



Living in harmony with nature

Ecosystem services

The principal framework for expressing the ‘usefulness’ of biodiversity is through the concept of *ecosystem services*. They illustrate the link between, on one hand, the interactions of species with each other and with the physical environment; and on the other, the well-being of people, whether in terms of wealth, nutrition or security.

The Millennium Ecosystem Assessment, published in 2005, divided ecosystem services into four categories:

- ▶ **Provisioning services**, or the supply of goods of direct benefit to people, and often with a clear monetary value, such as timber from forests, medicinal plants, and fish from the oceans, rivers and lakes.
- ▶ **Regulating services**, the range of functions carried out by ecosystems which are often of great value but generally not given a monetary value in conventional markets. They include regulation of climate through the storing of carbon and control of local rainfall, the removal of pollutants by filtering the air and water, and protection from disasters such as landslides and coastal storms.
- ▶ **Cultural services**, not providing direct material benefits, but contributing to wider needs and desires of society, and therefore to people’s willingness to pay for conservation. They include the spiritual value attached to particular ecosystems such as sacred groves, and the aesthetic beauty of landscapes or coastal formations that attract tourists
- ▶ **Supporting services**, not of direct benefit to people but essential to the functioning of ecosystems and therefore indirectly responsible for all other services. Examples are the formation of soils and the processes of plant growth.

Biodiversity is not regarded as an ecosystem service itself, but rather as a prerequisite underpinning each of them. The precise link between diversity and the capacity of an ecosystem to provide services is a complex one, and an area in which science is still developing.



Convention on
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Fast Facts

- ▶ Ecosystem services do the following:
 - ▶ Moderate weather extremes and their impacts (ex. drought, floods, etc.)
 - ▶ Mitigate climate change
 - ▶ Absorb and store CO₂
 - ▶ Protect water channels and shores from erosion
 - ▶ Regulate disease-carrying organisms
 - ▶ Provide ingredients for pharmaceutical, biochemical and industrial products
 - ▶ Are a source of energy and biomass fuels
 - ▶ Decompose waste and detoxify pollution
 - ▶ Generate, maintain and renew soil fertility (nutrient cycling)
 - ▶ Pollinate crops and plants, and disperse seeds
 - ▶ Control agricultural pests and diseases
 - ▶ Produce food (such as crops, wild foods and spices, seafood)
 - ▶ Produce wood and fibre
 - ▶ Produce oxygen, purify air and water
- ▶ Give cultural, intellectual, artistic and spiritual inspiration
- ▶ Allow recreation (ex. ecotourism)
- ▶ Hold answers to scientific questions
- ▶ Hold the cures to diseases
- ▶ Conserving forests avoids greenhouse gas emissions worth US\$ 3.7 trillion
- ▶ Ecotourism is the fastest-growing area of the tourism industry with an estimated increase of global spending of 20% annually (TIES 2006)
- ▶ Bee keeping generates US\$ 213 million annually in Switzerland by ensuring agricultural production through pollination—some five times the value of honey production alone
- ▶ Under a ‘business as usual’ scenario, where ecosystem services keep declining, the cost to compensate for the lost services (the cost of inaction) over a 50 year period will amount to US\$ 2.0 to 4.5 trillion per year

Learn More

Global Biodiversity Outlook 2 ▶ www.cbd.int/gbo2

Global Biodiversity Outlook 3 ▶ www.cbd.int/gbo3

The Economics of Ecosystems and Biodiversity (TEEB) ▶ www.teebweb.org

Ecosystem services abridged

▶ www.greenfacts.org/glossary/def/ecosystem-services.htm

World Resources Institute ▶ www.wri.org

Millennium Ecosystem Assessment ▶ www.millenniumassessment.org/en/index.aspx

Millennium Ecosystem Assessment, Ecosystems and Human Wellbeing

(synthesis) ▶ www.millenniumassessment.org/documents/document.356.aspx.pdf

Secretariat of the Convention on Biological Diversity

413, Saint Jacques Street, suite 800
Montreal, Quebec, H2Y 1N9
Canada

Tel.: +1 514 288 2220
Fax: +1 514 288 6588
UNBiodiversity@cbd.int