

## Comment to bioenergy with carbon storage (BECS)

Carbon-negative

bioenergy to cut global warming could drive deforestation: An interview on BECS with Biopact's Laurens Rademakers

Mongabay.com (November 6, 2007)

The article

on mongabay.com deals about a proposed mechanism for generating carbon-negative bioenergy. Bioenergy with carbon storage (BECS) holds out the prospect of reducing CO<sub>2</sub> from the atmosphere while producing carbon-negative energy. The article provides an informative introduction on how "carbon-negativity" is feasible and assumes geosequestration (developed from the "clean coal" industry, CO<sub>2</sub> capture in depleted oil and gas fields, saline aquifers etc.) as the sequestering tool. Laurens Rademakers delineates the risks such as deforestation of tropical rainforests and leakage of geosequestration. In addition these technologies require vast capital inputs and large scale projects.

A substantive difference of bio-energy to fossil-energy allows Charcoal Carbon Capture!

For Carbon Emissions, a Goal of Less Than Zero

Article about options to produce carbon negative energy, including biochar

Ancient skills "could reverse global warming"

Trials begin of a technique used by Amazon Indians that takes CO<sub>2</sub> and locks it safely into soil

### Geosequestration

and carbon capture technologies are currently being developed by the coal industry in order to produce the so-called "clean coal". Using this technology, the coal industry can at best reduce its CO<sub>2</sub> emissions, while using re-growing biomass would establish a carbon sink. This substantive difference allows bio-energy (energy from re-growing biomass) production systems to apply yet another way to capture carbon - Charcoal Carbon Sequestration! Bio-energy with charcoal carbon sequestration (BECCS) would only capture a maximum of 50% of the carbon stored in the biomass but offers the following advantages:

- Decentralized and small scale projects are feasible
- Large capital investments are not necessary. The technologies range from small cooking stoves to large bioenergy production units. No carbon capture technology is necessary as charcoal is a byproduct of gasification. As price for the incomplete gasification a proportion of the energy (geosequestration demands energy too) is invested to capture carbon in charcoal.
- Biochar (Charcoal used as soil amendment) increases soil fertility and sustainability (important for continuous cropping for energy or food crops)
- No risk of harmful CO<sub>2</sub> leakage as in systems like geosequestration. Most scientists agree that the half life of charcoal is in the range of centuries or millennia.
- Only re-growing resources can establish a carbon sink. Tropical Rainforest is not considered as re-growing resource in a BECCS scenario. An access to the C trade market holds out the prospect to reduce deforestation of primary forest, because using intact primary forest would reduce the C credits. The estimated above-ground biomass of unlogged forests is around 400 Mg ha<sup>-1</sup>, about half of which is C. This C is lost at a high percentage if used for gasification and only < 50% is captured by BECCS. The C trade could provide an incentive to cease further deforestation; instead reforestation and recuperation of degraded land for fuel and food crops would gain magnitude.

Mongabay Article:

[http://news.mongabay.com/2007/1106-carbon-negative\\_becs.html](http://news.mongabay.com/2007/1106-carbon-negative_becs.html)