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## Economics of forest carbon storage and the additionality principle

Economics of forest carbon storage and the additionality principle  
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### Highlights:

- Optimal carbon storage is studied at the stand and market level
- Subsidizing carbon storage causes a major financial burden
- Solely subsidizing additional storage distorts land allocation
- Distortion can be avoided by a general tax on land
- Subsidizing wood bioenergy or afforestation is suboptimal

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### Abstract

The ability of forests to store carbon is vital in maintaining the preset climate conditions, but is not systematically included in forest management or land-use decisions. Economic reasoning suggests subsidizing carbon storage, but empirical models show that this may easily more than double stand-level bare land values. Subsidization may thus be expensive, as it requires paying for all storage, including what would otherwise be obtained for free. To limit the consumption of public funds, the regulator may apply an additionality principle and solely subsidize storage exceeding a baseline level. We show that the commonly applied stand-level analysis suggests that the additionality principle could be applied to optimal rotation decisions without distortions. However, applying a forest vintage model with endogenous prices and land allocation decisions shows that similar application of the additionality principle causes distortions to both land allocation and optimal forest rotation. Nevertheless, subsidizing carbon storage with forest site productivity tax may still

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