

Planning for a Future with Zero Net Emissions: Indonesia

Case Study 2. Reducing Deforestation in Indonesia

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Context

Indonesia is an economic powerhouse in Southeast Asia. This archipelago nation has benefited from solid economic growth in recent decades. It is the 10th largest global economy in terms of purchasing power parity, is the only Southeast Asian member of the Group of 20 (G20), and has made significant gains in poverty reduction. It is also endowed with remarkable natural resources; as home to the world's third-largest tropical forest, it is a globally significant carbon sink.

Its economic success was at times accompanied by one of the world's highest rates of forest loss. Primarily driven by the production of agricultural commodities, notably palm oil and pulp and paper plantations, deforestation rates within the country's forest area (*kawasan hutan*) peaked in the late 1990s, and the country lost 8.49 million hectares of forest cover between 2000 and 2020 (Ministry of Environment and Forestry 2021). During those two decades, deforestation, land use, and peat fires contributed about 42 percent to Indonesia's overall GHG emissions. This land transformation heavily impacted Indonesia's peatlands—the partially flooded lowland areas of Kalimantan, Sumatra, and Papua—which have one of the world's largest biological carbon stocks, estimated at 13.6–40.5 Gt (Warren et al. 2017). Mangrove conversion for agriculture and aquaculture in coastal areas similarly contributed to high emissions (World Bank 2021b). (At 3.31 million hectares, Indonesia has around 20 percent of the world's total mangrove stock and, at times, the fastest absolute rate of loss [Arifanti 2020].) Recurring seasonal fires amplified during the dry El Niño years, including on peatlands, have significantly contributed to Indonesia's emissions. In 2015, fires burned 2.6 million hectares of Indonesian land, with daily emissions greater than those of the entire European Union (EU) economy (World Bank 2016b).

The effective protection of carbon-rich ecosystems has been stacked against the economics of land use in Indonesia. High opportunity costs have been a main barrier to counter the industrial-scale land use conversion for high-value agricultural commodity production. In the absence of a market value for standing forests and a valuation of the services they provide, economic forces are a principal driver of forest conversion, including for smallholders (Acosta and Curt 2019). These are compounded by inadequate management, weak governance, and limited enforcement capacity, especially at the subnational level, which are key underlying challenges for better land management and more effective protection of ecosystems. Despite these significant challenges,

Indonesia has started to reverse the historically negative patterns of forest loss in recent years through policy, regulations, and leveraging results-based payments.

Policy

Institutional reforms have aligned responsibilities for forests and climate, but challenges remain. In 2015, the government merged the environment and forestry ministries and mandated the new Ministry of Environment and Forestry (MoEF) to lead the country's climate commitment and oversee legally designated forest areas. Yet the Ministry of Agrarian and Spatial Planning retained responsibility for other forest lands (those designated within other-use areas), which complicates land administration and governance. At the same time, the Ministry of Agriculture implements land-relevant, demand-side policies, such as agricultural targets, often without full coordination with the MoEF. Other land-related decisions, such as issuing permits, are the responsibility of the local government, whose incentives do not align with national commitments, and revenue-raising options are limited. Between 2016 and 2019, the national government also established two new agencies, the Peat and Mangrove Restoration Agency (Badan Restorasi Gambut dan Mangrove, BRGM), responsible for delivering peatland restoration targets and expanded to include mangrove in 2021, and the Indonesia Environment Fund (Badan Pengelola Dana Lingkungan Hidup), a unit under the Ministry of Finance responsible for channeling financing for climate and environmental projects. These two new agencies have mandates that cut across sectors and provide models for how to align policy targets and coordination.

The government of Indonesia has made significant international commitments under the 2015 Paris Agreement to reduce the country's GHG emissions, with a focus on REDD+ (Reducing Emissions from Deforestation and forest Degradation, conservation of forest carbon stocks, sustainable forest management, and enhancement of forest carbon stocks in developing countries)(Government of Indonesia 2016). In the enhanced NDC submitted in 2022, the government pledged to reduce GHG emissions by 43.2 percent by 2030 with international assistance (31.9 percent with its own resources unconditionally) relative to a business-as-usual (BAU) scenario. Indonesia aims to meet more than 60 percent of the emissions reduction target through actions in forestry and land use (FOLU). These are projected to reduce emissions from a BAU projection of 714 MtCO₂e to 214 MtCO₂e in 2030 under the NDC's unconditional target (UNFCCC 2022). Going even further, Indonesia's FOLU Net Sink 2030 plan also outlines the government's aim to make forestry and land use a net carbon sink (that is, zero or negative net emissions) by 2030 by restoring 2.7 million hectares of peatlands, rehabilitating 5.3 million hectares of degraded forestlands, and further reducing deforestation and forest degradation (Ministry of Environment and Forestry 2022a).

These commitments draw on a series of policy reforms over the past decade. In 2011, the government placed a moratorium on new licenses for forest conversion in primary

forests (a measure made permanent in 2019); in 2016, it placed a moratorium on licenses in peatlands. These measures were complemented by major land rights programs, helping address incentives for land clearing. In 2021, it introduced a Presidential Regulation on the Economic Valuation of Carbon to support result-based payments that incentivize conservation and restoration activities.² To complement the moratoria through command-and-control measures, the MoEF revoked 3.1 million hectares of forest concession licenses in 2022 and required concession holders to protect high conservation value forest areas. Some level of restoration of 1.3 million hectares of peatlands has been undertaken by BRGM to date, with a further 3.6 million hectares undertaken by the private sector within concessions under the government's peatland management regulations (Ministry of Environment and Forestry 2022b).

Indonesia has also mapped out its longer-term emissions trajectories toward a net-zero target in 2060. Its LTS demonstrated the technical feasibility of a low-carbon trajectory, reaching 1.61 tCO₂e per capita emissions by 2050 under its low-carbon strategy scenario, aligned with the Paris Agreement. The LTS does not provide a pathway to achieve the 2060 net zero target, but instead relies on unidentified measures or new technologies to fill the gap (Chrysolite et al. 2020).

The recognition of indigenous people's forest rights was a significant step forward in forest policy in Indonesia. In 2013, the Constitutional Court of Indonesia gave indigenous people the right to manage the forests in which they live, which led to a revision of the 1999 Forest Law. The National People's Organization (Aliansi Masyarakat Adat Nusantara, AMAN) filed the case and objected on the basis that government could grant permits for companies to exploit customary land for mining and palm oil, paper, and timber production (Johnson 2013). AMAN estimates that 40 million hectares of Indonesia's state forest should be under customary control, but only a fraction has been mapped or handed back to date. The process has been hampered by overlapping land claims, challenges in demonstrating indigenous occupation, and a slow bureaucracy (Jong 2022; Sari et al. 2018).

In addition, the government improved the enabling environment for REDD+. Actions included formulation of an enabling policy framework for REDD+ at national level and broad-based implementation plans at subnational level. Other activities include developing measurement, reporting, and verification systems; benefit-sharing arrangements for the proceeds of results-based payments; and a feedback and grievance redress mechanism.³ International support contributed to these efforts, including through activities funded by the Forest Carbon Partnership Facility (FCPF) Readiness Fund implemented by the World Bank.

With key building blocks in place and experience of REDD+ pilots and initiatives, the government was in a position to access results-based payment to advance REDD+ implementation. It has been implementing a jurisdictional Emission Reductions Program in East Kalimantan since 2016, and it signed a \$110 million Emission

Reduction Payment Agreement with the FCPF Carbon Fund in 2019 (a first payment of \$20.9 million was made in November 2022).⁴ It has also attracted support and finance through results-based emissions reduction payments from the Green Climate Fund (\$103.8 million for early REDD+ results achieved at national level from 2014 to 2016) and through bilateral cooperation, most notably with Norway. More recently, the BioCarbon Fund Initiative for Sustainable Forest Landscapes has indicated to pay for future emission reductions generated in the Jambi and support the province's long-term low-emission economic growth strategy.

Results and Impacts

Indonesia's actions to reduce forest conversion have significantly lowered its annual GHG emissions in recent years. Between 2000 and 2006, an average of 1.13 million hectares of forests were converted to other land use annually. After a peak in 2015 (1.09 million hectares), the annual conversion rate came down to 0.11 million hectares for 2020–21. Accordingly, emissions from forests and land use gradually decreased from 743 MtCO₂e in 2015 to an annual average of 490 MtCO₂e for 2016–19 and reached 165 MtCO₂e in 2020.⁵ In contrast to earlier years (2001–15), the rise in oil palm prices since 2016 does not appear to have led to an upswing in forest clearing (Kiely et al. 2021). With these trends, Indonesia has outperformed Brazil and the Democratic Republic of Congo with respect to reducing forest-related emissions. National actions, such as the revoking of forest concession licenses, have been further complemented by and expanded in several provinces. East Kalimantan, for instance, has imposed a moratorium on new licenses for mining, forestry, and estate crops and developed policies to accelerate social forestry licensing and fire prevention. The effective implementation of these and other policies will be critical to sustain this trend at national and subnational levels.

To sustain the progress, it is important to further deepen and strengthen the policy framework for net zero emission from forests and land use. This includes the expansion for protection for forest and peatland areas not yet covered by current moratoria, as well as for subnational plans to extend protections to areas designated as nonforest areas (which often have important carbon-rich ecosystems, such as mangroves). It will be necessary to continue clarifying land tenure status to allow for stronger enforcement by responsible agencies. There is further scope to use fiscal incentives (including intergovernmental transfers) to protect carbon-rich ecosystems—forests, peatland, mangroves—and to develop a financing strategy for the implementation of actions set out in the FOLU Net Sink 2030 roadmap.

Key Takeaways

Indonesia was one of many countries to have advanced national REDD+ policies since the concept became a formal part of the UNFCCC negotiations in 2007 and was

eventually enshrined in Article 5 of the Paris Agreement. The government has taken regulatory actions (moratoria, revoking licenses) and enhanced capacity for land use decision-making (including new institutions) that have reduced deforestation and promoted restoration and conservation. Major initiatives—including the World Bank’s FCPF—have contributed to the development of the following: technical standards for jurisdictional REDD+ (such as for the definition of baselines and protocols for measuring, reporting, and verification); robust frameworks for social and environmental safeguards; benefit-sharing; and legal and transactional modalities that need to be in place to transfer emission reductions internationally. Most countries have pursued jurisdictional implementation, building on experience from earlier, smaller-scale REDD+ projects, and expect to use the emission reductions achieved in recent years to meet their stated NDC targets.

The successful implementation of REDD+ across a number of large jurisdictions globally using rigorous technical, legal, and safeguards standards is also now attracting demand from the private sector and allows governments to leverage additional finance for implementation—for example, through the Carbon Offsetting and Reduction Scheme for International Aviation. Yet, while efforts over the past decade have demonstrated that REDD+ can be implemented at scale and deliver viable emissions reductions that meet market demand and requirements, a significant scale-up of land-based mitigation actions, including REDD+, continues to be critical to meet the temperature targets of the Paris Agreement (Roe et al. 2021; Smith et al. 2019). Also, a key issue in Indonesia, and elsewhere, remains that there is currently no clarity on longer-term sources for future REDD+ payments, including from voluntary and compliance carbon markets.