

Food matters: Healthy diets increase the economic and physical feasibility of 1.5°C target

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A new study [published](#) in *Science Advances* finds that a more sustainable, flexitarian diet increases the feasibility of the Paris Agreement climate goals in different ways.

"The reduction of greenhouse gas emissions related to dietary shifts, especially methane from ruminant animals raised for their meat and milk, would allow us to extend our current global CO₂ budget of 500 gigatons by 125 gigatons and still stay within the limits of 1.5°C with a 50% chance," says Florian Humpenöder, PIK scientist and co-lead author of a study.

Putting a price on greenhouse gas (GHG) emissions in the energy and land system is an important policy instrument to stay within the limits of 1.5°C warming.

"Our results show that compared to continued dietary trends, a more sustainable diet not only reduces impacts from food production within the land system, such as deforestation and nitrogen losses. It also reduces GHG emissions from the land system to such an extent that it cuts economy-wide 1.5°C-compatible GHG prices in 2050 by 43%," explains co-lead author Alexander Popp, leader of the working group land-use management at PIK.

"Moreover, healthy diets would also reduce our dependency on carbon dioxide removal in 2050 by 39%," he adds.

Flexitarian diet could make a marked difference for the feasibility of the 1.5°C target

Up to now, existing literature did not allow to single-out the contribution

of dietary shifts alone for the feasibility of the 1.5°C limit. In the new study, PIK scientists investigated how dietary shifts would contribute towards the feasibility of 1.5°C transformation pathways relative to a scenario without dietary shifts.

The researchers used the [open-source](#) Integrated Assessment Modeling framework REMIND-MAgPIE to simulate 1.5°C pathways, one including dietary shifts towards the EAT-Lancet Planetary Health Diet by 2050 in all world regions.

"The EAT-Lancet Planetary Health Diet is a flexitarian [diet](#) predominantly featuring a wide variety of plant-based foods, a marked reduction of livestock products especially in high- and middle-income regions, and restricted intake of added sugars, among other things," says co-author Isabelle Weindl from PIK.

However, considerable challenges are yet to be addressed: Decision-making in food policy is often dispersed across different institutions and ministries, which hinders the implementation of coherent policies in support of healthy diets. Moreover, [social inclusion](#) and compensation schemes are central for a just transition to healthy diets, the authors state.

"The results indicate that a shift in our diets could make a considerable difference if we do not want to crash through the 1.5°C limit in the next 10 to 15 years. This calls for globally concerted efforts to support the transition towards sustainable healthy diets," concludes Johan Rockström, PIK director and co-author of the study.

More information: Florian Humpenöder, Food matters: Dietary shifts increase the feasibility of 1.5°C pathways in line with the Paris Agreement, *Science Advances* (2024). [DOI: 10.1126/sciadv.adj3832](https://doi.org/10.1126/sciadv.adj3832). www.science.org/doi/10.1126/sciadv.adj3832

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