Reducing Emissions from Office Buildings

GHG emissions category

For organisations renting their office: Scope 3, Category 8: Upstream Leased Assets

For organisations owning their office: Scope 1 & 2

Introduction

This guide focuses on steps to lower office building emissions, including those from lighting, heating, cooling, waste, paper, printing, and appliances.

Around 40% of global energy-related emissions come from buildings, and 60% of office building emissions come from energy use, making it a priority to address. Reducing energy and material use also often delivers long-term financial benefits as well as environmental advantages.

Solutions to significantly cut office emissions are available and often easy to implement, though if you don't own your building, you may need to talk to your landlord. For actions to reduce emissions in other areas, including IT equipment, services, commuting, food purchasing, and business travel, see our other guides.

Measure and Understand

Office building emissions can be divided into Scope 1, 2, and 3 categories. If you own a building with on-site power generation, it produces Scope 1 "direct emissions". When your office buys electricity, steam, heat, or cooling from utilities or municipal sources, the associated emissions are categorised as Scope 2 "indirect emissions". Offices also generate Scope 3 emissions from activities like waste and transportation.

If you own your office building, review your utility bills and use this to calculate your emissions, either through an online calculator or manually using emission factors. If you do not own the facility, contact the owner of the property to get information on the energy usage of your building. If you only have access to the total energy consumption of the building, you can calculate your share of the total building's energy consumption. E.g. if you are one out of four similar units in the building, your share of the building's total energy consumption would be 25%. If you do not know the energy mix from your office's energy consumption, reach out to the gas or electricity company and ask for the information.

Because many of the below key actions require up-front capital expenses, going through with them will require collaborating with the landlord and might require agreeing on rent premiums to pay back the investments. However, they might also lead to reductions on electricity and utility bills that provide a payback in addition to emission reductions and more comfortable working environments.

Key Actions

Building new or decarbonising existing offices?

When planning to reduce emissions from office buildings, the first question is whether you plan to continue in your current office or plan to switch to new premises soon. Building life-cycle emissions are often categorized in embodied carbon (emitted mostly from producing the building materials such as steel, cement & concrete) and operational carbon (emitted from producing the energy that the existing building uses). Considering that constructing a new building emits a lot of embodied carbon, building less is often preferable to building new. If you occupy an existing building that has poor operational efficiency, it is still often preferable to renovate and refurbish than build new. In cases where you need to upsize or downsize your office to adopt to new business situations, it is often preferable to find existing office space and possibly renovate or refurbish it, it as opposed to building new. However, in cases where your business premiss absolutely requires building a new office, consider using as much circular and natural materials as possible (e.g., responsibly harvested timber, recycled concrete, recycled steel) to mitigate embodied carbon emissions, and to make the new building as low carbon and energy efficient as possible through design choices such as passive heating and cooling, energy management systems, on-site renewable installations (such as solar panels) and heat pumps.

Energy efficiency: heating, cooling & electricity use

The most impactful actions to reduce emissions in existing buildings depend on a variety of factors. In colder climates, heating is the main source of fossil fuel use and CO_{2e} emissions, whereas in warmer climates the main source of emissions can be the electricity generation required to power the cooling system.

When considering the most impactful actions from your point of view, the key thing to consider is *are my actions reducing the amount of fossil fuels used?* As an example, in countries with cool climates and a largely decarbonised electricity grid (such as Northern Europe, France, Switzerland), the most impactful actions should focus on replacing fossil-based heating, such as natural gas boilers, with electric heat pumps. In countries with fossil-powered electricity grids (such as India and China), companies should try to buy fossil-free electricity and to assess whether pairing a heat pump or AC installation with energy efficiency measures such as insulation, building management systems (BMS) or passive cooling and heating techniques could reduce the amount of electricity that is needed. These energy efficiency measures can also lead to economic payoffs. For example, installing a BMS can typically reduce electricity consumption by around 10-15%, leading to direct reductions in your electricity bill. The payback on solar panels depends on the solar radiation conditions as well as the roof-to-floor area ratio. The less floors there are in a building (i.e. the higher roof-to-floor area ratio), the better the payback for rooftop solar.

When considering energy efficiency ratings, building owners should also consider that some jurisdictions are planning bans on letting energy inefficient office spaces. For example, in London it will be illegal to let office buildings with EPC rating of G or F from 2027 and office buildings with EPC rating worse than B from 2030.

When considering heat pumps and air conditioning, one key thing is that they contain refrigerants such as hydrofluorocarbons (HFCs) which can contribute to climate change if leaked and/or vented. Hence, when acquiring new heat pumps or AC devices, it is important to assess whether there are low-GWP (Global Warming Potential) options available.

Lighting & appliances

LED light bulbs are 80% more energy efficient, last longer (30,000 – 50,000 hours compared to 15,000 hours for fluorescent), and reduce maintenance costs, making them an obvious choice in all situations. Installing automatic lighting controls, zone controls, daylight sensors, and presence detector lighting controls can also significantly reduce electricity use and costs. Make sure timers and sensors are in good working order and set according to occupancy times. Where possible, utilising natural light also helps in lowering energy consumption.

Especially in countries with limited decarbonised energy supply, investing in more energy efficient electric is favourable and should be fairly easy due to energy efficiency classifications.

Waste

Waste offers an often overlooked and easily addressed opportunity to reduce emissions, save natural resources and reduce costs. Enable office recycling and encourage the use of reusable coffee mugs, glasses, plates, and silverware. Purchase compostable or high post-consumer waste content paper products, such as napkins and towels. Replace bottled water with tap filters to minimise plastic waste. For a more detailed description of how to address your waste, see our separate guide for managing waste from buildings.

Water Usage

Water consumption can have significant environmental impacts, particularly in water-scarce areas. Install low-flow fixtures, water-saving taps, and greywater systems for non-potable water use, like irrigation or toilet flushing. This can reduce water usage, lower water bills, and contribute to sustainability goals.

Engage with Employees

Creating a “green team" with members from different departments can make implementing the actions above more manageable. Encourage employee engagement through campaigns or initiatives to support progress.
Establishing a sustainability office policy can help guide these changes effectively.