THREE BASINS
THREAT REPORT:
Fossil Fuel, Mining, and Industrial Expansion Threats to Forests and Communities
OCTOBER 2023
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Suggested Citation:

Cover Image: (Top) Deforestation and degradation of mountain side at the Indonesia Weda Industrial Park (IWIP) in Central Halmahera, North Maluku Province. Credit: Courtesy of Auriga via Flicker, (Bottom Left) A woman from the Waorani community speaks via megaphone during a protest against new oil projects in the Amazon in Ecuador, Quito. Credit: Juan Diego Montenegro/picture alliance via Getty Images, (Bottom Right) Oil well in the Democratic Republic of Congo on October 19, 2021. Credit: Alexis Huguet/AFP via Getty Images
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The Amazon Basin contains the largest rainforest in the world – spanning nine countries and home to 2–4 million Indigenous people of more than 500 distinct nationalities. The Amazon, specifically its headwaters, is the most biodiverse region in the world. The Amazon region contains 40% of the world’s remaining rainforest, at least 25% of its known terrestrial biodiversity, and more fish species than in any other river system.¹

The greatest species richness in the world is found along the transition of the Amazon lowland basin to the Andes mountains headwaters in Colombia, Ecuador, Peru and Bolivia.² Due to its unique geology this region also has the most intensive oil production and exploration in the basin.
An estimated 65 million hectares, or nearly 13% of undisturbed tropical forest (an area nearly twice the size of Poland) now overlap with oil and gas blocks.

More than 31 million hectares of Indigenous Territories are now in oil and gas blocks.

Key Findings:

- Nearly 14 million people living in more than 13,000 villages, towns, etc., or more than 23% of populated places in Amazonia, are now in oil and gas production or exploration blocks.

- More than 31 million hectares of Indigenous Territories are now in oil and gas production or exploration blocks.
An Existential Threat to Indigenous people and an Ongoing Toxic Legacy

Oil extraction and deforestation lead to violations of Indigenous peoples’ rights and are threats to their survival and cultural stability. Indigenous federations and a vast majority of Indigenous communities are opposed to the expansion of oil and other industrial activities in their territories. Yet the oil industry continues to advance into their territories and frontier rainforests.

Oil and Gas Expansion: A Gateway to Deforestation

Oil drilling requires roads and infrastructure that fragment the rainforest; deforestation along roadsides has been a driver of forest loss – with a strong correlation between oil drilling and deforestation in the Ecuadorian Amazon. Ecuador has one of the highest road densities of the Amazon basin, and deforestation and colonization is a critical threat to Indigenous cultures and ways of life. Land-use change from agriculture is the number one cause of deforestation in Ecuador. Not surprisingly, the highest concentration of forest loss due to these practices overlaps with the three most active oil blocks in the country.

Indigenous people from Amazon countries and members of social movements take part in the March of the Peoples of the Earth for the Amazon in Belém, Para State, Brazil, on August 8, 2023 for the two-day meeting of the Amazon Cooperation Treaty Organization (ACTO). Image credit: Evaristo Sa / AFP via Getty Images
Oil “Development” in the Western Amazon: A Cautionary Tale

The history of oil-related contamination in the Western Amazon spans decades. Fossil fuel extraction has brought with it toxic waste and crude oil spilled from extensive and poorly-maintained pipelines. Oil development has also been associated with exposure to heavy metals and contaminants and cancer rates as high as four times that of reference populations. Major pipeline ruptures in 2022 and 2020 have heavily impacted the water resources of the Indigenous and local communities who live within the impact zone of the oil and gas industry. Since 1972 at least 7,850 spill sites have been inventoried by the Ministry of Environment of Ecuador.

At the same time, the aging Norperuano pipeline in the Peruvian Amazon continues to spill regularly; it is estimated more than 450 oil spills have occurred in the Peruvian Amazon since 2000.

Indigenous resistance has been a constant force against oil expansion and other forms of extractivism with a steady history of keeping oil, mining, and other extractive interests out of their territories and customary lands. Indigenous federations and a range of civil society organizations have been calling attention to millions of hectares of rainforest in the Western Amazon under imminent threat from oil and gas expansion.
A Vital Region in Peru in the Amazon Sacred Headwaters At Risk: The Fate of “Block 64” Looming

Earlier this year, certain members of the Peruvian Congress proposed to place 31 oil blocks over 435 Indigenous communities, eliminating 25 uncontacted peoples (PIACI) reserves. Fortunately, the bill did not pass. However, in this same region, there are troubling indications that oil expansion is looming in a highly controversial area where Indigenous resistance has kept a host of oil majors from drilling in recent decades.

The area, known as Block 64, in the Loreto province is a part of the Amazon Sacred Headwaters with more than 800,000 hectares (~2 million acres) of near-pristine tropical rainforest overlapping with the oil block. More than half (53%) of the area the government is actively seeking to exploit overlaps with titled Indigenous Territory with nearly all of the remaining area identified as customary Indigenous territories that haven’t been titled yet. This is setting the stage for conflict between a range of Indigenous communities and PetroPeru, the state-owned oil company.
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Ecuador: A Precedent-Setting Referendum Ending Oil in Yasuni and Looming Expansion Threats in the South

Approximately 89% of oil exports from the Amazon flow through Ecuador.10 In a historic referendum, almost 59% of voters voted to suspend oil operations in Yasuni National Park. While Petroecuador has a year to halt activities, the country’s environment minister estimated it will take “many, many years” for forests and wildlife to recover.11 He also noted that leaving abandoned infrastructure, like roads, would create a “gateway” to illegal logging and hunting. In southern Ecuador, a temporary moratorium on oil expansion is set to expire this year, exposing a range of key areas to risk, including 3 million hectares (8 million acres) of intact rainforest and the territories of seven Indigenous nationalities – unless this moratorium is made permanent.
Colombia Supports Protecting 80% by 2025 and Joins the Beyond Oil and Gas Alliance (BOGA): A Reference Point for Amazonian Nations

In August this year, Colombia joined as a “friend” a range of countries that comprise the Beyond Oil and Gas Alliance and committed to the BOGA Declaration. The Declaration supports a socially just, equitable global transition to align oil and gas production with the objectives of the Paris Agreement, and commits the signatories to work together to facilitate effective measures to this end in line with the Paris Agreement and national climate neutrality targets. Many see Colombia joining the Beyond Oil and Gas Alliance as a positive diplomatic development that shows strong leadership ahead of the crucial COP28. Colombia, which is the largest oil and gas producer to date to join BOGA, is being lauded for its leadership and has been calling for other countries to commit to an end to oil expansion in the Amazon.
Fossil Fuel Expansion Threats in the Congo Basin

Spanning approximately 200 million hectares (500 million acres), or about the size of Mexico, the tropical forests and wetlands of the Congo Basin are vital for its people, wildlife, and the future climate stability of the planet. The region is a vast carbon sink, absorbing even more carbon than the Amazon. Until recently, it has experienced lower deforestation rates compared to other tropical forest regions, but the pressures from agriculture, logging, extractive industries, associated infrastructure projects, and many others are increasingly intense.

The forest roughly overlaps six countries – Cameroon, Central African Republic, Democratic Republic of the Congo, Republic of the Congo, Equatorial Guinea, and Gabon. This diverse landscape contains undisturbed tropical forests, as well as riverine systems, savannahs, and swamp forests, supporting thousands of species of tropical plants, birds, and an incredible range of unique and endangered wildlife from forest elephants and chimpanzees to mountain gorillas and hundreds of species of mammals – including many that are IUCN red-listed.

These forests also sustain tens of millions of people, including a wide range of Indigenous peoples, many of whom maintain a semi-nomadic existence.

The cultural diversity of the region is evident in the hundreds of distinct ethnic groups whose rich heritage and traditions are interwoven within this unique landscape. Oil and gas expansion in the Congo Basin threatens to further fragment intact lands, and exacerbate forest and wetland degradation and deforestation in the region.

A mother and baby gorilla in the Democratic Republic of Congo’s Virunga National Park, a protected World Heritage Site and most biodiverse park in Africa. (Photo by Brent Stirton/Getty Images for WWF-Canon)
In the Congo Basin, over 72 million hectares, or more than 39% of intact Tropical Moist Forests, now overlap with oil and gas production and exploration blocks. Over 150 distinct ethnic groups call the Congo Basin home, and nearly 33 million people living in 16,000 populated places - or 20% of populated places in Congo Basin countries - are now in existing or designated oil and gas blocks.

Key Findings:
- In the Congo Basin, over 72 million hectares, or more than 39% of intact Tropical Moist Forests, now overlap with oil and gas production and exploration blocks.
- Over 150 distinct ethnic groups call the Congo Basin home, and nearly 33 million people living in 16,000 populated places - or 20% of populated places in Congo Basin countries - are now in existing or designated oil and gas blocks.

A recent examination by the Bayelsa State Oil & Environmental Commission on the impacts of oil development in Nigeria reveals disastrous impacts on the environment, health, livelihoods and human rights of local communities and is a significant point of contrast if oil expansion trajectories move forward in the Congo Basin.
The Democratic Republic of Congo (DRC) is currently auctioning 30 oil and gas blocks that overlap with millions of hectares of intact forest, including the Cuvette Centrale peatlands – the largest terrestrial carbon store on the planet, more than a dozen protected areas, and the ancestral lands of thousands of communities. Several companies have already expressed interest in the coastal oil blocks (that partially overlap with Mangroves National Park) while selected gas blocks have reportedly already been awarded in the east of the country. It is anticipated that the continued development of the East Africa Crude Oil Pipeline (EACOP) in neighboring Uganda could increase the viability of several oil blocks, including those overlapping the UNESCO World Heritage Virunga National Park. Earlier this year, a coalition of civil society groups called for the immediate suspension of the auction due to the lack of transparency between government officials and foreign interests.

In addition to the immediate threats to forests and the climate, the indirect and cumulative impacts in terms of the required roads, drilling equipment, pipelines, rigs, processing plants and use of local water sources are still higher. This infrastructure would turn on the spigot in the cascade of deforestation as loggers, settlers and poachers move in.
Fossil Fuel Expansion Threat Assessment in the Mekong Borneo Basin

Southeast Asia is home to nearly 15% of the world’s tropical forests, at least four of twenty-five globally important biodiversity hotspots, and 17% of the world’s wildlife. If current trends of extractive expansion continue, it is estimated that up to 42% of species could disappear by 2100, at least half of which could represent global extinctions.

The biodiversity of the Mekong Borneo Basin is yet to be fully documented. In one year alone, 380 new-to-science species were identified in Cambodia, Laos, Myanmar, Thailand and Vietnam.

The 11th longest river in the world, the Mekong supports 300 million people across southeast Asia.

Given Southeast Asia’s plan to rely on fossil fuels for three-quarters of its energy needs through 2030, the region’s forests and communities will be at risk from the expansion of industrial extraction. The national strategy of Indonesia, for example, anticipates a dramatic expansion in oil and gas in natural forests and a continued reliance on coal. Last year, increases in oil and gas and coal emissions brought Indonesia’s total fossil fuel CO2 emissions to 619 million metric tons.
In Southeast Asia, more than 34.8 million hectares, or nearly 20% of undisturbed Tropical Moist Forests, are in oil and gas blocks designated for production or exploration.

In Indonesia, more than 99,000 populated places (villages, communities, towns, etc.) and 88 million people (inclusive of a high degree of Indigenous and forest-based people) are located in oil and gas blocks.

**Key Findings:**

- 34M+ hectares of undisturbed Tropical Moist Forests (~20%) are in oil and gas blocks.
- 88M people (99k+ populated places) inclusive of Indigenous and forest-based communities are in oil and gas blocks.
Oil and Gas Expansion Threats to Indigenous Critical Ecosystems and Indigenous Peoples

West Papua is Indonesia’s most diverse region with more than 250 different Indigenous linguistic groups. Located on the island of New Guinea, the site of Asia Pacific’s largest area of intact old-growth forest, West Papula was targeted this year for two onshore oil and gas blocks that straddle the South Papua and Papua Mountains provinces.

The oil and gas blocks could impact Indigenous communities in Lorentz National Park, a Unesco World Heritage Site in Papua. The largest protected area in South-East Asia, Lorentz spans 2.35 million hectares across a continuous, intact transect from snowcap to tropical marine environment with extensive lowland wetlands.

Another oil block is in eastern Maluku province, the ancestral land of the Bati people. In 2022, the Bati protested against oil exploration on customary territory without their consent. On the island of Borneo, between 1973 and 2015, 50% of forest cover disappeared due to overlapping oil palm, coal and logging concessions. Oil and gas blocks bring another layer of critical threats to Indigenous Dayak communities, as well as critically endangered species, including the Bornean Orangutan and Helmeted Hornbill, which have already lost more than a third of their habitats.

Lorentz National Park is home to various bird species, including the rare bird of paradise. Image credit: Courtesy of Ufhii22 via Wikimedia Commons (CC BY-SA 4.0)
In Malaysia, Indigenous peoples, collectively known as the Orang Asli, comprise 13% of the country’s population. The latest expansion of onshore oil and gas could impact Indigenous communities near exploration sites located onshore between Limbang and Lawas, two northmost districts in Sarawak.

It is estimated that Indigenous peoples comprise 40% of Myanmar’s population and occupy 60% of its land. Most of the country’s 16 million hectares of intact forests, part of the Indo-Burma Hotspot, are on the eastern border. More than 200 globally threatened species inhabit Myanmar’s forests, including elephants, tigers, sun bears and the Myanmar snub-nosed monkey.

The revenue shares that fossil fuel companies pay the Myanmar Oil and Gas Enterprise (MOGE) make it the country’s largest revenue source. As Myanmar transforms into a significant energy source and a transit corridor for fossil fuels, studies show a direct link between oil and gas pipelines and large-scale deforestation. The pipelines traverse the Rakhine Roma Mountain Range across diverse ecosystems, dense forests, and rivers. The Rakhine Roma mountain range is recognized as one of the ten most vulnerable ecoregions in the world, feeding two crucial watersheds, the Brahmaputra and Irrawaddy Rivers.

Community of Orang Asli in Malaysia. Image credit: Courtesy of Jamie via Flickr (CC BY-NC-ND 4.0)
THREAT ASSESSMENT FROM MINING EXPANSION IN THE THREE BASINS

The expansion of industrial and illegal mining across the three basins poses grave future threats to ecosystems and communities. It is anticipated that skyrocketing investment in critical minerals will exacerbate pressure on forests in all three basins.

Amazon Basin Mining Expansion Threats

The expansion of legal and illegal mining across Amazonia will continue to be a significant driver of deforestation and forest degradation, and poses existential threats to Indigenous communities whose territories, health, and livelihoods are severely impacted from mining activity.

Health risks of gold mining for Indigenous peoples

Emissions from unregulated and small-scale gold mining surpass coal burning as the largest global source of mercury. In Peru’s Amazon forest, songbirds near mining areas show mercury levels as much as 12 times higher than those farther away. As an illustrative example, six in ten women of childbearing age in Munduruku villages near gold mining in the Brazilian Amazon had high mercury in their blood. Another study on Indigenous populations in Guyana who live close to artisanal and small-scale gold mining activities and who depend on local fish for most of their protein needs found they are more likely to harbor high levels of mercury in their bodies. Research increasingly shows mercury contamination emerging as a threat across all three basins.
Critical minerals

The rush to exploit critical minerals in the Amazon Basin so far lacks oversight. For example, as soon as Brazil created an exclusive division on critical minerals division, its first action was to reduce the administrative burden for strategic mining projects for lithium and rare earth elements, as well as graphite, copper and cobalt. Close to one-third of Brazil’s critical minerals reserves lie beneath the Amazon Basin. Brazil possesses 94% of the world’s niobium, a metal crucial to strengthening steel, and is the world’s fifth-biggest producer of lithium. This year, the government of the southeastern state of Minas Gerais, rebranded the Jequitinhonha valley as the ‘Lithium Valley.’

Meanwhile, Colombia’s new strategic roadmap, the Copper Route, will expand the domestic copper industry – starting with a protected area in Putumayo in the Amazon. This first major, legal mining project in the Colombian Amazon will operate a mega open pit mine of the country’s largest copper resource. It overlaps with the 308 km2 Mocoa River Upper Basin Protected Forest Reserve that safeguards the river’s headwaters, along with eight other areas of environmental importance. Indigenous leaders have offered an alternative economic strategy for the region that includes the creation of a university, the promotion of community and ethno-tourism, and the marketing of agro-ecological products.
Nearly 170 million hectares, or more than 33% of undisturbed Tropical Moist Forests, overlap with active (~71m ha) and potential (~99m ha) mining concessions.36

More than 70 million hectares of Indigenous Territories overlap with active (~10m ha) and potential (~60m ha) mining concessions.37

In an extreme threat scenario, more than 16,000 populated places (villages, communities, towns, etc.) and 27 million people are located in active and inactive mining concessions.38
Congo Basin Mining Expansion Threats

Mining, both legal and illicit, threatens forests across the Congo Basin. Across Central Africa, 5,500 pending and granted mining permits cover about 10% of the land surface. In the DRC alone, more than 3,800 permits cover more than 27 million hectares. In Cameroon, which has lost forest cover the size of Belgium since 1990, small scale gold mines pockmark its eastern forests, leaving toxic waste and water that have killed both humans and animals. One study of unregulated and small-scale gold miners found elevated mercury levels in 71.7% of those tested. In northeast Gabon, the Belinga iron ore project, revived this year, presents a threat to the Minkebe and Ivindo National Parks where endemic old-growth forests are home to a vast array of wildlife, including critically endangered forest elephants, western lowland gorillas, and endangered chimpanzees.

Mining in Protected Areas

As of 2020, approved and pending mining claims overlapped with 4.6% of protected areas in central Africa. Overlaps between conservation and unregulated, industrial and semi-industrial mining activities are extensive in eastern DRC, which have heightened violent conflicts, particularly in the Okapi Wildlife Preserve (RBO), home to the largest okapi and chimpanzee populations in the country, and the Itombwe Nature Reserve (INR), habitat of the world’s largest gorilla, the endangered Grauer’s gorilla. Unregulated mining is rampant in both reserves: up to 40 active unregulated gold and cassiterite mines in the INR, and 18 active gold and diamond mining sites in the RBO. Mining is estimated to have caused 1,260.304 hectares of primary forest loss around the RBO reserve. In Cameroon, in 2019, an estimated 1.173 million hectares of protected areas overlapped with mining sites. Gold mining has also developed considerably in the Dja-Odzala-Minkebe (TRIDOM) landscape that overlaps the Republic of Congo, Gabon and Cameroon.

Critical minerals

The Congo Basin contains some of the largest known reserves of key critical minerals. The enthusiasm for lithium as a source for the energy transition has left unanswered questions about the full impacts of its mining, whether brine or chemically-based. Research on the impact of brine extraction on water tables is scant. Initial studies of chemical extraction in other regions showed fish contamination 150 miles downstream from lithium processing sites. Lithium reserves in southeast DRC are estimated to be the largest undeveloped resource in the world with four hundred 400 million tonnes that could produce about 700,000 tonnes a year. There has so far been relatively little discussion on detailed environmental considerations of the DRC’s lithium mining or how it will impact the lives of communities near mining areas. One study, however, found little transparency in a planned lithium mine, which violated DRC law by not publicly releasing its environmental/social impact assessment.
The DRC is the world’s largest cobalt producer. Cobalt mining in the DRC risks high exposure to cobalt and other trace elements for people living within 3km of industrial mines or smelting operations. Children in cobalt mining towns show seven times higher levels of cobalt than those who don’t. Other risks include the increase of violence and conflict: According to numerous studies, including a report from the UN Group of Experts on the DRC, it is clear that mining plays a substantial role in the financing of armed groups.

Cameroon is also set to start mining what is touted as one of the world’s largest proven primary reserves of cobalt, along with deposits of nickel, manganese and rare earth in the southeast region. Unless these risks are addressed and mitigated, such mining will result in deeper inequality in the decarbonization divide, with communities in mining areas bearing the environmental costs without substantial benefit.
In the Congo basin, nearly 48 million hectares, or nearly 27% of intact Tropical Moist Forests, overlap with mining concessions.

More than 11,000 populated places (villages, communities, towns, etc.) and 56 million people (inclusive of Indigenous and forest-dependent people) are located in mining concessions in the Congo Basin.
Mining Expansion Threats in Indonesia

While future analyses will examine industrial mining threats to forests and communities in the broader domain of Southeast Asia, this brief is focusing attention on Indonesia. Industrial mining in Indonesia totaled 58.2% of the top 26 countries losing forests to mining. The strategy to tie coal to its economic future risks deep environmental impacts to forests and local communities. Unregulated and small-scale gold mining is spread across 31 provinces in Indonesia, impacting 15 national parks, grand forests and protected areas.

Of more than 186 nickel mines in operation globally, 127 are in Indonesia. The country seems to be following palm oil’s historic pattern of forest degradation and deforestation. Most nickel mining activities center on 690,400 hectares of concession lands, or close to 70 percent of forest cover, on the island of Sulawesi. Auriga Nusantara estimates Central Sulawesi and Southeast Sulawesi have lost 500 thousand hectares of forest from nickel mining. Other impacts are already evident in the dramatic increase in floods in Southeast Sulawesi: Before the mines, between 2002 to 2008 there were two to three per year. Last year alone there were at least 21 floods and mudslides. Further, the extraction processes Indonesia requires to produce battery-grade nickel pose high threats of contamination, particularly from onshore waste disposal.

East Kalimantan: A Microcosm of a Global Trend

East Kalimantan, the most intensively mined province in Indonesia, is a prime example of the cascade of deforestation from industrial extraction. The province’s 8.26 million hectares of forest are the habitat of such endangered endemic species as the Bornean orangutan, the Proboscis monkey, the Sumatran rhinoceros, and Bornean sun bear. These forests have more plant diversity than almost any other place on Earth.

The province is a microcosm of a global trend in which separate industrial expansion concessions overlap and build on previous deforestation. The evolution of extraction in the same forests can start with logging concessions that lead to mono-cultivation plantations that are then permitted for open-cast coal mining. By 2021, coal permits covered 70% of East Kalimantan. Mining is turning vibrant primary forest into silent, Mars-like landscapes. More than 1700 abandoned, unfilled coal mines pose treacherous hazards. At this point just 15% of the region is still under intact primary forest.

The Dayak Modang of East Kalimantan provide an illustrative example of Indigenous peoples and local populations who are increasingly impacted by cumulative forms of extractive expansion in the same landscape. Overlapping claims for commercial logging, plantations and mining have radically eroded both the Dayak landscape and their social cohesion.
This biocultural erosion stokes local inequalities and social divisions once mediated through negotiation, cooperation and exchange.

A growing social movement targeting this sector in Indonesia seeks institutional changes on the governance of licensing, land accumulation practices, fiscal arrangements, and ecological and social impacts. This is the space where both Indigenous and local livelihoods can potentially develop equitably.

“Indonesia is ground zero for nickel mining for the energy transition. Our forests and communities have been hit hard from waves of global demands from palm oil to pulp and paper and it is time for our government and international companies, particularly electric automakers, to ensure that our remaining natural forests and the communities that call them home are protected.” - Timer Manurung, Executive Director, Auriga Nusantara
More than 3 million hectares of intact Tropical Moist Forests overlap with mining concessions.

More than 450,000 hectares of nickel mining concessions and permit areas overlap with natural forests – representing a massive risk of deforestation if nickel mining permits expand.

Key Findings in Indonesia:

- More than 3,000 populated places (villages, communities, towns, etc.) and 4.5 million people (inclusive of Indigenous and forest-based peoples) are located in mining concessions.

- More than 3 million hectares of intact Tropical Moist Forests overlap with mining concessions.

- More than half of concessions, overlap with natural forests.

- Nickel deposits span more than 3 million hectares, and 2.5 million hectares of deposits overlap with natural forests – representing a massive risk of deforestation if nickel mining permits expand.

Map 8 - Indonesia Mining Threats

- 3M+ hectares of intact Tropical Moist Forests overlap with mining concessions
- >1/2 of nickel mining concessions & permit areas overlap with natural forests
- 2.5M of natural forest overlap with mining concessions
- 4.5M people inclusive of Indigenous and forest-based communities are located in mining concessions.

Data sources: Forests unclear; Minerals Data Least; Indonesia Forests Watch; Global Forest Watch; and estimates of mining in the Kopi Gold Mining Partnership provided by the Nature Conservancy.
As research findings by a range of institutions explored in this next section demonstrate, cattle ranching, agribusiness, and industrial logging continue to be the driving forces that are fragmenting primary and intact forests and impacting Indigenous and local communities across the three basins. The collective impacts of these drivers in recent decades and potentially in the future underscore the need for a moratorium on most industrial activities in primary and intact forests, to shift industrial activities onto already degraded lands, and to advance financial system innovations that better incentivize protecting natural forests and the rights of forest dwellers.

The demand for land for palm oil, soy, rubber, beef and leather in the Amazon, Southeast Asia and Central Africa helped drive an estimated 23 million hectares of tropical forest loss between 2016 and 2020 – an area nearly the size of the United Kingdom. Cattle ranching is inciting land grabs deeper in the Amazon. In Colombia, illicit cattle ranching surpasses coca as the main driver of forest loss, notably in protected areas.

Meanwhile, palm oil is expanding across the Amazon, particularly in Brazil where it has provoked conflict with Indigenous communities. The Amazonian state of Pará is even called the “palm oil war” region.
According to a recent study by the Amazon Network of Georeferenced Socio-Environmental Information (RAISG), in just five years, the Amazon may lose up to 23.7 million hectares of forest, an area almost as large as the entire United Kingdom. This RAISG study points to three possible scenarios of deforestation from 2021 to 2025. According to the highest threat scenario, in just five years, the largest tropical forest on earth could lose half of what it lost in the last 20 years (54.2 million hectares) – with varying deforestation and forest degradation drivers, such as livestock, agribusiness, mining, and the expansion of the road infrastructure for oil and gas and other industry, continuing to put intense strain on the forest and its peoples.

“We, Indigenous peoples have cared for the Amazon for millennia so today we raise our cry for help and urgently call for 80% protection by 2025. This means stopping deforestation, forest degradation and pollution of the water that sustains all forms of life. It also means legal security of Indigenous territories as a condition for the safeguarding of territorial rights for Indigenous peoples in the Amazon and in the whole of the three basins and beyond.” - Fany Kuiru Castro, General Coordinator, COICA
Congo Basin

Industrial logging has rarely proved to be sustainable. So-called selective logging has long been promoted as a form of sustainable forest management and environmentally preferable to the total loss of forest through clearance for farming. However, most logging operations in the region have relied almost entirely on ‘mining’ of old growth forests for a limited range of tree species. Once exhausted, the industry is thus reliant on continually opening up new areas of previously unlogged forest while the roads needed to access these areas can lead to secondary forms of deforestation. Old concessions can be converted as commercial plantations, abandoned to agriculture or exploited for simple wood fiber rather than timber, which can lead to intense logging.

The region’s forests. More than 54 million hectares of logging concessions span Congo basin intact tropical moist and other forests. According to Rainforest Foundation UK, tens of millions of hectares of forest are at risk if the DRC’s industrial logging moratorium is lifted.

Lifting the DRC’s Logging Moratorium Could Threaten Millions of Hectares of Forest

DRC’s logging moratorium was first established by ministerial order in May 2002 in response to what threatened to become a post-war free-for-all in the exploitation and destruction of the country’s vast forests. Despite multiple breaches of the moratorium, the government has signaled its intention to lift the ban, threatening
600 million tonnes of CO2 emissions over the lifetime of new concessions.\textsuperscript{79} As the largest buyer of wood from all six Congo Basin countries, China’s growing demand will continue to threaten

**The TRIDOM landscape: A Microcosm of the Threats and Opportunities in the Congo Basin**

Spread over three countries – Cameroon, the Republic of Congo and Gabon – the Tri-National Dja-Odzala-Minkébé (TRIDOM) Landscape covers 17.8 million hectares, or about 15% of Central Africa’s forests.\textsuperscript{80} More than four times the size of Switzerland, the TRIDOM is 95% rainforest and home to the majority of the last remaining forest elephants, lowland gorillas and chimpanzees in Central Africa, as well some 300,000 people, including a high concentration of the Indigenous Baka and Bakola pygmy, and Bantu people.

However, logging, agribusiness expansion, large-scale mining and infrastructure projects threaten the landscape’s biocultural diversity. Almost all the forest between the protected areas is under the control of extractive industries (forestry, mining and agro-industry). Two thirds (65%) of the TRIDOM landscape is under logging concessions.\textsuperscript{81} Construction of a 575-km road from the Congolese county capital city of Oussou to the Cameroonian town of Sangmélima will intensify all of these threats. The road could literally pave the way to extensive indirect deforestation.

**Mekong-Borneo Southeast Asian Forest Basins**

Between 1990 and 2020, south-east Asia lost forests at a rate of 3.22 million hectares a year.\textsuperscript{82} A third were in the tropical mountain region, where forest conversion into agricultural plantations is climbing upward – in both numbers and altitude. Indonesia and Cambodia cleared the most forests: one-fifth and one-quarter, respectively.

**Large-scale industrial logging**

In Cambodia, the luxury timber trade, the garment industry’s wood burning for energy, and the use of concessions to effectively privatize its protected areas\textsuperscript{83} cleared 2.5 million hectares (6.4 million acres) of forest cover between 2001 and 2020.\textsuperscript{84} In Malaysia, timber plantations accounted for 41.6% of deforestation.\textsuperscript{85}

In Indonesia, pulpwood expansion is among the top three deforestation drivers. Of the 3 million hectares of the existing pulpwood plantations “forest” cover, nearly 1 million hectares were natural forests in 2000.\textsuperscript{86} However, the government still easily granted permits to develop a huge pulpwood mill in the frontier forests of North Kalimantan that is threatening remaining natural forests in a range of provinces.\textsuperscript{87} The demand for palm oil as a feedstock for biofuel production decimated more than a third of peatlands in Indonesia and Malaysia between 2007 and 2015. Less than 40% of native peatland in Malaysia, Indonesia and PNG remain, with only 6 to 9% protected. From 2017 to 2021 palm oil caused 15.5% of forest loss in Malaysia.
Only 16.2 million hectares (19.4%) are legally protected and in conservation areas. Nearly 23 million hectares of the forest are granted for extractive concessions including 7.3 million hectares (8.7%) for forest conversion concessions (timber plantations, oil palm and mining) and 15.6 million hectares (18.6%) for logging concessions that are degrading the forest. Accordingly, a substantial portion of the forests (44.7 million hectares or 53.4%), is vulnerable to potentially be granted for extractive concessions by the government.

However, the country’s recent designation of 2,346,601 hectares of forest, for palm oil and timber plantations will drop forest cover to 47.35% – the size of four states, Perak, Penang and Melaka – combined.\(^89\) Since 2016, palm oil production accounted for nearly a quarter\(^90\) of Indonesia’s deforestation; with 81% of the forest clearing estimated to be illegal.\(^91\)

In Indonesia, the future threat scenario below shows the massive scale of natural forests under concessions in Indonesia.\(^92\) According to analysis by Auriga Nusantara, of the 83.8 million hectares of natural forest in Indonesia at present:

- Only 16.2 million hectares (19.4%) are legally protected and in conservation areas.
- Nearly 23 million hectares of the forest are granted for extractive concessions including 7.3 million hectares (8.7%) for forest conversion concessions (timber plantations, oil palm and mining) and 15.6 million hectares (18.6%) for logging concessions that are degrading the forest.
- Accordingly, a substantial portion of the forests (44.7 million hectares or 53.4%), is vulnerable to potentially be granted for extractive concessions by the government.
Looking forward, it is vital for logging, agriculture, and other commodities to be grounded in principles of sustainable intensification - whereby community and industrial needs are met from existing degraded lands and conservation agriculture, sustainable logging, etc. is practiced. At the same time primary and intact forests need to be preserved and cease being degraded and deforested. This requires effective land-use planning and prioritization. It is entirely possible.

**Protecting Forests, Advancing Indigenous and Community Rights, and Averting Tipping Points**

Put simply, primary and intact forests must be preserved now, before it is too late and the life-sustaining forest ecosystems of the three basins pass irreversible tipping points and further exacerbate the climate crisis.

In a statement issued by a wide range of indigenous, regional, and frontline organizations, heads of state from the three basins are being called upon to commit to the following:

- Scale up rights-based legal protection, demarcation and recognition of forest communities’ lands and territories as a prerequisite to more effective forest protection.
- Uphold communities’ right to fully and effectively participate in decision-making on any developments planned in these areas, respecting Indigenous Peoples' right to free, prior and informed consent, as well as securing the protection of those living in voluntary isolation.
- Empower and protect Indigenous Peoples and other frontline environmental and human rights defenders, including by enhancing access to justice.
- Halt and reverse loss and degradation of all natural ecosystems from large-scale agriculture, mining, extractives and other industries, such as through a global moratorium on industrial activities in primary and priority forests, and provide legal protections for remaining natural forests; including those in concession areas.
- Accelerate true low-carbon development in tropical forest countries through a just energy transition, protecting natural forests and the rights and food sovereignty of local communities and Indigenous Peoples.
- Adopt time-bound and measurable goals towards these objectives, for transparency and accountability.
Regional and global awareness and momentum is building. Bold action is critical. A range of solutions and frameworks are referenced below that embody the need for both measured and accelerated action:

- The Belem Declaration, if sufficient and timely action is taken, can help avert the tipping point crisis that the Amazon basin is facing.

- A moratorium on all industrial activity in primary and priority forests until 2050 in order to safeguard critical ecosystems and while allowing time and space to develop appropriate plans and financing – including debt relief, payments for ecosystem services, direct funding for Indigenous peoples, redirecting subsidies for extractive industries to support primary forest preservation, along with Indigenous co-management and the expansion of rights and territories.

- Expansion of global Indigenous land tenure, access and resource rights, direct funding through mechanisms like the Shandia Platform, and the requirement of Free, Prior, and Informed Consent (FPIC).

- National Determined Contributions (NDCs) with appropriate and effective plans and financing that enable protection of critical ecosystems and climate stability, including explicit and meaningful short term commitments for fossil fuels phase out.

- The Amazonia for Life: 80% by 2025 Declaration from Indigenous federations across the Amazon.

- New debt for Climate and Biodiversity commitments from International Financial Institutions, such as the IMF, large debt-holding nations like China, and other debt holders in the private sector.

- With strengthened ambition, related to primary forest degradation and accelerated timelines for action, the Glasgow Leaders’ Declaration on Forests and Land Use can be a reference point.

- New frameworks for financing bold climate and biodiversity action, including the 10-Point Plan for Financing Biodiversity.

- Commitments from banks and financial institutions to stop financing oil and gas expansion – starting with critical forest basins and ecosystems, e.g., through platforms like Exit Amazon Oil and Gas.

- Increased country-level commitments to the principles of the Beyond Oil and Gas Alliance.

- Widespread commitments to the Fossil Fuel Non-Proliferation Treaty.
SOLUTIONS

- Restoration efforts and local bioeconomy solutions, based on effective ecological practices from traditional Indigenous knowledge, should be uplifted and supported, while ensuring that primary and priority forests and other critical terrestrial and marine ecosystems are protected.

- Scaling up direct support to Indigenous Peoples and local communities whose conservation efforts play a fundamental role in preserving biodiversity, critical ecosystems and supporting climate stability.

- Unlocking the vast potential in renewables, and scaling up direct support to forest communities and other frontline forest defenders.

The multitude of cascading industrial pressures and future threats explored in this report reinforce the need for **new and bold policies and financial mechanisms**.

Preserving intact forests is essential for the Indigenous and local communities who call them home and for the maintenance of biodiversity and climate stability. Given that the Amazon is in the midst of a tipping point crisis and that a similar tipping point threshold exists for the Congo basin, the evidence is clear, **urgent action is needed for the forests of the three basins and beyond.**
END NOTES


5. (Mena et al. 2017).


ENd Notes


END NOTES


36. Note this figure includes 99 million hectares of formerly established and now “inactive” concessions that still represent a potential expansion threat.

37. Note this figure includes 60 million hectares of formerly established and now “inactive” concessions that still represent a potential expansion threat.

38. Note this figure includes approximately 5,000 populated places now in “inactive” concessions that still represent a potential expansion threat.


END NOTES

57. (Giljum. 2022).
END NOTES


68. (Toumbourou. 2022).

END NOTES


77. (Infoamazonia. 2022).


END NOTES


89.(Borneo Project. 2023). State of the Malaysian Rainforest

90.(Bausano. 2023)

91.(Dummett, C., Blundell, A. 2021). 20% illegal


END NOTES


102. Beyond Oil and Gas Alliance. (2023). Who we are. BOGA. Accessed October 2023 at https://beyondoilandgasalliance.com/who-we-are/

METHODOLOGY

Data Disclaimer:
The geospatial analyses in this report are an attempt to capture processes of change using the most recently available, most accurate and precise data and methods available. As such, the results of these analyses may change between reports as data and/or methods are updated. Modeled datasets and the resulting analyses, such as gridded population data and population estimates, carry a degree of uncertainty.

Earth Insight takes a precautionary approach to estimating the potential area under oil, gas, and mining threats. Oil, gas and mining data used in the analyses in this report include active production blocks and concessions, as well areas under multiple stages of exploration and permitting. This approach provides the most expansive view of areas under threat of oil, gas, and mining.

Oil, Gas and Mining Threats to Tropical Forests in the Amazon

The extent of the Amazon region was defined by RAISG based on a consultative process that combines hydrographic, ecoregional and other biogeographic factors. Note that based on this definition the region may be different from the one used in the national context of individual countries. The extent of oil and gas blocks was compiled based on the RAISG oil and gas database and was updated by Earth Insight based on recent official publications by the Ministries of Natural Resources or Energy of Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana and Suriname. The extent of mining concessions was compiled based on the RAISG mining database which was updated by Earth Insight based on recent official publications by the Ministries of Natural Resources or Mines of Brazil, Bolivia, Peru, Colombia. The forest cover used in this analysis consisted of the 2022 EC JRC Undisturbed and Degraded Tropical Moist Forest product (TMF), while the global ESA Tree Cover fraction was used for visualization purposes. The TMF is thought to be the most accurate representation of tropical forest cover that is currently available.

Oil, Gas, Mining and Logging Threats to Tropical Forests in the Congo

The Congo Basin countries were defined as the six nations that encompass the Congo Forest ecoregions: Democratic Republic of Congo, Republic of Congo, Central African Republic, Gabon, Cameroon and Equatorial Guinea. Note that the domain differs from the hydrographic basin which is smaller than the country domain. The oil and gas blocks, mining concessions and logging concessions were identified based on recent publications by the governments of the DRC, RoC, CAR, Gabon, Cameroon, and Equatorial Guinea.
Oil, Gas and Mining Threats to Tropical Forests in Southeast Asia

Southeast Asia was defined as the following twelve countries: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Singapore, Thailand, Timor, and Vietnam. Note that the domain differs from the hydrographic basins that cover the Mekong and Borneo basins, which are smaller than the country domain. The oil and gas blocks were identified based on recent publications by the governments of Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand, and Vietnam. The extent of mining concessions in Indonesia was compiled based on a database provided by Auriga.

Oil, Gas and Mining Threats to Indigenous Territories

The extent of Indigenous territories was derived from the RAISG database. This layer was intersected with the Earth Insight oil and gas block and mining concession datasets in order to identify areas of overlap.

Oil, Gas, and Mining Overlap with Human Settlements

This map illustrates the overlap between the oil and gas blocks and mining concessions, the large number of settlements throughout the Congo Basin region and their concentration along rivers and access roads. The populated places layer was derived from a global product maintained by the US National Geospatial-Intelligence Agency. Population numbers were derived from the global WorldPop Constrained 2020 UN adjusted gridded (100m) population product.
DATA SOURCES


Logging: Ministry of Water, Forests, Hunting and Fishing of the Central African Republic, Ministry of Economy, Forestry, Water, Finishing and Aquaculture of Gabon, Ministry of Forestry and Wildlife of Cameroon, Ministry of Agriculture and Forests of Equatorial Guinea, Ministry of Forest Economy of the Republic of Congo, Ministry of Environment, Nature Conservation and Tourism. Indigenous Territories: Indigenous territories for the Amazon Region were derived from the RAISG (Amazonian Network of Georeferenced Socio-Environmental Information) database on Indigenous Territories. Presence of Indigenous Peoples: The presence of indigenous peoples in the Congo Region is based on extensive field data collection by Rainforest Foundation UK, Dynamique des Groupes des Peuples Autochtones (DGPA) and other partners. Tree Cover Fraction: The Global Tree Cover Fraction was derived from the PROBA-V satellite observations and ancillary datasets. Tropical Moist Forests: The European Commission’s Joint Research Centre developed this new dataset on forest cover change in tropical moist forests (TMF) using 40 years of Landsat time series. The analysis and maps in this report use the Undisturbed and Degraded Tropical Moist Forest product. Populated places: The populated places database was derived from the Geographic Names Server maintained by the US National Geospatial-Intelligence Agency.
Indigenous Territories.
Presence of Indigenous Peoples: The presence of indigenous peoples in the Congo Region is based on extensive field data collection by Rainforest Foundation UK, Dynamique des Groupes des Peuples Autochtones (DGPA) and other partners.

Tree Cover Fraction: The Global Tree Cover Fraction was derived from the PROBA-V satellite observations and ancillary datasets.

Tropical Moist Forests: The European Commission’s Joint Research Centre developed this new dataset on forest cover change in tropical moist forests (TMF) using 40 years of Landsat time series. The analysis and maps in this report use the Undisturbed and Degraded Tropical Moist Forest product.

Populated places: The populated places database was derived from the Geographic Names Server maintained by the US National Geospatial-Intelligence Agency.

Population data: High resolution population estimates were derived from WorldPop Constrained individual countries 2020 UN adjusted gridded (100m) population product.

Country outlines: The geoBoundaries Global Database of Political Administrative Boundaries Database built by William and Mary geoLab provides national boundaries.