

Can a circular economy close the emission gap?

Bringing materials into climate change modelling

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Project description

Circular Economy is becoming a buzzword, receiving lots of attention within sustainability research. But is this attention warranted? Can we achieve the urgently needed emission cuts by “closing the circle”? Possible emission reductions through circularity are gaining momentum especially since the latest IPCC report concluded that reaching no more than 1.5 degrees global heating is becoming very unlikely with existing mitigation options¹. Could circularity be the missing piece?

That is why the [Horizon Europe project CircoMod](#) was set up. In this project, we bring together a multidisciplinary group of researchers with a common goal: to put numbers down to the potential of circularity strategies in reducing greenhouse gas emissions. Our objective is to enhance scenario-based climate change mitigation modelling to better assess circular economy. Therefore we look at both demand and supply-oriented circularity strategies related to the whole range of strategies including recycling, remanufacturing, reuse, reduce, and partial refuse of consumption.

We are part of the [IMAGE team](#), an Integrated Assessment Model hosted by the PBL Netherlands Environmental Assessment Agency that integrates energy, climate, land, and policy modules in a single framework to simulate systems interactions. By linking different research streams such as industrial ecology, integrated assessment modelling and macroeconomic models, we aim to answer the question: Can circularity close the emission gap?

BMA proposal: There is quite some freedom in the direction of the BMA within the CircoMod project. You could think of a modelling-based project but you can also pick up a research, programming or data collection task. The following suggestions are possible tasks:

- Data collection and/or visualization on material production, product manufacturing, product stocks, and material intensities to contribute to the [iedc database](#);
- Supporting the programming design of dynamic stock and material modelling especially in the transport and buildings sector (python);
- Help align modeling approaches and building bridges between economic modelling (computable general equilibrium models) and integrated assessment models;
- Improve sectoral representation in the IMAGE model, such as aluminum or mining.

In this BMA, you will work directly with researchers working closely with international panels such as the IPCC and IRP, also making bridges with industrial stakeholders and research communities.

Job Requirements

For this project, you need to and be willing to independently think of new ways to identify data and modelling approaches. Some proficiency in data gathering OR object-oriented Python programming OR experience with modelling is an advantage.

¹ Calvin, K. et al. IPCC, 2023: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (Eds.)]. IPCC, Geneva, Switzerland. <https://www.ipcc.ch/report/ar6/syr/> (2023) doi:10.59327/IPCC/AR6-9789291691647.

Project proposal Bright Minds Assistantships – September 2024

We are an active and close-knit team that values collaborative approaches, new ideas and teamwork. Reach out to us if you have any questions! We look forward to your application.