

Close to nature

**Restoration of peat bog areas with peat mosses –
Innovation for climate protection and biodiversity**



we make it grow

Peatlands & rewetting

The majority of German peatland sites are in poor condition due to human intervention. In stark contrast to their original function as carbon sinks, these areas in Germany currently release 43.8 million tonnes CO₂ equivalent (CO₂e) per year. This corresponds to 4.6% of German greenhouse gas emissions¹. In Lower Saxony, peatland areas alone account for around 11% of total emissions².

To restore damaged peat bogs to their natural state after intensive peat harvesting, typically the sites are rewetted and allowed to return to their natural habitat. This can often take decades, or in many cases doesn't happen at all.

In addition to the absence of seed potential, over half of all rewetted areas are either too dry or too wet and as a result there is little prospect of them returning to a living peat bog. Most typical bog species such as peat-forming hummock mosses and other typical vascular plants are unlikely to establish independently. These areas stay sources of greenhouse gases; in 2013 they emitted 190.000 tonnes CO₂ equivalent in Lower Saxony³.

Peat bog restoration

Restoration of damaged peat bogs can be accelerated by introducing typical raised bog vegetation such as peat-forming hummock mosses (*Sphagnum* spp.) and carefully adapted water management techniques.

This innovative process can help establish typical peat bog vegetation and achieve positive climate effects at least 30 years earlier than can be attained by using traditional rewetting methods. The resulting ecosystem services can be assessed in the form of Ecopoints (Germany) or climate certificates.

¹ Umweltbundesamt (2014). Berichterstattung unter der Klimarahmenkonvention der Vereinten Nationen und dem Kyoto-Protokoll 2014. - Nationaler Inventarbericht zum Deutschen Treibhausgasinventar 1990-2012 (National Inventory Report on the German Greenhouse Gas Inventory 1990-2012) - Climate Change 24/2014, p. 963

² Niedersächsisches Ministerium für Umwelt, Energie und Klimaschutz (2016). Programm Niedersächsische Moorlandschaften - Grundlagen, Ziele, Umsetzung (Lower Saxony Moorlands Programme - Basics, goals, implementation), p. 72

³ Höper, Heinrich (2015). Treibhausgasemissionen aus Mooren und Möglichkeiten der Verringerung (Greenhouse gas emissions from peatlands and ways to reduce them), TELMA Beiheft 5, p. 133-158

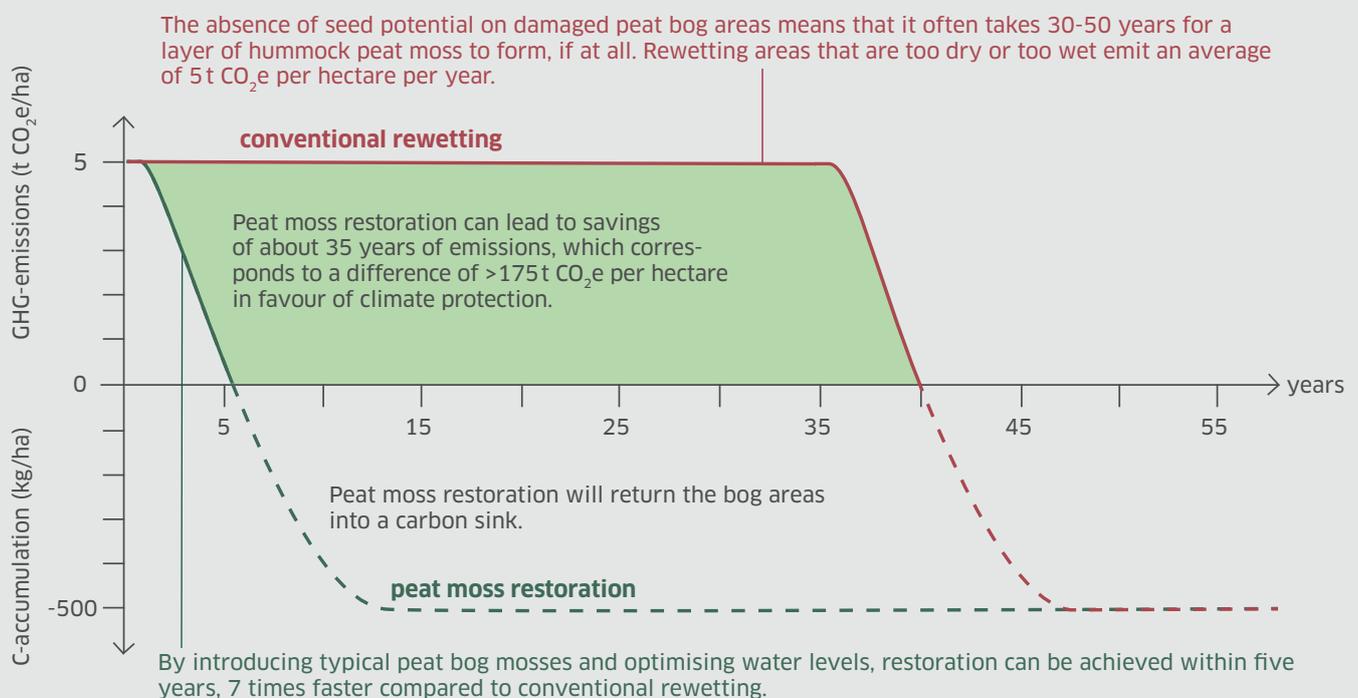


Ecosystem services

Restoring damaged bogs with peat moss encourages the settlement of typical bog flora and fauna and the accelerated re-establishment of rare and protected biotope types.

Enhancing the range of biotope types can also act as an intervention, compensation or substitution measure, generating up to 2.5 Ecopoints per square metre in Germany. This in turn corresponds to 25,000 Ecopoints per hectare, with a current value of over €5.00 per Eco-point. As a result, peat moss restoration can be regarded as a lucrative investment, while simultaneously protecting our climate.

Example of development of a rewetting area



How do we achieve restoration of natural peatland?

- Hydrological evaluation of the area and professional preparation of the site
- Ensuring optimal irrigation and maintenance of areas
- Harvesting moss from our own peat moss bank or sustainable production in a greenhouse
- Placement of peat moss fragments and accompanying vegetation where appropriate
- Coverage of various types of peat moss in a short period of time

Advantages for the climate



Preservation of the peat body, prevention of peat decomposition, and if possible, creation of a carbon sink



The establishment, within 5 years, of climate neutral peat moss areas, 35 years earlier than current techniques allow



Saving of 175 t CO₂ per hectare over at least 35 years (equivalent to the CO₂ sequestration of 1750 trees)



Lower emissions of methane and carbon dioxide greenhouse gases

Advantages for biodiversity



Creation of habitats for endangered and protected species, such as:

- Hunting grounds for amphibians (e.g. moor frog)
- Breeding areas for ground nesting birds (e.g. Northern lapwing)
- Environments for many species of insects (e.g. beetles, bugs) and spiders
- Nectar plants for butterflies (e.g. Silver-studded blue)



Immediate increase in biodiversity of natural peat bog vegetation (e.g. sundew & cotton grass)

Peat moss inoculants

Due to the rarity of peat bog habitats in Germany, one of the major problems lies in getting hold of source material for inoculation. Klasmann-Deilmann cultivates protected peat mosses in their own peat moss bank (open field site) and using peat moss grown in a greenhouse environment. This means we no longer need to access natural or semi-natural peatland areas to obtain inoculants.

Either individual species or a mixture of species can be provided, depending on the client's wishes. Regional peat moss varieties can also be propagated for specific requirements.



Advantages of moss from Klasmann-Deilmann's own peat moss bank

- Raised bog open field cultivation
- Seven peat moss species
- Sites are colonised directly with flora and fauna (up to 40 plant species, usually those typical of raised bogs, plus a variety of insect and spider species)

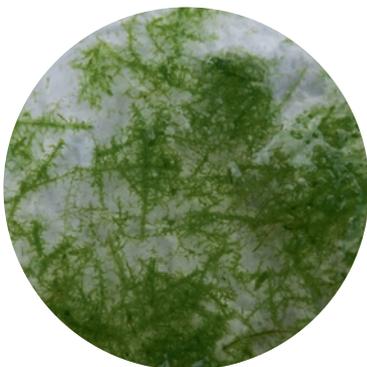
Beadahumok™ Sphagnum moss bundles*

- 20 Sphagnum (peat moss) species are currently available
 - Targeted propagation of native, local origin species
 - Pure Sphagnum moss without unwanted flora and fauna
- Plants establish quickly as they have been pre-cultivated
 - Without damage to natural peatlands



Beadagel™ Sphagnum moss fragments*

- 20 Sphagnum (peat moss) species are currently available
- Laboratory propagation of native species
- Pure Sphagnum moss without unwanted flora and fauna
- Simple area-wide spraying of BeadaGel™
- Without damage to natural peatlands



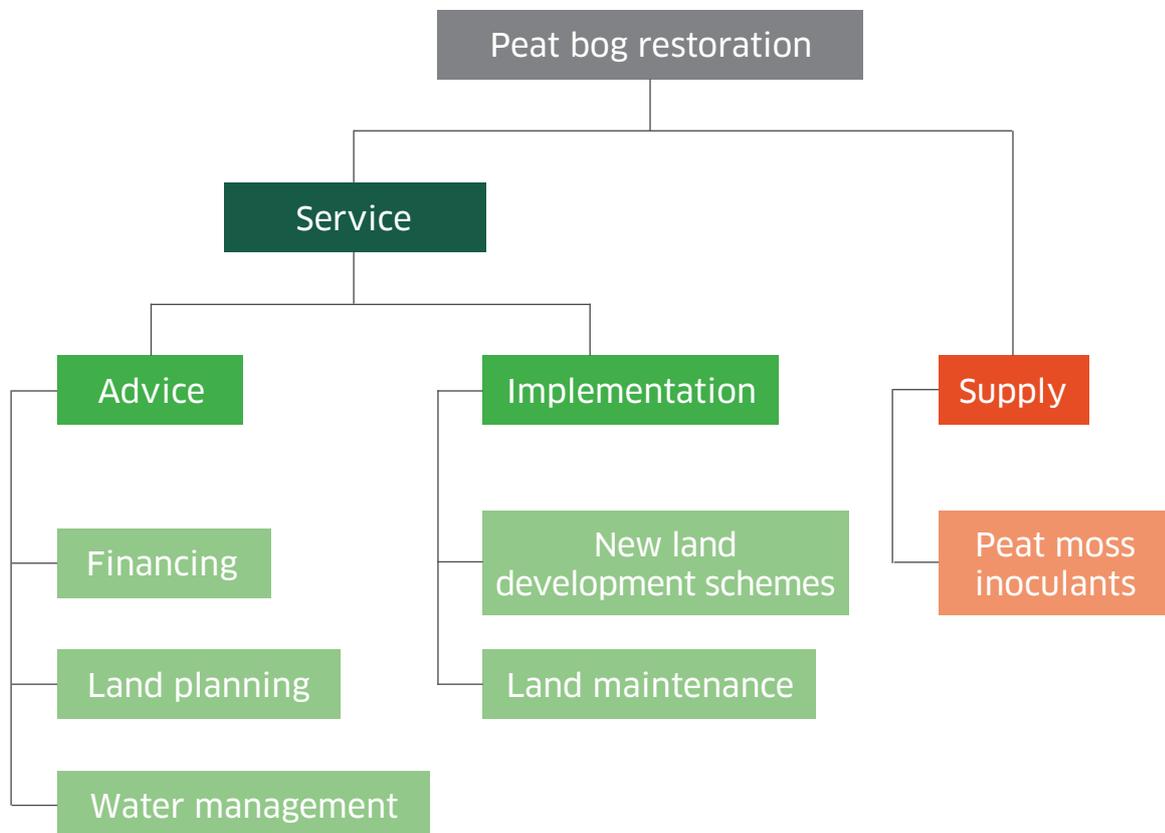
*Beadahumok™ and BeadaGel™ are registered trademarks of Micropropagation Services Ltd. Klasmann-Deilmann own the exclusive distribution rights in Germany.





Our services at a glance

- **Advice** on finance options, land planning and water management
- Complete **implementation** and maintenance of new land development schemes
- **Supply** of peat-forming hummock peat moss from a range of sources





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