

Can awareness-raising alone reduce the environmental footprint of a geosciences laboratory?

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Since March 2021, the Geosciences Rennes laboratory in France has a Sustainable Development and Social Responsibility (SD&SR) working group whose main missions are (i) to quantify the laboratory's carbon emissions using the GES1point5 tool, (ii) to propose awareness-raising and training initiatives, and (iii) to set up a transition plan. Carbon balances have been produced for the last 5 years (2019-2023), an environmental charter adopted in 2022 and a transition plan voted in 2023, to be applied from 2024 onwards. This multi-year plan (2024-2030) is incentive-based and therefore non-binding. Some of our activities are managed by the Observatoire des Sciences de l'Environnement de Rennes (OSERen), to which the laboratory belongs. In particular, this concerns purchases made by analytical platforms supported by OSERen, as well as scientific projects and analytical and scientific equipments. It is necessary to integrate these “delocalized” flows in order to track the evolution of the laboratory's emissions over time, without any bias due to changes in administrative management. In 2023, these flows represented 54% of Geosciences Rennes' purchases.

Despite our efforts to raise awareness (communication, conferences) and the adoption of an environmental charter, only emissions linked to buildings (electricity and heat consumption) and commuting have fallen steadily, from 289 T ecCO₂ in 2019 to 195 T eqCO₂ in 2023 (-30%). We suggest that this is a response to the policies put in place by the university and the Rennes metropolitan area to encourage energy savings, soft mobility and work from home.

On the other hand, after a sharp drop in 2020, mission-related emissions in 2023 were close to their pre-covid level. In order to better understand the origin of these emissions, we worked at the individual level. The same trend is observed every year: the majority (>80%) of agents emit less than 1T eqCO₂/year for their missions, all modes and reasons combined. What's more, by 2023, 72% of missions will be by train or car, with an average distance of 500 km. As data acquisition in the field is the laboratory's core business, it seems possible to maintain a high level of research activity with study areas located close to the laboratory.

Lastly, purchasing-related emissions have never decreased, and will even rise sharply in 2023. We have gone from around 420T eqCo₂ (average 2019-2022) to 800 T eqCO₂ in 2023. As a result, the share of purchasing in the laboratory's total carbon footprint has risen from 47% in 2019 to 68% in 2023. It therefore seems that awareness-raising initiatives, including the adoption of the environmental charter, are not enough to reduce the purchasing footprint. More restrictive measures and support for laboratories are needed to rethink the way we carry out our research.

Awareness-raising initiatives thus appear as a necessary but not sufficient step towards reducing our laboratory's carbon footprint. The detailed analysis carried out on an individual basis for each mission has enabled us to highlight the great heterogeneity of the footprint linked to travel, and to propose more targeted actions that are also more equitable and acceptable. Access to individualized data for purchases would enable us to propose targeted actions for an effective mitigation strategy for this item. The plan voted for in 2023 will most likely require a revision of its application modalities in the years to come, in order to keep pace with the expected reduction trajectory.