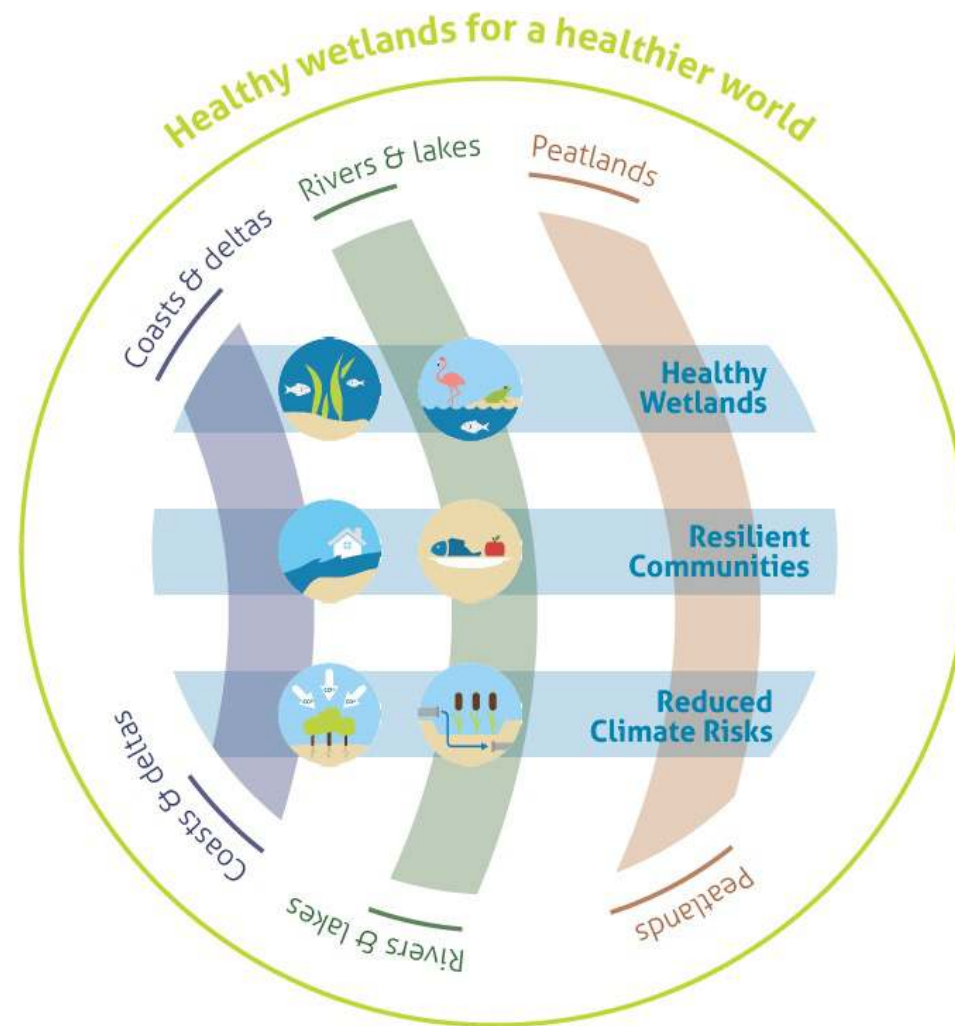




Sustainable harvests from wet peat (Paludiculture)

Hans Schutten

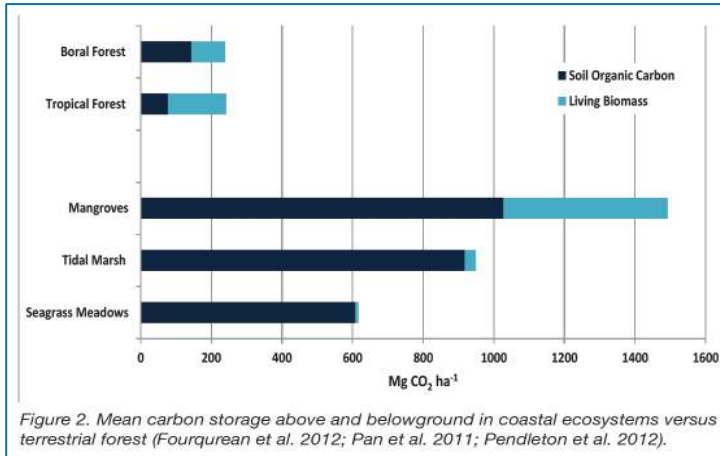
Our mission and focus



Our wetland carbon & peatland restoration track record (examples)

SCIENCE

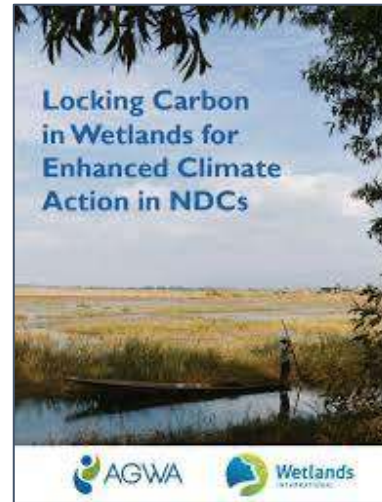
Wetland carbon is key



- Verra REDD+ Methodologies for tropical peatswamp
- IPCC supplement on wetland carbon – peatland rewetting
- Land-based GHG emissions hydraulic engineering
- GMC (peatland science, Paludiculture)

POLICY & communications

Wetlands in NDCs



- “Saving the peat for less heat” campaign
- Advising Indonesian government on peatland restoration > 750,000 ha
- Guidance on integration of wetlands in NDCs (2020 report +practical Mongolia, Russia etc)
- #Power of Wetlands campaign
- European Policy (CAP, Conservation etc)

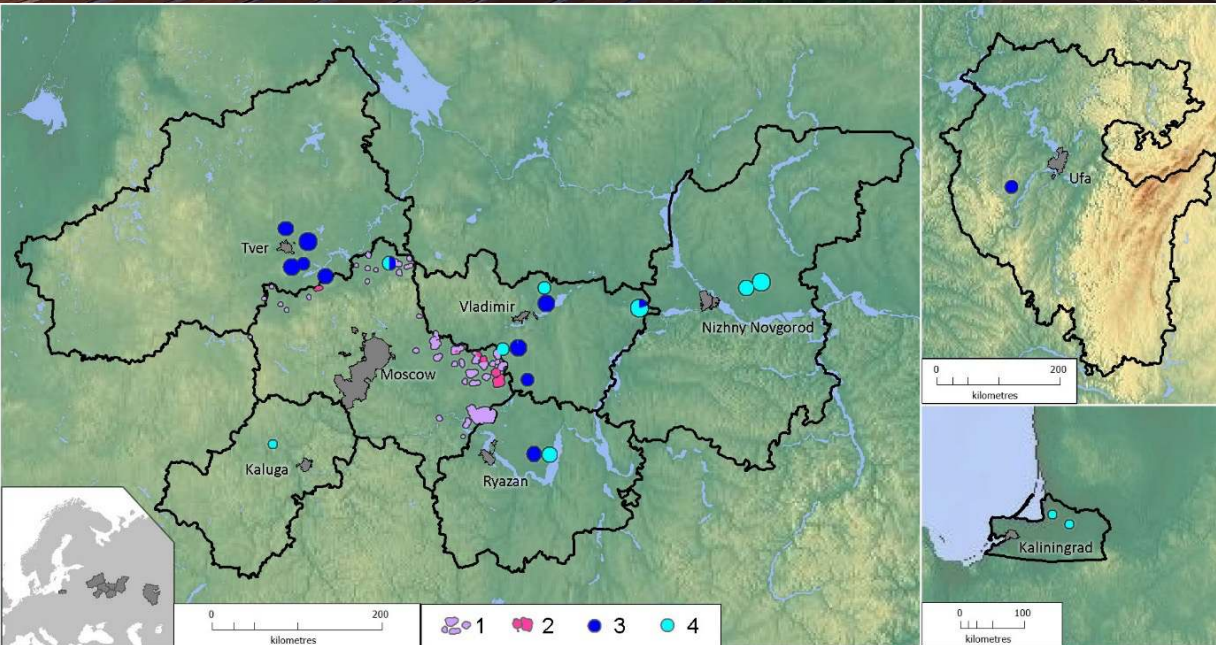
PRACTICE

Real impact on the ground



- UNFCCC Momentum for change award peatlands Russia (100,000 ha)
- Largest VCS verified REDD+ project globally peatswamp forest Kalimantan (>300,000 ha)
- Best practice on peatland restoration and paludiculture
- Collaboration with Permian Global, dialogues with investors and commodity chains (RSPO, CANOPY)

Peatland restoration Russia



- [PeatRus project 2011-2023: Reducing Peat Fire and GHG Emissions in Central Russia \(European part\)](#)
- [Areas:](#) Rewetting of ~100.000 ha degraded peatlands, reducing peat fire on ~120.000 ha, climate-smart peatland rewetting 75.000 ha, 9.500 ha with pilot paludiculture application and ecological restoration, spanning 10 provinces. Rewetting plans and prioritization for additional 90.000 ha of drained peatland.
- [Ecosystem:](#) Vast areas of boreal bogs and some fens, drained mostly for forestry
- [Beneficiaries:](#) Several regions in Russia, local communities and population of large cities (lower peat fires and air pollution risk); and protected areas.
- [Threats:](#) drainage and afforestation, peat extraction, peat fires and lack of capacity to implement ecosystem restoration
- [Carbon - Emission reductions](#) of 5-10t CO₂eq/a/ha GHG, targeting a reduction of 650,000 tonnes of CO₂eq emission reductions per year at the end of the project, currently achieved: emission reduction of 320,000 metric tonnes CO₂ eq/a.
- [Innovative solutions:](#) Pilot paludiculture sites are established and demonstrate sustainable peatland cultivation and relevant capacity for larger-scale implementation is being developed in two regions (Tver, Kaliningrad)
- Setting up a system for monitoring for GHG emissions and biodiversity and integrating it into national reporting systems for conventions and policy

[Short term needs:](#) more ecological restoration principles and development of acceptance for paludiculture , awareness about carbon storage function
[Opportunities:](#) long term collaboration and large area affected

Paludiculture

Start Peatlands Paludiculture Infotheque Publications Contact DE 



Best practice examples

Paludiculture on fen peatlands



Biomass heating plant

The heating plant in the city of Malchin combines bioenergy with climate, landscape and water protection and results in benefits for biodiversity and tourism. [more...](#)



Cultivation of Cattail (Typha)

In the [Project Paludi-PRIMA](#), Cattail (Typha) is cultivated on 10 ha. [more...](#)

Paludiculture on bog peatlands



Start Peatlands Paludiculture Infotheque Publications Contact DE 

MoorWissen Paludiculture Paludiculture in detail Best practice examples Biomass heating plant

Fen biomass heating plant in the city of Malchin

Since June 2014 the biomass boiler in the city of Malchin is providing heat for 540 households, a kindergarten, two schools and several office buildings. The biomass fuel for the heating plant is produced on wet fen meadows at lake Kummerow, Mecklenburg-Vorpommern.

Harvesting areas

The city of Malchin is situated at the western end of the Peene valley in NE Germany. With 17,810 ha of peatlands, the Peene valley is one of the largest fen areas in Germany. The fens had been drained for agriculture but were rewetted during the 90s. The meadows of the local farmer Hans Voigt lake Kummerow were affected by the rewetting of the adjacent Penne valley area. He therefore had to find new ways to use the changing vegetation which was no longer feasible as fodder for his cattle.

During an R & D project together with the University of Greifswald, using the biomass as solid fuel was tested and identified as a promising solution. In the following years, the farmer brought together different stakeholders in the nearby city of Malchin to realize the integration of an adapted biomass boiler in the existing heating grid. There the biomass is used to replace a natural gas fired boiler.

The vegetation of wet fen meadows at lake Kummerow is dominated by reed canary grass and sedges. The yields in 2013 had been 4.5 and 6 t DM per hectare. The fen meadows covers an area of ca. 300 ha, however harvestability depends on weather conditions.

Biomass harvest

The fen meadows are harvested once a year between June and September for hay. Harvest depends on good weather conditions and is only possible during dry periods in the summer.

Adapted grassland machinery, light tractors with wide tires and a light, fixed chamber round baler with tandem axle is used for the biomass harvest. A multi stage technique is used for harvesting: mowing, tedding, windrowing, baling, single/double bale retrieval.

The harvested round bales have a diameter of 120 cm and a weight of 185 to 200 kg DM. Each bale equals ca. 85 lt of mineral



Location: Lake Kummerow, Mecklenburg-Vorpommern
Vegetation: Reed canary grass and sedges
Yield: 4.5 and 6 t DM per hectare and year
Area: ca. 300 ha fen meadows (harvestability depends on weather conditions)



News

RRR2021 - conference week

In March 2021, the Greifswald Mire Centre hosts the third conference week on paludiculture. [more...](#)



Peatlands must be wet - immediately
160 scientists agree at WETSCAPES conference in Rostock, Germany. [more...](#)

DESIRE project starting - Paludiculture in the Neman River
sustainable peatland management for nutrient retention and other ecosystem services within the Neman River catchment. [more...](#)

Minister meets peatland ambassadors
GMC at the Open Day in the Ministry of Environment. [more...](#)

MoorWissen Paludiculture Paludiculture in detail Projects PRIMA

Paludi-PRIMA

Putting Paludiculture into Practice: Integration – Management – Cultivation

Background

In Germany, drained peatlands are responsible for 37% of greenhouse gas emissions from agriculture, although they represent only 7% of agricultural land. In addition to emissions, conventional farming leads to soil degradation, subsidence and rising drainage costs. To prevent long-term abandonment and complete loss of productive agricultural land, alternative forms of cultivation are being developed for fen soils at water levels close to the surface: Paludiculture. The joint project Paludi-PRIMA investigates Reed and Cattail as native plant species that are adapted to water-saturated soils, enable peat conservation and have a high value creation potential based on the material use of the biomass.

Project Goals

Paludi-PRIMA intends to contribute to putting paludiculture into practice on degraded fen sites. To this end, the project tasks cover a broad spectrum, ranging from basic scientific research to a field trial on approx. 8 hectares and to the elaboration of recommendations for farmers, authorities and politicians. The following questions will be addressed:

- Which species or genotypes of Cattail (*Typha angustifolia*, *Typha latifolia*) and Reed (*Phragmites australis*) are suitable for different site conditions and utilisation lines?
- What influence does site selection and management (water level, nutrient availability and harvest regime) have on productivity and biomass quality?
- What are the costs of switching to paludiculture (site preparation, planting, management, harvesting, drying and storage)?
- How can the economic viability of paludicultures be assessed in dependence of biomass quality and utilisation options
- How can paludiculture be integrated into agricultural policy, approval (water and nature conservation law) and planning processes?

Work Packages

- WP 1: Project Coordination, Knowledge Transfer, Transferability
- WP 2: Genotyping of Reed
- WP 3: Cultivation and Harvest
- WP 4: Management
- WP 5: Biomass Quality
- WP 6: Economics of Paludiculture

Paludi-PRIMA Project

Duration:
May 1, 2019 to April 30, 2022

Funding:
Federal Ministry of Food and Agriculture ([BMEL](#))

Geördert durch:



aufgrund eines Beschlusses des Deutschen Bundestages

Project Management:
Agency for Renewable Resources ([FNR](#))



Consortium:

UNIVERSITÄT GREIFSWALD
Wissen lockt. Seit 1456



Mecklenburg Vorpommern



Landesforschungsanstalt
für Landwirtschaft und Ernährung



[MoorWissen](#) | [Paludiculture](#) | [in detail](#) |

<https://www.moorwissen.de/en/paludikultur/imedia/umsetzungsbeispiele/biomasseheizwerkmalchin.php> pest practice examples | Biomass heating plant



Landscape track record – Katingan, Kalimantan



- Area: 149,800 ha of intact peat swamp forest; 155,869 ha mixed use community buffer zone (305,699 ha total)
- Ecosystem: restoration and conservation of tropical peatland forest, incl. habitat for endangered wildlife (Orangutan)
- Community: we work closely with communities to create sustainable development opportunities and develop alternatives to palm oil and timber plantations
- Partners: PT Rimba Makmur Utama, Permian Global and Yayasan Puter Indonesia, Silvestrum, Greifswald Mire Centre, Wageningen University
- Carbon storage: 7,4 million tonnes of CO₂e per year, REDD+ VCS verified
- Threats: felling and draining of tropical peatland forests to make place for plantations; leading to huge GHG emissions, fires and biodiversity decline
- Short term needs: extracting lessons learned and documenting/sharing best practices
- Opportunities: this project could be used as an example to inspire replication and/or enhance standards and policies

Tropical livelihoods



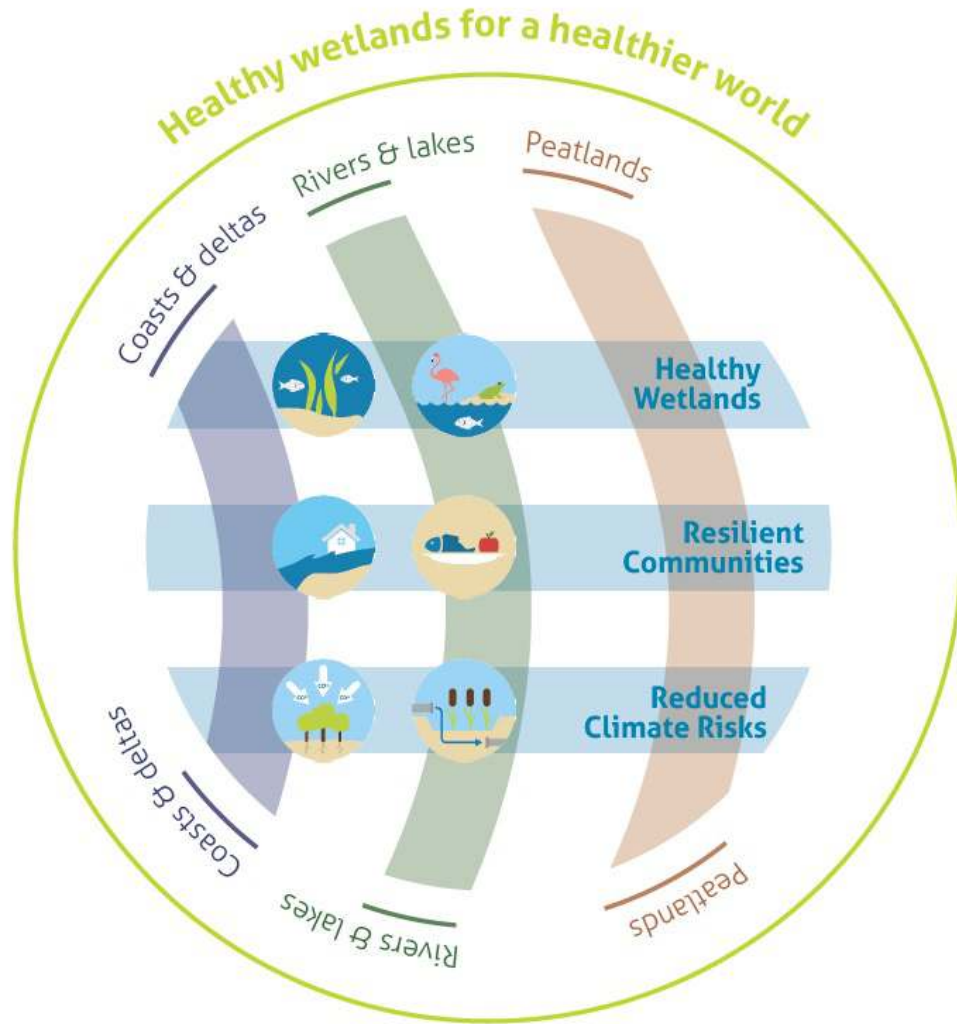
purun.institute Pelatihan desain (inovasi) kerajinan purun

Sago-Duck-feed business model.

Sago is a palm species that can be grown successfully on wet peatland soils and thus providing sustainable crops that protect the ecohydrology of the peatland. The produce or crop is used for food. The waste products are re-purposed into animal feed for ducks, and thus provide another food source and the manure from the ducks and organic matter from the feed recirculate nutrients back to the soils. This business model creates sustainable local livelihoods and food sources, protects the functionality of the peatlands and creates a circular nutrient economy reducing the need for external feed and fertilizer, a real win-win for local economy and peatlands.



Summing it up



Next steps.... Let's think together

1. Scaling it up:
 1. supply chain analysis
 2. Linking to market
2. Enabling policy
 1. Governance and subsidies align
 2. Procurement and trade (EU and others)
3. Community benefit
 1. Sustainable livelihoods create 'ownership'
 2. Longevity of solutions

Making to real..Ireland opportunities



- Area: >1,000,000 ha of lowland raised bogs in the Irish Midlands are drained for peat mining to feed power stations or grow-bags
- Ecosystem: lowland raised bogs; discrete low 'mounds' (typically 10 m deep)
- Restorability: Restoration through hydrological management (ditch and gully blocking). Experience across the country through dedicated state company (Bord na Mona) program
- Community: ??
- Partners: Bord na Mona – state owned Energy Company
- Carbon storage: to be determined. Lots of sites which are now abandoned with 50 cm to 2 m of peat remaining. The early gain is reduced emissions of carbon from these drained peat soils
- Opportunities: as large areas are still with 1 owner (Bord na Mona) with an ambition ; 108M Europe for restoration, **but no real thinking of opportunities for best use..**
- **Irish government now includes peatlands in their NDC's**

#PowerofWetlands
Share your story

