

# Five-year study reveals how much carbon China's environmental resources capture

April 18 2018, by Bob Yirka

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A large team of researchers has conducted a five-year research program in China aimed at measuring the amount of carbon sequestered by environmental resources in that country. In their paper published in

*Proceedings of the National Academy of Sciences*, a subset of the group describes the study and what was found.

China, as the [researchers](#) note, has undergone explosive economic growth over the past few decades, which has conferred many benefits. But it has also brought problems such as pollution, and more importantly, a substantial increase in the amount of carbon emitted into the air. To address this problem, the Chinese government has turned to its Chinese Academy of Sciences (CAS) to study the problem and hopefully to offer some solutions.

One of the responses of the CAS was to establish a five-year research effort aimed at better understanding how much of the carbon emitted by the country is absorbed by environmental resources. The effort called for 350 researchers to collect soil and vegetation samples from across a variety of the country's habitats. Samples were collected, the team reports, over the years 2011 to 2015, from grasslands, forests, shrubs and even farmlands.

After combining and analyzing all the data, the researchers found that all of China's combined environmental resources sequestered approximately 201.1 million tonnes of carbon each year for the time period studied. And that, they further noted, amounted to 14.1 percent of the total amount of carbon emitted by the country during the same time period. In a further breakdown, they reported that forests comprise approximately 80 percent of the environmental sequestration resources—crops accounted for 12 percent and shrubs for just 8.

The researchers further note that the huge amount of carbon being sequestered by [environmental resources](#) is due in large part to programs implemented by the government over the past few decades. Such programs involved implementing restoration efforts to replant forests, reallocate croplands and to allow grasslands to recover from overgrazing.

Such efforts, the researchers claim, accounted for approximately 36.8 percent of the total amount of carbon being sequestered by natural resources in China. They suggest efforts in that country show how much of an impact environmental intervention can have in mitigating [carbon](#) emission problems.

**More information:** Jingyun Fang et al. Climate change, human impacts, and carbon sequestration in China, *Proceedings of the National Academy of Sciences* (2018). [DOI: 10.1073/pnas.1700304115](https://doi.org/10.1073/pnas.1700304115)

### **Abstract**

The scale of economic growth in China during the past three decades is unprecedented in modern human history. China is now the world's second largest economic entity, next to the United States. However, this fast economic growth puts China's environment under increasing stresses. China can be viewed as a massive "laboratory" with complex interactions between socioeconomic and natural systems, providing an excellent opportunity to examine how environmental changes and intensive human economic activities influence natural systems. This special feature explores the impacts of climate change and human activities on the structure and functioning of ecosystems, with emphasis on quantifying the magnitude and distribution of carbon (C) pools and C sequestration in China's terrestrial ecosystems. We also document how species diversity, species traits, and nitrogen (N) and phosphorus (P) stoichiometry mediate ecosystem C pool and vegetation production. This overview paper introduces the background and scientific significance of the research project, presents the underlying conceptual framework, and summarizes the major findings of each paper.

[Press release](#)

Citation: Five-year study reveals how much carbon China's environmental resources capture (2018, April 18) retrieved 26 April 2024 from <https://phys.org/news/2018-04-five-year-reveals-carbon-china-environmental.html>

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