

greenly

White paper

Employee emissions

Current levels, behaviors and reduction options in the US,
UK and France

Introduction

In a rapidly warming world, both individual action and regulatory responses are necessary to curb emissions levels. A prime example of this occurs in corporations looking to reduce their footprint. While some emissions sources can be tackled by company policies, others require the willful cooperation of employees : so-called employee emissions. As a result, these emissions are often considered uncontrollable and are not included in corporate reduction objectives or even excluded from GHG Assessment perimeters. Yet, we find that employee emissions can be material for companies evolving in services, and encouraging efforts to reduce them engages employees in the fight against climate change.

This article thus offers a data-driven review of employee emissions levels and their causes across geographies and industries. It also introduces emissions reduction levers and successful examples of companies that implemented them. We hope this article will encourage other companies to take responsibility for and tackle their employee emissions.



Table of contents



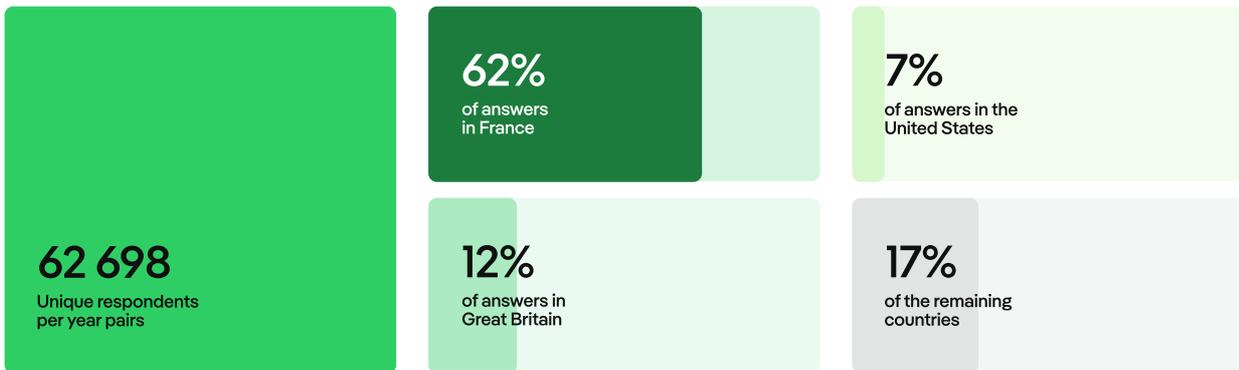
1. Method	04
2. Employee emissions sources and relative magnitude	05
3. Employee behavior	08
4. Emissions reduction actions	17
5. Conclusions and further research	22

Method

The following results from a data analysis made using anonymous responses on the Greenly employee emissions accounting platform. The Greenly employee emissions platform is a collaborative website that allows companies to survey their employees and collect information relative to their eating during their working hours, heating and air-conditioning while working from home and commuting to the office. The emissions computed from these surveys cover emissions source 7 from the GHG Protocol's scope 3, emission source 3.3 of the BEGES V5 methodology, and frequently reported optional emissions in the BEGES methodology. We cover these optional emissions sources with the objective of identifying relevant sources of carbon dependency for companies.

Note however that our perimeter doesn't necessarily cover all of them, and that a thorough study should be conducted to identify them.

The Greenly database contains employee emissions profiles for a total of 62 698 unique respondents - year pairs. Responses were collected between 2020 and June 2024, cover a range of different company sizes and industries and are focused on companies located in France (62% of answers), Great Britain (12%), and the United States (7%). The remaining 17% of respondents are uniformly distributed across the remaining countries, with an overrepresentation of developed countries.



Note that prior to exploitation, the database has been cleaned following the following rules : all lines including a non numeric value were removed ; all part-time employees were excluded to ensure results were comparable ; and lines with absurd values for commuting distances given the transportation mode were excluded.

The global logic of employee emissions calculations is displayed below.

The total commuting distance and the mean of transport is used to compute the resulting emissions of commuting. If a commute time was provided and not a distance, the time is converted to a distance using average data. Employees are free to enter various commuting modes and distances per week. When relevant, the result also depends on the number of carpoolers and the fuel type (if using a thermal car). Commuting options cover walking, cycling, scooter, motorbike, train, public transports and car, we have never received feedback saying the respondent's commuting mode isn't covered.

The employee provides the number of days they work from home, the surface of their working space and if there have air conditioning. Using that information, we compute: Heating emissions (depends on the heating temperature and the fuel provided by the employee), air-conditioning electricity consumption (depends on the cooling temperature provided by the employee), air-conditioning refrigerant gas leaks (depends on the cooling temperature provided by the employee). Note that to avoid a lengthy questionnaire and to ensure employees had the answers to the questions required, calculation is not customized to take into account the refrigerant gas used in the employees' installation.

Lastly, for each working day, the emissions resulting from one lunch meal are computed. This is computed for both when the employee eats on site or remotely. The total emissions depend on the type of lunch is considered (vegan, vegetarian, red meat, white meat, fish) and the number of each type per week.

The list of emissions factors and other statistics used is available in the bibliography section. Emissions factors used cover all Kyoto protocol greenhouse gasses and use the global warming potentials of the IPCC AR6.

Lastly, recommendations suggested in this article are based on Greenly's acquired expertise through discussions with corporations, literature reviews and research on previously implemented actions by companies.

Employee emissions sources and relative magnitude

Figure 1

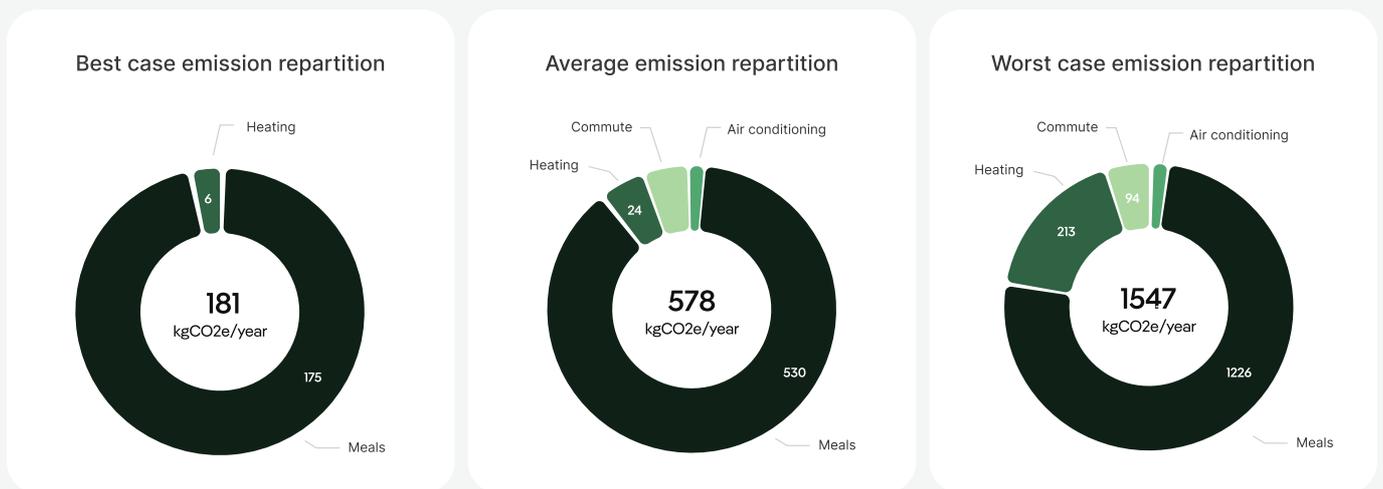


Figure 1 - Employee emissions magnitude and distribution across three scenarios. The best case scenario is a fully vegan employee, commuting by foot, not owning AC and heating their apartment at 19°C by using a heat pump. The average scenario follows average behavior in the Greenly dataset, further described below. The worst case scenario is an employee that only consumes red meat meals, commutes 75% of the time using a sedan fuel car for 20 kilometers per day, uses fuel heating at 21°C and AC using a refrigerant gas with a high global warming potential.

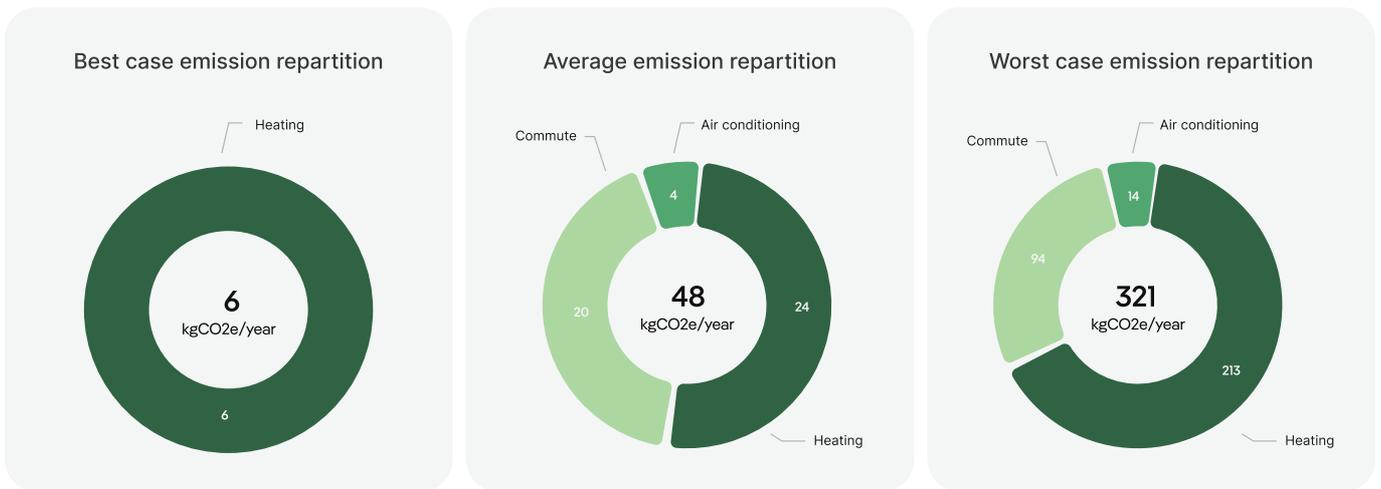


Figure 2 - Employee emissions magnitude and distribution across three scenarios, excluding employee meals. Scenarios are the same as the ones described in Figure 1.

Figure 2

Figure 1 and 2 display absolute yearly employee emissions and emissions distribution across three different scenarios, taking into account all data points in the Greenly database. The best case scenario is a fully vegan employee, commuting by foot, not owning AC and heating their apartment at 19°C by using a heat pump. The average scenario follows average behavior in the Greenly dataset, further described below. The worst case scenario is an employee that only consumes red meat meals, commutes 75% of the time using a sedan fuel car for 20 kilometers per day, uses fuel heating at 21°C and AC using a refrigerant gas with a high global warming potential.

Our analysis shows that yearly employee emissions range from a few hundred of kilograms of CO2e to up to 1.5 tons of CO2e. Note that this doesn't represent the full range of final employee emissions but the range between 5 imaginary scenarios. While it is unlikely that emissions in our best case scenario can be reduced further (in countries where heating is required, excluding the rare option of passive housing and playing on the electricity mix), emissions in our worst case scenario can be raised further, notably by assuming longer commuting distances and a heavier car. We conclude that there is important variability between employee profiles and urge companies to measure them rather than relying on averages.

Depending on the sectors of activity and the scenario considered, these emissions could thus become significant. Indeed, in the Greenly dataset, typical scope 1, 2 and 3 emission intensity per employee of companies that declare working in software typically range from 5 (Q1) to 14 (Q3) tCO2e/employee per year. Yet, this is completely insignificant from companies in the primary or manufacturing sectors, where accounted emissions per employee can be 10 times higher.

Meals are dominant when it comes to emissions, regardless of the scenario considered, and always represent more than 75% of emissions. This might however not be the case in extreme profiles where meals are majority vegetarians or vegan and commuting is particularly long and uses carbon dense commuting modes. Meals are typically followed by heating and commuting emissions, that can go in either order depending on the employee characteristics. Air conditioning impacts, however, stay relatively low and, even in the worst case scenario, stay relatively insignificant.

The relative magnitude of meals is striking : this is an emission source that is typically optional within reporting frameworks (BEGES, Bilan Carbone[®] and GHG Protocol) and the reporting of which stirs the most debate (should companies report these emissions that result of the personal eating habits of their employees over which they have no power?). Yet, our analysis shows excluding it would result in neglecting material impacts on the environment. Adding to this that one could argue that commuting also results for personnel choices (housing location, confort preference), and that companies have an influence over their employee's eating habits (canteen menus, lunch coupons, etc) we support making the reporting of this emission source mandatory.

Further, our results suggest there exist a tradeoff between commuting and home working heating and cooling emissions, supporting the ADEME's analysis. We thus recommend accounting for these emissions to ensure a proper management.

In continuation, we will discuss employee behaviors generating these emissions.



Employee behavior

Eating habits

Figure 3, 4a and 4b display key statistics when it comes to employee eating habits.

Contrary to popular belief, repartition of meal types in the US, UK and France are quite similar. The most common meals contain white meat, and we expect this to continue as global consumption of white meat is currently on the rise [SOURCE]. White meat is closely followed by vegetarian meals, particularly in the UK where they reach more than 30% of meals consumed. Red meat represent a fifth of meals consumed, above fish (between 10% in the US and 15% in France). Lastly, vegan meals represent up to 6% of meals.

Animal based proteins are thus present in more than half the declared lunches. The predominance of animal based proteins explains the dominance of employee meals in employee emissions, as a plant based diet would divide emissions by 3. Assuming people not eating vegetarian meals also do not consume vegan meals, more than 30% of respondent consume animal protein on each week lunch.

Yet, meat and fish consumption seems to be dropping [SOURCE file:///Users/mac/Downloads/baisse_de_la_consommation_de_proteines_animales.pdf] as exemplified by the proportion of vegetarians meals in our dataset. Up to 5% of respondents report they are exclusively vegetarian, 2% consume exclusively vegan or vegetarian meals, and 1% exclusively vegan (at least during their work lunches). Occasionally consuming vegetarian meals as part of a wider flexitarian diet also seems to progressively become a habit, as shown in Figure 4bis. These are positive trends for food related emissions.

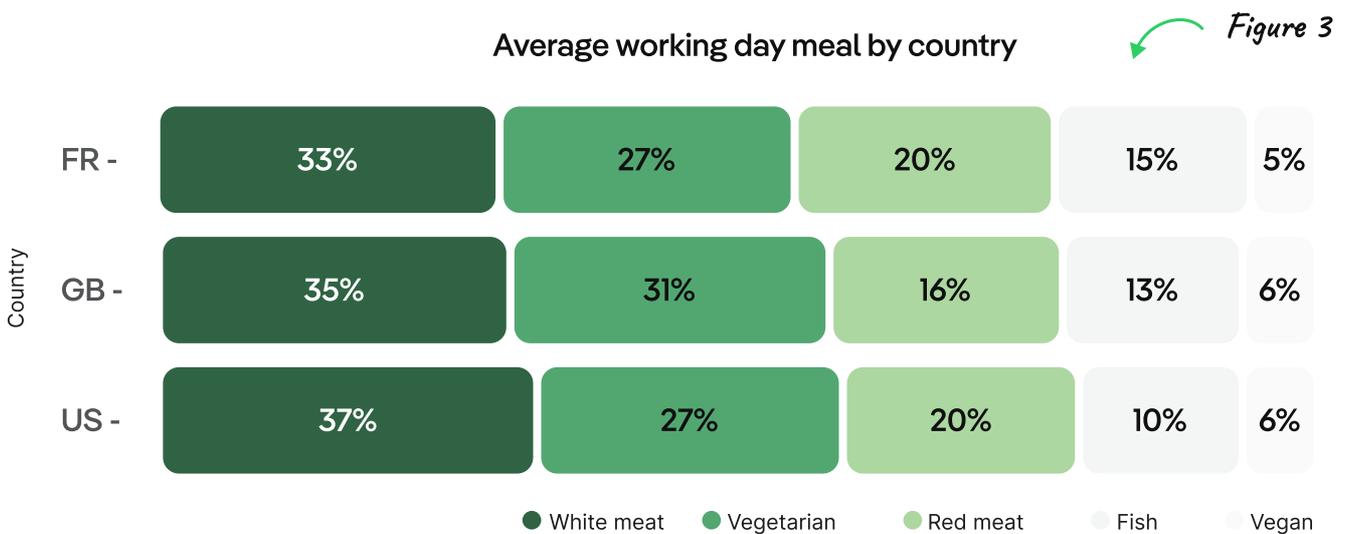


Figure 3 - Distribution of eating habits across countries. Numbers displayed on the columns correspond to the share of the meal type among total working time lunches.

On the other hand, veganism still seems marginal : 82% of respondents didn't report eating any vegan meal during their work week, and 14% of respondents only eat a vegan meal a week. Given the possible emissions reduction of veganism compared to vegetarianism and meat consumption, we find this is an opportunity for further emission reduction.

These results are affected by the fact that the Greenly database mainly covers urban, service companies in developed countries, where the trend of plant based food has probably been the strongest. Further, we suspect self reporting conducts to rosy results as the queried populations are typically aware of the environmental benefits of plant based diets.

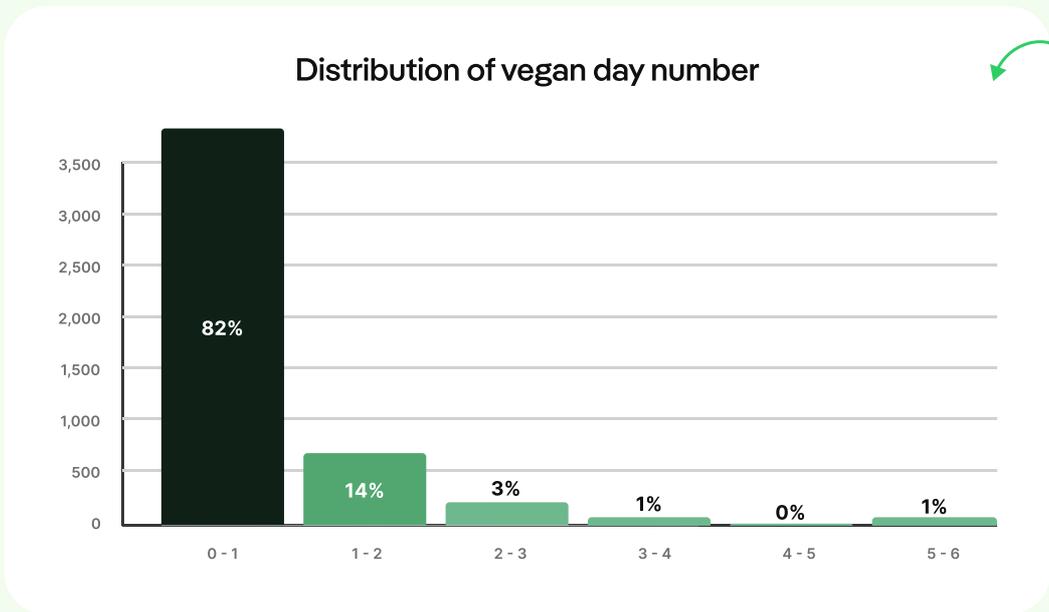


Figure 4

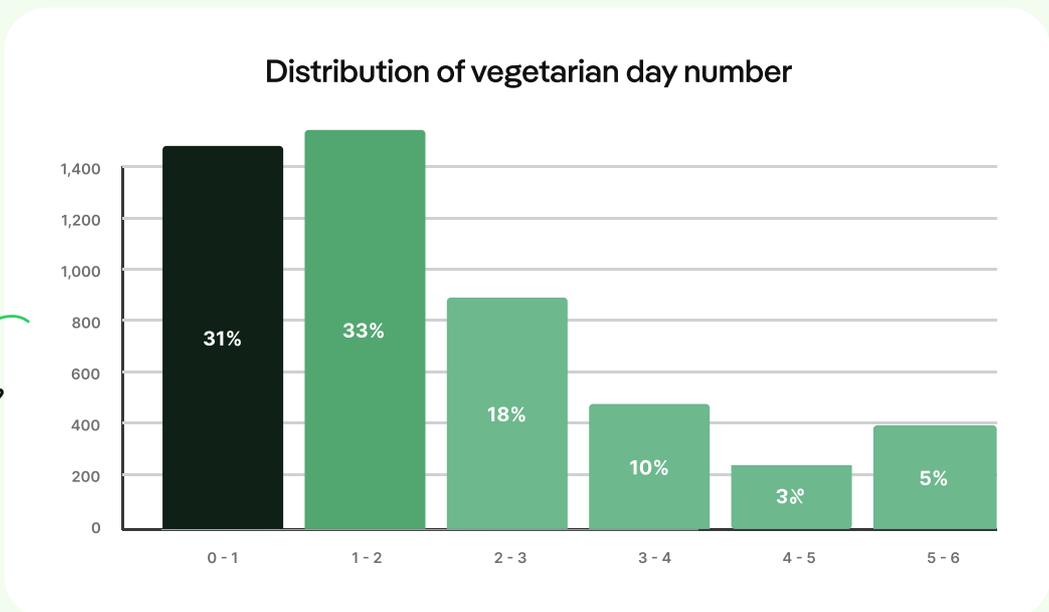


Figure 4b

Figure 4a and 4b - Distributions of reported vegetarian and vegan days per week. Y-axis denotes the total number of respondents that chose the category. Distributions are similar when filtering by country.

Employee behavior

Heating and cooling habits

Figure 5 displays the distribution of heating sources and temperatures across our dataset.

Across our dataset, the most represented heating source is electricity. This is driven up by the fact that most respondents live in France, where electric heating is more common than Great Britain or the US. In fact, 63% of French respondents stated they had electric heating at home, versus 49% of respondents in Great Britain and 54% in the US. Electric heating is followed by gas, (23% of French, 47% of UK and 39% of US respondents). Wood, Heat pump, Urban heating and Fuel cover roughly the same share of respondents (2-5%), and are slightly more used by French employees.

We find the most common reported heating temperatures are 20°C (43% of respondents), and 19°C (12%). 21°C and 22°C remain popular options (7% of answers). The rest of respondents are split across the 25, 24, 18 and 17 degrees. This is aligned with recent studies on heating habits, although our dataset seems to display less extreme behaviors. This might be linked to self reporting bias as temperature regulation has been a topic of public discussion in France in 2022 following a limited gas supply to meet peak demand in the winter.

<https://www.ifop.com/wp-content/uploads/2018/11/EnqueteEnilfop.pdf>

We find not significant correlation between heating source choice and temperature choice, as the temperature bins are equally distributed across sources. This seems to show that either surveyed employees are not conscious of the differentiated impact of different heating types, either reducing temperatures is not an easily acceptable emissions' reduction mechanism.

Repartition of heating sources and temperatures by country *Figure 5*

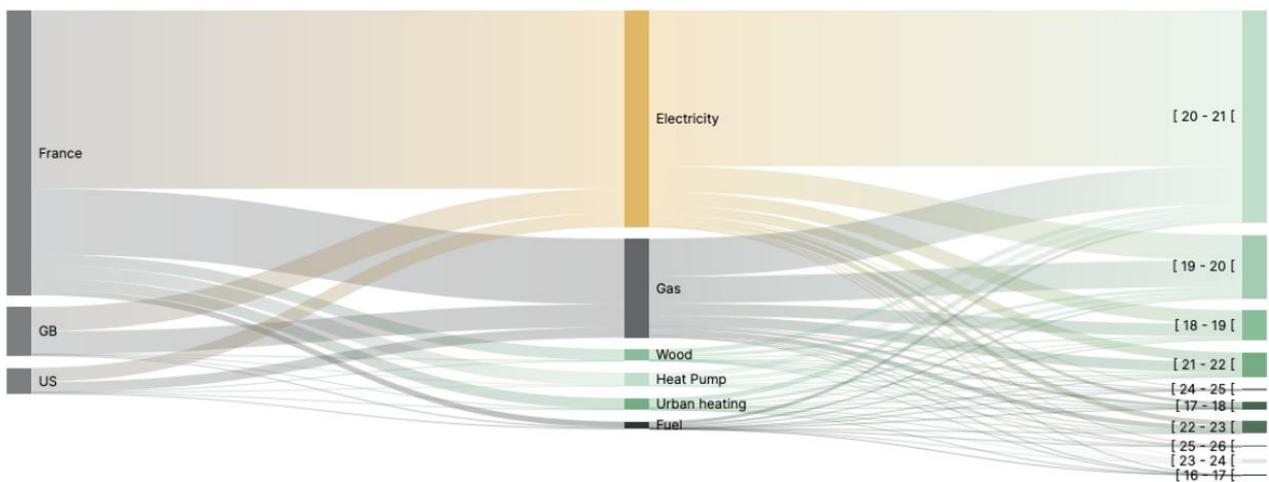


Figure 5 - Distribution of heating sources and temperatures in the Greenly database

Similarly, Figure 11 displays the repartition of cooling habits by country. While a majority of the France and UK based respondents don't have air conditioning (AC) at home, 89% of US respondents do. A strong majority of respondents say they set their AC at 23°C, with lower temperatures that 23°C being over represented in the US.

Repartition of cooling habits and temperatures by country

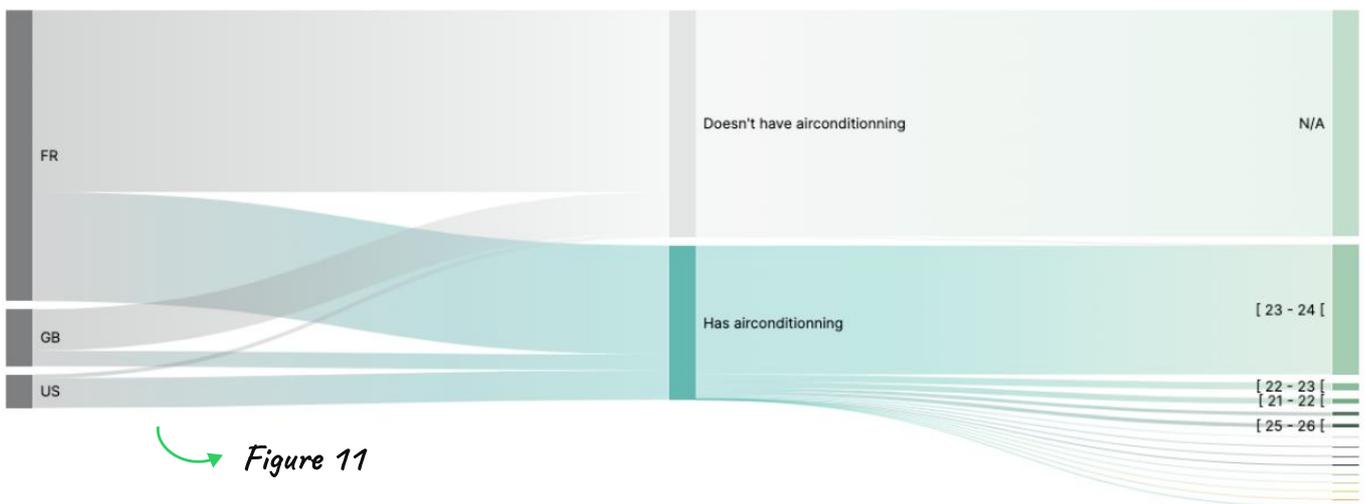


Figure 11

Figure 11 - Distribution of cooling habits and temperatures in the Greenly dataset

Employee behavior

Commuting habits

Figure 6a and 6b display respectively the distribution of chosen commuting mode and the distribution of kilometers commuted across the commuting modes.

Regardless of the country considered, the most dominant mode of transportation is the car, that is used in 36% of responses in France, 39% in the UK and 62% in the US. While SUV are in minority in France and Great Britain (used in respectively 7% and 10% of commutes), they are used in 30% of commutes in the USA, where subcompacts represent a fraction of cars used.

Public transportation is the second most used transportation mode, as expected given our database covers mostly urban companies. It is the most predominant in France, where public transportation is used in 34% of commutes. The rest of the commutes are covered by Train, Bike, or walking. Trains are particularly popular in the UK (16% of travels). All in all, active transportation modes are used in 22%, 22% and 12% of surveyed commutes.

Taking into account distances demultiplies the coverage of cars, trains and public transportation, that cover more than 80% of kilometers commuted in all countries. Active transportation modes represent less than 1% of the total distances traveled.

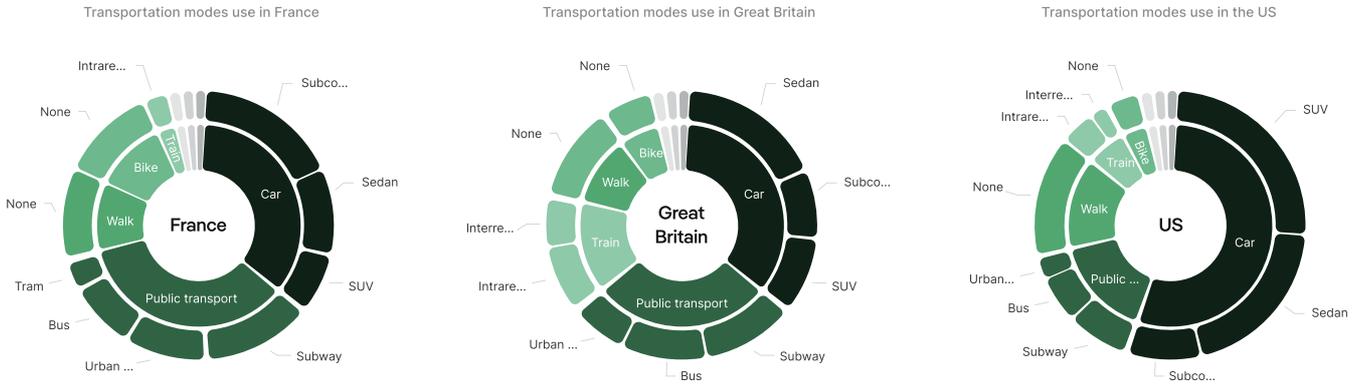


Figure 6a - Distribution of commuting modes choice across countries

Figure 6a

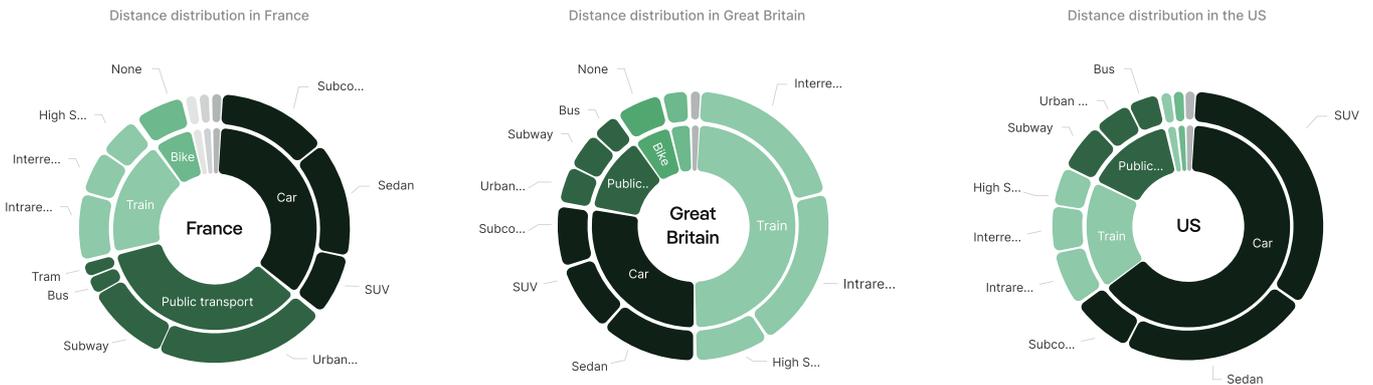


Figure 6b - Distribution distances of commuting modes across countries

Figure 6b

The low share of active transportation modes in the total commuting distance is explained by Figures 7 and 8 below, taking into account respondents from the US, UK and France. They display the chosen commuting model according to the commuting distance, from 0 to 250 kilometers and from 0 to 40 kilometers respectively.

First, they show that while a majority of respondents travel less than 20 km per day on average, distributions are heavily skewed and 26% of the respondents travel more than 20 kilometers per day on an average week, and 12% more than 40 kilometers per day on average. These commuters use their car in majority, followed by public transportation on shorter distances (less than 50km). The share of train users rises as distances grow, and all employees commuting for more than 130 kilometers on average use it. They however represent less than 1% of respondents.

On shorter distances, walking only takes place on less than 5 kilometers per week on average, but it represents more than 40% of respondents. This is followed by public transportation and biking, although 17% of respondents still commute by car even for very short distances. Walking become a small minority from 5 to 10 kilometers and is replaced by public transportation (49% of respondents), biking (22% of respondents) and driving (33% of respondents). Biking and public transportation are progressively replaced by driving as distances become longer, until reaching almost three quarters of respondents commuting between 35 and 40 km per day on average, with public transportation starting to decline from 20 km.

All in all, we conclude that current commuting habits are still heavily car dependent and that a significant proportion of them are long distance.

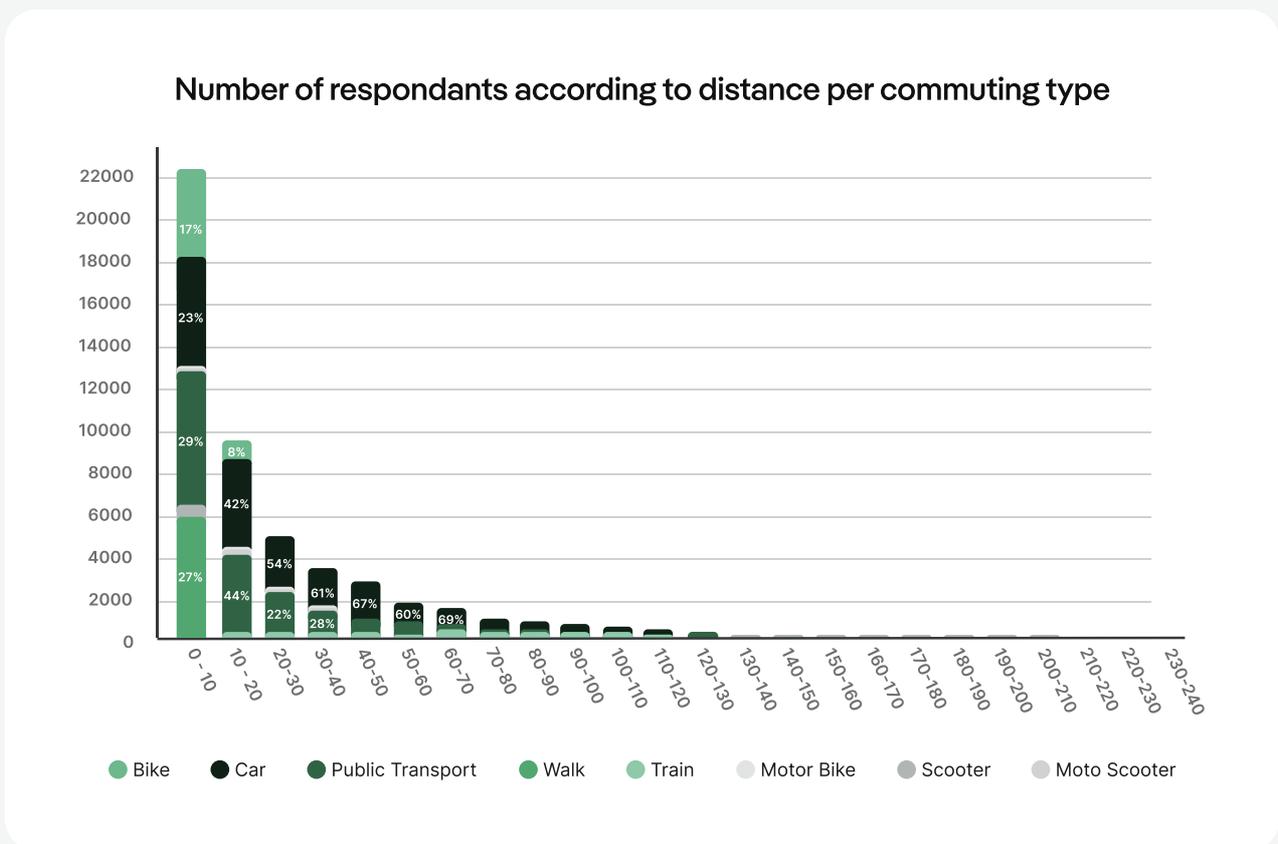


Figure 7 - Number of respondents according to distance per commuting type

Figure 7

Figure 8

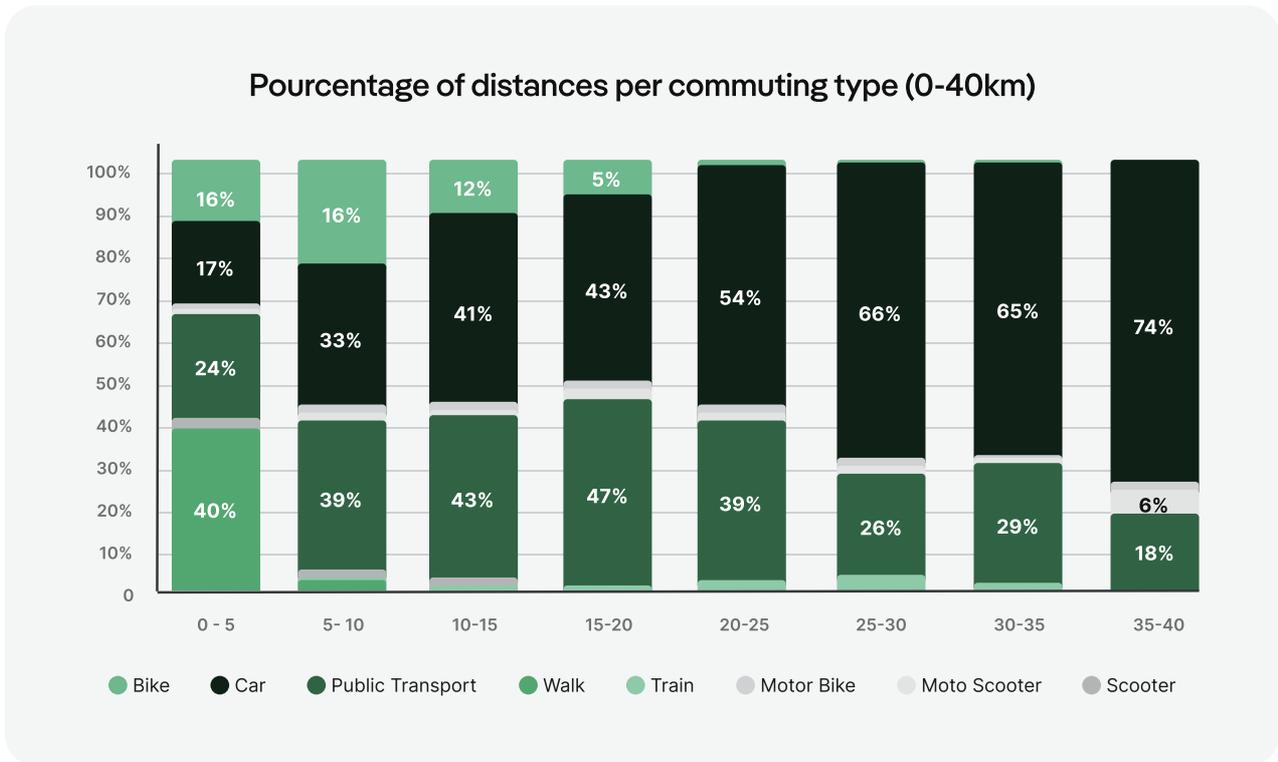


Figure 8 - Distribution of commuting modes according to distance for less than 40 km.

Of course, not all cars are equal - emissions vary significantly according to car size, motorization and chosen fuel.

Figure 6a, 6b and 5c shows the repartition of car sizes, fuels and motorisations, across the UK, France and the US. While SUV stay in minority in France and in the UK as subcompacts and sedans represent the majority of cars used, 49% of respondents in the US declared using an SUV. In all countries, all car are in majority using fuel, with hybrid and electric vehicles representing for instance 13% of cars used in the UK. In each country, cars run in majority with gasoline or diesel, with the expectation of the US, where diesel is rarely used. Biofuel (E85) and liquid petroleum gas (LPG) stay minority options throughout the US, UK and France with the exception of biofuel in Great Britain (13%). While this is not a rosy picture regarding GHG emissions, Figure 8 points out that different motorizations are as used for short commuting distance than long ones, suggesting that hybrid and electric vehicles are fit to cover any commuting need. Electric vehicles are even slightly more used for longer commuting distances, probably resulting from impact mitigation efforts from long distance commuters.

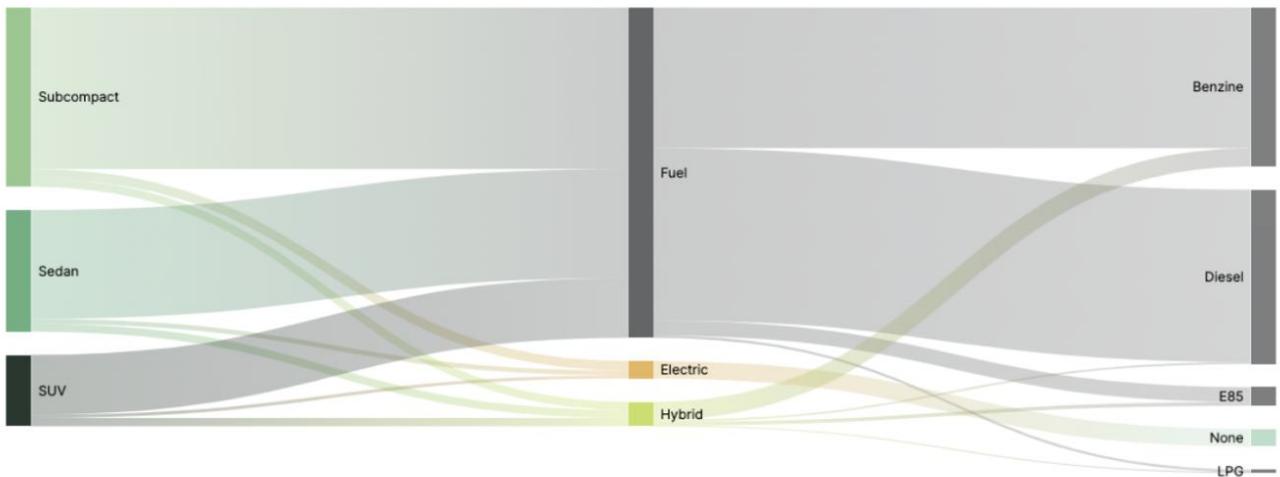


Figure 9a - Distribution of car sizes, motorization and fuels in the Greenly database in France

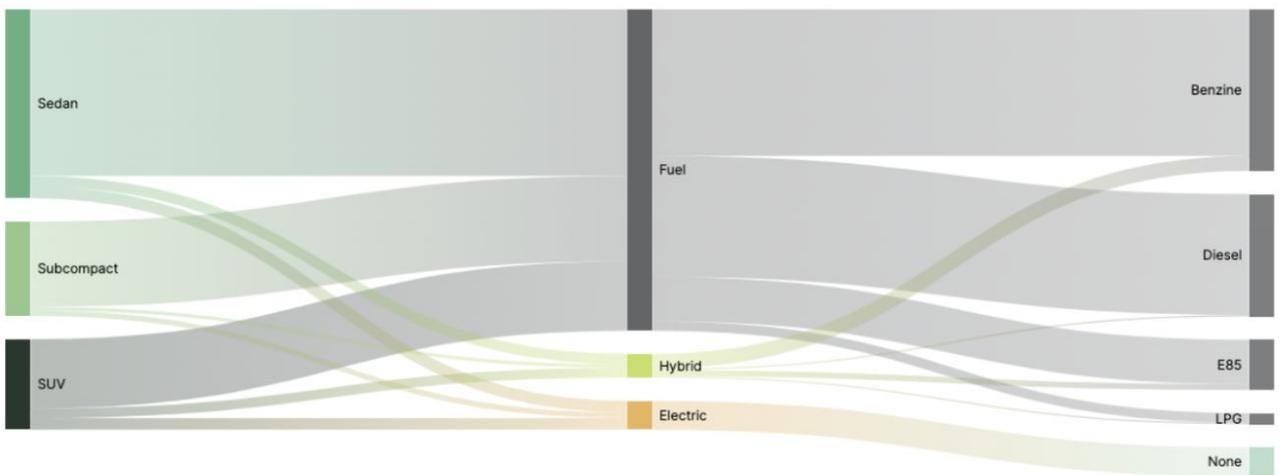


Figure 9b - Distribution of car sizes, motorization and fuels in the Greenly database in Great Britain

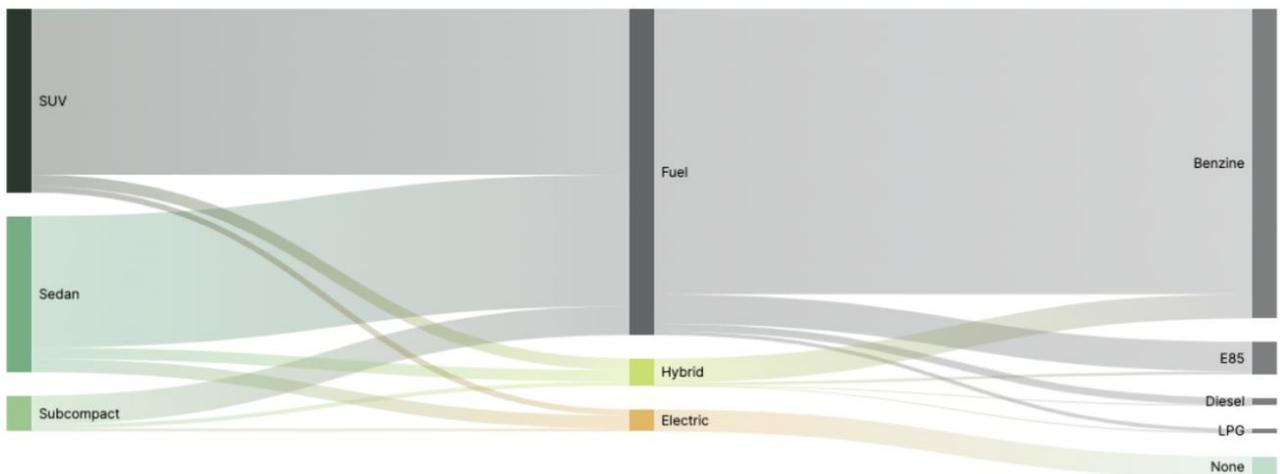


Figure 9c - Distribution of car sizes, motorization and fuels in the Greenly database in the US

Figure 9a, 9b & 9c

Figure 10

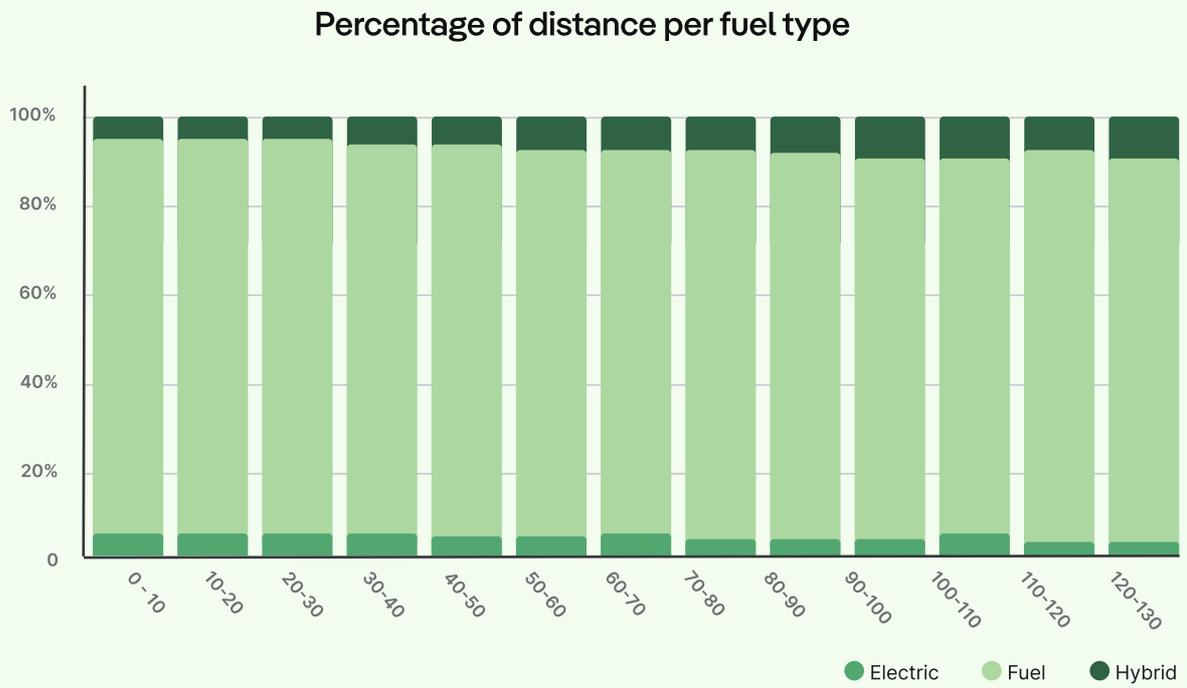


Figure 10 - Distribution of car motorization according to commuting distance.



Emissions reduction actions

Employee meals

Tacking into account this state of employee habits, companies can implement several effective strategies to reduce their emissions.

Encouraging employees to eat low-carbon meals can be approached through a combination of education, incentives, and making sustainable food choices more accessible and appealing.

In terms of meals, control options are out of the question. When it comes to meals, controlling choices is not feasible. Nudge-based strategies are more effective, with the aim of gradually embedding low-carbon eating into the company culture. We recommend companies first ensure to provide and promote vegetarian or vegan food options on official company events.

More advanced companies can also organize collective events around vegan and vegetarian foods so that the minority of employees familiar with this cuisine can share their knowledge and tips with their teams. Such events can be collaborative but also competitive to improve employee involvement.



On a daily basis, as vegan and vegetarian menu choices often fall victim to negative prejudice, data-based awareness campaigns are needed to make sure employees are aware of their environmental and social benefits. In particular, we recommend companies provide context as to why it is necessary that we collectively introduce more plant based foods in our diets to meet the Paris Agreement. In particular, we recommend underlining the insufficiency of other, typically more accepted actions (eating locally, seasonally, avoiding waste and packaging, supporting alternative agricultural methods); and raising awareness on their nutritional benefits and limits. If possible, on the spot awareness content (food labeling) is more effective than online courses. While we recommend the focus be put on eating plant based foods as they are the most relevant GHG emissions-wise, we also encourage similar awareness raising initiatives for eating locally, seasonally, avoiding waste and packaging and supporting alternative agricultural methods.

Lastly, in the case the company doesn't offer a canteen, as vegan and vegetarian food are often less accessible (cost-wise, or less available) than meat based alternatives, we recommend lowering costs for employees. This can be done by offering sustainable meal options in collective fridges at work (), choosing a responsible meal vouchers provider (), or partnering with local vegan and vegetarian restaurants for discounts.

All in all, you can expect changes on this to be gradual and should celebrate even small advances, as eating habits are grounded in socio-cultural practices that evolve slowly. Ensuring continuous communication on progress helps create a positive momentum on this issue.

While these actions are considered groundbreaking, some companies have already begun exploring how to reduce their employee meals' emissions. For instance, LinkedIn has piloted a program in its San Francisco office, offering a 65% plant-based menu. Sodexo, a major food services company, has committed to increasing plant-based options across its menus. They plans to make 50% of its campus offerings plant-based by 2025, motivated by the growing interest from younger generations in sustainable eating.

Emissions reduction actions

Commuting emissions

Commuting habits are typically easier and more commonly addressed by companies.

A very common approach is to encourage a shift in transportation habits by promoting sustainable modes of commuting such as cycling, walking, or using public transportation. For example, organizations might offer incentives like discounted public transit passes, partnerships with local bike-sharing programs, or green mobility allowances.

Yet, other, more concrete actions can be taken by companies. First, when choosing an office location, it's important to consider the commuting times and available transportation options. Selecting office spaces that are easily accessible by public transport or close to residential areas can help minimize car use, commuting time, and raise employee well-being. This can be combined by renting coworking spaces for employees living far from the office, allowing employees to work from locations closer to home while still benefiting from a productive workspace. When selecting or renovating workspaces, companies can also ensure the office offers the necessary infrastructure for low carbon transportation (charging stations, secure bike lockers, changing facilities, showers, lockers, etc). In some case, employee relocations can also be an option. Specialized companies such as [1kmapied](#) or [BeeToGreen](#) offer support to companies to help them optimize their choices according to their employees locations and work preferences.



On another note, and although remote working is seemingly losing popularity [CITE], allowing employees to work from home regularly can have a positive impact on reducing emissions. Even considering the potential rebound effects, such as heating remaining on while employees are at the office and additional travels made during free time, the overall impact of working from home tends to result in lower emissions. [CITE ADEME]

Carpooling can also be promoted by companies through official company carpooling platforms such as SPLT, BlaBlaCar, Liftango or Comovee, or offering specific parking spots, fuel subsidies, parking discounts, or cash rewards for employees who carpool regularly.

For instance, IKEA has partnered with Liftango to launch a global carpool program named Ride2Work. This initiative encourages employees to use a customized app for ride-sharing, which not only aims to reduce greenhouse gas emissions but also enhances employee morale and safety, especially in light of public transportation hesitations post-pandemic. Twitter and Shopify have adopted long-term remote work policies, which not only enhance work-life balance but also reduce overall commute emissions by minimizing the need for employees to travel to an office.



Emissions reduction actions

Heating and cooling

First and foremost, educating employees on the importance of turning down heating and air conditioning when in the office also helps reduce unnecessary energy consumption. Indeed, such emissions are outside the assessment perimeter, yet, they undeniably exist and do typically not respond to a need.

When it comes to heating, raising awareness among employees about government incentives for improving thermal insulation and switching to greener heating sources can drive long-term reductions in emissions. While these incentives are still insufficient to drive the renovation necessary to meet climate targets, they constitute a low cost lever to reduce corporate employee emissions. In particular, the UK's Green Homes and Energy Company Obligation, the US's [Energy Star Home Upgrades](#) and France's MaPrimeRénov' and Eco-PTZ should be followed closely.

For air conditioning, awareness around the different environmental impacts of cooling methods is crucial. Passive cooling solutions, such as natural ventilation and avoiding direct sunlight, are much less emissive than traditional cooling systems. Further, companies can raise awareness on the capacity of air conditioning to raise the outside temperatures in dense, urban areas, further emphasizing the health impacts of climate change. [CITE] Further, companies should encourage the regular maintenance of air conditioning devices and the switch towards low global warming potential gasses, as outlined by the CE regulation. [CITE]

As no company has fully implemented comprehensive strategies to address energy consumption in heating and air conditioning yet, we consider this a tremendous opportunity for organizations to lead the way in sustainability.





Conclusions and further research

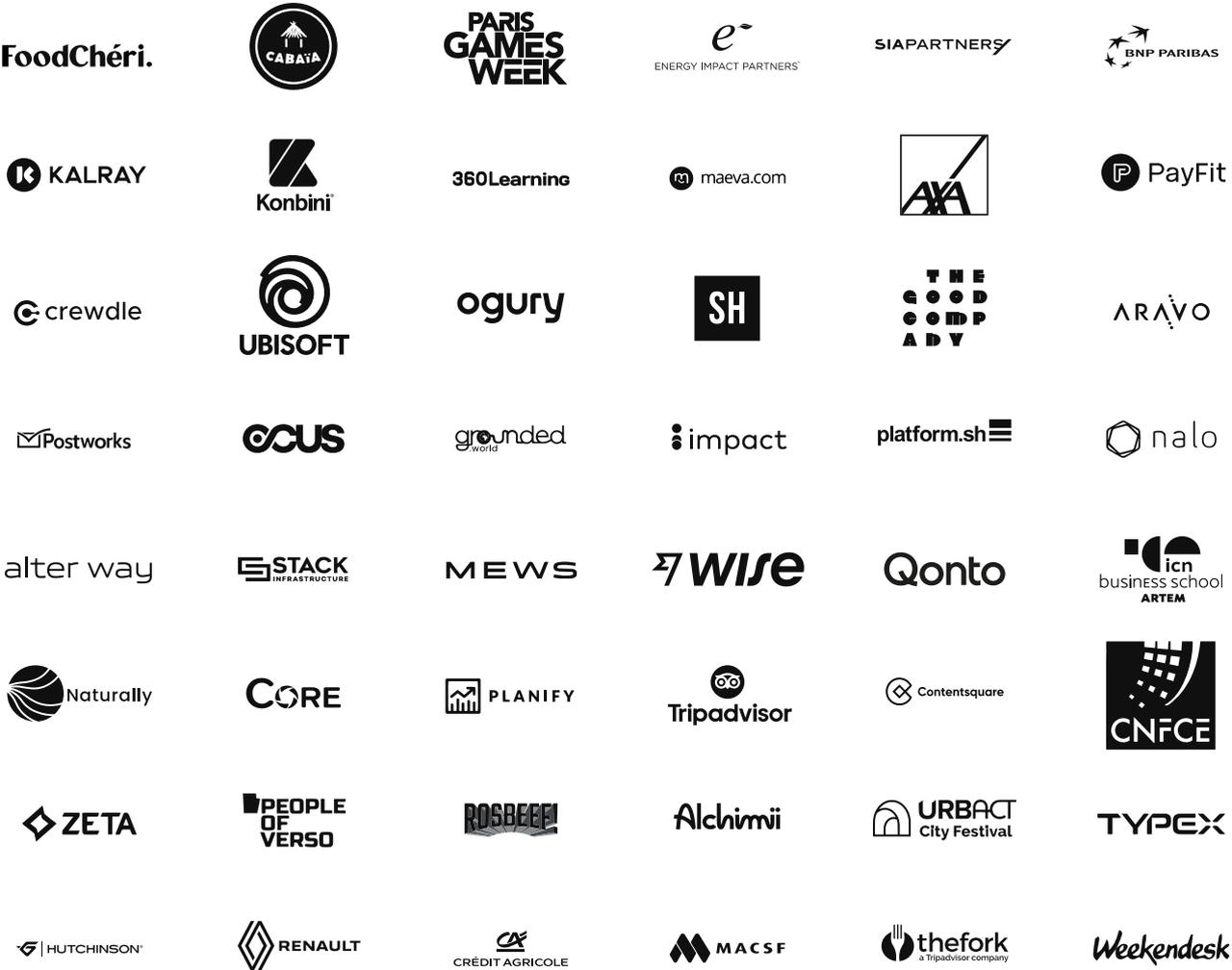
In conclusion, the current reporting on employee emissions remains arbitrary and lacks comprehensive analysis, leaving many significant emissions sources unaddressed. For instance, while meals constitute the largest portion of employee emissions, they are often overlooked in favor of more commonly reported categories.

Current employee habits are unfortunately still unsustainable. Although there is a growing trend towards vegetarian diets among employees, vegan options remain marginal, and meat-based meals continue to dominate. Furthermore, commuting habits still heavily rely on fuel-powered vehicles, with electric and hybrid options not yet widely adopted, and active transportation methods representing only a small fraction of total distances traveled. Additionally, heating and cooling practices frequently fail to align with energy-saving government recommendations. Cultural differences significantly influence these emissions, particularly in the U.S., where our sample displays higher rates of SUV use, cooling preferences, and meat consumption.

Current corporate initiatives primarily focus on commuting and meals, yet numerous opportunities exist for organizations to raise awareness, incentivize sustainable behaviors, and effectively reduce their emissions. This discrepancy suggests a fundamental gap in knowledge and recognition of corporate responsibility regarding these emissions.

To bridge this gap, we encourage other carbon accounting actors to disclose data analyses. In particular, this would help to constitute a more representative dataset that goes beyond urban SMEs and includes diverse demographics across multiple countries. Further, it would contribute to making a standard emerge to allow for compatibility across companies, to lowering the overall uncertainty of these calculations, and to constitute a shared database of reduction strategies.

Just like **over 2500 other companies**, they have entrusted Greenly with their Carbon Footprint



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