

USA and EU are responsible for the majority of ecological damage caused by excess use of raw materials

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High-income nations are responsible for 74% of the global excess in resource extraction over the 1970-2017 period, driven primarily by the

USA and the countries of the European Union. This is demonstrated in an international study led by Jason Hickel, researcher at the Institute of Environmental Science and Technology of the Autonomous University of Barcelona (ICTA-UAB), which determines national responsibility for ecological breakdown by calculating the extent to which each nation has overshoot their fair share of sustainable resource use thresholds.

Human impacts on the Earth's -system processes are exceeding several planetary boundaries, not only in terms of CO₂ emissions and [climate change](#), but also in [land-use change](#), biodiversity loss, chemical pollution and biogeochemical flows. This [ecological collapse](#) is being caused in large part by global [resource extraction](#), which has increased rapidly over the past half century and now dramatically exceeds safe and sustainable levels.

It is estimated that the [world economy](#) consumes over 90 billion tons of materials per year, well in excess of what industrial ecologists consider to be the sustainable limit.

This new study proposes a novel method with which to determine national responsibility for ecological breakdown. "Not all nations are equally responsible for this trend; some nations use substantially more resources per capita than others through material extraction, production, consumption and waste," explains ICTA-UAB researcher Jason Hickel.

Between 1970 and 2017, nearly 2.5 trillion tons of materials were extracted globally, with high-income and upper-middle-income countries using the vast majority of these resources. Of this, 1.1 trillion tons were in excess of the sustainable corridor.

The study shows that high-income countries (with 16% of the world's population) are responsible for 74% of global excess resource use over the 1970-2017 period, driven mainly by the United States (27%) and

high-income countries in the European Union (25%). Spain ranks 11th in the list of 15 countries exceeding the planetary sustainable limit of raw material use. Spain is responsible for 2% of excess, behind countries such as Japan, Germany, France, the United Kingdom, Canada and Italy, among others.

China, an upper-middle-income country, ranks second globally, and is responsible for 15% of global excess material use. The rest of the Global South (i.e., low-income and middle-income countries of Latin America and the Caribbean, Africa, the Middle East and Asia) is responsible for only 8%. Likewise, 58 countries in the global South, representing 3.6 billion people and including India, remain within sustainable levels.

The research, published in the journal *Lancet Planetary Health*, analyzed domestic extraction as well as the materials involved in global trade flows for resources such as [fossil fuels](#), timber, metals, minerals and biomass, using data from the UN's international resource panel and extrapolated calculations.

National responsibility has changed over the period analyzed. Although the United States' overshoot has grown consistently in absolute terms, its share of global overshoot has gradually diminished over the past two decades, a similar trend for Europe and other high-income nations. This change is mainly due to increasing resource use in China, which is mostly comprised of construction materials. China's overshoot began only in 2001, but has grown rapidly in the years since.

"The results show that wealthy nations bear the overwhelming responsibility for global ecological breakdown, and therefore owe an ecological debt to the rest of the world," explains Jason Hickel, who stresses that "these nations need to take the lead in making radical reductions in their resource use to avoid further degradation, which will likely require transformative post-growth and degrowth approaches."

More information: Jason Hickel et al, National responsibility for ecological breakdown: a fair-shares assessment of resource use, 1970–2017, *The Lancet Planetary Health* (2022). [DOI: 10.1016/S2542-5196\(22\)00044-4](https://doi.org/10.1016/S2542-5196(22)00044-4)

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