



Tradable permit schemes for carbon sequestration in geological formations

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The necessity to combat global warming has entered the political agenda, and in Feb 2005, the Kyoto protocol regulating CO₂-emissions, will start operation. One increasingly discussed as well as criticized option to mitigate global warming is to capture CO₂ at large power stations and to store it in geological formations. That allows for the use of fossil energy resources without further destabilization of the climate system. From an economic point of view, the efficiency of Carbon Capturing and Sequestration (CCS) depends mainly on leakage rates, marginal costs of CCS (including the energy penalty) and the volume of available depositories. A generic model is presented in order to clarify the economics of CCS.

Furthermore, we show that if CCS is to become an option to buy time, a regulatory framework is needed. In particular, a framework has to be designed that creates incentives for profit-oriented firms and investors to reduce leakage rates, and to deposit carbon in safe depositories only. We introduce a new instrument called Carbon Sequestration Bonds (CSB) [1]. Two versions for such a bond system are discussed: a first one leaving more of the risks from leakage to the climate system, and a second one delegating more to the economic sector. Both schemes utilise the investigative power of markets to actively reduce the risk of leakage, for the benefit of common goods such as the climate system.

[1] O. Edenhofer, H. Held, N. Bauer, *A regulatory framework for carbon capturing and sequestration within the post-Kyoto process*, accepted for publication in the peer-reviewed section of the 7th *International Conference on Greenhouse Gas Control Technologies* proceedings, Vancouver, Sep. 2004.