

Ecosystems and human well-being

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The relative nature of human well-being

Ecosystem services (ESS) are the benefits people obtain from ecosystems. The constituents of human well-being (e.g., security, basic material, good social relations) are related to ESS and they are politically influenced.

Humans have altered the ecosystem since hundreds to thousands of years. One can raise the question if it is possible for a country to become rich without changing the environment. The changes have brought gains but also costs that threaten developmental goals, like the degradation of many ESS, the increased risk of abrupt changes in ecosystems or growing negative impacts on poor people. Poor people are most dependent on ESS and also most vulnerable to degradation of the services. The degradation of ecosystems could grow worse but can be reversed. Workable solutions will require significant changes in policy.

Where is improvement really needed?

There are a lot of difficult questions regarding the “rich north” and the “poor south”: What does the poor south have a right to expect in terms of human well-being? What will the fulfillment bring in terms of ecosystem change, resource needs, policy, economy and cultural change?

The ecological footprint shows how much land one needs to live its life (ha/capita), hence it is a measure for how much resources are available per person in a country. It is much lower in developing countries than in the industrialized regions of the world. However, all biodiversity hotspots are in poor countries.

In rural areas of developing countries people depend on ESS from direct surroundings (ecological footprint concept), therefore unwise management of local ecosystems has an immediate impact on local communities. However, people cannot afford their way out of the problem. The question is how to achieve economic development without jeopardizing ecosystems and biodiversity.

The Millenium Ecosystem Assessment of South Africa

The key ESS discussed in the Millenium Ecosystem Assessment of South Africa (SAfMA) are freshwater, food, biodiversity, woodfuel, cultural, spiritual, aesthetic and recreational services. Standard indicators of human-well being are the human development index (HDI), the infant mortality and the percentage of people having less than 1 US\$ per day.

The key findings from the SAfMA are:

- There are critical food shortages (especially protein)
- The water shortage is growing
- Fuelwood is locally scarce, but regionally acceptable
- Biodiversity is doing better than sometimes feared (e.g., nature-based tourism is a boom industry)

The problem in such assessments is often the scale: on regional scale there might be no problem visible. However, when zooming in on a local level there is a severe problem.

Regional synthesis suggests a link between ESS degradation and declining human well-being. This pathway is likely to be two-dimensional.

At least half of the SAfMA development goals will not be met unless specific attention is paid to ESS. Governance is a critical uncertainty at all scales and many services require transboundary coordination.

Ecosystems and human well-being: dilemmas at the local scale – Serengeti as an example

The Serengeti-Mara district is located in Tanzania and Kenya and comprises the Massai-Mara Natural Reserve (1,310 km²) and the Serengeti National Park (14,763 km²). The area is an UNESCO World Heritage Site where for example one million migrating wildebeests live.

There are several conflicts and dilemmas in the area:

- need for international collaboration
- economic development in areas bordering to the national park
- tourism in the park – who benefits?
- subsistence for a growing population of rural poor.

International management is needed because wildlife migratory systems cross national borders. The Mara River is essential for the ecosystem dynamics since it provides water for wildlife during the dry season. Hence, water abstractions may cause large scale wildlife mortality. Economic development is needed in areas next to the national park since population almost trippled.

However, it is hard to improve well-being without destroying ecosystems. Improved subsistence levels are needed where people have access to animal and plant products from natural areas. In addition, hunting must be possible unless there is access to fish which takes the pressure from wildlife. Though subsistence agriculture puts less pressure on land and resources, human well-being may not be ensured. Economic development among rural poor requires increased agricultural output by improved technologies, increased cultivated areas as well as improved water use and a market for agricultural products. Alternative means of income could be tourism, but it is questionable, whether locals benefit from a product that requires professional skills.

Conclusion: Research needs

The available studies do not allow systematic and context-sensitive generalisations about how poverty alleviation and biodiversity conservation may be achieved simultaneously.

A way out of the problem would be to document and test the likely tradeoffs and to focus on contextual details that contribute to the outcome. Furthermore, the impact of macro-social and political variables (education, demography, unemployment, etc.) on the dynamics of poverty vs. biodiversity should be assessed.

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