

Assessing the carbon footprint of a European-African collaborative malaria clinical trial

Level	MSc
Start of project	January 2022- April 2022
Project form	Environmental life-cycle assessment with a focus on climate change impacts, based on previously collected field data and newly gathered literature data
Supervision	daily supervisor to be decided; secondary supervisors: Steef Hanssen & Teun Bousema
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Background

Biomedical research is essential for global health and sustainable development. Global warming is posing a formidable challenge to global health and in particular to health and wellbeing in Africa (Stephenson et al., 2013; Smith et al., 2014). There is increasing awareness that human activities, including medical research (Costello et al., 2009), must take into account their carbon footprint and wider environmental impacts. Quantifying the relative contribution of different activities can help in identifying priority areas where (technical) improvements can help in reducing the carbon footprint of research projects.

Project aim

In this internship you will quantify the carbon footprint of several research activities related to a recently completed randomized malaria clinical trial in Ouelessebouyou, Mali. This study included clinical and research activities in both Africa and the Netherlands. Efforts have already been made to minimise the environmental burden of these trials by opting for a short period of data collection, minimal air travel and collection of only essential patient materials. Nevertheless, it is of great value to better understand the relative environmental burden of the different study components. During this internship you will use the life-cycle assessment method to determine the footprint of the different research steps, including transport, material and energy use. The overall aim of the project is to make recommendations on how to efficiently reduce the greenhouse gas (GHG) emissions associated with this type of clinical trials with a strong international character. The findings of this

thesis will be directly used by the malaria research group at Radboud University Medical Centre and will have wider applicability to other forms biomedical fieldwork. The product of the internship will be a draft manuscript.

Student profile

You have a strong interest in both biomedical research and sustainability. You have basic experience with life-cycle assessment (for example by completing the Environmental Life-Cycle Assessment course NWI-MM020A) and a (bio)medical background (e.g., as part of your bachelor's degree, or thematic health courses in the SMI curriculum).

References

- Costello A, Abbas M, Allen A, Ball S, Bell S, Bellamy R, et al. Managing the health effects of climate change. Lancet and University College London Institute for Global Health Commission. *Lancet* 373, 1693-733.
- Smith KR, Woodward A, Campbell-Lendrum D, Chadee DD, Honda Y, Liu Q, Olwoch JM, Revich B, and Sauerborn R (2014) Human health: impacts, adaptation, and co-benefits. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field CB et al. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 709-754.
- Stephenson J, Crane SF, Levy C, Maslin M (2013) Population, development, and climate change: links and effects on human health. *Lancet* 382, 1665-73.