Previous Event

⇢ EUBCE 2014, 22nd European Biomass Conference and Exhibition, Hamburg

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DETAILED CONFERENCE PROGRAMME

A leading platform for the biomass specialists

The Conference took place from 23 to 26 June 2014 at the CCH - Congress Center Hamburg, Germany.

The Conference discussed major issues for the biomass markets, in technical and business areas, from resource assessment to market and policy developments, drawing on leading experiences from all over Europe and worldwide.

Message from Clemens Hoffmann, Conference General Chairman of the 22nd EUBCE

In 2009 and again this year, the European Biomass Conference takes place in the city of Hamburg. Hamburg carries the affix "Hanseatic City". The Hanseatic League or short "Hansa" can rightly be viewed as a pre-cursor organization of the European Union, with a remarkably long history. The foundation of the Hansa can be traced back to the mid-12th century and it lasted for 500 years until the mid-17th century. The Hansa was a Union of predominantly Northern-European coastal cities but also inland cities which were trading - biomass! Trading took place between the regions of Northern Russia, rich in crude materials, especially the city of Novgorod which offered goods such as grain, wood, wax or fur and the countries of Western Europe, which offered manufactured products such as woven fabric from England or Flanders.

Thus neither the range of biomass transport, nor centralized European regulations and legislation nor the relation between Europe and Russia are new issues. However, the high technologies which we apply to the material or energetic use of biomass is constantly being further developed. This rate of development is indeed impressive. Due to the capital intensity of such development, stable frame conditions are imperative. An unstable political course has led to a temporary crisis for biomass technology in Germany.

Among the different factors triggering this crisis, one phenomenon can be singled out, to which we should pay special attention: "improper simplification". More than other forms of renewable energy, the energetic use of biomass is intertwined in a complex manner with sectors such as nutrition, agriculture, landscaping and fauna, in short: biosphere, atmosphere, hydrosphere.

In some cases, complex issues can be simplified, in others strictly not at all. Therefore a central question to be addressed is:

Deployment strategies for solid sustainable energy carriers from biomass by means of torrefaction

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Introductive Summary

This work will give first recommendations to which extent the renewables product portfolio can be enhanced using torrefied biomass under different framework conditions. To investigate the possible market diffusion of torrefaction the experimental work done within the FP7 SECTOR (Solid Sustainable Energy Carriers from Biomass by Means of Torrefaction) project is accompanied by extensive desk studies and modelling work. A large range of production and utilisation pathways based on torrefaction, that could become relevant in the near future are addressed and their biomass-to-end-use chains are evaluated in terms of socio-economics and GHG-emissions. This results in a comparative chain assessment and outlines cost-efficient and environmental sound deployment strategies for torrefied biomass under different framework conditions.

Purpose of the work

The purpose of this work is twofold; to illustrate to which extent torrefaction can improve the environmental sound deployment of biomass for various end-user types, and to investigate the economic competitiveness of the attached biomass-to-end-use chains up to 2030.

Approach

A biomass-to-end-use chain simulation tool (*BioChainS*) was developed which is capable of assessing the high number of production and utilisation pathways based on torrefaction that could become relevant in the near future. Different feedstocks are simulated to be processed to torrefied pellets and briquettes in several countries and world regions. Direct consumption of these commodities for the industrial or domestic deployment of energy or further processing to biochemicals respectively biomaterials are considered and related costs and GHG-emissions calculated. The unsettled question of transport distances between the chain links as well as the used transport modes are addressed by probability functions. Torrefaction plant size, its process energy mix and, in case of woody biomass, whether a mobile chipper is used or not are treated by optimisation but implicated as well by probability calculation to establish a realistic representation of the market behaviour of investors. Using Monte Carlo simulation, these probabilities are correlated and a range of biomass supply costs and GHG-emissions are computed for relevant biomass-to-end-use chains. This data is compared with costs and GHG-emissions from fossil and renewable reference products. The potential for improvement of the environmental sound deployment of biomass through torrefaction is outlined and the economic competitiveness of torrefied biomass addressed. In four storylines the exogenous data for possible future political and technical framework conditions for the period of 2020 to 2030 are drawn. Deployment scenarios for torrefied biomass are simulated by using this exogenous data including quantitative effects of policies regarding biomass supply, demand and research and development. Deployment strategies for torrefied biomass under different framework conditions are formulated based on a thorough sensitivity assessment of the driving parameters.

Results

The results of this work will be first recommendations to which extent the renewables product portfolio can be enhanced using torrefied biomass under different framework conditions. Deployment potentials, GHG-mitigation potentials and diffusion restrictions for torrefaction based products will be illustrated and used to outline cost-efficient and environmental sound deployment strategies for this commodity.

Conclusions

Supply chain scenarios can give an insight into the impact of political, environmental and economic diversification on the utilisation and development of upcoming biomass preparation technologies. Further work within the SECTOR project will extend selected examples of the comparative biomass-to-end-use chain assessment with a full environmental assessment and overall conclusions and recommendations for stakeholders, policy makers and international sustainability forums will be derived.