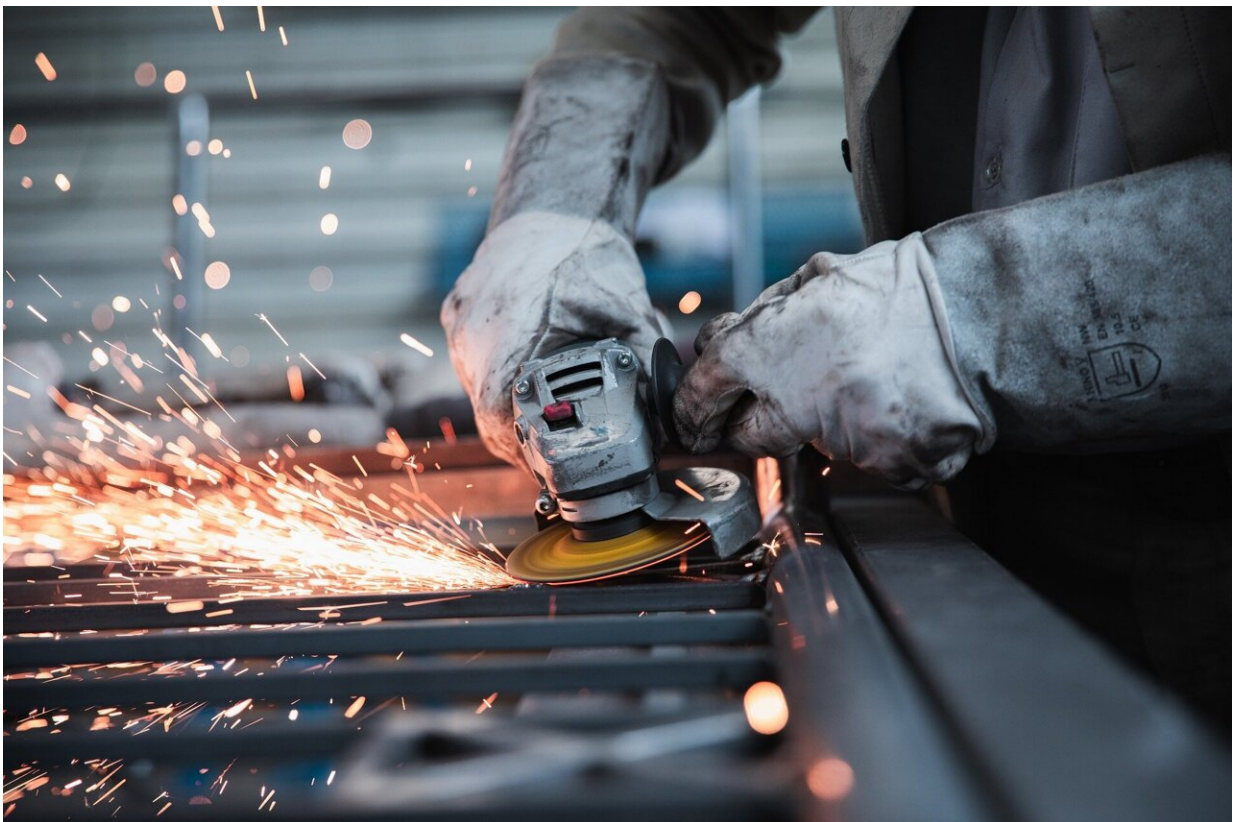


Reducing production and consumption growth in high-income countries: Is it good for tackling climate change?

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A new study led by Jarmo Kikstra, a research scholar in the IIASA Energy, Climate, and Environment Program, explores whether reducing

production and consumption growth could make a significant contribution to resolving the climate crisis.

As the effects of climate change become more severe and the scale of environmental damage gains magnitude, some researchers disagree about the desirability and feasibility of further economic growth in high-income countries. More recently, the case has been made for exploring a "degrowth" (or post-growth) strategy.

Such a strategy would entail reducing less necessary forms of production and consumption (rather than growing them) with the goal of reducing environmental pressures in a way that is democratically planned and improves equity and human well-being.

Assessment reports by the Intergovernmental Panel on Climate Change (IPCC), however, have not yet featured mitigation scenarios with degrowth in high-income regions because little quantitative research has been done on such scenarios. In a new study, IIASA scientists and their colleagues analyzed whether degrowth could help to enable ambitious climate mitigation. They focused on a case study of Australia—a high-income, high-resource use country.

In their study, [published](#) in *Economics Systems Research*, the authors applied MESSAGEix—an integrated assessment model (IAM)—for a simple, explorative illustration of what information IAMs could provide in terms of projecting the future under a degrowth scenario.

The model was used to explore 51 scenarios, including those projecting no growth in consumption or even a reduction of consumption per capita. Although some degrowth modeling exists, the authors took a previously unexplored approach: they focused on what transition is required—under different economic growth assumptions—to achieve a particular emissions reduction target.

One of the primary aims of this project was to compare such scenarios to the ones that currently are common in the literature (those following the so-called Shared Socioeconomic Pathway (SSP) framework, where GDP grows in all pathways for all regions and points in time during the twenty-first century.

"Part of the degrowth literature talks about how historically energy and emissions decoupling has not been fast enough, and uses this to argue for a degrowth strategy," says Kikstra.

"We show that this is not a black-or-white debate. The nuance lies in the fact that also under degrowth strategies, forms of decoupling are necessary. But these are structurally different dynamics, which relate to a broad set of policies. A lot of new research is required to model such strategies, and we lay out different options to do so."

"The results of the study suggest that fast emissions reductions in countries like Australia could be enabled in scenarios characterized by reduced or zero growth. Possibly even faster than in virtually all of the most ambitious mitigation scenarios described in the IPCC Sixth Assessment Report Scenario Database," says Bas van Ruijven, co-author of the study, research group leader, and principal research scholar in the IIASA Energy, Climate, and Environment program.

The study also shows that reduced energy demand paired with lower GDP per capita lessens technological feasibility concerns by reducing the need for upscaling solar and wind energy and limiting future material needs for renewables as electricity generation stabilizes in the second half of the century.

"However, even in a scenario that halts economic growth, we show a fourfold increase in solar and [wind energy](#) is necessary by 2030, compared to 2020, for Australia to meet ambitious climate targets," says

Joeri Rogelj, another co-author of the study and a senior research scholar in the IIASA Energy, Climate, and Environment Program.

Finally, the study also looks at the risk lower energy availability could have on providing decent living standards for all. It shows the tradeoff between growth and inequality reduction, illustrating what corridors exist for meeting human needs and climate goals.

The authors highlight that further analysis is required to dissect the complex dynamics of an actual real-world degrowth transition scenario. This includes a better understanding of the sociocultural and economic feasibility of lower-growth pathways, as faster reductions in energy demand may entail deeper sociocultural feasibility concerns, depending on the policies involved.

More information: Jarmo S. Kikstra et al, Downscaling down under: towards degrowth in integrated assessment models, *Economic Systems Research* (2024). [DOI: 10.1080/09535314.2023.2301443](https://doi.org/10.1080/09535314.2023.2301443)

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