Identifying Regional Drivers of Future Land-Based Biosphere Integrity Footprints

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Biodiversity footprints – now and in the future

To date:

Focus of biodiversity footprint studies has been on current and past biodiversity impacts

Our objectives:

➢ Assess how biodiversity footprints change over time
➢ Identify drivers of future biodiversity footprints
➢ Compare future biodiversity footprints to the Planetary Boundary threshold for biosphere integrity

This requires

- A range of socio-economic development scenarios
- Associated land use change
- Suitable biodiversity indicator
Supply and Demand

Biodiversity footprints – now and in the future

Land use

Biodiversity indicator
Biodiversity footprints – now and in the future

Supply and Demand

Land use

SSP scenario output (IMAGE model)

Biodiversity Intactness Index

SSP = Shared Socio-economic Pathway
Per capita footprints – North America and Africa

Middle of the road

Sustainable world

Lower animal-based consumption

Higher crop-based consumption from high-intensity cropland

BII = Biodiversity Intactness Index
Per capita footprints –
North America and Africa

Middle of the road

Sustainable world

BII = Biodiversity Intactness Index
Per capita footprints

BII = Biodiversity Intactness Index
Contextualizing results against the Planetary Boundary \(\Rightarrow\) threshold recognized by a wider audience

- Scenario matters
  - Middle of the road: 4 regions above boundary
  - Sustainable world: 1 region above boundary

Regional focus matters \(\Rightarrow\) highlights need for different policy action

- Reducing animal-based consumption \(\Rightarrow\) North America and Africa
- Closing yield gaps, reduction in harvest and post-harvest losses \(\Rightarrow\) Africa
Thank you!
References

Pictures
- Woman in supermarket: https://www.wur.nl/en/Research-Results/Chair-groups/Social-Sciences/Urban-Economics-2/Theme-1-Consumer-Food-Choice.htm
- Assembly line: https://www.greencarcongress.com/2019/12/20191212-esprinter.html
- Cropland: https://www.hppr.org/post/cropland-prices-droop-while-ranchland-values-soar
- Forest: https://www.zenzoekers.nl/plant-een-boom-kijk-niet-op-je-telefoon-forest/
- Footprint: https://thenounproject.com/term/footprint/3969/
Planetary safe operating space

Per capita boundary

- Asia
- South America
- North America
- Africa
- Europe
- Oceania
- Central America
- World

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