

Low-carbon technologies: An impending threat to forests

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ABOUT THIS BRIEFING PAPER

The New York Declaration on Forests (NYDF) is an international pledge to halt global deforestation. It sets out ten ambitious goals related to protecting and restoring forests. In November 2020, the NYDF Assessment Partners published the Goal 3 and 4 Progress Report, *Balancing forests and development: Addressing infrastructure and extractive industries, promoting sustainable livelihoods*. Following the report, this briefing paper explores the impending threats to forests from the global transition to low-carbon technologies and associated increase in mining.

FORESTS AND LOW-CARBON TECHNOLOGIES

Forests need to be preserved and restored to limit global warming and reduce biodiversity loss. However, the global transition to low-carbon technologies to combat the growing climate crisis risks putting further pressure on forest ecosystems. Clean energy technologies such as solar panels, wind turbines, electric vehicles, and batteries require large amounts of minerals – even more materials than fossil-fuel-based electricity generation¹ - making the transition to low-carbon technology very mineral intensive.

To achieve a below 2°C future and meet the growing demand for clean energy technologies an estimated 3 billion tons of minerals and metals will be needed and the production of minerals such as graphite, lithium and cobalt, could increase by nearly 500% by 2050.²

¹ World Bank. Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition. <http://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf> (2020).

² Ibid.

Many of these minerals used in low-carbon technologies like gold, iron ore, copper, bauxite, titanium, and nickel are extracted from mines in forests.³ Mineral extraction for the transition to a low-carbon economy therefore poses a high risk to important ecosystems such as an intact forest landscape (IFL) - a seamless mosaic of forests and natural treeless ecosystems without human activity or habitat fragmentation large enough to maintain biodiversity.

Although the remaining IFLs comprise only 20% of tropical forest area, they account for 40% of the total aboveground tropical forest carbon. These intact forests are diminishing at alarming rates - 7.2% were lost between 2000 and 2013, a rate twice that of overall global deforestation.⁴ Mining operations are an important cause of IFL loss mainly due to the fragmentation effect of the mining-related infrastructure which directly removes, fragments, or degrades these important natural habitats.⁵ Two such important forested regions at risk from the increasing demand for minerals due to the transition to low-carbon technologies are the Amazon and Congo Basin.

To establish the future threat to forests from the transition to low-carbon technologies, CDP analyzed available mining concession maps and their relationship with IFLs and protected areas in these two regions.



3 World Bank. Forest-Smart Mining: Identifying Factors Associated with the Impacts of Large-Scale Mining on Forests. <https://openknowledge.worldbank.org/handle/10986/32025> (2019).

4 Potapov, P., Hansen, M., Laestadius, L., Turubanova, S., Yaroshenko, A., & Thies, C. et al. The last frontiers of wilderness: Tracking loss of intact forest landscapes from 2000 to 2013. *Science Advances*, 3(1), e1600821. <https://advances.sciencemag.org/content/3/1/e1600821.full> (2017).

5 Ibid.

MINING & THE AMAZON

The Amazon region is home to the largest tropical forest globally, covering more than 6 million square kilometers spanning across eight countries including Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, and Suriname, as well as French Guiana. The Amazon rainforest harbors 10% of the world's biodiversity⁶ while its trees store 90–140 billion tons of carbon⁷ - an essential part of combating climate change. The Amazon forest has considerable mineral reserves including copper, tin, nickel, bauxite, manganese, iron ore and gold⁸ which makes it attractive for global mining companies. Mining and mineral exploration have played a substantial role in the destruction of IFL in tropical South America - contributing up to 9% of IFL area loss.⁹ Approximately 10% of the deforestation in the Brazilian Amazon between 2005 and 2015 was due to mining activities alone.¹⁰

Currently, around 4% of all mines in construction or operation in the Amazon region lie within IFLs while up to 13% of all mines at the feasibility or exploration stage were within an IFL (Figure 1). Forests in Brazil and Guyana are most at risk - the majority of mining permits are located in the Brazilian Amazon, while Guyana had the largest area impacted by mining. Mining can also impact areas up to 70 km beyond the mining lease.¹¹ Around 16% of mines in operation or construction in the Amazon region were within 10 Km of an IFL and around a third (30%) of all mines at the feasibility or exploration stage were this close to an IFL. This suggests that the increased demand for minerals is contributing to mines increasingly edging closer to and into intact forest landscapes in the Amazon region.

The occurrence of many projects in a region can lead to cumulative impacts which may be overlooked if concession applications are only considered individually. Such cumulative impacts are already occurring in the IFLs in the Amazon region with mining-related infrastructure, industrial logging and large-scale agriculture collectively causing significant loss of forests.

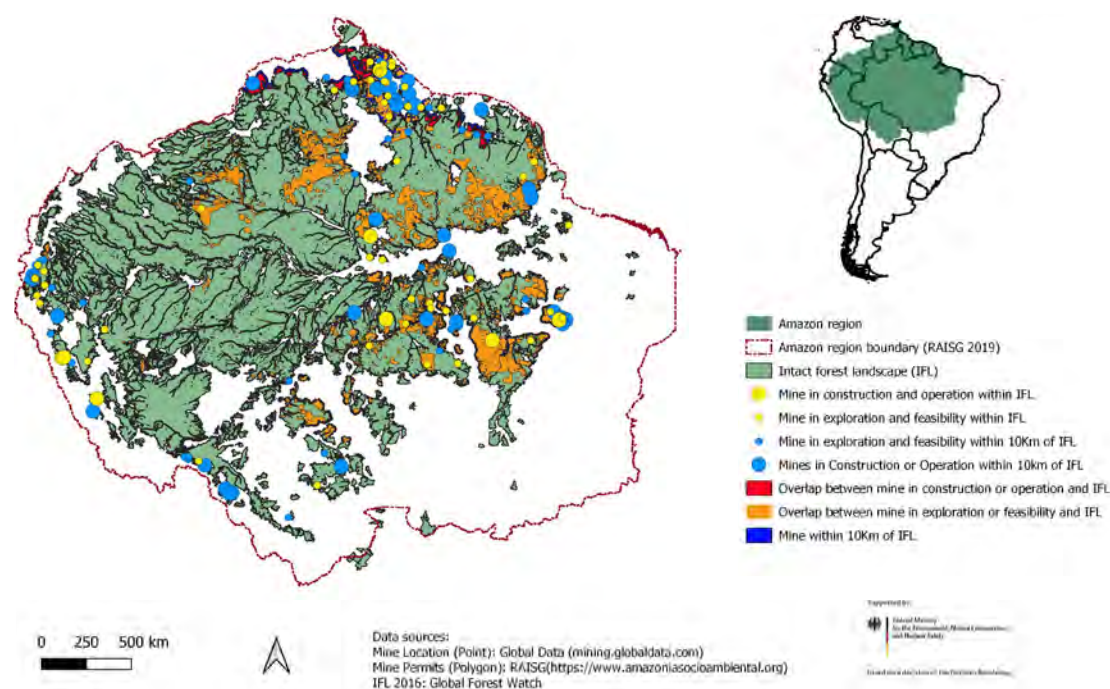


Figure 1 Relationship between mining and intact forest landscapes in the Amazon region.

- 6 WWF. WWF's Living Amazon Initiative: A comprehensive approach to conserving the largest rainforest and river system on Earth https://www.feu.awsassets.panda.org/downloads/wwf_s_living_amazon_initiative_strategy_summary__2010.pdf (2010).
- 7 Soares-Filho, B., Nepstad, D., Curran, L. et al. Modelling conservation in the Amazon basin. *Nature* 440, 520–523 <https://doi.org/10.1038/nature04389> (2006).
- 8 World Bank. Forest-Smart Mining: Identifying Factors Associated with the Impacts of Large-Scale Mining on Forests. <https://openknowledge.worldbank.org/handle/10986/32025> (2019).
- 9 Potapov, P., Hansen, M., Laestadius, L., Turubanova, S., Yaroshenko, A., & Thies, C. et al. The last frontiers of wilderness: Tracking loss of intact forest landscapes from 2000 to 2013. *Science Advances*, 3(1), e1600821. <https://advances.sciencemag.org/content/3/1/e1600821.full> (2017).
- 10 Sonter, L., Herrera, D., Barrett, D., Galford, G., Moran, C., & Soares-Filho, B. Mining drives extensive deforestation in the Brazilian Amazon. *Nature Communications*, 8(1). <https://doi.org/10.1038/s41467-017-00557-w> (2017).
- 11 Ibid.

MINING & THE CONGO BASIN

The Congo Basin, the second largest tropical rainforest in the world, spans across six countries—Cameroon, Central African Republic, Democratic Republic of the Congo, Republic of the Congo, Equatorial Guinea and Gabon. It is extremely rich in minerals such as copper, cobalt, tin, uranium, iron, titanium, coltan, niobium, manganese, and gold.¹² With over 85% under natural forest cover, the Democratic Republic of Congo (DRC) holds the largest part of the rainforest in the Congo Basin but deforestation is a key concern. In 2018, the DRC lost the second-largest area of tropical primary forest of any country on Earth.¹³ Over 65% of cobalt in the global market is currently supplied by the DRC, and it is expected to supply more than 75% by 2023 spurred on by the production of batteries for smartphones and electric vehicles.¹⁴

Mining exploitation and research permits are concentrated in the Eastern, South/East and Western areas of the Congo Basin and are often in areas of high forest cover and in close proximity to protected areas (Figure 2). The mineral wealth of the Congo Basin remains largely underdeveloped, however, rising metal prices and increased demand mean that mineral reserves previously considered financially unviable are now receiving increased interest from companies and investors increasing exploration activities in the Congo Basin.¹⁵ Appropriate land use planning and coordination is vital to prevent conflicts between conservation priorities, mining and logging concessions, infrastructure development, and local livelihoods.

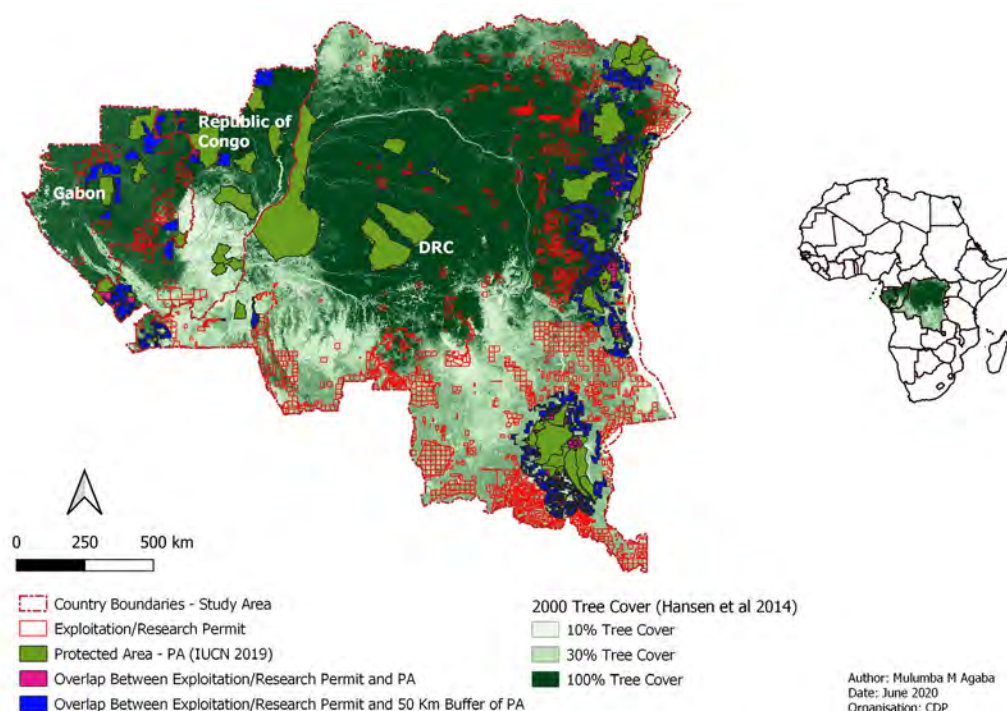


Figure 2 Relationship between mining and Protected Areas – Exploration and Research Permits in the Congo Basin.

12 World Bank. Deforestation Trends in the Congo Basin: Reconciling Economic Growth and Forest Protection. <https://openknowledge.worldbank.org/bitstream/handle/10986/16617/779440WP0P11600ort0FINAL0web00may13.pdf> (2013).

13 Weisse, M. and Goldman, E. D. The World Lost a Belgium-sized Area of Primary Rainforests Last Year. World Resources Institute. <https://www.wri.org/blog/2019/04/world-lost-belgium-sized-area-primary-rainforests-last-year> (2019).

14 World Bank. Climate-Smart Mining: Minerals for Climate Action. <https://www.worldbank.org/en/news/infographic/2019/02/26/climate-smart-mining> (2019).

15 World Bank. Deforestation Trends in the Congo Basin: Reconciling Economic Growth and Forest Protection. <https://openknowledge.worldbank.org/bitstream/handle/10986/16617/779440WP0P11600ort0FINAL0web00may13.pdf> (2013).

A SUSTAINABLE FOREST-POSITIVE ENERGY TRANSITION

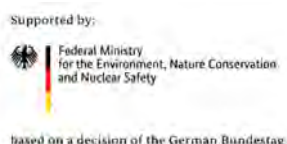
The global transition to low-carbon technologies and related growing demand for minerals and metals provides economic opportunities for resource-rich developing countries and companies. However, significant challenges will likely emerge if the transition is not managed sustainably. Given how critical minerals are to the low-carbon transition, mitigating environmental impacts such as deforestation needs to be integrated in how these minerals are produced. Failure to address these wider environmental risks could counteract any carbon reductions made through these technologies and facilitate a backlash against low-carbon technologies needed to mitigate GHG emissions.

For the NYDF the Goal 3 and 4 Progress Report, *Balancing forests and development: Addressing infrastructure and extractive industries, promoting sustainable livelihoods*, CDP gathered and analyzed data from mining sector companies and state and regional governments to evaluate if and how deforestation from mining was being managed.

Most of the companies (93%) assessed have made general commitments covering biodiversity and environmental aspects. Yet, only a minority of those embraced specific forest-related commitments, such as No Net Loss and Net Positive impact (11% and 20% respectively). Few companies also adopted Specific, Measurable, Achievable, Realistic, and Time-bound (SMART) targets, and only 38% reported biodiversity offsetting projects.

Half of the state and regional governments reported having policies in place to address deforestation and forest degradation caused by mining activities (50%). However, most state and regional governments (78%) did not report having forest management plans which directly address deforestation and forest degradation from mining.

To keep benefitting from forests in the long-term and ensure the global transition to low-carbon technologies does not further exacerbate deforestation, extractive companies must improve transparency and apply the 'mitigation hierarchy' to effectively minimize their impacts on forests. Governments need to align macro-economic and strategic planning with forest goals and put policies into action by implementing management plans that protect forests. Coordination and collaboration is also needed. Mining and other development projects need to be jointly understood within landscape plans to manage and mitigate cumulative impacts on forests and conflicts.



To learn more about the NYDF Progress Assessment, please visit www.forestdeclaration.org.

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