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UNFF14 Issue Brief

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Forests and climate change

United Nations FORUM ON FORESTS

Introduction

Forests play a key role in regulating the global climate, most importantly through capturing carbon dioxide from the atmosphere and storing it in biomass and forest soils. In 2016, forests absorbed about 27 per cent of the carbon dioxide emitted by fossil fuels and industry, though at the same time, land-use change – primarily forest clearance for agriculture – accounted for about 12 per cent of total climate-forcing emissions. As the largest storehouse of carbon after the oceans, forests have the potential to absorb and store about one tenth of the global anthropogenic carbon emissions projected for the first half of this century into their biomass, soils and products.

It has been estimated that since 1750, forests (and other vegetation, but mainly forests) have been responsible for about half of the carbon emissions naturally sequestered from the atmosphere; the rest has been absorbed by the oceans. Together, forests and oceans form a natural buffer against climate change.

Conversely, deforestation contributes to climate change. When forests are burned or cleared for uses such as cropland, pasture, infrastructure or urbanisation, the net flow of carbon from the atmosphere into the forest ends, both in the present and for the entire projected future lifetime of the trees. Deforestation also causes the release of the stock of carbon that has accumulated, both in the trees themselves and in the forest soil.

Forests also affect climate systems through regulating atmospheric moisture and rainfall patterns and, consequently, local temperatures and fresh water flows. Forests are themselves affected by climate change, mainly through the increased frequency and/or intensity of natural disturbances such as fires, droughts, storms, insect infestation and disease. This is only partly offset by faster tree growth due to elevated atmospheric carbon dioxide and nitrogen levels, which may be in any case be limited by the availability of water or nutrients.

Given the importance of forests to climate change, both as carbon sinks and sources of emissions, it has long been recognised that some form of measuring and accounting for changes should be included in the international climate agreements. In practice, reporting changes in emissions and removals from land use, land use change and forestry (LULUCF) and accounting for them against national targets is challenging. Article 5 of the Paris Agreement encourages parties to pursue various actions in regards to forests, and most of the Nationally Determined Contributions (NDCs) published to date include commitments such as afforestation/reforestation, forest management and a reduction in deforestation. At the global level, the LULUCF sector is expected to contribute as much as 20 per cent of the full mitigation potential of all the conditional and unconditional NDC targets.

Reducing greenhouse gas emissions from forests world-wide can play a highly significant role in combatting global climate change.

Estimates of the total mitigation potential of forest-related mitigation options vary substantially, ranging up to about 14–15 $GtCO_2e$ per year (compared to total global emissions, in 2017, of 53.5 $GtCO_2e$). Over the last ten years, attention, and financing, has focused mainly on the REDD+ process. Designed as a performance-based mechanism, encouraging countries to reduce emissions from deforestation and forest degradation through creating a financial value for the carbon stored in forests, REDD+ has proved challenging in practice to implement, and most financial support has been devoted so far to 'readiness' activities and initial investments; performance-based payments at a national or sub-national level remain limited.

Many other forest-related mitigation options are available. These include reducing pressures on forests through focusing on the drivers of deforestation – chiefly agriculture, the main global driver of forest clearance for at least the last two decades. Increasing numbers of governments and companies are adopting zero-deforestation commitments, investing in developing agricultural techniques which eliminate or minimise deforestation from supply chains, and exploring measures to reduce the demand for forest risk commodities.

Options also include promoting the sustainable management of existing forests – though managing forests to maximise carbon uptake and carbon storage is not necessarily the same as SFM techniques used to maximise production for high-quality commercial wood products, which is the context in which they are normally applied.

Alongside reducing the pressures on forests, measures can also be taken to increase the area of forest cover and, therefore, the global carbon sink. Many reforestation and afforestation initiatives are currently under way, particularly in China, which is home to more than a quarter of the world's total planted forest. There are dangers, though, in poorly designed initiatives, and attention is increasingly turning to forest ecosystem restoration, restoring degraded natural forest cover and promoting the expansion of natural forests.

All these measures can be encouraged by increasing the use of sustainably produced wood products, replacing, for example, construction products manufactured from greenhouse-gas-intensive materials such as concrete or brick, metals or plastics. The use of wood to generate power and heat can in theory also add value to forests, though current support policies are increasingly being questioned as possibly leading to increases in atmospheric carbon, at least in the short and medium term.

The full implementation of an ambitious range of policy options – including halting deforestation and forest degradation, promoting sustainable forest management, increasing the area of forests through reforestation, afforestation and forest landscape restoration and increasing the value of forests through expanding markets for wood products – could lead to a reduction in emissions of an estimated 15 $GtCO_2e$ a year by 2050, potentially closing the current 'emissions gap', at least to the level needed to keep global warming below 2˚C.

Key policies and measures include the following:

- Agreement on consistent means of measuring and accounting for changes in forest-related greenhouse gas emissions and sinks and distinguishing between anthropogenic actions and natural impacts, together with investment in the capacity to measure these changes.
- Encouragement for countries to commit to voluntary national contributions aimed at achieving the UNSPF Global Forest Goals and targets, alongside their commitments under the Paris Agreement.
- Measures aimed at reducing current rates of deforestation and degradation, including measures designed to reduce pressures from conversion to agriculture (particularly illegal conversion).
- The research and promotion of means of sustainable forest management designed to maximise carbon storage in forests.
- Support for reforestation and afforestation initiatives, focusing on holistic approaches to natural forest landscape and ecosystem restoration, sensitive to local conditions and local communities.
- Measures to promote the sustainable production and consumption of long-lived forest products, in construction and other uses.

Unlike many other climate mitigation options, these measures do not require any invention or commercialisation of new technologies, and are also not likely to be expensive, compared to many other mitigation options.

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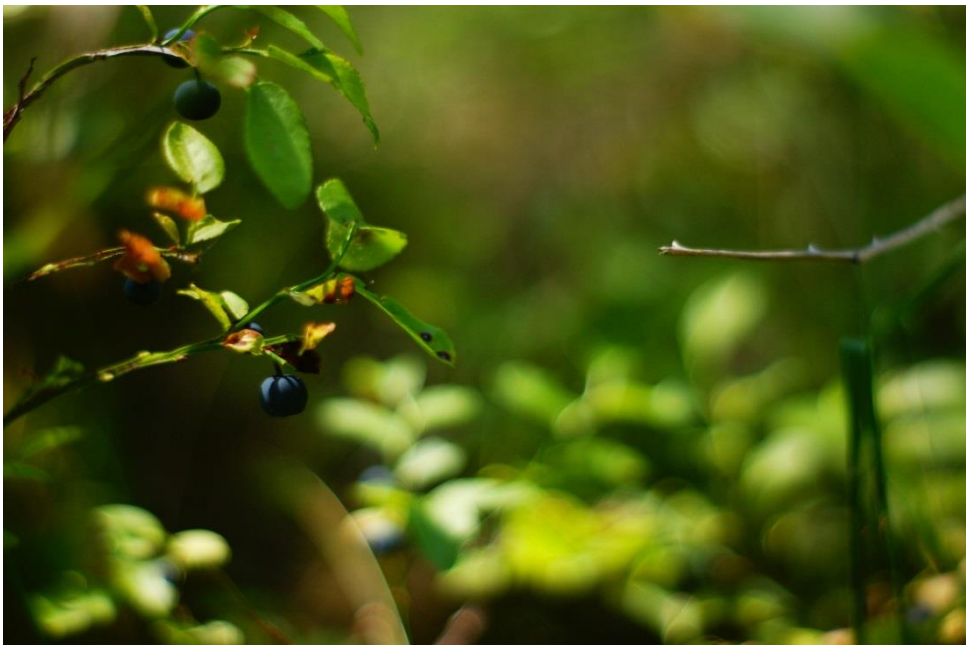
Forests can help societies adapt to climate variability and change in several ways, providing ecosystem services that can significantly reduce social vulnerability.

Forests themselves will need to be assisted to adapt to the impacts of climate change, through measures that either increase their resistance and resilience or facilitate ecosystem shift or evolution towards a new state that meets the new conditions.

Implementing forest-related climate adaptation measures, however, is in some ways a more difficult challenge than mitigation efforts; it is best addressed at the local level, with organisations, communities, businesses, households and individuals considering their future climate risks and the benefits and costs of different risk management options.

Key policies and measures include:

- Ecosystem-based adaptation strategies designed to target the conservation or restoration of specific ecosystem services that are crucial for societal adaptation in a particular region.
- Strategies to assist forests to adapt to the impacts of climate change, through measures that either increase their resistance and resilience or facilitate ecosystem shift or evolution towards a new state that meets the new conditions.



Two prerequisites: adequate sources of funding and adequate standards of governance

The provision of adequate sources of funding is one of two prerequisites for the successful implementation of all the activities described above.

At just over 1 per cent of global mitigation-related development funding, current financing for forests is highly disproportionate to both the investment needs and the mitigation potential of the forest sector, and is dwarfed by financial flows to the land sector – mainly for agriculture – that influence forests but are not aligned with forest and climate goals.

The second prerequisite is ensuring adequate standards of governance and law enforcement. Measures to address these problems need to include not only legal and policy reform and improvements in law enforcement but also secured land rights for forest communities.

Key measures include:

- A significant increase in financial support for forest-related mitigation activities, and a commensurate increase in funding for forest adaptation activities.
- Support for improvements in forest governance and law enforcement, including in particular the clarification of land tenure and access rights and support for community land and forest management.

Although progress is being made in many countries, it is not yet sufficient. The Global Forest Goals of the UN Strategic Plan for Forests set out a clear direction for forest-related mitigation and adaptation options. If nations fail to meet them, the overall cost of climate mitigation efforts will rise, global warming will take longer to limit, and the impacts of climate change will be more severe.

About this UNFF14 Issue Brief

The UN Forum on Forests (UNFF) is a functional commission of the UN Economic and Social Council (ECOSOC) with universal membership. The Forum is composed of all Member States of the United Nations and Member States of specialized agencies.

Since its inception in 2000, the Forum has reached numerous milestones including agreement on the first United Nations Forest Instrument in 2007, establishment of the Global Forest Financing Facilitation Network (GFFFN) in 2015, and agreement on the first United Nations Strategic Plan for Forests 2030 in 2017.

The UN Forum on Forests Secretariat, in the UN Department of Economic and Social Affairs provides substantive support to the Forum, prepares technical reports and analytical studies, and fosters dialogue to enhance cooperation and coordination on forest issues.

At its 13th session in 2018, the Forum requested the UNFF Secretariat to prepare background analytical studies on the contribution of forests to other Goals under review by the High-level Political Forum on Sustainable Development in 2019, for consideration by the Forum at its fourteenth session

Accordingly, the UN Forum on Forests Secretariat commissioned three background analytical studies, in consultation with the Bureau of the fourteenth session of the Forum, taking into account the thematic priorities of the fourteenth session of the Forum.

The three studies are on: (a) Forests and climate change; (b) Forests, inclusive and sustainable economic growth and employment; and (c) Forests, peaceful and inclusive societies, reduced inequality and inclusive institutions at all levels.

The issue brief is derived from the background analytical study on Forests and Climate Change by Duncan Brack.

The full text of the study is available at https://www.un.org/esa/forests/wp-content/uploads/2019/03/UNFF14-BkgdStudy-SDG13-March2019.pdf

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