



Workshop: Using paludiculture biomass for heat 8th of November 2021, Greifswald, Germany

As the field excursion to paludiculture sites in northeastern Germany and a visit at Malchin biomass heating plant could not take place due to Corona, the Centre for Research and Technology Hellas – CERTH, the Greifswald Mire Centre and the Hochschule für Technik und Wirtschaft (HTW) Berlin organised a workshop named “Using paludiculture biomass for energy”, organized on behalf of the EU-AgroBioHeat, the BOnaMoor and INTERREG-DESIRE projects.

Peatlands are important ecosystems in Europe that are valuable carbon storages. Conventional agricultural use of peatlands requires their drainage and thus leads to degradation and the release of vast amounts of greenhouse gases. Paludiculture, which is the cultivation of crops on wet and rewetted peatlands, has the potential to maintain or even increase the carbon stock, while also providing useful biomass for energy production or other purposes.

The introduction from Wendelin Wichtmann, Maximilian Wenzel, Tobias Dahms gave an overview on options for sustainable use of rewetted peatlands for energy. Some questions were raised, which kind of utilisation of biomass from paludiculture would be the better one: material or energetic utilisation. Both options have their advantages and disadvantages: For material use specific biomass characteristics must be in place and the amount of usable biomass is dependent on processing capacities of industries. For energetic use it seems that the quantities of biomass for energy recovery are less limited by the absorbing land and that correspondingly large boilers can also consume large quantities of biomass. In addition, as subsidies for many biogas plants are currently expiring and attempts are being made to pursue new concepts, the production of biogas for feeding into the natural gas grid seems also to be a serious alternative for processing large amounts of paludi-biomass.

The heat provisioning costs are mainly influenced by high investments and of course operation and fuel costs. Referring to the combustion plant in Malchin at least 4,000 full load hours are needed to cover the basic and medium load. About 75% of the emission savings are achieved by rewetting of the peat soils that supply the biomass; burning this selected biomass leads to emission savings of 850 t CO₂ per year in Malchin. Combustion of biomass causes significant higher emissions than burning natural gas. Although biomass fuels are a good option if biomass carbon would be released into the atmosphere anyhow fast and if no alternative use for paludi-biomass (leading to long term carbon storage) is available.

Manolis Karampinis, Project Coordinator from the Centre for Research and Technology Hellas talked about using agrobiomass for heat: the AgroBioHeat project, emissions from agrobiomass combustion and experiences with paludiculture and wetland biomass in project countries ([AgroBioHeat – Promoting the penetration of agrobiomass heating in European rural areas](#)). There seems to be a great future in the energetic utilisation of residues from agriculture for energetic purposes, as decarbonisation of all sectors is the great challenge of today. Energetic use is a means for valorisation of agricultural biomasses and agro wastes. The energy sector seems to be the only one which provides future markets for agro-biomass. The just finished Life project Life Stymfalia ([LIFE 3.0 - LIFE Project Public Page \(europa.eu\)](#)) in Greece investigated in reed harvesting for energy pellets production as a means for wetland restoration. More information: www.agrobioheat.eu.



Semeon Dragnev from the Bioenergy Association of Ukraine presented the Dobrobud initiative for using reed biomass in Kherson, Ukraine. Large reedbeds can be found in the Dniepr delta nearby the city of Kherson. The reed is traditionally used for different purposes. The productivity seems to have increased during last decades. Yields form 10 up to 50 t DM/ha have been observed. There have been some initiatives to produce pellets for combustions from reed. Residual biomass had been used for heating commercial buildings. Tests have been made with a pelletizing machine with a performance of 650 kg/hour. Harvesting costs were about 450€ per ha. In total the Dniepr delta provides a potential of about 100.000 tons of reed for energetic utilization (cap. of 6,5 million €) For more information: <https://uabio.org>.

Dimitris Kourkoumpas, Centre for Research and Technology Hellas gave an overview on the LIFE BIOMASS C+ project: Opportunities for utilization of *Typha domingensis* towards bioethanol production and other added value products. In pilot tests the utilization of the complete plant of Typha which was grown in something like hydro-culture had been used. The aboveground biomasses were processed to fibres or other matter utilization, but also energy pellets and animal feed have been produced. The belowground roots and rhizomes could be used for ethanol production, due to their high contents of starch. More information: <https://biomasscarbonpositive.eu/>

Last not least Mirko Barz from HTW Berlin - University of Applied Sciences came back to the praxis example of the combustion plant in Malchin and the BOnaMoor project ([Biomasseproduktion-Optimierung auf nassen Moorstandorten und deren thermischen Verwertung \(BOnaMoor\) - Hochschule für Technik und Wirtschaft Berlin University of Applied Sciences - HTW Berlin \(htw-berlin.de\)](#)). He gave his presentation entiteled “Biomass from Paludiculture for thermal utilisation – chances and constraints”. Monitoring investigations show that the thresholds for exhaust gases can be complied with. By optimising the air supply, the exhaust gas quality could even be further improved. The ash from the Malchin plant could be used as fertiliser after processing, e.g. into pellets. However, the ash quantities produced at this size of plant are so low that such a treatment plant for the production of fertilisers is not worthwhile.

PDFs from the presentations can be provided on request

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