

At least 80% of world's important sites for biodiversity on land currently contain human developments

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A study has found that infrastructure worldwide is widespread in sites that have been identified as internationally important for biodiversity, and its prevalence is likely to increase.

This is the first-ever assessment of the presence of <u>infrastructure</u> in Key Biodiversity Areas (KBAs), a <u>global network</u> of thousands of sites recognized internationally as being the world's most critical areas for wildlife.

Infrastructure is one of the greatest drivers of threats to <u>biodiversity</u>, according to the International Union for Conservation of Nature. It can cause natural habitat destruction and fragmentation, pollution, increased disturbance or hunting by humans, the spread of invasive species, direct mortality, and can have wider impacts beyond the <u>development</u> site.

Now, researchers from BirdLife International, WWF and the RSPB, in association with the University of Cambridge, have conducted an assessment of infrastructure in KBAs, finding that it is widespread and likely to increase. The results are published today in *Biological Conservation*.

"It's concerning that human developments exist in the vast majority of sites that have been identified as being critical for nature," said Ash Simkins, a Zoology Ph.D. student at the University of Cambridge who led the study.

KBAs are sites that contribute significantly to the global persistence of biodiversity. For example, they may contain species that are under a high risk of extinction or are home to species or ecosystems that are found in only a small area worldwide.

Researchers assessed 15,150 KBAs on land and found that 80% contained infrastructure. Multiple combinations of infrastructure types



occurred in KBAs, with the most common being roads (75%), power lines (37%) and urban areas (37%).

They found that potential future planned infrastructure developments could lead to an additional 2,201 KBAs containing mines (from 754 to 2,955; 292% increase), an additional 1,508 KBAs containing oil and gas infrastructure (from 2,081 to 3,589; 72% increase) and an additional 1,372 KBAs containing power plants (from 233 to 1,605; 589% increase).

Maps of KBAs were intersected with spatial datasets of different types of infrastructure that researchers categorized as transport, dams and reservoirs, extractives (relating to natural resources), energy (power lines and power plants) and urban areas.

Energy and extractives were the only categories for which some global data on potential future planned developments was available.

"We recognize that infrastructure is essential to human development, but it's about building smartly. This means ideally avoiding or otherwise minimizing infrastructure in the most important locations for biodiversity. If the infrastructure must be there, then it should be designed to cause as little damage as possible, and the impacts more than compensated for elsewhere," said Simkins.

Researchers found that countries in South America (for example, 82% of KBAs in Brazil), Sub-Saharan, Central and Southern Africa, and parts of Southeast Asia are among the areas with the highest proportion of extractive claims, concessions or planned development in their KBA networks. All of the KBAs identified to date in Bangladesh, Kuwait, the Republic of the Congo and Serbia have potential extractive claims, concessions or planned development.



"It's also concerning to see that in the future, extensive mining and oil and gas related infrastructure is planned to be built in many of the world's most important sites for biodiversity," said Simkins.

Some of the technology to tackle the climate crisis, like solar panels and wind turbines, is also dependent on mining for precious metals. "We need smart solutions to the climate crisis whilst avoiding or minimizing negative impacts on biodiversity," said Simkins.

"At the UN biodiversity COP15 meetings in Montreal last year, governments committed to halting human-induced extinctions," said coauthor Dr. Stuart Butchart, Chief Scientist at BirdLife International and Honorary Research Fellow at Cambridge's Department of Zoology. "Widespread destruction or degradation of the natural habitats within KBAs could lead to wholesale extinctions, so existing infrastructure in KBAs must be managed to minimize impacts, and further development in these sites has to be avoided as far as possible."

"Infrastructure underpins our societies, delivering the water we drink, the roads we travel on, and the electricity that powers livelihoods," said Wendy Elliott, Deputy Leader for Wildlife at WWF. "This study illustrates the crucial importance of ensuring smart infrastructure development that provides social and economic value for all, whilst ensuring positive outcomes for nature. Making this happen will be the challenge of our time, but with the right planning, design and commitment it is well within the realms of possibility."

Researchers say that infrastructure within a KBA varies in the degree to which it may drive a loss of biodiversity. More research is required to find out the extent to which infrastructure in a particular KBA affects wildlife within the site and what measures are needed to mitigate this.

More information: A global assessment of the prevalence of current



and potential future infrastructure in Key Biodiversity Areas, *Biological Conservation* (2023). DOI: 10.1016/j.biocon.2023.109953

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