

The Carbon Footprint of NTNU

- Preparatory study of the Norwegian University of Science and Technology

Background

MiSA – Environmental Systems Analysis was given the task to develop a Greenhouse Gas (GHG) inventory for the Norwegian University of Science and Technology (NTNU) for 2009. The motivation was to include all direct and indirect GHG emissions relating to the activities of the university.

The analysis

MiSA has developed Klimakost; a tool for assessing the carbon footprint of businesses and organizations. The main idea of the model is to apply financial accounts of the units to effectively calculate carbon footprints using Environmentally Extended Input-Output Analysis (EEIOA). MiSA have applied the tool to a number of municipalities, counties, businesses and organizations.

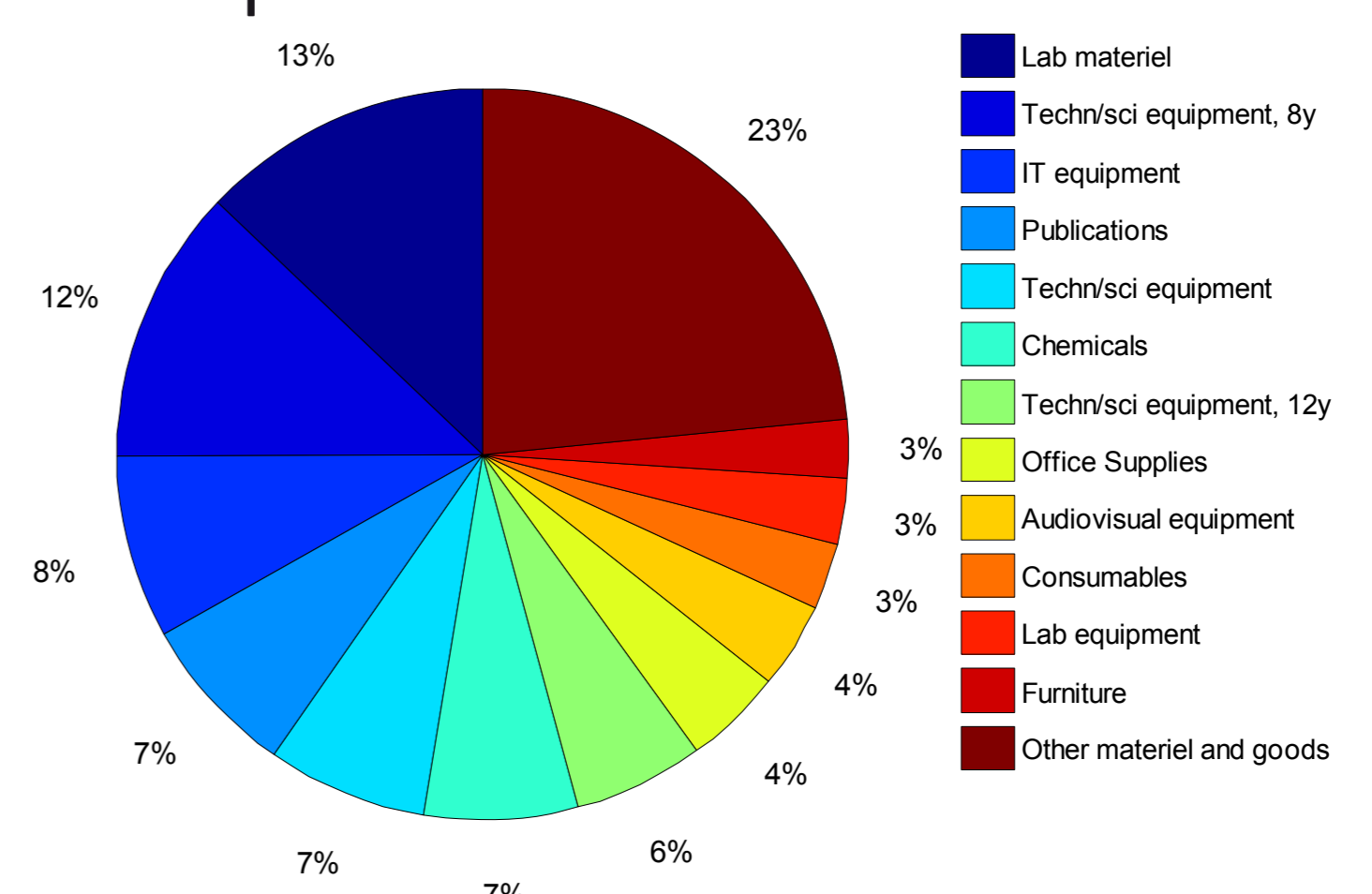
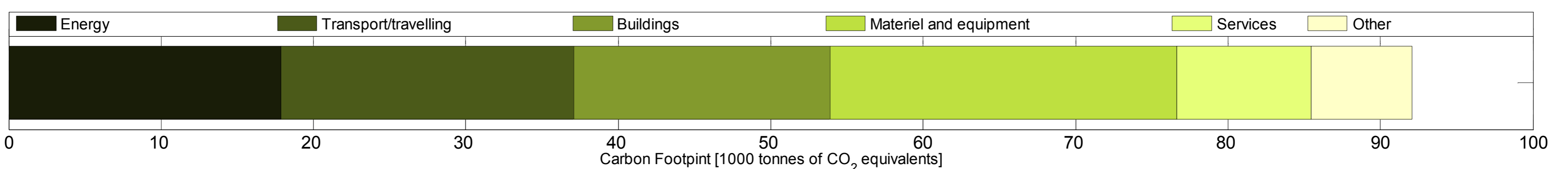
Main findings

The analysis of NTNU shows that all activities of the university in 2009 generated more than 90 000 tonnes of CO₂ equivalents. In the table below we see that this constitutes to 4.6 tonnes per student and 16.7 tonnes per employee.

Indicator	Sum
Number of students	~ 20 000
Number of employees	~ 5 500
Budget	4.7 billion NOK
Purchase of goods and services	1.34 billions NOK
Investments	0.42 billion NOK
Carbon Footprint (CF)	92 096 tonnes CO ₂ e.
CF per student	4,6
CF per employee	16,7
KF per NOK budget	~ 0.02 CO ₂ e. per NOK
KF per NOK purchase	~ 0.05 CO ₂ e. per NOK

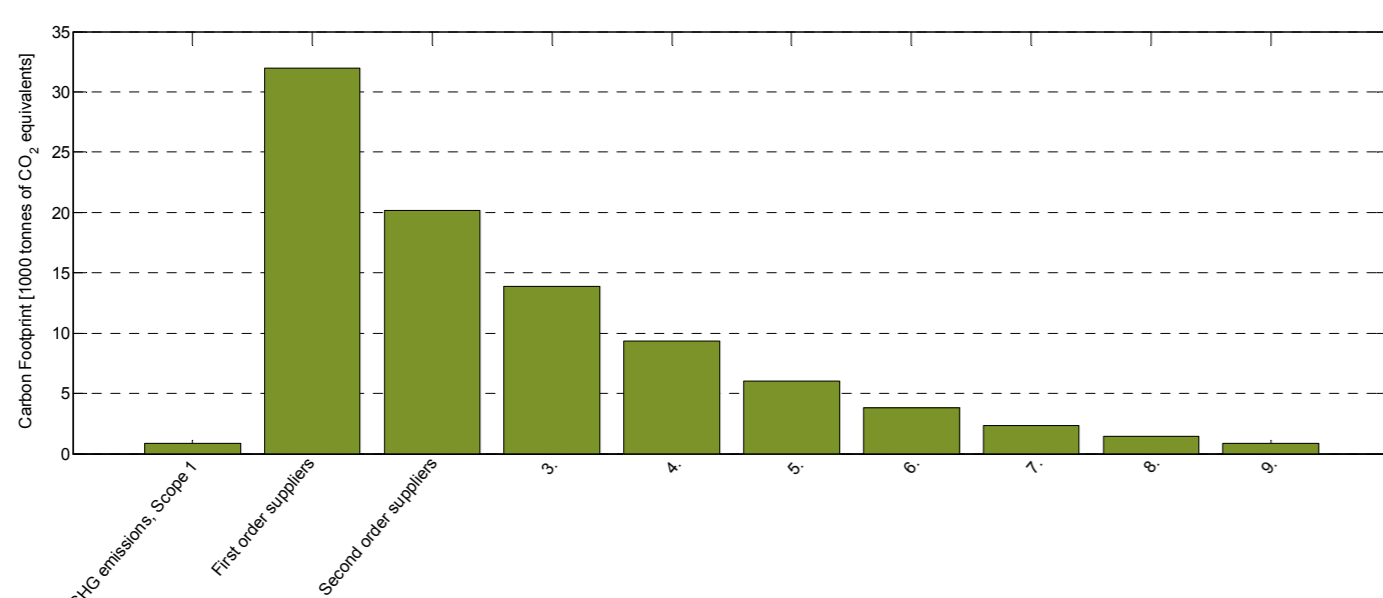
Structure of carbon footprint

In the bar chart below we illustrate the carbon footprint divided into main categories. Although the emissions related to energy, transport and buildings are all significant, it is interesting to see that material and equipment constitutes the largest contribution to the carbon footprint. Detail on this is provided in the pie chart to the right. An increased level of detail is also available for all other main categories.



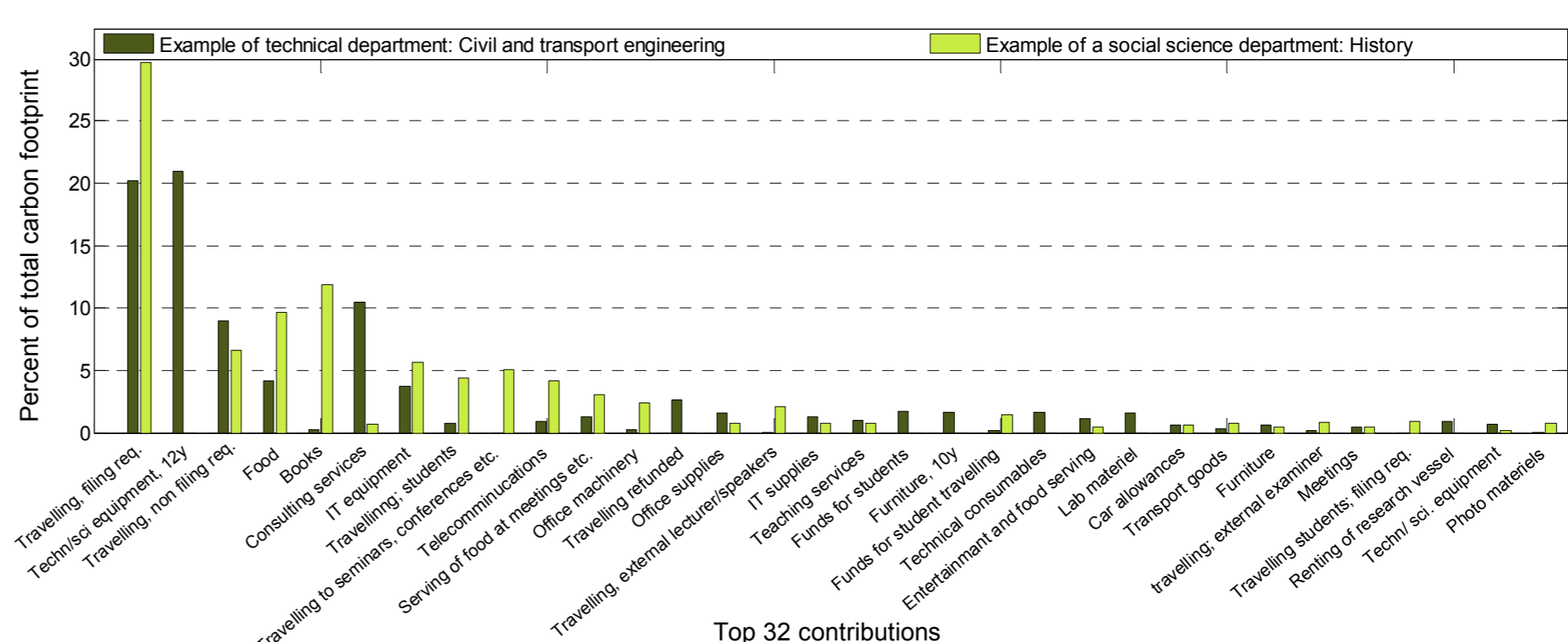
Tier-wise distribution

As illustrated in the tier-wise distribution below, only a small amount is counted as direct, Scope 1, emissions. Emissions at the 1. order suppliers are both Scope 2 (purchase of energy) and Scope 3 (other indirect emissions). From the 2. order supplier, and further down the supply chain, all emissions are counted as Scope 3 emissions.



Carbon footprint per department

Using the structure in the standardized financial accounts of NTNU, we are able to divide the carbon footprint into different departments of the university. It is interesting to see the difference in structure from the different departments, exemplified in the figure below looking at a technical department (Civil and transport engineering) versus a social science (History) department.



For more information, please visit www.misa.no

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