

Forest Carbon Sinks: Exploring Nature's Climate Change Warriors for Effective Mitigation

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Abstract: 【Objective】 Climate change is an urgent global challenge with wide-ranging environmental and socio-economic consequences. The objective of this study is to examine the importance of maintaining and expanding forest carbon sinks for achieving climate change mitigation targets. **【Methodology】** Our methodology involved analyzing peer-reviewed research articles, scientific reports, and climate change policy documents related to forest carbon sinks and climate change mitigation. We synthesized the findings from these sources to understand the current state of forest carbon sinks, their potential for mitigating climate change, and the challenges they face.

【Results】 The results of our analysis highlight the critical role of forest carbon sinks in climate change mitigation efforts. Sustainable land-use practices, including agroforestry and mixed land-use systems, demonstrate the potential to enhance carbon sequestration while meeting multiple societal objectives. However, forests remain vulnerable to climate change-induced disturbances, such as wildfires, insect outbreaks, and diseases, which can compromise carbon storage and release stored carbon back into the atmosphere. **【Conclusion】** Forest carbon sinks serve as valuable natural assets in combatting climate change. Their capacity to sequester and store carbon provides an effective means of reducing greenhouse gas emissions and mitigating the impacts of climate change. By recognizing forests as essential components of climate change mitigation strategies, we can lay the foundation for a more sustainable and resilient future.

Key words: climate change; forests; carbon sinks; mitigation; sustainable management.

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