

Can sustainable development co-exist with current economic growth?

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In low-income countries, populations often depend on extractive industries such as fishing, agriculture and mining, but have lower per capita consumption rates and higher population growth. Credit: ARC CoE for Coral Reef Studies/Jacqueline Lau

New research confronts the elephant in the room—the 'trilemma' of population growth, economic growth and environmental

sustainability—and reveals the vast incompatibility of current models of economic development with environmental sustainability.

Using data collected from across the globe, national economies and natural resource use were closely examined by an international team of scientists using a mathematical model.

The results suggest that as long as our economic system retains its current structure, and if [population growth](#) continues, both high- and low-income countries will fail to achieve environmental sustainability.

The study, published today in the *Proceedings of the National Academy of Sciences*, is led by Professor Graeme Cumming of the ARC Centre of Excellence for Coral Reef Studies at James Cook University.

"There is a pervasive misconception that economic growth and development will eventually lead to [environmental sustainability](#)," said lead author, Prof Cumming.

"While [high-income countries](#) may appear to support a more sustainable lifestyle, in practice, they consume more resources per capita than low-income countries."

"It's just that their ecological and economic impacts are felt in other places."

The researchers found that patterns of resource use for both high- and low-income countries reflected predictable environmental outcomes.



In this study, Qatar, a high-income desert nation, is found to have a particularly large ecological footprint. Credit: Pixabay, <https://pixabay.com>. CC0

High-income countries often rely more on non-extractive industries, such as manufacturing and services, but also consume more per capita and import more raw materials.

In contrast, in low-income countries, populations depend more on extractive industries such as agriculture, logging and mining, but have lower per capita consumption rates and higher population growth.

For example, an estimated 500 million people globally rely on the goods and services provided by healthy coral reef ecosystems. The effects of climate change are already revealing threats to livelihoods and a potential

ecological collapse that is beyond intervention.

"Feedbacks between income and population growth are pushing countries farther from sustainability," said co-author Professor Stephan von Cramon-Taubadel of the University of Göttingen.

"As a society, we need to find ways to make [economic development](#) and good standards of living compatible with ecological sustainability. We can use this knowledge to steer economic growth towards win-win outcomes for people and the environment."

The researchers argue that one key to achieving this is to restructure the economic system, particularly in less wealthy nations where rapid [economic growth](#) may lead to significant declines in quality of life.

More information: Graeme S. Cumming et al., "Economic growth pathways and environmental sustainability: Understanding development as alternate social–ecological regimes," *PNAS* (2018).

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