

Final Conference (on-line)

DESIRE: Development of Sustainable peatland management by Restoration and paludiculture for nutrient retention and other ecosystem services in the Neman River catchment

“Peatlands and nutrients”

Date: November 24, 2021

Participants: more than 40 stakeholders from different organisations

Present: Jan Peters (J), Wendelin Wichtmann (W), Nerijus Zableckis (N), Tomasz Wilk (T), Michael Manton (M), Achim Schäfer (A), Marina Abramchuk (M), Piotr Banaszuk (P), Mateusz Grygoruk (M), Amalj Samerkhanova (A), Irina Raiskaya, Olga Denyshchuk

08:00 – 08:45 Registration and acquaintance with the online platform

08:45 – 09:00 Opening and welcome words by **Wendelin Wichtmann** (DESIRE project)

09:00 – 10:00 **Session 1: Policies for improved peatlands management and decision making on peatlands rewetting (WP 2)**

Moderators: Nerijus Zableckis

Policies for wise peatlands management.

Jan Peters, Succow Foundation, Germany

New CAP introduce eligibility for payments for paludiculture.

Each member state should submit CAP strategic plans by the end of the year.

But more progress should be made.

All EU policies and national implementations need to be aligned with Paris Agreement targets. Focus should be made on peatlands in those as they contribute to multiple environmental goals, i.e. nutrient retention and improvement of water quality.

More strategic exchange between EU Member States is needed to focus on most effective measures, as money is not all, change of legislation is needed.

To enable the transformation to 100% wet peatlands by 2050, we need all stakeholders on board.

Private sector need to have a strong role for upscaling as we need enormous amounts of biomass for bio-economy.

Q&A

In Lithuania a new CAP Strategic Plan has been approved by the Parliament. Regarding peatlands, on one hand the plan is to restore 8000 ha of peatlands, on the other hand they removed the prohibition to plough them.

Q: There is a demand from the farmers to see successful implementation of paludiculture. How to better prove that paludiculture is promising business?

A: There is no lack of pilot sites, we rather need the demonstration sites for farmers, land owners, processing companies to show that paludiculture works. And this should be done on a larger scale. Hence, the funding for implementation is needed. Currently, the sites look like wet islands in the dry landscapes.

There are many activities in Germany regarding this. For example, Environmental ministry will fund the implementation of such demonstration sites with different focus (on bogs, on fens, with various production schemes). Not only growing and harvesting will be shown, but also processing techniques. As well, Ministry of Agriculture will have several long-lasting (10 years) demonstration sites for farmers. However, such activities should also be implemented in other countries as well.

Agri-Environmental Schemes for peatlands management and biodiversity.

Tomasz Wilk, Polish Society for the Protection of Birds – OTOP, Poland

Currently, CAP favours peatland degradation due to payments for drainage-based agriculture and provides no support for paludiculture. This was

addressed in DESIRE 2.5 activity. Which resulted in the Water retention eco-scheme in Poland, but only for areas under AES.

CAP related tools, as AES, are extremely important in peatland conservation because they provide large amounts of money, long term effects and large areas covered.

We need to work more for wider application of retention schemes, peatland protection and restoration, tools for paludiculture implementation. We need cooperation between different stakeholders.

Q&A

Q: Small clarification to Tomasz presentation. Water retention scheme under eco-schemes in the National Strategic Plan for Poland from 2023 will be implemented on the whole agricultural areas.

A: That is a good news.

Spatial planning for peatland restoration in the Neman River catchment.

Michael Manton, Vytautas Magnus University, Lithuania

Statistical information on peatland land cover, their land use and protection status was covered.

Looking at the protection state of LT peatlands, none of the subcatchments meet EU Green Deal target of peatlands restoration. While, LT aims for 8000 ha restored, the area needs to be much larger to meet the targets. And even though, the quality of such restoration is questionable.

Green deal targets 10% of the area being under strict protection but it is probably not possible to “restore” fens without ongoing management, this leads us to paludiculture. Strict protection of bogs is possible though.

Q&A

A: Perhaps, we don't need strict protection in all cases because we have to find the best way to protect peatlands. Fens need to be managed in a wise and sustainable way.

For the spatial planning, the more detailed approach is needed, i.e. the ownership, neighbours, which might be a problem for them due to rewetting.

B: This is a problem where to do the restoration of 8000 ha in Lithuania. There are so many small sites owned by many farmers.

Strategy for paludiculture in the Neman catchment with economic assessment.

Wendelin Wichtmann, Achim Schäfer, Greifswald University, Germany

Strategy helps to recognise what and where needs to be done.

Small number of economic assessments of wetland restoration.

Only very few reliable figures are available on the economics of paludiculture.

Failures to achieve economic viability.

Existing agricultural policy instruments are not sufficient for rewetting and conversion to paludiculture.

Conversion from dry to wet peatland management is a paradigm shift that must be supported by suitable economic instruments during the transition phase.

10:00 - 10:15 *Coffee break*

10:15 – 11:15 Session 2: Research and modelling of peatlands rewetting (WP 3)

Moderator: *Jan Peters*

Wetland buffer zones for nutrients retention and cleaner waters – summary of some project articles

Marina Abramchuk, University of Greifswald, Germany

WBZs (organic or mineral) work as effective barriers for diffused nutrient pollution – WBZs should be recognised in large-scale, long-term pollution management.

Efficiency of N removal by WBZs is lower with higher loads of N (more than 160 kg * ha * year) – restoration of WBZs should be integrated with reduction of nutrients input from the catchment area.

Forested WBZs are the most effective in nutrient retention.

Harvesting of *Carex* biomass can remove up to one third of a system's total nitrogen.

Q&A

Q: If we remove biomass rich in various nutrients (even chemical elements) and use it to produce goods or move the biomass to the other location, how safe it is for the consumer in terms of nutrients? Does it help to save the environment? If it is burnt, what is the chain of chemical reactions?

A: The plants uptake not only nutrients, but also other chemicals in the water. As well as the degree of biomass "safeness" depends on the water quality. Regarding the chain, the best is to reuse the biomass, for example, as a fertiliser.

A: If you burn N, it becomes N₂ in the atmosphere. P could be used as a fertiliser in the form of ash. Globally, there is a lack of P fertiliser and this is one of the options how to extract it. Regarding the human health and the concentrations of heavy metals or such, we didn't check, but I have no information that this could be a problem.

Nutrients in wet and rewetted peatlands.

Piotr Banaszuk, Białystok Technical University – BUT

Rewetting of murshic drainic Histosols in the Neman river basin will cause internal eutrophication, but its extent depends on the type/trophic status of a peatland.

Most significant potential for releasing plant-available P and mineral N was found for fertile fluviogenic peatlands

It seems that the soil pH is a good proxy of the amount of nitrate-nitrogen and P released after rewetting

The long-term paludicultural use of the reconstructed wetlands along with the removal of biomass may gradually eliminate superfluous nutrients and restore the trophic balance of the ecosystem.

Q&A

*It was just mentioned that rewetting might create novel ecosystems - we just checked that out in a recent study and can support this expectation, here is the reference for those who are interested: Kreyling J, **Tanneberger F, Jansen F, van der Linden S, Aggenbach C, Blüml V, Couwenberg J, Emsens W-J, Joosten H, Klimkow-ska A, Kotowski W, Kozub L, Lennartz B, Liczner Y, Liu H, Michaelis D, Oehmke C, Parakenings K, Pleyl E, Poyda A, Raabe S, Röhl M, Rucker K, Schneider A, Schrautzer J, Schröder C, Schug F, Seeber E, Thiel F, Thiele S, Tiemeyer B, Timmermann T, Urich T, van Diggelen R, Vegelin K, Verbruggen E, Wilmking M, Wrage-Mönnig N, Wotejko L, Zak D, Jurasinski G (2021) Rewetting does not return drained fen peatlands to their old selves. Nature Communications 12: 5693.*

Q: Do you think that the pH-mobilisable P relations is very "site specific"? The whole Neman catchment is pretty Fe-rich so has a lot of P accumulated in the top layers but in case we had Ca rich but Fe-poor conditions then we could have low P mobilisation even at high pH (as in former Cladium mires)?

A: it is not pH that mobilizes phosphorus; The pH is merely a proxy for generalizing the many factors influencing this process

Q: Thank you. I understand. I just thought how universal is this proxy?

A: It works well in fluvioigenous mires (fens), just as C:N; the idea was how to use a simple measure to judge the size of a phenomenon. Fens are usually rich in Fe; so the idea works. Surprisingly, it also works well in peat bogs. But I am aware of the limitations. We are constantly looking for a solution

ServiPeat - a tool for quantifying peatland rewetting co-benefits - theory & assumptions.

D. Mirosław-Świątek, P. Banaszuk, M. Grygoruk, Warsaw University of Life Sciences – SGGW

ServiPeat - practical presentation of the online tool.

Mateusz Grygoruk, Warsaw University of Life Sciences – SGGW

ServiPeat is a platform that shows what people are gaining in case of rewetting entering some parameters (servipeat.sggw.edu.pl). It shows water save, carbon storage, N, P, quantified ecosystem services in money. ServiPeat also shows how many ditches should be installed to increase water level to the desired level.

Q&A

Q: Mateusz have you compared the outputs of the ditches component of the tool with the current practices in the rewetting? Are there major differences? (Sorry, I'm not aware how the number of ditches is calculated now).

A: You cannot put ditch spacing less than 100 m... Which is very typical for many high groundwater input sites (often worth restoring).

A: ServiPeat is working but still in Beta Version

B: Very interesting model the ServiPeat. I cannot put in typical data from Norway yet, but maybe when it is developed more. Typical spacing between ditches here is 20 meters.

A: Ditch spacing depends on parameters D. I can check this - this is a limitation. But I am sure we can solve it.

B: I can see the use for ServiPeat if one does not want to flood the mire totally, but want to keep the level at some desired height due to paludiculture or other use. But for total mire restoration, our approach is ditch infilling and peat dams. the water must find it ways at other parts of the mire than in the old ditches.

A: We are talking about ditch blocking and average conditions. This means, that although water level on the annual basis is 0.1 m below the ground then it really means that for majority of year the mire is nearly flooded. Additionally, we are not telling that ditch blocks are "weirs" or "wooden dams" - these are just ditch blocks. I would much prefer to have the rewetting done with peat dams. So if the output is 0.8 m elevation of a ditch block and the average water level desired in the middle of the peatland is 0.15 m below the ground then feel free to use peat to this elevation and average annual water level should be +/- 0.15.

11:15 - 12:00 Session 3: Implementation of rewetting and paludiculture in the Neman River catchment (WP 4)

Moderator: Mateusz Grygoruk

Obstacles and challenges of peatlands rewetting and paludiculture in Kaliningrad

Amalj Samerkhanova, Nature Park "Vishtynetsky", Russia

Obstacles on a state level include the absence of regulatory framework for peatlands rewetting; absence of experience and legal framework for paludiculture implementation; absence of state funds for peatlands projects.

Challenges are application for funding to finalise contracts with participation of the Kant Baltic Federal University; hydrological modelling and project design for rewetting of Vittgirrenskoye and Vishnevoye peatlands according to the Russian expertise requirements; carrying out information campaigns about rewetting and paludiculture; final plots rewetting.

Q&A

Q: Currently there are many initiatives related to carbon, rewetting, peatlands in Kaliningrad. Have DESIRE project promoted peatland rewetting somehow?

A: 3-4 years ago during PeatRus project, there was no support for peatlands rewetting. Now peatlands rewetting was offered to Russian Federal project about carbon farming, where 80 carbon farms are planned to be implemented in Russia. As a possible site, Vittgirrenskoye peatland was offered because a preliminary data about it was already collected. To speed up the process this site was selected as one of the first polygons for carbon farming.

Opportunities of paludiculture biomass utilisation in the Neman River catchment.

Wendelin Wichtmann, Michael Succow Foundation, Germany

Kinds of biomass utilisation considered in DESIRE: cranberries and sphagnum farming, biogas, direct combustion, bedding and fodder, compost

Recommendations: implement paludiculture parallel to development of markets for biomass; choose wisely how to use specific biomass; the area of implementation and effectivity of nutrients reduction is dependent on harvesting dates, demand for products from paludiculture, rewarding of additional ecosystem services.

More to be done in the Neman catchment concerning development of the framework conditions for wet peatland management; practitioners training and consultation; creating awareness for the importance of rewetting and paludiculture, especially among stakeholders and lobbyists in BY, LT, KGD, PL; investment support for harvesting and biomass processing technologies; development of the market incentive programmes; examples of best practice.

We need to continue the catchment wide multidisciplinary dialogue on utilisation of paludiculture biomass.

Rewetting in Žuvintas Biosphere Reserve: obstacles, technical solutions, monitoring, maintenance.

Nerijus Zableckis, Lithuanian Fund for Nature.

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 for rewetting: Almavas polder, 200 ha, Liepakojai and Azuoliniai 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 water dams.

In Azuoliniai – 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 fields. Also used for kettle food.

Compost company was involved in the project to utilise the biomass from the rewetted site.

12:00 – 12:30 Presentations and comments of invited guests

Antanas Maziliauskas, Professor at Vytautas Magnus University, Kaunas, Lithuania: Building capacity for understanding climate change.

Capacity of people to understand: rewetting of peatlands allows farmers to continue land cultivation but with other crops (paludiculture), or using wood products, or biomass for different purposes and also storing carbon. There are a lot of discussion of carbon markets, and a lot of opportunities for example for farmers.

Farmers are very different now compared to 20 years ago. They are interested in new activities but they want to know what they get from it. More capacity building through demonstration need to be created. Farmers need to see how it looks and works. If it works, it is taken up by others. Farmers are good ambassadors of new technologies and business opportunities.

As part of EU EIP-AGRI Focus Group, a set of 20 experts from various fields come twice to discuss and share knowledge and experience to generate suggestions for farming community how to deal with specific topics, like rewetting of peatlands. Please find the link to the open call for experts to apply for <https://ec.europa.eu/eip/agriculture/en/focus-groups> Focus Group Water: Nature-Based Solutions for water management under climate change.

Q&A

Comment: Farmers are the crucial point when we want to implement something like rewetting and paludiculture. And those who act as pioneers and could implement the demonstration sites are very important.

When carbon prices are good, rewetting and conversion to paludiculture would be more interesting for the farmers, at least until it is about carbon reduction. Carbon sequestration is not so effective and not so much is possible.

12:00 – 13:00 Final discussion

M: ServiPeat – test and try it, report about bugs. We would love to get your feedback.

N: Farmers don't get a link about GHG emissions and drained peatlands. Emission report is done in LULUCF but not in agricultural sector.

Concern about rewetting is what to do with all the biomass. What are the benefits of paludiculture for the farmers? There was a possibility that the Ministry of Agriculture would finance the seeds but there is no need in it.

We need to upscale the paludiculture projects to get real figures.

W: We must to come to farmers' level. The 2ha demonstration site is not representative and costs are much higher.

A: If we don't have demand for the biomass, we don't have markets, what to do with it? We have to differentiate payments for ecosystem services and farmers and owners. Direct payments don't go to the farmers; they go to the owners.

W: Remark, direct payments go to the farmers, but they are handed to the owners.

There should be programmes to invest in capacities to manufacture the biomass. First steps are taken in Germany but it must be similar in other countries.

J: We have focused a lot on site-specific challenges (establishment, harvesting, work with farmers), and policy to bring paludiculture in CAP. The second step is to involve private businesses, the biomass processors in it.

In Germany we are strongly working to connect with processing industries, retailers, bigger- and mid-size companies and make them aware of the needed innovations. We have a lot of working techniques; we need programmes to upscale. We already managed to bring many stakeholders on-board from land and policy side, the next step would be business. Let's continue being proactive!

O: Creating the market on EU level would ultimately lead to the increase in paludiculture. For example, Ukraine's producers don't mind what to grow and will grow paludiculture if they are paid for it.

P: The paludiculture market situation is very dynamic. Now we are facing problems with biomass, but with rising prices for energy can change the situation. Biomass will be an interesting substitute for energy carriers.

Emerging idea to use biomass is to convert it to a peat-free substrate. It is progressing in Germany and Poland.

W: To cover the demand for peat for gardeners in Germany, it would be enough to implement Sphagnum farming on 36,000 ha. There are projects where higher plants are considered to produce a compost-like material as a substrate for gardeners.

S: This year in General directorate for environmental protection we prepared projects on wetlands based on Ramsar convention, which are yet not passed through all the levels of consultations. The idea is to make an inventory of peatlands and wetlands in the whole Poland. In the next 10 years we plan to apply for LIFE strategic projects and rewet degraded peatlands. We want to choose a large area to rewet, and we aim to link it to views that biomass is an alternative for horticulture.

*M: We tend to look at the policies like they are right now, but in 2030 the world could be completely different. I think that if CAP starts to pay for carbon instead of paying for *Acrocephalus paludicola* or *Crex crex*, then most of farmers would go for carbon harvesting. The issue of market would be critical in open market situation, but in our case when 90% of agriculture is controlled by CAP, the implementation of this type of subsidies can help a lot for wise management of peatlands. Hence, farmers should also communicate to European Commission about climatic and soil challenges ahead.*

S: Agree with M. CAP payments should be calculated not only based on extra costs and lost income but on ecosystem services and carbon market only in some cases.

W: Certifications for paludiculture should be introduced and only those who really consider the aims of paludiculture and rewetting could get them.

N: Carbon farming will help us and soil strategy with give a political will to do things differently. But there is some unclarity how to deal with carbon market. I see the risk that the same farmers could be carbon farmers and still sell credits for high price.

A: The market potential of the paludibiomass could increase because of the climate protection regulations. Production of conventional insulation materials

cause a lot of GHG emissions, which could promote the use of paludiculture for construction and hence the prices for it will increase substantially.

W: There should also be developed a scheme to finance the reduction of output of nutrients in the similar way as GHG emissions reduction. For example, MoorFutures include nutrient loss reduction.

W: Please, visit our web page <https://www.moorwissen.de/en/paludikultur/projekte/desire/index.php>

18:00 – 20:00 Internal wine session for DESIRE project team with nice photos and inspiring discussions