# Climate change and forest carbon sequestration

Climate change is happening. Greenhouse gas levels are rising and are now at their highest atmospheric concentrations for more than 400,000 years. This increase is attributed to human activities. Consumption of fossil energy is driving this trend, accounting for about 80% of human-caused $CO_2$ emissions. Land disturbance – burning, loss, and degradation of forests, rangeland and soils – accounts approximately for the remaining 20%. The Intergovernmental Panel on Climate Change (IPCC) estimates that at least one-third of the world's remaining forests may be adversely affected by changing climate, especially in the boreal zone where the warming will be greatest. The Hadley Centre for Climate Change at the UK Meteorological Office has predicted that, by 2050, forests globally will become a significant net source of $CO_2$ emissions. This will lead to even greater emissions of carbon dioxide, contributing to a climate change cycle already well-underway. Climate change impacts on biodiversity are already evidenced by shifting migration ranges of insects and animals, modified flowering and fruiting cycles, and species extinctions. Additional impacts include drought or flood-induced die back, conversion to grassland, steppe, or desert, increased vulnerability to pests, fire and invasive species. The prospect of broad-scale forest loss due to changing climate places a premium on slowing the rate of climate change, while working in tandem to protect forests by reducing fragmentation and increasing resilience to climatic stress.

Decisions at Kyoto Protocol negotiations in 2001 allow the use of certain carbon sequestration activities, and carbon 'credits' gained through these activities, to meet industrialized countries' Kyoto emissions reductions commitments both at home and overseas. Forest carbon sequestration (sinks) is (are) characterized as an increase in carbon stocks on the land base through such activities as afforestation, reforestation, agroforestry, forest restoration, etc. Parties further agreed to the principle that any sequestration project should contribute to the "conservation of biodiversity and sustainable use of natural resources". While WWF has opposed the use of sinks due to its conviction that permanent fossil fuel emissions reductions must be the prime focus of efforts to address climate change, coupled with concerns about potential negative outcomes of badly designed or implemented sinks projects, these Kyoto decisions have moved the process forward in ways that influence WWF's work and engagement on forests and climate in general, and forest carbon sequestration/sinks in particular. WWF accepts the outcomes of the Bonn and Marrakech agreements on forest carbon sequestration because it is critical to get the overarching Kyoto framework for emissions reductions into force.

***WWF believes*** that as such, carbon sinks have a potential role to play in the fight against global warming provided measures to enhance sinks are taken with appropriate care. Restoring forest ecosystems and changing farming practices could also help protect biodiversity and promote a range of other environmental and social values, including clean water and land tenure reform. At the same time, measures to enhance carbon sinks can pose potential risks to biodiversity and local livelihoods if implemented incorrectly, and could compromise efforts to reduce GHG emissions. It is imperative that adequate environmental and social safeguards be put in place to address these risks. Fossil fuel combustion remains the major cause of global warming and any global warming program must focus primarily on clean energy solutions to the problem of rising industrial and transportation-sector emissions.

***WWF will work with governments, industry, NGOs and local communities*** to play an increased and proactive role by initiating a series of pilot forest sinks projects to explore how risks can be mitigated and benefits enhanced. These projects, through activities such as habitat restoration and reduction of forest fragmentation, can enhance our knowledge and help increase the resilience of forests to climate change. WWF will also identify and publicize projects that pose a threat to biodiversity, local communities or climate change, and will explore constructive ways to work with partners to identify and mitigate potentially negative projects. To develop this approach, WWF is working with governments, particularly those in lesser-developed countries most susceptible to climate change impacts, to explore sequestration options that pose the least risk, and could potentially benefit biodiversity and sustainable development efforts. WWF's current approach to sinks, particularly in lesser-developed countries, focuses on forest landscape restoration that advances biodiversity and livelihood objectives, not solely carbon gains.

**Position Paper**

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