Closing Window of Opportunity:
Mapping Threats from Oil, Gas, and Mining to Important Areas for Conservation in the Pantropics

Earth Insight
Campaign for Nature
IUCN
WCPA World Commission on Protected Areas
Wild Heritage
IIFB International Indigenous Forum on Biodiversity
one earth

Acknowledgements

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Cover Image: Top left: Historic indigenous mobilization confronts spiraling threats to rights and resources in Brazil. Image credit: Courtesy of Matheus Alves. Top Right: Central Sulawesi Nickel Mining. Image Credit: Courtesy of Auriga Nusantara. Middle left: Mangrove and roots. Image credit: Dibrova via Envato. Middle circle: Oil spill in the Ecuadorian Amazon. Image credit: Franklin Jacome via Getty. Middle right: Top down view of small river and swamps at spring. Image credit: Shaiith via Envato. Bottom left: Male chimpanzee. Image credit: Edwin-Butter via Envato. Bottom right: A herd of zebra, the last surviving population in the Democratic Republic of Congo, are seen on the Kibara Plateau in Upemba National Park. Image credit: Hugh Kinsella Cunningham via Forgotten Parks Foundation.

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Executive Summary

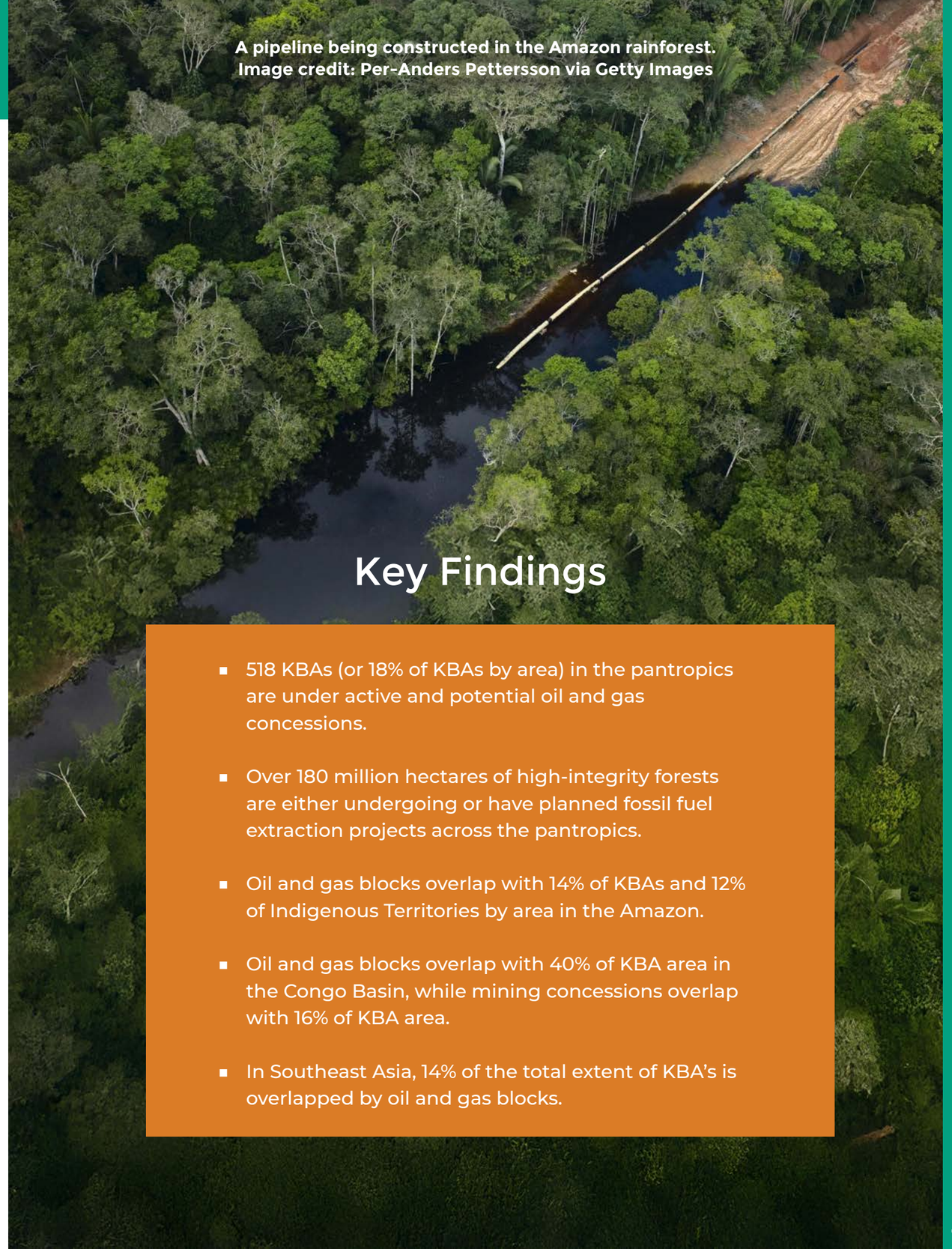
The global race to safeguard irreplaceable ecosystems is nearing a critical threshold, and the window to protect vital areas for climate stability, biodiversity, and human wellbeing is rapidly closing. Growing pressure from extractive industries, including oil, gas, and mining, is putting irreplaceable ecosystems and Indigenous Territories at risk, especially across the pantropical belt.

Protected and conserved areas are well-documented to be important safe havens for nature amidst an ever-expanding industrial footprint in terrestrial ecosystems. As it stands, 17.5% of Earth's land and freshwater are currently protected[1], but more targeted and ambitious conservation measures are required. Areas of high ecological significance, such as undisturbed tropical forests, Key Biodiversity Areas (KBAs), and Indigenous Territories need to be prioritized for protection — but many of these regions are also abundant in natural resources, leading to competing interests between conservation and resource extraction. The expansion of industrial activity into these areas could push ecosystems past critical tipping points[2], leading to environmental collapse and threatening traditional cultures. Once lost, these ecosystems and the services they provide, including clean water, fertile soils, and carbon storage, are extremely difficult, if not impossible, to restore.

This report maps the alarming overlap of oil, gas, and mining concessions with KBAs, high-integrity forest landscapes, protected areas, Indigenous Territories, and other areas important for conservation across the Amazon Basin, Congo Basin, and Southeast Asia. These regions harbor immense biodiversity and store vast amounts of carbon, playing a vital role in regulating the global climate and sustaining life on earth. They are also home to Indigenous peoples and local communities whose survival, livelihoods, and cultures are deeply intertwined with the natural environment.

Urgent and coordinated global action is needed to close the gap between conservation commitments and the realities of industrial scale exploitation of natural resources. Equitably expanding the global network of protected areas, supporting Indigenous-led conservation, and enacting legal protections to stop extractive industries from advancing on areas important for conservation are all critical steps.

The window of opportunity to protect these critically important ecosystems is rapidly closing. The world stands at a crossroads: either act now to safeguard the natural systems that sustain life on Earth, or risk losing them forever. The future of these ecosystems, and the people who rely on them, depends on immediate, bold action. The cost of inaction is high, and time is running out to protect our planet's last strongholds for nature.



A pipeline being constructed in the Amazon rainforest.
Image credit: Per-Anders Pettersson via Getty Images

Key Findings

- 518 KBAs (or 18% of KBAs by area) in the pantropics are under active and potential oil and gas concessions.
- Over 180 million hectares of high-integrity forests are either undergoing or have planned fossil fuel extraction projects across the pantropics.
- Oil and gas blocks overlap with 14% of KBAs and 12% of Indigenous Territories by area in the Amazon.
- Oil and gas blocks overlap with 40% of KBA area in the Congo Basin, while mining concessions overlap with 16% of KBA area.
- In Southeast Asia, 14% of the total extent of KBA's is overlapped by oil and gas blocks.

Introduction

The race to safeguard our planet is intensifying as humanity grapples with unprecedented environmental challenges. In the face of the twin crises of biodiversity loss and climate change, governments and organizations worldwide are ramping up efforts to protect nature, guided by commitments under international frameworks, including the Global Biodiversity Framework (GBF) and the Paris Agreement. Protected and conserved areas[3] (PCAs) stand at the forefront of these efforts, serving as important tools for preserving biodiversity, mitigating climate change, and sustaining life on earth.[4,5] At the same time, many PCAs, especially in areas protected under Indigenous-led conservation, are crucial for supporting the self-determination and livelihoods of Indigenous peoples globally.[6] As it stands today, PCAs protect 17.5% of the world's land and freshwater, accounting for over 23 million km^2 of protected nature.[7] Despite gains in establishing new PCAs in recent years, it is clear that more ambitious and targeted conservation efforts are needed to secure a liveable future.

As the world works toward protecting nature, there are increasing calls to ensure that the areas most important for climate, biodiversity, and people receive priority for conservation.[8] In response, researchers, NGOs, and governments are actively working to identify important areas for conservation by measuring biodiversity, contributions to climate mitigation, ecosystem services, and social and cultural values. Indigenous peoples are also actively working to secure legal protections for their traditional territories and ensure that their rights are upheld. These efforts are guided by frameworks and studies that prioritize areas of ecological and cultural significance, ensuring that conservation measures can be directed to the most valuable areas including primary and priority forests, biodiversity hotspots, carbon sinks, and Indigenous Territories.[9,10] However, many of the regions identified as important for conservation are also abundant in natural resources like oil, gas, and rare earth minerals, resulting in competing interests and potential threats to their ecological integrity. Sacrificing these critical areas to resource extraction would compromise the ecological resilience we urgently need— and once they're lost, no amount of profit can bring them back.

The world agreed to effectively protect 30% of land, sea and freshwater by 2030.

A guiding force behind ambitious global efforts to establish new PCAs is the Global Biodiversity Framework (GBF) Target 3, known colloquially as the 30x30 target, which mandates governments to ramp up conservation to at least 30% of the planet's terrestrial and marine areas by 2030. The pursuit of 30x30 is not only a quantitative target: It also calls for increased quality of PCAs and underscores the importance of identifying and conserving ecologically significant regions that are effectively managed and implemented equitably, while uplifting human rights and well-being.[11]

A woman from the Waorani community speaks via megaphone during a protest against new oil projects in the Amazon. Image credit: Juan Diego Montenegro/dpa via Getty Images

Oil, gas, mining, and other industrial activities are shown to have devastating impacts on biodiversity and climate stability.[12,13] Extractive activities are also well-documented to cause social unrest and jeopardize the cultures and livelihoods of Indigenous peoples and local communities.[14] The tensions between conservation and exploitation underscore the urgency of protecting areas identified as important for conservation before their ecological value is irreparably damaged. By mapping current oil, gas, and mining concessions overlapping with important areas for biodiversity, climate, and people, this report exposes potential extractive industry threats posed to some of the most important areas for conservation in the world, including areas that are already meant to be afforded strict protection measures. Mapping these threats also highlights a broader wave of industrial expansion not covered in this analysis but looming over the future of key ecosystems. Logging and agriculture especially represent additional, equally pressing threats to these areas, accelerating both habitat destruction and climate pressures, and often follow in the wake of infrastructure development associated with oil, gas, and mining activities.[15,16]

The Closing Window

Rapid transformation of ecosystems around the world in the name of economic development is increasingly putting our planet's biodiversity and climate stability at risk. Nowhere is this more evident than in the pantropical belt, where oil, gas, and mining activities threaten to expand into areas of unparalleled ecological and social importance. With industry ramping up development across the pantropics, there is a closing window of opportunity to protect the irreplaceable places for climate, biodiversity, and people.

In terrestrial environments, area-based conservation has proven effective for safeguarding biodiversity in the tropics[17] and is known to protect carbon stored above and below ground.[18] PCAs are also increasingly being used as tools to safeguard Indigenous Territories and to uphold the sovereignty and self-determination of Indigenous peoples. In many Indigenous Territories, expanding conservation efforts is not only essential for preserving ecosystems, but also for safeguarding the cultures, livelihoods, and rights of Indigenous peoples, who depend on these lands and waters for survival. Indigenous communities have long been stewards of some of the most biodiverse and ecologically-rich regions on Earth, and traditional knowledge continues to play a vital role in maintaining the health and balance of these environments. As Indigenous peoples worldwide engage in urgent fights to protect nature, global decision-makers must respect their calls and recognize Indigenous rights over the ecosystems they have safeguarded for generations. Failure to do so risks undermining both cultural survival and ecological resilience on a global scale.

Prioritizing Free Prior and Informed Consent in conservation

Conservation planning, including establishing new protected areas, must be done in a way that honors the Free, Prior, and Informed Consent of Indigenous Peoples and local communities. This not only ensures human rights approaches to conservation, but will lead to better conservation outcomes in the long run.

Existing conservation areas have safeguarded critical ecosystems from imminent threats and continue to represent some of the last strongholds of intact nature against a backdrop of destructive resource extraction.[19] With intensifying pressures from industrial development, the need to expand and reinforce these areas has never been more urgent. Addressing this closing window of opportunity will require dedicated efforts and significantly increased resources, including fulfilling existing financial commitments to climate and biodiversity: Without significant financial backing, the scale of conservation needed will remain dangerously out of reach.

Funding is critical for conservation in the closing window of opportunity.

A key challenge facing areas in need of conservation — including protected areas, KBAs, high-integrity forests, and Indigenous Territories — is the lack of adequate funding to support and mainstream these important areas. Sufficient and reliable funding is essential for long-term conservation success as the window for effective conservation narrows. This includes both public and private financial investments in nature, reforming harmful subsidies, and delivering on existing funding commitments under the GBF and the Paris Agreement.[20]

Identifying Threats to Important Areas for Conservation

In recent years, efforts to map areas of ecological and social importance for protection have increased. Among these, Key Biodiversity Areas (KBAs) have been identified as conservation priorities and are likely to play a crucial role in meeting the 30x30 target, given their status as globally recognized areas critical for the preservation of biodiversity.[21] KBAs are identified through rigorous scientific criteria, highlighting their importance for the survival of species, the maintenance of ecosystems, and the overall health of the planet.[22] Despite their recognized value to humanity, many KBAs remain unprotected and face significant threats from the expansion of extractive industries across the pantropical belt. For example, 75% of the total area of KBAs in Cambodia and nearly 50% in the Democratic Republic of Congo are overlapped by oil and gas concessions. All told, oil and gas concessions threaten 518 individual KBAs across the pantropics, while mining concessions overlap with 368 KBAs. These areas represent some of the most ecologically rich, rare, and critical biodiversity on Earth, yet are at risk of habitat destruction, pollution, and ecosystem fragmentation — common consequences of extractive activities. Unprotected KBAs are also vulnerable to further degradation from the spillover effects associated with infrastructure development for oil, gas, and mining projects, including agricultural expansion and deforestation.

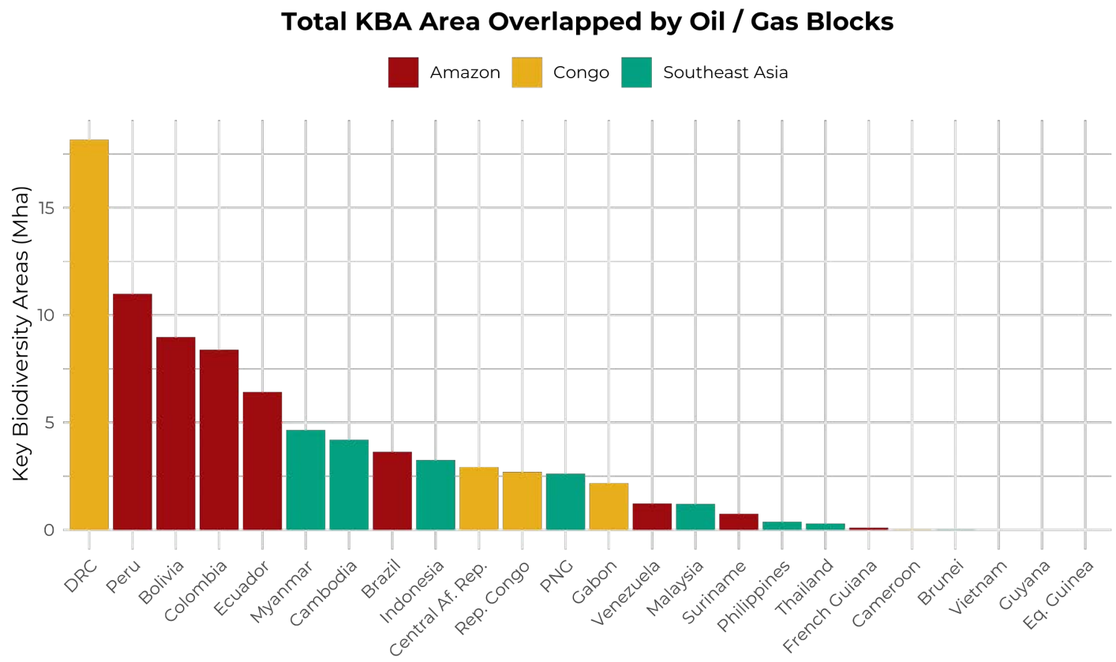


Figure 1: Total area of oil and gas blocks overlapping with Key Biodiversity Areas in countries across the pantropics.

High-integrity forest landscapes and Indigenous Territories are also areas in urgent need of protection. Primary and priority forests are vital for climate regulation and ecosystem resilience, while Indigenous Territories play a crucial role in preserving well-stewarded environments and cultural heritage. Indigenous Territories are not always easy to delineate on a map, as they often encompass complex, overlapping land uses and ancestral knowledge that go beyond formal boundaries, but recognizing and upholding their significant role in conservation, as well as designating them as "no-go" areas for extractive industries, is crucial for achieving conservation success.

Sustainable finance is needed to protect forests

High-integrity forests are some of the most important ecosystems on Earth, and require sustainable financing to secure their protection. The Tropical Forest Forever Facility (TFFF) is an innovative financial mechanism in development aiming to house a fund of $250 billion to protect and restore standing forests. The TFFF would provide a fixed yearly payment per hectare of standing forests for countries that meet certain requirements like a maximum deforestation rate. The Facility is Global South-led and designed to have little dependence (20%) on grants. The design of the TFFF is expected to be finalized early in 2025.

These important areas for conservation are increasingly under threat from extractive industries, as industrial oil, gas, and mining activities continue to expand into ecologically and culturally rich areas. Over 180 million hectares of high-integrity forests are either undergoing or have planned fossil fuel extraction projects, jeopardizing global ecosystem health. Left unprotected, primary and priority forests, KBAs, and Indigenous Territories are left on the frontline of destruction as extractive industries expand, threatening both their environmental integrity and the cultural foundations that sustain human and planetary health.

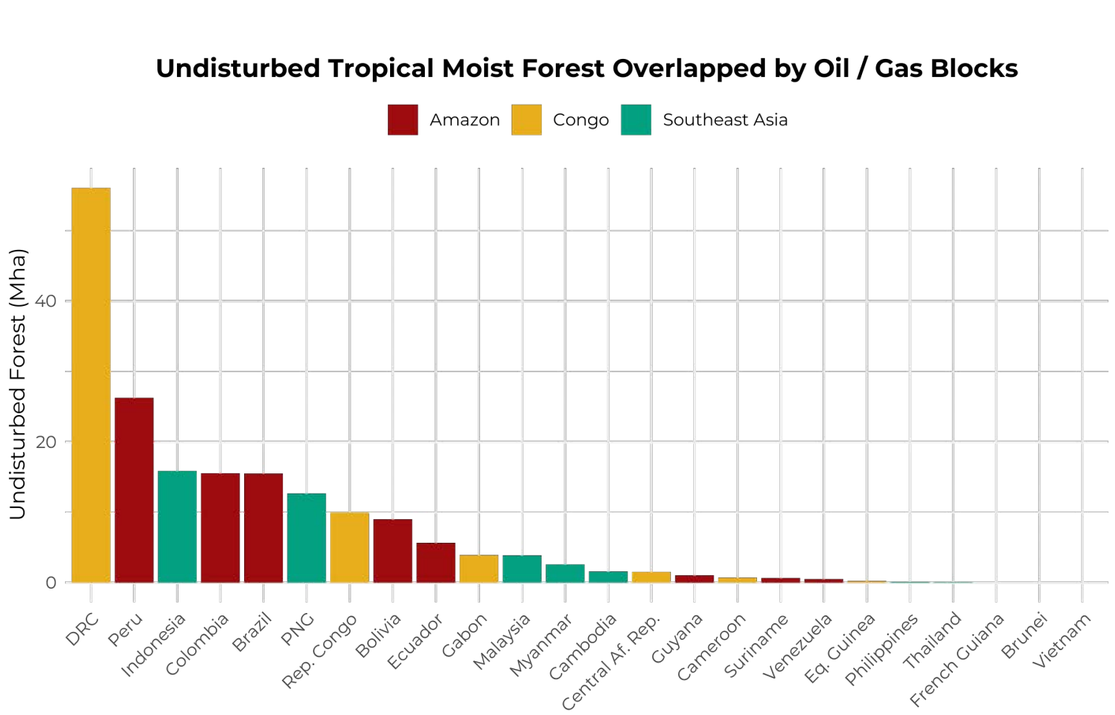


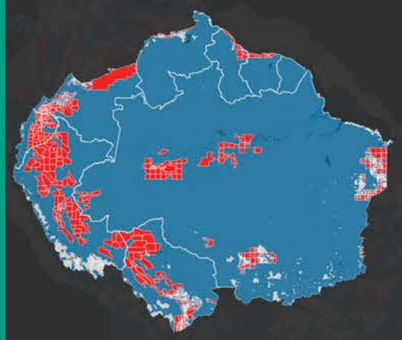
Figure 2: Total area of oil and gas blocks overlapping with high integrity forest landscapes in countries across the pantropics.

The Global Safety Net at Risk

There have been various efforts to identify priority areas to protect under global commitments, notably the 30x30 target. One effort to comprehensively map areas important for conservation is the Global Safety Net, a peer-reviewed model that presents a spatial inventory of land vital for biodiversity and climate regulation.[23] The Global Safety Net identifies and prioritizes areas critically in need of conservation and restoration measures, while considering the social equity concerns of Indigenous Peoples and local communities. The GSN's spatial layers include areas of importance for biodiversity – rare and threatened species habitats (including KBAs), high biodiversity areas, large mammal assemblages – totaling approximately 30% of land surface (30x30 target), as well as ecosystem representation and carbon storage areas totaling an additional 20% of land areas. To conserve biodiversity, safeguard Indigenous territories, and preserve the ecosystem services upon which humanity depends, these areas should be protected from extractive industries. Unfortunately, many of the lands identified in the GSN across the pantropical belt overlap with oil, gas, and mining concessions, placing their ecological integrity at risk. Exploitation of oil, gas, and minerals in areas important for conservation, such as the Global Safety Net, compromises Earth's ability to stabilize our climate and deliver the ecosystem services we all rely on.

Aerial view of the Amazon Rainforest, near Manaus, the capital of the Brazilian state of Amazonas. Image credit: Courtesy of Neil Palmer via CIAT (CC BY-SA 2.0)

Regional Threat Analyses and the Imperative for New and Effective Conservation Efforts



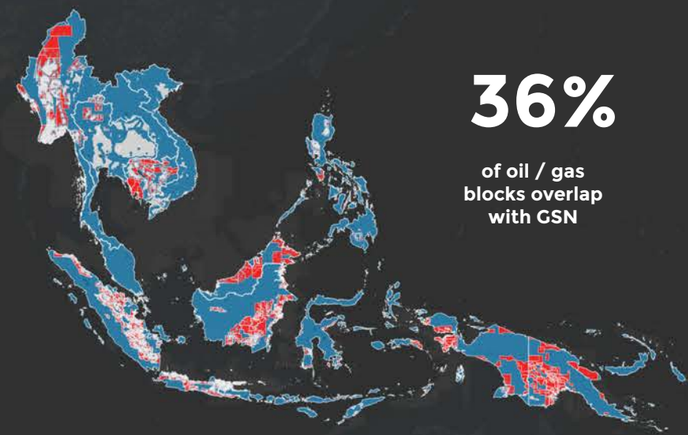
82%

of oil / gas blocks overlap with GSN

64%

of oil / gas blocks overlap with GSN

MAP 1: Oil, gas, and mining threats to the Global Safety Net across the pantropical belt.

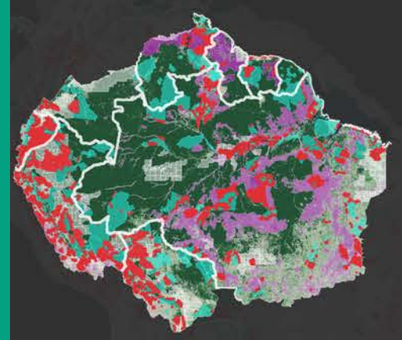


36%

of oil / gas blocks overlap with GSN

- Oil / Gas Block
- GSN - Oil / Gas Overlap
- Global Safety Net (GSN)

Many important areas for conservation within the pantropical belt are already experiencing pressures spanning logging, mining, oil and gas extraction, and agricultural expansion. These activities not only degrade biodiversity but also weaken the capacity of these ecosystems to sequester carbon, thus exacerbating climate change. To mitigate these threats and achieve international biodiversity and climate targets, we must expand the existing network of PCAs across the pantropics and ensure effective management of existing protected areas. The following regional threat analysis of the pantropical belt reveals ongoing threats to forest integrity, KBAs, Indigenous Territories, and other important areas for conservation, and highlights the urgency of implementing new conservation measures on the landscape to prevent potentially catastrophic extractive activities in some of the most important areas on Earth.



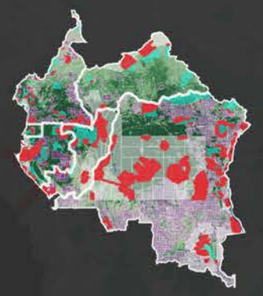
14%

of KBAs under oil / gas blocks

and

10%

of KBAs under mining concession



MAP 2: Oil, gas, and mining threats to the KBAs, protected areas, and high-integrity forests across the pantropics.

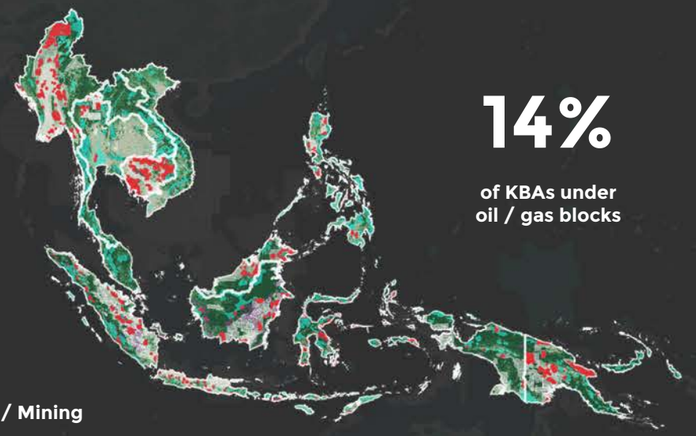
40%

of KBAs under oil / gas blocks

and

16%

of KBAs under mining concessions



14%

of KBAs under oil / gas blocks

- KBA Overlap with Oil / Gas / Mining
- Oil / Gas Block
- Mining Concession
- Key Biodiversity Area (KBA)
- Tropical Forest

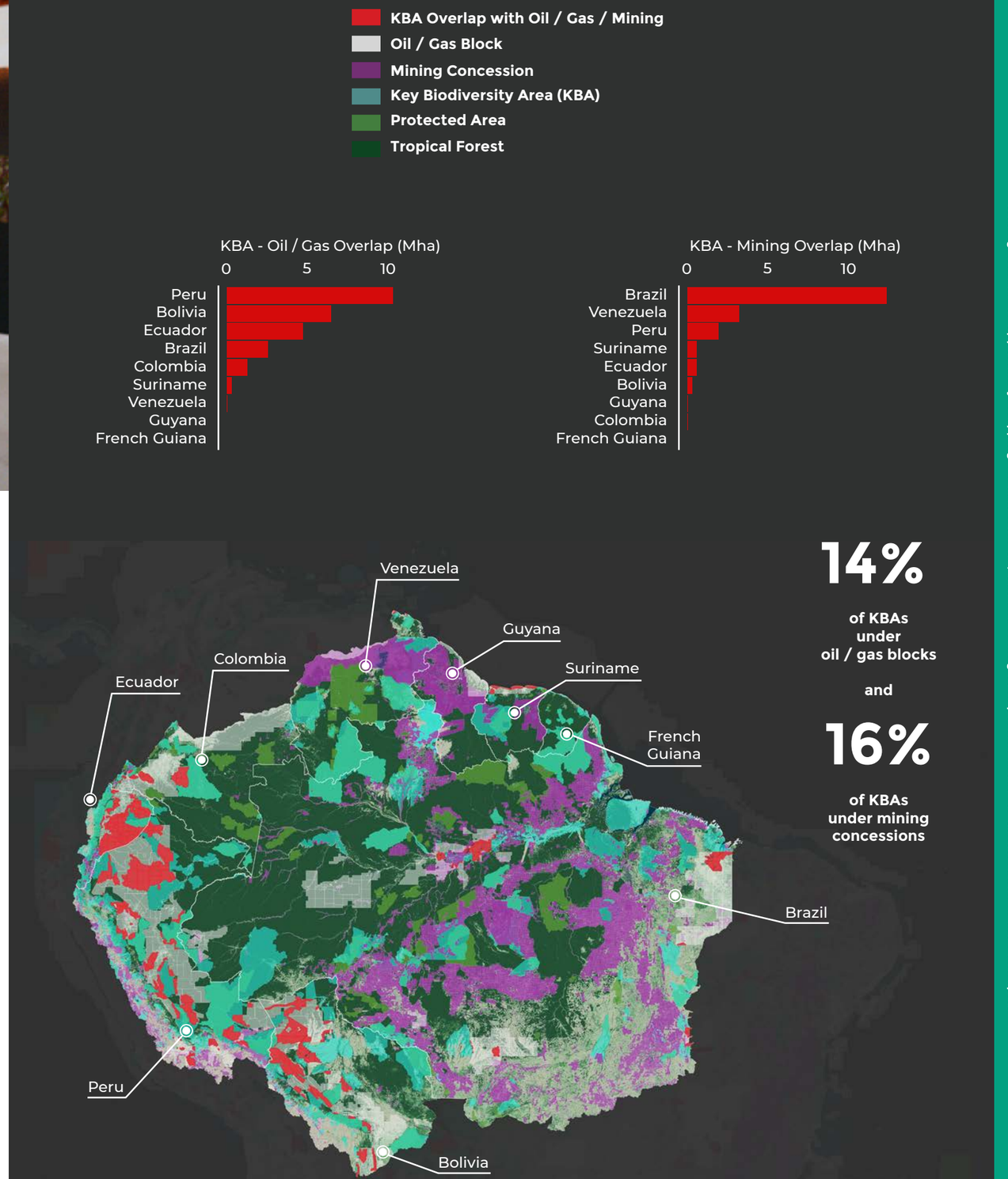
Representatives of indigenous communities and activists protest o support the Achuar, Kichwa and Quechua Amazonic tribes affected by oil industry activities on their ancestral lands. Image credit: Cris Bouroncle,AFP Photo via Getty Images

The Amazon

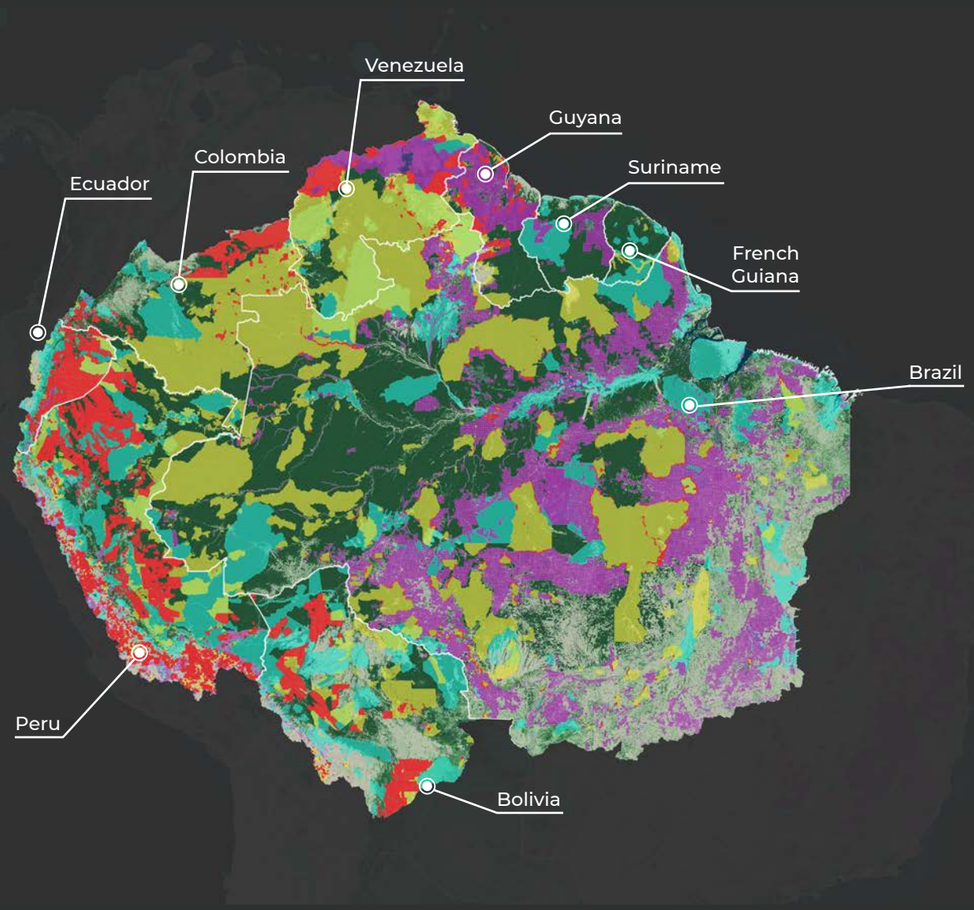
The Amazon is a biodiversity hotspot and important carbon sink, spanning nine countries and home to about 10% of all known species on Earth. The vast rainforests of the Amazon absorb 2.2 billion tons of carbon dioxide annually and release oxygen, subsequently helping to regulate global climate.[24]

The Amazon is not only a biological treasure but also a cultural one, inhabited by hundreds of distinct Indigenous groups who have stewarded the Amazon's lands and waters for millennia. Indigenous Territories within the Amazon are often the best-preserved areas, highlighting the critical role of Indigenous stewardship in maintaining the forest's integrity.[25] Indigenous federations across the Amazon are opposed to expanding industrial activities in their territory, yet oil, gas, and mining actors continue to advance into the Amazon forest at alarming rates.[26]

Alarmingly, 25.6 Mha of KBAs (14%) and 30 Mha of Indigenous territories (12%) in the Amazon Basin are under oil and gas concessions. At the same time, 19.7 Mha of KBAs (10%) and 9.2 Mha (4%) of Indigenous Territories are overlapped by mining concessions. Oil, gas, and mining pose severe risks to the Amazon's ecosystems, including deforestation, habitat fragmentation, pollution, cultural erosion, and social conflict. The extraction processes can lead to oil spills, water contamination, and the destruction of pristine ecosystems, undermining conservation efforts and Indigenous rights. We know that we are in the midst of a tipping point crisis in the Amazon, and further degradation could trigger catastrophic and irreversible impacts on not only the Amazon rainforest, but on global climate systems and biodiversity. The time to protect these important areas is now.



MAP 3: Across the Amazon, oil, gas, and mining concessions overlap with areas of high ecological and social value.



4%

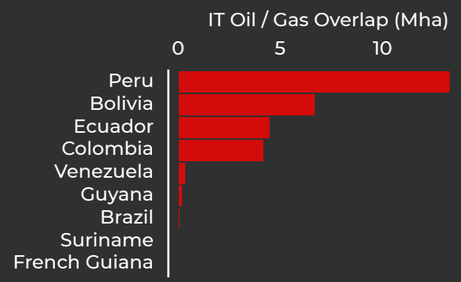
of ITs under mining concessions

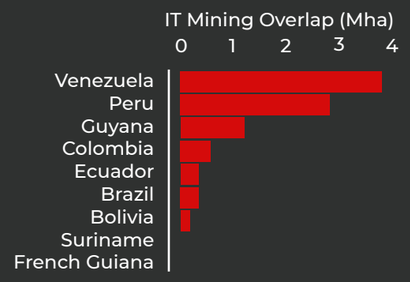
and

12%

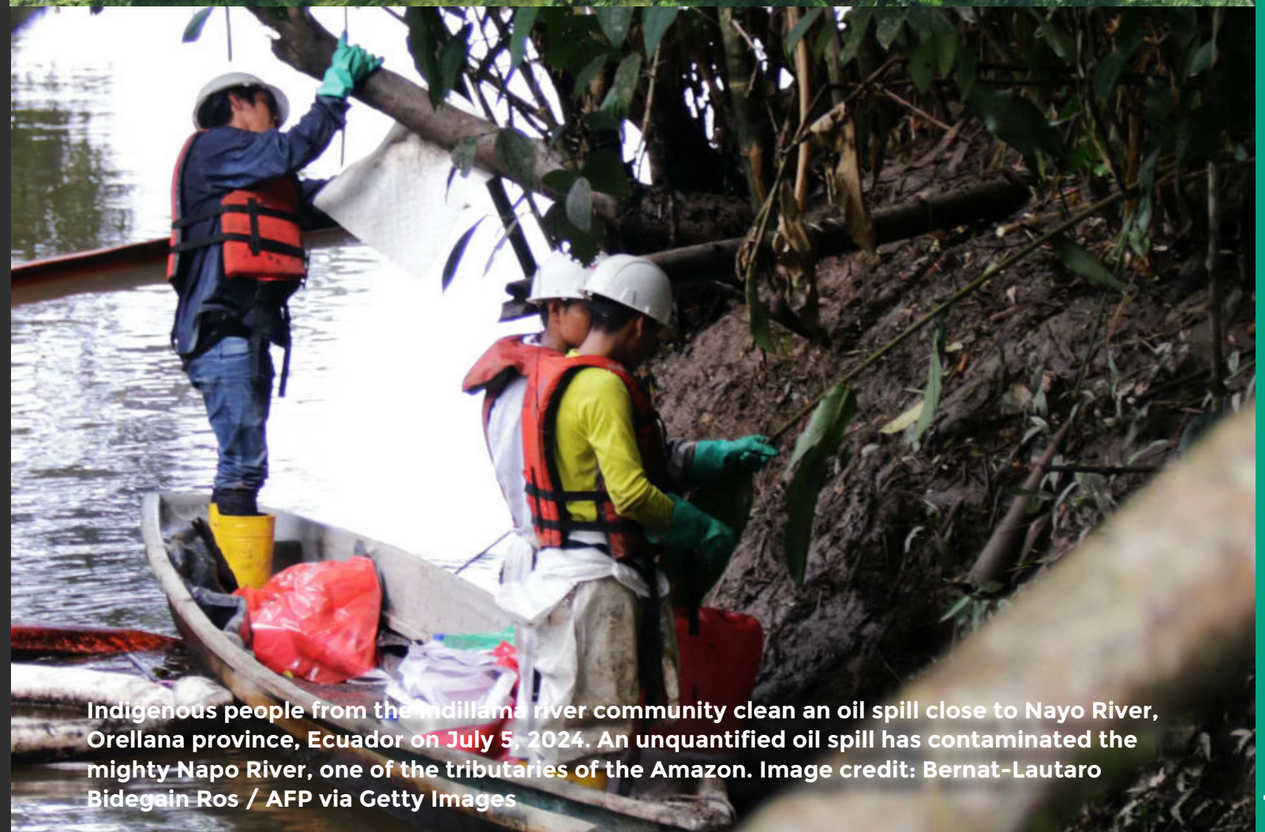
of ITs under oil / gas blocks

MAP 4: Across the Amazon, oil, gas, and mining concessions overlap with Indigenous Territories and areas of high ecological and social value.





Malocas (traditional communal houses) of the Isconahua people of Peru, who are Indigenous Peoples in Isolation and Initial Contact (PIACI acronym in Spanish). Image credit: Courtesy of Melissa Medina/Institute for the Common Good (IBC) via AIDESEP

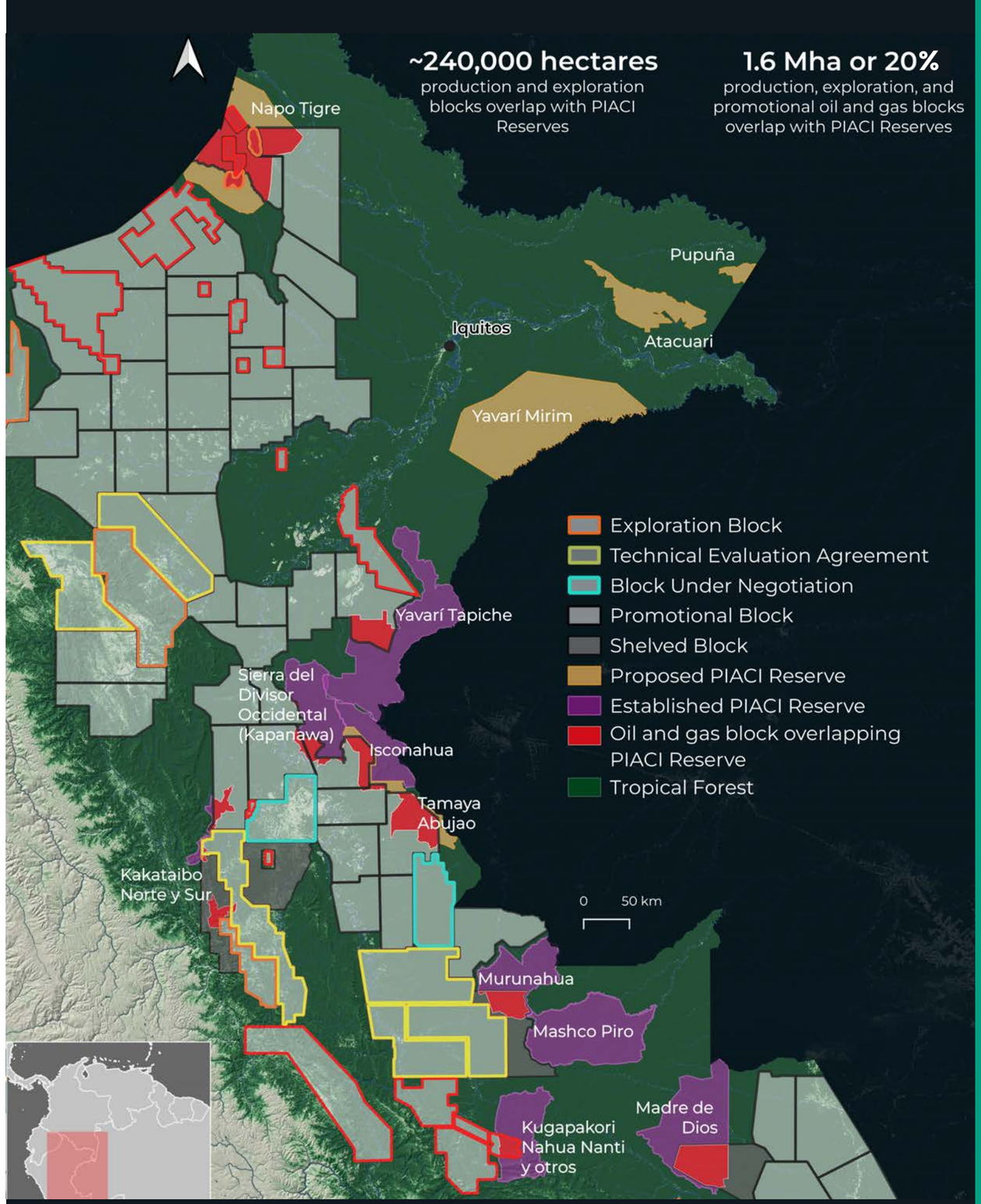


Indigenous people from the Indillama river community clean an oil spill close to Nayo River, Orellana province, Ecuador on July 5, 2024. An unquantified oil spill has contaminated the mighty Napo River, one of the tributaries of the Amazon. Image credit: Bernat-Lautaro Bidegain Ros / AFP via Getty Images

Case Study: PIACI and the case for Protected Areas in the Peruvian Amazon

In Peru, the term “Peoples in Isolation and Initial Contact” (PIACI - the Spanish acronym) refers to Indigenous peoples who have chosen to live in voluntary isolation or are in the early stages of contact with the outside world. In many cases, these communities have intentionally avoided contact to protect their cultural heritage and traditional ways of life and to shield themselves from dangers of diseases and violence from the outside world.[27] Despite the recognition of their rights at both national and international levels, PIACI communities remain extremely vulnerable to external development pressures, which threaten their existence and the preservation of their unique cultural identities.

To safeguard the rights and territories of PIACI communities, the Peruvian government has established eight Indigenous Territorial Reserves across the Amazon, with an additional five reserves pending federal designation. These reserves are intended to provide a legal framework for protecting PIACI lands from industry expansion and exploitation. PIACI reserves protect both Indigenous peoples and a tremendous amount of biodiversity–60% of the reserves are overlapped by identified KBAs. Despite their recognized significance, 20% of PIACI reserves are also overlapped by oil, and gas blocks, covering 1.6 MhA of lands and waters critical for conservation. This significant overlap on PIACI lands undermines the effectiveness of the reserves and places communities at heightened risk. The threat to PIACI communities is further compounded by legislative and industrial initiatives aimed at reducing or eliminating the protections afforded to these territories, such as a bill that was introduced in 2023 to annul PIACI reserves at the federal level. These initiatives, driven by economic interests, seek to diminish the legal barriers that currently prevent the exploitation of resources within PIACI reserves. As a result, the integrity of these protected areas is increasingly at risk, jeopardizing not only the survival of PIACI communities but also the rich biodiversity and carbon sequestration that these areas support. There is a clear case for strengthening and expanding PCAs for PIACI, as it represents one of the most effective means of ensuring the long-term preservation of these incredibly rare and vulnerable Indigenous populations and their environments.



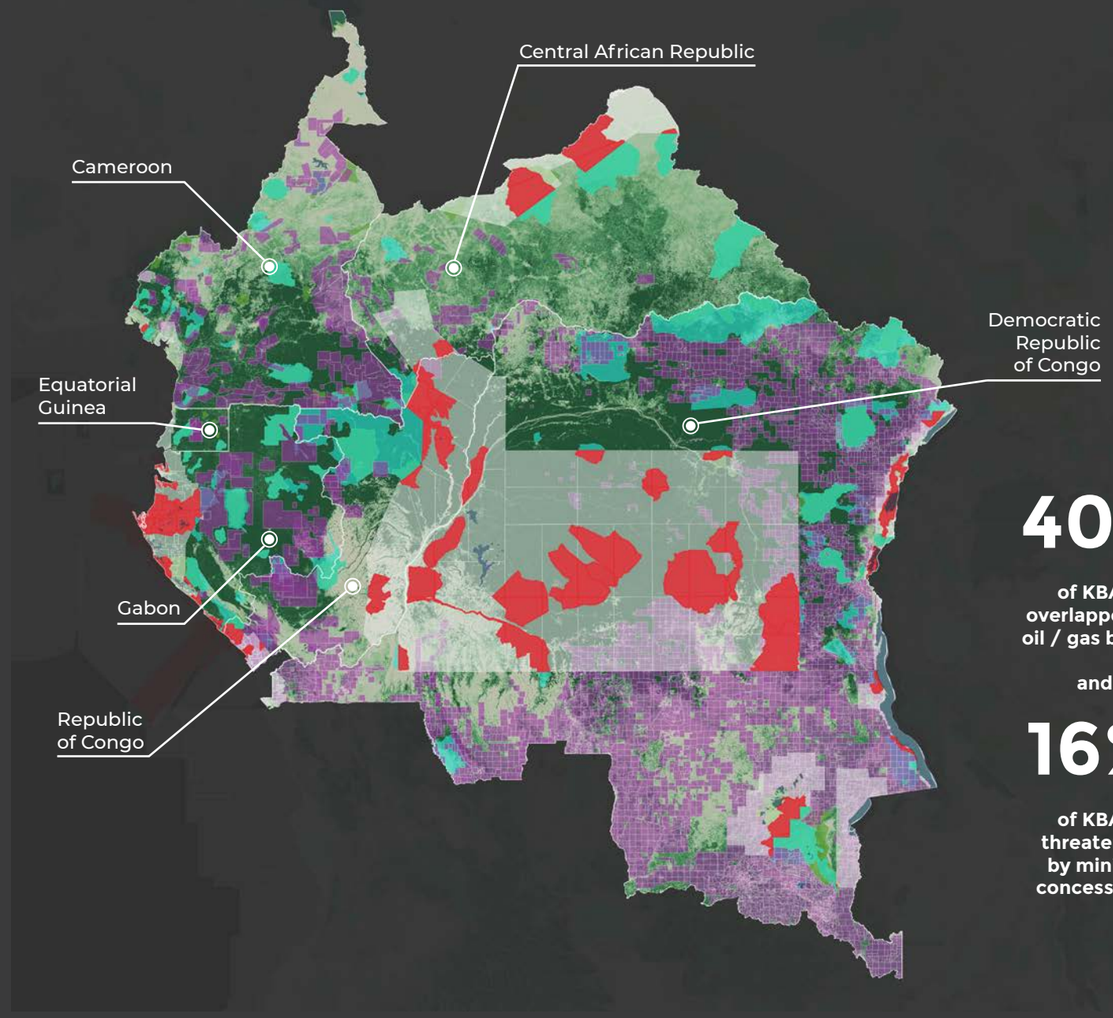
MAP 5: Conkouati-Douli National Park and its buffer zone are overlapped by an oil and gas block that could threaten the ecological integrity of the protected area.

The Congo Basin

As the planet's second-largest tropical rainforest and largest tropical peatland, the Congo Basin harbors an extraordinary diversity of life, including thousands of plant species, hundreds of bird and mammal species, and a myriad of insects, with biodiversity found nowhere else on Earth. The cultural diversity of the region is equally rich, with hundreds of distinct ethnic groups living within the mosaic of forests, swamps, rivers, and savannas for tens of thousands of years. Today, IP & LCs in the Congo Basin are on the frontlines of rapid industrial expansion across the region, and many are actively fighting to preserve their traditional lands and practices. The environmental impact of extractive industries is compounded by the social conflicts it often ignites, as local and Indigenous communities face the degradation of their land and resources, along with a misappropriation or inequitable allocation of the financial gains the projects bring.

The people and the ecosystems in the Congo Basin are under increasing pressure from industrial activity– and the environmental damage inflicted by these activities is severe. Deforestation rates in the Congo Basin are soaring, and the region is at an important turning point, heading toward alarming deforestation and degradation rates. Each new site for oil, gas, or mining exploration heightens the risk of industrial spillover effects, including intensified logging and expanding agricultural activities, all of which threaten to destroy some of the world's last remaining primary forests. Currently, 61 KBAs in the Congo Basin and 40% of their total area are overlapped by oil and gas blocks, while mining concessions overlap with 16% of the KBA area in the region. The KBAs in this region, and the ecosystem integrity they represent, are among the most critical areas to secure for conservation, and any overlap with extractive industries should sound an urgent alarm.

The loss of forest integrity in the Congo Basin is problematic not only at a regional scale but for all of humanity. Dense peat swamp forests play a crucial role in the global carbon cycle, sequestering billions of tons of carbon dioxide annually and helping to stabilize the Earth's climate. According to the UN Environment Programme, there is no possibility of limiting global warming to 1.5°C or 2°C if we don't conserve existing carbon sinks, such as the Congo Basin.[28] The unique biodiversity of the Congo Basin is also globally significant and essential for maintaining the balance of Earth's life systems. The ecosystems in the Congo Basin are approaching a dangerous tipping point and the stakes are higher than ever. Increasing protection across the region is critical to preventing further environmental damage and to secure the livelihoods of the millions who call this place home.



40%

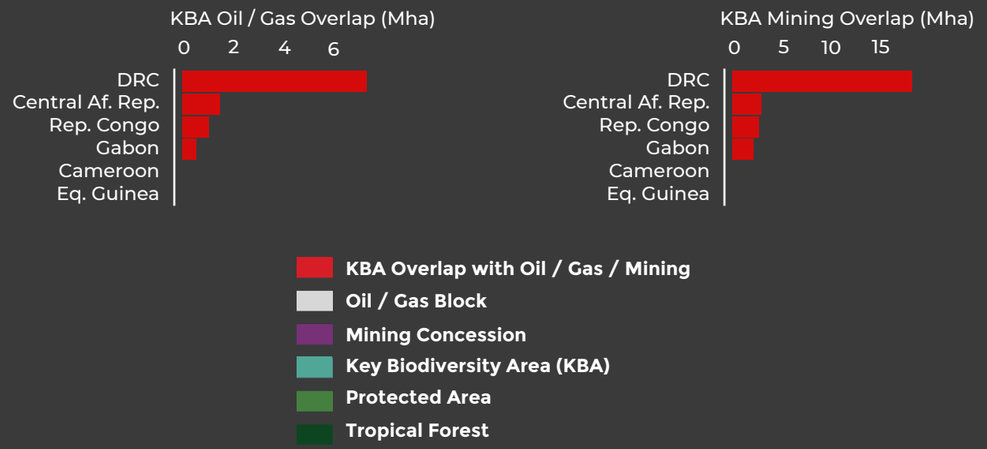
of KBAs overlapped by oil / gas blocks

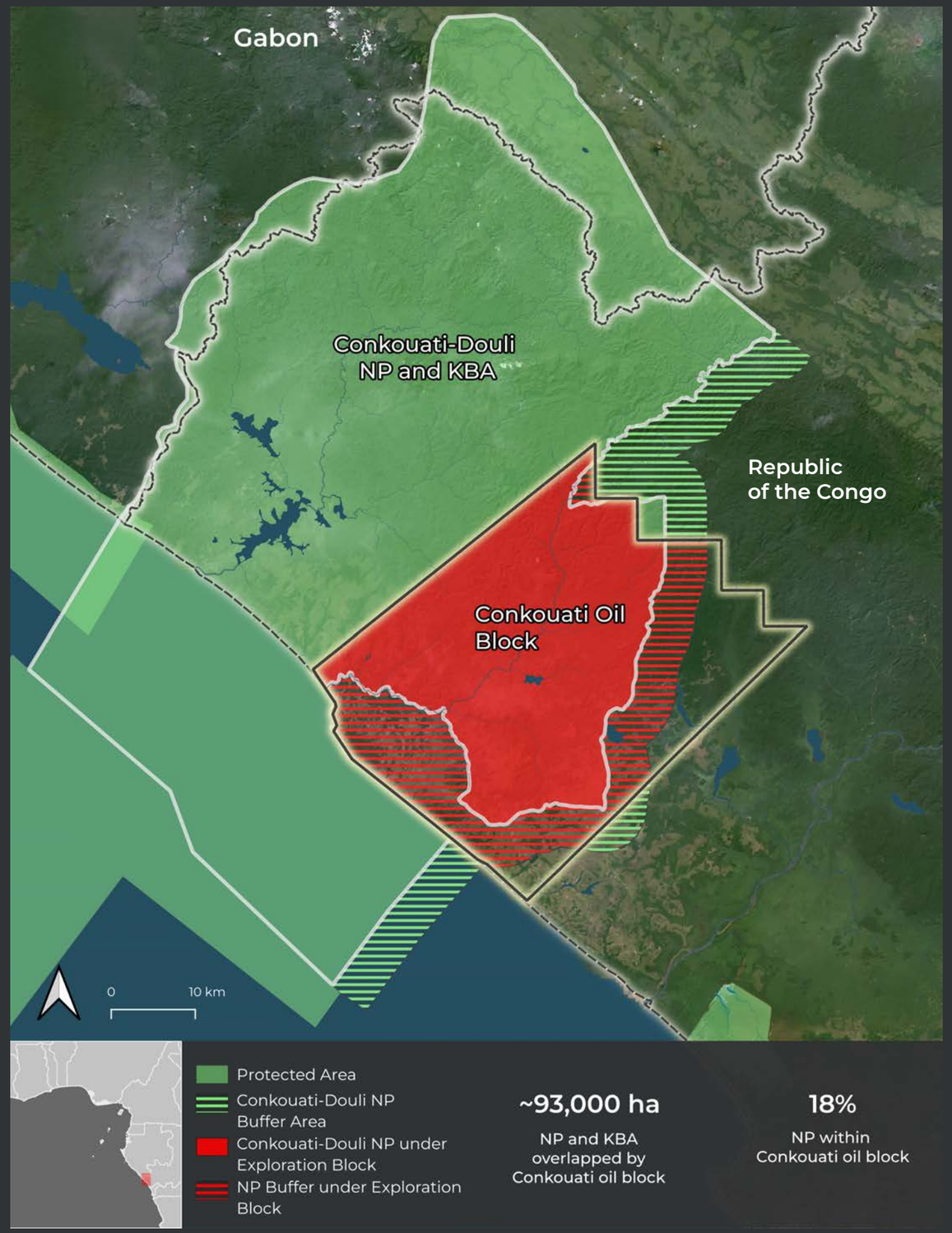
and

16%

of KBAs threatened by mining concessions

MAP 6: Across the Congo Basin, oil, gas, and mining concessions overlap with areas of high ecological and social value.





MAP 7: Conkouati-Douli National Park and its buffer zone are overlapped by an oil and gas block that could threaten the ecological integrity of the protected area.

Case Study: Oil Exploration Threatens Conkouati-Douli National Park

Conkouati-Douli National Park, the Republic of Congo's most biodiverse protected area, is facing threats to its ecological integrity from a new oil exploration permit recently granted within its boundaries. The Conkouati oil block, previously unexplored and unlicensed, is nearly 160,000 ha and overlaps with the national park and its designated buffer zone. Extending from the coastline deep into the heart of the park, the exploration block exists within high-integrity tropical forest and jeopardizes the ecological balance of a globally significant conservation site. Despite its protected status, over 18% of the park is now overlapped by the Conkouati oil block, with a staggering 65% of the park covered by oil and gas concessions at various stages of development.

Established in 1999 and internationally recognized as a Ramsar site, Conkouati-Douli National Park is renowned for its immense biodiversity, significant freshwater systems, and marine coastline, which extends offshore into the first Marine Protected Area established in the Congo as part of a 2023 extension of the national park. Located in the southwest corner of the Republic of Congo, the park is also home to an estimated 7,000 Indigenous people and local community members. However, the newly-permitted Conkouati oil block threatens both the park's inhabitants and ecosystems, with 93,000 ha within the park and an additional 44,000 ha in the buffer zone at risk of destructive development tied to oil exploration and extraction. Notably, nearly 59% of the area within the oil block is designated as a KBA, highlighting the critical ecological importance of this area. Over 91% of the forest within this oil block remains undisturbed, but oil exploration could lead to extensive deforestation and habitat fragmentation, further endangering species, including chimpanzees and forest elephants, already on the brink of extinction. The ecological consequences would be severe and irreversible, compromising both local and global conservation efforts.

The situation in Conkouati-Douli is currently unfolding, creating an urgent need to enforce Congo's existing environmental laws, which prohibit all extractive activities within protected areas and their buffer zones. International pressure and support are crucial in ensuring that these laws are upheld and that the biodiversity of Conkouati-Douli National Park is preserved for future generations. Without immediate action, the park's ecological significance and the livelihoods of the local communities that depend on them could be irreparably damaged.

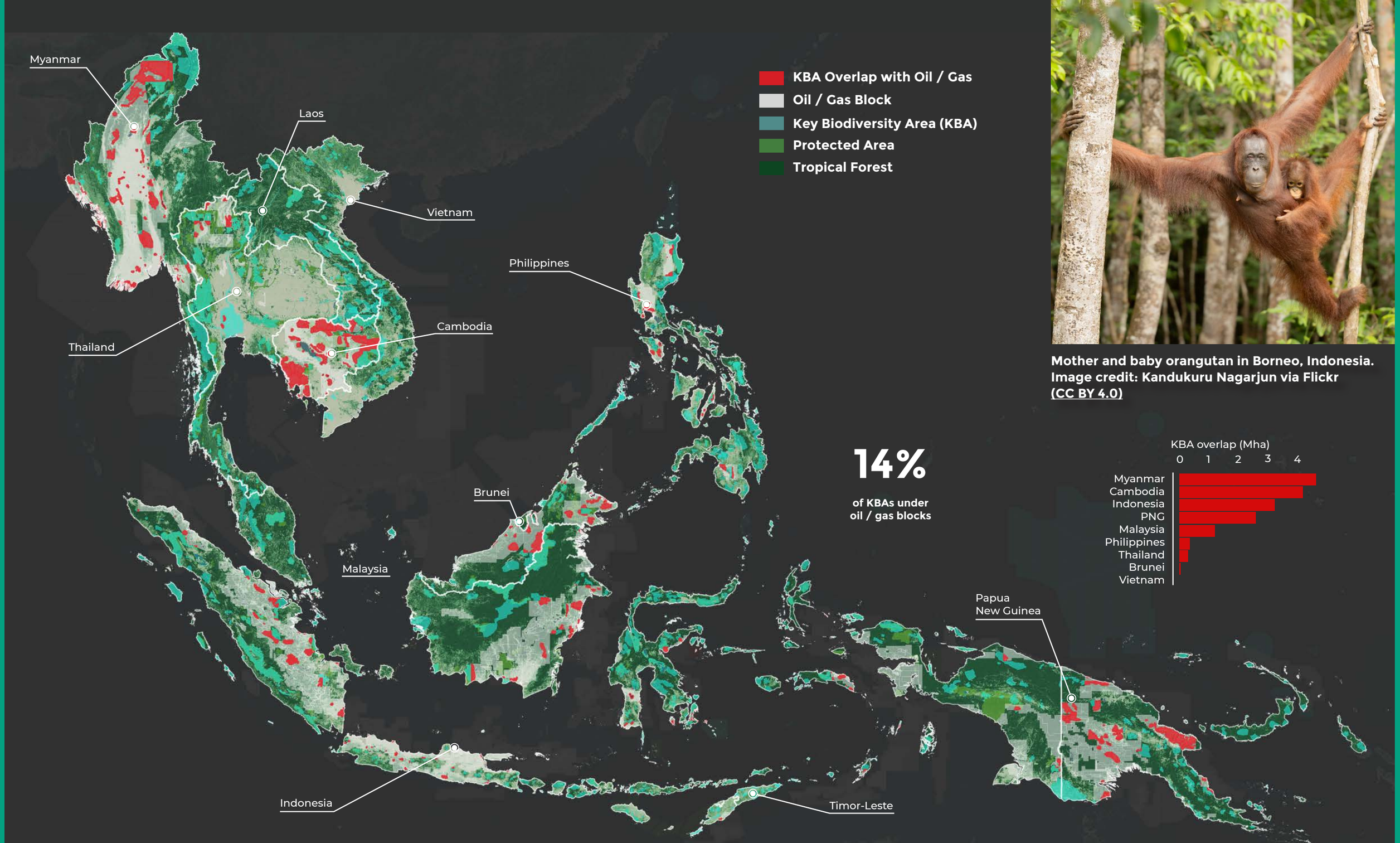
Southeast Asia

Southeast Asia is home to vast and varied ecosystems, including the world's largest archipelagos and some of the planet's most significant rainforests. The rich landscapes of Southeast Asia host a staggering array of life, from iconic species like orangutans, tigers, and Komodo dragons, to thousands of plant species. Despite their global importance, many of Southeast Asia's ecosystems face mounting threats from deforestation, driven by the expansion of palm oil plantations, logging, bioenergy, oil, gas, and mining development. These activities are not only leading to habitat loss and species decline but also contributing to greenhouse gas emissions, exacerbating the extreme challenges of climate change. Industrial expansion on Indigenous and local communities' lands has also sparked social conflicts, as these communities grapple with the degradation and loss of their traditional territories and livelihoods. Ongoing threats to natural landscapes in this region jeopardize the delicate balance of its ecosystems and the cultural and economic well-being of the people who rely on them.

Rising energy demands and economic growth in the region has spurred significant oil and gas exploration and extraction activities in Southeast Asia.[29] In the Southeast Asia region, oil and gas blocks overlap with approximately 14% of the extent of KBAs, which are critical for biodiversity conservation. The potential development of these blocks poses a serious threat to the region's ecological integrity, leading to habitat loss and fragmentation that endangers numerous species. Despite increasing calls for a transition to a fossil-free future, the rise in fossil fuel extraction also leads to increased greenhouse gas emissions, undermining global efforts to combat climate change. Increasing oil and gas activity is exacerbated by surging interest in mining for minerals, including nickel, copper, and tin across the region. A potential mining boom could lead to wide-spread and irreversible environmental destruction, while encroaching on Indigenous lands and threatening the livelihoods of local communities. The cumulative impacts of both fossil fuel and mining activities present significant challenges to the rich biodiversity and globally significant forest landscapes of the region.

Background Image: Concession in North Kalimantan. Image credit: Courtesy of Auriga

Top Images: Indigenous communities protest against concessions in West Kalimantan. This area includes the customary lands of Dayak Benua Kualan Hilir Indigenous community in Simpang Hulu District, Ketapang Regency, West Kalimantan. Image credit: Courtesy of Auriga



MAP 8: Oil and gas blocks overlap with important areas for conservation across Southeast Asia.

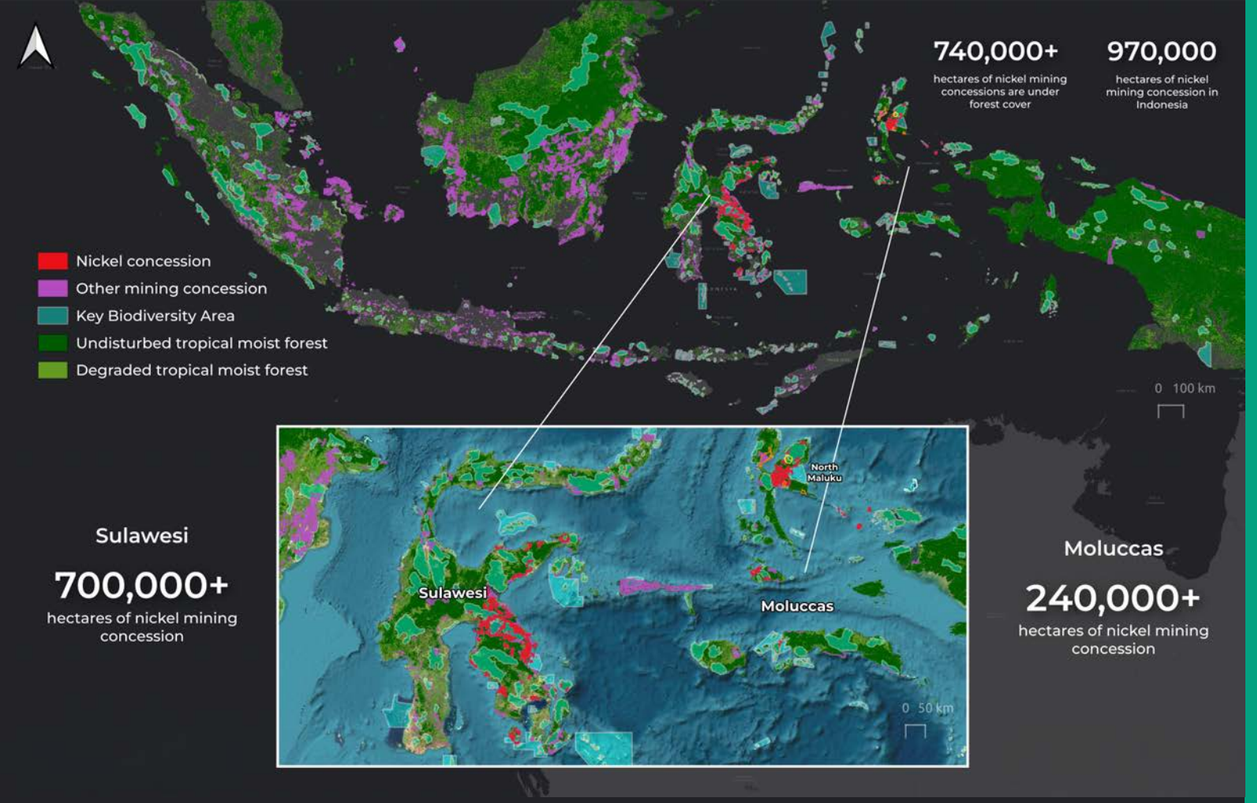
Mother and baby orangutan in Borneo, Indonesia. Image credit: Kandukuru Nagarjun via Flickr (CC BY 4.0)

Case Study: Balancing Clean Energy Needs and Biodiversity in Indonesia

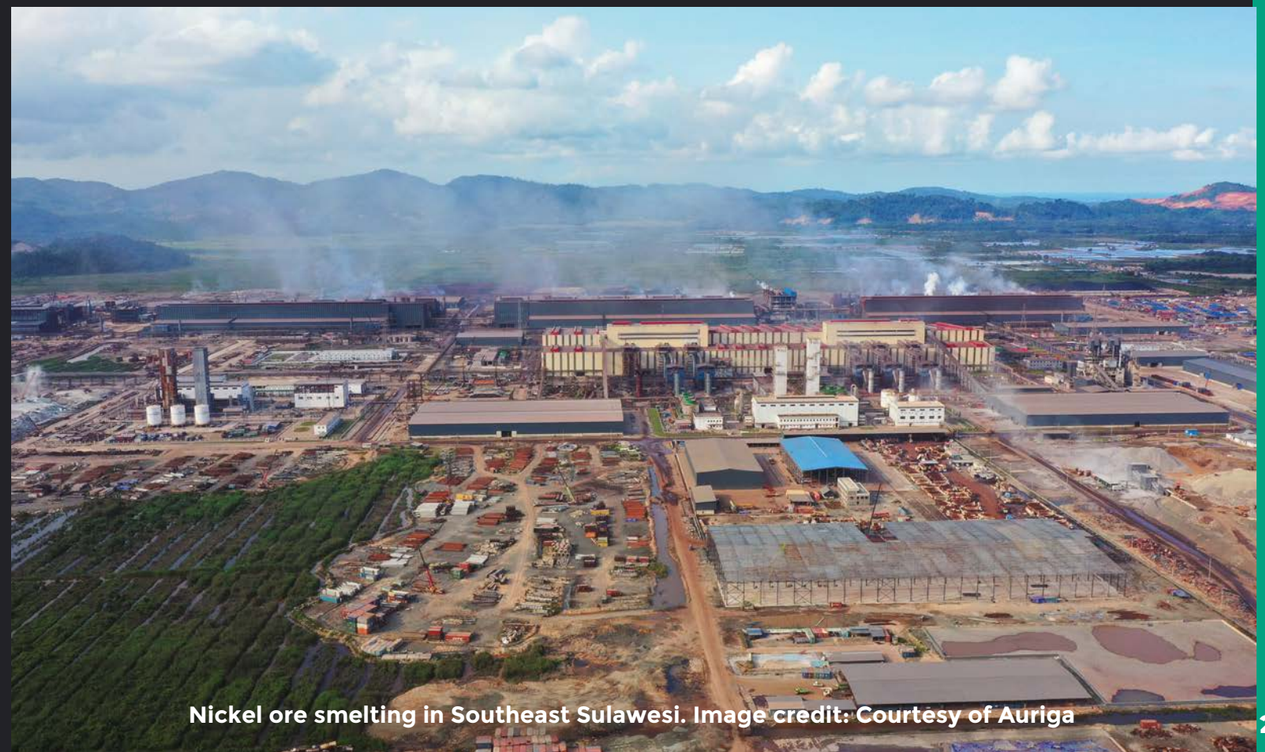
The green energy transition is essential to reduce the threat of climate change; it must be carefully managed to avoid significant threats to the ecological balance of our planet. Indonesia, renowned for its rich flora and fauna and critically endangered species, exemplifies the high stakes. Indonesia is a hotspot with some of the highest numbers of endemic species in the world.[30] In light of Indonesia's tremendous ecological significance, there have been growing calls to scale up conservation efforts and to afford protections to areas of particularly ecological importance.[31]

The fast-growing demand for minerals used in renewable energy technologies presents a significant challenge across Indonesia, particularly in ecologically sensitive regions, such as protected areas and KBAs, where even the most well-intentioned mining operations could cause catastrophic damage. Currently, 29 individual KBAs are overlapped by nickel mine concessions, threatening the ecological stability of these critical areas. The renewable energy transition cannot come at the cost of ecosystems that provide essential services to humanity: There is a delicate balance to achieve long-term environmental and societal well-being. It is imperative that policymakers and industry stakeholders recognize tradeoffs that we cannot afford to make between biodiversity conservation and the mining necessary to sustain the green energy transition. Sustainable and smart practices must be prioritized to ensure that the drive for renewable energy does not come at the expense of the ecosystems that provide essential services to humanity.

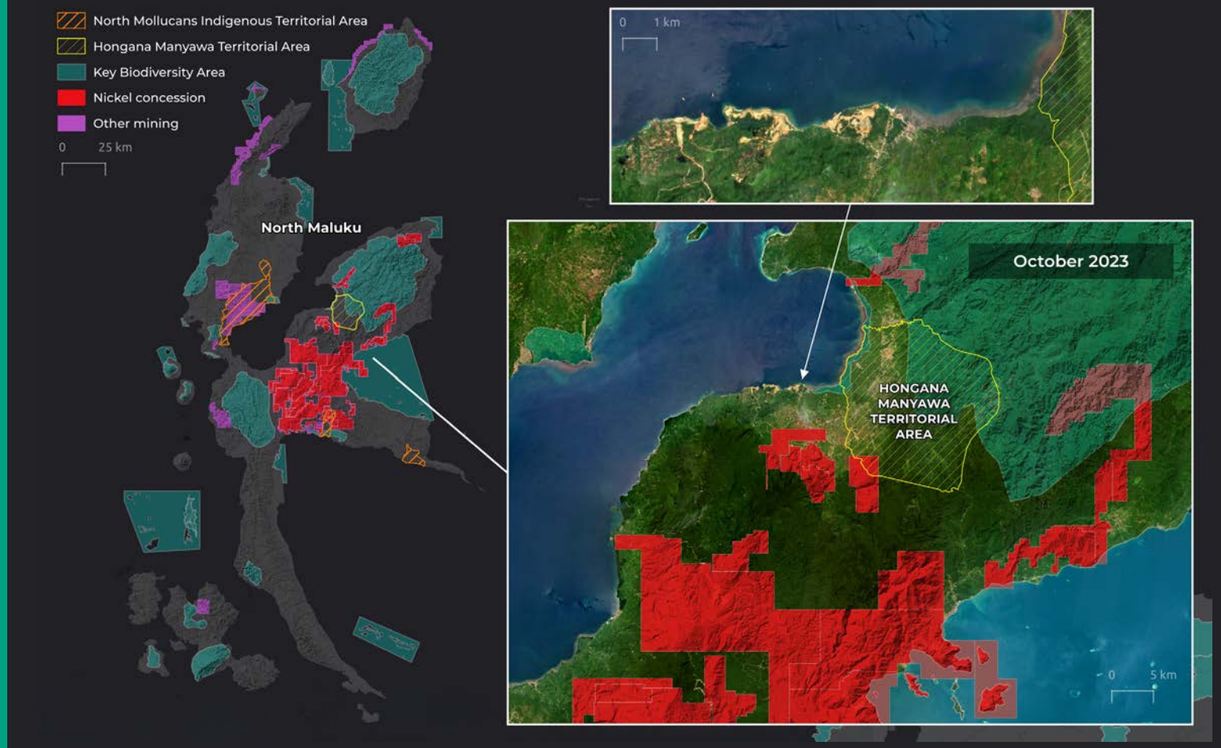
Indonesia's efforts to balance conservation and the green energy transition is not only an environmental challenge but also a significant human rights issue for Indigenous peoples. North Maluku, an eastern Indonesian province in the northern Maluku archipelago, is undergoing rapid industrial transformation due to the country's booming nickel extraction industry. Mining activities, while promising economic growth, are drastically altering the landscape and driving significant environmental degradation and destruction in areas of global biodiversity and climate significance.



MAP 9: Across Indonesia, nickel mining poses an immediate and growing threat to ecological integrity and well-being of local people.



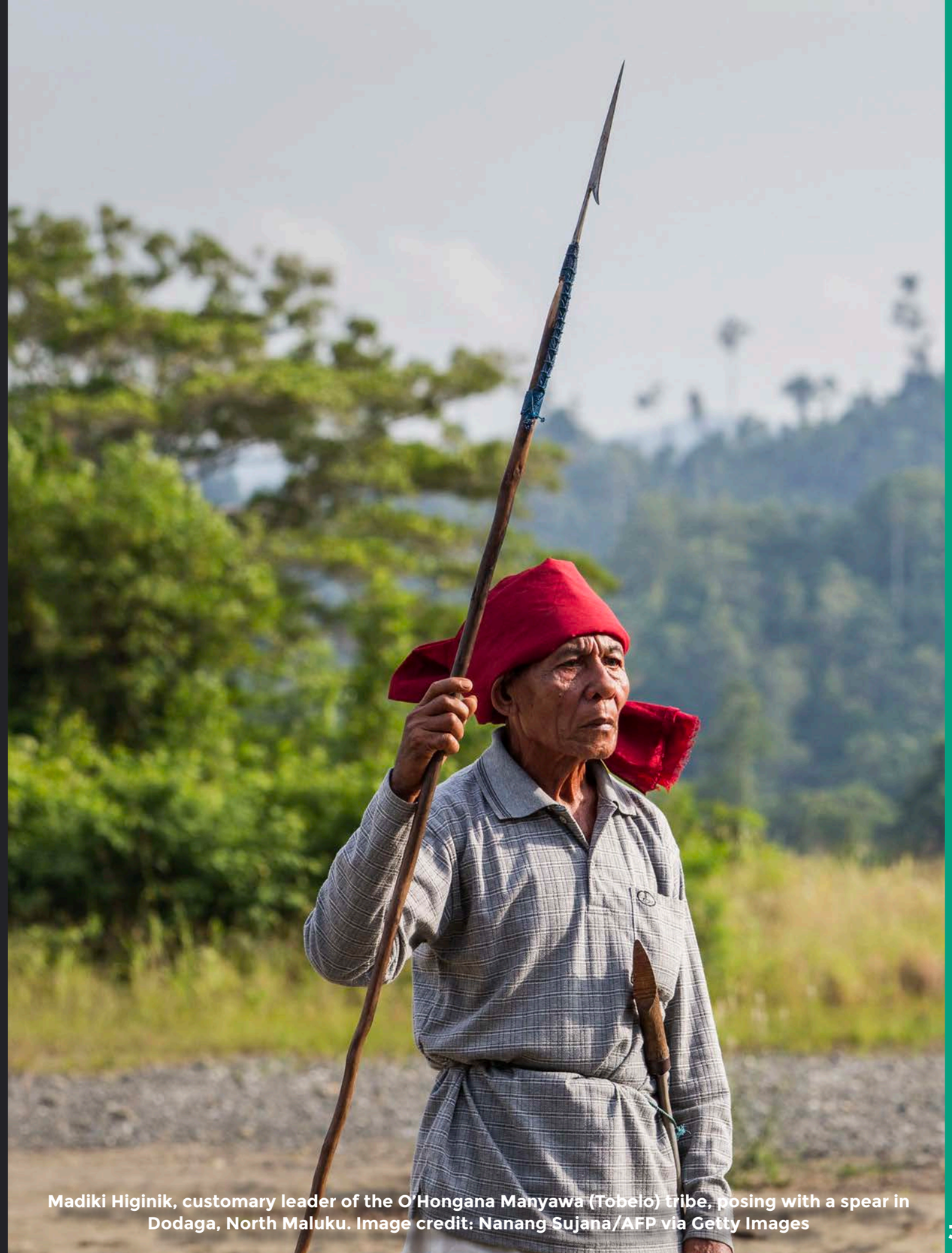
Nickel ore smelting in Southeast Sulawesi. Image credit: Courtesy of Auriga



MAP 10: Nickel mining threatens Key Biodiversity Areas across North Maluku and in Hongana Manyawa Territory.

Land clearing associated with mining operations is steadily expanding, threatening the rich biodiversity of the region as well as the livelihoods of Indigenous communities. Satellite imagery underscores the severity of this ecological transformation. What was once lush forest, home to a range of species and Indigenous peoples, is being replaced by cleared land and industrial infrastructure. This environmental loss, coupled with the industrial expansion on tribal territories, signals a brewing crisis not only for the ecosystems and climate but also for the fundamental freedoms of affected communities. North Maluku is home to several Indigenous communities, including the Hongana Manyawa tribe, some of whom choose to live in voluntary isolation and live a nomadic lifestyle. The Hongana Manyawa tribe is dispersed throughout the central region of North Maluku and their territory significantly overlaps with nickel mining concessions.

In October 2023, a video released by Survival International captured members of the uncontacted Hongana Manyawa tribe warning outsiders to stay clear of their territory, highlighting the real-time danger that nickel mining poses to their ancestral lands and traditional ways of life.[32] The expansion of industrial activities, especially in areas that intersect with tribal lands, raises urgent questions about the rights of Indigenous peoples and the sustainability of resource extraction in one of Indonesia's most biodiverse regions.



Madiki Higinik, customary leader of the O'Hongana Manyawa (Tobelo) tribe, posing with a spear in Dodaga, North Maluku. Image credit: Nanang Sujana/AFP via Getty Images

Ensuring Effective Conservation

As outlined in the GBF 30x30 target, merely increasing the extent of conservation on Earth is not enough – effective conservation that delivers tangible benefits for biodiversity, people, and ecosystems is critical to avoiding ecological collapse. This includes maintaining habitat connectivity, enhancing species populations, supporting ecosystem resilience against climate change, and respecting Indigenous sovereignty over their territories. Protected areas should be among our strongest tools for safeguarding ecosystems against a variety of threats across the landscape, representing crucial remaining strongholds for nature. We need to scale up conservation at a global scale, while equally defending protected areas against encroachment and the spillover effects of industrial development.

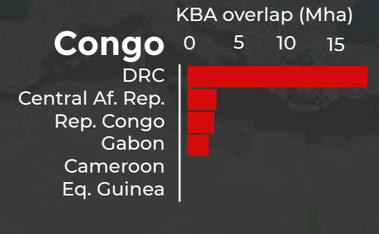
Despite being designated and legally protected for the conservation of biodiversity and natural habitats, many PCAs globally continue to face significant threats from fossil fuel extraction and mining. Over 25.4 Mha of protected areas across the pantropics are overlapped by oil and gas blocks, with some being actively expanded into and developed, despite local and global opposition.

Extractive activities in protected areas lead to tangible negative, often irreversible, impacts on the ecological integrity of these conservation areas through deforestation, habitat destruction, and pollution, endangering wildlife and ecosystems, while also threatening the livelihoods and cultural heritage of Indigenous communities. Numerous international accords have reiterated the incompatibility of extractive activities with PCAs including the United Nations Convention on Biological Diversity and the International Union for Conservation of Nature.[33]

The expansion of extractive industries into protected areas undermines the very purpose of these designations. Protected areas are established to preserve biodiversity, safeguard critical habitats, and contribute to global efforts in mitigating climate change. However, the expansion of fossil fuel and mining projects in these areas not only disrupts these objectives but also exacerbates climate change by releasing stored carbon and destroying natural carbon sinks, such as forests and peatlands. Without decisive protection and stricter enforcement, the boundaries of protection will remain porous, allowing industrial activity to creep into vulnerable ecosystems both inside and outside of protected areas.

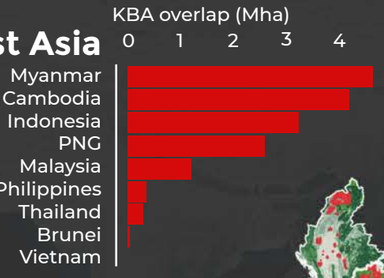
4.1
million hectares

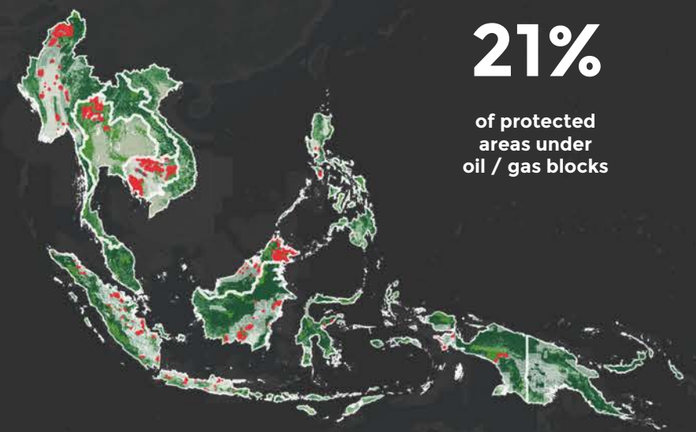
4%
of protected areas under oil / gas blocks



12.9
million hectares

38%
of protected areas under oil / gas blocks





9.5
million hectares

21%
of protected areas under oil / gas blocks

MAP 11: Oil and gas threats to protected areas across the pantropics.

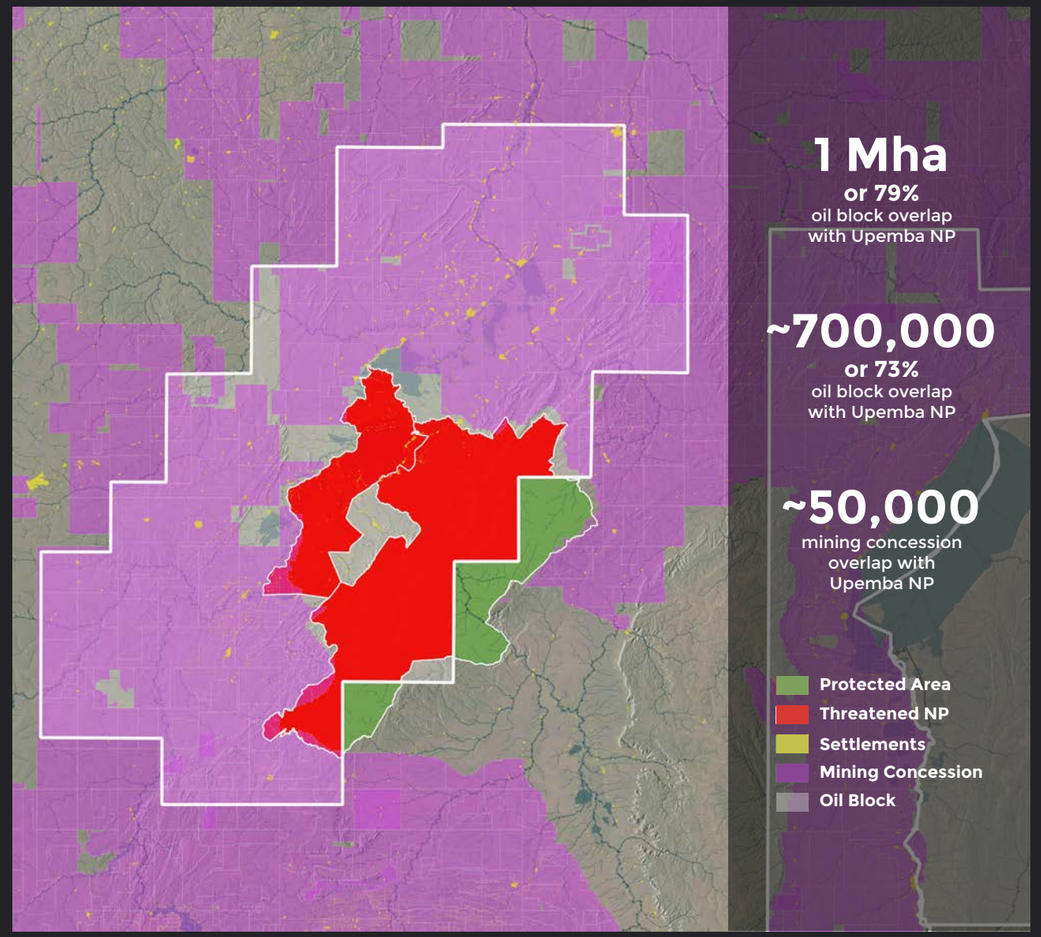
Case Study: Upemba National Park Faces Growing Threats from Oil, Gas, and Mining

Upemba National Park exemplifies a protected area in need of defense, as oil, gas, and mining activities pose significant threats to its habitat both within and outside its boundaries. Upemba is located in the southeast of the Democratic Republic of Congo (DRC) and is home to over 1,800 unique species with habitats including rainforests, woodlands, and rich freshwater. Established in 1939, the park was once a sanctuary for elephants, black rhinos, lions, zebras, leopards, and wild dogs, boasting some of the richest biodiversity in the country. However, decades of civil unrest and the collapse of park management led to devastating losses in its megafauna populations. Despite unimaginable challenges, Upemba's ecosystems remain largely intact, providing a rare opportunity for conservation and wildlife recovery.

Upemba sits in the mineral-rich Katanga Plateau, an area marred by ongoing conflict and large-scale extraction of copper and cobalt. The global demand for cobalt, driven by its essential use in lithium-ion batteries for renewable energy and electric vehicles, has made the region a target for mining interests. Mining concessions exist within the boundaries of the protected area and the KBAs within and surrounding the park, raising significant concerns about the conservation effectiveness of the park within the landscape. Even mining activities outside of the park boundary can have tremendous negative effects on the park's ecosystem, with downstream effects putting undue pressures on the ecological integrity and social stability of the region. Adding to these pressures, the Upemba oil block overlaps nearly 80% of the national park, including all of the Upemba National Park Annex. While the block is not currently in production, the DRC's 2024-2028 Government Action Plan outlines intentions for a new oil and gas bidding round, making now a critically important moment to ensure that no amount of exploration or development is allowed within the protected area.

Upemba National Park presents an urgent opportunity to enhance effective conservation measures in a region in dire need. Without sustained investment in conservation and enforcement of strict no-go zones for industry within the park and a buffer zone, Upemba's irreplaceable biodiversity could soon be lost to industrial extraction. The window to secure Upemba's protection is closing, and urgent action is needed before it's too late.

A small vervet monkey in Upemba National Park, Haut-Katanga Province, DRC. Image credit: Courtesy of Hugh Kinsella Cunningham via Forgotten Parks Foundation.



MAP 12: Oil, gas, and mining activities overlap significant ecosystems both within and immediately adjacent to Upemba National Park.

Conclusion

This report underscores the critical need to protect areas important for climate, biodiversity, and people, particularly in light of the escalating threats posed by oil, gas, and mining activities. As the global community works to meet the ambitious targets set by the GBF and the Paris Agreement, the focus must be on safeguarding regions that are ecologically significant, support climate mitigation, and uphold the rights and livelihoods of IP & LCs. The overlap between Indigenous Territories, biodiverse and carbon-rich areas, and extractive concessions remains alarmingly high, and the push for resource extraction continues to undermine conservation goals.

To effectively combat biodiversity loss and climate change, we must balance ecological protection that respects human rights with the pursuit of economic opportunities for those who need them most. This involves not only expanding protected areas in the areas most in need of conservation measures but also improving the management and governance of existing protected areas, ensuring that they are resilient to pressures from industrial activities. The tension between conservation and exploitation emphasizes the urgency of protecting these critical regions before their ecological value is irreversibly compromised. Ultimately, the success of global conservation efforts will depend on our collective ability to prioritize these vital areas and implement protections that recognize the interconnectedness of ecosystems, climate stability, and human well-being. By doing so, we can ensure that important natural areas are preserved, not just for their intrinsic value, but for the benefit of current and future generations.

Addressing these challenges requires a coordinated global effort to enforce protections, resist harmful development, and promote viable alternatives that benefit both nature and local communities. This includes stronger legal frameworks, effective management strategies, and the meaningful involvement of Indigenous Peoples and local stakeholders at all levels of conservation planning and decision-making. The time to act is now—before the ecological and cultural value of these irreplaceable areas is lost forever.

Key Recommendations

- **Expand the network of effective protected and conserved areas in the right places**
  Accelerate efforts to designate and protect effective conservation areas to meet and exceed the 30x30 target, using integrated landscape planning to prioritize protecting areas that offer significant biodiversity benefits, contribute to climate mitigation efforts, and honor Indigenous stewardship and land sovereignty.

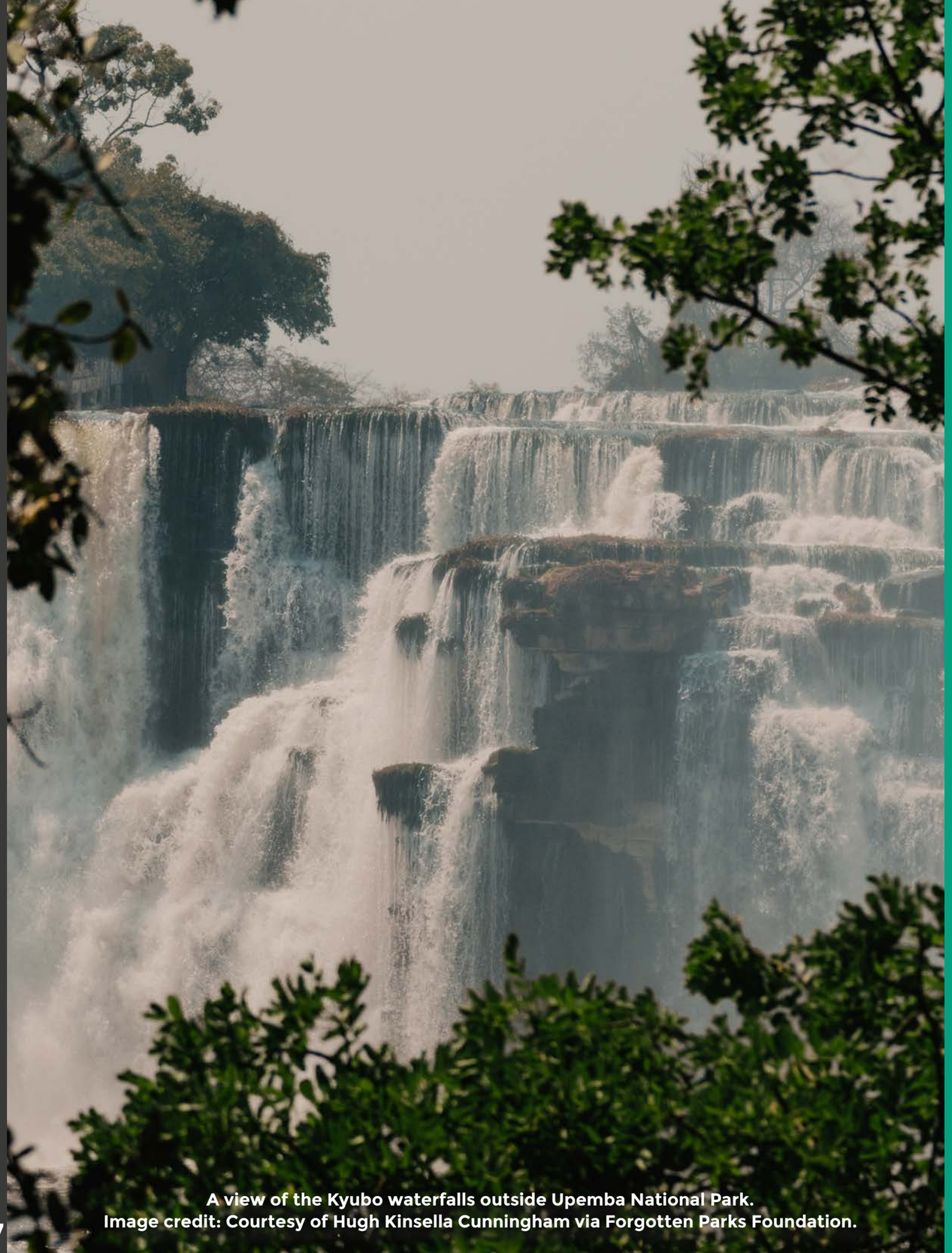
- **Respect Indigenous sovereignty and provide sufficient resources for Indigenous-led conservation**
  Provide Indigenous peoples with the necessary financial, technical, and political resources to exercise governance over their territories while fully recognizing and respecting their sovereignty. This includes ensuring Free, Prior, and Informed Consent for any development or conservation projects in ITs and the integration of traditional knowledge systems into broader conservation strategies.

- **Enact and uphold a global moratorium on oil, gas, mining and other resource extraction in all protected areas**
  A moratorium on resource extraction in protected areas must be enforced through national and international legal frameworks, ensuring that no new exploration or extraction takes place, while phasing out existing extractive operations in protected areas.

- **Prioritize ecological integrity in the green energy transition**
  Ensure that resource extraction necessary for the green energy transition occurs only outside vital conservation areas. Prohibit mining and other industrial activities within critical habitats, while implementing stringent environmental standards and assessments to minimize ecological impacts of any necessary extraction.

- Outside of protected and priority areas, **any proposed oil, gas, mining or other industrial activities must, at a minimum, be subject to the mitigation hierarchy,** which seeks, as a first priority, to avoid impacting areas of importance to biodiversity and climate regulation.

- **Increase funding for nature conservation**
  Mobilize and increase funding for conservation at both national and international levels, including reforming harmful subsidies and delivering on existing commitments to finance conservation under the GBF and the Paris Agreement.



A view of the Kyubo waterfalls outside Upemba National Park.
Image credit: Courtesy of Hugh Kinsella Cunningham via Forgotten Parks Foundation.

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Methodology

Data Disclaimer:
The geospatial analyses in this report are an attempt to capture threats to key biodiversity areas 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. The World Database of Key Biodiversity Areas (WDKBA) releases regular updates based on national assessment processes. The World Database on Protected Areas (WDPA) has known data inconsistencies due to national government data reporting. We have accounted for these inconsistencies wherever possible.

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

There are places where the oil and gas blocks and mining concessions overlap. Given the distinct threat each industrial activity poses, the overlaps with ecosystems and communities have been calculated separately for each and should not be combined.

Oil and Gas Blocks
The extent of oil and gas blocks was compiled by Earth Insight based on recent official publications by the Ministries of Natural Resources or Energy and the national petroleum companies of Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, Suriname, Democratic Republic of Congo, Republic of Congo, Central African Republic, Gabon, Cameroon, Equatorial Guinea, Brunei, Cambodia, Indonesia, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand, and Vietnam.

Blocks that are offshore were removed from analytical layers. To account for overlapping oil and gas blocks, particularly in Indonesia, areas of overlap were removed to avoid double-counting threats.
Mining Concessions
The extent of mining blocks was compiled by Earth Insight based on recent official publications by the Ministries of Mines and Natural Resources of Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, Suriname, Democratic Republic of Congo, Republic of Congo, Central African Republic, Gabon, Cameroon, Equatorial Guinea. Mining concession data for Indonesia is from Auriga Nusantara, concession data for Venezuela, Guyana, and Suriname is from RAISG (2023), and data for Democratic Republic of Congo, Republic of Congo, Central African Republic, Gabon, Cameroon is supplemented by data from Global Forest Watch (2015).

To account for overlapping mining concessions areas of overlap were removed to avoid double-counting threats.
Oil, Gas, and Mining Threat Analysis
Forest Cover
The forest cover area under oil and gas blocks was calculated by intersecting the JRC Tropical Moist Forest (TMF) cover product (Vancutsem et al., 2021) with the oil and gas layer using Zonal Histogram, and then summarizing the number of pixels by country. The same steps were repeated for the Forest Landscape Integrity Index (FLII), an alternative forest product which is able to better capture the dry forest landscapes in the Congo Region. Before running the Zonal Histogram the FLII layer was reclassified into Low (≤ 6.0), Medium (> 6.0 but <9.6), and High (scores ≥ 9.6) integrity forests based on the classes defined by the dataset's authors (Grantham et al., 2020). The Copernicus Global Land Service, derived from the PROBA-V satellite, was used for visualization (Buchhorn et al., 2020).

The same steps were repeated with the mining concession layer.

Key Biodiversity Areas
The area of KBAs under oil and gas blocks was calculated by intersecting the WDKBA layer (BirdLife International, 2024) using the intersection tool and then summing the area by country. To find the number of KBAs that overlap with oil and gas activity, we grouped by country and found the unique instances of KBA by name.

The same steps were repeated with the mining concession layer.
Protected Areas

The protected areas data used in this analysis are from the World Database of Protected Areas (UNEP-WCMC and IUCN, 2023). The database identifies a range of classes which reflects their primary management objectives (Dudley 2008).

Ia - Strict nature reserve
Ib - Wilderness area
II - National park
III - National monument or feature
IV - Habitat and species management area
V - Protected landscape or seascape.
VI - Protected area with sustainable use of natural resources
Not applicable/no classification

Protected areas with IUCN categories I - IV were selected based on IUCN recommendations that no oil and gas extraction should occur in these protected areas. Protected areas that did not have a IUCN category but were designated 'National Parks' were recategorized as IUCN category II to account for the gaps in reported attribute data for certain countries, including Bolivia. Duplicate and overlapping protected area features were removed before running the area-based analysis. Marine Protected Areas were removed using `Marine != 2` to preserve protected areas in coastal and tidal landscapes as well as terrestrial protected areas.

The area of PAs under oil and gas blocks was calculated by intersecting the WDPA layer using the intersection tool and then summing the area by country, using the Parent ISO attribute. To find the number of PAs that overlap with oil and gas activity, we grouped by country and found the unique instances of PA by name.

The same steps were repeated with the mining concession layer.

Indigenous Territories
Due to data availability, the area of Indigenous territory (ITs) that overlaps with oil, gas, and mining blocks was only calculated within Amazon Basin. The dataset of Indigenous Territories in the Amazon is compiled RAISG (2023), and is collected and validated by local organizations. The dataset includes multiple designations of Indigenous peoples and community lands reflective of each country's Indigenous and land tenure laws, and includes Indigenous lands, Indigenous territories, Community lands, Peasant communities, and Native communities, among other designations. The dataset includes recognized lands and lands that have been demarcated and submitted for recognition. Customary Indigenous lands are not included in this dataset, and notably customary IP and LC lands are usually more extensive than recognized lands.

ITs were intersected with the oil and gas layer using the intersection tool, and the area was summed by country. The same steps were repeated with the mining concession layer.

Global Safety Net
The proportion of oil and gas blocks that overlaps with the Global Safety Net (GSN) was calculated by intersecting the GSN with oil and gas block data, and the area was summed by region.

The GSN layer was created by merging the five GSN layers identified by Dinerstein et al. (2020) - species rarity sites, high biodiversity areas, large mammal landscapes, intact wilderness areas, climate stabilization areas, and terrestrial protected areas. The updated species rarity layer (Dinerstein et al., 2024) was provided by the authors and used. Overlapping areas were removed.

Case Studies

Conkouati-Douli National Park
A 5 km buffer zone was created on the East edge of Conkouati-Douli NP, according to the decree that established the park (Décret n° 99-136). The Conkouati oil block was intersected with the protected area and buffer zone, as well as the KBA to calculate the areas under risk of the newly licensed block.

Indonesia Nickel Mining
The nickel mining concession layer is a filtered subset of the Indonesian mining concession layer shared by Auriga. The nickel mining layer was intersected with the KBA layer to calculate the overlap of KBAs within nickel mining concessions. Zonal histogram was used to calculate the TMF under nickel mining concessions. The Indigenous territorial layer on North Maluku is also shared by Auriga.

PIACI
The PIACI reserve layer is from AIDESEP (the Interethnic Development Association of the Peruvian Amazon). An older version of the boundary of the Sierra del Divisor Occidental - Kapanawa PIACI reserve was used in this analysis because the approved boundary, following the reserve's approval on May 22, 2024, is not currently available. The PIACI reserve layer was intersected with the oil and gas block layer to calculate the overlap of PIACI reserves with extractives.

Upemba National Park
The Upemba National Park and NP Annex were intersected with the oil block and with the mining concessions to calculate the overlap of both extractive threats with the protected area. Upemba KBA was also intersected with the oil block to calculate the KBA overlap.

Data Sources
Oil and gas blocks: Amazon: RAISG oil and gas block database (2023), Bolivian Ministry of Hydrocarbons and Energy, Brazilian National Agency of Petroleum and Natural Gas and Biofeuls, Colombian National Hydrocarbon Agency, Ecuadorian Ministry of Energy and NonRenewable Resources, Guyanese Ministry of Natural Resources, PerúPetro, Staatsolie, Venezuela's Ministry of Energy and Petroleum. Congo: Ministry of Mines, Industry and Technological Development of Cameroon, Ministry of Energy, Mines, Geology and Water Resources of the Central African Republic, Ministry of Hydrocarbons of the Democratic Republic of Congo, Ministry of Mines and Hydrocarbons of Equatorial Guinea, Ministry of Hydrocarbons of the Republic of Congo, the Ministry of Oil, Gas and Hydrocarbons of Gabon. Southeast Asia: Cambodian National Petroleum Authority, Indonesian Ministry of Energy and Mineral Resources, Department of Energy of the Philippines, PetroVietnam Exploration and Production Company (PVEP), Thai Ministry of Energy, Petronas (Malaysia), Ministry of Energy of Myanmar, Papua New Guinea Department of Petroleum and Energy.

Mining concessions: Amazon: RAISG mining concession database (2023), Bolivian Ministry of Mining and Metallurgy, Brazilian National Agency of Mines, Colombian National Agency of Mining, Ecuadorian Ministry of Energy and Non-Renewable Resources, Guyana Geology and Mines Commission, Peruvian Ministry of Energy and Mines, Suriname's Natural Resource and Environmental Assessment, Venezuelan Ministry of Energy and Mines. Congo: Ministry of Forestry and Wildlife of Cameroon, Ministry of Mines and Geology of the Central African Republic, Cadastre Minier (CAMI) of the Democratic Republic of Congo, Ministry of Mines and Hydrocarbons of Equatorial Guinea, Ministry of Mines and Geology of Gabon, Ministry of Mines and Geology of the Republic of Congo. Indonesia: AURIGA (2023).

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