

EarthTrends Featured Topic:

Findings of the Millennium Ecosystem Assessment: How do the Poor Fare?

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The Millennium Ecosystem Assessment (MA) was a four-year, international effort to document the contribution of ecosystems to human well-being, assay the current state of ecosystem health, and offer a prognosis for how the capacity of ecosystems to support human needs may change under different management scenarios. The intent was to provide decision-makers scientifically credible information to help them manage ecosystems more sustainably while meeting human development goals.

The MA was a remarkably broad-based effort. Completed in 2005, it involved over 1300 scientists from 95 countries. It found that humans have altered the structure and functioning of the world's ecosystems more substantially in the second half of the twentieth century than at any time in human history. As a result, 15 of the 24 ecosystem services the MA assessed are now being degraded or used unsustainably (MA 2005a:viii, 1, 6).

This unsustainable use stems from the fact that humans often favor some kinds of ecosystem production—such as the provisioning services of food and fiber production—at the expense of other services that ecosystems can render, such as biodiversity, water purification, or natural pest control. The MA showed that such trade-offs among different ecosystem services are the norm. Particularly over the past hundred years, human management of provisioning services (food, timber, water, and other commodities) has degraded the

ability of ecosystems to provide regulating services, such as flood control or pollination. Cultural services such as recreation and the aesthetic and spiritual appreciation of nature have also suffered.

At the same time, the findings of the MA have shed new light on the importance of ecosystems to the poor and how ecosystem degradation impairs the livelihoods of the poor. Poor people, particularly those in rural areas in developing countries, are more directly dependent on ecosystem services and more vulnerable when those services are degraded or lost (MA 2005a:2-14).

The MA findings document many examples of the human toll on ecosystems. Approximately 35 percent of mangroves have disappeared in the last two decades. Twenty percent of the world's coral reefs have been lost and an additional 20 percent are degraded. Water withdrawals from rivers and lakes have doubled since 1960. Nitrogen flows to the environment have also doubled, while phosphorous flows have tripled between 1960 and 1990. Landings from inland and marine fisheries have declined due to overexploitation. Fuelwood used for energy is scarce in many parts of the world. Some 10-20 percent of drylands are degraded (MA 2005a:2, 26, 31, 34).

Ecosystem Degradation and the Poor

The MA highlights the relationship between the poor and ecosystem goods and services. While everyone is affected by ecosystem degradation, the poor

suffer the harmful effects disproportionately. In fact, the disparities between the poor and rich have grown in recent decades. For instance, despite global increases in the amount of food available per capita, over 800 million people remain undernourished, and food production per capita has actually decreased in Sub-Saharan Africa. While water availability has increased in many regions of the world, half of the urban population in Africa, Asia, Latin America, and the Caribbean suffer from contaminated water and its burden of disease. Ecosystem degradation has very real human and financial costs. The burning of 10 million hectares of Indonesia's forests in 1997-8 resulted in additional health care costs of US\$9.3 billion and affected some 20 million people (MA 2005a:2, 13, 51, 57, 62).

The poor have also suffered from loss of access to ecosystems through privatization of what were formerly common pool resources. Examples include inland and coastal fisheries, which the MA findings reveal to be in steep decline. Smallscale fisheries are of great value to the poor, providing an inexpensive source of protein and supplemental income. Increasingly, coastal areas that were once open fishing grounds are being converted for use in shrimp farming and other forms of aquaculture. The harvest from aquaculture ponds or cages is typically exported, and both the income and the protein bypass the local poor. Countries where extensive conversion of coastal habitats for aquaculture is taking place include Ecuador, Thailand,

Vietnam, Honduras, Chile, Indonesia, the Philippines, Bangladesh, and India (MA 2005b:25.13).

The MA findings also confirm that the substantial degradation of ecosystems that is now occurring is a barrier to achieving the Millennium Development Goals. For example, the MA warns that meeting the goals of eradicating hunger and reducing child mortality by 2015 will be unattainable if ecosystems

continue to be used unsustainably. Soil degradation and water scarcity are two important sources of risk to the production of agroecosystems, and thus to the food supply, particularly as it affects the poor. The MA makes it clear that failure to tackle the current decline of ecosystem health will seriously erode efforts to reduce rural poverty (MA 2005a:61).

For more information on the Millennium Ecosystem Assessment and its findings, see: <http://www.maweb.org>.

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GLOBAL STATUS OF PROVISIONING, REGULATING, AND CULTURAL ECOSYSTEM SERVICES EVALUATED IN THE MILLENNIUM ASSESSMENT

The table below summarizes the MA's finding on ecosystem services. The "Status" column indicates whether in the recent past the condition of the service globally has been enhanced (▲) or degraded (▼) or whether there has been no consistent global pattern (▲+▼)

Service	Subcategory	Status	Notes
PROVISIONING SERVICES			
Food	crops	▲	Substantial production increase
	livestock	▲	Substantial production increase
	capture fisheries	▼	Declining production due to overharvest
	aquaculture	▲	Substantial production increase
	wild foods	▼	Declining production
Fiber	timber	▲+▼	Forest loss in some regions, growth in others
	cotton, hemp, silk	▲+▼	Declining production of some fibers, growth in others
	wood fuel	▼	Declining production
Genetic resources		▼	Lost through extinction and crop genetic resource loss
Biochemicals, natural medicines, pharmaceuticals		▼	Loss through extinction, overharvest
Fresh Water		▼	Unsustainable use for drinking, industry, and irrigation; amount of hydro energy unchanged, but dams increase ability to use that energy
REGULATING SERVICES			
Air quality regulation		▼	Declining ability of atmosphere to cleanse itself
Climate regulation	global	▲	Net source of carbon sequestration since mid-century
	regional and local	▼	Preponderance of negative impacts
Water regulation		▲+▼	Varies depending on ecosystem change and location
Erosion regulation		▼	Increased soil degradation
Water purification and waste treatment		▼	Declining water quality
Disease regulation		▲+▼	Varies depending on ecosystem change
Pest regulation		▼	Natural control degraded through pesticide use
Pollination		▼	Apparent global decline in abundance of pollinators
Natural hazard regulation		▼	Loss of natural buffers (wetlands, mangroves)
CULTURAL SERVICES			
Spiritual and religious values		▼	Rapid decline in sacred groves and species
Aesthetic values		▼	Decline in quantity and quality of natural lands
Recreation and ecotourism		▲+▼	More areas accessible but many degraded
Source: Millennium Ecosystem Assessment 2005a			