This paper is a contribution to
Net Zero+: The OECD Horizontal Project on Climate and Economic Resilience

Forests, agriculture and other land uses as a cornerstone of climate action

Background note

2025 Green Growth and Sustainable Development Forum

Abstract

This note has been prepared to support discussions at the 2025 OECD Green Growth and Sustainable Development (GGSD) Forum on *"Forests, Agriculture and Other Land Uses (AFOLU) as a Cornerstone of Climate Action."* Structured around the Forum's five sessions, it outlines key policy challenges and presents the OECD's ongoing and planned work on forest management, sustainable agriculture, greenhouse gas measurement in the AFOLU sector, financing for forests and nature, and the role of forestry in rural development. Drawing on inputs from across the Organisation, the note highlights how the OECD is leveraging its multidisciplinary expertise to help governments design effective, place-based, and integrated land-use strategies aligned with climate and biodiversity objectives under the Net Zero+ initiative.

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This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

This paper was developed to serve as a background note to the 2025 OECD Green Growth and Sustainable Development Forum, drawing on ongoing work being carried out through the OECD's committees and working parties. The opinions and arguments employed herein do not necessarily reflect the official views of the OECD member countries. This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

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Introduction

This note has been prepared to provide background and supporting material for the discussions at the 2025 Green Growth and Sustainable Development (GGSD) Forum. The Forum will explore how forests, agriculture and other land uses can contribute to climate action. The note summarises key policy challenges and outlines ongoing and planned OECD work across the five main themes of the 2025 GGSD Forum: forest management, sustainable agriculture, measurement of greenhouse gas emissions in the AFOLU sector, mobilising finance for forests and nature, and the link between forestry and rural development.

Agriculture, forestry and other land use (AFOLU) sectors are central to the transition to net zero and to addressing biodiversity loss and environmental degradation. Yet, the transition to more sustainable practices across these sectors faces persistent barriers, including fragmented governance, weak economic incentives for environmental protection due to unpriced externalities, data gaps, and limited institutional capacity. Through the OECD's flagship horizontal project Net Zero+: Building Climate and Economic Resilience, the OECD draws on its unique multidisciplinary reach in providing practical guidance to governments on addressing these challenges.

Each section of this note corresponds to a Forum session, highlighting the key policy issues being discussed as well as ongoing and planned OECD work to respond to these challenges. This includes development of new data and indicators, evidence-based policy research and advice, and cross-country case studies and analysis.

Session 1: Improving Forest Management Practices to Enhance Carbon Sequestration and the Protection of Natural Capital

Key policy challenges

Achieving the Paris Agreement's 1.5°C target requires a drastic transformation in the Agriculture, Forestry and Other Land Use (AFOLU) sector, as well as across all other sectors of the economy. Currently responsible for approximately 21% of global greenhouse gas emissions[1], the AFOLU sector's emissions should decrease by 72% by 2050 to limit global warming to 1.5°C with limited or no overshoot [2].

Forests, which can act as both carbon sinks and sources of CO_2 emissions, are central to this transformation. Beyond carbon sequestration, forests are critical biodiverse ecosystems providing numerous other ecosystem services (e.g. habitat provision, nutrient cycling, and freshwater regulation). Yet, alarming trends continue: FAO[3] reports that the global and area covered by forests has decreased from 31.9% to 31.1% in the last decade, contributing GHG emissions and biodiversity loss.

Forest governance is complex, with ownership and management structures varying widely across countries. In many countries, governments own a large proportion of forested land but may lack the institutional capacity and financial resources to effectively manage it. Furthermore, multiple Ministries (e.g., environment, agriculture, economy, land) may have overlapping or conflicting mandates regarding forests. Regardless of ownership structure, compliance, monitoring and enforcement of related laws is often complex given the largely remote location and size of forests as well as competing interests on the ground.

Moreover, countries differ significantly in their forest types and coverage, which has important implications for policy design and implementation. For example, tropical trees grow, on average, two times faster than trees from temperate and boreal biomes, and live significantly shorter, on average[4]. Permafrost thaw is an increasing risk for boreal forests while mediterranean forests are prone to drought and wildfire. Annual natural variations in forest gain and loss and the time lag between policy implementation and impact realisation add to the challenge.

This ecological and institutional complexity means that forest-based climate mitigation and adaptation strategies are not a "one size fits all". Governments need to pursue strategies that balance economic uses and livelihoods (e.g. timber, fibre), social benefits (e.g. employment), and environmental functions considering the specific characteristics of domestic forests and trade-offs over different time frames. While progress has been made in integrating climate and other environmental concerns into forest policy, major gaps remain.

Planned OECD work

The OECD is undertaking a range of initiatives aimed at enhancing the role of forest as carbon sinks, while ensuring that they continue to provide other essential ecosystems services, and remain a key contributor to economic and cultural life. Key workstreams include:

- **Economic analysis of forest trends and drivers** of tree cover change since the 1990s, including business-as-usual projections;
- **Analysis of mitigation-related policy approaches**, clustering countries by forest management approaches, geographical and structural characteristics of their forests and mitigation ambition;
- Additional activities could include **case studies** on countries with high-impact forest policy reforms, supporting global policy learning, and an analysis of the **cost of carbon sequestration** in scaling up ambition on forest-based mitigation in Paris-aligned scenarios.

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Session 2: Advancing Solutions for a Productive, Sustainable and Resilient Agriculture

Key policy challenges

Agriculture and food systems are both a major contributor to climate change and one of the sectors most vulnerable to its impacts. Direct agricultural emissions account for roughly half of the AFOLU emissions. When emissions across the food supply chain are included, food systems may account for up to one-third of total global emissions. At the same time, the sector faces mounting challenges due to rising temperatures, more frequent and intense extreme weather events, and variations in rainfall patterns[5]. Agriculture is also a major consumer of fresh water globally[6] and is closely linked with global biodiversity loss, particularly through deforestation[7].

Despite these challenges, agriculture also holds enormous potential for transformation. Innovative farming techniques, technological advances, nature-based solutions like agroforestry, and improved resource efficiency can reduce emissions and enhance resilience. Sustainable increases in productivity can help to feed an increasing global population while reversing deforestation. Improved soil management and restoration of degraded lands offers additional avenues.

Yet, significant policy and market barriers remain. Many countries still exclude agriculture from major climate mitigation instruments (e.g. carbon pricing) and only a handful provide targeted incentives for emission reductions. Misaligned policies add to the challenge. Policy measures introduced to address other societal concerns than climate change have a significant effect on the agricultural sector, influencing how producers make decisions and what the future of food and farming will look like. Existing policies can also hamper farmers' capacity to adapt, for instance by discouraging alternative and more sustainable production when support is tied to specific commodities. Overall, only a small fraction of total support (12.6%) goes to investments in general services for the sector such as investments in infrastructure, bio-security, or innovation – even though those investments are essential for sustainable productivity growth.

Planned OECD work

The OECD is undertaking a range of initiatives aimed at increasing the sustainability, productivity and resilience of agriculture and food systems. Key workstreams include:

- Modelling the sustainability impacts of agricultural support policies, including carbon emissions, land-use change, and biodiversity impacts;
- Measuring sustainable productivity growth and analysing policy incentives for innovation in agriculture;
- Updating agri-environmental indicators and the Policy Inventory for Mitigation Actions in AFOLU Sectors (PIMA- AFOLU) inventory to reflect the latest trends and policy instruments;
- Assessing water-related risks to agriculture considering the implications of climate change;
- Assessing the role of demand-side interventions (e.g. as food labelling to promote dietary shifts) and reduction of food loss and waste.
- Measuring carbon footprints of agri-food products.

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Session 3: Overcoming Measurement and Data Challenges in GHG Estimations from Agriculture, Forestry and Other Land Use

Key policy challenges

Reliable measurement, reporting, and verification (MRV) of greenhouse gas emissions and removals in the AFOLU sector is fundamental to effective climate policymaking. Yet, the spatial dispersion and temporal variability of biological processes create unique challenges to correctly measure the sector's emissions.

In the case of agriculture, emissions vary by crop and animal type, management practice, fertiliser and feeds used, and climatic conditions, making standardised estimates difficult across regions. Estimating emissions and removals from forest and land-use change, usually defined as "Land Use, Land-Use Change and Forestry" (LULUCF) emissions, is equally complex as it requires estimating emissions and removals from biomass growth, decay, and deforestation or afforestation. Natural factors, such as fires and diseases, and the complexity of biological and chemical processes add to the challenge.

Public-private partnerships and new technologies can help to close this gap. In the agriculture sector, efforts to increase the use of primary data, ensure greater reliability of data, and to facilitate digital exchange throughout the supply chain can significantly improve the measurement of the carbon footprint of agricultural products. New technologies, particularly Earth Observation (EO) tools, offer an opportunity to transform MRV for LULUCF by directly measuring changes in biomass and land cover at high spatial and temporal resolution. However, challenges remain, including fragmentation in reporting standards and calculation methods, and uncertainties around data quality.

Planned OECD work

The OECD is working on several initiatives aimed at overcoming measurement and data challenges in estimating GHG emissions from the AFOLU sector. Key workstreams include:

- Exploring options to reduce the fragmentation of methods and tools for farm-level GHG measurement, based on a comprehensive analysis of existing approaches.
- Developing a global, EO-based database that tracks annual carbon stock changes across land cover types, especially focusing on woody biomass. This will provide spatially explicit estimates of GHG emissions and removals, enabling cross-country comparisons and policy analysis.
- Building indicators for deforestation in the pan-tropical region, carbon stocks and flows within and outside protected areas and carbon stocks exposed to various climate-related hazards (wildfire, drought, etc.).
- Contributing to the System of Environmental Economic Accounts (SEEA) update process, exploring how LULUCF emissions and removals can be integrated into air emission accounts (AEA). The AEA provides a tool to monitor the relation between emissions and economic activities such as production and consumption. The contribution entails a thorough analysis of potential options and will be formalised in a "guidance note," proposing amendments to the existing SEEA handbook. Prior to submission for final approval by the United Nations Statistical Commission, the proposal will undergo a comprehensive global consultation process.

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Session 4: Mobilising Finance for Forests and Nature to Deliver Climate and Biodiversity Goals

Key policy challenges

Many of the ecosystem services provided by forests (e.g. carbon sequestration, habitat provision, water filtration, soil stabilisation) are not priced in the market. As a result, investments that protect (i.e. conserve and sustainably use), restore and enhance forests are at a disadvantage compared to investments that put these benefits at risk. The sometimes unclear land tenure and insufficient enforcement of environmental protection further worsen the business case for sustainable forest management.

Efforts to improve the economics of forest conservation, sustainable use, reforestation and afforestation have been numerous, ranging from Payments for Ecosystem Services (PES) and REDD+ schemes to biodiversity offset schemes. More recently, voluntary carbon markets and biodiversity credits have also attracted attention. However, the full potential impact of these instruments has yet to be realised, with scope remaining to increase both their scale and effectiveness.

The credibility of forest carbon credits has been called into question due to issues around additionality, permanence, leakage, and respect for local rights. The temporal dimension adds further complexity: if forests are used to offset CO_2 emissions, permanence becomes critical. Any damage (e.g. due to extreme weather) not only releases stored carbon, but could also trigger liability. Jurisdictional approaches to REDD+ crediting are increasingly discussed as a promising approach to address some of these challenges, but further research is needed on their effectiveness and how to put them into practice. Furthermore, environmentally harmful subsidies continue to undermine efforts to conserve and sustainably use forests. Overall, finance flows for forest protection remain insufficient, while many policies and financial resources continue to incentivise its conversion or unsustainable exploitation..

Creating an enabling environment for long-term investments in forest conservation, sustainable use and restoration is an essential building block to improve the economics of sustainable forest use. This includes addressing market and policy failures, clarifying land tenure, strengthening institutional frameworks, reducing investment risk through blended finance approaches, and ensuring that local communities receive fair benefits.

Planned OECD Work

The OECD is exploring several key dimensions of finance for forests and biodiversity more broadly and nature-based climate action. Key workstreams include:

- Reviewing strategic tools - such as credit quality assessments - available to governments to enhance integrity and restore confidence in carbon credit markets;
- Analysing jurisdictional REDD+ approaches, to understand how they can support effective mitigation action, through the Carbon Market Platform Secretariat;
- Developing policy recommendations on scaling up positive incentives for biodiversity, covering a range of ecosystems including forests, in line with Target 18 of the Kunming-Montreal Global Biodiversity Framework.
- Developing good practices to mobilise public and private finance for biodiversity, covering forests, wetlands, oceans and other ecosystems.

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Session 5: Forestry and Rural Development

Key policy challenges

Forests are not evenly distributed across the globe. They concentrate in specific geographic locations within countries, where their ecological functions, economic uses, and development implications differ markedly.

Forests located near Functional Urban Areas (FUAs) often face intense land-use pressure from housing and infrastructure. At the same time, their proximity to FUA's can also create opportunities for recreational use, health and well-being benefits, and sustainably sourced forestry products benefit from easier access to richer urban markets. These forests often serve multiple roles, including recreational use, provision of ecosystem services like air purification and urban cooling, while also supporting small scale forestry activities. In rural regions, the relative profitability of agriculture and forestry-based industries is often the main driver of land-use decisions. When agricultural returns are high, forests may be cleared or degraded and may provide secondary income streams for farmers. When agricultural returns are low, forest may expand through natural regeneration or reforestation of marginal lands, and became the main economic use of land, especially if subsidies for biodiversity or reforestation are in place.

Integrated strategies that link forestry to regional value chains, local infrastructure, addressing local challenges and exploiting synergies are needed for sustainable forest use. Examining forestry activity and its impact on rural development through a territorial and rural lens can bring a holistic approach allowing to better realise complementarities and address trade-offs. For instance, ecotourism can bring economic benefits to rural areas by valorising the recreational and cultural values of forests. However, this calls for collaborative efforts within the tourism industry as well as with forest owners to allow access to forests and appropriate safeguards. Similarly, the bioeconomy can bring profits by exploiting forest biomass resources, but this also calls for R&D investment in a wide range of technology for biomass processing.

Indigenous knowledge systems are vital for sustainable forest management helping to maintain the longterm health of forests, promoting inclusive governance practices through equitable participation in resource management, and further strengthening the role of Indigenous Peoples in rural development. Community-based organisations, in addition to government bodies, have a key role in managing forest resources. Promoting inclusive management by Indigenous Peoples, based on their deep ecological understanding derived from close interactions with specific environments across generations, is essential for forest regions to continue providing global environmental benefits and the ensuring forest sustainability.

Recognising the territorial diversity of forest contexts is critical for designing effective, inclusive, and place-based forest policies that enhance rural well-being, economic opportunity, and resilience.

Planned OECD work

The OECD is developing work to better integrate forestry into rural development strategies. Key workstreams include:

- Collecting and analysing subnational data on forestry employment, gross value added, productivity and direct and indirect benefit in rural regions;
- Producing a framework paper to identify the functions of forestry across geographies and their economic, social and environmental trade-offs;
- Launching a policy questionnaire to gather country experiences on forest governance, land ownership, policy coordination and Indigenous engagement.

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