Energetic Limits and Existential Risk on Long-Term Economic Growth

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Abstract

In the aftermath of the COVID pandemic and the 2022 energy crisis, urban Western elites have been forced to confront the biophysical realities underpinning their financialized economies. These crises have revealed that, despite claims of dematerialization, post-industrial economies still depend on intensive natural resource extraction, environmental stability, and ecosystems services to process their waste. Indeed, wealth creation is accompanied by severe sustainability challenges: a global socio-ecological system breaching planetary boundaries and becoming increasingly fragile, prone to tipping points that could lead to systemic collapse.
In response, Green Growth advocates propose a rapid transition to a net-zero economy, driven by investments in renewable energy. However, this strategy ignores the biophysical limitations of green technologies and relies on overly simplistic techno-economic models. Meanwhile, environmental detractors (usually conservatives) exploit waning support for green investments by pushing to return the political discourse to the familiar framework of "business as usual," under the pretext of addressing economic underperformance while disregarding sustainability concerns. Hence, a green light for unlimited fossil fuel extraction. Degrowth offers an alternative path forward, but it risks underestimating the deeply entrenched materialistic values of contemporary Western societies. Furthermore, it risks falling into a trap of "social optimism" – assuming that humans can successfully orchestrate and manage a prosperous way down. These competing narratives fail to address the existential risks associated with ecological overshoot caused by unsustainable resource demands. So, how can we escape this impasse?

In this paper I offer a novel perspective on resource-side sustainability by examining critical fragilities in global oil metabolism and the internal societal constraints tied to human time allocation. I argue that recognizing the energetic limits of post-industrial societies is critical to mitigating existential risks and unlocking their full adaptive potential. Specifically, instead of focusing on environmental stewardship and detailed net-zero roadmaps projected 30 years into the future, we need a framework capable of capturing the systemic socio-ecological fragility of modern societies as they exist today.

I suggest the adoption of a transformative strategy which aims to preserve biophysical resources and capital (i.e., humans, vital energy systems, and industrial infrastructure) while gradually deconstructing and reorganizing societal metabolism to enhance system stability in an increasingly inhospitable environment. By confronting the "tragedy of change" and deciding which functions to relinquish for long-term survival, modern societies can navigate

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their developmental path without succumbing to collapse. Remaining on a trajectory of unchecked growth is no longer-and has never been-a viable option.

References

Hickel & Kallis, 2019, Is Green Growth Possible?, New Political Economy, https://doi:10.1080/13563467.2019.15989

Kallis et al., 2012, The economics of Degrowth, Ecological Economics, https://doi.org/10.1016/j.ecolecon.2012.08.01
Manfroni et al. 2021, The profile of time allocation in the metabolic pattern of society: An internal biophysical limit to economic growth, *Ecological Economics,* https://doi.org/10.1016/j.ecolecon.2021.107183

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