

The hidden carbon markets: how forests can balance emissions

Category: agriculture, Brazil, Climate, Colombia, Costa Rica, Finland, Indonesia, New Zealand, Peru
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How OECD Economic Surveys reveal the drivers of deforestation, and the policy tools to stop it

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Tropical forests cover vast swaths of land in many OECD member and accession countries, including more than 75% of Costa Rica's territory, and over half of Brazil, Colombia, Indonesia and Peru. In these countries, emissions from land use, land use change and forestry (LULUCF), largely driven by forest loss and degradation, account for a large share of total emissions (Figure 1). In fact, land use emissions are in some cases the main driver of national emission trends. But forests can also be part of the solution, as the experiences of Finland and New Zealand, two forest-rich OECD members, teach us.

For many countries, forests are no longer just a conservation issue, they are central to climate mitigation plans. Turning forests into carbon sinks is one of the most cost-effective

ways to offset hard-to-abate emissions from agriculture, transport and energy. Finland and New Zealand have long had negative LULUCF emissions thanks to sustainable forest management and afforestation. Costa Rica managed to turn around LULUCF emissions, converting its forests into a carbon sink. Indonesia aims to achieve net negative emissions from LULUCF by 2030 while in Peru and Brazil, LULUCF accounts for 65% and 38% of planned emissions reductions by 2050, respectively. The economic case for protecting forests, through stronger enforcement, property rights, sustainable agriculture, and better incentives, has never been clearer.

Insights from Economic Surveys: What's really driving deforestation?

What do Brazil, Costa Rica, Colombia, Finland, Indonesia, New Zealand, and Peru have in common? They are all forest-rich economies, and each has been subject of in-depth analysis in OECD Economic Surveys. These studies go beyond emissions reporting. They dig into the underlying economic drivers of deforestation and discuss what can be done to turn forests into carbon sinks. While each country has its own context, common drivers of deforestation emerge. Forest loss is rooted in economic structures and incentives, from the rapid expansion of agriculture to unclear or unenforced property rights and misalignment between individual incentives and broader societal goals. Developing forest-based activities that generate sufficient economic value while keeping forests intact is far from impossible, given that cleared forest land is often used for low-profitability activities. Moreover, as seen in Finland and New Zealand, afforestation can be one of the least costly ways to reduce net greenhouse gas emissions. Tackling deforestation therefore requires structural policy responses that make choosing forests the economically sensible option, not just environmental regulation.

Fostering sustainable agriculture

Across all countries studied the expansion of the agricultural frontier is the main driver of deforestation. In Peru, OECD research shows that 90% of all deforested land is used for agriculture and livestock-rearing (Garcia Soto and Koelle, 2025). Moreover, 75% of these lands are identified as mixed-use, where farmers combine crop growing and livestock grazing on relatively small plots. In Brazil, cattle is a major pressure; in Indonesia, palm oil plantations continue to push into forest areas. Cattle grazing was also a main driver of deforestation in Costa Rica and Colombia. Most of these activities have low productivity and profitability, making extensive use of underpriced land. As Finland's experience shows, managing soil emissions from agriculture and forestry can become a crucial issue even when forest stocks have stabilised.

To address this, OECD Economic Surveys recommend:

- Eliminating environmentally harmful agriculture subsidies, such as cattle ranching subsidies, which contributed to successful reforestation in Costa Rica.
- Improving scientific knowledge of agriculture, soils and forests, which provides the basis for cost-efficient emissions reduction and carbon storage activities in Finland.
- Boosting productivity on existing land, to reduce pressure to expand the agricultural frontier.
- Incentivising agroforestry and sustainable land-use practices and enforcing compliance with the law and regulations tied to land rights.

Strengthening property rights

Most deforestation occurs on land that is either publicly owned or of unclear or unenforced property rights. In Peru,

state lands without designated purpose are at the highest risk for deforestation. In Colombia, land rights are often unclear and ambiguous after decades of conflict and displacement of rural populations. In Brazil, a strong framework exists, but enforcement is a challenge. Indigenous communities are especially vulnerable in defending their property rights, even if formally recognised.

OECD Economic Surveys recommend:

- Creating comprehensive land registries using modern technology.
- Strengthening property rights and law enforcement in remote areas, including based on satellite imagery.
- Recognising and enforcing indigenous land rights, which are linked to lower deforestation rates.

Aligning incentives with climate goals

Even with secure land rights and strong enforcement, forest conservation must make economic sense. Intact forests need to generate real value for communities and landowners. Payment for ecosystem services (PES) that provide payments to forest owners for forest preservation are an essential policy tool. Costa Rica's model stands out: funded by an earmarked portion of fuel taxes it covers 40% of all the nation's forests, even if financing needs to be put on a broader footing. Other countries have significantly underfunded PES systems or rely mostly on international mechanisms like REDD+ and Article 6 of the Paris Agreement that provide a global mechanism for protecting the world's remaining forests, but implementation is slow and partly untested. The possibility to sell carbon credits through emissions trading schemes (ETS) can provide powerful incentives for reforestation. New Zealand's pioneering inclusion of forestry in its ETS, where forest owners can earn carbon credits for capturing carbon through

tree growth and must surrender credits if they deforest, provides useful lessons on how such schemes should be designed in forest-rich countries. There should be differentiation according to the emissions removal potential of different forest types, and the design should ensure a sufficiently high carbon price to incentivise carbon-efficiency in non-LULUCF sectors.

The OECD Economic Surveys call for:

- More robust, broader, and sustainably financed payment for ecosystem services schemes and the expansion and integration of emissions trading schemes.
- Better integration of eco-tourism, agroforestry, pisciculture and sustainable timber industry into regional economic development and planning.
- Public incentives that complement, not contradict, private-sector logic.

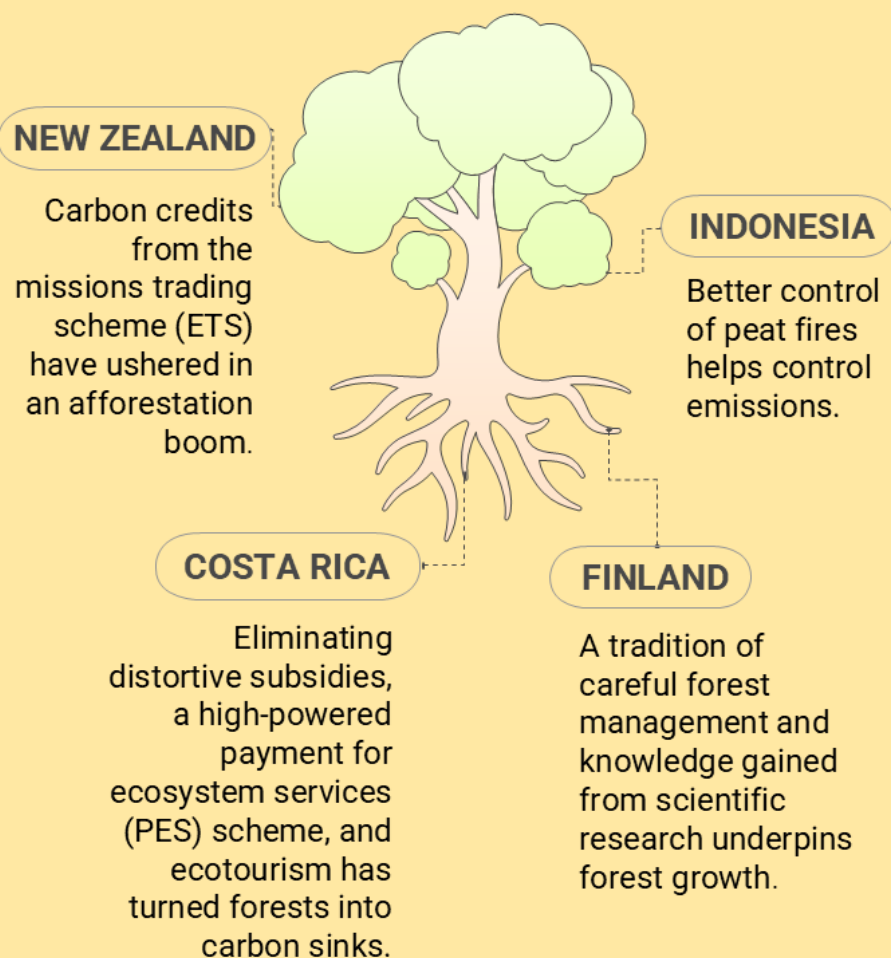
Conclusion

To truly value forests, governments must embed them into national budgets, tax systems and investment frameworks. Forest conservation must be seen as a sensible investment into preserving the nation's natural wealth and resources. The cost of these investments is often relatively modest but strong leadership and coordination is needed to ensure that institutions and incentives all work in the same direction.

At COP30 in Belem, forest rich countries have a chance to lead, not just in emission reductions, but also in showing how forests can support climate goals and the economy.

Infographic

Key learnings from OECD Economic Surveys on **Controlling Deforestation**



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Norway... time to prune farm subsidies?

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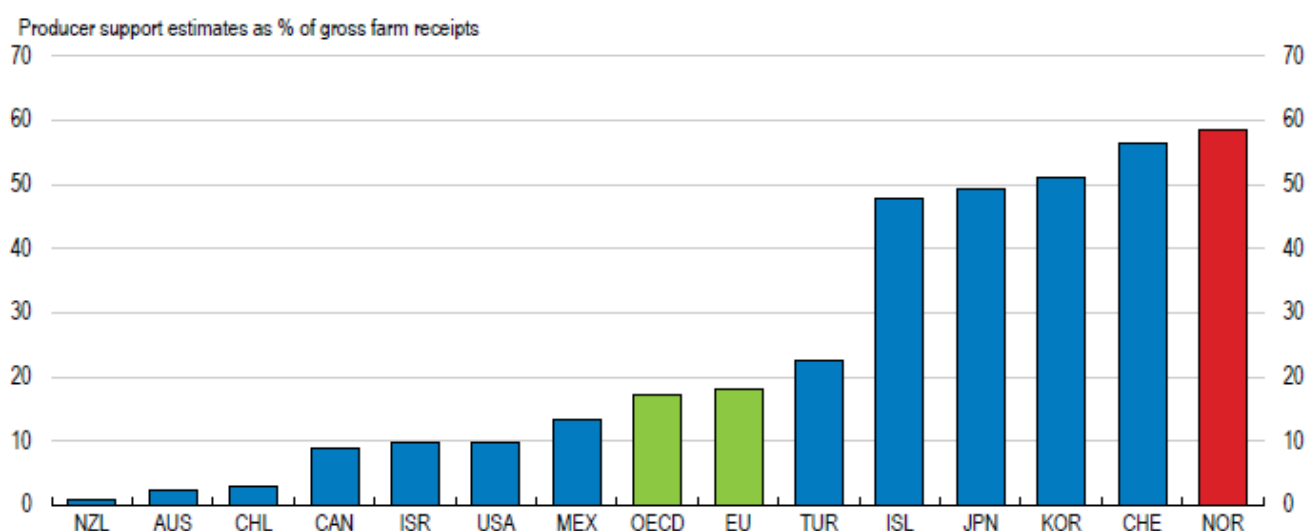
**By Philip Hemmings, Head of Norway Desk,
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Norway puts a high priority on maintaining high levels of well-being in rural communities, many of which are in remote and challenging environments. While it is broadly successful in achieving this goal, it comes at a high price, most notably in the form of substantial support to farmers. Is there a better way?

Each agricultural holding in Norway receives, on average, support worth nearly € 62 000 each year, according to OECD calculations, making the country's agricultural sector among the most heavily subsidised in the OECD area. Overall, subsidies to farms represent around 60% of gross farm income

(see chart). Farmers are not only supported by government-funded subsidies but also benefit from special tax breaks and from custom's tariffs on food imports, the latter contributing to Norway's comparatively high retail food prices. Furthermore, the status quo in farming is supported by concessions and special rules in legislation, which for instance limit corporate ownership of farms and provide advantageous inheritance laws for farming families.

Norway's support to agricultural producers is high



Note: Calculations based on policy settings as of 2014. The OECD's approach to estimating support for the agricultural sector takes into account not only direct payments to farmers from support schemes, but also forms of indirect support, such as customs tariffs and general support (e.g. publically funded agricultural research). This figure shows the producer support estimates, which measures the ratio of transfers from consumers and taxpayers to individual agricultural producers to gross farm receipts (including support, which means, for instance that a 50% PSE means that support equals that of net farm receipts, valued at world market prices).

Source: OECD (2015), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database).

Reform of Norway's traditional fishing industry and the

country's hugely successful aquaculture industry demonstrates that the country's rural communities have capacity for change and an ability to seize opportunity. Subsidies to fishing communities have fallen substantially, thanks to measures encouraging more economically competitive fleets. In aquaculture the lifting of price-setting and investment regulations in the early 1990s were key to the industry's expansion. Furthermore, there remains considerable potential for Norway to develop rural tourism given its many dramatic and unusual landscapes (such as the fjords and arctic landscapes).

Norwegian agricultural support also now needs substantial reform. Though the current government has taken some welcome steps, a lot more should be done. Import-tariffs should be reduced, which would pare back the implicit subsidy that households pay through food prices. Also direct payments for producing should be lowered and linkages between subsidies and cultural and environmental goals strengthened. The agricultural reform should be central to a wider rural paradigm that is less focused on preservation of the status quo through subsidy and more channeled towards encouraging change that helps rural communities thrive in the long run.

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