



Assessment of the climate impact of future climate adjusted peat production and utilisation from a life cycle perspective

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Summary

This presentation is based on two ongoing studies: Swedish Environmental Institute IVL financed by Swedish Peat Producers Association and National Energy Administration and Miljökraft AB. Those studies will be presented later this year.

Introduction

Peat plays an important role in the energy systems of the Nordic and Baltic countries as well as in Ireland. It has been a domestic fuel with a long tradition of use especially as a fuel in times of crisis. Nowadays we observe also the gain from an environmental and energy perspective of using peat and wood fuels together. The European Commission Green Book on energy issues emphasises the need of a safer system of supply of energy in the form of a safe and competitive energy production that means a more sustainable, efficient and diversified energy mix. The Green Book also underlines the need to use safe sources of energy produced close to where they are used. It is therefore very important to combine energy and environmental objectives to use peat in the energy system. The proposal from the European Commission of a Directive on the promotion of the use of energy from renewable resources also emphasises the need to increase the use of renewable fuels in Europe.

Knowledge and experience in recent years have shown that peat is very important as a complement and facilitator in co-firing with wood fuels. This applies especially to Sweden and Finland, where research shows that from the viewpoint of the climate and biological diversity there are significant advantages to using peat from drained or in other ways affected peatlands. The intention is to use peat to increase the total use of biofuels and decrease the use of fossil fuels at the same time. In this way, apart from establishing a securer energy system, a source of CO₂ emissions can be eliminated and a sink can be created through forestation or the construction of a wetland after completed excavation. Energy efficiency will increase when using peat and biofuel together. The European Commission has estimated a gain of between 21-30% of primary energy when co-fuelling peat and woodfuel together in large CHP plants. The studies referred to show (preliminary results) an increased electricity production of between 6 and 8% when co-fuelling peat and wood fuels.

A question that is often asked in this connection is whether or not peat is a fossil fuel or biofuel. The Finnish Government and the Swedish Commission on Peat support the view that peat is a slowly renewable biomass fuel. Peat certainly resembles wood fuels in some regards. However

peat characteristics from a climate viewpoint can vary greatly depending on the situation at each individual site. This means shifting from characteristics closely resembling fossil fuels to characteristics close to or even better than wood fuels. From this vantage point however the question of whether to classify peat as biomass or fossil is less important than the question of peat's climate impact.

Here the focus is on the decision made by the IPCC in Mauritius in March 2006 to place peat in a category of its own, between fossil fuels and biomass. The IPCC also noted that national emission factors are a question for each individual country to decide upon within the framework of Tiers 2 and 3. To determine whether peat is a sustainable solution or not depends on the situation from case to case. Therefore a system for certifying peat and peatlands is needed. The material in this study aims to contribute to that discussion.

Objective of the presentation

One objective of this presentation is to quantify the climate impact of present peat utilisation from a life cycle perspective and compare it with a scenario where existing peat extraction areas are shut down before harvesting is completed. Another objective is to present how a future peat utilisation with potentially lower climate impacts can be made and to estimate the climate impact of a future climate adjusted peat utilisation compared with present peat utilisation. Factors that influence the climate impact of peat utilisation and that will be highlighted in the study are: type of peat reserve, production technology, combustion technology (e.g. co-combustion of peat and wood fuels) and choice of aftertreatment alternative. The total emissions of CO₂, N₂O and CH₄ of the future most effective peat utilisation scenarios will be calculated and compiled from existing literature and compared to the utilisation chain of present peat utilisation. After this is done, radiative forcing calculations of some of the utilisation scenarios will be done.

Peat from a life cycle perspective

The international community has analysed and judged wood fuels from a climate point of view and found that these should be classified as climate-neutral from a life cycle



perspective. So too peat is considered here from a life cycle point of view. This makes it possible to study the entire chain from localising a certain utilisation of peat via combustion to after-treatment of the peatland after excavation. The following will discuss these parts of this chain:

- Localising peat sites
- Peat production
- Peat combustion
- Transport
- After-treatment of peatland

Outcome of the study

The outcome will be an analysis of the possibilities of minimizing the emissions of greenhouse gases from the energy peat sector. This is very important in connection with discussions in Brussels concerning renewable energy.

The study shows potential for more effective peat production and use. Another question that will be analysed in the study is the potential for energy efficiency and saving when using peat together with woodfuels. Information from this study could be used for the creation of a certificate system for peat and to refine the methods for such a certificate system. Those criteria could be in an EU Directive as a prerequisite for integrating peat in this system.

References

A long-term sustainable production of peat. Report from the Johansson group, the peat industry working group for sustainable peat use.

Assessment of the climate impact of future climate adjusted peat production and utilisation from a life cycle perspective. Ongoing project Swedish Environmental Institute IVL.

Energy efficiency when co-combustion of peat and wood fuels. ongoing project Miljökraft AB.