

Online Workshop

DESIRE in cooperation with Waterdrive project

Rewetting and sustainable use of peatlands

19 November, 2021

8:30 – 11:30 (CET)

8:30 – 9:00 Registration and acquaintance with the online platform

9:00 – 10:30 Impulse talks

DESIRE project: potential effects of peatlands rewetting and paludiculture on water quality

Wendelin Wichtmann, Marina Abramchuk

In the beginning of the presentation some background information about DESIRE project was given. Wendelin told about the role of peatlands in terms of nutrient retention and discussed how drained peatlands influence the water quality and how to mitigate its deterioration through rewetting and paludiculture. Results from the research funded by DESIRE project showed that nutrient loads affect nutrient retention percentage more than the type of soil in the Wetland Buffer Zones; *Typha latifolia* and *Phragmites australis* have a great potential for nutrient removal.

However, there might be also negative aspects in rewetting – mobilisation of P, if the relationship between Fe and P content is rather narrow. It could be addressed by excluding certain peatlands or by harvesting biomass for nutrients export from the site. There is an online tool as part of Clearence project for this to calculate the potential export of nutrients by harvesting.

At the end, some recommendations for the management of peatlands in the Neman river catchment for nutrients reduction were given, which should start as soon as possible.

Hydrology and ecology of peatland rewetting

Mateusz Grygoruk, Marta Stachowicz

The peatlands are not “restored” by rewetting, it does not make them natural again, but they will be more similar to natural mires. However, rewetting of peatlands is still important and needed.

Mateusz compared the results of rewetting of Amalvas peatland (LT) within DESIRE project, where the average annual increase in water level is 15 cm, with spontaneously rewetted Gromovo fluviogenous mire (KGD, RU). The Gromovo peatland used to be drained 100 years ago, but currently is “self-restored” due to lack of management of drainage system.

Unfortunately, there are no national strategies for peatlands rewetting, that's why we need tools to inform people what they will potentially gain in case of rewetting.

Potential measures within the CAP in Poland were addressed. Such tool has been developed – ServiPeat – a platform that shows what people are gaining in case of rewetting a peatland (servipeat.sggw.edu.pl). It shows water savings, carbon storage, N, P, quantified ecosystem services in money. ServiPeat also shows how many blocks on ditches should be installed in order to increase water level to a desired level.

Q: As the water table within a site changes in space and time, should we stop to indicate a certain water table depth for rewetting peatlands?

How did you consider spatial and temporal changes in the water level in ServiPeat?

A: We use simple equations that were used in the past to drain the peatlands, as which distance should be between ditches or desired depth of water level after drainage. However, we don't know the initial water level, so, it was calculated, we attempt to get average conditions. We don't consider any spatial variability. A manual is under elaboration, where such issues are explained. There are many uncertainties, and we use a simplistic two-dimensional approach, which we extend to third dimension calculating certain things, as distance between ditches.

Practical rewetting measures and planned landuse activities on rewetted sites – *Nerijus Zableckis, Jurate Sendzikaite, Amalj Samerkhanova*

One of the components in the DESIRE project was practical rewetting of the area. The selected site: Zuvintas Biosphere Reserve. It is included in the list of peatlands which are suitable for paludiculture. There is also a good dialogue with stakeholders. Three sites were rewetted within the DESIRE project: Almavas polder, 200 ha, Liepakojai and Ažuoliniai peatlands.

Rewetting activities: planning for technical design, renew the water level regulations (min water level – 30-40cm below the surface), which should be improved. Bush removal, mulched the stumps, installed dams in main ditches to retain water. In Ažuoliniai – farmer made a dam himself.

Challenges: what to do with the bush stumps? What to do with biomass? In Zuvintas – was ploughed upside down on the arable fields on mineral soils. Also used for cattle food.

Compost company was involved in the project to utilise the biomass from the rewetted site and run several tests with this kind of raw material for compost production. Results on these investigations will be delivered soon..

An additional presentation on peatland rewetting in KGD region was given by Amalj. Peatland management is an important issue in Kaliningrad region. But it is complicated to convince the authorities in the need of projects about nutrient retention. The path taken to make a cross-sectoral dialog in this regard is very important.

For the practical rewetting a few steps were done: two sites were chosen (Wittgirinskoe and Vishnevoe peatlands), maps were created, yet, was not rewetted.

Regarding the paludiculture options, we noticed that mostly cranberries are discussed as an option for paludiculture. Regional authorities added information about cranberries as a paludiculture on their website.

Q: Have you done mixing of biomass piles during composting process? Have you done economical evaluation?

A: Yes, there was mixing of it, but without additives. We have not done economical evaluation yet.

Q: What was the harvesting technique, also this „pistenbully“?

A: Simple or double wheel tractors were used. No pistonbully in Zuvintas so far.

How to use the Neman catchments peatlands database

Leonas Jarašius, Michael Manton, Andrzej Kamocki

The Database shows hexagons with the area proportion of peatlands. There are several layers, i.e. peatland type. Precision in LT, BY, RUS, PL differs. PL peatlands have been GPSed and mapped with high precision. Data can be exported as a shapefile.

For LT fragmented peatlands, there were calculated peatland key areas (cluster) where the sites are significantly connected together. Other layers in the tool are: paludiculture suitability layer, usage of peatlands, restoration priority, they could be only made for LT and PL for now.

Q: Very impressive, seems to be a „century work“. Did you all „on ground“?

A: We worked on the ground for Poland and Kaliningrad. The Lithuania peatlands data was inventoried just before the DESIRE project. But we still validated the data as we found many small errors. The First draft of the Belarusian data was identified using <http://peatlands.by> and verified using many remote sensing data sets. Our secondary updating is nearly completed.

Rewetting and Paludiculture experiences, examples from Denmark

Frank Bondgaard (SEGES, DK)

There are not many paludiculture production sites in Denmark. *Typha* cultivation on a rewetted raised bog which was used to grow potatoes did not succeed, but canary grass is growing. There are areas with and without fertilisation. The challenge is the area is used for nature conservation rather than for production. We want to take protein out of the grass for fodder.

There are complications to get financing for paludiculture projects in Denmark. Farmers are paid nature agency money for harvest but it hasn't brought much to nature agency, since the potato growers need to be repaid for land reclamation. Hence, there were installed plastic membranes to separate drained and rewetted areas.

Denmark has to take 88 000 ha of carbon rich soils out of production. For that, there was introduced a new eco-scheme to deal with P removal by means of biomass harvesting after rewetting.

Stakeholders and especially farmers need to agree and actively participate in such activities. After the public consultations with farmers, we created a tool where farmers could indicate which field they want to take out of production. Farmers are included in this process also by participating in their land valuation.

Q: Could you give some more details about protein extraction?

A: We are in the start. Organic farms still use conventional fertilisers in Denmark, especially if they don't have cows. Protein extraction is a way to make biogas, I don't believe in organic farms without cows. And then there are regulations by the nature agency which asks to keep the landscape open, but one needs to harvest it if one doesn't keep cows. But then there are problems with birds, for example.

Utilisation and economy of biomass from wet peatlands

Piotr Banaszuk, Andrzej Kamocki, Achim Schäfer

Nowadays special machinery is used to mow on rewetted sites. After rewetting the area we get different kinds of vegetation – *Phragmites*, *Carex*, *Typha*. But what to do with biomass? We focused on biogas generation because of its flexibility in storage and nutrients conservation. This is a form of circular economy.

Phragmites, *Carex* and wet meadows biomass on the first hand show lower energy (methane) yield compared to maize. However, *Phragmites* biomass cultivated earlier could be equivalent to that of maize. GHG emissions are lower than that of coal, until we include all the production steps, like manufacturing and processing of machinery and materials. In the end, it is lower only with the dry fermentation. But according to the calculations proposed in RED II, GHG emissions from *Phragmites*

biomass are reduced by 74% compared to coal. Using biomass as a conservation measure is very promising.

Peatland policies, AES and eco schemes for rewetted peatlands

Tomasz Wilk, Jan Peters, Achim Schäfer

Peatlands are mentioned in many EU different policies – financial, agricultural, structural and cohesion, conservation and biodiversity, water, soils, climate and energy, research, horticulture.

In DESIRE we focus on EU common agriculture policy (CAP) related tools. Under CAP, we need wise solutions for water retention and paludiculture. Due to drainage based agriculture payments, CAP is the main driver for peatlands degradation. And paludiculture plants are not regarded as financed crops. Under new CAP this needs to be changed.

Existing solutions:

Finland – buffer zones protection around wetlands under RDP

Sweden – AES for new constructed wetlands

Brandenburg – AES for water retention designed for reduction of GHG emissions.

Lithuania – 16mln EUR provided for peatlands restoration of 8000 ha under EU RRF.

From paludiculture point, there is not much going on.

Solutions from DESIRE project: As part of A2.5, AES proposal for water retention and paludiculture was created. We review existing financial schemes, provided arguments, detailed proposal of retention schemes. In the end water retention eco-scheme was accepted but was narrowed down to areas under AES. But the work continues.

Local projects are not enough; we need a wide strategic programme aligned with EU policy. All stakeholders need to be involved, engaging the private sector.

10:30 – 11:15 Breakout groups

After the presentation of the impulse speeches the participants should join one of the groups according to the topics. The discussion in groups will be facilitated. Each group will select a rapporteur who will present the outcomes from an outbreak session at the plenum.

- **Group A:** Peatland distribution and their protection – data availability, gaps, how to compile best for users (facilitation: Michael Manton)

Problems: Data quality (scale, definitions, missing data), especially for BY, the one for LT and PL is acceptable; upkeep costs and ownership; upscaling the data; integration into online website; time consuming.

Benefits: Broadscale data; transborder database; freely available; great for broadscale assessments.

Q: Even though the transborder information is not the same in all countries, it is worth a try to put it together.

A: RU and BY data wasn't available freely and would be improved.

Q: Will this project last?

A: Lithuanian Fund for Nature could keep the site on at least for 6 years. But this information should be improved, because the source maps were old maps and it might be that there is no peatland anymore on some sites.

- **Group B:** Peatlands rewetting in Neman catchment and their sustainable use (facilitation: Piotr Banaszuk)

How to convince farmers to practice paludiculture?

Challenges are: There is a lack of social awareness, farmers want to keep business as usual, especially with the dairy production.

Policy and technology – biogas production is very expensive, including construction of biogas plants.

Money and subsidies would encourage farmers to engage more into paludiculture.

- **Group C:** The significance of rewetting and paludiculture for nutrients/carbon retention by peatlands on a catchment scale (facilitation: Wendelin Wichtmann)

There are still many questions to be answered regarding the paludiculture implementation within scientific, political and farmers' communities. Such issues as effect of nutrient leaching, methane emissions after rewetting etc. should be clearly communicated towards different categories of people. There are publications about it. Methane emissions will increase right after the rewetting, but it is outlined in the end. Otherwise, there is a peat mineralisation.

The Green Deal promises that the demand on biomass will increase in the future. EU should promote the usage of biomass. Carbon market will open more incentives which will be released in the next communication. The farmers will have to protect organic-rich sites according to the new CAP which will be supported by AES, which will be designed by the member states.

- **Group D:** Peatland policies, instruments and incentives to support economic feasibility of paludiculture (facilitation: Jan Peters)

We talked about which levels are instrumental to make paludiculture happen. There should be more synergies of different policy sectors on the EU level; community involvement should be greater; economic issues, when after rewetting land loses its value, which should be compensated. Other schemes: carbon taxes and carbon farming.

Kaliningrad discussion: there is intensification of agriculture, land drainage and usage. And it seems that rewetting is possible only on lands which are completely not suitable for agriculture.

Market forces for paludiculture: energetic use is not feasible, but better situation with construction market. Another question is what should be first: production of biomass or demand of the industries.

- **Group E:** Russian speaking

Two Interreg Baltic Sea projects – DESIRE and WATERDRIVE - are lobbying for opposite things – DESIRE aims to rewet peatlands in order to stop peat degradation and restore the water filtering function of the wet peatlands, while Waterdrive project works on the reconstruction of drainage systems for the reason that in KGD region more than a half of agricultural lands are in polder systems (also on peatlands). Waterdrive approaches nutrient retention by constructing artificial wetlands next to the drainage systems (end of pipe solution). Polders are not working without pumping station anymore, and there is no recognition about the subsidence.

Q: Hydrological connectivity could also be approach in the way described by the Waterdrive project and this would allow reduced nutrients leaching.

A: Water Framework Directive proposes connectivity up to the uppermost reaches of the river, which is a problem for peatland rewetting. It needs to be disconnected to keep the water in.

B: In Kaliningrad region they need to be interested in the paludiculture development due to the high proportion of polder systems in agriculture.

C: In polder systems it is much easier to establish paludiculture simply by opening sluices and stopping pumping.

D: A perfect example for this is Gromovo rewetting – they just stopped pumping.

E: In such cases there is no security that this site will be kept wet.

Q: Perhaps in some places it makes sense to keep pumping to avoid having shallow lakes, for example?

A: Water level for paludiculture should be at the soil surface or a little bit higher. Such polder systems could become shallow lakes after rewetting and produce high methane emissions. The pumping stations should be kept working but in a correct way.

Q: Sometimes it is possible to have a compromise solution. In the Netherlands they didn't want paludiculture and worked with higher water levels keeping small cows instead of big cows, walking in the water.

A: If they stopped pumping, the water level would be 8m.

11:15-11:30 Conclusions and resumé after breakouts

- Reports from the groups
- Wrap up: the catchment of the Neman - potential for rewetting, peatland protection and paludiculture (facilitation Jan Peters)
- Final statements and discussion

11:45 End of the workshop