Intertwining Carbon, Biodiversity and Social Targets: Indonesia Setting an Example to the International Community

BACKGROUND

Indonesia's extensive tropical forests, mangroves, and peatlands make it one of the world's most biodiverse nations and a crucial actor in climate change mitigation. Covering nearly two-thirds of the country's land, these ecosystems function as massive carbon sinks that are essential for absorbing global greenhouse gas emissions. Indonesia has demonstrated its commitment to combating climate change through its Nationally Determined Contribution (NDC), which sets ambitious targets to reduce greenhouse gas emissions by 2030. The country also launched the Forest and Land Use Net Sink (FOLU) 2030 strategy in 2022, a specific plan focused on curbing emissions from forestry and land use to achieve net carbon sequestration by 2050. Reaching these targets will require innovative solutions, strong policies, and crucial, active engagement from local communities. Forest Management Units (FMUs), as the managers of forest areas, play a crucial role in contributing to these national goals through collaboration with local stakeholders.

To support these national goals, the AFoCO and Indonesia's Ministry of Environment and Forestry have partnered on the "Innovative Solutions for Climate Change and Biodiversity Landscape Strategy to Support SDGs in Indonesia" project. This multi-year initiative aims to restore degraded ecosystems while enhancing the capacity of FMUs and local communities. The project focuses on three key ecosystems, each critical for both carbon storage and biodiversity conservation:

- Tropical peatlands in Kampar Regency, Riau Province
- Mangrove ecosystems in Sumbawa Regency, West Nusa Tenggara Province
- Karst lowland forests in Maros Regency, South Sulawesi Province

Key Messages

1. Integrated Carbon and Biodiversity Management: Through its restoration strategies in peatlands, mangroves, and karst ecosystems, Indonesia is simultaneously increasing carbon storage and conserving biodiversity, providing an effective response to climate change.
2. Strengthening FMU role in Forest Governance: By successfully initiating the development of the country's first climate-responsive Long-Term Forest Management Plans (RPHJP) for three participating Forest Management Units (FMUs), the project has provided a benchmark model for scaling up to the remaining 529 FMUs across Indonesia, expanding the impact nationwide in line with Indonesia's FOLU Net Sink 2030 goals.
3. Empowering Local Communities: The project has enhanced the capacities of FMUs and local communities through tailored education and training, enabling them to lead climate mitigation and ecosystem restoration efforts.
4. Promoting Non-Timber Forest Products (NTFPs): The project has advanced the production and market development of high-value NTFPs like honey and palm sugar, driving sustainable economic growth and improving local livelihoods.

Figure 1. Karst Ecosystem Restoration Model within the Bulusarang FMU Area in Maros Regency, South Sulawesi Province @ AFoCO

Integrated Land Restoration Models

The project designed and established customized, integrated land restoration models that enhance carbon sequestration, conserve biodiversity, and improve community livelihoods across three distinct Indonesian ecosystems.

Peatlands in Riau: The project converted 10 hectares of oil-palm-dominated land by introducing an agroforestry system. This addressed tenurial conflicts by forming a local farmer group trained in agro-silvopasture and apiculture, creating alternative livelihoods while restoring the ecosystem.

Mangroves in West Nusa Tenggara: Piloted an 18.5-hectare silvofishery model integrating mud crab cultivation. In partnership with the local FMU, two farmer groups were trained to manage the plots, boosting local incomes and gaining recognition as a potential learning hub.

Karst Ecosystem: In South Sulawesi, an agroforestry-based rehabilitation project was launched to restore pine forests in the Karst Lowlands damaged by a 2016 lightning-induced fire. The local Forest Management Unit (FMU) partnered with farmer groups to replant the area with a mix of forest species, Multi-Purpose Tree Species (MPTS), and crops.

To support long-term sustainability, the initiative also focused on developing ecotourism by training FMU staff and local tourism groups, and by creating a master plan to manage tourism in the Tala-Tala Pine Forest.

The project created replicable models for sustainable landscape management. Long-term success is ensured by formal agreements between Forest Management Units (FMUs) and registered farmer groups, who maintain the sites and receive ongoing technical support. The initiative successfully mitigated land-use conflicts, enhanced ecosystem services, and fostered community engagement.

Strengthening Forest Governance

The project established Indonesia's first long-term forest management plans integrating climate adaptation and mitigation strategies for FMUs in three provinces, setting a new benchmark for sustainable forestry. Informed by comprehensive baseline data including carbon stock assessments, biodiversity studies, and value chain analyses, these plans balance economic development with conservation by addressing biodiversity protection, conflict resolution, and local livelihoods.

They provide FMUs with a framework tailored to local conditions while aligning with national climate goals like the FOLU Net Sink 2030 initiative, ultimately strengthening inclusive governance and enhancing FMU capacity to advance sustainability from the local to the national level.

Community Empowerment

A core component of the project focused on empowering local communities through education and training, enabling collaboration between FMUs and villagers on forest restoration while creating sustainable income opportunities. This was achieved by promoting Non-Timber Forest Products (NTFPs) like honey and palm sugar, supported by workshops in product development and digital marketing, as well as assistance with certifications.

To ensure long-term success, management of demonstration plots was transferred to local FMUs, with growth monitoring entrusted to a specialized center, thereby reinforcing both community development and forest health.

Building Forest Management Capacities

Training in carbon accounting, GIS applications for forest monitoring, climate change adaptation, sustainable forest management, and agroforestry techniques based on Indonesia's National Standards enabled FMU officials to acquire essential skills to actively contribute to national climate goals. These capacity-building efforts not only ensure the sustainability of FMU operations but also empower FMU stakeholders to independently manage and monitor their forest resources, effectively managing restored ecosystems in alignment with national strategies.

Figure 2. Mangrove Ecosystem Restoration Model within the Ampang Plampang FMU area in Sumbawa Regency, West Nusa Tenggara Province @ AFoCO

FUTURE OPPORTUNITIES

Developing New Markets for Non-Timber Forest Products (NTFPs)

The pattern of community involvement in forest edges has become a new trend in forest area management. The project has demonstrated the potential of Non-Timber Forest Products (NTFPs) to drive sustainable economic development and support local livelihoods.

Future efforts should focus on scaling up production and expanding market access for high-value products like honey and palm sugar. Leveraging digital platforms and e-commerce can help communities reach broader domestic and international markets, boosting incomes while reinforcing sustainable forest management.

Pioneering Standards for Non-Carbon Benefits in REDD+ Implementation

The development of four innovative standards for assessing and integrating non-carbon benefits in REDD+ activities represent a transformative step in forest management.

These standards expand the focus beyond carbon sequestration, creating opportunities to leverage REDD+ projects for holistic ecosystem and community benefits.

Standard for Identifying and Assessing Non-Carbon Benefits on Biodiversity: The biodiversity standard offers a systematic approach to assess impacts on local species and habitats to support preservation efforts.

Standard for Ecotourism Benefits: By linking REDD+ projects with ecotourism potential, the ecotourism standard presents an opportunity to drive sustainable local livelihoods while fostering forest conservation.

Standard for Soil Protection: This standard evaluates the role of REDD+ projects in mitigating soil erosion and improving soil quality.

Standard for Hydrological Protection: The standard underscores the importance of water regulation and flood mitigation, offering a pathway to enhance climate resilience in forested landscapes.

Figure 3. NTFP Development led by Minas Tahura FMU in Riau province

These standards establish a framework for future REDD+ projects to deliver multidimensional impacts, creating opportunities for comprehensive ecosystem stewardship.

Strengthening Public-Private Partnerships for Sustainable Agroforestry

Building on successful agroforestry initiatives, there is a strong opportunity to establish public-private partnerships to scale up these efforts.

Involving the private sector can provide additional investment, technical expertise, and market access for local farmers. Such collaboration would enhance climate adaptation and mitigation while strengthening sustainable livelihoods over the long term.

Enhancing the Capacities of Forest Management Units (FMUs) and Local Communities

Despite significant pressure, Indonesia's forests hold vast potential for climate resilience and economic opportunity.

This project combines forest restoration, agroforestry, and community engagement to develop sustainable models of land management that can be replicated across the country.

Enhancing the capacities of Forest Management Units (FMUs) and local communities can contribute to Indonesia's emissions reduction targets and improve biodiversity landscapes to support the achievement of the Sustainable Development Goals (SDGs), in particular SDGs 1, 8, 13 and 15.

It is important to transfer techniques and raise awareness of project model establishment to relevant stakeholders through the synthesis of knowledge and experiences.

Figure 4. Capacity-building Activities for NTFP Development led by Minas Tahura FMU in Riau province

THE WAY FORWARD

Moving forward, the project can build on its solid foundation in ecosystem restoration and community empowerment by pursuing several key strategies.

To ensure long-term sustainability and support Indonesia's 2030 targets, the ways forward include forging public-private partnerships to scale up conservation efforts.

A central priority should be to accelerate the transition away from palm oil toward high-value Non-Timber Forest Products (NTFPs), such as honey and palm sugar, which provide the economic foundation needed to keep forests standing while supporting rural development.

Furthermore, the project should continue to strengthen forest governance by building on the successful formalization of partnerships with participating FMUs.

To address persistent challenges such as illegal encroachment and tenure conflicts, it is essential to ensure that FMUs are adequately equipped with resources and expertise to support the transition away from unsustainable landscape management.

Looking ahead, more concrete benefit-sharing mechanisms should be designed to secure sustained farmer participation, as the short project timeline has limited the harvesting of substantial NTFP commodities. This would enable farmers to genuinely benefit from alternative livelihoods by harvesting and selling forest products, reducing their reliance on palm oil and driving broader transformation in land use practices. Additional capacity-building activities related to enterprise development, product certification, and enhancing market access should also be provided to support the sustainable use of forest resources.

Figure 5 Local Communities Actively Engaged the Maintenance and Monitoring of Demonstration Plots @ AFoCO

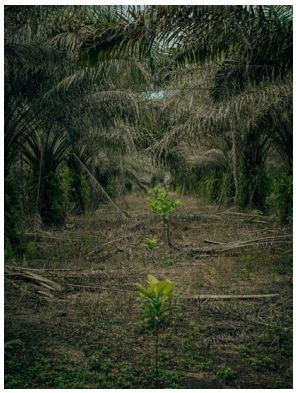

Figure 6. Intercropping of Coffee liberica on Oil Palm-dominated Peatlands Planted in Kepau Jaya Forest with Specific Purpose in Riau province @ AFoCO

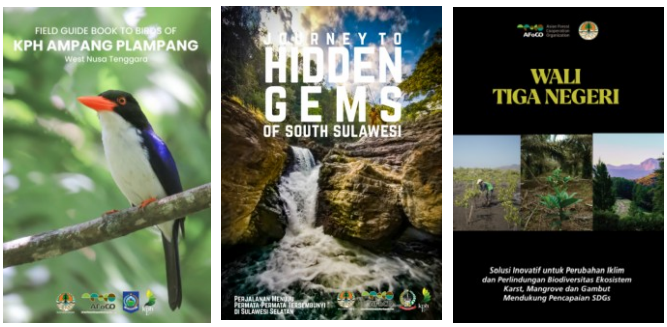

Figure 7. Project publications:
Field Guide Book for Birds in KPH Ampang Plampang, West Nusa Tenggara; Journey to Hidden Gems of South Sulawesi; and The Guardians of Three Landscapes @ AFoCO

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