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## FORESTS OF CANADA IN DANGER

Climate change – a topic that most people are worried about. Others are not even concerned, even though it is going to impact all of us sooner or later. In the following essay I want to talk about the impacts of global warming in Canada, specifically on the forests of Canada.

Approximately half of the country is covered by forest – it dominates the landscape. I have never set foot in this forest myself, but I have heard a lot about it. It is home to a wide range of animals and grows the famous sugar maple tree. But is this aspiration still hopeful? Fires, droughts and severe storms in big forests like the boreal forest have become the norm. They no longer surprise us. These disturbances are, however, far more visible than other changes like the timing of spring bud burst.<sup>1</sup> Have you ever noticed that buds gradually start to bloom later and later? No? Me neither, but changes like these are going to have a far greater impact on us than we think they have. The future is just a big frightening question mark.

But how is global warming influencing the flora and fauna of Canada's forests exactly? First, the forest's composition and distribution are forced to change, favouring the tree species that are able to adapt to new climate.<sup>2</sup> This also means that a lot of important and beautiful tree species are going to be rare and in some cases even converted to grasslands. Also, forest productivity may increase in some regions and fall in others as tree growth rates and tree mortality fluctuate. Because of higher temperatures, it is possible that some habitants disappear or shift northwards where higher elevations and colder temperatures rule the landscape. The increasing occurrence of droughts set the trees and all plants in general under stress and this phenomenon also leads to a shoot up in fire activities, which then bring the wild life in danger.

It is important to know that Canada's forest especially plays a big role in the global carbon balance.<sup>3</sup> The carbon cycle is known to be a movement of carbon through the atmosphere and is fundamental to the life of every organism on earth. Forests are primarily a part of this

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<sup>1</sup> <https://www.carbon.cfs.nrcan.gc.ca/publications?id=29616>

<sup>2</sup> <https://www.nrcan.gc.ca/climate-change/impacts-adaptations/climate-change-impacts-forests/13083>

<sup>3</sup> <https://www.nrcan.gc.ca/climate-change/impacts-adaptations/climate-change-impacts-forests/forest-carbon/13085>

cycle, since they help to maintain the balance of said carbon. Land systems, like the forest, and oceans are taking up the carbon emissions from human activities, known as CO<sub>2</sub>, and transforms it into oxygen.

In the past 100 years Canada's managed forests have been a remarkable carbon sink, which means they absorbed more carbon from the atmosphere than they released. In the last years, however, the situation has worsened considerably due to increasing wild land fires for example. The forests of the country have become carbon sources, releasing more carbon into the atmosphere than they take up.

To mitigate climate change globally through forests, there are two main strategies.<sup>4</sup> The first one is the limitation of deforestation and reducing GHG emissions. Therefore, disturbances during the harvesting time need to be minimized, so that the trees can be re-established after that period of time. The second strategy is just the opposite of deforestation – afforestation! If forests are enlarged and new trees start to grow on abandoned agriculture land, the forests could act as carbon sinks again.

In order to improve the situation, people in Canada have been working on an adaptation plan in order to make the forests a carbon sink again:<sup>5</sup> The first step would be to identify social, environmental and economic vulnerabilities to change the conditions. After that, we can plan ways to reduce the impact of these named vulnerabilities. The key is to think in a new direction, for example using the impacts like longer growing season as an advantage. Also, the forest sector is getting support from everywhere possible because it has turned out to be a priority for our future.

Scientists and specialists all across the country are collaborating with governments in order to help forest managers to begin taking adaptation actions, which were carefully thought through. Parties like the Canadian Forest Service are developing software tools, frameworks and guidebooks in order to track the effect of the mountain pine beetle infestations in certain areas for example.

To be honest, these ideas or tools sound very good and trustworthy at first sight.

In my opinion, the first and most important step is to publicly address the danger of climate change to the population and spread awareness. From my point of view, it always works best if people are informed about critical situations, which makes it easier to cooperate. It is the most effective approach, when involving the government, the academia, the industry and the public in these long-term adaption efforts.

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<sup>4</sup> <https://www.nrcan.gc.ca/climate-change/impacts-adaptations/climate-change-impacts-forests/mitigation/13097>

<sup>5</sup> <https://www.nrcan.gc.ca/climate-change/impacts-adaptations/climate-change-impacts-forests/adaptation/13099>

I try to see the forest as a human being that needs to recover, because in the past years it has not been treated well. To make up for the damage, we are responsible now to put in all our energy to re-establish the power it holds over the whole ecosystem.

(847 words)