

Carbon sink economics: examples from forestry in Europe

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Climate change mitigation forestry initiatives in Europe are directed primarily towards woodland expansion, forest management for carbon capture and storage, and towards an increasing use of wood as a substitute for both, fossil fuels and carbon intensive materials in construction. There is a great deal of uncertainty, however, on how to raise the cost-efficiency of carbon sequestration forestry based projects, how to overcome their market limitations and where to place afforestation and woody biomass production in the context of land use. This paper analyses these aspects with a particular focus on economic opportunities and challenges of moderating carbon emissions through forestry development. The analysis of the role of forestry to mitigate climate change is particularly relevant to countries and regions that have a potential for new tree-planting or natural woodland expansion, and where the cost-effectiveness of afforestation and forest management, as well as social acceptability of carbon sequestration forestry options are hot topics. By addressing the case studies from forestry in the United Kingdom, the Netherlands, Slovakia, and Ukraine, this paper analyses whether forestry can offer a a low-cost opportunity for carbon sink.

The results indicate that although carbon sink in European forests that could be accounted under the Kyoto Protocol is moderate, forestry projects have relevance for carbon budgets in individual countries where wooded cover has a potential to grow, as in the UK, Ukraine and Slovakia. The results suggests that over and above other climate policy measures, an enhancement of carbon ‘sinks’ and ‘reservoirs’ in forests is meaningful, and the inclusion of carbon sequestration forestry projects in climate policy activities is viable in these countries. The carbon sequestration potential of afforestation, for example in Ukraine, especially in the Wooded Steppe region, and in the UK, in some regions in Scotland, is deemed to be substantial. And although this potential is restricted by institutional and socio-economic factors, the results of economic assessment of opportunities to mitigate climate change through forestry in the UK, Slovakia and Ukraine suggest that this policy measure is likely to be competitive with other means of removing carbon from the atmosphere. The choosing of most appropriate species and management regimes (diffeent across regions in these countries) is important for saving economic costs. Important factors that influence the results are discount rates and time horizon considered in the models. The general conclusion is also that along with the carbon sequestration potential of afforestation, the level of land-use integration and the stage of institutional development play important roles for effective implementation of climate policy measures.

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