

## **The stony way to renewable energy**

Biophysics versus metaphysics in planning for CO<sub>2</sub>-neutral combustion of biomass

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**Main thesis:** Politically administered 'definitions' of CO<sub>2</sub>-neutrality of biomass combustion<sup>1</sup> are counterproductive, when reproduction of the respective plant matter is either not addressed or out of control of the planning subject.

**Implications:**

(a) When reproduction is not addressed in biophysical terms, metaphysical contemplation of the results of plant growth may be used instead. But this is misleading: Because of a lack of reference to any time dimension, the officially used definition saying that the combustion of biomass is CO<sub>2</sub>-neutral, as far as plant matter by combustion only releases carbon in the same amount as has been bound in it from atmospheric CO<sub>2</sub><sup>2</sup>, can be applied to fossil fuels, too. The aim of defining CO<sub>2</sub>-neutral burning of biomass is, however, to make a demarcation against fossil fuels.<sup>3</sup> Hence, the metaphysical definition of CO<sub>2</sub>-neutrality is counterproductive in regard of the development of knowledge on the transition from fossil fuels to renewable and sustainable energy and thus on how to curb climate impacts from energy supply.

(b) When following the myth of wholesale carbon neutrality, planning subjects may be set out of control (or hindered in establishing it) over the reproduction of specific plant matter and its biodiversity impacts - especially regarding the material and energy chain from forests to harvested wood with its long lead times of reproduction. The historical (re-)expansion of forests in early industrialising countries - known as the forest transition hypothesis - was conditioned by the expansion of fossil fuel use (RCD 2009a). When wood use is grossly expanded in order to (re-)substitute wood for fossil energy, this can, therefore, become a threat against forests. And: it threatens climate policies, because the lower energy-efficiency of biomass (RCD 2009b) creates a net carbon debt. It is, thus, a question of time-profiles to show, when rising CO<sub>2</sub>-sinks in forests reach a break-even point (Manomet Center 2009, Johanneum Research 2009). Also, it has to be taken into account that the probability of forests becoming carbon sources instead of sinks rises with expected levels of global temperature increase (Fischlin 2007, IUFRO 2009).

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1 As in the Danish Law on CO<sub>2</sub>-kvotas

2 Written answers from several Danish authorities, including the Ministry of Climate and the City of Copenhagen

3 It is an agreed goal of Danish politics to outphase fossil fuels and a proposal how to do this has been worked out by the official Climate Commission in its report of autumn 2010