

## **New CDM biodiesel methodology may threaten peatlands**

*by John Couwenberg & Hans Joosten*

The Clean Development Mechanism (CDM) is an instrument of the Kyoto Protocol that allows industrialised countries to invest in projects that achieve emission reductions in developing countries in exchange for carbon credits. The executive board of the CDM recently approved a methodology for the production of biodiesel for use as a fuel.

Whereas the use of biodiesel from *waste* oil and *waste* fats had already been approved in a different methodology, the new methodology will allow biodiesel from crops that have specifically been grown for fuel. Concerns have been raised that stimulation of such biofuel crops may lead to competition with food crop production and other types of land use.

Another fear was that developers would be tempted to cut down forests to plant fuel crops, but the new ‘approved consolidated baseline and monitoring methodology – Production of biodiesel for use as fuel’ (ACM0017, [cdm.unfccc.int/EB/050/eb50\\_repan03.pdf](http://cdm.unfccc.int/EB/050/eb50_repan03.pdf)) only supports carbon credits from dedicated plantations that are established on degraded lands or lands degrading at the start of the project activity. This restriction of the methodology, however, still holds some dangerous elements where peatlands are concerned.

Although the methodology is restricted to oils from plant seeds, the general definition of biodiesel as “a diesel fuel consisting of long-chain alkyl (methyl, propyl or ethyl) esters which is produced by esterification of vegetable oils and/or waste oil/fat with alcohols from biogenic and/or fossil origin” (definition from ACM0017) keeps the option open to produce ‘biodiesel’ solely from fossil peat if you subscribe to the argument that ‘peat is a biomass’ (cf. <http://tinyurl.com/dxeps6>).

Drained peatlands can be considered as “degraded land” (rules for what is degraded can be found under UNFCCC/CCNUCC, CDM–Executive Board EB 41, Report, Annex 15, <http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-13-v1.pdf>) when

- They are classified as degraded in a verifiable classification system
- Degradation indicators are present (e.g. soil compaction/erosion, decline in soil organic matter content, plant cover or productivity, presence of species typical for degradation)

That drained peatlands can be considered degraded land according to the Methodology becomes apparent from Annex 1 of the documentation: ‘Project emissions associated with the cultivation of lands to produce oil seeds’ that explicitly mentions organic soils. Whereas the losses of soil carbon following drainage have to be calculated, the Methodology prescribes the use of IPCC default values. The real carbon losses might be severely underestimated; in case of oilpalm classified under (agro)forestry even with a factor 10 (see Couwenberg 2009).

With respect to oil palm, short-term greenhouse gas balances of the production process, including losses from degrading peat, may suggest no or only small carbon losses (Melling et al., 2007). More comprehensive lifecycle analyses that address the lifetime of a plantation (usually ~25 years) all arrive at clear carbon debits (Germer & Sauerborn, 2007; Pastowski et al., 2007; Fargione et al., 2008; Reijnders & Huijbregts, 2008; Wicke et al., 2008; Danielsen et al., 2009). The CO<sub>2</sub> emissions from peat degradation assumed in these studies range from 18 to 73 tCO<sub>2</sub> ha<sup>-1</sup> y<sup>-1</sup>. The measurements of Melling et al. (2007) indicate emission values from oxidizing peat of 50 tCO<sub>2</sub> ha<sup>-1</sup> y<sup>-1</sup> or more (Couwenberg et al. 2009). This implies that the emission factor of biofuel derived from oil palm grown on tropical peat soil amounts to at least ~ 400 gCO<sub>2</sub>-eqMJ<sup>-1</sup> (Wicke et al., 2008; cf. Couwenberg, 2007), which by far exceeds emission factors of common fossil fuels (cf. IPCC, 2006). Other biofuel crops grown on peat soil will not perform much better and carbon losses from the peat will invariably outdo carbon savings from fossil fuel substitution (Couwenberg 2007).

The new methodology thus does not forbid the cultivation of biofuels on drained peatland, but – by giving it a CDM status – even stimulates it.

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