for Humanitarian Logistics and Regional Development (CHORD) on the environmental footprint of humanitarian supply chain operations is casting light on the greenhouse gas emissions associated with humanitarian response: Measuring and reducing the environmental impact of UNFPA’s humanitarian supply chain, What is the environmental impact associated with humanitarian logistics?

[https://logcluster.org/wrec/green-logistics](https://logcluster.org/wrec/green-logistics)
approach to measuring and reducing greenhouse gas emissions. This will be achieved by providing precise definitions, emphasizing key benefits, and sharing success stories from within the sector. Humanitarians adopting decarbonization plans contribute to a ‘green humanitarian response’, improving the environmental sustainability of our work and minimizing and managing the damage we cause to local communities and the environment on the long run.

Moreover, reducing your organization’s greenhouse gas emissions can:

1. **Support disaster recovery and risk management**: A degraded environment will ultimately hinder the survival and recovery prospects of people affected by disasters, possibly increase the risk of future disasters and disrupt sustainable development.
2. **Improve your organization’s reputation**: by supporting emission-reduction goals, your organization can contribute to the fight against global warming and have a positive impact for current and future generations.
3. **Generate value for money**: In some instances, being more environmentally sustainable doesn’t cost more and leads to cost efficiencies in the long run. For example, using solar energy instead of diesel generators in some locations has a relatively short payback period where you can see a return on initial investment in solar in the savings against fuel costs.

**Target Audience**

This guide is tailored at humanitarian practitioners working directly in the field of humanitarian assistance, including aid workers, relief coordinators, and project managers, who need guidance on how to measure the carbon footprint of their operations, understanding which activities entail the greatest emission-reduction potential and which actions can lead to the greatest emissions savings in the short, medium, and long term. It is also directed to environmental and sustainability teams responsible for ensuring that humanitarian activities adhere to environmentally friendly practices and comply with sustainability standards. Finally to NGOs, international organizations, and agencies involved in humanitarian relief efforts which are seeking guidance on how to integrate emission reduction targets and activities in their operations.

**Greenhouse Gas (GHG) emissions and Decarbonization**

*Greenhouse gases* are gases in the atmosphere such as water vapour, carbon dioxide, methane, and nitrous oxide that can absorb infrared radiation, trapping heat in the atmosphere. This *greenhouse effect* means that emissions of greenhouse gases due to human activity cause global warming. *(source: IPCC)*.

Carbon dioxide (CO₂) is the primary greenhouse gas emitted through human activities. Carbon dioxide is naturally present in the atmosphere as part of the Earth’s carbon cycle, however human activities are altering the carbon cycle both by adding more CO₂ to the atmosphere and by influencing the ability of natural filtration systems, like forests and soils, to remove and store CO₂ from the atmosphere. Humanitarian supply chain activities, including air freight, cargo movements on land, relief items distribution, and end-of-life disposal generate CO₂ emissions and require an approach to reduce the emissions associated with their operations.
Decarbonization can be defined as the process by which humanitarian organizations or other entities aim to reduce their climate impact by measuring, managing, and reducing the greenhouse gas emissions (GHG). The WREC project focuses on the efforts to measure, manage, and reduce the emissions associated with humanitarian supply chain operations.

Scopes 1, 2, and 3

Greenhouse gas emissions have operational boundaries which are delineated using “scopes” which classify emissions arising from a company’s operations and activities, whether occurring directly or indirectly. There are three types of scopes according to the GHG Protocol corporate standard, a leading source of guidance on the measurement and reporting of GHG emissions.

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<td>Direct emissions</td>
<td>Scope 1</td>
<td>Emissions that originate from sources that are either owned or under the organization’s control</td>
<td>Emissions from combustion in owned or controlled boilers, furnaces, vehicles, generators, AC devices.</td>
</tr>
<tr>
<td>Indirect emissions</td>
<td>Scope 2</td>
<td>Emissions that arise from the generation of energy purchased. These emissions encompass the energy production linked to grid electricity</td>
<td>Use of purchased electricity, heating, or cooling; knowing the source of your energy provided by municipalities or ‘grid’ companies is critical to measuring your GHG emissions under Scope 2.</td>
</tr>
<tr>
<td></td>
<td>Scope 3</td>
<td>Emissions stemming from an organization’s operations but not under the organization’s ownership or control, including upstream and downstream emissions</td>
<td>Production of purchased products, transportation of purchased products, or use of sold products, business travel, employee commuting.</td>
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Table 1 Breakdown of emissions categories Source: Derived from the GHG Protocol

Emissions from Scope 1 and Scope 2

This category comprehends emissions from fuel burned in owned or controlled assets — buildings, vehicles, and equipment (like boilers). Fugitive emissions are included in this category and are defined as leaks from greenhouse gases (e.g. refrigeration, air conditioning units). A good shorthand to remember scope 1 is what you “burn”. Common ways to measure this Scope include: track down the fuel consumption (litres by type of fuel, usually from vehicle logbooks were refuelling is registered) of your vehicles, generators and stationary combustion appliances. Admin and logistics officers can play a crucial role to report, measure and reduce the emissions for this category: Through tailored building and fleet efficiency initiatives, they can contribute to reduce their organizations’ footprint. Examples include:

- **Building management**: if you rely on generators or old energy appliances, invest in upgrading or replacing boilers, furnaces and processing equipment to improve their efficiency. Invest in increasing the isolation of the building to minimise the energy required to heat or cool the indoor temperature.
- **Fleet management**: adopting appropriate policies to ensure regular maintenance of vehicles, replace old vehicles by other with more energy-efficient engines (or lighter vehicles) and training to drivers on eco-driving.

https://logcluster.org/wrec/green-logistics
Scope 2 emissions are indirect emissions generated from purchased energy—including electricity, steam, heating, and cooling.

To calculate the emissions associated with purchased energy, the first step consists in going through the electricity bills for your office. Normally, the formula to follow to calculate the emissions from electricity consumption is the following one:

**Electricity: Input value (in KWh/Yr) X Emission Factor = Output value in (Kg of CO2)**

In case you don’t have access to the electricity bills or meters, a few considerations apply:

- If you are one of many tenants in a facility and you do not have the actual amount of electricity used in your office space, you may estimate your usage by multiplying the electricity usage of the entire facility by the percentage of the floor area that your company occupies.
- If you can’t get your kWh, you can estimate your emissions based on national averages and your facility type, square footage, and location.

For steam, heat, and cooling, you can work with your providers to understand how each is produced—for example, if your steam is created with natural gas, coal, or other means—and the amount you purchase.

Your organization can contribute to reduce Scope 2 emissions through similar initiatives:

- **Installing on-site generation devices**, thereby reducing the amount of electricity purchased from outside parties or the grid (which is often generated through fossil fuels combustion). This usually involves the use of solar panels or wind turbines;
- **Switching to a low-carbon energy supplier (if any available)**. The best choice of energy supplier is one that invests in building new renewable power infrastructure. By choosing this type of supplier, you can help build demand for an additional renewable generation as well as reducing your own emissions;
- **Upgrading or replacing the electric systems such as heating, air conditioning, lighting and IT** can improve the energy profile of your organization, also helping cutting costs (e.g. through the replacement of light bulbs with LED lights, which have a longer useful life and lead to energy savings).

**Emissions from Scope 3: focusing on supply chain**

While most of the largest companies and organizations in the world now account and report on the emissions from their direct operations (scopes 1 and 2), emissions along the value chain often represent an organization’s biggest greenhouse gas impacts, which means companies have been missing out on significant opportunities for improvement. Developing a full GHG emissions inventory—incorporating corporate-level scope 1, scope 2, and scope 3 emissions—enables organizations to understand their full value chain emissions and to focus their efforts on the greatest GHG reduction opportunities.

Upstream emissions-producing activities relate to all the activities required to produce the relief items or products that your organization purchases, while downstream emissions-producing activities relate to how your product gets to the populations assisted by humanitarian action via transportation and distribution. For a complete breakdown of the emission sources, refer to the table below and to the GHG Protocol guidance.

<table>
<thead>
<tr>
<th>Upstream emissions sources</th>
<th>Downstream emissions sources</th>
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<tr>
<td>• Goods and services you purchase or you receive (like in-kind donations);</td>
<td>• How materials are transported from your premises until distribution points</td>
</tr>
<tr>
<td>• Capital goods (like buildings, vehicles, machinery, IT equipment);</td>
<td>• Financial transfers to your counterparts (e.g. implementing partners) and cash-based interventions</td>
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[https://logcluster.org/wrec/green-logistics](https://logcluster.org/wrec/green-logistics)
How materials are transported to your premises/distribution points;
Waste generated in day-to-day operations (warehouses and offices);
Fuel- and energy related activities (not included in scope 1 or scope 2);
Business travel;
Employee commutes;
Leased assets (energy used in office, warehouse space or vehicles you rent, if managed and paid by your lessor).

Processing of items;
Use of items;
End-of-life treatment of items;
Franchises – this subcategory isn’t commonly applicable to humanitarian organizations.
Investments.

To guide your Scope 3 emissions analysis, you can consult existing guidance from the GHG Protocol and define an emission reduction roadmap following a set of principles:

1) Reduce consumption, when possible. This represents the most preferred option to cut greenhouse gas emissions, whether it entails cutting unnecessary goods or services or managing to maintain operations by lowering energy consumption. This also means adopting a careful supply chain planning approach to avoid over-ordering, coordinating with other partners in the same location to transport goods in a way that containers or cargos don’t leave half empty.

2) When reducing isn’t viable, the second priority area should be finding alternatives for transport/packaging. This means understanding the carbon footprint associated with: packaging of products and services delivered through humanitarian aid, transport, commuting, air and sea travel, comparing it then with low-carbon options. Talking to suppliers to request alternative packaging to single-use plastics, or to ship in bulk when possible, represent solutions that several humanitarian organizations are applying to contribute lowering their organizational environmental footprint;

3) Set green criteria for items/services: introducing environmental considerations in procurement processes can lead to substantial emissions savings, and sometimes to financial savings too. Try to identify which relief items or goods represent the most frequent purchase for your organization what is the carbon footprint associated with such products, engaging with suppliers, including local suppliers to strengthen their capacity, and analyzing Life Cycle Analysis (LCA) when available.

To start the decarbonization journey and apply the aforementioned steps, you can focus on the following key questions:

- How are the products we purchase manufactured and transported?
- How many facilities does my organization lease?
- How are our goods and services delivered to populations in need?
- Is there energy consumption involved in the use of our products or services? Can we opt for renewable energy?
- When a relief item reaches its end-of-use, how do we dispose of it? Can it be recycled or reused? do we have in place a take-back program or does it go into a landfill?
- Do our employees travel for work? If so, how often, which distances and what modes of travel do they use?
- Do our employees commute into an office? If so, how many employees do we have, which distances and do they take public transportation, private cars, or active modes like biking and walking?
- If we transfer funds to our counterparts to implement humanitarian programmes (or build their capacities) or if we provide cash-based interventions, which are the carbon emissions for that use of our funding? This point recently...
emerged from decarbonization discussions across the humanitarian sector, which is joining forces to produce further research on the topic.

A five-step approach towards decarbonization

To reduce your CO2 emissions, it’s important to start from understanding your current carbon footprint, adopt a commitment to foster climate action across your organization and regularly measure carbon emissions to get robust evidence whether your decarbonization measures are achieving the expected results or not. As confirmed by the scientific community, the next ten years will be crucial to limit global temperature rise and avoid the worst impact of climate change and the answer is clear: rapidly decarbonize the global economy. At 2°C of warming, the world could see coral reefs essentially wiped out, a doubling in the length of droughts, global sea level rise around 10 centimeters higher than at 1.5°C – putting another 10 million people at risk of flooding – and a reduced ability to grow key crops. According to the IPCC, holding temperature rise below 1.5°C will mean global emissions of CO2 will need to decline by 45% from 2010 levels by 2030, and reach net zero by 2050. For those reasons, it’s crucial to set organizational emission-reduction targets in line with science, aiming to reduce absolute emissions for your organization. The steps required to achieve emission reduction goals are outlined below.

Figure 1: WREC decarbonization diagram, 2023 Source: WREC project

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3 Source: WREC GHG Scope 3 coordination meetings. For more information contact: global.WREC@wfp.org
4 IPCC Special report: Global Warming of 1.5

https://logcluster.org/wrec/green-logistics
Step 1: Develop a policy to systematically integrate environmental considerations into the organization's work and commit the organization to achieving its sustainability goals.

Step 2: Identify and validate a baseline, starting a carbon accounting exercise. The baseline for an organization is the projected GHG emissions that are calculated to occur in the absence of emission-reduction activities. Validation of a baseline means checking if the GHG measurement carried out by your organization responds to the requirements of the selected carbon accounting standard and methodology: it’s usually done through third-party auditing – but non exclusively - and allows organizations to measure the emissions associated with humanitarian operations in a business-as-usual scenario and to build emission-reduction projected scenarios. A baseline should reflect as much as possible the ‘normal’ operational context: choosing years with significant deviations from the norm – e.g. 2020 (Covid-19 lockdowns) – would not capture the real carbon footprint of your organization.

You can refer to the following methodologies to calculate your organization’s emissions:
- The Humanitarian Carbon Calculator (HCC) and the GHG Protocol Scope 3 calculation guidance to understand how to set up a carbon accounting exercise and measure your Scope 1, 2, 3 emissions. Those tools support humanitarian organizations to calculate their carbon footprint at the country level (or if needed sub-country level, like for example national NGOs) and to identify the main sources of carbon emissions, to implement the most effective reduction solutions.
- The GLEC Framework, specifically for carbon accounting for logistics. This methodology aligns with ISO 14083 and is recognized by the Greenhouse Gas Protocol. It is the recommended method for reporting logistics emissions to the Carbon Disclosure Project (CDP) and for setting targets in line with the Science-Based Targets initiative (SBTi).

Note that each humanitarian entity has its own specificity and operational capacity, there is no ‘one-size-fit-all’ solution. Humanitarians should carefully look into their emission sources, understanding their organizational boundaries to define the parts of an organization that will be included under the carbon accounting (e.g. determining whether the carbon accounting will cover all offices and activities, or only a portion of those – as HQ -).

Step 3: Define targets to indicate a clearly defined, absolute GHG reduction to be achieved over a specified period of time (e.g., -50% by 2030) and cover global operations in their geographic boundaries. Some organizations chose to set ‘science-based’ targets, in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement – limiting global warming to 1.5°C above pre-industrial

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5 You can refer to the Sphere standards to understand which elements to include in your policy, based on your organization’s core mandate.

6 https://unfccc.int/process-and-meetings/the-paris-agreement
levels. Make sure to understand which operations are associated with the largest emissions and to set interim targets to measure progress on the short and medium term.

**Step 4: Define and implement emission-reduction activities and build an emission reduction roadmap,** with timelines, indicators to monitor progress, and emission-reduction actions once you’ve managed to identify the activities within your operations which are associated to the greatest levels of emissions\(^7\). Examples of initiatives that can be carried out to reduce both direct and indirect emissions associated with humanitarian supply chains are outlined in the document section ‘Practical examples’.

**Step 5: Assess roadmap progress and further reduce emissions.**

- **Compare GHG emission levels** with baseline values to understand if your organization is on track to achieve its overall reduction target (e.g. reduce by 45% the overall emissions by 2030 compared to 2019 data). Essentially, you should quantify the reduction in energy consumed or waste generated because of your actions, then calculate the quantity of GHG emissions that were avoided (for example, if you are attempting to assess the benefits of an energy efficiency project in a facility, you start by monitoring energy use and measuring the energy performance of the facility post retrofit).
- Provide annual reports on your greenhouse gas emissions, and consistently update on your climate policies, measures, and advancement towards targets. This helps assessing the effectiveness of your actions and determining whether adjustments are necessary to continue minimizing carbon footprint.
- Make sure to improve your data system and improve your capacity to track emissions over time. Implementing a robust data system is paramount to ensure continuous tracking of carbon emissions. This system should be capable of integrating data from various sources, automating calculations, and providing real-time insights on business-as-usual scenarios as well as emission-reduction projected scenarios.
- Hold information session with relevant organizational stakeholders on reduction of emissions to ensure mainstreaming of environmental sustainability activities.

**Practical examples**

Humanitarian professionals can integrate certain decarbonization strategies within their supply chain processes. Presented below are a couple of non-exhaustive quick tips demonstrating how to initiate this process\(^8\).

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<th>Supply chain step</th>
<th>Actions</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement</td>
<td>• Collaborate with Sustainable Suppliers. If organizations are trying to develop carbon reduction techniques, then they need to engage experts for better results. Depending on the</td>
<td>• To reduce food loss, the Food and Agriculture Organization (FAO)(^9) introduced plastic crates as an alternative packaging method for transporting bananas. In addition to providing a higher level of</td>
</tr>
</tbody>
</table>

\(^7\) An example of humanitarian roadmap, developed by MSF and the Climate Action Accelerator: [https://www.msf.ch/en/media/4711](https://www.msf.ch/en/media/4711)

\(^8\) For additional tips and quick wins by the Climate Action Accelerator: [https://climateactionaccelerator.org/quick_and_easy_wins/](https://climateactionaccelerator.org/quick_and_easy_wins/)

\(^9\) FAQ – Reduce, reuse, recycle: a mantra for food packaging [https://logcluster.org/wrec/green-logistics](https://logcluster.org/wrec/green-logistics)
experience of partners and suppliers, engaging in a carbon reduction technique can be productive.
Introducing collaborative strategies and training sessions for suppliers can enable both parties to make strides in reducing their carbon footprint;
- Perform supply chain planning exercises to improve prepositioning exercises and reduce the need for just-in-time deliveries of emergency goods via air freight;
- Improve the sustainability of supply chain for relief items by reducing packaging, eliminating single use plastics, purchasing materials with a lower carbon footprint;
- Put in place technical specifications considering eco-design;
- Add sustainability when weighting offers;
- Ask suppliers to set carbon reduction targets;
- In some contexts, promote local procurement if evidence shows that local markets provide sustainable, quality products.

| International distribution | • When shipping your product from manufacturing centers in humanitarian hubs, you should consider two factors: how much excess space is in your packaging and cube utilization. When considering cube utilization, ask yourself “Is the packaging actually the right fit for the product that we are shipping?”. If the answer is no, consider alternatives for packaging to reduce the volume occupied by your cargo.
  • If possible, consider switching from air to sea freight. |

| Warehousing and storage | • Install LED lightbulbs in your warehouse, they have a lower energy consumption and also have a longer lifespan (win-win!);
  • Utilize natural ventilation and fans in warehouses and reduce reliance on diesel generators and/or air conditioning units
  • Consider integrating solar panels or other renewable energy sources to power warehouse operations. |

|  | • ShelterBox\(^{10}\) removed excessive packaging from all the children’s thermal clothing they sent to Syrian families. Additionally, they eliminated unnecessary packaging from their kitchen sets, shelter tool kits, water jugs, washbasins, and shelter kits that didn’t require plastic wrapping. This initiative prevented the use and transport of 173,396 pieces of plastic, all while ensuring that the quality and condition of the aid they provide remained uncompromised. |

|  | • The Standard Product Catalogue of the ICRC and IFRC\(^{11}\) recommends substituting traditional incandescent bulbs with LEDs (Light Emitting Diodes). This suggestion is grounded in the fact that LEDs are the most efficient light emitters available to consumers, boasting extended lifespans and containing no hazardous materials. |

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\(^{10}\) ShelterBox – The Plastic Problem: our commitment to do better

\(^{11}\) IFRC/ICRC – Standard Product Catalogue

[https://logcluster.org/wrec/green-logistics](https://logcluster.org/wrec/green-logistics)
| Transportation | • Provide driver training to optimize fuel efficiency while driving vehicle fleets;  
• Perform vehicle preventative maintenance on your fleet and keep good records of servicing to reduce vehicle faults and breakdown  
• Right-size your fleet of vehicles, minimizing the engine size and net weight of the vehicles, what directly influence the fuel consumption (provided cargo is optimized)  
• Explore transitioning to electric vehicles (EVs) for a sustainable and cost-effective transportation solution. | • A variety of organizations, including the Fleet Forum\(^\text{12}\) provide drivers with access to cost-effective online training platforms. These platforms aim to educate drivers on strategies for reducing CO2 pollution and other pollutants related to road transport in aid operations, leading to improved fleet efficiency, effectiveness, and performance. |

In short, a successful emission-reduction trajectory for supply chains implies setting science-based targets and prioritizing areas of intervention to decarbonize. An example from MSF is available below.

![Figure 2: MSF OCG's decarbonisation trajectory: 2019 – 2030, Source: Climate Action Accelerator](https://logcluster.org/wrec/green-logistics)

### WREC Help Desk

The WREC project includes Environmental Specialists who are there to support humanitarian partners with access to information and guidance in support of a more environmentally sustainable humanitarian logistics response. As such, please get in touch if you have questions, comments, or concerns that you’d like support with or if you simply have a story to share. Reach out to: [Global.WREC@wfp.org](mailto:Global.WREC@wfp.org).

\(^{12}\) [Fleet Forum](https://logcluster.org/wrec/green-logistics) – Welcome to the Driver’s Seat, the School and [Fleet Forum](https://logcluster.org/wrec/green-logistics) - Rightsizing your fleet
Climate Change/Environmental policy: a tool which defines how an organization will contribute to national and global efforts to prevent climate change. The policy normally covers all the operations and programmes of an organization, setting the level of ambition of an entity in terms of climate action.

Carbon footprint inventory: an exercise allowing humanitarian organizations to capture the GHG emissions associated with their operations. This allows to list the sources of GHG emissions associated with specific activities, detailing where emissions are coming from at a specific moment in time.

Baseline: a reference state or the values against which we measure change. A baseline is defined by the absence of a recognized intervention—a general term for the policy, decision, investment, incentive, or other act intended to influence activities that produce GHG emissions and whose impact is being assessed.

Emission reduction target: a state-level goal to reduce emissions by a specific amount by a predetermined date. The targets can cover all greenhouse gas emissions or specific gases (e.g., carbon dioxide only). Robust targets are built when an organization is able to measure which activities are associated with the highest emissions: this allows to prioritize interventions and focus emission-reduction efforts on the activities which generate the greatest amount of emissions.

Emission-reduction roadmap: a tool summarizing the emission reduction actions to implement by specific target dates to meet the emission reduction targets defined by an organization. Short term, mid-term and long-term goals can be included in a roadmap.