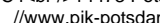




## Forests around the world affected by climate change

**Forests around the world affected by climate change** Forests are probably more at risk than previously thought, says Christopher Reyer of PIK, coordinator of the Special Feature and lead-author of an overview article. "The observed changes affect forests as important as the Amazon, but also forests on all continents, possibly pushing some of them towards tipping points." Up to now, no example could be found where forests tipped into a state where no regrowth is possible due to man-made climate change. Yet the overview article identifies substantial research gaps. "This is hardly good news, Reyer says. "It is in fact scary how little we still know about the resilience of forests, despite all the scientific progress we present in this special issue. From a risk perspective, climate change puts additional pressure on an exceptionally valuable ecosystem whose stability up to now cannot be properly assessed. Forests preserve biodiversity, provide timber, store CO<sub>2</sub> Besides being home to a large part of the world's plants and animals, hence preserving biodiversity, forests are also of great economic relevance. They provide timber in many countries, as well as game and fruit. "Some tropical forests, such as the Amazon, are also key for regional water cycles, says Milena Holmgren of the University of Wageningen in the Netherlands. "How dense these forests are, affects the amount of rainfall that is recycled and also the amount of water that is retained. When forests become less dense, a smaller amount of water is recycled as rain and also less water is retained in the soil. Less dense forests facilitate also the growth of grass which burns easily in dry seasons. Fire can change the rules of the game drastically because grass burns easily and recovers fast whereas trees are very sensitive and need more time. So once a forest has been opened and starts burning, the end result can be a system that resembles a savanna with much grass and fewer trees. This changes the habitat for plants, animals and people. "The fate of forests is important also because they store huge amounts of the greenhouse gas CO<sub>2</sub>, adds Holmgren. "Losing forests and releasing carbon to the atmosphere contributes to climate warming and to the impacts we start to see in many regions of the world. Alleviating the negative effects of climate change on reforestation efforts" To assess the resilience of forests, long time scales are important. Over 2000 years, tropical peat swamp forests from Malaysian Borneo showed to be resilient even under disturbances such as fire or climate variability related to the El Niño weather phenomenon. Recent burning and agricultural expansion however clearly changed the landscape by replacing tropical peat swamp forests with open or even no forest. Still, things are not straightforward. Drought, on the other hand, is found to have variable effects on different tree species in different regions, and seasons, one of the new studies shows. In the end, it is a complex combination of stress factors that is likely to impact forests resilience. In Finland and Australia, scientists performed field experiments on regrowth of forests. A joint dutch-finish team examined how boreal peat bogs can shift to forests and concluded that shrubs can pave the way for greener tree dominated landscapes in the far northern hemisphere. The Australian team studied the timing of seeding and the use of seedlings in restoring sites. "Adapted restoration practices could help alleviate the negative effects of climate change on reforestation efforts, says Rachel Standish of The University of Western Australia. "We have some encouraging findings here. This is even more important as the area of disturbed forest ecosystems is clearly growing. 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(2014): Is drought-induced forest dieback globally increasing? *Journal of Ecology* (online) Weblink to the articles once they're published: <http://www.journalofecology.org/view/0/specialfeatures.html> For further information please contact: PIK press office Phone: +49 331 288 25 07 E-Mail: [press@pik-potsdam.de](mailto:press@pik-potsdam.de) Twitter: @PIK\_Climate Potsdam-Institut für Klimafolgenforschung Telegrafenberg C4 14473 Potsdam Deutschland Telefon: 0331/288-2500 Telefax: 0331/288-2600 Mail: [pik@pik-potsdam.de](mailto:pik@pik-potsdam.de) URL: <http://www.pik-potsdam.de> 

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Further delay in the implementation of comprehensive international climate policies could substantially increase the short-term costs of climate change mitigation. Global economic growth would be cut back by up to 7 percent within the first decade after climate policy implementation if the current international stalemate is continued until 2030 -- compared to 2 percent if a climate agreement is reached by 2015 already, a study by scientists of the Potsdam Institute for Climate Impact Research (PIK) shows. Higher costs would in turn increase the threshold for decision-makers to start the transition to a low-carbon economy. Thus, to keep climate targets within reach it seems to be most relevant to not further postpone mitigation, the researchers

conclude.