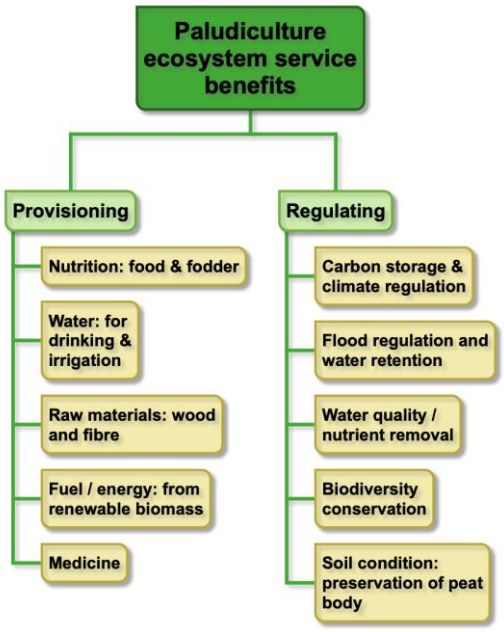

# Commission of Inquiry on Peatlands Update: Productive lowland peatlands

Much of the IUCN UK Peatland Programme's focus up until now has been on acidic bog habitats in the uplands and lowlands of the UK due to an abundance of available data and policy interest in these habitats. However, there is a growing need to address the climate, biodiversity and water impacts resulting from degraded and declining lowland wetlands, including fen peatlands.

To support the sustainable management of fen peat soils and habitats, there is scope to develop alternative methods of agricultural production on these peatlands. Wetland farming (paludiculture) is being employed in a number of countries around the world (e.g. Canada, Germany, Indonesia and Peru) to sustainably farm peat soils whilst producing a marketable product. However, paludiculture is underdeveloped in the UK and the scope for implementing these systems is poorly understood. Some challenges and recommendations for action to support the sustainable management of fen peatlands are outlined here.




**Challenges of paludiculture - addressing barriers and risks**

Paludiculture presents a promising, inclusive solution to the question of sustainable production on lowland peatlands (Wichtmann, Schroeder and Joosten, eds., 2016). Numerous management options for this 'wetter farming' on fen peatlands have been trialled outside of the UK to produce pulp and paper, building materials and energy with

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plant species such as common reed (*Phragmites australis*), sedges (*Carex spp.*) and reed canary grass (*Phalaris arundinacea*). The trials have demonstrated these as marketable and sustainable, wetland biomass resources (Abel et al, 2013; Wichtmann and Couwenberg, 2013). Moreover, wetland biomass harvesting would not only bring climate change mitigation benefits but also align well with the provision of other ecosystem services provided by fen peatlands such as water and nutrient regulation, and nature conservation (Wichtmann, Schroeder and Joosten (eds., 2016). Why then, in spite of these advantages compared to conventional land use, has paludiculture has not yet been implemented in the lowland peatlands of the UK? The following key challenges to the implementation of paludiculture and proposed solutions capture the results of multi-stakeholder discussions at the Paludiculture UK 2017 conference (Natural England, 2018).

**1. Lack of policy, legal framework and funding support**

A change to paludiculture at the scale needed implies a paradigm shift in land management, however the agricultural policy and legal framework to support such a transition is lacking in the UK.

a) There is uncertainty about the status of wetland adapted plants as agricultural crops, paludiculture is not recognised as a form of agricultural production and paludiculture land is not classified as as agricultural land in policy; therefore, biomass cultivation on wet or re-wetted peatlands is not included in agricultural subsidy schemes.

b) Current agricultural legislation maintain income, through subsidies, for farmers who use drainage-based agriculture, artificially increasing the profitability of this and offering little incentive to change.

c) There is an apparent lack of policy coherence and consistency across different departments. For paludiculture to become the norm not the exception, it requires existing land use and other policies to be joined up and work together for the common good.

d) Paludiculture implies a major change in operational management, and substantial investment in adapted machinery so that a change to paludiculture is virtually irreversible on the individual farm level. There is lack of confidence in long term support of paludiculture.

e) The legal and policy framework currently does not adequately assess or account for the provision of multiple peatland ecosystem services - or have penalties for disservices.

f) Current water management systems are not favourable for paludiculture and primarily still reflect the need of farming that depends on drained landscapes. Also, it is extremely difficult to sufficiently re-wet single plots surrounded by fields that continue to be drained, so paludiculture would potentially require water levels altered for an entire catchment area.

g) Uncertain financial flows. Paludiculture is currently a relatively unknown, niche market in the UK; funding is needed to establish paludiculture and markets for paludiculture products, but it will be hard to drawn down funding or investment until paludiculture activities exist which show that it is economically viable.

Paludiculture is explicitly mentioned as a sustainable land use option in several global initiatives as well as in the IUCN UK Peatland Programme's UK Peatland Strategy 2018-2040. However, the UK is yet to adopt the initiative into national policy, and there is no explicit mention of wetter farming or reference to Paludiculture in the UK Government 25-year Environment Plan.

**Solutions:**

The legal, policy and funding framework in the UK successor to the Common Agricultural Policy must be adapted to create effective incentives for a change to enable sustainable and profitable use of wetland biomass.

i. Change agriculture legislation so that paludiculture is recognised as being production of agricultural products on agricultural land - to ensure general eligibility of wetland adapted crops. This needs to be accompanied by clear policy signals from government in support of paludiculture in policy statements, associated parliamentary bills and documents.

ii. Phase out support of counter-productive subsidies for agriculture on drained peatlands, so it is no longer profitable; if that is not possible at least remove market distortions.

iii. Establish longer term (15 - 20 year) AES schemes, to convince farmers of continuity of support and provide planning security.

iv. Support for paludiculture needs to provide real incentives, increasing income and reducing financial risks for all steps of paludiculture implementation. Build rewards for ecosystem services into the post-Brexit Common Agricultural Policy. Develop results-orientated payment structures that adequately account for external costs and benefits. Make use of scoring systems, targeting approaches (e.g. carbon priority maps) and develop evidence-based, outcome orientated schemes. Paludicultures should ultimately be self-supporting but because of the important ecosystem services generated for wider benefices, it is reasonable that paludiculture projects are supported by public financing at least in the intermediate term.

v. Re-assess UK carbon-related policy; link paludiculture to other existing plans and policy targets, to secure support and funding – for example, flood management schemes.

vi. Exploration and promotion of the scope for markets in ecosystem services provided by paludiculture to encourage private investment, including through Payment for Ecosystem Services (PES) and recognised market standards, e.g. the Peatland Code.

vii. Set up a national multi-stakeholder 'paludiculture task force' to define plans and strategies at national and local levels, to coordinate action, encourage partnerships, establish a robust evidence base, monitor and report on progress. The development of a scoring system or spatial mapping would help regional policy makers/land managers/planners to make evidence-based decisions on the best locations for paludiculture production in the UK.

**2. Socio-economic barriers**

a) There is a lack of (large scale) UK pilot studies to trial and demonstrate paludiculture systems and crops. Paludiculture is currently a novel form of land management, largely unknown in the UK. Novelty alone means land managers may be unwilling to move away from profitable arable and horticultural crops, unless they have seen it done successfully.

b) Lack of uptake among farmers and land owners. Taking land out of conventional farming is a very sensitive issue, and farmers also face a lack of knowledge on alternatives. There are also cultural perceptions that wetlands are a flood risk. As such there could be a lot of resistance towards halting and then reversing land drainage.

**Solutions:**

i. Set paludiculture pilot projects and demonstration farms in the UK to:

- provide more robust estimates for different paludiculture models and crops and
- demonstrate best practise to farmers and land managers - farmers and land owners are more likely to deliver change if it's seen to be viable.

ii. There will be no 'one size fits all' solution, so pilot projects need to demonstrate a mixture of paludiculture models at various scales, crops, processing methods, machinery and infrastructure needs, potential markets, and sources of funding.

iii. Improve knowledge transfer and advice through agricultural consultation for site adapted peatland use.

iv. Initiate dialogue with land managing groups to discuss reservations against paludiculture and workable solutions; recognising that sustainable management will equate to different things in different landscapes. Communicate that Paludiculture is about diversifying agriculture activities, rather than a complete change of land management.

v. Establish a paludiculture advisory service and/or regional paludiculture facilitators – e.g. to support cooperation among farmers and with other stakeholders; for example to encourage joint action (sharing machinery for harvest and processing, joint marketing), connect sellers, processors, harvesters and buyers of

biomass; also have a knowledge base of conversion processes, different forms of biomass, and availability within the landscape, promote scheme successes.

vi. Investment in Research and Development programmes to establish the potential of different paludiculture systems and crops (based on the DPPP); support development of products, processing lines, and markets for wetland biomass (build economies of scale or create niche markets for high end products)

vii. Public engagement. In addition to farmers and representative groups, raise awareness paludiculture to potential investors or influencers - water companies, utility and renewable energy companies, NGOs, policy makers, peat companies, horticultural suppliers, end users of public benefits derived (i.e. general public), academic community, and the media.

**3. Machinery and logistics**

Manufacturing products from wetland biomass requires specially adapted procedures ranging from plant cultivation, harvest, biomass transport and storage to biomass processing and use.

a) Specialised harvesting machinery and logistics are still immature, especially in the UK (Komulainen et al., 2008)

b) It remains unclear whether current machinery is suitable for use in the large-scale implementation of paludiculture.

c) Specialised machinery that can work on wet and easily-damaged soils will require considerable investment.

d) Biomass processing is also mainly restricted to local markets due to the high costs of transporting fresh biomass with a high-water content, and not readily accepted.

e) Lack of biomass or raw material for companies wanting to use it.

**Solutions:**

i. Support research and development of harvesting technology, exploring best practise examples elsewhere. Develop and adapt existing farming equipment to cope with harvesting on wet soil

ii. Support the establishment of contractor hubs and machinery rings to pool labour, expertise and machinery. This will be of particular help s farm/land owners transition to working with 'wet agriculture'

iii. Provide incentives for the processing stage to overcome the low acceptance of practitioners and help widely established wet fermentation biogas plants adapt to use biomass of low digestibility

**Recommendations -setting a new course**

Actions required for achieving large scale paludiculture:

- **Identify** suitable (perennial) crops and develop markets for the new type of biomass.
- **Overcome** technical challenges for harvesting and processing of wet biomass.
- **Establish** pilot projects and demonstration farms to demonstrate viability and best practise.
- **Adapt** laws, rules and regulations to accommodate wet peatland agriculture.
- **Remove** market distortions, such as situations where subsidies are provided for drainage-based peatland agriculture but not for paludiculture.
- **Run** long term schemes (e.g. 15 - 20 years) to convince farmers, provide planning security and ensure continuity of climate and environmental benefits.
- **Develop** incentives, such as payments for ecosystem services, that adequately account for the social and environmental costs and benefits of paludiculture, in addition to any biomass revenues.
- **Facilitate** paludiculture implementation, at national to local through a paludiculture task force and facilitation hubs.

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