

June 11, 2023 [Environment, In the Lab](#) By [Sachin Rawat](#)

Saving Tigers Helped Reduce India's Carbon Emissions

Research shows that tiger conservation interventions prevented forest loss, leading to reduced emissions and ecosystem benefits.



AsianScientist (Jun. 11, 2023) – In 2005, the Indian government set up the National Tiger Conservation Authority (NTCA) to build upon earlier tiger conservation efforts in the country. It enabled enhanced monitoring and better enforcement of forest protection laws in designated tiger reserves. Consequently, the tiger population in India rose from 1,411 in 2006 to over 3,000 currently. Now, research published in the journal *Nature Ecology and Evolution* shows that the effort also led to a significant cut in carbon emissions.

The study found that the tiger conservation policy prevented forest loss to the tune of over 5,800 hectares across all tiger reserves. This is equivalent to preventing nearly a million tonnes of carbon dioxide emissions. That's not a lot but as an ancillary benefit of protecting tigers, it's still significant.

The researchers estimated the monetary value of carbon offset by these tiger reserves to be about \$92 million in ecosystem services.

Speaking to *Asian Scientist Magazine*, Aakash Lamba, a conservation scientist at the National University of Singapore and the lead author of this study, said that tiger conservation pays for itself.

For this study, the researchers looked at 162 protected areas in the country with tiger presence, including 45 areas that were designated as tiger reserves. This count only included tiger reserves where the policy was implemented between 2007 and 2015 to ensure that only reserves with sufficient time to benefit from the interventions were included in the analysis.

To quantify the net benefit of these measures, the researchers employed the synthetic control method, a statistical tool that allows scientists to study counterfactual scenarios (meaning, what it could have been). They created a synthetic control (similar to the control group in a drug trial) by combining all kinds of data from 117 reserves that had tigers but took no special interventions for tiger conservation. The data points included things like human population density around the reserves, roads passing through them, weather and geographical data, and even how far the nearest city is.

They then compared this control with data from tiger reserves with the interventions (similar to the experimental group that receives the drug in a trial). This revealed insights into how things would have panned out in those 45 reserves had they not implemented those interventions. Thus, it provides a causal link between the intervention and the outcome (reduced forest loss).

Almost all tiger reserves benefitted from the interventions, with only four showing increased forest loss as compared to the counterfactual. Nawegaon–Nagzira, the tiger reserve with the largest area of prevented forest loss, serves as a crucial point of connectivity between tiger habitats in central India. This highlights the direct link between protecting tiger habitats and averting forest loss.

However, over 1,000 tigers in India live outside tiger reserves. This study shows that implementing these dedicated tiger conservation interventions in more areas could be a win-win for everyone. It protects tiger populations, strengthens ecosystem conservation efforts broadly, adds value in terms of ecosystem services and offers carbon offsetting as a potential revenue channel.

For example, the study found that in addition to offsetting carbon worth \$92 million in ecosystem services, the emissions saved amounted to a potential \$6 million if sold in carbon offsetting markets. Carbon markets price interventions that combine emissions

reduction with biodiversity protection higher than those that only reduce emissions. For both such markets and countries looking to address the challenges of increasing emissions and biodiversity loss, quantitative studies like this provide a tool to assess the potential value of any interventions.

Counterfactual studies need to be extended to investigate other policy interventions as well as look more closely into what's happening on the ground. "Understanding the forest laws within different reserves and seeing what works versus what doesn't would be an important step for informing management and policy", Lamba said.

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Source: [National University of Singapore](#); Image: Unsplash

The paper can be found at: [Climate co-benefits of tiger conservation | Nature Ecology & Evolution](#)

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