

Climate policy for forest carbon

Prof. Dr. Jussi Lintunen, Natural Resources Institute Finland (LUKE)

Workshop "Forest Carbon Policy", 10.10.2024, German Biomass Research Center (DBFZ)

The idea of carbon pricing

From the environmental economics point of view the first principle is to price externalities. In the case of climate externality of forests, the priority should be given to pricing of carbon flows between forest and atmosphere. Forest carbon has peculiar timing structure, as the carbon inflow happens gradually over time as the forest biomass grows in volume and later the sequestered carbon is released. Hence, the forest biomass provides a non-permanent carbon storage that can be used for reducing the amount of atmospheric carbon.

Accounting schemes and their implications

From natural scientific point of view, the carbon is released into atmosphere when the wood decays or is combusted. In the current accounting system, however, the forest biomass stock changes are measured. Hence, carbon emissions are allocated to harvests. A carbon pricing scheme can be applied regardless of the accounting system in such a way that the schemes incentivize the same forest management.

The problem of no policy

If the forest carbon flows are not priced or otherwise regulated, the forest owners are not incentivized to take the climate impacts of their decisions into account. In such a case, forests are not optimally used for climate change mitigation. At the same time, there exists pricing schemes for some emissions, such as, from fossil fuel use. If forest carbon is not priced, but the carbon of its substitutes is, the relative prices are distorted. This implies too much use of biomass, which weakens the forest carbon sink. This is unfortunate, as environmental economic modeling suggests that forest carbon sequestration could be a relatively low-cost option for climate change mitigation.

Implications of a carbon policy: short term and long term

A forest carbon pricing policy will create immediate incentives to postpone harvests because it will change the target harvest conditions. This will reduce the supply of timber and, hence, reduce harvests. The postponement of harvests allows forest carbon stock to increase over time. As the forest stands reach their new target harvest conditions, the harvests gradually increase. The development of harvest levels depends on the forest owners' responses to carbon pricing and on the time-path of the forest carbon price. Since the forest carbon stock will eventually saturate, the period of strong carbon sink is not permanent.

Issues raised: impermanence, funding, measurement, additionality, and leakage.

There are several issues that impede the use of forest carbon policies. The impermanence of forest carbon sequestration is fundamental as the social value of such carbon storages depends on the policy frameworks, climate models, and the social valuation. Funding is an issue as public funds are scarce and private funding has been ridden with additionality challenges. The question of harvest and/or carbon leakage is also an issue that is used for understating the benefits of forest carbon policies. These additionality and leakage issues aggravate the general challenges related to the measurement of carbon sequestration and its benefits. These issues are real, and they should be taken into account when implementing the policies.