



International Workshop to launch the Green Economy Initiative
1-2 December 2008

Environmental infrastructure Briefing Note

Introduction

Humans are an integral part of ecosystems. Ecosystems are closely linked with social systems – to such an extent that some refer to coupled socio-ecological systems. People receive substantial benefits from ecosystems; these benefits have been termed ecosystem services. These may be categorized as *provisioning services* (such as food and fiber), *cultural services* (such as a sense of place or tourism), and *regulating services* (such as climate moderation or flood reduction). Few ecosystems have not been affected by human action, intentionally and unintentionally. People often modify ecosystems to increase the supply of ecosystem services that they desire, and develop institutions to govern access and use of these services. However, because ecosystems jointly produce many ecosystem services simultaneously human action to increase the supply of one service, such as food, can frequently lead to declines in other services, such as flood protection.

The concept of environmental infrastructure is sometimes used interchangeably with the concept of ecosystems and natural capital, which are comprised of forests, wetlands, estuaries, soils, and coral reefs among others. The maintenance of this stock—the natural capital—is essential for sustainable economic development and human well-being. Investment in environmental infrastructure is therefore critical for maintaining a sustainable economic productive base.

The Green Economy Initiative's (GEI) environmental infrastructure activities will be informed by and build on The Economics of Ecosystems and Biodiversity (TEEB) initiative, which was launched in 2007 by the Environmental Ministers of the G8 plus Brazil, China, India, Mexico, and South Africa. TEEB, whose first phase is now completed and second phase hosted by UNEP, is focused on estimating the economic costs and benefits of biodiversity and ecosystem protection. GEI's environmental infrastructure project will use these results to further establish the relationship between environmental infrastructure investment and economic development and stability.

This note does not attempt to provide a comprehensive analysis of the environmental infrastructure or ecosystem services. Rather, some basic facts and trends within ecosystems are presented as a means of stimulating discussion on the best way forward for promoting environmental infrastructure investment within the GEI.

Status

- Human-led species extinction rates are now 1,000 percent higher than the “natural” rate of extinction. Each year, flora and fauna species extinction amounts to about 6 percent of global gross national income.
- Over the past 300 years, the global forest area has shrunk by around 40 percent. Deforestation is occurring at a rate of about 13 million hectares per year, resulting in an annual loss of \$2.5 trillion worth of ecosystem goods and services.
- Half of the world's wetlands that are vital to biodiversity, can naturally purify freshwater, and serve as effective barriers against coastal storms, have been destroyed. Now, representing 6 percent of land area, wetlands fix 20 percent of the earth's carbon and produce 25 percent of the world's food from fisheries, agriculture, and hunting.
- Currently, only 22 percent of the world's fisheries are sustainable and less than one percent of the world's oceans have been placed under protection.

Prospects

- \$45 billion invested annually in the world's 100,000 national parks and protected areas could conserve their \$5 trillion worth of goods and services and boost employment and livelihoods for millions of indigenous and rural people. Costa Rica has invested around \$200 million in protection of forests for ecosystem services and Mexico is paying 1.5 million rural people to manage forests and watersheds.
- Tourism as a whole is the world's largest industry. By one account, tourism and recreation account for \$9.6 billion of the total \$29.8 billion global net benefit of coral reefs.
- The cost to conserve coral reefs, whose fishery, tourism and flood protection services are estimated at between \$100,000 and \$600,000 per square km, is only 0.2 percent of the value of the ecosystem protected.
- A global marine protected area network, involving the closure of 20 percent of total fishing grounds, could sustain fisheries worth \$80-100 billion a year. Such action would assist in conserving an estimated 27 million jobs while generating one million new ones.
- \$17 billion to over \$30 billion annually could halve the 20 percent of global greenhouse gas emissions caused by deforestation, while securing livelihoods and boosting conservation-related employment in tropical countries.
- Scientists have estimated that restoring the 4800 km² of wetlands lost from the Mississippi delta prior to Katrina could provide increased flood protection, but also a number of other ecosystem services, worth in total an estimated US\$ 6 billion a year.

Drivers

- A number of ecosystem-related Multilateral Environmental Agreements (MEAs) call for increased financial resources for actions on ecosystems.
- The Millennium Development Goals (MDGs) include a number of targets whose attainment relies on the health of environmental infrastructure. Wetlands, for example, are critical for ensuring access to freshwater.
- In a number of rapidly developing emerging economies, decline in environmental infrastructure have started constraining economic growth. Examples include shortage of water supply, soil degradation, and deforestation, which causes sand storm across countries.
- Conflicts over ecosystem services have been on the rise, especially in the case of water.
- Prospects of international payments for ecosystem services can generate interest in investing in ecosystem restoration and conservation activities. An example is the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD Programme). Established in July 2008, UN-REDD is to allow multinational donors to pool resources in support of developing countries' forest conservation efforts.

Main issues

- It may be more difficult to make a convincing and tangible economic case for investing in ecosystems as compared to other green sectors. Monetary valuation exercises alone may not be adequate to make such a case. Establishing the macroeconomic significance of ecosystems is technically challenging.
- Interest in payments for ecosystem services is rising, but most of the funding for such payments currently comes from the public sector or voluntary contributions. There is a lot of interest in pursuing and scaling up market-based payment systems. Given the persistent public-goods nature of environmental infrastructure, however, the scope for private payments may be limited.
- Unlike the climate regime, the biodiversity regime does not include any mandatory targets and enforceable mechanisms to reduce biodiversity loss and ecosystem degradation.
- The equitable access and use of ecosystem services, in particular the regulating and cultural services can be a challenge. Market based approaches may be problematic and public sector intervention may be essential.