Case Study
2020 Greenhouse Gas Inventory and working from home

The University has committed to achieve carbon neutrality before 2030, zero net emissions from electricity by 2021 and significantly reduce energy-related emissions through on-campus energy projects. To support these goals, the University’s greenhouse gas emissions have been calculated and reported in a Greenhouse Gas Inventory (GGI) since 2016 (see Table 1). The GGI covers:

- **Scope 1**: direct emissions from sources controlled by the University
- **Scope 2**: indirect emissions from the purchase of purchased energy
- **Scope 3**: indirect emissions that occur in the value chain, as a consequence of the University’s activities

The University’s GGI was prepared internally for 2020. The disruption to ‘business-as-usual’ due to the COVID-19 pandemic had a significant impact on our emissions profile. Gross GGI emissions in 2020 reduced to 140,875 tCO₂-e, down from 211,796 tCO₂-e in 2019, primarily due to reduced utilities usage (electricity, gas, water) and staff travel (flights, hotel accommodation). Carbon intensity reduced from 0.22 tCO₂-e/m²GFA in 2019 to 0.14 tCO₂-e/m²GFA in 2020.

To better understand the impact of COVID-19 on emissions, the Scope 3 emissions category ‘working from home’ was added to the GGI. These emissions were estimated based on a simplified version of the methodology produced by EcoAct. Input data was limited, so the result is indicative only, however it has been included to illustrate that while the impact of the pandemic resulted in reduced operational emissions on campuses, other emissions sources increased.

From campus attendance data on the Smart Campus Dashboard for April to Dec-2020, it was estimated that approximately 88% of staff worked from home, while 12% commuted to campuses. Using the EcoAct methodology estimate for electricity usage of 115 W/hr per desk for office equipment and lighting, greenhouse gas emissions from working from home in 2020 were calculated at 2,150 tCO₂-e.

The above estimate is simplistic, and could be enhanced in future by sourcing data on the following:

- Incremental home heating and cooling.
- Increased use of videoconferencing.
- Incremental use of videoconferencing.

Significant emissions were saved by reducing staff commuting and traveling in 2020. Incremental emissions were generated, however, by the corresponding increase in videoconferencing. In a paper published in 2021, Obringer et al. estimate that a standard videoconferencing service has a carbon footprint of 127 gCO₂-e/hr. Turning off the video, however, can reduce these emissions by up to 96%. Due to data limitations, this was not included in estimates for 2020.

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