

The Economic Case for Nature: A global Earth-economy model to assess development policy pathways

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Is there an economic case for conserving ecosystem services and nature more generally?

Yes, there is!

The Economic Case for Nature



A novel approach: Integrating 4 ecosystem services in a global CGE



A partial collapse of ecosystem services would cost \$2.7 trillion, with higher impacts on poorer countries...

Difference in 2030 GDP under collapse scenario vs. baseline scenario, by income group



..and especially in Sub-Saharan Africa and South Asia

Difference in 2030 GDP under collapse scenario vs. baseline scenario, by regions



Win-win policies exist..



..and are especially effective when combined



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Basic policy options



P1: Decoupled Support to Farmers;P2: Domestic forest-carbon (FC) payment;P3: Global FC payment

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Combined policy options

Adding forest carbon payment schemes improves the policy

Good for the economy



P4: Subsidy reform + Domestic FC payment;P5: Decoupled Support to Farmers + Global FC payment

Basic policy options



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Research & development

Adding research & development improves the policy

Good for the economy



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P6: Decoupled Support to Farmers + RD; **P7:** Decoupled Support to Farmers + RD + Global FC payment

What is the net effect of the 30x30 goal?

- Determine the BAU land use pattern
- Define how that would change under 30x30 (optimized conservation)
- Asses the net effect of
 - Improved ecosystem service provision
 - Declined value added from reduced production



Globally, small net cost: but with important geographic differences

Globally, the costs of achieving the 30 x 30 target are largely offset by the benefits from ecosystem service gains, but there are important geographic differences

Draft Target 2 of the post-2020 global biodiversity framework:

By 2030, protect 30 percent of the planet

A negligible cost to the world, and the need to mobilize resources in low-income economies

- US\$ -115 billion (-0.10%) <u>without</u> CC co-benefits
- US\$ -13 billion (-0.01%) <u>with</u> CC mitigation co-benefits



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Winners and losers: Political economy poses the biggest challenge going forward

Although at the global aggregate level the case for adopting naturesmart policies is clear...

... Policy reforms tend to have a positive impact on labor wages and a negative impact on returns to land.

Country-level adoption of naturesmart policies crucially depends on reconciling incentives across social groups Number of policies that will benefit each factor of production per country unit



NCA/ ES can inform the new Global Biodiversity Framework

Summary

- Biodiversity loss is financially material (this work provides novel evidence at a global scale)
- Developing countries are most at risk but can also gain from policy reform
- A whole-of-economy approach is essential: design policies that protect nature, improve the economy and are inclusive
- Synergies with the climate agenda are crucial. Explicitly accounting for the carbon benefits of nature-smart policies considerably strengthens the case for action

Good economics is instrumental for a successful Post-2020 GBF

Target 2	Target 7	Target 8
Protect and conserve 30 per cent of the planet	Climate change mitigation from national biodiversity strategies	Nutrition, food security, livelihoods from nature
Target 9	Target 13	Target 14
Productivity, sustainability and resilience in agriculture	Biodiversity values into policies and accounts	Green production practices and supply chains
Target 17	Target 18	Target 19
Repurpose subsides and positive incentives	Financing from all sources	Quality information for decision-makers



Thank you!

The economic case for nature: https://openknowledge.worldbank.org/handle/10986/35882

Yes, there is! Key messages

- 1. The world cannot afford to lose ecosystem services: even a **partial collapse** would be detrimental, particularly for **low- and lowermiddle-income countries**
- Win-win, nature-smart policies exist: they can reduce systemic risks and generate economic gains
- 3. Ambitious targets, including the 30x30 target, are **within reach**, particularly when **synergies with climate change** are exploited
- 4. Nature-smart transition needs to be **inclusive and fair**



GTAP (Global Trade Analysis Project) model

- The GTAP model is a multi-commodity, multiregional computable general equilibrium (CGE) model
- Designed for analysis of trade agreements and national policies
- Resolution is limited by national economic accounts
 - 141 regions, 65 sectors



Corong, Erwin L. et al. The Standard GTAP Model, Version 7. Journal of Global Economic Analysis, [S.I.], v. 2, n. 1, p. 1-119, june 2017. ISSN 2377-2999..

GTAP Agro-Ecological Zones Model

GTAP Agro-**Ecological Zones** (AEZ) model introduces competition for land resources across crops, pasture and forestry and heterogeneous land use and land endowments within each region



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Reaching selected tipping points hurts low-income and lower-middle-income countries the most...

Difference in 2030 GDP under collapse scenario vs. baseline scenario, **by income group**



A novel approach: the integrated Global Earth-economy Model in a nutshell

Question 1: What happens when Nature services collapse?

(A stress test of the global economy)



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Impacts of meeting the 30x30 goal

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