

# Encouraging a ‘data sufficiency’ mindset is key for responsible research

Author: *Alexandre Heeren\**

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\*Correspondence:

Psychological Sciences Research Institute  
Université catholique de Louvain  
Place du Cardinal Mercier, 10  
B-1348 Louvain-la-Neuve, Belgium  
[alexandre.heeren@uclouvain.be](mailto:alexandre.heeren@uclouvain.be)  
+32 493 74 24 46  
ORCID: <https://orcid.org/0000-0003-0553-6149>

Efforts to decarbonize research often focus on air travel<sup>1</sup> and on energy use in laboratories<sup>2</sup>. Yet, in many fields, repeated collection of original data — through field campaigns, experiments or high-performance computing — represents the bulk of emissions. It also demands considerable funding and labour, especially from early-career researchers who must secure grants for bespoke data collection, even when relevant data sets already exist.

This model is becoming increasingly unsustainable, as research budgets stagnate and infrastructure gaps<sup>3</sup>. Reuse of open-access data sets offers a practical way to reduce emissions, ease funding pressure and broaden participation. Thousands of curated data sets are available. Still, reuse is undervalued, perceived as lacking novelty and seldom rewarded in funding or promotion processes.

Not all scientific questions can be addressed using existing data. However, when reuse is appropriate, a ‘data sufficiency’ mindset should be encouraged, in which new data are collected only when truly necessary.

Journals, funders and institutions should incentivize reuse through evaluation criteria, training and policy. Researchers must ensure that the data they share are reusable. Data reuse is not a fall-back or a lesser form of research. It offers a path to sustainability, equity and resilience.

## References

1. Soliman, A. Academics say flying to meetings harms the climate — but they carry on. *Nature* (2024). <https://doi.org/10.1038/d41586-024-02965-7>
2. Gillingham, K., Carattini, S. & Esty, D. Lessons from first campus carbon-pricing scheme. *Nature* **551**, 27–29 (2017). <https://doi.org/10.1038/551027a>
3. Fazio, L. When the government cancels your research grant, here’s what you can do. *Nature* **641**, 824 (2025). <https://doi.org/10.1038/d41586-025-01547-5>