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Forests, Climate & FSC

Introduction

Forests are much more than stores of carbon; they produce the air we breathe and water we drink, provide habitat for 80% of terrestrial species, and offer vast opportunities for cultural, religious and recreational uses. Forests can also provide a steady stream of building products and jobs that support rural economies. When it comes to climate change, forests can be sinks (storage) or sources (release) of carbon dioxide emissions.

This overview is designed to introduce some of the primary interactions between forests and climate change, along with information about how Forest Stewardship Council (FSC) certification can be part of the solution.

Forests and Climate

After oceans, forests are the world's largest store of carbon; they absorb and store almost 30% of total current carbon emissions from fossil fuels and industry, with the potential to store much more. It is estimated that the world's forests store more than 850 Gt of carbon, which is equivalent to 24 years of global emissions at 2018 levels (of 36.2 Gt). Since 1750, forests have been responsible for about half of the carbon emissions naturally sequestered from the atmosphere; the rest has been absorbed by the oceans[1].

Forests capture carbon dioxide from the atmosphere and convert it, through photosynthesis, into living biomass: tree trunks, roots, branches and leaves. Old trees tend to store more carbon than young ones; a single large tree can add an amount of carbon equivalent to that of multiple small- or medium-sized trees.

Approximately equivalent amounts of carbon are stored in woody biomass and soil, although this varies by forest type (e.g., there is more carbon stored in boreal soils than tropical). After a harvest, soil carbon can decompose for years – or even decades – with one study in the US concluding that forests do not return to acting as carbon sinks for at least 10 years, with much larger impacts for clear-cutting than for selective harvests[2].

12% of global greenhouse gas emissions are estimated to come from deforestation. Forest degradation – as opposed to full deforestation – also affects climate change. In forests that are left standing, logging, wood fuel extraction, fires and grazing typically reduce carbon stocks faster than they can naturally recover. A 2015 study suggested that emissions from forest degradation were a quarter of those from deforestation in the decade 2001–10, increasing to one third of those from deforestation in the period 2011–15, with substantial variation across countries[3].

Improved management – including for timber and non-timber forest products, ecological values, lengthened rotation times and reduced harvest rates – could lead to significant increases in forest carbon stocks and biodiversity in temperate and boreal managed forests (as opposed to protected areas, such as National Parks).

Recent research by The Nature Conservancy and others suggests that up to one-third of emissions targets set in the Paris Climate Agreement could be achieved through "natural climate solutions," such as reforestation (restoring recently deforested areas), avoided deforestation, afforestation (restoring long-

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1 Background Analytical Study: Forests and Climate Change, Brack, Duncan, United Nations Forum on Forests, March 2019 [LINK]

2 Ibid.

3 Ibid.

deforested areas), and improved forest management[4]. In Canada and the United States, reforestation and improved forest management offer the greatest potential, storing as much as 600 Mt of additional carbon dioxide per year[5].

Role of the Forest Stewardship Council

Climate-smart forest management allows ecosystem processes to continue to work by using harvesting approaches that mimic natural disturbances and that maintain the ecological functions of the forest. This approach reflects FSC's uniquely trusted and credible forest management certification, which exists to help consumers and businesses identify products sourced from responsibly managed forests. Accordingly, for project owners, architects, and contractors, choosing FSC means choosing climate-smart wood.

Both common sense and research support this perspective. FSC's standard goes beyond legal requirements in a number of ways. It encourages longer rotations and limits opening sizes (clearcuts) to ensure a diversity of tree sizes, ages and species. It requires larger forested buffers along streams and wetlands, to protect water quality and quantity. It also requires landowners to identify and protect habitat for rare, threatened and endangered species, and also for High Conservation Value forests. All of these requirements, and many others, mean more trees are left standing and more shade is provided to forest soils, which means that more carbon is stored - both above and below ground.

Conventional forestry (Left) compared with FSC-certified forestry (Right). Both images shot after harvest in Northwest Oregon, January 2018. Research – and common sense – suggests they are not equivalent from a carbon perspective.

Recently published research by Ecotrust and the University of Washington finds that FSC always stored more carbon in Douglas-fir forests of Western Oregon and Washington; on average, 30% more carbon than forests managed conventionally[6]. This means FSC-certified wood products are likely to come with an embodied carbon benefit, in addition to benefits for drinking water, worker safety, and native fish and wildlife. The research found that if rotation lengths were increased from 40 years (typical under conventional management) to 75 years, we could store much more carbon while producing comparable volumes of timber for building projects[7].

For more information please visit https://advocate.us.fsc.org/construction/.

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4 Natural Climate Solutions, The Nature Conservancy – http://naturalclimatesolutions.org/

5 Nature4Climate – https://nature4climate.org/

6 Tradeoffs in Timber, Carbon, and Cash Flow under Alternative Management Systems for Douglas-Fir in the Pacific Northwest, Diaz, David, et. al., Forests 2018, 9, 447. [LINK]

7 Climate-Smart Forestry, Ecotrust - https://ecotrust.org/project/climate-smart-forestry/