

Integrated Solutions for Biodiversity, Climate Change and Poverty



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Key Messages

- Biodiversity is key to how well people can adapt to climate change. The poor will need to be involved in any planning and decision-making and must ultimately be able to derive sustainable livelihoods from these resources
- We need to set different policy directions, change incentive structures, reduce or phase out perverse subsidies, and engage business leaders in a vision for a new economy. Holistic economics – or economics that recognize the value of nature’s services and the costs of their loss – is needed to set the stage for a new “green economy”
- Environmental limits need to be established in order to ensure society remains within them in order to achieve sustainability. This is based on four principle criteria: long-term environmental effectiveness, equity consideration, cost effectiveness, and, overall institutional compatibility of the policy combinations
- Ecosystem-Based Adaptation (EBA) is an emerging approach that works with nature to help vulnerable communities and build resilience of their ecosystems and livelihoods being threatened by climate change impacts. It can also generate significant multiple benefits such as social, economic and cultural.

Summary

The rationale for this Policy Brief is to make clear the vital benefits of integrating biodiversity conservation and ecosystem management by taking the Ecosystems-based Adaptation approach along with the Green Economy Initiative to achieve equitable multiple ‘win-win’ objectives to ensure the continued well-being of human society in the future.

Biodiversity is the variety of all life, from genes to species that form the complex interactions of life and habitats that make up ecosystems. Biodiversity is intimately linked to the earth’s climate and inevitably to climate change as it is the foundation for the natural processes of climate regulation. Biodiversity and poverty are also inextricably connected. Changes to ecosystems influence both the climate and people’s ability to cope with its adverse impacts. In return, climate change and people’s responses to it, affect biodiversity. Understanding these inter-relationships clearly shows that conserving and managing biodiversity protects the resilience of natural systems and so helps all people, particularly the most vulnerable, to cope with a shifting global climate. This increasing dependency of human society on biodiversity and ecosystems services is occurring at a time when biodiversity is suffering a considerable loss. It is estimated that the current species extinction rate is between 1,000 and 10,000 times higher than it would naturally be¹. Such extinction rates have already been seen as exceeding the ‘safe limits’ for a viable human society². Therefore urgent support is needed to develop local solutions to biodiversity loss which also provide benefits for climate change mitigation and adaptation and especially poverty alleviation and economic growth.

Towards the end of 2010 there exists a significant opportunity for major players to embrace an integrated solution by tackling in a coordinated fashion these two most important environmental issues of biodiversity loss and climate change. The year 2010 is the International Year of Biodiversity, and in October the Parties to the Convention on Biological Diversity convene their 10th meeting in Nagoya, Japan. Shortly afterwards, the sixteenth meeting of the Conference of the Parties to UNFCCC takes place in Mexico to further negotiate strategies to deal with climate change.

UNEP recommends that the CBD be strengthened to optimise biodiversity conservation for climate change mitigation and adaptation and that the UNFCCC builds on the increasing recognition that ecosystems play a vital role in climate regulation.

¹ IUCN. See: <http://www.iucn.org/what/tpas/biodiversity/>

² Rockström et al (2009) Planetary boundaries: exploring the safe operating space for humanity. *Ecology and Society* 14: 32. See: <http://www.ecologyandsociety.org/vol14/iss2/art32>

The objectives of both Conventions are synergistic. Integrated efforts can protect biodiversity, support mitigation and adaptation to climate change, and, crucially, help alleviate poverty. In contrast, the continuing erosion of biological diversity and failures to tackle climate change undermine the foundations of human life support: ecosystems goods and services.

UNEP recommends that synergies between the CBD and UNFCCC are optimised for climate regulation, ecosystems services protection and poverty alleviation.

There is an urgent need to integrate strategies that link solutions for biodiversity conservation, climate change and human well being. A framework for doing so exists as the Ecosystems-based Adaptation approach.

UNEP recommends that Ecosystems-based Adaptation receives substantial funding support and becomes a core component of strategic planning for a sustainable future.



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Biodiversity is the variety of all forms of life, including genes, species, populations and ecosystems.

All ecosystem services such as the production of food and water; the control of climate and disease; nutrient cycles and crop pollination; all depend on biodiversity.

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What is biodiversity and ecosystem services?

Biodiversity is the variety of all forms of life, including genes, species, populations and ecosystems. Biodiversity underpins the essential goods and services that ecosystems provide and has value for current uses, possible future uses (option values), and intrinsic worth. There are between 5- 30 million distinct species on Earth; most are micro-organisms and only about 1.75 million have been formally described³. Collectively, the interactions of all the components that make up the total global biodiversity set the foundations on which human society has evolved.



³ http://intranet.iucn.org/webfiles/doc/SSC/SSCwebsite/Policy_statements/IUCN_Guidelines_for_the_Prevention_of_Biodiversity_Loss_caused_by_Alien_Invasive_Species.pdf

Humankind benefits from a multitude of resources and processes that are supplied by natural ecosystems. Collectively, these benefits are known as ecosystem services and include products like clean drinking water and processes such as the decomposition of wastes. While scientists and environmentalists have discussed ecosystem services for decades, these services were popularized and their definitions formalized by the United Nations 2005 Millennium Ecosystem Assessment (MA), a four-year study involving more than 1,300 scientists worldwide⁴.

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 benefits⁵.

All these services depend on biodiversity.

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Many people are using natural resources and biodiversity, including genetic diversity, as part of the adaptation process.

The rural poor already rely heavily on wild food sources and medicinal plants to supplement diets and maintain health.

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Interlinkages between Climate Change, Biodiversity and Ecosystems Services

In its Fourth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) states with ‘very high confidence’ that human activities since 1750 is the major cause of worldwide trends of global warming. For the next two decades, says the IPCC, about 0.2 °C of warming per decade is projected. Among the many knock-on effects are a sea level rise of more than 50 cm by 2100. It is also likely that between 20 and 30 per cent of plant and animal species assessed will be at greater risk of extinction if the rise in global average temperatures exceeds 2-3 °C⁶ ⁷.

How climate change affects biodiversity

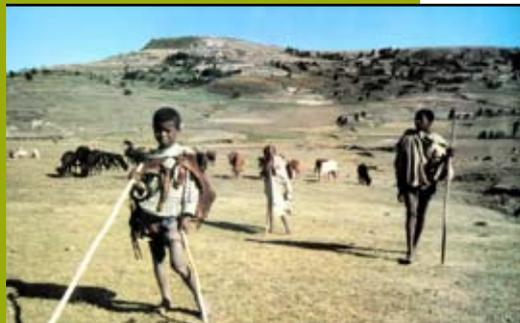
The 2005 Millennium Ecosystem Assessment (MA) estimates that by the end of this century, climate change will be the main driver of biodiversity loss. Along with predicting a higher risk of species extinctions, the IPCC says that temperature increases up to 3 °C are also very likely to trigger substantial changes in the structure and functioning of all ecosystems. Climate change

⁴ Millennium Ecosystem Assessment (MEA). 2005. Ecosystems and Human Well-Being: Synthesis. Island Press, Washington. 155pp.

⁵ Millennium Ecosystem Assessment 2005; Kraft, Valencia, and Ackerly 2008; Gitay and others 2002.

⁶ IPCC (2007) The Intergovernmental Panel on Climate Change Fourth Assessment Report. Summary for Policymakers. See www.ipcc.ch/SPM2feb07.pdf.

⁷ Fischlin, A. et al. (2007) Ecosystems, their properties, goods, and services. In Climate Change 2007: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. M. L. Parry et al. (eds.). Cambridge University Press, Cambridge, 211-272.



will have a number of impacts on biodiversity, from ecosystem to species level⁸. Perhaps the most obvious is the effect that changes in rainfall distribution, temperature; flooding and sea level rise will have on ecosystem boundaries and the functions within them. As a result of these changes in functions and shifts in boundaries, some ecosystems will expand into new areas, while others will become smaller. Habitats will change as rainfall and temperatures change, and some species will not be able to adapt, leading to a sharp increase in extinction rates.

The impacts of climate change on biodiversity will vary from region to region. The most rapid changes in climate are expected in the far north and south and in mountainous regions. These also happen to be the regions where species are more likely to become trapped, with no alternative habitat to which they can migrate. Species with small fragmented populations, or populations restricted to small areas, are also especially vulnerable to any climatic shifts.

Higher water temperatures have already caused devastating losses of biodiversity in coral reefs⁹. Global warming is also causing shifts in the reproductive cycles and growing seasons of certain species, which can in their turn affect how ecosystems function. The equilibrium of ecosystems can also be upset when, for example, insect pests and microbial pathogens previously unknown in a region survive the warmer winters. Migrating species may be affected dramatically by any changes to stopover sites key to their survival, or when seasonal availability of food sources is no longer synchronized with migration times.

Using biodiversity to cope with climate change impacts

From the IPCC report, scientists agree that even if greenhouse gas emissions were to stabilise soon (an unlikely scenario, given the current increasing rate of emissions, slow pace of inter-governmental negotiations on curbing/reducing greenhouse gas emissions) global warming and sea level rise will persist for centuries. This is down to the timescales associated with climate dynamics and feedback processes. So the need to adapt to climate change impacts is inevitable. It is already happening across the globe. Many people are using natural resources and biodiversity, including genetic diversity, as part of the adaptation process. For instance, wild relatives of food crops are used to breed new varieties that can cope with changing conditions. In many regions of the developing world, the rural poor already rely heavily on wild food sources and medicinal plants to supplement diets and maintain health. Some species are used on a daily basis; others gain in importance during periods of drought or stress. In times of need some farmers may plant crop varieties resistant to floods, drought or saline conditions. A diverse genetic base is key to producing varieties from which such characteristics can be developed.

⁸ Reid, H. (2006) Climatic change and biodiversity in Europe. *Conservation and Society* 4(1): 84-101.

⁹ Leahy, Stephen(2007). "Environment: Between a Reef and a Hard Place." *NoticiasFinancieras*.

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People living in poor countries are disproportionately vulnerable to the loss of biodiversity and reduced ecosystem services as they solely depend on these services.

This dependence means the impact of climate and other environmental changes on biodiversity and ecosystem services poses a real threat to the livelihoods, food security and health of the poor.

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Changes in priorities and active and adaptive management will be needed to maintain biodiversity under a changing climate.

The actions taken must function within environmental limits imposed by resource availability and renewal rates.

There is need for the formulation and evaluation of economic and policy mechanisms based on long term environmental effectiveness, equity, cost effectiveness and Institutional compatibility

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Conserved ecosystems offer many other services vital for adapting to climate change. Wetlands are important reservoirs for floodwater. Vegetation used as live hedges protects agricultural land from excessive water or wind erosion in times of heavy rainfall or drought. And by stabilising slopes on hillsides, vegetation also reduces the risk of landslides when rain comes in heavy bursts over prolonged periods. Watersheds with intact plant cover slow surface runoff feeding rivers and thus reduce flood risks downstream. Mangroves are coastal buffers renowned for dissipating the energy of waves braking onshore and therefore protecting against cyclone damage to coasts and seaside communities.

Interlinkages between Poverty, Climate Change and Biodiversity

People living in poor countries are disproportionately vulnerable to the loss of biodiversity and reduced ecosystem services. And although they are responsible for emitting the lowest levels of greenhouse gases, they suffer most from the impacts of climate change. Recognizing this, the United Nations Framework Convention on Climate Change (UNFCCC) asserts that there are ‘common but differentiated responsibilities’ for tackling climate change. But along with the Convention on Biological Diversity (CBD) and the Millennium Development Goals (MDGs), these agreements do not specify the strategies and methods to be used by parties to each agreement to meet their stated aims. While links between climate change, biodiversity and poverty are clear, and there is an obvious imperative to support projects and activities that meet the objectives of all three agreements, in practice these tend to be thin on the ground. And in some cases, activities intended to meet the goals of one agreement may negatively affect the goals of another. As such the integration of objectives can be improved through stronger linkages between Conventions, better research and inter-disciplinary thinking and a wider engagement between the public, governments, agencies and other stakeholders.

Geographic location is a key factor in the vulnerability of poor people and poor nations. Many of these countries lie in the regions most at risk from climate change (such as drought-prone sub-Saharan Africa); many of the poor may live in marginal areas such as floodplains or at the foot of unstable hillsides. Poor people also have the fewest choices available to them, and the lowest capacity, for example because of a lack of resources and mobility, to cope with climate change related shocks such as cyclones¹⁰.

Poor countries and their people also depend heavily on climate-sensitive sectors and natural resources. These include agriculture, fisheries, water supply, animal husbandry, forestry and tourism. As the MA points out, this dependence means the impact of climate and other environmental changes on biodiversity and ecosystem services poses a real threat to the livelihoods, food security and health of the poor.



¹⁰ Huq, S., Reid, H., Konate, M. et al. (2004) Mainstreaming adaptation to climate change in Least Developed Countries (LDCs). *Climate Policy* 4(1): 25-43

What can be done?

Changes in priorities and active and adaptive management will be needed to maintain biodiversity under a changing climate. In some places, active management will take the form of further improving protection from human interference, while in others conservation may need to include interventions in species and ecosystem processes that are stronger and more hands-on than today's. In all cases biodiversity values must be actively considered in the face of climate change and in the context of competing uses for land or sea. This requires an ongoing process to anticipate how ecosystems will respond to a changing climate while interacting with other environmental modifiers to change the dynamic interactions between species and therefore ecosystem functions.

The ability to anticipate such change will always be incomplete and far from perfect, so any management actions must be within a framework that is robust yet flexible and adaptive. Most importantly, the actions taken must function within environmental limits imposed by resource availability and renewal rates. As such, environmental thresholds need to be established in order to ensure society remains within them in order to achieve sustainability. Thus, there is need for the formulation and evaluation of economic and policy mechanisms based on four principle criteria, including;

1. Long term environmental effectiveness:

Environmental effectiveness refers to the degree to which combined development and climate policies stay close to the established thresholds. These thresholds are determined based on societal perception of risks associated with climate change impact and by views on what is considered as 'dangerous' and 'socially unacceptable'¹¹. Policy combinations that achieve a state well within biodiversity/environmental goals (thresholds), can be said to have a higher degree of effectiveness and should normally be preferred. The environmental effectiveness of any policy mix will therefore, depend on its coherence. For example, a policy mix that attempts to reduce the loss of biodiversity and ecosystem services by focusing only on the forest sector will be less effective than an alternative that considers biodiversity conservation/protection in all sectors.

2. Equity consideration:

In framing actions that functions within the environmental limits and protect biodiversity and ecosystems, the relative distributional impact on economic agents and natural systems must be considered ex ante. These considerations can be split into outcomes and processes. Outcomes in terms of the distribution of impacts and processes in terms of the distribution of responsibilities. In choosing a politically practically workable biodiversity framework, the incidence of the outcomes must be considered to be fair and balanced in order to enjoy wide acceptability.



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EBA encompasses a wide range of strategies that operate at multiple scales: local, national, and regional and through to global. The aim of the EBA is to facilitate climate change adaptation by both society and the environment in harmony

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¹¹ Beg et al;2002. Linkages between climate change sustainable development. *Climate Policy*, 2: 129-144

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Replacing our obsolete economic compass could help economics become part of the solution to reverse our declining ecosystems and biodiversity loss.

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3. Cost effectiveness:

The management of ecosystems to conserve biodiversity presents a cost effective method of protection from climate change to all people and environments through strengthening resilience, particularly for vulnerable societies and threatened ecosystems. Protection and sustainable management of the diverse range of ecosystems within the world offer substantial cost effective solutions to climate change mitigation and adaptation, with focused investment in ecosystems management having multiple benefits across a broad spectrum of sectors. Key to this are mechanisms that fully value ecosystems and the services they provide. The fundamental basis of this is that economic activities must not compromise the sustainability of an ecosystem (exceeding thresholds), and therefore balance must be sought within policies to achieve short-term economic goals and long-term sustainability.

4. Institutional compatibility of the policy combinations.

Whilst it would be easy to state that policies combinations need to be better integrated, monitored and regulated, this is not always possible due to political and economic differences (i.e. the Copenhagen Accord was not endorsed by the UNFCCC). Where a greater probability of success in achieving compatibility of policy combinations exists is in fostering a more visible global recognition of environmental issues. At the core of this is the way that the environment is valued and the extent to which acknowledgement given that all of society depends on biodiversity, ecosystems and the life supporting goods and services they provide. Thus the formulation and evaluation of economic activities and policies must consider as a first principle the effect the activity or policy will have on environmental quality and thus maintain it within safe threshold limits.



Ecosystem-based Adaptation

Ecosystem-Based Adaptation (EBA) is an approach that works with nature to help vulnerable communities build resilience of their ecosystems and livelihoods being threatened by climate change impacts¹². EBA can also generate significant multiple benefits such as carbon sequestration and other social, economic and cultural benefits. Healthy ecosystems and their services provide opportunities for sustainable economic prosperity while providing defence against the negative effects of climate change (Figure 1). Fundamentally, EBA is a cost-effective adaptation option that address the four principle criteria above and needs mainstreaming into national adaptation plans.

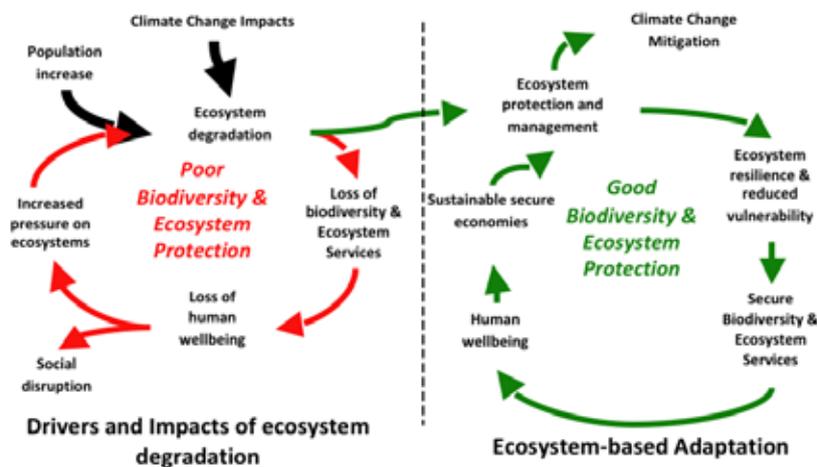


Figure 1. Beating the vicious cycle of poverty, ecosystem degradation and climate change

This is achieved through ecosystem management¹³, including sustainable resource use, biodiversity conservation and ecosystem restoration. The ecosystem management approach is supported by many national and international organisations including UNEP, World Bank¹⁴, IUCN¹⁵, WCMC¹⁶ and many others.

¹² IUCN Position Paper, UNFCCC Bangkok meeting, 28th Sept – 9th Nov 2009.

¹³ **Ecosystem management** can be defined as “an integrated process to conserve and improve ecosystem health that sustains ecosystem services for human well-being”. Here the ‘Ecosystem management’ term is used to encompass ecosystem-based mitigation and adaptation. Ecosystems are defined as encompassing all land and marine based natural and semi-natural systems, and associated land uses including conservation, sustainable livelihoods, pastoralism, agriculture and forestry.

¹⁴ See: http://siteresources.worldbank.org/ENVIRONMENT/Resources/ESW_EcosystemBasedApp.pdf

¹⁵ See: http://www.iucn.org/about/work/programmes/ecosystem_management/

¹⁶ See: <http://www.unep-wcmc.org/EAP/espa.aspx>

“ Replacing our obsolete economic compass could help economics become part of the solution to reverse our declining ecosystems and biodiversity loss.

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Ecosystem-based Adaptation (EBA) is a climate change adaptation response that achieves multiple goals:

- Continued support of human wellbeing through sustained biodiversity and ecosystem services provision.
- Climate change mitigation through ecosystem carbon sequestration capacity.

EBA encompasses a wide range of strategies that operate at multiple scales: local, national, and regional and through to global. The aim of the EBA is to facilitate climate change adaptation by both society and the environment in harmony¹⁷.

UNEP is currently developing an EBA programme whose overarching goal is to help vulnerable communities adapt to climate change through good ecosystem management practices, and their integration into global, regional, national and local climate change strategies and action plans. The EBA programme will deliver specific products and services responding to country needs to support EBA mainstreaming through three main overarching components. These are :

- i. Knowledge Support:** This component will also undertake analysis of ecosystem services for adaptation and their economic value, and help convert these results into a knowledge base with which decision-makers can design and implement priority EBA policies and projects.
- ii. Capacity Building and Demonstration:** This component will help create the enabling conditions for implementing EBA options in developing countries, including technology development and diffusion, piloting and demonstration and capacity building. Through technology development and diffusion, participating countries can access viable technologies for restoration and ecological engineering for adaptation and disaster risk reduction. Through piloting EBA approaches on the ground, and applying the results of knowledge support, countries and communities will be demonstrated with a combination of models including those building on community-based adaptation and micro-credit, making ecological, economic and financial laws work for adaptation.
- iii. Integration of EBA Options into National Adaptation Plans:** This component will help pave the way for the integration of EBA into national adaptation plans. A coordinated and integrated approach with institutional structures that are capable of mobilizing different stakeholders will be established through modifying the frameworks and processes that are used to develop or revise policies, programs and projects. The activities will include economic analysis of different EBA options, support for policy

¹⁷ <http://www.macauley.ac.uk/copenhagen/summary.html>

setting and legislation, as well as feasibility studies for large-scale investment in EBA projects. This will help build a sustainable policy and investment framework in the participating countries in which EBA can be integrated into national budgetary and investment plans

The need to place Biodiversity as the fundamental Unit of Economic Activity

The economic invisibility of nature in our dominant economic model is both a symptom and a root cause of biodiversity loss. We value what we can put a price on, but nature's services - providing clean air, fresh water, soil fertility, flood prevention, drought control, climate stability, etc - are, mostly, not traded in any markets and not priced. These so-called "ecosystem services" are all "public goods" provided free.

It is becoming increasingly accepted that the current global economic model of consumption is not sustainable, and that the system of measurement of economic growth compounds pressures on environmental thresholds. Replacing our obsolete economic compass could help economics become part of the solution to reverse our declining ecosystems and biodiversity loss. We therefore need a new compass to set different policy directions, change incentive structures, reduce or phase out perverse subsidies, and engage business leaders in a vision for a new economy. Holistic economics, or economics that recognize the value of nature's services and the costs of their loss, is needed to set the stage for a new "green economy"¹⁸.

The crisis of biodiversity loss can only begin to be addressed in earnest if the values of biodiversity and ecosystem services are fully recognized and represented in decision-making. This may reveal the true nature of the trade-offs being made: between different ecosystem services (food provision or carbon storage), between different beneficiaries (private gain by some, public loss to many), at different scales (local costs, global benefits) and across different time horizons. When the value of ecosystem services are understood and included within economic accounting, what may have looked like an "acceptable" trade-off may appear quite unacceptable.

Conversely, when benefits that were previously unrecognized become visible (i.e. the role of ecosystems in climate regulation), they become worth preserving. Further to this, investment in ecosystem protection and management can, with appropriate full environmental economic accounting, yield high returns. For

¹⁸ Greening the economy refers to the process of reconfiguring businesses and infrastructure to deliver better returns on natural human and economic capital investments, while at the same time reducing green house gas emissions, extracting and using less natural resources, creating less waste and reducing social disparities

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At a global scale, decisions need to be made within the context of an underpinning rational where environmental protection takes precedence.

This requires a fundamental shift in the structure of the world's current economic models, where resource consumption is the primary driver which has led to environmental degradation, biodiversity loss and hence unsustainable societies.

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example, recent research findings¹⁹ show that an annual global investment of \$45 billion in protecting ecosystems could deliver an estimated \$5 trillion a year in societal benefits, a cost-benefit ratio of over 100:1. The establishment of new marine protected areas, resulting in the closure of 20% of total fishing grounds, could result in estimated annual profit losses of \$270 million, but would sustain fisheries worth \$80-100 billion a year; maintain an estimated 27 million jobs while generating one million new ones, and secure food supplies for over one billion people.

Many examples now exist of payment for ecosystem services (PES). Here people who manage or interact in some way with ecosystems receive payments for the benefits provided by the ecosystem to the wider community:

- In Costa Rica, payments to farmers who conserve forests on their land rather than destroy them for low-earning pasture have become almost a national environment programme. Soil and water benefits flow to farmlands all around them. And this was funded by a small 3% tax on transport.
- In India, ecological restoration and water harvesting is paid for by a national rural employment guarantee scheme, employing millions.
- In San Francisco and New York, ecological infrastructure is the reality: reservoirs and lake watersheds surrounded by well-managed forests provide cities with a freshwater supply.
- Conversely, on the island of Lombok in Indonesia, the local community pays \$0.60 per household per month to a special fund that ensures the sustainable management of their watershed forests so as to protect vital water supplies.



These are new economic models for government and business in which both private opportunity and “public goods” are being created and rewarded by a new partnership between business, citizens, and their government. TEEB (The Economics of Ecosystems and Biodiversity) has assembled a library of suggestions for policy-makers on how to use good economics to conserve wild nature and herald a society that profits and progresses yet lives in harmony with nature. (TEEB for Policy-Makers, November 2009)²⁰.

¹⁹ The Economics of Ecosystems and Biodiversity (TEEB) Interim Report 2009. See: <http://ec.europa.eu/environment/nature/biodiversity/economics/>

²⁰ The Economics of Ecosystems and Biodiversity (TEEB) Interim Report 2009. See: <http://ec.europa.eu/environment/nature/biodiversity/economics/>

The Way Forward

Biodiversity and ecosystem services are the foundation of many successful adaptation strategies, especially for poor people. They can also deliver climate change mitigation benefits. But meeting all these objectives can be difficult. Adaptation activities in one sector can compromise those in another, as well as mitigation, biodiversity or poverty objectives. Decisions should therefore be based on good science, an understanding of the full environmental-economic trade-offs. At the very least, climate change solutions should aim to avoid damaging biodiversity and ecosystem services, increasing inequity and exacerbating poverty. At a global scale, decisions need to be made within the context of an underpinning rationale where environmental protection takes precedence. This requires a fundamental shift in the structure of the world's current economic models, where resource consumption is the primary driver which has led to environmental degradation, biodiversity loss and hence unsustainable societies. Instead there is need to develop economic models that reverse the market failures of the existing models by fully valuing the environment. They must be able to balance the capacity of the world's ecosystems to provide essential services with the basic needs of all sections of human society in an equitable way. Such models need to foster greater individual and global collective responsibility and facilitate a shared equity of resource use.

Governments, individuals, bilateral organisations and the private sector should seek to achieve better integration of information, thinking and decision making to ensure that initiatives that meet the objectives of the MDGs, the UNFCCC and the CBD are supported. Currently, however, the bodies responsible for each convention, and the governments and ministers in charge of implementing them, tend to have a sectoral approach, focusing on their own objectives. The synergies between objectives need to be better recognised by governments, who must facilitate change by supporting both top-down and bottom-up initiatives. Similarly businesses and communities need to take advantage of the economic benefits that the ecosystems-based adaptation approach will bring. Only by collectively addressing the multiple issues of climate change, biodiversity loss and poverty in an integrative way will synergistic solutions be developed.

Recommendations

- The CDB needs to be strengthened to optimise the benefits that biodiversity conservation can have for climate change mitigation and adaptation by society.
- The UNFCCC needs to build upon the progress made at CoP15 in recognising the role that ecosystems play in regulating our climate.
- There is need for greater integration between the CBD and UNFCCC to maximise the synergies in environmental protection, not only for climate change, but for poverty alleviation, food and water security and long-term sustainability.
- The Ecosystems based Adaptation approach must receive substantial funding and international recognition to ensure that it becomes part of the core considerations in strategic planning for a sustainable economic development.

These are new economic models for government and business in which both private opportunity and “public goods” are being created and rewarded by a new partnership between business, citizens, and their government. TEEB (The Economics of Ecosystems and Biodiversity) has assembled a library of suggestions for policy-makers on how to use good economics to conserve wild nature and herald a society that profits and progresses yet lives in harmony with nature. (TEEB for Policy-Makers, November 2009) .

This Policy Brief recommends:

- **The Convention on Biological Diversity needs to be strengthened to optimise the benefits that biodiversity conservation can have for climate change mitigation and adaptation by society.**
- **The UNFCCC needs to build upon the progress made at CoP15 in recognising the role that ecosystems play in regulating our climate.**
- **There is need for greater integration between the CBD and UNFCCC to maximise the synergies in environmental protection, not only for climate change, but for poverty alleviation, food and water security and long-term sustainability.**
- **The ecosystems-based adaptation approach must receive substantial funding and international recognition to ensure that it becomes part of the core considerations in strategic planning for a sustainable economic development.**

This research policy was drafted by:

Richard Munang²¹

Climate change adaptation Unit
Division of Environmental Policy Implementation (DEPI)
United Nations Environment Programme (UNEP)
Email: Richard.Munang@unep.org

Mike Rivington,

Macaulay Land Use Research Institute,
Craigiebuckler, Aberdeen.
AB15 8QH, Scotland.
E-mail: m.rivington@macaulay.ac.uk

Jian Liu

Chief, Climate Change Adaptation Unit,
Division of Environmental Policy Implementation (DEPI)
United Nations Environment Programme (UNEP)
Email: Jian.liu@unep.org

Ibrahim Thiaw

Director,
Division of Environmental Policy Implementation (DEPI)
United Nations Environment Programme (UNEP)
Email: Ibrahim.Thiaw@unep.org

Tim Kasten

Deputy Director,
Division of Environmental Policy Implementation (DEPI)
United Nations Environment Programme (UNEP)
Email: Tim.Kasten@unep.org

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²¹ Corresponding author



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UNEP

United Nations Environment Programme
P.O. Box 30552 Nairobi 00100 KENYA
Tel: +254-20-762 3753
Fax: +254-20-762 3917
Email: depi@unep.org
Website: www.unep.org/depi

