

COSTING THE EARTH: ECOSYSTEM SERVICES

What are ecosystem services?

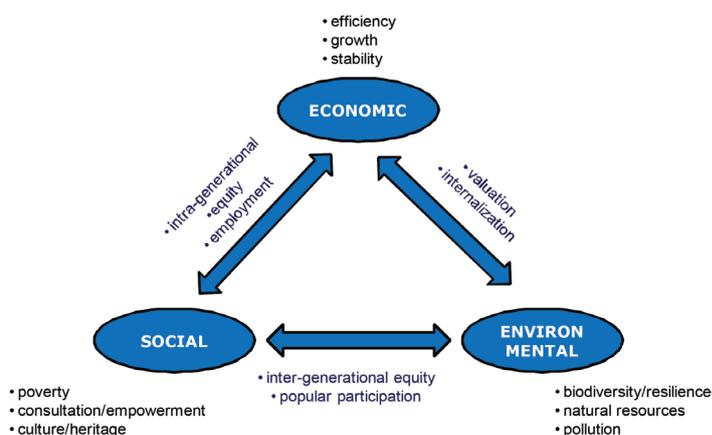
Everyone benefits from a multitude of resources and processes supplied by natural ecosystems. Collectively, these benefits are known as ecosystem services. While scientists and environmentalists have discussed ecosystem services for decades, these services were popularized and their definitions formalized by the United Nations 2004 Millennium Ecosystem Assessment (MA). This grouped ecosystem services into four broad categories: **provisioning**, such as the production of food and water; **regulating**, such as the control of climate and disease; **supporting**, such as nutrient cycles and crop pollination; and **cultural**, such as spiritual and recreational benefits.



Lake Modrac, Bosnia and Herzegovina provides important recreational, filtration and waste assimilation services.

Historically, the development of the industrialized world focused on production. Until the early 1980s, economic development took place at the expense of the environment, and environmental protection was given little priority. By the early 1980s – in the wake of the discussions on sustainable development – a large body of evidence had accumulated that such a development path is not sustainable.

Sustainable development can be defined as a pattern of resource use that aims to meet human needs while preserving the environment and the flow of ecosystem services, not only for the present, but also for future generations. Achieving sustainable development is only possible where economic, environmental and social concerns are given balanced consideration throughout decision making processes.



For sustainable development, activities must necessarily balance environmental, economic and social costs so that a project's total costs include that of the impact on the ecosystem.

The economics of ecosystems

Ecosystem services valuation enables decision makers to link ecosystems and economic development by quantifying the benefits of these services in monetary terms. It assesses how changes to ecosystem services impact on human well-being.

Such a tool can support improved decision making, guide institutional framework development, influence the allocation of resources and investments and raise awareness about the importance of the services on people's lives.

However, for many ecosystem services, no commercial markets exist so they do not readily fetch a price. Their contribution to the economic system is difficult to quantify in monetary terms and so their importance is given little to no weight in decision making. Consequently, decisions about ecosystem resources will favour their commercial use and short-term profitability over long-term sustainability.



Reed-bed filter eco-remediation project for treatment of municipal waste sludge in Mojkovac, Montenegro.

Valuing the Earth

Many techniques can be used to monetize ecosystem services. The main types to estimate public preferences are **Revealed Preference** and **Stated Preference methods**. Revealed Preference methods rely on markets for other goods. This includes calculating costs of potential loss or damage to an ecosystem service. It also includes travel costs to visit an ecosystem for recreational use, and how changes to an ecosystem may affect prices – such as real estate – in the area. Stated Preference methods elicit preferences, including willingness to pay for services, through the use of questionnaires. Falling outside Revealed and Stated Preference methods, **Benefit Transfer** is a technique by which economic values are estimated through the transfer of information from detailed original studies undertaken in a different context. This technique is applied where original studies are too resource intensive to undertake.

Coming clean with UNIDO: Eco-remediation

Eco-remediation involves the use of environmentally friendly practices for the clean-up of contaminated sites.

Before remediation, a value assessment is conducted. This assessment tracks how a project's clean-up activities change the ecosystem. It also identifies ways to avoid or mitigate any negative effects a project may have.

Many ecosystems provide critical waste-assimilation and processing services. Taking into account the value of such services is an important tool for determining strategies to address environmental problems through eco-remediation. A UNIDO-Slovenia project to construct reed-bed filter systems in Mojkovac, Montenegro employed this tool. The project's aim was to maintain and enhance the capacity of local ecosystems to assimilate and treat municipal waste, in order to protect a World Heritage Site. Another such example where eco-remediation measures were applied is a project aimed at enhancing the water quality of Lake Modrac in Bosnia and Herzegovina.



Eco-remediation at Lake Modrac, Bosnia and Herzegovina

For more on eco-remediation projects:

Enhancing the water quality of Lake Modrac

https://youtu.be/n72Hs_Yu2GI

UNIDO-Slovenia protects a World Heritage Site in Montenegro: <https://youtu.be/Bt55djl0GCw>

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