

# IEA Bioenergy

## Proposal for continuation of the work on Greenhouse Gas Balances of Bioenergy Systems

**Title of Task:** *Greenhouse gas balances of biomass and bioenergy systems*

### Objectives

- Develop, compare and make available, integrated computer models for assessing greenhouse gas (GHG) balances of bioenergy and carbon sequestration systems on the project, activity, and regional levels, and address scaling issues between these levels.
- Assess the life-cycle GHG balance of such systems, including leakage, additionality, and uncertainties. These analyses must integrate forest and agricultural industries, energy components, and carbon sequestration considerations. They will include comparisons with fossil, nuclear and renewable energy sources, as well as materials such as steel and concrete (for the comparison with conventional wood products)
- Analyse the country-level, regional, and global potential of bioenergy, forestation, and other biomass-based mitigation strategies, including implications for the atmospheric CO<sub>2</sub> concentration and radiative forcing.
- Provide policy-relevant information on the task topic that can aid decisionmakers in selecting appropriate mitigation strategies that optimise GHG benefits, e.g. how to maximise bioenergy production while maintaining carbons stocks at high levels, or how to allocate biomass to energy vs. uses as raw material.
- Contribute to the work of IPCC/OECD/IEA related to the role of biomass and bioenergy for GHG mitigation

### Work scope – including industrial involvement

The work scope would comprise:

- Assessment of GHG (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O) balances, flows, stocks, emissions in biomass production systems (woody or herbaceous biomass from forests, agriculture; biomass waste), biomass conversion systems (combustion, gasification, CHP, ...) and carbon sequestration systems (afforestation, reforestation, managed forests, etc; carbon pools include: above and below-ground biomass, litter and woody debris, soils, wood products)
- Investigation of trade-offs within and among these systems
- Analysis on short-term vs. long-term climate-change mitigation effects, considering the time value of carbon.
- Cost effectiveness of GHG mitigation through biotic options.

The goal is to involve industrial participants (utilities, oil/gas companies, forest companies ...) with a view on the implementation of biomass and bioenergy related GHG mitigation projects.

## **Work programme – including co-operation with other Tasks and international programmes**

- 1) Basic activities: Workshops, website development, bibliography, modelling seminars, reply to external inquiries related to the Task topic, information materials (posters, position papers, proceedings ...).
- 2) Subtasks or contracts in line with the above objectives and with the interests of involved countries and industrial partners, to be funded from the basic Task budget, but preferably from industrial contributions
- 3) International activities:
  - Contribute scientific-technical input to international processes, such as the development of the IPCC Guidelines of National Greenhouse Gas Inventories, development of modalities / rules / guidelines under the Kyoto Protocol, or other IPCC work on bioenergy and land-use change and forestry.
  - Collaborate with the IEA GHG R&D Programme (for example, comparison of carbon disposal vs. sequestration in biological systems vs. fossil fuel substitution), IEA ETSAP (with respect to bioenergy, and biomaterials), ETDE, GREENTIE and other IEA programmes
  - Involvement of the UN Food and Agriculture Organisation (FAO) and other international organizations interested
  - Stronger involvement of developing countries, either through membership of such countries in the Task, or through collaboration with existing networks such as F7 (key developing countries working on issues within this Task).
  - Collaboration (e.g., joint workshops) with other Tasks, such as Conventional Forestry) and Short-rotation Forestry. GHGs and carbon sequestration are envisioned to be dealt with in the Task outlined here, but would build on input provided by, and exchange of information with, other Tasks.
  - Networking with the International Energy Modelling Forum.

## **Time schedule and milestones – including duration of the proposed Task**

Duration: 3 years. Milestones: yet to be determined. The Task would include 5-6 workshops on regular intervals, and various subtasks with 1-2 years duration each. Basic activities would be carried out continuously.