



# THE NATURAL FIX?

## THE ROLE OF ECOSYSTEMS IN CLIMATE MITIGATION

A UNEP RAPID RESPONSE ASSESSMENT



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## **CARBON CAPTURE AND STORAGE – NATURE’S WAY**

One response to the urgent and dramatic challenge of climate change has been a growing interest by governments in carbon capture and storage at power stations. Tens of billions of dollars are being earmarked for a technology that aims to remove greenhouse gases from smoke stacks and bury it deep underground.

In this UNEP-commissioned, Rapid Assessment report we present carbon capture and storage through a Green Economy lens outlining the potential in terms of natural systems – systems from forests to grasslands that have been doing the job in a tried and tested way for millennia.

Currently the world’s ecosystems, instead of maintaining and enhancing nature’s carbon capture and storage capacity, are being depleted at an alarming rate.

Some 20 per cent of greenhouse gas emissions are coming from the clearing and burning of forests, the vast carbon bank in peatlands and the tundra are threatened by drainage and thawing and many agricultural soils are degraded or degrading.

Safeguarding and restoring carbon in three systems – forests, peatlands and agriculture might over the coming decades reduce well over 50 gigatonnes of carbon emissions that would otherwise enter the atmosphere: others like grasslands and coastal ones such as mangroves are capable of playing their part too.

The multiple benefits of such investments range from improved lives and livelihoods, employment in areas such as conserva-

tion, management, monitoring and rehabilitation alongside reversing the rate of loss of biodiversity and improved water supplies up to the stabilization of precious soils.

2009 will witness pivotal negotiations surrounding how the world will tackle climate change when governments meet at the crucial UN climate convention meeting in Copenhagen, Denmark this December.

The \$3 trillion-worth of stimulus packages, mobilized to reverse the down-turn in the global economy, represents an opportunity to Seal a meaningful climate Deal and perhaps a once in a life time opportunity to accelerate a transition to a low-carbon Green Economy – one that can deal with multiple challenges from food and fuel crises to the climate and the emerging scarcity of natural resources.

There is every optimism governments in Copenhagen will agree to begin paying developing countries for Reduced Emissions from Deforestation and forest Degradation (REDD).

This report, compiled for World Environment Day on 5 June, underlines a far greater potential across a wider suite of natural systems – a potential to not only combat climate change and climate-proof vulnerable economies but to accelerate sustainable development and the achievement of the poverty-related Millennium Development Goals.

**Achim Steiner**

UN Under-Secretary General and Executive Director, UNEP

*Very large cuts in emissions of greenhouse gases are needed if we are to avoid the worst effects of global climate change. This report describes the vital contribution that ecosystems can and must make to these efforts.*

## KEY MESSAGES

■ It is vital to manage carbon in biological systems, to safeguard existing stores of carbon, reduce emissions and to maximise the potential of natural and agricultural areas for removing carbon from the atmosphere.

■ The priority systems are tropical forests, peatlands and agriculture. Reducing deforestation rates by 50% by 2050 and then maintaining them at this level until 2100 would avoid the direct release of up to 50 Gt C this century, which is equivalent to 12% of the emissions reductions needed to keep atmospheric concentrations of carbon dioxide below 450 ppm. Peatland degradation contributes up to 0.8 Gt C a year, much of which could be avoided through restoration. The agricultural sector could be broadly carbon neutral by 2030 if best management practices were widely adopted (equivalent to up to 2 Gt C a year).

■ It is essential that climate mitigation policy is guided by the best available science concerning ecosystem carbon, and decisions should be informed by the overall costs and benefits of carbon management.

■ Developing policies to achieve these ends is a challenge: it will be necessary to ensure that local and indigenous peoples are not disadvantaged and to consider the potential for achieving co-benefits for biodiversity and ecosystem services. Drylands, in particular, offer opportunities for combining carbon management and land restoration.

■ The adoption of a comprehensive policy framework under UNFCCC for addressing ecosystem carbon management would be a very significant advance.





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*“The vulnerability of many carbon cycle processes and pools depends on the magnitude of future climate change. The magnitude of future climate change, in turn, depends on the vulnerability of the carbon cycle.” (Gruber et al. 2004: 52)*