

“How to calculate your Biobanks carbon footprint?”

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Introduction:

Climate change, driven by greenhouse gas emissions impacts on various aspects of life, such as food production, water availability, and the (re)emergence of diseases. The biobanking field encompasses a range of activities that contribute to greenhouse gas emissions. Understanding the carbon footprint of these activities, how they can be measured, and subsequently reduced, is of significant importance.(1)

Material & Methods:

Biobank Graz, a partner of BBMRI.at, performed intensive literature research and consulted with experts in the field of sustainability, with a focus on carbon footprint calculations. Based on the “Greenhouse Gas Protocol” (2,3) to prepare a carbon footprint calculation, the biobank processes and its resulting CO₂ emissions, were divided into 3 scopes: direct emissions, emissions of purchased energy and indirect emissions.

Results:

After reflecting our processes, we believe that the most important emissions in Biobank Graz come from 1) energy demand (e.g. electricity), 2) resources that are needed in large amounts (e.g. liquid nitrogen, labware, IT-devices), 3) mobility of employees and 4) refrigerants.

Discussion & conclusion:

The determination of energy and resource requirements for biobanking activities along with the resulting carbon footprint is the first important step towards achieving more efficient and sustainable biobanking. This process allows biobanks not only to reduce e.g. the energy demand of specific equipment and Infrastructure but also to compare the environmental impacts of certain processes, all while reducing costs.

Bibliography:

1. Shirakashi R, Kozlakidis Z, Yadav BK, Ng W, Fachiroh J, Vu H, et al. Decarbonization in Biobanking: A Potential New Scientific Area. *Biopreserv Biobank*. 2022 Oct 1;20(5):446–50.
2. Ranganathan J, Corbier L, Schmitz S, Oren K, Dawson B, Spannagle M, et al. The Greenhouse Gas Protocol - A Corporate Accounting and Reporting Standard.
3. Determine Organizational Boundaries [Internet]. [cited 2024 Oct 14]. Available from: <https://www.epa.gov/climateleadership/determine-organizational-boundaries>