BIODIVERSITY

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Current status

- Globally there is an uneven distribution of biodiversity

Jenkins *et al* 2013. PNAS

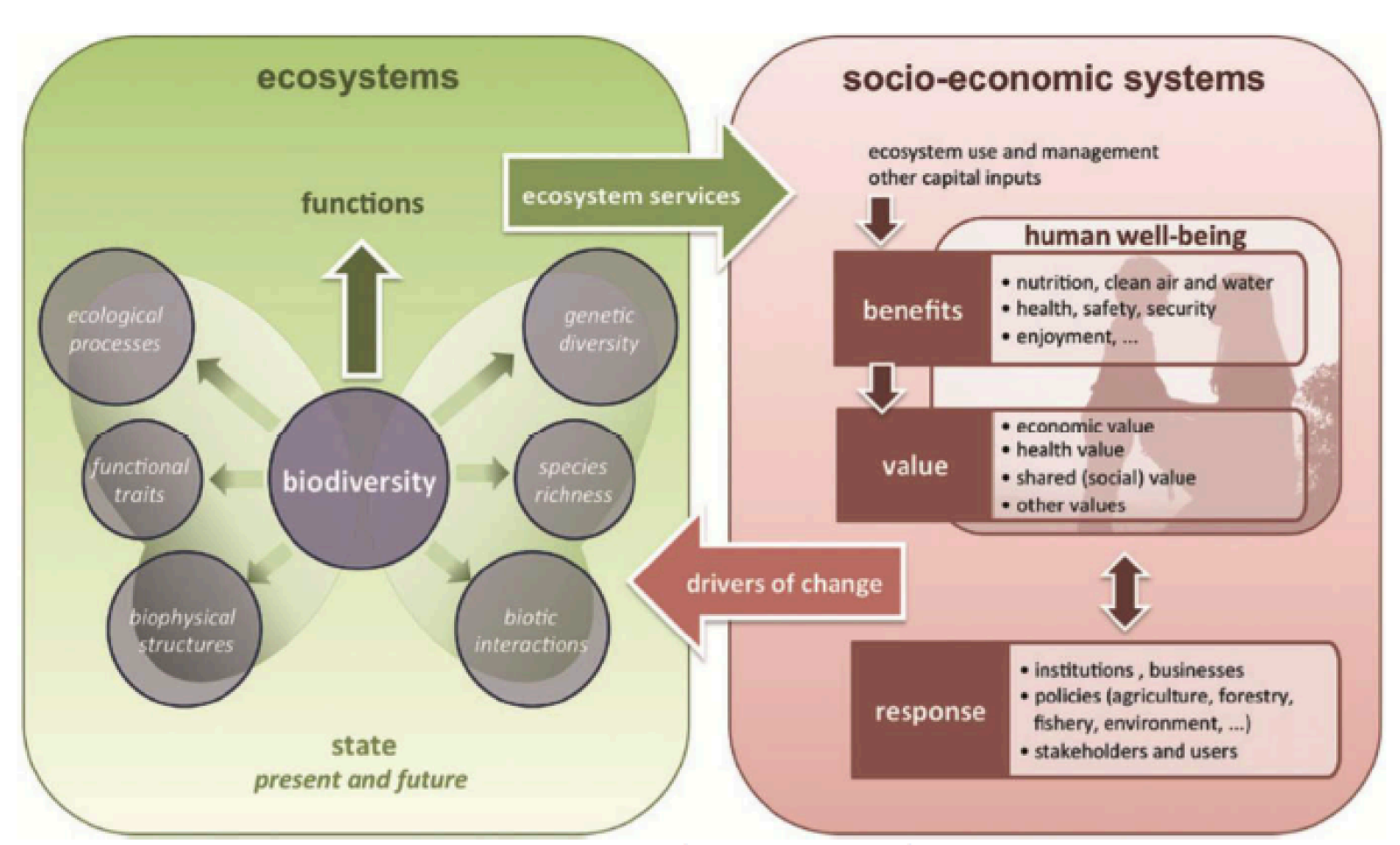
Current status

- Speciation and local “innovation” depend on environmental conditions

What is Biodiversity?

What is Biodiversity?

- Genetic composition
- Species populations
- Species traits
- Community composition
- Ecosystem structure
- Ecosystem function



Global drivers of biodiversity loss

- Climate change
- Land use change
- Biotic exchange
- Overexploitation of resources
- Pollution

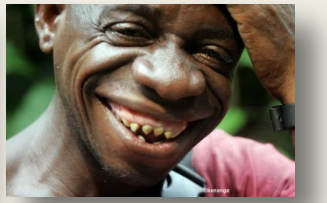




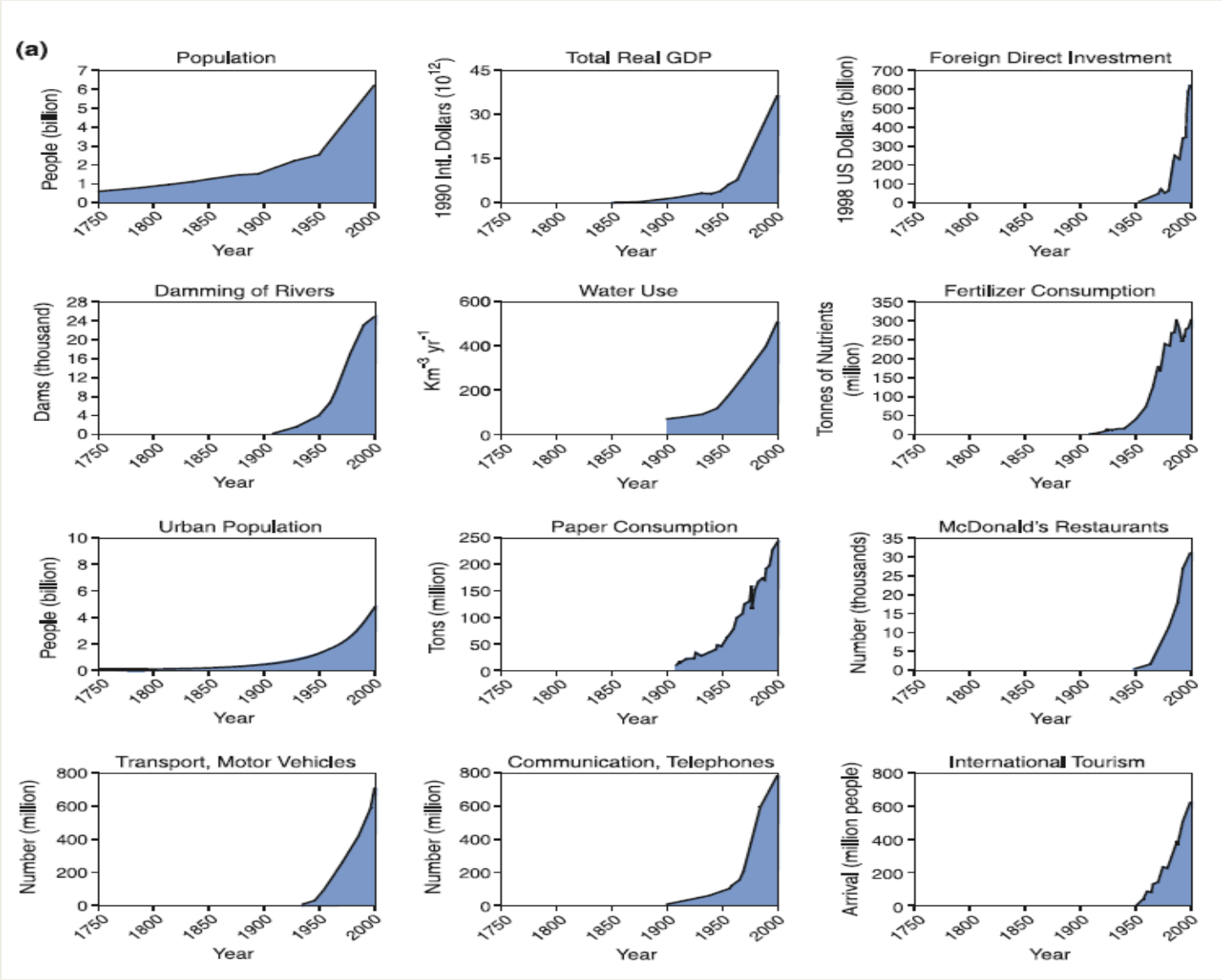








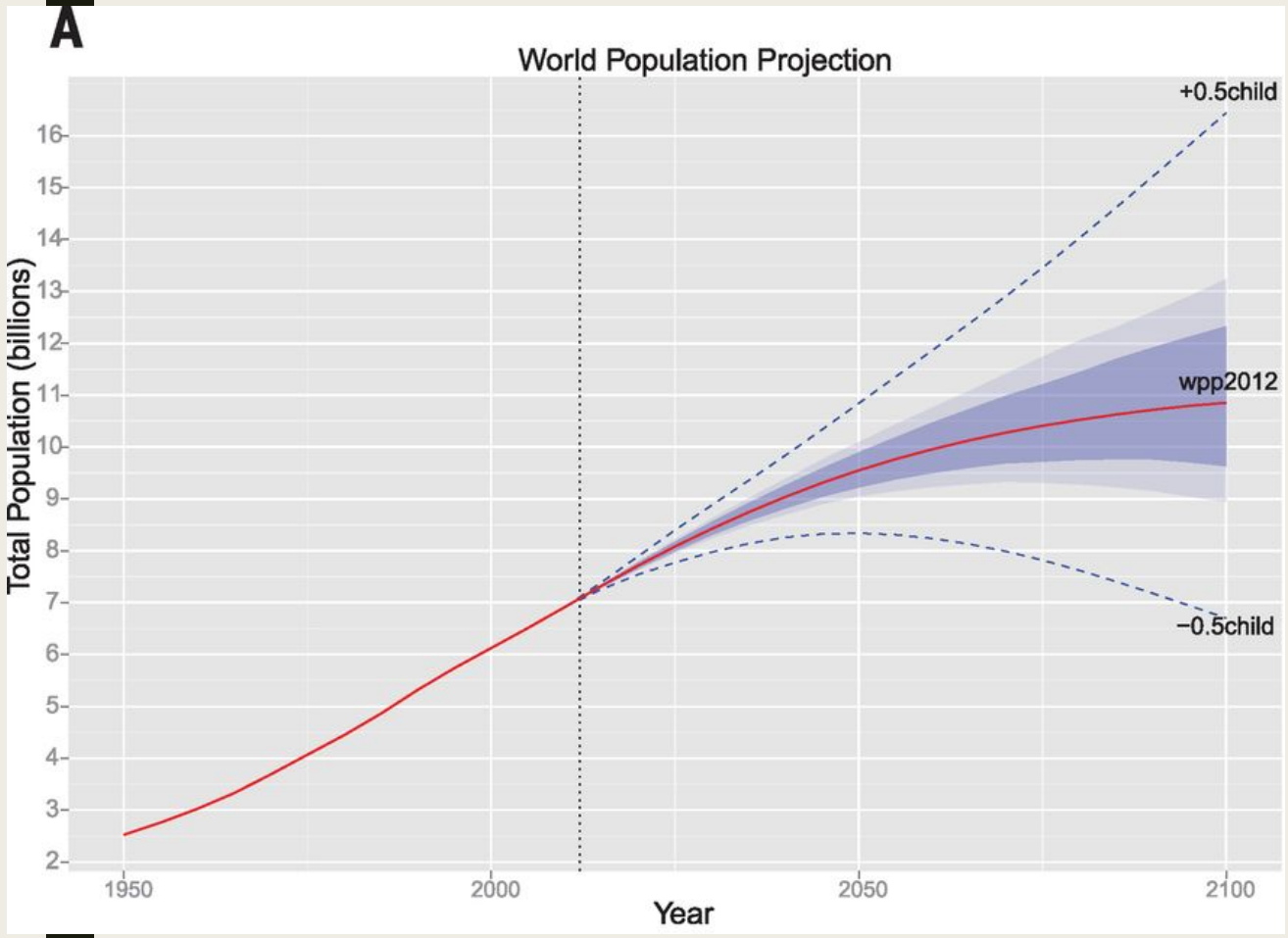

Changing and Connected World



Steffen *et al.* 2011. Ambio

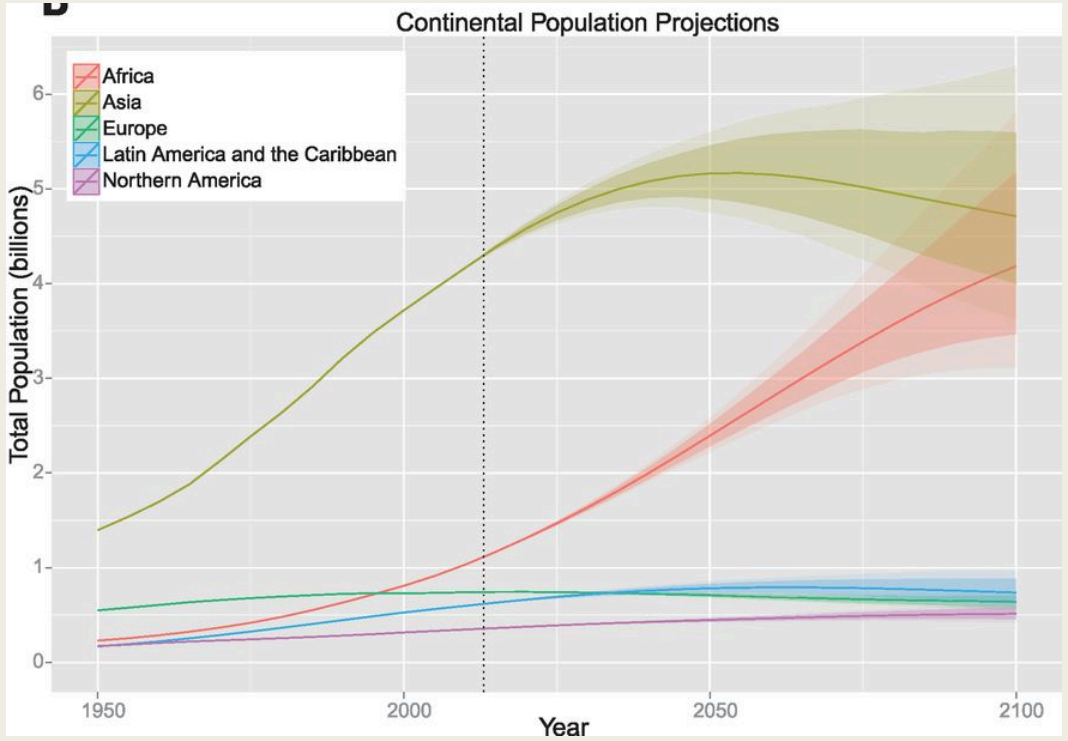
Sciencexpress

World population stabilization unlikely this century



World population 2100:

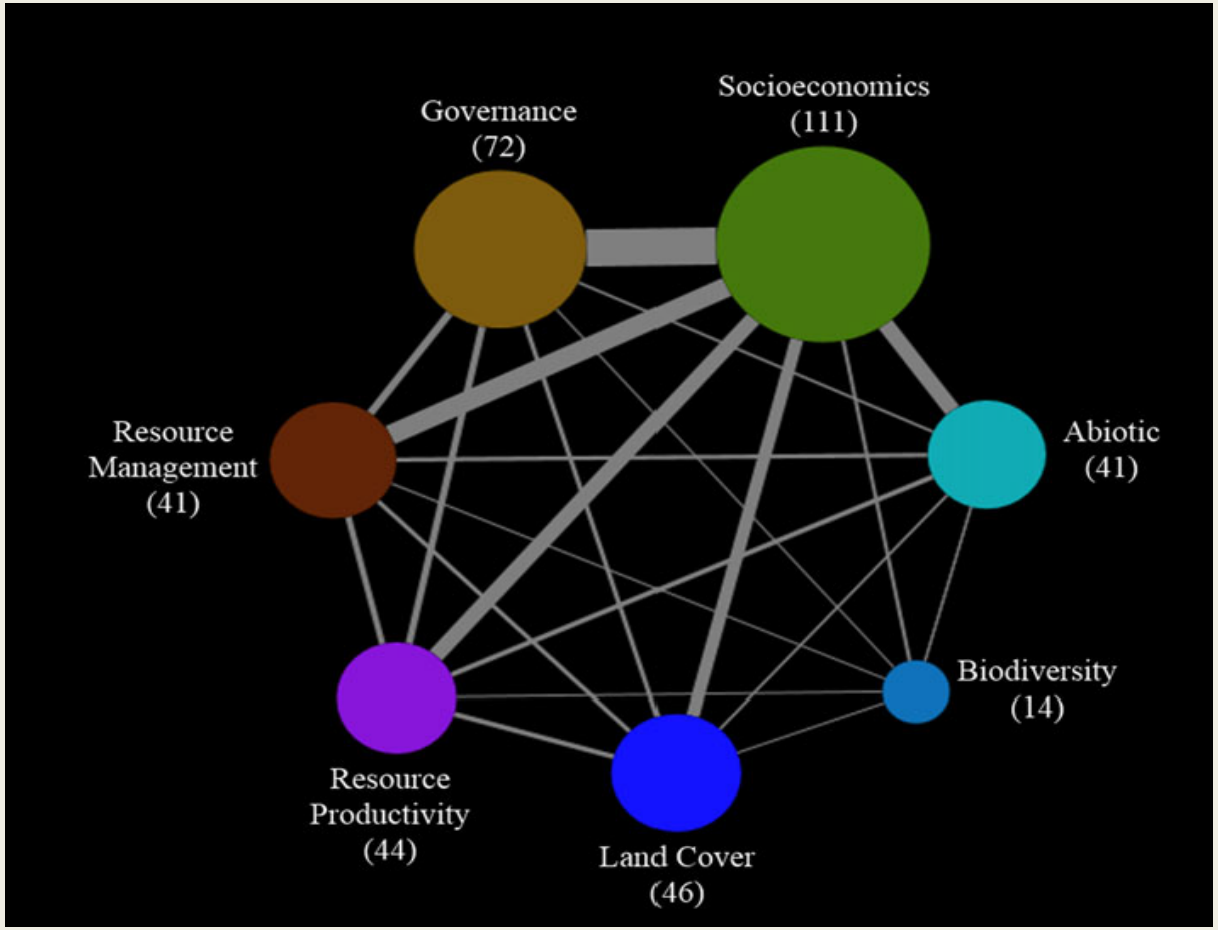
- 80% probability
- between 9.6 and 12.3 billion



Gerland *et al.* 2016. Science

Impacts on biodiversity

- Species extinctions
- Local extirpation
- Loss of interactions/novel interactions
- Loss of functions

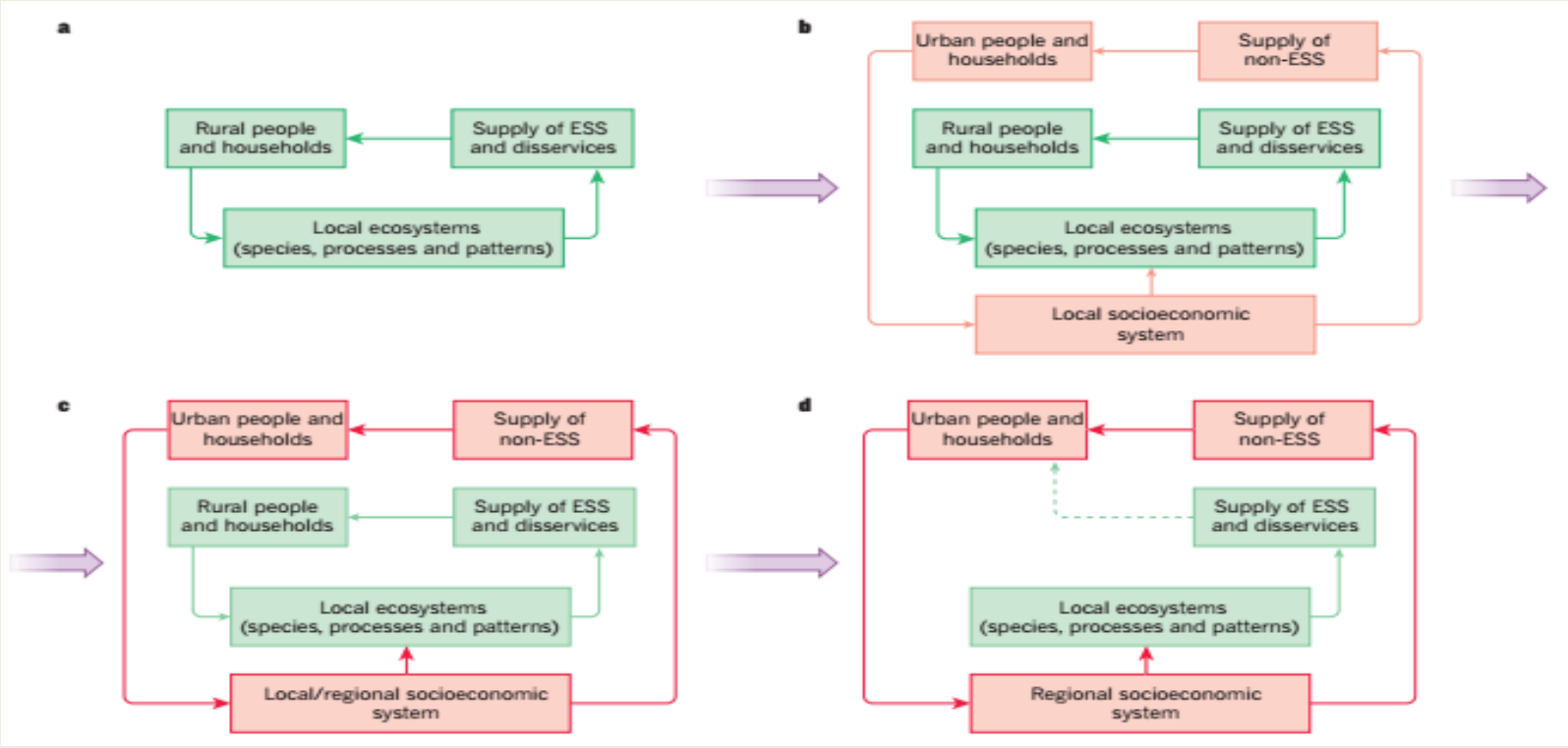


Challenges

- Climate change
- Velocity of climate change >> velocity of species movements
- How can species move through modified landscapes?
- How far can they get on their own or do they need assisted migration?
- Ethics of moving species?
- Biotic sorting and exchange of moving species?

Challenges

- Land use change
- Deforestation and habitat loss
- Fragmentation and edges
- Human presence



Challenges

- Overexploitation
- Can we use biodiversity resources within their natural replacement rates? Is there a biodiversity planetary boundary?
- Role of quota and trade?
- Building with nature and nature-based solutions
- Alternative farming/fishing tactics and strategies
- Ecosystem services

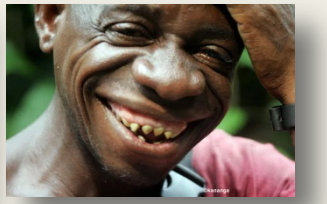













Challenges

- Biotic exchange
- Invasive species exchange: can it be controlled and monitored?
- Beneficial exchange?

Challenges

- Pollution
- Control pollutants:
  - *Fertilizers*
  - *Pesticides*
  - *Plastic*
  - *GMO*

BUILD BIODIVERSITY RESILIENT SYSTEMS

Climate change, land use change, biotic exchange, overexploitation, and pollution