

An IIED Briefing

Making poverty reduction irreversible: development implications of the Millennium Ecosystem Assessment

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Development is achieved through growing and managing the 'portfolio of assets' available to a household or a nation. Soils, water, plants and animals often make up the biggest chunk of poor people's assets. The **Millennium Ecosystem Assessment (MA)** has taken stock of these environmental assets worldwide. It reveals that fully sixty percent are being degraded – with poor people disproportionately suffering the consequences such as shortage of clean water, floods and droughts. Yet the MA also identified instances of effective asset management – proven 'Response Options' that deserve scaling up. This briefing note identifies the major developmental implications of the MA, and calls for action in four areas:

- **Information** – getting information on environmental assets and hazards to the heart of development planning
- **Institutional reform** – encouraging ecosystem management by poor people and local organisations, and enabling better oversight by national authorities
- **International cooperation** – increasing aid and benchmarking it against just how far off-track we are on MDG7 (the 'environmental sustainability' goal)
- **Investment vehicles and budgets** – to support long-term environmental management in key environmentally-sensitive sectors

Action on these is so urgently required that we can no longer avoid asking what it will cost. We propose '**Millennium Ecosystem Budgets**', globally and nationally.

Why should development organisations respond to the Millennium Ecosystem Assessment?

The MA is 'a critical evaluation of information concerning the consequences of ecosystem changes for human well-being, for the purpose of guiding decisions on complex public issues' (Millennium Ecosystem Assessment, 2005a). The MA's credentials are impressive: called for by the UN Secretary General in 2000, it was authorized by UN member governments through four multilateral environmental conventions. It was prepared by 1360 experts from 95 countries. In addition to a global assessment, the MA

includes information from 33 sub-global assessments. Its credibility and accuracy were assured through independent review by 850 experts and governments, and an 80-person board of review editors.

The MA's stock take is far reaching, but this is also its major drawback. It comprises more than 3000 pages, in 81 chapters, addressing multiple questions, with a mandate to be 'policy-relevant, but *not* policy-prescriptive' – in all, quite a challenge to any reader. This might partly explain why the MA and the Millennium Development Goals (MDGs), despite their shared Millennial timing and multilateral mandates, and their analyses showing close links between

poverty and environmental problems, are not closely aligned. This paper suggests how to improve that alignment. Four characteristics of the MA put this prospect within reach:

- The MA assessed ecosystem-people links. This led it to conclude that drylands are a priority – since many poor people are vulnerable to the poor soils and limited water supply – rather than the coral reefs or tropical rainforests that one might expect to head a list of ‘environment’ priorities.
- The assessment is organised in terms of *the services that people obtain* from ecosystems: ‘provisioning’ services like food, fresh water and fibre; ‘regulating’ services like climate and flood regulation; ‘supporting’ services like soil formation and nutrient cycling; and ‘cultural’ services like spirituality, aesthetics, education and recreation.
- The MA offers a unique catalogue of ‘response options’ proven to make better and more sustainable use of ecosystem services. Although the more dramatic MA messages are negative, it also offers many ‘can-do’ ideas and experiences.
- Finally, the MA offers a conceptual – and potentially a political – *bridge* between the too separate worlds of environment and development. Although it was launched by environmental conventions, its dual focus on human and ecosystem well-being offers a real link to institutions concerned about the MDGs.

What do the MA’s conclusions tell us about development?

The MA’s main message is that we are spending the Earth’s natural capital at excessive rates, straining its ability to support everybody in current and future generations, but particularly poor people. Fifteen of the 24 ‘ecosystem services’ reviewed have been degraded or unsustainably used (see table). This represents the loss of a capital asset and thus undermines human well-being and will prove to be a major barrier to achieving the MDGs. This degradation is not just a gradual, predictable problem that can be solved in due course: for some services there is increasing risk of non-linear system collapse – notably climate, water and disease regulation and marine fisheries. Things will get worse before they improve – even more so with predicted growth in demand for food crops (70-85% by 2050) and freshwater (30-85%).

Most worryingly, the MA notes that while millions of people have benefited from ecosystem transformation and species exploitation (the increase in food production from modern agriculture has been a major societal benefit) the benefits have not been equitably distributed. The harmful effects of the degradation of ecosystem services are being borne disproportionately by the poor, are contributing to

the growing inequities and disparities across groups of people, and are sometimes the principal factor causing poverty and social conflict. The problem is one of trade-offs. Modification of ecosystems to enhance one service generally comes at a cost to other services and these impacts affect different people in different ways. Poor people are more directly reliant on ecosystem services to support their day to day livelihoods and, with limited other resources, are more vulnerable to their degradation: “...people with low resilience to ecosystem changes – mainly the disadvantaged – have been the biggest losers and witnessed the biggest increase in not only monetary poverty but also relative, temporary poverty and the depth of poverty.” (MA 2005b: 40)

Whilst some ‘Response Options’ can help to reverse much of the degradation and to make sustainable use of environmental assets for development, the changes required

MA 2005a Ecosystem service enhancement or degradation – MA findings

ECOSYSTEM SERVICE		Service being: enhanced? ↑ degraded? ↓
Provisioning services		
Food	Crops	↑
	Livestock	↑
	Capture fishery	↓
	Aquaculture	↑
	Wild foods	↓
Fibre	Timber	↑ ↓
	Cotton/hemp/silk	↑ ↓
Genetic resources		↓
Biochemicals and medicines		↓
Freshwater		↓
Regulating services		
Air quality regulation		↓
Climate regulation	Global	↑
	Regional + local	↓
Water regulation		↑ ↓
Soil erosion regulation		↓
Water / waste treatment		↓
Disease regulation		↑ ↓
Pest regulation		↓
Pollination		↓
Natural hazard regulation		↓
Cultural services		
Spiritual and religious values		↓
Aesthetic values		↓
Recreation and ecotourism		↑ ↓

in policy and practice are substantial. This is because the problems are partly due to richer people's greater access to environmental assets, and associated over-consumption and waste; and partly to the resource-intensive infrastructure systems and development patterns that prevail everywhere. This 'locking-in' is a stubborn legacy: the MA highlights the huge stresses it has placed on ecosystem services over the last fifty years, and presents worrying scenarios for the next fifty.

The MA confirms the finding of the UN Millennium Project that 'the environment is the foundation on which strategies for all MDGs must be built'. It implies that much more investment is needed to secure that foundation, but few details are offered. Now is the time to identify key investments, their costs, and the returns they can offer.

What is the case for investing in environmental assets?

Good development entails:

- increasing the asset base and its productivity per person;
- empowering poor people and marginalised communities;
- reducing and managing risks;
- taking a long-term perspective including subsequent generations.

The environment is central to all four of these requirements. Here we discuss the particular importance of environmental assets and hazards to poor people, and the problems of under-investment in environmental management in developing countries. Whilst the MA highlights the many dangers that a continued lack of investment will bring, recent work from the World Bank and the Poverty Environment Partnership¹ begins to lay out the case for investment.

Poor people are disproportionately dependent upon soils, water, wildlife, and other environmental assets. At national level, these account for 26% of the wealth of low-income countries – disproportionately higher than the 2% they provide in OECD countries (World Bank 2005). At household level, poor people with limited access to financial, human, or physical assets often have only environmental assets on which to base their livelihoods. These assets can at the very minimum act as safety nets - preventing people slipping further into poverty - but sometimes offer 'stepping stones out of poverty' (WRI 2005). Overall, environmental assets provide roughly two-thirds of household income for the rural poor (WRI 2005)

1. The Poverty Environment Partnership is a network of bilateral aid agencies, multilateral development banks, UN agencies and international NGOs that aims to address key poverty-environment issues within the framework of international efforts to achieve the Millennium Development Goals.

- thus environmental assets drive 'pro-poor' development - even if they are too often perceived by the development community as brakes on development. In spite of this role, environmental assets are under-supplied: OECD levels of environmental wealth per person are four times that of low-income countries (World Bank 2005). Poor people are also disproportionately vulnerable to environmental hazards: 97% of the world's deaths from natural disasters are suffered in low-income countries (Abramovitz 2001). Within those countries, the poorest people often have no choice but to live in the least desirable areas – those that suffer more landslides, floods, poor sanitation, or pollution.

Finally, the sheer size of economic sectors that are environmentally sensitive is reason enough to warrant regular environmental accounting and investment in countries that depend upon them for development. The MA notes the market value of ecosystem-service industries:

- Food production: \$980 billion per year
- Timber industry: \$400 billion per year
- Marine fisheries: \$80 billion per year
- Marine aquaculture: \$57 billion per year
- Recreational hunting and fishing: >\$75 billion per year in the USA alone

Such levels of dependency and vulnerability would suggest that returns to environmental investment could be high. The late David Pearce and colleagues from IUCN and IIED found this to be the case when they reviewed 400 separate economic assessments for the Poverty Environment Partnership (Pearce 2005). Even with conservative assumptions, they identified promising rates of return:

- controlling air pollution <15:1
- clean water and sanitation <14:1
- natural disaster prevention <7:1
- mangrove conservation <7:1
- coral reef conservation <5:1
- soil conservation <4:1

These rates would be higher still if longer time frames were taken into account in the calculation, and the diverse needs of the poor were given due weighting. Furthermore, investment in social capital, such as common property regimes that improve the management of environmental assets, is also promising. However, a range of policy, institutional, market and information constraints tend to reduce the apparent rate of return and establish a bias against environmental investments. Clearly, several things need to change if under-investment in environmental assets is to be tackled: we propose the following agenda.

From asset stripping to environmental investment: a development agenda that responds to the MA's major conclusions

To secure the 'environmental foundation on which strategies for all MDGs must be built' (UN Millennium Project 2005), we propose an agenda addressing the four 'Is' referred to in the summary: Information, Institutions, International cooperation and Investment. For each, three practical ideas are suggested as starting points. Some of them will be explored in future 'Environment for the MDGs' briefings.

Information – getting environmental information to the heart of development planning and action.

The MA framework, with its focus on the utility of environmental assets for people's well-being, is increasingly identified as an excellent way to keep track of key assets on which poor people depend. The challenge is both to generate demand for this information, and to structure information systems so that they inform policy and action. Ultimately, the preparation of new forms of national wealth accounts that take into account produced capital, natural resources, and human capabilities is desirable to identify the relative – and changing – status of national environmental assets.

As steps in this direction, three useful starting points are suggested:

1. Including basic environmental information in **poverty monitoring systems**, initially for programmes and ultimately at national level. Environmental deprivations – dirty water, lack of access to fertile soils, and so on – are identified by the poorest people as being as significant a part of poverty as low 'dollars per day'. Poverty mapping is one way to do this – identifying where poor people live and the status of associated ecosystem services.
2. **Examining environmental expenditure within public expenditure reviews.** For environmentally sensitive sectors, it is helpful to know what has been spent on environmental management, and to ask what environmental expenditure can contribute to agreed outcomes such as the MDGs.
3. **Undertaking strategic environmental assessments (SEAs) of major policy initiatives** such as poverty reduction strategies (PRSs) and sector development plans. Recent guidance from the OECD-DAC on how to conduct SEAs is based on best practice in developing countries (OECD 2006).

Institutions – capacity strengthening and reform to integrate environment and development.

Although the MA was largely a technocratic process, and did not delve into issues of power and politics, it offers enough evidence to suggest that we are going to have

to 'rewire' the institutional landscape if we are to secure the environmental foundations of development. Firstly, most of the effective 'Response Options' identified by the MA require multi-stakeholder or multi-level interactions. Secondly governments need to create incentives for poor people and businesses to invest in environmental assets, and then encourage them to use these assets wisely, thus creating a sustainable revenue and tax base. A large part of this conducive environment will comprise recognising and supporting local groups' rights to environmental assets, their local environmental management knowledge, and their 'voice' on environmental values.

Three starting points include:

1. Strengthening **national environmental authorities**, so that they are able to keep track of environmental assets, their use, and associated investments, revenues and rights – requiring improved ability to cooperate across sectors
2. Supporting **local organisations** that can balance environment and development needs, including community and common property regimes
3. Ensuring that major development initiatives (e.g. PRSs) are well-linked to effective **multi-stakeholder environment fora** and to civil society '**watchdogs**', to improve transparency, accountability and interaction

International cooperation – improving international payments for ecosystem services and aid for pro-poor investments.

In the medium term, there is much to be done to develop means to pay for global public goods, building on the very limited experience of the Clean Development Mechanism and the Global Environmental Facility. In the shorter term, there are several key starting points that international cooperation is well placed to tackle:

1. **Benchmarking aid against MDG7** and increasing support to those environmental investments that offer high returns for poverty reduction – given how far off-track progress is on MDG7.
2. **Including poverty-environment indicators in MDG7** and the other MDGs – notably indicators that are missing such as climate change vulnerability, learning from what countries are voluntarily reporting to the United Nations.
3. Encouraging use of the **MA framework in 'MDG based national strategies'** and other development plans – building on UNDP's lead in this area.

Investment – improved advice, budgeting and finance vehicles that support long-term environmental management.

Severe under-investment in environmental assets needs to be tackled, especially in environmentally sensitive sectors and livelihoods. To increase market led investment, the key issue

is to support stable ecosystem service markets – requiring good science (for example to assure reliable production of the service in question) and equitable legal and policy regimes (including considering the needs of poor people as producers or consumers of environmental services). To increase governmental investment, innovative long-term finance models need to be developed, e.g. as suggested in the UN's New Public Finance (UNDP 2005).

Three starting points include:

1. **Reviewing the budgets and investment sources of major sectors that are environmentally sensitive**, such as health, infrastructure, energy, tourism and agriculture. Many will be 'feeling the burn' of current or approaching environmental problems, from the market, insurers, other stakeholders, and their operations. Many will also have significant investment budgets that could be influenced with better information on environmental benefits. Such sectors may be a more effective starting point than a fully comprehensive approach to 'environmental mainstreaming'.
2. **Identifying easy gains in environmental fiscal reform.** A recent review has revealed many ways in which tax reform can both protect key environmental assets and realise revenue for poverty reduction. National exploration of these win-win potentials is overdue (OECD 2005).
3. **Constructing 'Millennium Ecosystem Budgets', globally and nationally.** The MA did not go as far as postulating a 'Millennium Ecosystem Budget' – and neither did the Millennium Project which 'costed' all MDGs comprehensively, with the exception of MDG7. Because of these oversights, the Poverty Environment Partnership offered an initial attempt. PEP suggests that \$60-90 billion are needed each year to meet MDG7 targets regarding water, sanitation, slums, clean air, land degradation, energy and protected areas (Pearce 2005). To meet climate change targets, PEP suggests a wider range – from \$80-1100 billion, depending upon assumptions.² All these figures compare rather well with the \$1065 billion annual cost of subsidies to industry, energy, transport, agriculture and forestry. However, priority environmental investments will differ between countries. The key platform on which national budgets can be constructed should be national ecosystem assessments conducted along the lines of the MA. Sachs and Reid (2006) suggest that it will cost just \$0.2 billion over five years to conduct national assessments in developing countries – an excellent initial investment.

Following its launch in 2005, it would be fair to ask how the MA's intensive efforts are being followed up. The MA closely follows the model used by the Intergovernmental Panel on Climate Change (IPCC) – a scientific assessment

that has been critical to formulating climate change policy. It is hoped that the MA will be similarly influential in realising a step change to ensure that development practice acts on environmental potentials and limits. But there is one difference. The IPCC's mandate continues, enabling policy and practice to adapt to new scientific findings. In contrast, the MA has already come to a close.

Like a one-off firework display for the Millennium, the MA revealed a great deal all in one go, but those who prepared it soon returned home. The spirit of the MA is being kept alight in some quarters concerned with development – notably by the Nordic Council of Ministers, which hopes to see the MA's findings influence development policy, and by UNDP, which is promoting use of the MA analytical framework in its support to 'MDG based national development strategies'. But far more needs to be done to continue the MA's work - at very least to illuminate more consistently and constantly our changing management of environmental assets, and preferably also to inspire improved institutions, international cooperation and investment.

2. To stabilise C at 550 ppm – although it now looks as though 400 ppm will be needed, requiring more investment.

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