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Climate change mitigation via afforestation, reforestation and deforestation avoidance: and what about adaptation to environmental change?

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Abstract Climate change is affecting the world's ecosystems and threatening the economic system, livelihoods and availability of natural resources. Forest ecosystems can be carbon sources or sinks and are therefore integrated in international climate policy. Forest-related carbon mitigation projects are threatened by climate change through altered environmental conditions and forest processes, as well as through synergistic effects of climate change impacts with already existing socioeconomic and environmental stressors. Data on risk management and adaptation strategies were collected by a survey of 28 current forest projects targeting climate change mitigation. Ten of these represent the officially implemented afforestation (A) and reforestation (R) activities under the UNFCCC and the Kyoto protocol. Additionally, the official methodologies for AR activities under the CDM (Scope 14) were examined for potential climate change adaptation requirements. As a result, the adaptation of forest mitigation projects to climate change is found to be insufficient. A systematic approach for the inclusion of climate change risk management and adaptation is developed and guidelines for the design of "climate-change-proof" afforestation, reforestation and deforestation avoidance projects are proposed. A broader mainstreaming of the issue is required and clear policy regulations are necessary, especially for the post-Kyoto process.

Keywords Climate change · Mitigation · Adaptation · Afforestation · Reforestation · Deforestation avoidance

Introduction

The recently published IPCC reports on climate change and numerous other scientific publications do not leave any doubts that anthropogenic greenhouse gas emissions contribute significantly to global climate change. There are already worldwide observed

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