

The Environment and The Economy: Turning global tradeoff challenges into co-benefit opportunities

Presentation for the



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Introduction

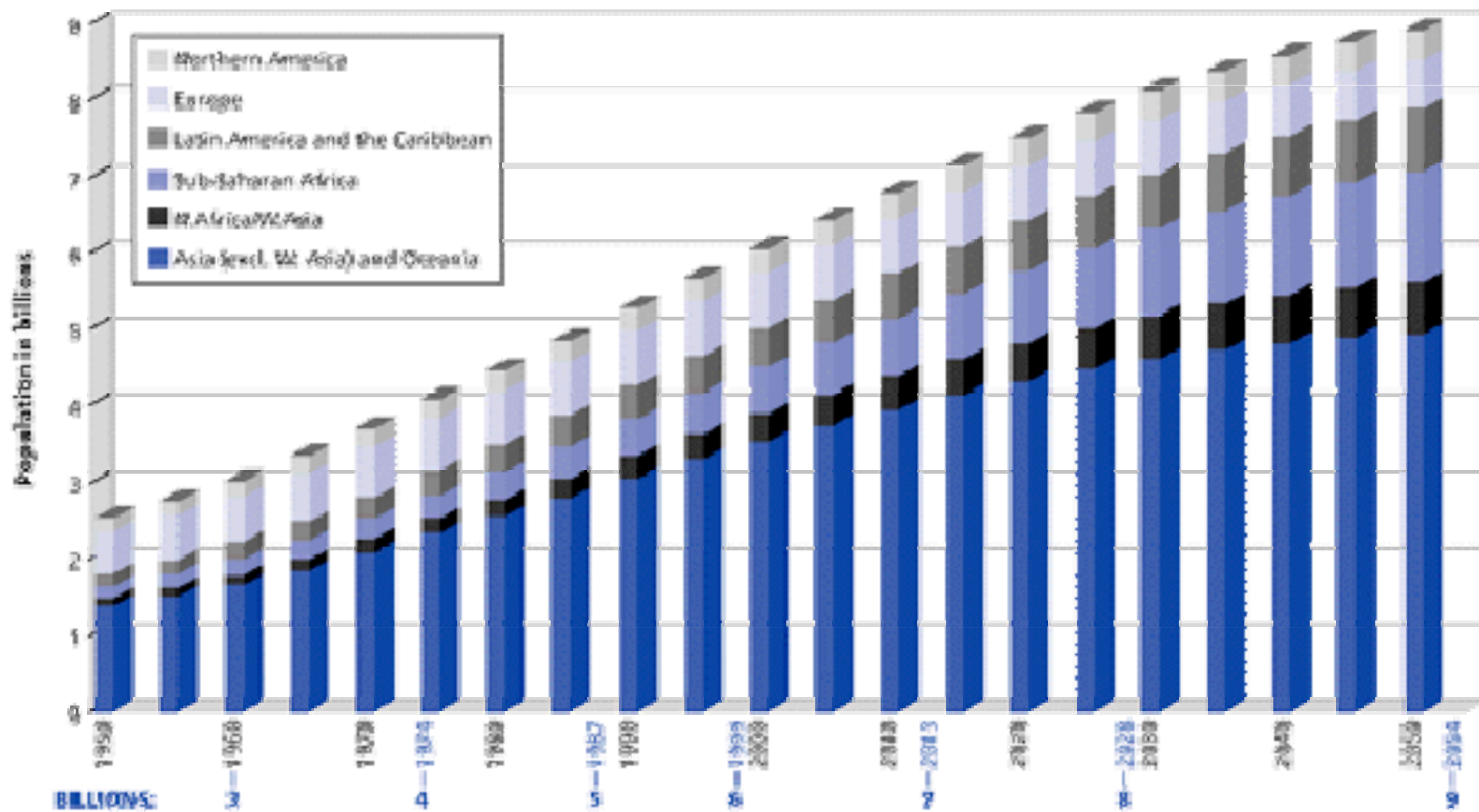
- ▣ Large body of scientific literature on the environment – economy interface
 - ▣ Some of the most influential in recent years
 - ▣ Survey of some of the areas and issues surrounding this interface
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Economics & sustainable development

- ▣ Optimal Growth Models and Discount Rates
 - ▣ Brundtland Commission – sustainable development
 - ▣ IPCC – ancillary benefits and co-benefits
 - ▣ Environmental Kuznets Curve
 - ▣ Social dimensions of sustainable development
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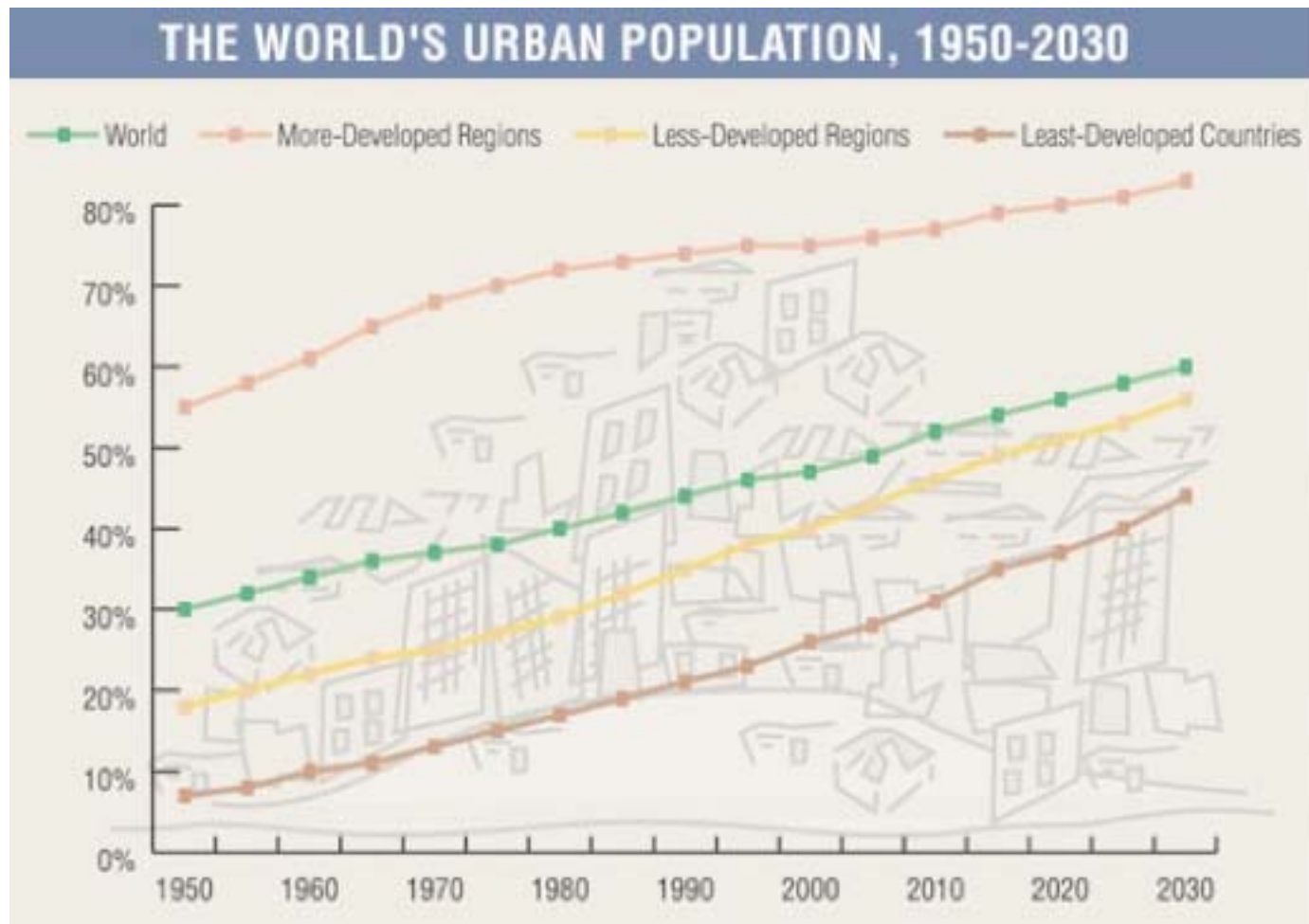
The big drivers of change

- ▣ The demographic changes
 - ▣ The growing demand for resources
 - ▣ The great accelerations
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Projected world population growth

Source: University of Michigan, Global Change Program



Urban vs. Rural Population (Global)

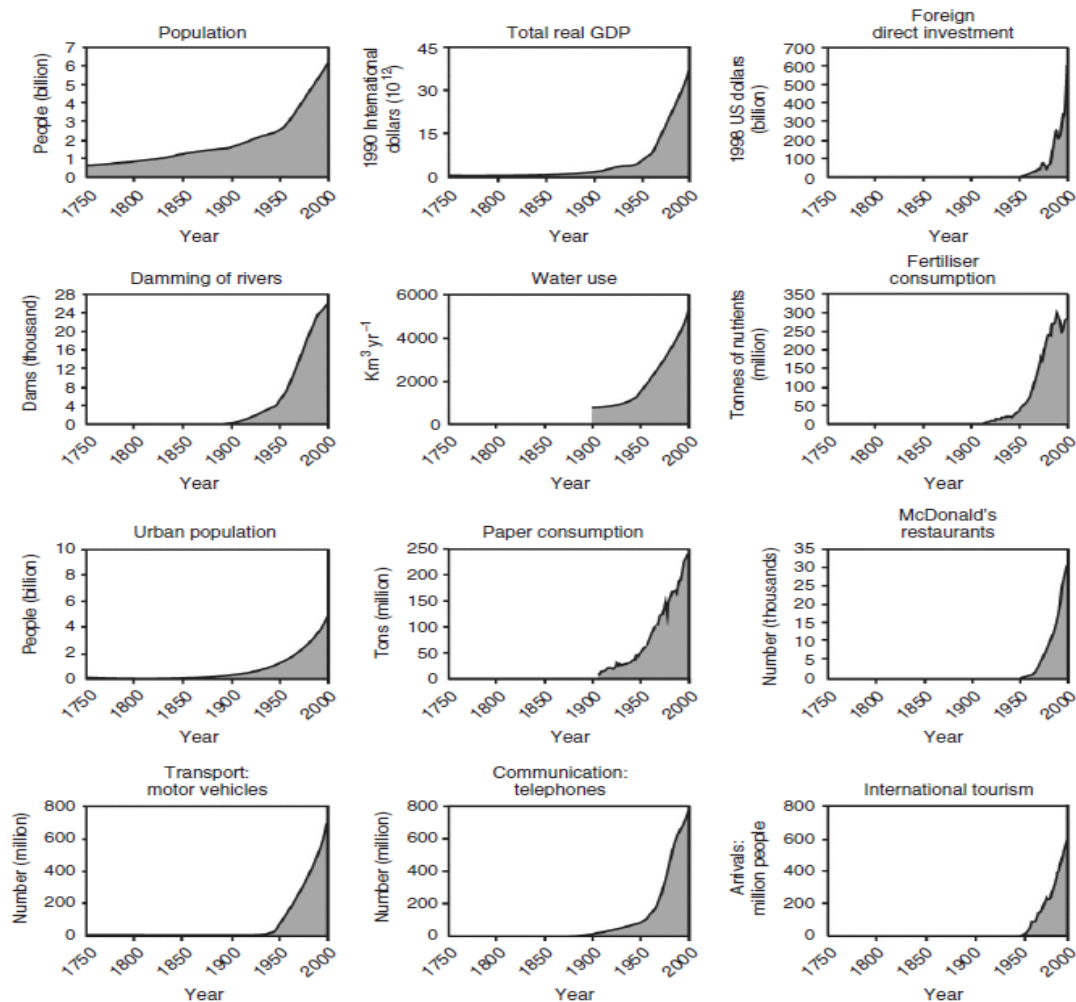
Source: USAID, 2005



Contrasting consumption patterns

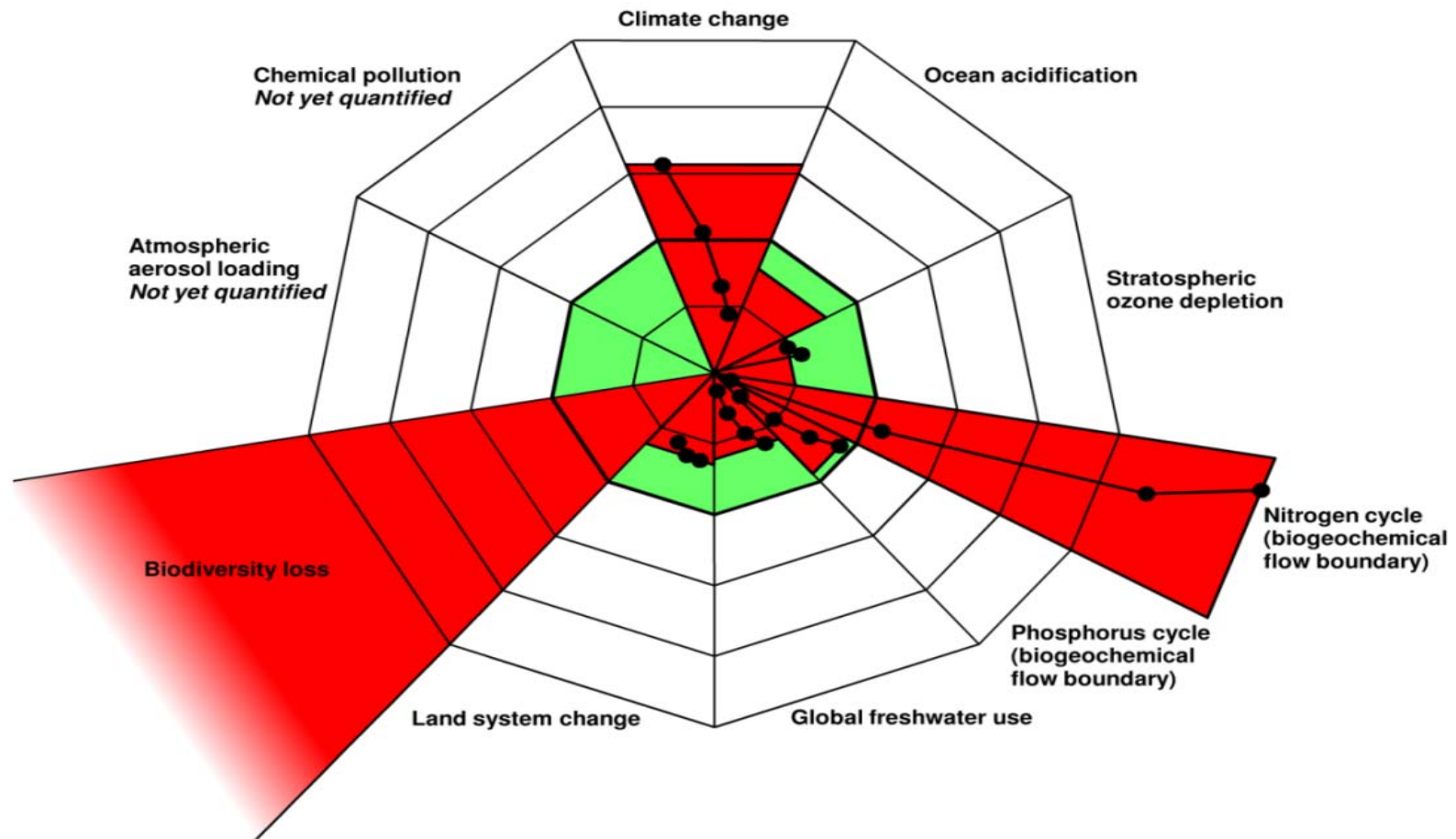
Food for a week in Mali and in Germany

Source: Menzel & Dálusio, 2007, Hungry Planet: What the World Eats



The great accelerations

Source: Steffen et al., 2007



Increasing demand for resources vs. Planetary boundaries

Source: Global Energy Assessment, International Institute for Applied Systems Analysis, forthcoming

	1800	2000	Factor
Population (billion)	1	6	x6
GDP PPP (trillion 1990 \$)	0.5	36	~x70
Primary Energy (EJ)	12	440	~x35
CO ₂ Emissions (GtC)	0.3	6.4	~x20

Growth factors (past 200 years)

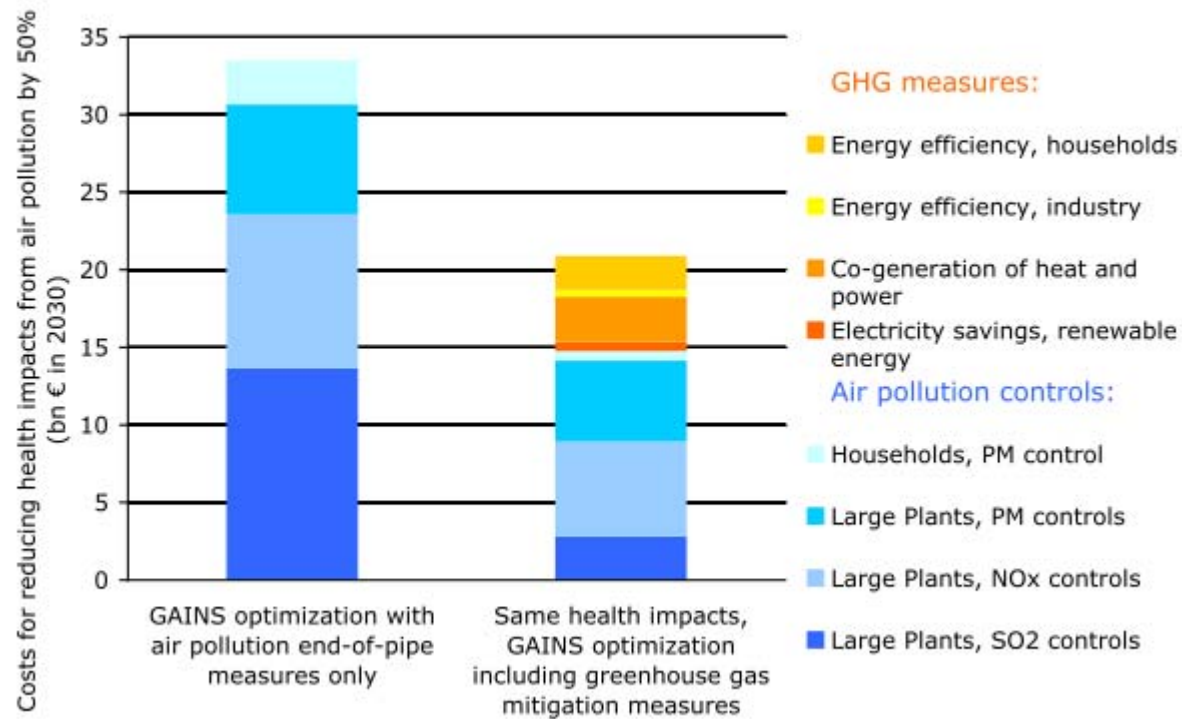
Source: Global Energy Assessment, International Institute for Applied Systems Analysis, forthcoming

Tradeoffs – the environment and the economy

- ▣ Economic growth and impacts of climate change
 - ▣ Agriculture, climate change mitigation, and food security
 - ▣ Forest degradation and mitigation of climate change
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There is hope: Possible synergies

Co-benefits of investing in the environment



Benefits of adopting both air pollution and climate change measures

Source: Aman, Kejun, et al, 2008, Gains Asia scenrio for cost effective control of air polluton and GHG in China

Before



Over 150 kWh/(m²a)

After

(Retrofitting according to the passive house principle)



15 kWh/(m²a)

-90%

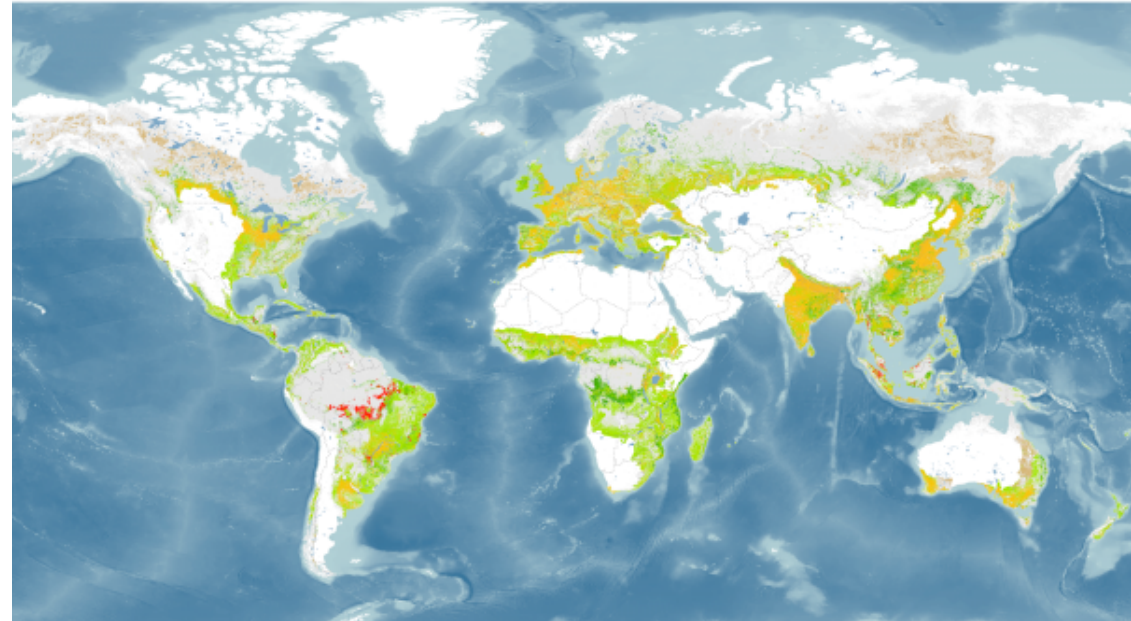
Value-added investments in energy efficiency (infrastructure)

Source: Jan Barta, Center for Passive Buildings, www.pasivnidomy.cz, EEBW2006

- Restored lands supply clean water, reduce erosion, provide wildlife habitat, biofuel, other forest products.
- Forests and trees mitigate climate change by sequestering carbon.
- Trees in agricultural landscapes can enhance soil fertility, conserve soil moisture, and boost food production.



A World of Opportunity for Forest and Landscape Restoration



FOREST AND LANDSCAPE RESTORATION OPPORTUNITIES

- Wide-scale restoration
- Mosaic restoration
- Remote restoration

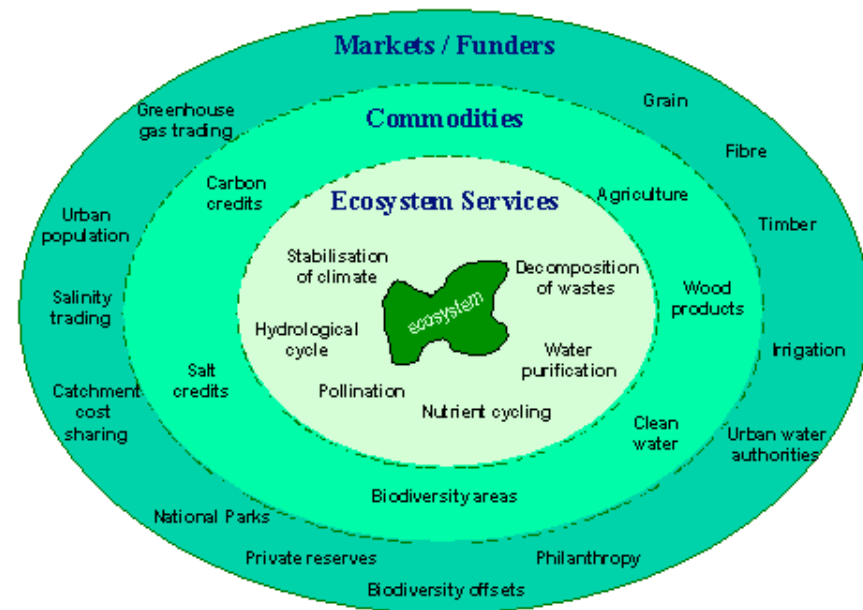
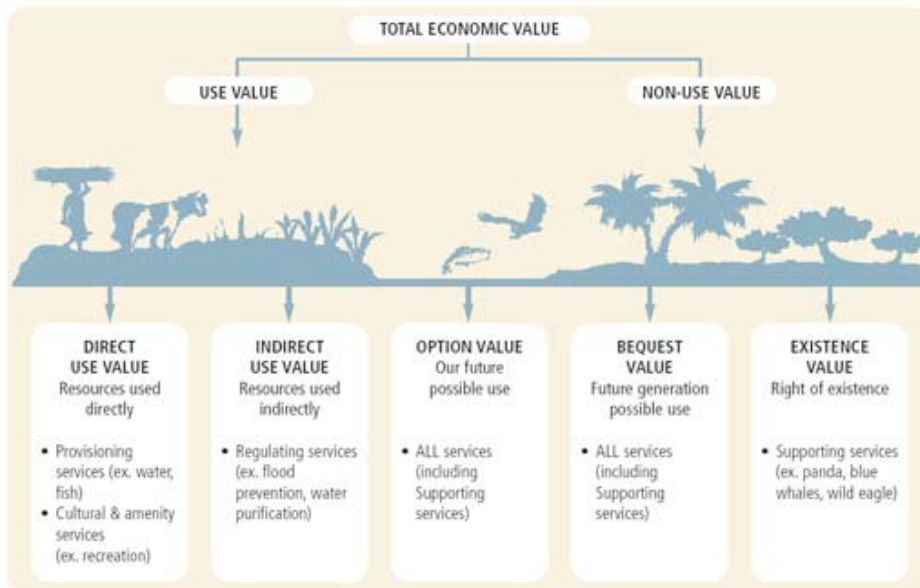
OTHER AREAS

- Agricultural lands
- Recent tropical deforestation
- Urban areas
- Forest without restoration needs



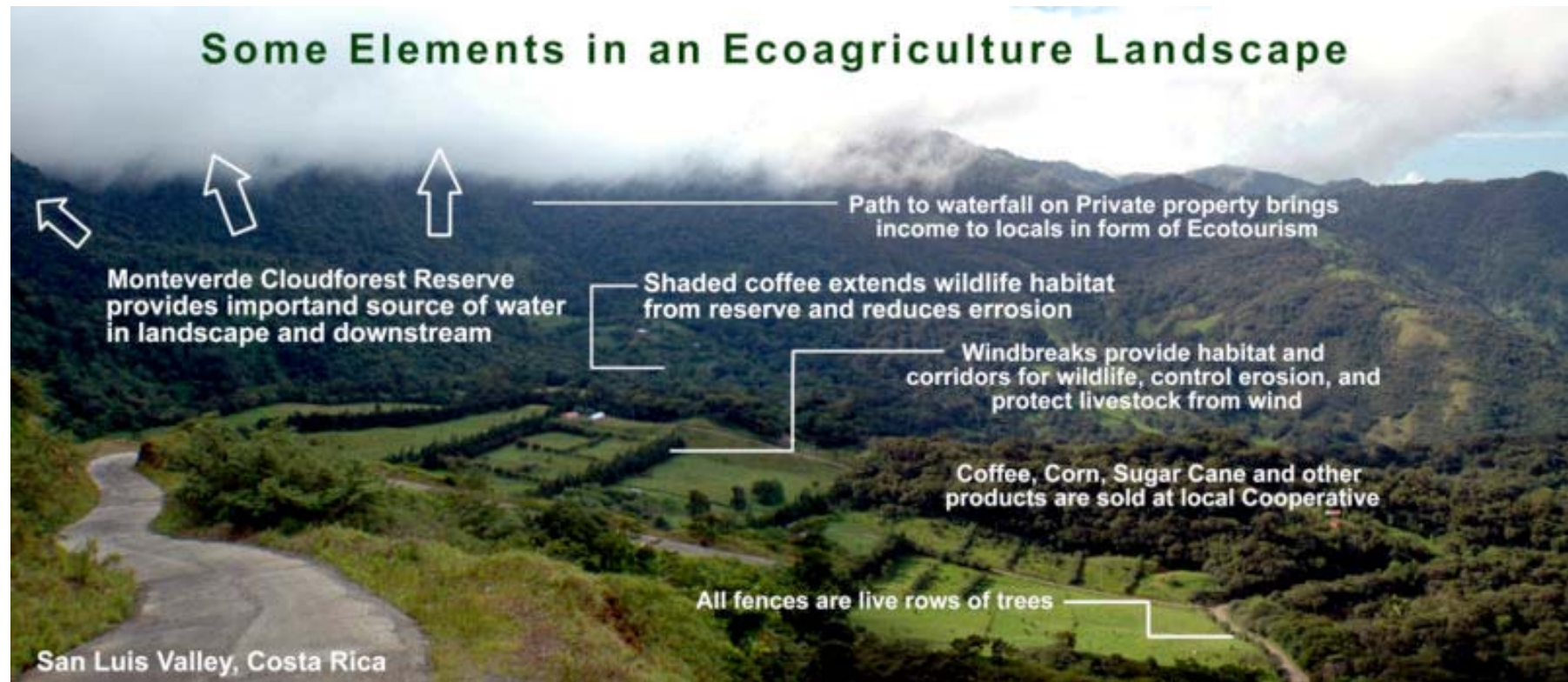
Landscape restoration opportunities

Source: World Resources Institute



Valuation of ecosystem services

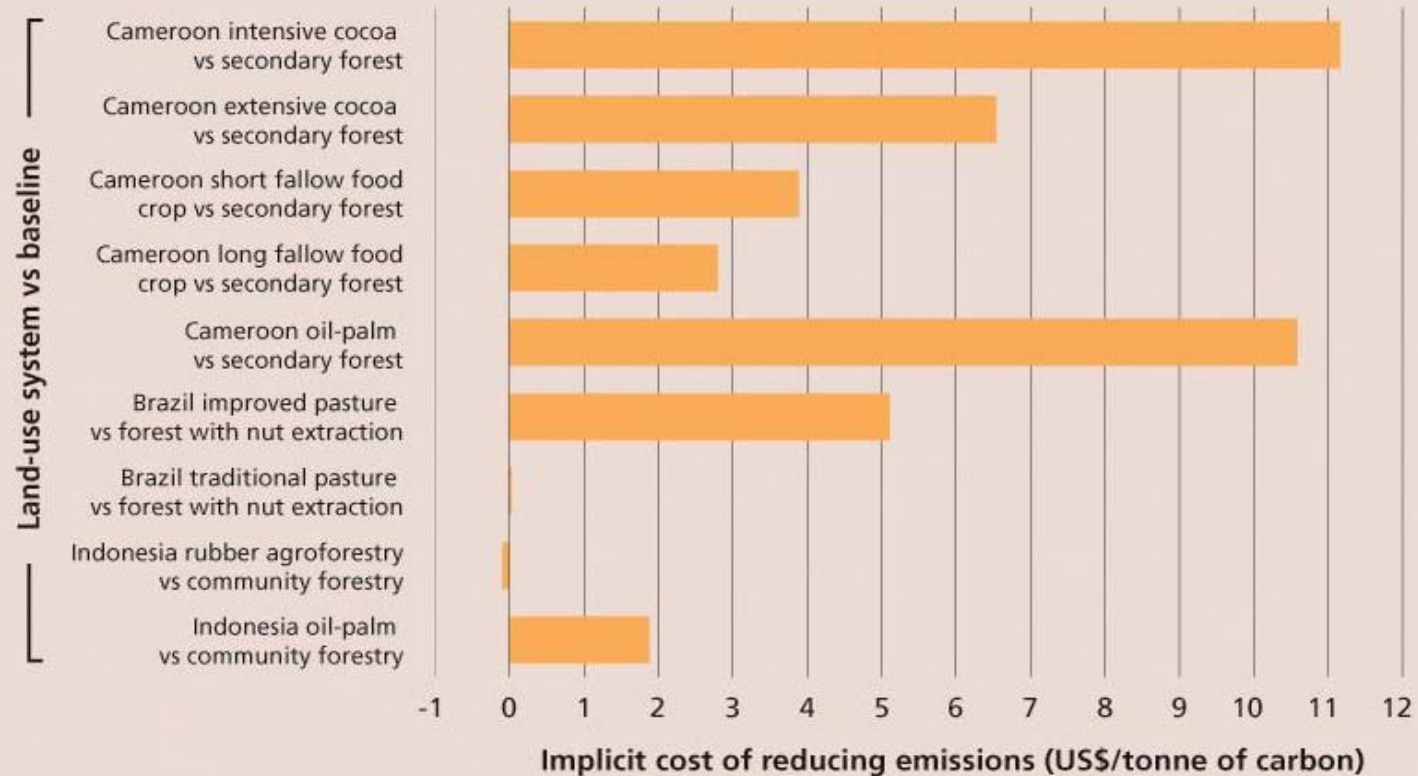
Sources: FAO, 2010; Markets for Ecosystem Services Project, Australia, 2004



Value-added agriculture

Source: Ecoagriculture Partners

Level of carbon payments required to provide incentives for reducing emissions by avoided deforestation



REDD+

Source: Chomitz, 2007, based on data from Tomich et.al., 2005

- Biodiversity markets/offsets
- Carbon markets (voluntary / possibly mandatory, i.e. REDD+)
- Eco-certification schemes (FSC, PEFC, MSC, etc.)
- Others?

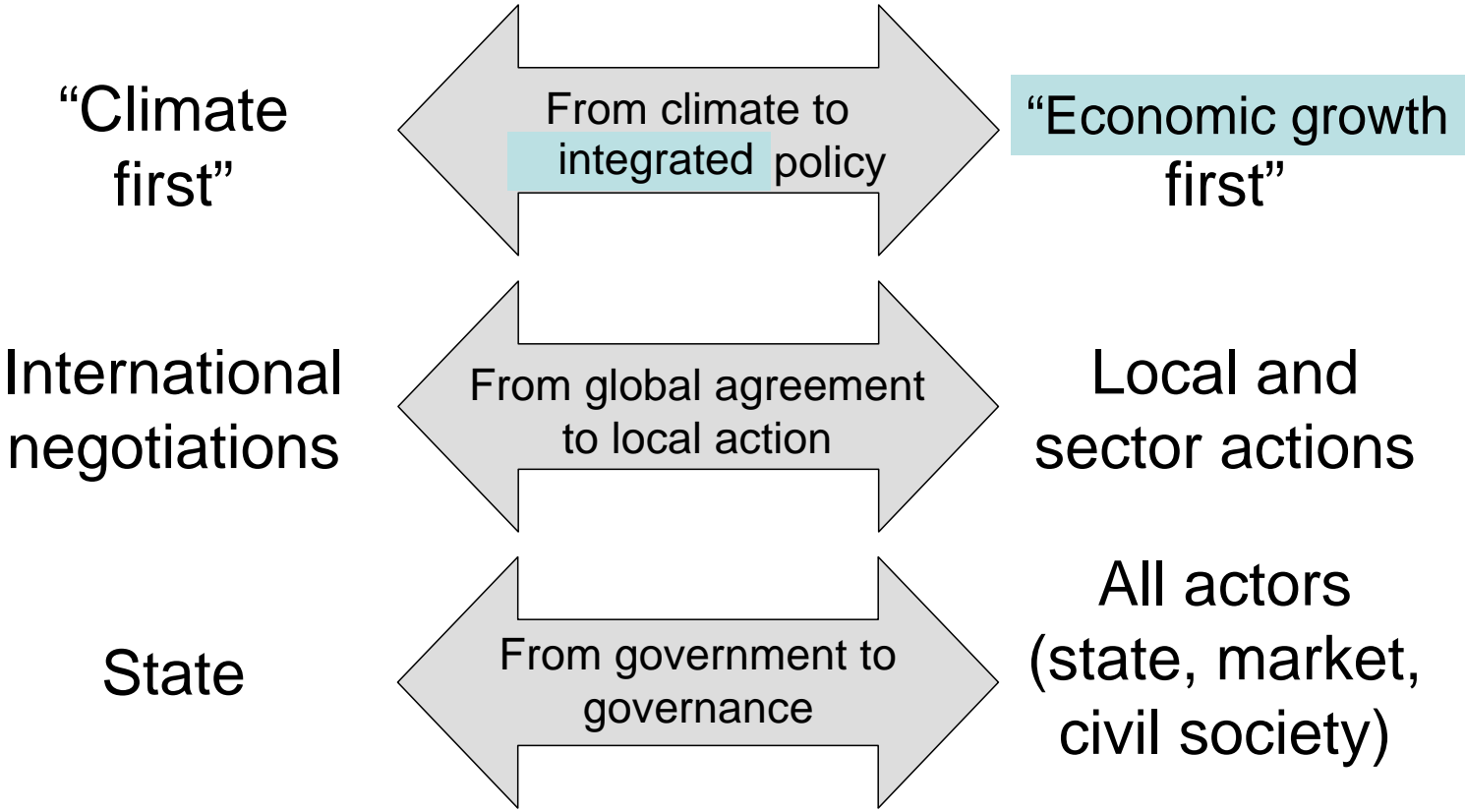


Image Source: Community Markets for Conservation, Zambia

Other market-based opportunities



Taking climate change measures
as an example



Integrated approaches are key

Source: IPCC Fourth Assessment Report: Working Group 3, Chapter 12:
Sustainable Development and Climate Change Mitigation

Conclusions

- ▣ Focus on opportunities for synergy and co-benefits
 - ▣ Conflicts will continue to grow larger and solutions will become more and more difficult
 - ▣ Integrated approaches – only way forward and toward solutions (policy mix)
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