

## Sustainable forest management: Indonesia navigates a paradigm shift

*Mainstreaming ecosystem services to protect the archipelago's remaining forests*



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After a long day a worker heads home. Photo by Aulia Erlangga/CIFOR

Indonesia's forests are home to 10-15 percent of the world's known plants, mammals, and birds, as well as vast carbon stocks. As such, any degradation or deforestation of these ecosystems will have important local, national, and international implications.

With this in mind, the Indonesian government has taken critical steps to protect as much as possible of its precious forest estate, including enhancing its Nationally Determined Contribution (NDC) targets for the Paris Agreement on Climate Change and developing a new strategy for reaching its 2030 Forest and Other Land Use (FOLU) Net Sink target for carbon sequestration. ^

But there is also considerable pressure on its land to meet demand for food and materials. In this context, the government “has taken the initiative to shift from conventional forestry practices, to introducing innovative approaches to producing goods and services,” said Hunggul YSH Nugroho, a researcher at Indonesia’s National Research and Innovation Agency (BRIN) and lead author of a new paper in *Sustainability*, which describes the practice of ‘mainstreaming ecosystem services (ES)’ in forest management as a manifestation of this shift. The paper also highlights key gaps in the implementation of this approach, and offers important insights for how to bring it closer to reality.

What might such a shift entail? Essentially, it’s about finding ways to value – and add value to – the diverse set of services that are provided by an intact ecosystem, which include food, water, timber, air purification, soil formation, and pollination. In Indonesia, said Nugroho, a new set of business configurations for the management of production forest resources has emerged, which includes a more diverse set of forest-based businesses – including food, renewable energy, ecotourism, agroforestry, non-timber forest products (NTFPs), and environmental services such as carbon capture and water storage and filtration.

“The goal of mainstreaming is to internalize the aim of conserving natural resources in economic sector policies, programs, and development models for the benefit of humanity,” said the co-authors in the paper. “Mainstreaming aims to ensure that the conservation and sustainable use of ecosystems is not only the responsibility of conservation actors, but all stakeholders, from policymakers to business actors and local communities.”

The paper explores the strategies the country is employing to put the mainstreaming process in action. It highlights four key elements: developing a payment for ecosystem services (PES) scheme; securing sustainable funding to incentivize the shift; utilizing a decision support system (DSS); and articulating the value of ES in order to manage these services appropriately and produce measurable outcomes.

The study’s authors view PES as “mandatory” to sustaining the shift. To date, however, “its implementation remains rare in Indonesia”, said Yudono – to boost this, community capacity will need to be built, intermediary agents employed, and incentives increased to encourage participation.

Private and public funding will be critical to strengthening funding certainty. There are several options for sustainable financing schemes that can be optimized, say the authors – these include public funds from the government budget, grants, and foreign loans; and non-public funds in the form of private funds, blended finance, State-Owned Enterprise (BUMN) funds, and funds from philanthropic institutions and NGOs.

Another key challenge for implementing PES at the landscape level is working out how to allocate and manage different land use options, some of which may be contradictory. “In this case,” say the authors, “the use of DSS combined with spatial analysis and remote sensing becomes important and strategic. DSS can be used to support a more comprehensive understanding of the problem and the development of alternative management options, and project the consequences of different actions.”

Articulating the value of ecosystem services in a participatory manner can help promote a more comprehensive integration of stakeholder perceptions and values, said Yudono – “starting with bringing out the economic as well as the social value of ecosystem services, from the ground up.”

In general, the paper’s contributors hope to build awareness of the need to recognize the contribution of ES to the country’s financial, social, and environmental wellbeing. “Economic development often depends on natural ecosystems and the flow of goods and services generated by nature,” said Himlal Baral, a senior scientist at the Center for International Forestry Research (CIFOR) and a co-author of the paper. “Incorporating an ecosystem services approach into existing planning and decision-making processes provides win-win solutions in terms of both economic development and environmental conservation.”

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