

IEA Bioenergy Task 38: Climate Change Effects

July 12, 2017

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Climate Change Effects of Biomass and Bioenergy Systems

Task 38 investigates the climate effects of bioenergy and land-based carbon sequestration systems to support development of climate change mitigation strategies.



Images: http://task38.ieabioenergy.com/

Climate benefits of bioenergy compared to fossil reference energy system



- What are scientific methods to *quantify* climate effects of bioenergy?
- What are the conditions under which effects are beneficial versus detrimental relative to other options?

Task 38 Publications

This scrangic report was prepared by Mir Nell Illind, Joanneum escarch, Auseria: Professor mese Cowle, The National Centre for Rural Greenhouse Gas ech, Ameralia: Dr Francesco rublel, Norweglan University of nology Norway nce and Tec and Dr Gerfrind Jung neum Rescurch, Autoria INTE (L CA) with USE GES COME ces of blow ergy systems. It alts in comparison to itsul rt is so produce an unbitase nere almes tally as practitioners, policy ors, and policy makers

IEA Bioenergy

Using a Life Cycle Assessment Approach to Estimate the Net Greenhouse Gas Emissions of Bioenergy

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On the Timing of Greenhouse Gas Mitigation Benefits of Forest-Based Bioenergy

Task 38 Publications: http://task38.ieabioenergy.com/iea-publications/

Life cycle GHG emissions changes through harmonization (corn ethanol dry mill)



No ILUC

Warner, E. and Chum, H. Tools for greenhouse gas (GHG) assessment for biofuels: a comparison. http://ieabioenergy2015.org/fileadmin/veranstaltungen/2015/IEA_Bioenergy_Conference/S08-4_Chum.pdf

Understanding the Climate Effects of Bioenergy Systems

16 May 2017, Chalmers University, Gothenburg, Sweden

- Major issues discussed at workshop
 - how bioenergy contributes to the global carbon budget
 - short-term vs. long-term emissions reduction targets
 - how climate effects of bioenergy should be evaluated

Workshop Materials: http://task38.ieabioenergy.com /gothenburg-sweden-2017/



Task 38: Future Plans

- Continue releasing technical papers in scientific journals as well as summaries for non-technical audiences
- Update the Task 38 standard methodology for LCA assessments with reference systems
- Expand knowledge of the climate change effects of bioenergy by including current and emerging issues:
 - GHG accounting for carbon in wood products and use of post-consumer wood products for energy;
 - the timing of GHG emissions and removals;
 - non-CO₂ climate forcers such as general and local albedo and black carbon.
- Collaborate with other Tasks on cross-cutting issues.



IEA Bioenergy Inter-task Project: Measuring, Governing, and Gaining Support for Sustainable Bioenergy Supply Chains

July 12, 2017

Kristen Johnson Technology Manager Bioenergy Technologies Office U.S. Department of Energy IEA Bioenergy Inter-Task Project 2016

Measuring, governing and gaining support for sustainable bioenergy supply chains

Objectives:

- 1. Measuring sustainability of biomass and bioenergy supply chains
- 2. Governing and verifying sustainability
- 3. Involving stakeholders to avoid misconceptions and gain trust

Interim results presented at workshop: Sustainability of Bioenergy Supply Chains

May 18-19, Gothenburg, Sweden

Workshop Materials:

http://itp-sustainable.ieabioenergy.com/iea-publications/

Workshop summary soon to be published.

Tasks involved: 37, 38, 39, 40, 42, and 43

Objective 1: Measurement

- Address climate forcers and other environmental, economic, and social criteria and indicators
- Critically review tools and calculation methods
- Discuss measurement approaches with respect to specific bioenergy systems

Quantifying the climate effects of bioenergy – Choice of reference system

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Koponen, K., Renewable and Sustainable Energy Reviews (2017), http://dx.doi.org/10.1016/j.rser.2017.05.292

Objective 2: Governance

- Develop frameworks to analyze the trust and legitimacy of sustainability governance systems
- □ Assess and compare the legitimacy, effectiveness, efficiency, and transparency of approaches to govern and verify sustainability



Abbott and Snidal (2009) c.f. Mansoor et al (2016).

Objective 3: Stakeholders

- Understand positions and underlying motivations of stakeholder groups relative to their perceptions of bioenergy
- Inform dialogues and discussions to avoid misconceptions about sustainability of bioenergy

Progress:

- Stakeholder analysis and feedback within country case studies
 - Biogas in Germany and Denmark
 - Forestry in Canada
 - Agriculture and Forestry in United States
- Stakeholder questionnaire distributed

Survey on sustainability of bioenergy supply chains:

Dear Intertask Sustainability readers,

We would like to invite you to take a survey regarding the sustainability of bioenergy supply chains by answering our questions via the link below:

http://ieabioenergysustainability.questionpro.com

Inter-task: Future plans

Planned Deliverables (by end of 2018)

- Final workshop with abstracts and presentations
- Three full reports (one for each Objective)
- Dissemination of synthesis report for policy makers, industry, and other stakeholders
- Identification of key opportunities and challenges



Thank You

Special thanks to Helena Chum (NREL) and Annette Cowie (Task Leader for Task 38)