IEAGHG Information Paper: 2016-IP11; GBEP and IEA Bioenergy Publish Summary of their Webinar on Positive Bioenergy and Water Relationships

This webinar was jointly organised by the Global Bioenergy Partnership (GBEP) and IEA Bioenergy. The aim of the initiative is to catalogue and highlight worldwide examples of bioenergy systems throughout all stages of production that can produce positive impacts on the status of water.
More information about the webinar and GPEB reports is available at:

- http://www.globalbioenergy.org/programmeofwork/working-group-on-capacity-building-for-sustainable-bioenergy/activity-group-6/ag6-activities/en/
- http://www.globalbioenergy.org/programmeofwork/working-group-on-capacity-building-for-sustainable-bioenergy/activity-group-6/ag6-report/en/

The results from the initiative are relevant to a new project under IEA Bioenergy on the role of Bio-CCUS in climate change mitigation, in which IEAGHG participates. The work is also useful for potential future studies on Bio-CCUS within IEAGHG, e.g. regarding the water intensity of Bio-CCUS systems.

More information about the new Bio-CCUS project, IEA Bioenergy and past IEAGHG reports on Bio-CCS can be found at:

- http://task41project5.ieabioenergy.com/
- http://www.ieabioenergy.com/
- http://www.ieaghg.org/publications/technical-reports

Please see overleaf for the summary from GBEP and IEA Bioenergy.

13/04/2016

GBEP Working Group on Capacity Building for Sustainable Bioenergy (WGCB) Activity Group 6 - "Bioenergy and Water"

WEBINAR
"Examples of Positive Bioenergy and Water Relationships in Africa, Asia and the Pacific and Europe"

06 April 2016

Summary

Background

Ms. Michela Maria Morese and Mr. Göran Berndes briefly explained the history of the Working Group on Capacity Building (WGCB) Activity Group 6 (AG6) on bioenergy and water as well as the background of this event. The AG6 was established in 2015 to identify and disseminate ways of integrating bioenergy systems into agricultural and forested landscapes to improve the sustainable management of water resources, including wastewater. Part of this process involves sharing knowledge and experiences on landscape identification and design, best management practices, policy instruments and technologies that support the implementation of bioenergy that contributes positively to the state of water.

The GBEP Secretariat, with the support of IEA Bioenergy, issued a "Call for Good Examples" in April 2015. The initiative aimed to catalogue and highlight worldwide examples of bioenergy systems throughout all stages of production that can produce positive impacts on the status of water. A workshop was subsequently held in Stockholm in August 2015 in which a representative sample of the submissions received were showcased and then an outcome report detailing a number of examples was published in February 2016. Mr. Uwe Fritsche presented the key messages from the Stockholm workshop. It was determined that while an encouraging variety of options exist, a number of barriers in the mainstreaming of such practices remain, which is why the focus should be on capacity building. Another one of the key messages was that most of the best practices presented are "bottom-up", but many policy makers view issues "top-down", which means that key issues must be translated into more suitable language and highlight the potential of governance, including economic incentives, in fostering sustainable bioenergy-water systems.

The AG6, in conjunction with IEA Bioenergy Task 43 – assisted by Task 40 – decided to host two webinars in 2016 (on 6 April to be focused on Africa, Asia and the Pacific, and Europe, and on 25 May to be focused on the Americas) to further disseminate the results from the April 2015 'Call for Good Examples' and inspire participants to build on these experiences with other bioenergy producers in their respective countries.

Webinar Presentations

Mr. John McGrath gave the first presentation on, “Integrated tree crop systems in south-western Western Australia.” That project has focused on the dryland agricultural region of south-western Western Australia (WA) where the hydrological imbalance from annual agricultural systems has resulted in extensive dryland salinity. In response to this, a practice was developed for improving stewardship of natural resources and consists of specific project areas to develop biomass supply systems, which includes the development of mallee as a crop integrated into agricultural systems, supply chain technologies and research into processing for bioenergy with the objectives of delivering both commercial and environmental outcomes (mitigate climate change, improve water quality and benefits for biodiversity).

Extensive research and development on growing, harvesting and delivery systems for biomass from integrated tree plantings was undertaken between 1990 and 2015, supported by economic modelling of tree crops in whole farm systems and of supply chain logistics. Efficient operational practices for large-scale biomass supply can now be specified. However, the anticipated development of commercially viable biomass processing opportunities has not yet eventuated due to changed international and national commercial conditions and a weakening of policy support. These conditions have stalled planting since 2007. The policy position for bioenergy and climate change mitigation has further deteriorated recently. However, the current potential supply of mallee biomass is attracting the attention of small regional industries that consider biomass as a fuel in combined heat and power installations. The development of pyrolysis for biofuels has advanced to the stage of testing pre-commercial prototypes with the strong local input by the Centre for Fuels and Energy Technology at Curtin University and continuing international investments in developing effective biofuel conversion technologies.

After Mr. McGrath’s presentation, *Ms. Helen Watson* spoke about, “Producing electricity from biomass from terrestrial invasive alien plants in South Africa.” The country currently has difficulty producing enough electricity to meet growing demand, and in addition, it is a water poor country where demand for available freshwater is set to exceed availability by 2025. The quality of surface and groundwater has also declined due to increased pollution caused by industry, urbanisation, mining, forestry, agriculture and power generation.

In 1995, the government launched the national Working for Water (WfW) programme to eradicate terrestrial invasive alien plants (IAP) primarily through manual methods of clearance. IAPs are a very serious problem in South Africa. They cover about 10 percent of the country and about 38 percent of this invaded area is covered by commercial forestry species that have escaped from plantations and woodlots. IAP clearance in South Africa has been shown to have a number of positive impacts on water availability as well as several social benefits, including new uses for previously unproductive land, jobs and skills training for low-income people.

Firewood, charcoal and briquettes can be obtained from IAPs, and in 2009, the Working for Energy (WfE) programme called for biomass from IAP clearance to be used to produce electricity. To date, feasibility studies have focused on several woody species used in commercial forestry. There are over 350 terrestrial IAP species in South Africa. Research into the suitability of other IAP woody species and non-woody species for use as fuelwood and for the production of charcoal, briquettes, pellets and black pellets (torrefaction) should be prioritized.

The final presentation was given by *Mr. Guido Bezzi* on, “Livestock waste to biogas: the Italian BiogasDoneRight® model.” BiogasDoneRight® is an Italian sustainable agricultural model, which was

developed in farms with an integrated biogas plant. The term BiogasDoneRight® is used to describe a platform that combines Anaerobic Digestion technologies and other Industrial and Agricultural practices that are applied synergistically in order to improve traditional farming by adding value to livestock and by-products and creating a positive and circular agro-energy system. The integration of a biogas plant in a farm generates environmental, social and economic improvements, with particular attention to soil fertility, water quality and water availability. Moreover, the model maintains the established farm production without lowering food and feed output. BiogasDoneRight® is an example of multifunctional and sustainable agriculture according to the objectives of “EU road map of efficient Europe” and is now being applied in several farms in northern Italy.

With the Biogasdoneright® model, the following improvements to water quality have been observed: reduced risk of nitrogen leaching; stabilization of organic nitrogen; increased organic carbon in soils and reduced use of chemical fertilizers. This model also impacts water availability by promoting: Year-long soil coverage; rotation crops rather than monocultures; no tillage or minimum tillage agriculture; digestate distribution techniques like storage, ombelical and Xerion; and drip irrigation with renewable fertilizers or the liquid portion of the digestate.

Results

This webinar proved to be a good opportunity to share lessons learned from the “Call for Good Examples” and Stockholm workshop and allowed for a number of fruitful interactions amongst participants.

List of Participants

First Name	Last Name	Affiliation
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Göran	Berndes	IEA Bioenergy and Chalmers University of Technology
Guido	Bezzi	Italian Biogas Consortium
Anne	de Boer	Netherlands Enterprise Agency
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John	McGrath	Department of Parks and Wildlife
Jan	Mizgajski	IWAR Institute
Maria Michela	Morese	GBEP Secretariat
Leonardo	Nibbi	University of Florence, Italy
Emily	Olsson	GBEP Secretariat
Luigi	Pari	CREA
Luc	Pelkmans	VITO
Alberto	Pistocchi	
Stephen	Schuck	Australia's representative on the IEA Bioenergy Executive Committee
Jeffrey	Skeer	IRENA

First Name	Last Name	Affiliation
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Helen K.	Watson	University of KwaZulu-Natal, South Africa