

FORESTS NEWS

Deforestation from road expansion jeopardizes ecosystems in Indonesian New Guinea

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The vast forests of the world's largest tropical island are populated by exotic birds of paradise, kingfishers, parrots, raptors and pigeons – these species representing just a handful of almost 750 that have so far been identified.

Yet New Guinea – notable for unique and biodiverse flora and fauna attributed to its turbulent geological history and range of tropical habitats from sea level to high elevation mountain ranges – faces multiple threats from deforestation.

Since colonial times, the island has been divided – in the west, the provinces of West Papua and Papua make up Indonesian New Guinea, and in the east it is the independent country of Papua New Guinea. Until relatively recent times, the environmental disruptions faced by Indigenous Peoples and local communities were mostly localized.

But since 2010, the situation has been rapidly changing, according to David Gaveau, an associate scientist with the Center for International Forestry Research and World Agroforestry (CIFOR-ICRAF), who worked with a team of Indonesian and international scientists to use satellite imagery to measure forest loss between 2001 and 2019, demonstrating close ties between expansion of the Trans-Papua Highway – a 4,000 km national investment project – the expansion of oil palm plantations and deforestation.

“Positive correlations between Trans-Papua Highway construction and plantation expansion indicate these are linked processes,” said Gaveau, who is also a member of the International Union for Conservation of Nature Oil Palm Task Force, which investigates the sustainability of palm oil.

“Plantations and roads expanded rapidly after 2011, particularly in Papua province. While overall forest losses remain limited, our model shows how new roads may lead to more extensive deforestation. Some 4.5 million hectares of forest will be cleared by 2036 if Papua and West Papua follow similar patterns observed in Kalimantan on the island of Borneo.”

With less land available elsewhere in the country, agro-industries are increasingly investing in the development of large monoculture plantations for palm oil, and pulp and paper production, he said, adding that extensive road construction supports related land development, as well as mining.

The scientists used satellite data to examine the patterns and relationships of deforestation, road development and plantation expansion from 2001 to 2019, then developed a model to predict future deforestation.

The data are summarized in the journal of Biological Conservation and presented interactively in the Nusantara Atlas.

“We believe that the role of civil society to monitor, alert and report on deforestation and land conversion in Papua and West Papua should be strengthened to ensure what happens on the ground is fair, transparent and democratic,” Gaveau said.

“Although roads can bring benefits to previously remote and neglected communities, many observers are concerned that big commercial interests dominate over local needs across the region,” he added. “They appear to facilitate access by concession owners to their oil palm or mining concessions and benefit their subsequent extractive industries with consequent harm to forests, to Indigenous Peoples and to biodiversity.”

To reach their findings, the scientists calibrated six models using forest loss observed between 2010 and 2018 as the response variable. They generated yearly deforestation risk maps, simulating the spatial occurrence of forest loss over an 18-year time frame to 2036.

Using two scenarios – one which estimated the speed of forest loss as the percentage of forest loss observed between 2010 and 2018 in Indonesian New Guinea, relative to the total amount of forest left. The other scenario estimated forest loss as the percentage of forest loss based on what was observed in Indonesian Borneo between 2001 and 2018.

“Although our research focused on land-cover change, this is only one aspect of the threats to biodiversity in the area,” said co-author Douglas Sheil, an associate scientist at CIFOR-ICRAF, who is also a member of the IUCN task force and a professor at Wageningen University & Research in the Netherlands.

“New roads do not only increase the risk of deforestation, but they also increase access for other activities such as hunting, potentially impacting wildlife,” he added. “But what I would emphasize — as particularly important and exciting in Indonesian New Guinea — is how the aspirations of local communities and conservation often align. In many instances people venerate, guard and protect nature as an integral part of their culture. If we work closely with these people we can develop plans that have local support, and bring many wider benefits both in terms of development and conservation.”

Overall, less forest loss has occurred in Indonesian New Guinea than in the rest of Indonesia, with only 2 percent of old growth forests cleared from 2001 to 2019, mostly due to plantation expansion, roads, timber cutting, fires, shifting agriculture, artisanal mining and landslides, according to the report.

“Policies overseeing land use decisions should carefully weigh the trade-offs in the region and acknowledge the significant local and international role these forests play economically and environmentally,” Gaveau said.

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