



**zef**

Center for  
Development Research  
University of Bonn



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# Biodiversity under Stress: Global Climate Change & Human Development

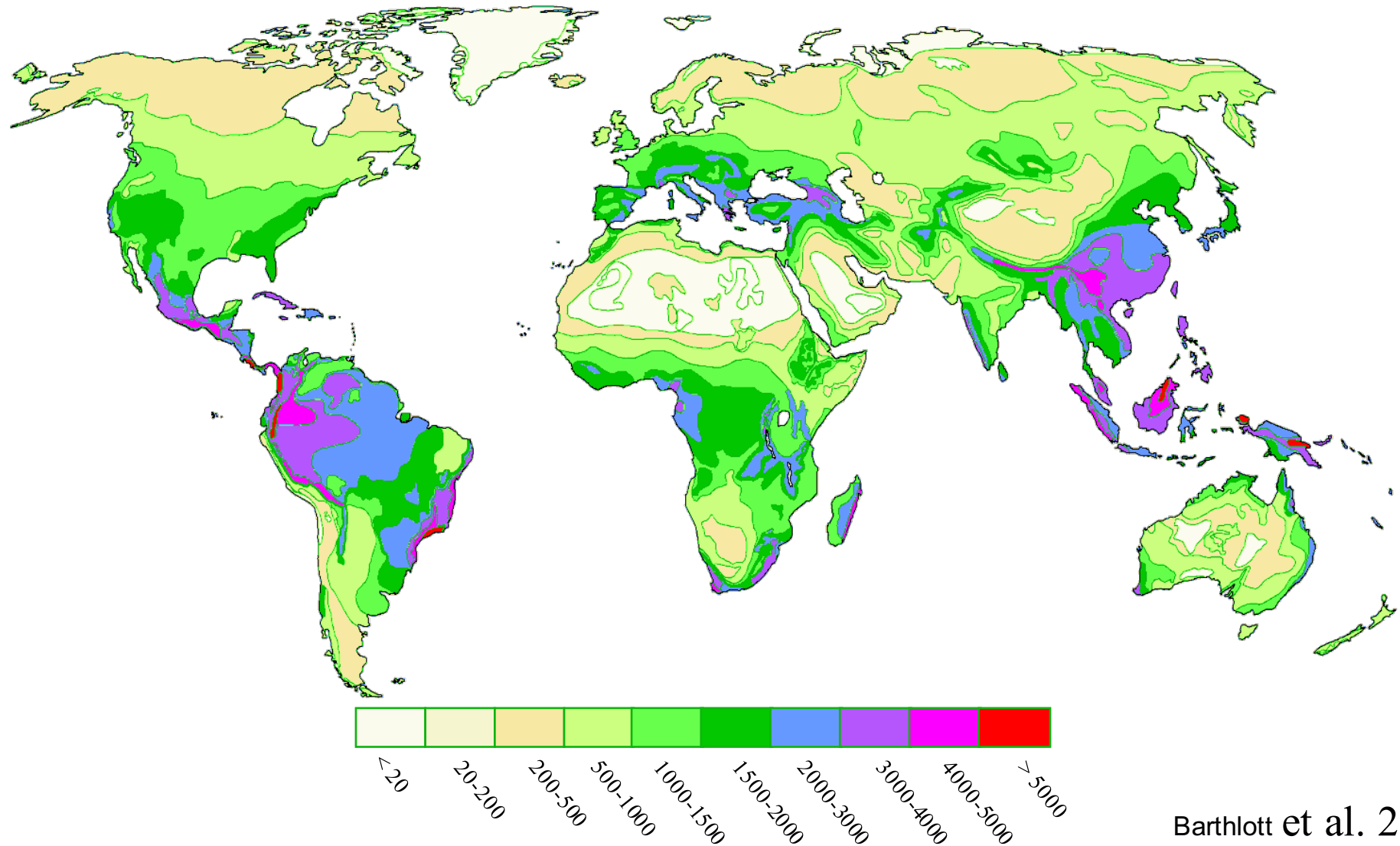
Dr. Lisa Biber-Freudenberger  
and

Dr. Jan Henning Sommer

Center for Development Research Bonn University

# Global Plant Diversity Distribution

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Barthlott et al. 2005





# Reasons for Biodiversity Loss are manifold and connected!

## Deforestation

Since 1990 ~1000 football fields/hour



## Pollution

250,000 tons plastic in the oceans



## Fragmentation

>600.000 fragments



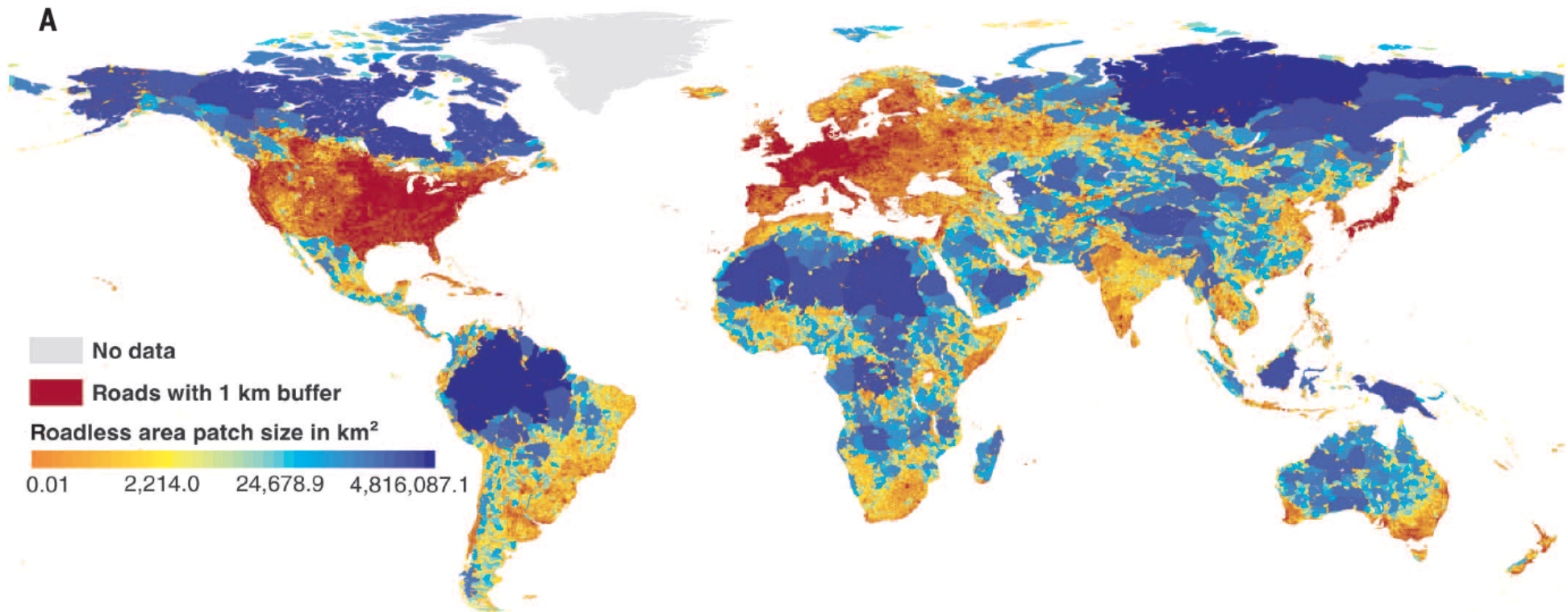
## Climate Change

15-37% species threatened by extinction till 2050



# The Earth is shattered in > 600.000 Pieces

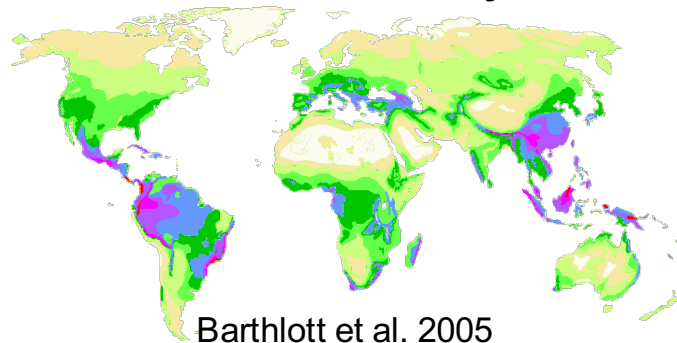
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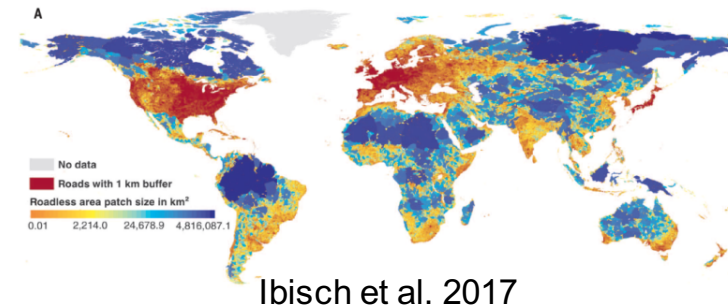
>50% of the pieces are <1km<sup>2</sup>

# Multiple Threats have caused Biodiversity Loss beyond safe limits!

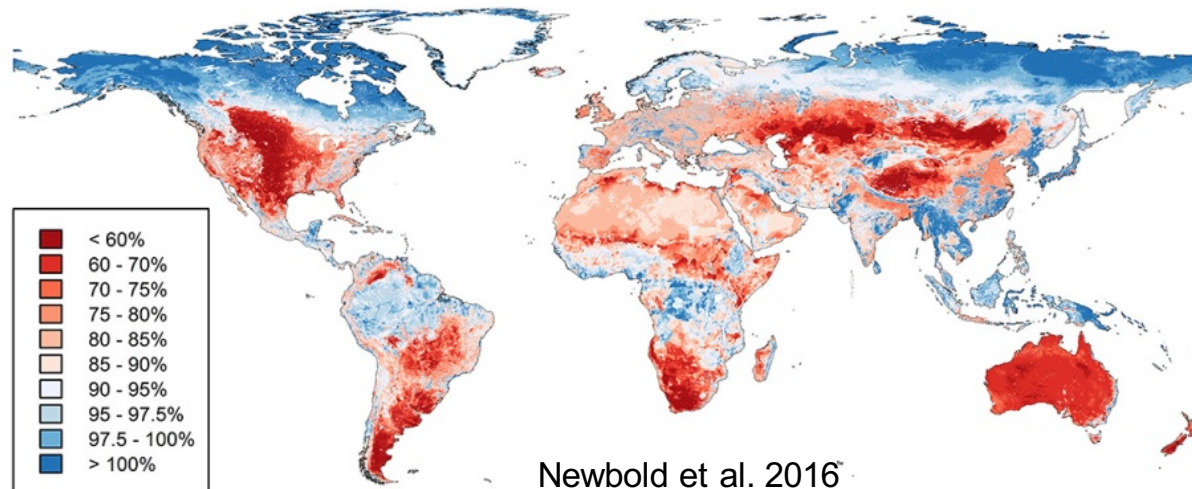
**Global Biodiversity**



**Human Impact**

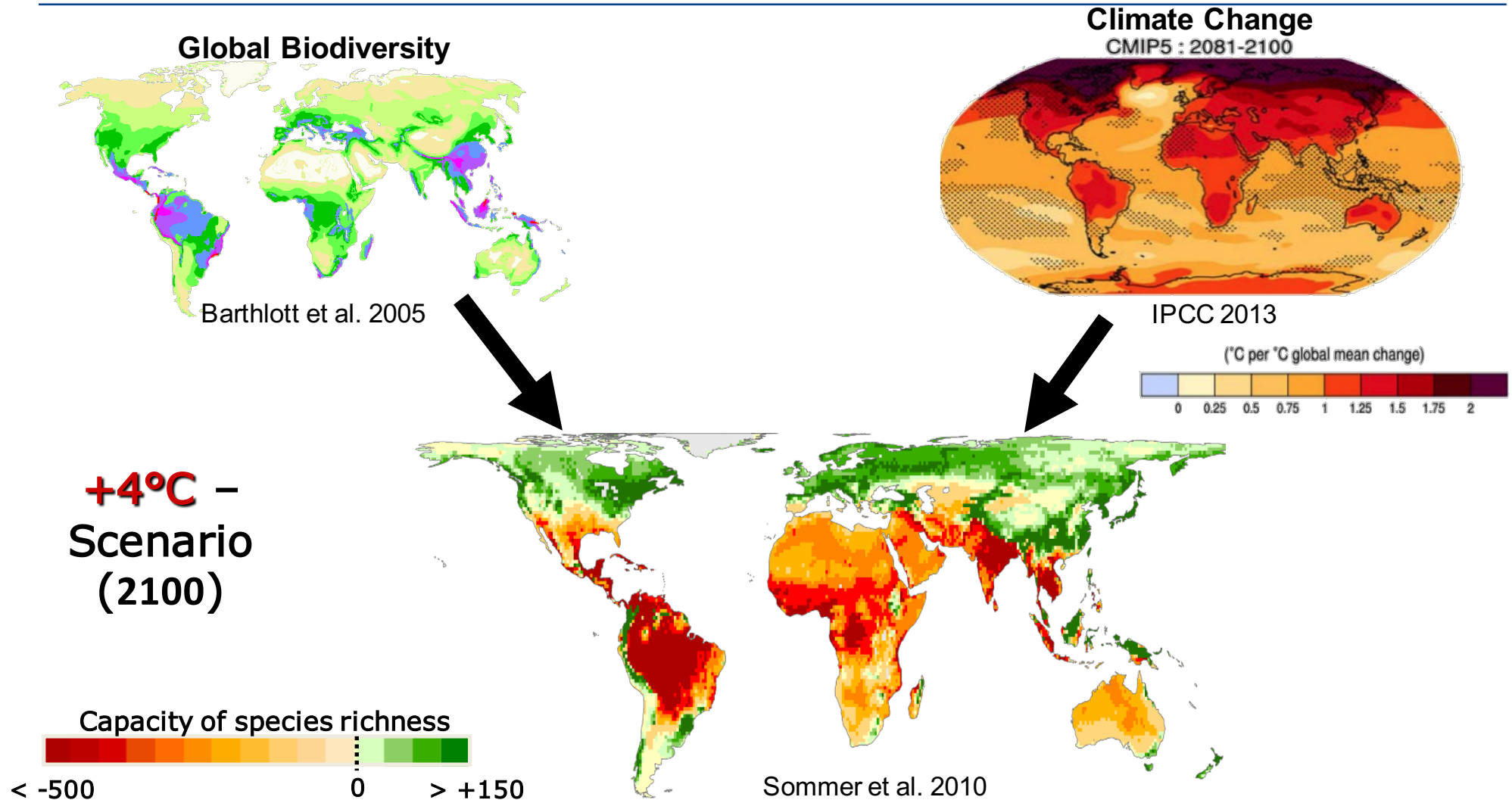


**Species Population Loss**



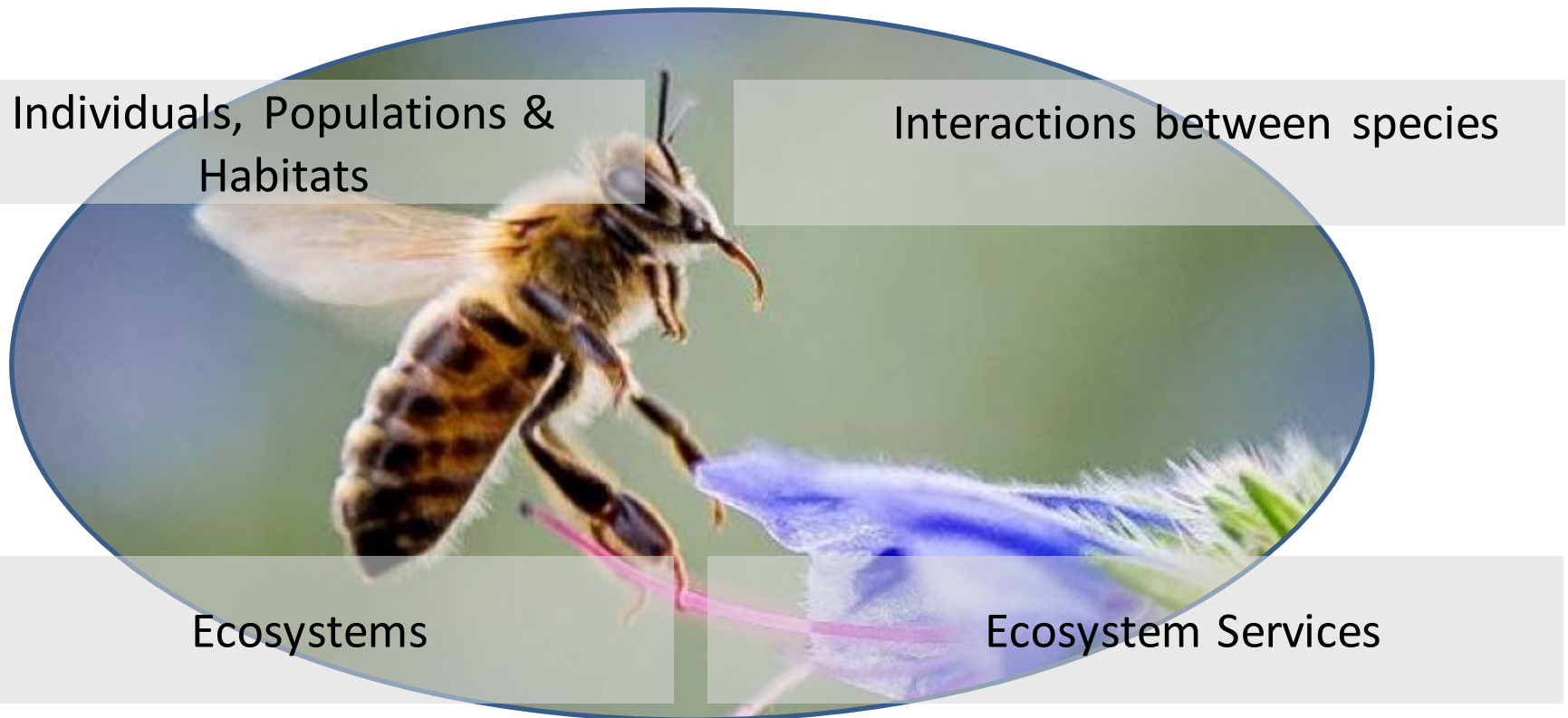
Biodiversity  
beyond safe  
limits at  
~65% of the  
area

# Existing Threats are reinforced by Climate Change



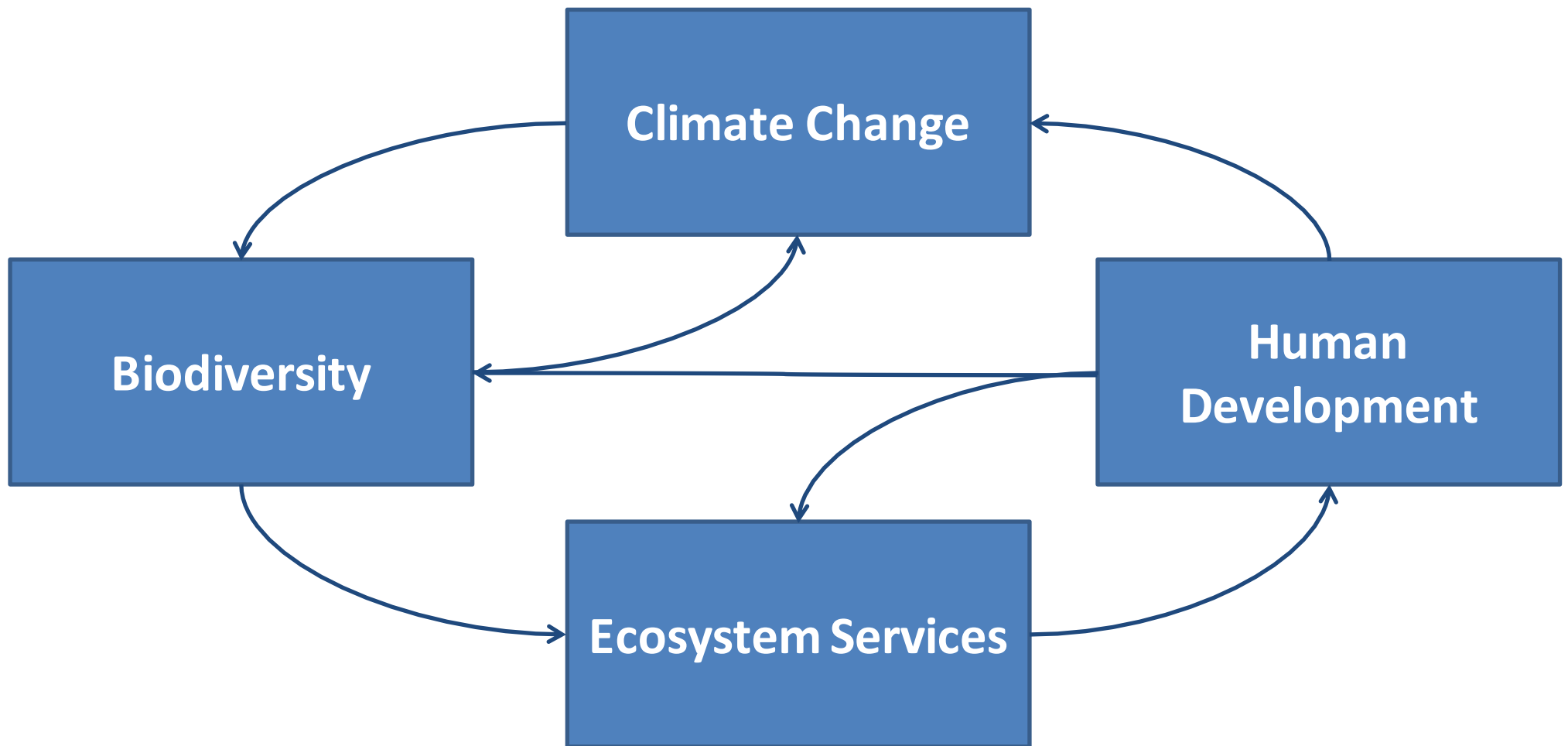
# Climate Change affects Biodiversity on multiple Levels

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# It is all connected!

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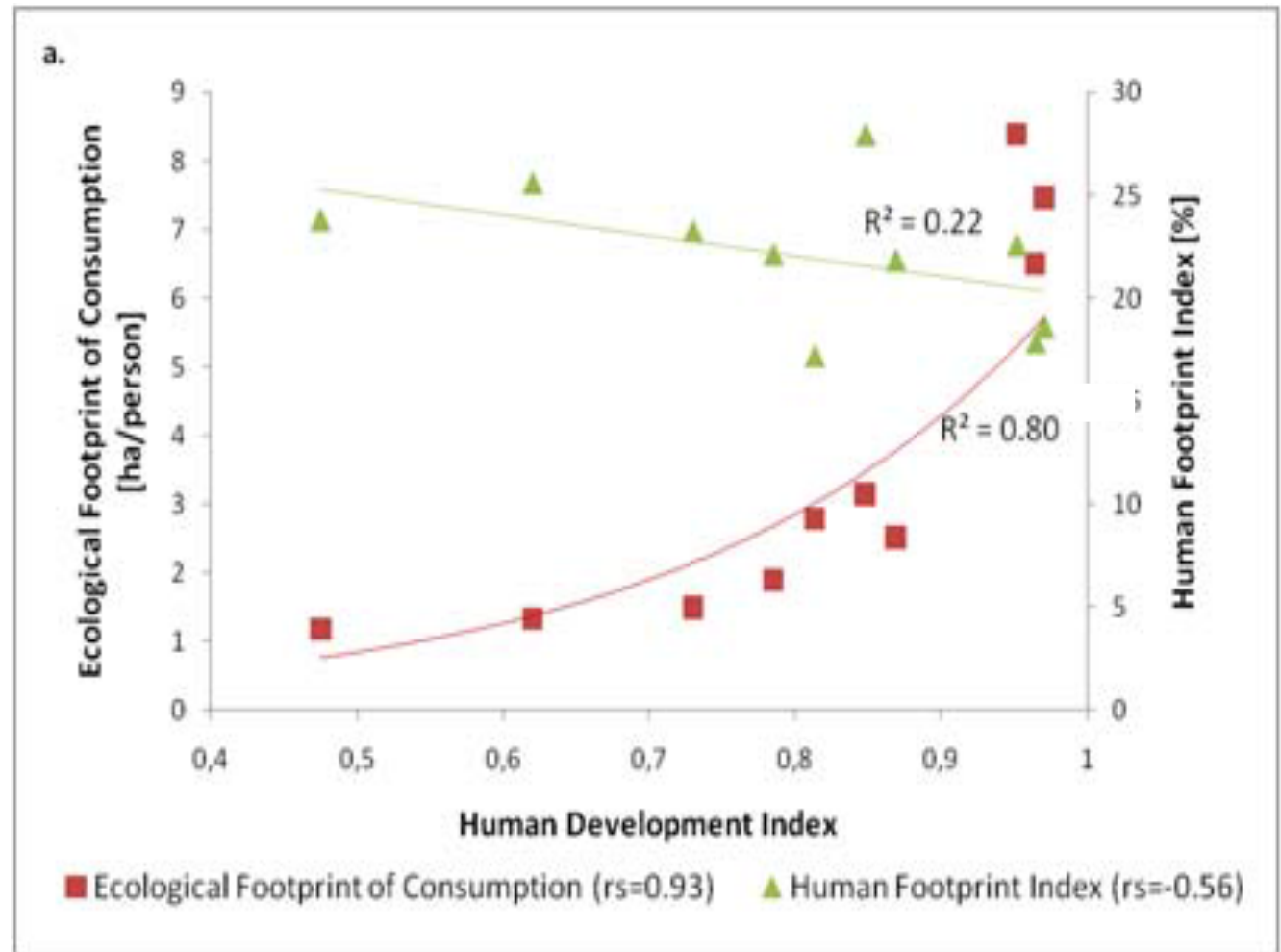
# Human development leads to increased resource consumption – but elsewhere

Human Development  
causes increased  
Consumption (Ecological  
Footprint)

But not necessarily  
Environmental  
Degradation (Human  
Footprint Index)

**Human Development  
causes biodiversity loss,  
but not at the same  
place!**

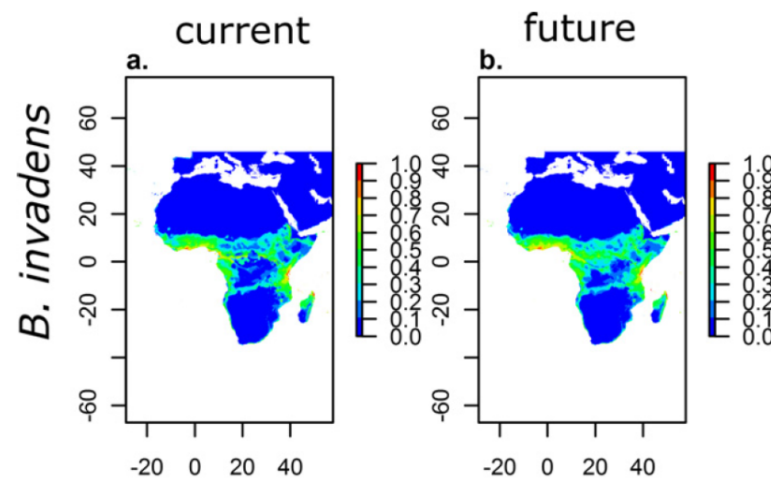
**Environmental Costs are  
being externalized !**



How to  
conserve biodiversity,  
safe the climate  
&  
enable human development  
?

# 1. Use less resources more efficiently

Project Water-Energy-Food-Nexus:  
Increasing Resource Use Efficiency  
under Growing Natural Resource  
Scarcity

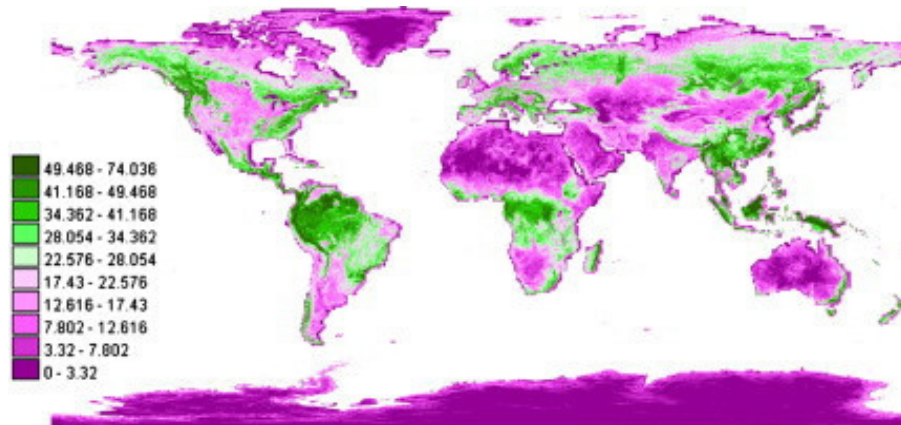


Project Improved application  
strategies for entomopathogenic  
fungi (EPF) as biological control  
agents in integrated pest  
management (IPM)



## 2. Find Win-Win Situations

Project STRIVE: Identify bioeconomy strategies that provide benefits for sustainable development?



Freudenberger et al. 2012



@ German Bioeconomy Council

Climate Smart Conservation :  
Conserve the most resilient and  
functional ecosystems

# 3. Build Capacities to Adapt & Mitigate

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Example Project WASCAL:

Create capacities through academic education and collaborative research on climate change impacts



Example Project WABES:

Strengthen Policy Advise through academic education and exchange on Biodiversity and Ecosystem Services for IPBES

# Thank you for your attention!

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