

The Department of Government's Carbon Footprint in 2019

Introduction

In 2021, Uppsala University commissioned a report of the total carbon dioxide emissions of the university.¹ The mapping was carried out by an external consultant agency and was based on the year 2019, before the Covid-19 pandemic. Initiated by the Department of Government's environment group, a similar report of the Department of Government's total carbon dioxide emissions has been carried out. The purpose of the report is to get an idea of the overall carbon footprint of the department and to understand how emissions are distributed between different activities. The results will inform strategies to reduce emissions.

The analysis has been carried out by Hannah Lundgren, in consultation with the department's environment group and with support from the department's head of administrator Åsa Constanda. Hannah Lundgren was responsible for a similar mapping at the Institute for Housing and Urban research (IBF) and worked together with Uppsala University's former environmental director Karolina Kjellberg, who was involved in the mapping of the whole university.

Method

The mapping of the Department of Government's emissions is largely based on the same methodology as the mapping of the whole university. The analysis is based on the year 2019 and all emissions are measured as carbon dioxide equivalents (co2e). Below is a brief summary of the methods, but for more detailed information, see the report for the entire university.

Similar to the analysis of the whole university, emissions at the department have been divided into five categories. The categories are:

- Travels (tjänsteresor)
- Buildings (fastigheter)
- Purchase of goods (inköp av varor)
- Staff and other (personal och övrigt)
- Research and consulting services (forsknings- och konsulttjänster)

The methods can be divided into three different parts. The first part consists of a so-called environmental spending analysis (miljöspendanalys), which is a top-down approach that has been used to measure (at least parts of) the emissions from all categories. The environmental spending analysis is based on the organization's income statement (resultaträkning), where every cost item that generates some kind of emissions is categorized and attributed to different economic activities. Statistical emission data are available for these economic activities, expressed in grams of emissions of co2e per kronor spent, and the sum of the costs is multiplied by the emission factor. In other words, this method is based on how much money

¹ [Klimatkartläggning Uppsala universitet 2019](#)

the department has spent on various goods and services, and converts these different sums into carbon dioxide emissions.

The second part of the methods is called LCA and is a bottom-up approach that has been used to measure emissions from air travel. This method is based on travel statistics from the university's contracted travel agency Lingmerths. For calculating carbon dioxide emissions from air travel, the calculation website Transportmeasures.org has been used. To facilitate these calculations, the following assumptions about standard journeys have been made:

- Within Sweden: Stockholm – Malmö
- Within the Nordic countries: Stockholm – Copenhagen
- Within Europe: Stockholm – London
- Rest of the world: Stockholm – Boston

Transportmeasure.org does not include a high altitude factor, therefore a surcharge of 1.9 times the emissions has been calculated for the journeys Stockholm - London and Stockholm - Boston.

Air travel that employees book on their own do not appear in Lingmerths' statistics. Therefore, environmental spending analysis has been used to calculate emissions from air travel that is not booked via Lingmerths.

The third part of the methods only covers emissions from buildings. In the university report, emissions from buildings are measured using an LCA approach, but due to various constraints (for instance regarding how energy use is measured at the university), this method cannot be used at the departmental level. Instead, a rough estimate has been made where the emissions from the Department of Government's buildings are calculated as a proportion of the emissions of the entire university. More specifically, the calculation is based on the department's total rental cost in relation to the costs of the whole university where the proportion of the department's cost is multiplied with the university's total emissions from buildings.² Environmental spending analysis has been used to calculate minor additional emissions from buildings.

It is difficult to measure the total emissions from an entire organization and there are various problems with the methods used. Thus, the results of the analysis should primarily be understood as an overall estimate and a snapshot of the department's carbon dioxide emissions in 2019.

Results

Table 1 presents the result of the mapping. The total carbon dioxide emissions of the Department of Government in 2019 was 754 tonnes co₂e. Travels is the largest source of emissions and accounts for 526 tonnes and 70% of the total emissions. Within travels, air travel corresponds to 94% of the total emissions. Buildings are the second largest source of

² The departments total rental cost, both from internal rent (internhyra) and booked buildings (bokade lokaler), is 8 445 726 SEK. This constitutes 1.13% of the total rental cost for the whole university (total rental cost for the university is 749 309 465 SEK). Thus, emissions from the department's buildings are calculated as 1.13% of the total emissions from the university's buildings.

emissions and accounts for 187 tonnes and 25% of the total emissions. The remaining three categories together account for 41 tonnes and 5% of the total emissions.

Table 1.

Categories	Tonnes CO2e	Share of total	Method
Travels	526	70%	
Air travel	494,6	94%	<i>LCA+Spend</i>
Hotels	29,8	6%	<i>Spend</i>
Bus/car/boat/train/taxi	1,6	0%	<i>Spend</i>
Buildings	187	25%	<i>Share of UU+Spend</i>
Purchase of goods	9	1%	
Decoration and furniture	0,6		<i>Spend</i>
Marketing materials, press	1,6		<i>Spend</i>
Chemicals, lab equipment, drugs	0		<i>Spend</i>
Office supplies	6,9		<i>Spend</i>
Research equipment and cars	0,1		<i>Spend</i>
Personnel and other	31	4%	
IT and telecommunication	17		<i>Spend</i>
Food, restaurant etc.	12,6		<i>Spend</i>
Health	1,3		
Research and consulting services	1	0%	
Research and educational services	0		<i>Spend</i>
Consulting services	0,1		<i>Spend</i>
Education and conferences	0,9		<i>Spend</i>
Total	754	100%	

Table 2.

Air travel	Number of trips	~Kg co2e per trip
Within Sweden (Stockholm-Malmö)	37	131
Within Nordic countries (Stockholm-Copenhagen)	56	131
Within Europe (Stockholm-London)	291	504
Rest of the world (Stockholm-Boston)	172	1750
Outside Lingmerths' statistics	60	0,135 kg/kr
Total	616	495 000

Table 2 shows additional information on air travel. It shows that 616 air trips (one-way) were made during the year.³ 37 of these were within Sweden, 56 within the Nordic countries, 291 within Europe, and 172 in the rest of the world. 60 trips are not categorized since they lie

³ 616 include all trips, also stopovers.

outside Lingmerths' statistics and have been calculated using the spending analysis. The table also illustrates how much emissions the different trips generate according to Transportmeasures.org.

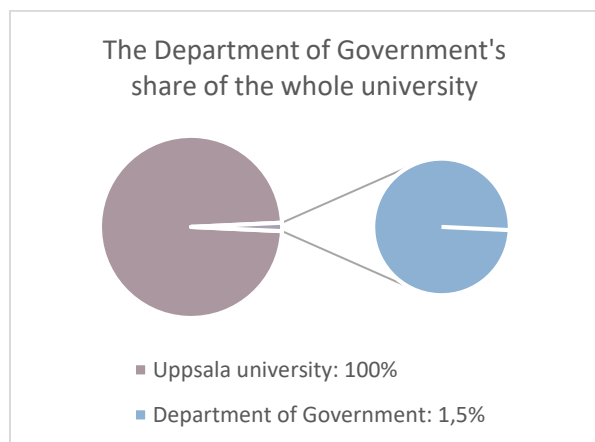
An important note is that around half of the 616 trips made in 2019 were by people who are not employed at the Department of Government. This includes for example visiting scholars, guest speakers and other visitors whose trips were paid by the department. While this shows that a large portion of the trips in 2019 were not made by employees at the department, it also suggests that trips made by employees at the department but that were paid by other departments do not appear in our emission statistics.

Comparison with the whole university

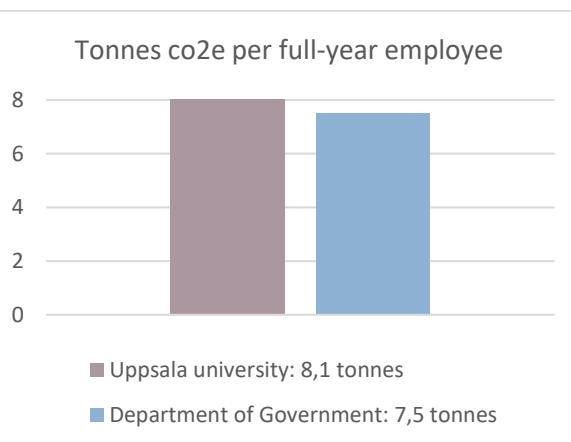
The mapping of entire Uppsala University shows that the total emissions in 2019 were 50 589 tonnes co2e. As demonstrated in Graph 1, the emissions from the Department of Government of 754 tonnes constitute approximately 1,5% of the university's total emissions. As some sort of comparison, the Department of Government makes up about 1,13% of the university's total rent and 1,6% of the university's total staff.⁴

The mapping of the entire university also shows that the emissions per full-year employee in 2019 amounted to 8.1 tonnes co2e. As demonstrated in Graph 2, the result for the Department of Government is 7,5 tonnes.⁵

Graph 1.



Graph 2.



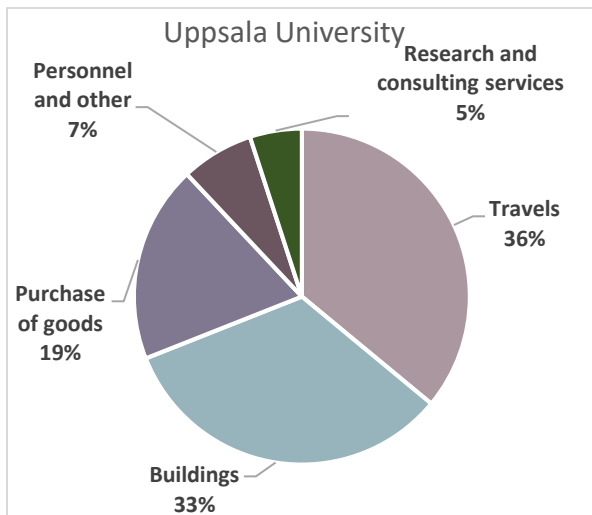
Graph 3 and 4 show the distribution of emissions between different categories at the Department of Government and the university as a whole. Similar to the whole university, the largest source of emissions at the Department of Government is travels. However, at the university, travels make up 36% of the total emissions while at the Department of Government, travels correspond to 70%. Buildings is the second largest source of emissions at both the university and the departmental level yet, at the university, buildings correspond to 33% of emissions while at the department they correspond to 25%. The third largest source of emissions at the university is purchased goods, followed by personnel and other. At the

⁴ Based on the assumption that Uppsala University in 2019 had 6250 full-year employees and the Department of Government 100 full-year employees.

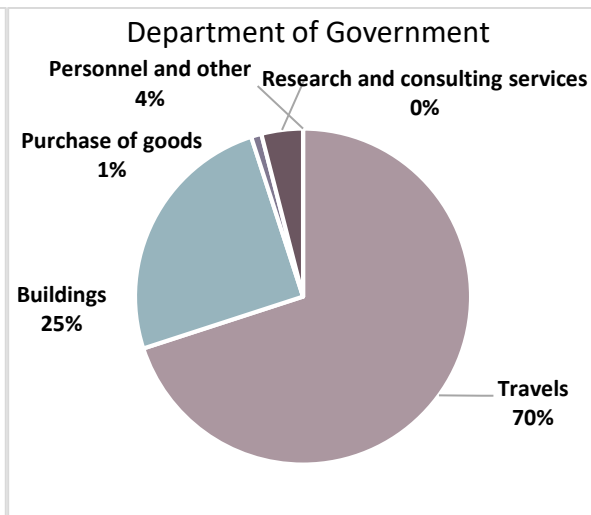
⁵ Again, based on the assumption that the department in 2019 had 100 full-year employees.

Department of Government, the order is reversed. Personnel and other is the third largest source corresponding to 4% of emissions and purchase of goods is the fourth largest, corresponding to 1%. Research and consulting services is the smallest source of emissions at both the university and the department.

Graph 3.



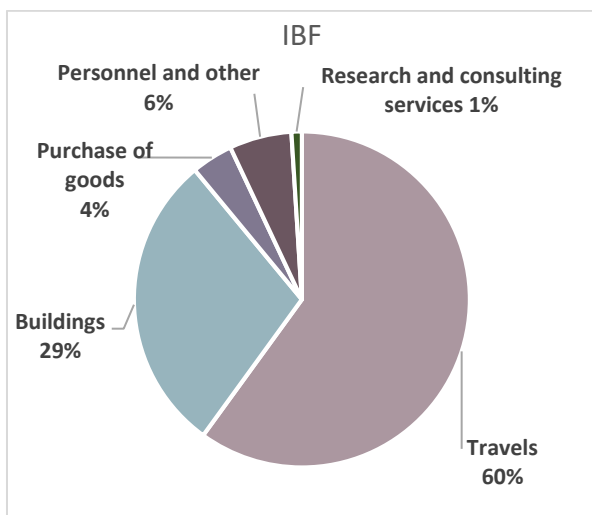
Graph 4.



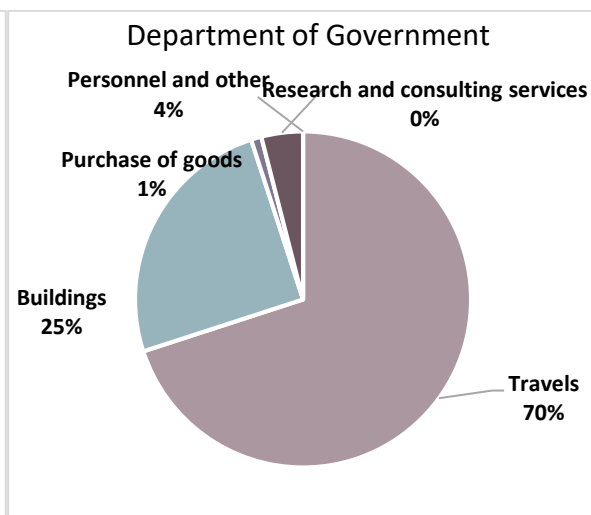
The somewhat different distribution of emissions at the departmental versus the university level is not entirely unexpected. In comparison to the university at large, the activities at the Department of Government do not require a lot of goods and material such as lab material, chemicals, machines etc. These factors help explain why travels is such a large source of emissions at the department in comparison to the other categories.

Comparison with the IBF

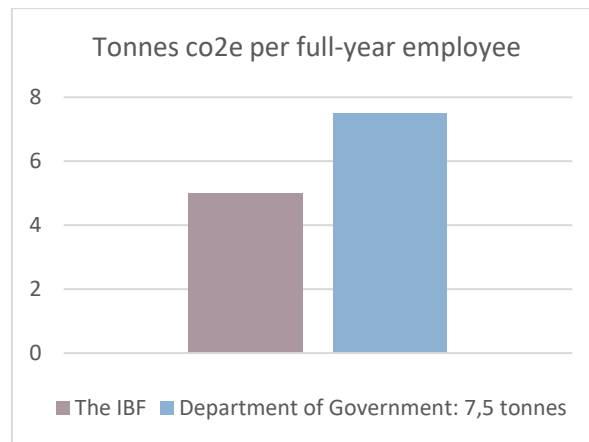
Graph 5.



Graph 4.



Graph 6.



The IBF and the Department of Government seem to be the only departments so far that have reproduced the analysis of the whole university and mapped emissions at the departmental level. Graph 5 therefore shows the result of the mapping of IBF (Graph 4 is included again next to Graph 5 to facilitate the comparison). The total emissions in 2019 amounted to 195 tonnes co2e and approximately 5 tonnes per full-year employee. The largest source of emissions was travels followed by buildings. Similar to the Department of Government, travels was a significantly larger source of emissions compared to the university as a whole, although not as large as at the Department of Government.

Discussion

This report shows that the emissions from the Department of Government in 2019 amounted to 754 tonnes co2e and approximately 7,5 tonnes co2e per full-year employee. But how should these numbers be understood? And how can they inform strategies to reduce emissions from the department?

First, while the emissions at the department are slightly lower compared to the university at large (counted per full-time employee), this report shows that the emissions still amounted to 7,5 tonnes co2e per employee in one single year. And this only includes emissions from work. To put this number in perspective, the Swedish Environmental Protection Agency states that “[F]or the world to keep the global temperature increase well below two degrees, the emissions of greenhouse gases need to come down as far below 2 tonnes per person as possible by 2050”⁶. Elsewhere, the agency writes that to keep the global temperature under 1.5 degrees, emissions need to be no more than 1 ton by 2050⁷. Consequently, it stands clear that in order to meet long-term (inter)national targets, the emissions from the Department of Government as well as from the whole Uppsala University need to be drastically reduced.

⁶ Naturvårdsverket, *How can I reduce my carbon footprint?*, n.d., <https://www.naturvardsverket.se/en/topics/climate-transition/omraden/klimatet-och-konsumtionen/how-can-i-reduce-my-carbon-footprint/> [Accessed 2023-03-03]

⁷ Naturvårdsverket, *Klimatet och konsumtionen*, n.d., <https://www.naturvardsverket.se/amnesomraden/klimatomstallningen/omraden/klimatet-och-konsumtionen/> [Accessed 2023-03-03]

Second, since travels constitute the by far largest source of emissions at the Department of Government, representing a full 70% of total emissions, it suggests that strategies to reduce emissions should primarily focus on travels. In comparison to emissions from buildings, which are difficult to change in the short term, travels are easier to affect and have a direct effect on emissions. In addition, according to Uppsala University's environmental plan, emissions from travels should reduce with 30% to 2024.⁸

Third, the second largest source of emissions at the Department of Government is buildings. As just mentioned, these are more difficult to change in the short term since they are related to the buildings of the whole university. Nevertheless, thinking about how to use office space, teaching space and energy is still an important part of the long-term reduction of emissions from buildings.

Fourth, although the emissions from purchased goods and personnel and other are relatively small, changes in these sectors also have a direct effect on emissions. Hence, thinking of the use and purchase of office supplies, IT and food is also important.

Finally, while the Department of Government already contributes with important research and knowledge about socially and ecologically sustainable societies, it also has the opportunity to state an example and reduce the environmental impact of the own organization.

⁸ Miljöplan 2022-2024 för Uppsala universitet, <https://www.regler.uu.se/dokument/?contentId=243432>