KEY MESSAGES

- In pursuit of unending material growth and prosperity, industrialized countries have failed to value the services provided by ecosystems, namely fresh water, soil, clean air, a stable climate, and others. This approach to growth is increasingly being replicated by developing countries.

- There is often imperfect knowledge of the services provided by ecosystems, so the impacts of decisions made at the expense of ecosystems are often not fully understood.

- The science of ecosystem services evaluates the benefits derived from ecosystems and assigns a monetary or physical unit to these benefits in order to facilitate better management and planning.

THE PROBLEM

In the last century, individuals and countries have exploited ecosystems in favor of economic growth. The human ecological footprint has grown so large that progress is now constrained more by limits on natural resources and ecosystem services than by limits on infrastructure or technology.

Even when stakeholders and decision makers understand the services provided by ecosystems, they do not have concrete measurements of the trade-offs between ecosystem health and economic growth. By not having a number attached to ecosystem services in comparison with economic services and manufactured capital, the value of ecosystem services is often perceived to be zero. Hence, these services are often given too little weight in policy decisions.

When understood in monetary terms, however, ecosystem services are revealed to be vital to the global economy. In one of the first studies to estimate the value of ecosystem services, published in 1997, the authors estimated the value of 17 ecosystem services to be an average of US$33 trillion per year, more than the annual Gross World Product at the time.

MOVING FORWARD

Ecosystem services science attempts to frame the benefits provided by ecosystems using relatable monetary or physical indices. By understanding ecosystem services in such terms, leaders and stakeholders can assess the sustainability of their actions and take steps to lessen their ecological impact.

There are two common ways of evaluating ecosystem services: through a common asset trust, which “propertizes” the commons without privatizing them; and through payment for ecosystem services, in which landowner or farmers are paid to maintain ecosystems that benefit the larger community, such as a carbon-capturing forest.

Governments can take the lead in establishing common asset trusts. In March 2011, for example, the U.S. state of Vermont introduced a bill that would establish such a trust to protect certain natural resources that belong to all Vermont citizens. Private companies can also participate in valuing ecosystem services: in January 2011, Dow Chemical established a $10 million collaboration with The Nature
Conservancy to tally up the ecosystem costs and benefits of the company’s business decisions.

Public, private, and government entities must also invest in projects and technologies that spread understanding of ecosystem services science. A World Bank initiative called Wealth Accounting and Valuation of Ecosystem Services is one such project; it works to improve information available to decision makers in Ministries of Finance and Planning, and in central banks so that countries can pursue growth with a greater awareness of their impact.

Targeted educational campaigns, clear discussion of successes and failures, and collaboration among stakeholders are all vital to protect ecosystem services and to gain an accurate understanding of these services. Leaders must continuously gather and disseminate information regarding the condition and limits of ecosystems, so that stakeholders at all levels understand the impacts of their actions.

**LOOKING AHEAD**

The work of evaluating ecosystem services must be carried out on a variety of scales, from individuals to governments. Individuals can manage the impact of their farms or fisheries, for example, but governments must be responsible for air pollution in cities. The spatial and temporal scales of institutions that manage ecosystem services must match the scale of the services themselves, and collaboration among these institutions is vital. The distribution of these ecosystem services, in turn, must be designed to include the global poor, who depend more on common goods and ecosystem services, but have traditionally been excluded from ecosystem service management.