

How to avoid eating the world: From degrowth to a sustainable food system transformation

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Proponents of degrowth have long argued that economic growth is detrimental to the environment. Now, scientists show that curbing growth alone would not make the food system sustainable—but changing what we eat and putting a price on carbon would. In a first, a group led by the Potsdam Institute used a quantitative food and land system model to gauge the effects of degrowth and efficiency proposals on the food sector's greenhouse gas emissions. In their study published in *Nature Food*, they find that combining a dietary shift, emissions pricing, and international income transfers could make the world's food system emissions-neutral by the end of the 21st century—providing at the same time a healthier nutrition for a growing world population.

"Just shrinking the size of our current [food](#) system won't cut emissions much. Instead, we need to transform the very nature of that global food system," says Benjamin Bodirsky, researcher at Potsdam and the World Vegetable Center in Tainan, Taiwan and author of the study.

"That means on the one hand that people consume what they need in terms of nutritional requirements, curb food waste and eat a more [balanced diet](#), with much more vegetables and less animal products. On the other hand, a qualitative transformation means more efficiency, hence producing food in a less-polluting way: smarter dosing of fertilizers or planting higher-yield crops. Also, carbon pricing could help steer farmers towards lower-emission agricultural practices, because emitting less then means paying less. Put together, this could drastically reduce greenhouse gas emissions."

The way we produce food and manage our land is responsible for up to a third of global greenhouse gas emissions along the entire supply chain. "So we looked at what this system would look like in a hypothetical degrowth world: On the basis of a review of degrowth proposals, we created a set of scenarios to feed into a food and land systems computer simulation to explore their effect on the food system," David Chen, researcher at the Potsdam Institute for Climate Impact Research and author of the study, explains. "We took a step back from the heated normative debates about degrowth. What we found is that the current food system is basically unsustainable for any society, regardless of [economic growth](#) rates."

The simulations show that simply curbing growth in [rich countries](#) would not yield sizable sustainability benefits in the food system. Financial transfers from higher- to lower- income countries within the current development paradigm may even increase emissions. That is because carbon-intensive diet changes towards animal products and processed foods are most pronounced when countries move from low to medium incomes.

Yet when the scientists included consumption changes and efficiency gains incentivized by a price on carbon, the results showed an improved nutritional outcome for all consumers, lower [greenhouse gas emissions](#), and in consequence also less economic activity in agriculture required for food production. "For the food sector, we can say that a certain degree of degrowth would be the result of the sustainable transformation, not the starting point," says Hermann Lotze-Campen, co-author from the Potsdam Institute. "So basically this is not really about less but about different growth."

Importantly, a sustainable [food system](#) transformation that takes into account all costs for the environment would entail a slight increase in [food prices](#)—felt especially by the poor, the scientists show. Any

transformation hence must be accompanied by a well thought out policy mix of smart taxing schemes, social compensation for CO₂ pricing, and international transfers. Also, making agriculture more climate friendly, e.g. by controlling nitrogen flows in croplands, requires investment. These costs, however, are likely offset by the restoration of ecosystem services.

More information: David Chen, Integrating degrowth and efficiency perspectives enables an emission-neutral food system by 2100, *Nature Food* (2022). [DOI: 10.1038/s43016-022-00500-3](https://doi.org/10.1038/s43016-022-00500-3).
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