



### Why is biodiversity loss a concern?

1. What are the main links between biodiversity and human well-being?
2. What competing goals can affect biodiversity?
3. What is the value of biodiversity for human well-being?
4. How are the impacts of biodiversity loss distributed geographically?

Biodiversity is essential for the benefits the ecosystems can provide to humans and hence for human well-being. Its role goes beyond ensuring the availability of raw materials to include security, resiliency, social relations, health, and freedoms and choices. While many people have benefited over the last century from the conversion of natural ecosystems to human-dominated ecosystems, other people have suffered from the consequences of biodiversity losses.

#### 1. What are the main links between biodiversity and human well-being?

Biodiversity and the many ecosystem services that it provides are a key factor determining human well-being. Biodiversity loss has direct and indirect negative effects on several factors:

**1.1 Food security:** The availability of biodiversity is often a "safety net" that increases food

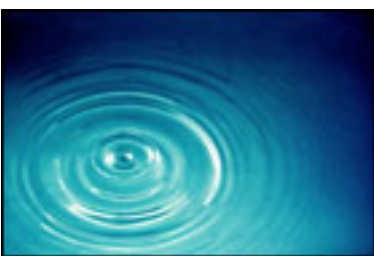
security and the adaptability of some local communities to external economic and ecological disturbances. Farming practices that maintain and make use of agricultural biodiversity can also improve food security.

[Table: Percentage of households dependent on indigenous plant-based coping mechanisms at Kenyan and Tanzanian site.](#)

**1.2 Vulnerability:** Many communities have experienced more natural disasters over the past several decades. For example, because of the loss of mangroves and coral reefs, which are excellent natural buffers against floods and storms, coastal communities have increasingly suffered from severe floods.

**1.3 Health:** A balanced diet depends on the availability of a wide variety of foods, which in turn depends on the conservation of biodiversity. Moreover, greater wildlife diversity may decrease the spread of many wildlife pathogens to humans.

**1.4 Energy security:** Wood fuel provides more than half the energy used in developing countries. Shortage of wood fuel occurs in areas with high population density without access to alternative and affordable energy sources. In such areas, people are vulnerable to illness and malnutrition because of the lack of resources to heat homes, cook food, and boil water.



[See also our Water resource Digest](#)

**1.5 Clean water:** The continued loss of forests and the destruction of watersheds reduce the quality and availability of water supplied to household use and agriculture. In the case of New York City, protecting the ecosystem to ensure continued provision of clean drinking water was far more cost-effective than building and operating a water filtration plant.

**1.6 Social relations:** Many cultures attach spiritual, aesthetic, recreational, and religious values

to ecosystems or their components. The loss or damage to these components can harm social relations, both by reducing the bonding value of shared experience as well as by causing resentment toward groups that profit from their damage.

### Social Consequences of Biodiversity Degradation

**1.7 Freedom of choice:** Loss of biodiversity, which is sometimes irreversible, often means a loss of choices. The notion of having choices available irrespective of whether any of them will be actually picked is an essential constituent of the freedom aspect of well-being.

**1.8 Basic materials:** Biodiversity provides various goods - such as plants and animals - that individuals need in order to earn an income and secure sustainable livelihoods. In addition to agriculture, biodiversity contributes to a range of other sectors, including " **e**  
**cotourism**", pharmaceuticals, cosmetics, and fisheries. Losses of biodiversity, such as the collapse of the Newfoundland cod fishery can impose substantial costs at local and national level.

## 2. What competing goals can affect biodiversity?

When society has multiple goals, many of which depend on biodiversity, ecosystem services, and the many constituents of well-being, difficult decisions involving trade-offs among competing goals have to be made. When humans modify an ecosystem to improve one of the services it provides this generally results in changes to other ecosystem services. For example, actions to increase food production can lead to reduced water availability for other uses, and degraded water quality.

In the long term, the value of services lost may greatly exceed the short-term economic benefits that are gained from transforming ecosystems.

In Sri Lanka, for example, the clearing of tropical forest for agriculture initially reduced the habitat for malaria-transmitting mosquitoes which live in forests. But later, other mosquito species occupied the changed habitat, contributing to the resurgence of malaria.

Only four of the ecosystem services examined in this assessment have been enhanced by human changes.

Enhanced services include crops, livestock, aquaculture, and, to some extent, carbon sequestration

Degraded services include fisheries, water supply, capacity of ecosystems to treat waste, water purification, natural hazard protection, regulation of air quality, regulation of regional and local climate, regulation of erosion, and many cultural services.

An analysis of trade-offs can help decision-makers make efficient decisions among competing goals.

### [Table: Trends in the Human Use of Ecosystem Services](#)

- [Provisioning services](#)
- [Regulating services](#)
- [Cultural services](#)
- [Supporting services](#)

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### **3. What is the value of biodiversity for human well-being?**

Unlike goods bought and sold on markets, many ecosystem services do not have markets or readily observable prices. This means that the importance of biodiversity and natural processes in producing ecosystem services that people depend on is not reflected in financial markets.

Degradation of ecosystem services could be significantly slowed or reversed if their full economic value were taken into account in decision-making.

A way of assigning monetary values to them is to rely on non-market valuation methods. These methods have been applied to clean drinking water, recreation, or commercially harvested species.

Non-market values can be either the value to society from the active use of the asset or a "non-use" value, which reflects the value of an asset beyond any use, such as the value of existence of species. Measuring the latter poses a great challenge to those trying to measure the complete value of conserving biodiversity and natural processes.

The private use value of biodiversity and ecosystem services by individuals will typically ignore the "external" benefits of conservation to society in general. For example, a farmer may benefit from intensive use of the land but generally does not bear all the consequences caused by leaching of excess nutrients and pesticides into ground or surface water, or the consequences of loss of habitat for native species.

### [Economic Costs and Benefits of Ecosystem Conversion](#)

Intensive use of ecosystems often produces the greatest short-term advantage, but excessive and unsustainable use can lead to losses in the long term. A country could cut its forests and deplete its fisheries, and this would show only as a positive gain to GDP, despite the loss of capital assets, because of the income generated by the sale of those products.

Moreover, many ecosystem services, such as groundwater, are available freely to those who use them and so again their degradation is not reflected by standard economic valuation methods.

## **4. How are the impacts of biodiversity loss distributed geographically?**

The well-being of many social groups and individuals can increase when biodiversity is used, changed, or lost. However, the changes in ecosystems are harming many of the world's poorest people, who are less able to adjust to these changes and who are affected by even greater poverty, as they have limited access to substitutes or alternatives. For example, poor farmers

often cannot afford using modern methods for services previously provided by biodiversity. In addition, substitution of some services, such as the reliance on toxic and persistent pesticides to control certain pests, may have negative environmental and human health effects.

Many communities depend on a range of biological products for their material welfare. Poor people have historically disproportionately lost access to biological products and ecosystem services as demand for those services has grown. The transfer in ownership of ecosystem resources often excludes local communities, and the products of their exploitation are not destined for the local market.

Changes in the structure of societies that affect access to resources can have impacts on ecosystem services. This may also help to explain why some people living in environmental resource-rich areas nevertheless rank low in measures of human well-being. An increase in international trade has improved the well-being of many people, but others, such as those who were dependant on the resources being exploited for export, have been adversely affected. Conflicts can arise when different social groups compete for the same resources, and although many such conflicts have been managed cooperatively, it is also common for one group to benefit at the expense of the other.

[Concepts & Measures of Poverty](#)

[Conflicts Between the Mining Sector & Local Communities in Chile](#)