

Peatlands in the Netherlands – benchmarking report

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The aim of the report

The short report aims to summarise the basics of the use of peatlands in Netherlands as well as map out the impact of the EU Restoration Law to the use of peatlands and highlight some good practices in implementing restoring the peatlands in The Netherlands. The report is compiled as a student project work in the Seinäjoki University of Applied Sciences and commissioned by the Competence Cluster of Sustainable Use of Peatlands (www.turvemaakklusteri.fi).

Background

Due to its geographical location, the Netherlands used to be almost completely peatlands, but their proportion has been declining for a long time. The change is illustrated in figures 1, 2 and 3 (1).

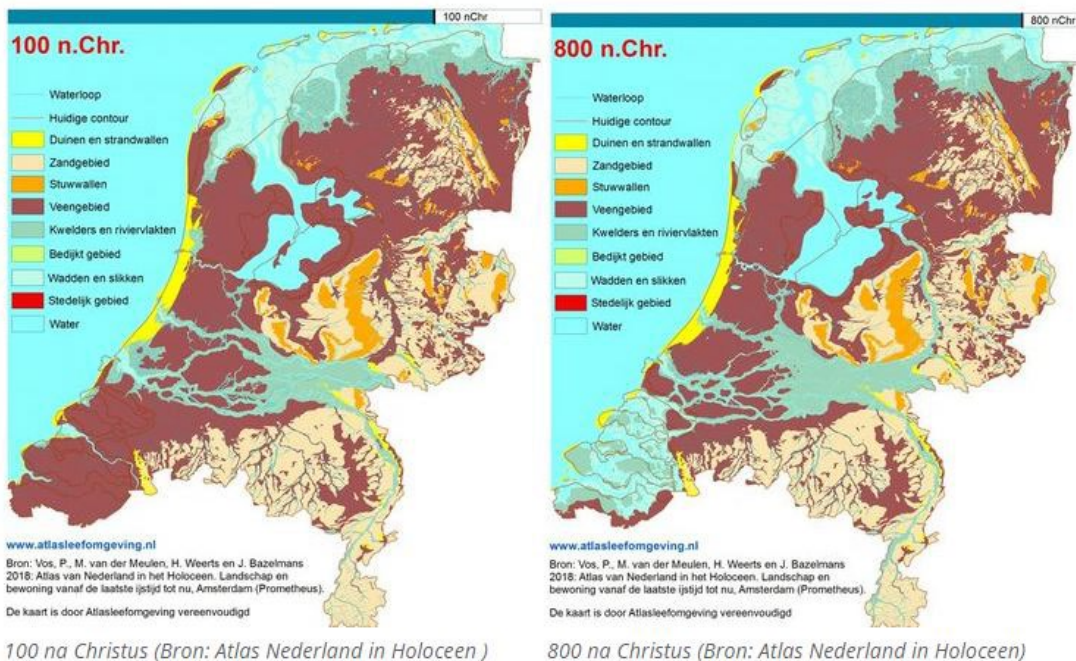


Figure 1: The Netherlands at the years 100 and 800. The dark red/brown colour indicates peatlands (Veengebied). Source: Maak een reis door 12.000 jaar landschapsgeschiedenis. (n.d.). Atlas Leefomgeving. <https://www.atlasleefomgeving.nl/nieuws/maak-reis-door-12000-jaar-landschapsgeschiedenis>

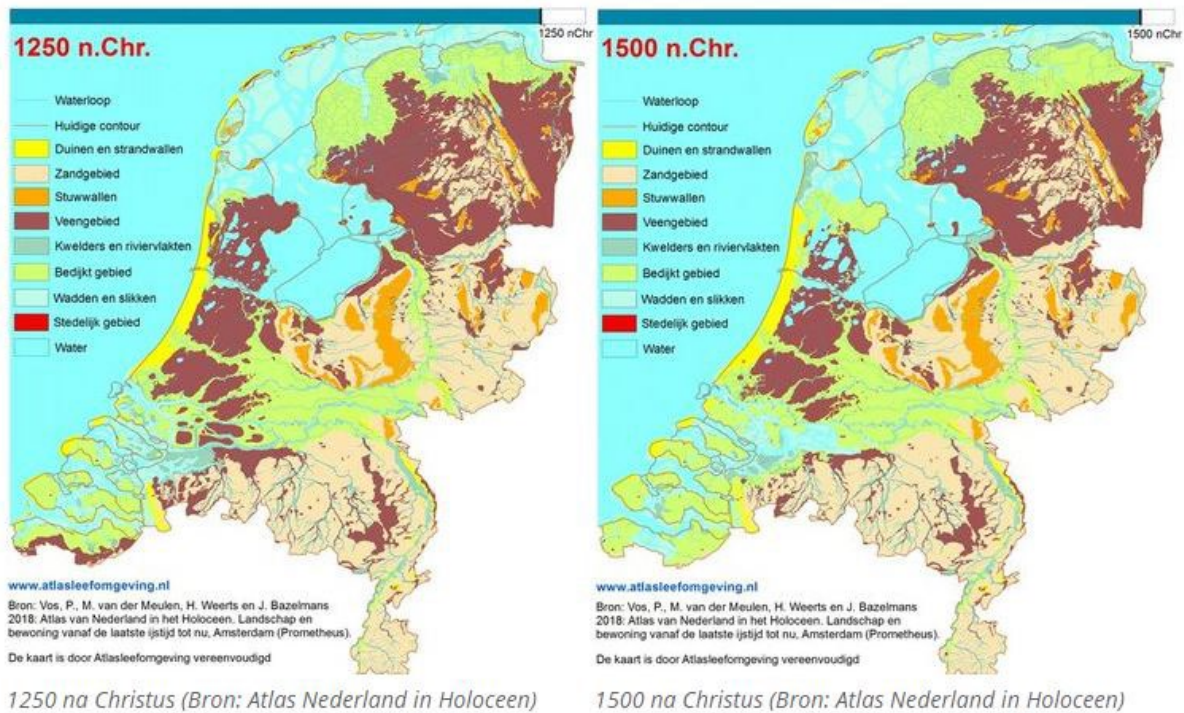


Figure 2: The Netherlands at the years 1250 and 1500. The dark red/brown colour indicates peatlands (Veengebied) Source: *Maak een reis door 12.000 jaar landschapsgeschiedenis*. (n.d.). Atlas Leefomgeving. <https://www.atlasleefomgeving.nl/nieuws/maak-reis-door-12000-jaar-landschapsgeschiedenis>

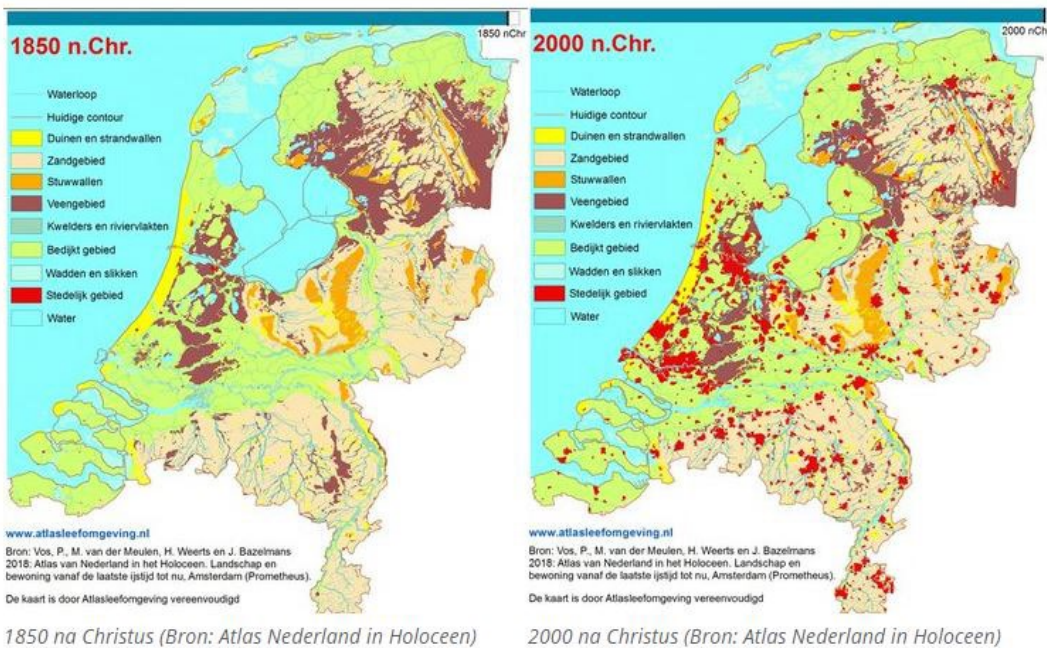


Figure 3: The Netherlands at the years 1850 and 2000. The dark red/brown colour indicates peatlands (Veengebied) Source: *Maak een reis door 12.000 jaar landschapsgeschiedenis*. (n.d.). Atlas Leefomgeving. <https://www.atlasleefomgeving.nl/nieuws/maak-reis-door-12000-jaar-landschapsgeschiedenis>

Thus, currently, only 10% of the area of The Netherlands is peatlands (273,300-290,000 hectares) ⁽²⁾. Before 1900, peat was mostly harvested and used as fuel for houses and early industry. After 1900, peat as fuel was replaced by coal ⁽²⁾. However, peatlands still continued disappearing, mostly because of peatlands were turned into farmlands by dewatering activities. Today, 77% of the remaining peatlands are drained and used for dairy pastures ⁽⁶⁾. These peatlands are owned by the private farmers. The other 23% is mostly protected, government owned peatlands (E.g. Natura 2000 -areas) or urbanized peatland ⁽⁵⁾. It has been calculated that annually, around 4,25 million tons of CO₂ emissions originate peatland ⁽²⁾, which equals about 3% of the total CO₂ emissions of The Netherlands.

Peat material is mostly being used nowadays as potting soil and in agriculture. Peat extraction has basically completely stopped in The Netherlands, and thus all the peat used is imported. The Netherlands imports around 4,7 million cubic metres of peat every year, mostly from Germany and The Baltic States ⁽²⁸⁾.

Dutch National Restoration plan (EU Restoration Law) and related requirements

As mentioned earlier, at this moment, 77% of the remaining peatlands in The Netherlands are drained and used for agriculture, mostly as dairy pastures. The current restoration requirements for the remaining peatlands according to EU restoration law, article 11 (7)) are:

- By 2030: 30% are being restored, 25% of which are rewetted
- By 2040: 40% are being restored, 33% of which are rewetted
- By 2050: 50% are being restored, 33% of which are rewetted

“Are being restored” refers here that that the restoration measures have already been started. It is important to note, though, is that these requirements can be overruled if it is evaluated that they bring national food availability in danger.

The rest of existing peatland (23%) is either protected areas owned by the state (Natura 2000 - areas) or urbanized areas. For urbanized peatlands, not concrete laws are in place at the moment. The Natura 2000 areas, on the other hands are protected by article 5 of the EU Restoration Law ⁽⁷⁾. This means that:

- By 2030: 30% are being restored
- By 2040: 60% are being restored
- By 2050: 90% are being restored

Many of these areas are, however, already rewetted and they will be counted into the goals for the following decades mentioned above.

Currently, The Netherlands is not on track to meet any of these goals mentioned above ⁽²⁹⁾. It is estimated that at this moment less than in total 10 000 hectares are actually restored. Most restoration projects at the moment are small and thus, more effort and financial investment is needed to meet the goals by 2030.

Examples of the experiments have been developed in the Netherlands to reduce climate emissions from peatlands

Different techniques have been employed to restore peatlands in The Netherlands and reduce their climate emissions. The 3 most used and researched ones are 1) rewetting, 2) subsurface infiltration and 3) paludiculture.

1) Rewetting

Rewetting is the most used way to restore peatlands, and it simply means to raise the water level in a drained peatlands area. This is mostly done by filling the drainage ditches which were previously used to drain the water from the area. However, some other methods can also be deployed, like building dams⁽⁸⁾. Rewetting prevents the emissions since the water blocks oxygen penetrating the soil and thus stops the oxidation of the peat, which, in turn, means significantly lower CO₂ emissions⁽⁹⁾. Wet conditions are also necessary for peat to regrow and increase the carbon storage of the peatlands⁽¹⁰⁾.

A recent example of rewetting in The Netherlands is the rewetting of *Fochteloërveen* area (<https://rewilding.academy/ecosystem-restoration/the-fochteloerveen-a-tale-of-peatland-restoration/>). This is the biggest rewetting project in The Netherlands to date. In it with multiple organisations worked together to build measures to rise and keep the water inside of the rewetting area⁽¹³⁾. Fochteloërveen area contains about 1500 hectares of drained peatlands, all of which could theoretically be restored by the rewetting⁽¹²⁾. Another successful example is the rewetting of Weerribben Wieden National Park. In this national park, about 100 hectares of peat was rewetted⁽¹¹⁾. This was done by actors called REWET in collaboration with WENR (more about them in the next chapter).

2) Subsurface infiltration

Subsurface infiltration is very similar to rewetting, with the only difference being that the water is infiltrated to the lower layers of the soils and the surface remains dry. This is done by using channels and/or pipes. This technique is very intensive and might be necessary for peatlands that are in a very bad (dry) condition. The benefits of rewetting in this way are the same as normal rewetting concerning the reduction of CO₂ emissions and the regrowing of peat⁽¹⁵⁾. So far, subsurface infiltration has mostly been done in The Netherlands at small experimental places, like Assendelft, Zegveld, Aldeboarn and Vlist⁽¹⁴⁾. Although this setup has proved successful, it would also be intensive and expensive to be implemented at large scale.

3) Paludiculture

Paludiculture, or “wet agriculture” is also one form to rewet peatlands. At the same time the land area can, however, also be used for agricultural purposes. This approach can offer a middle ground for farmers and nature conservation parties, as the land is rewetted and CO₂ emissions reduced, but farmers can still generate some income out of it⁽¹⁶⁾. But on the other hand, because of the crops, the peatland will not return to its “natural” state and biodiversity. Indeed, it seems that rewetting doesn’t always return peatlands to their original form in terms of biodiversity⁽¹⁷⁾.

Research has shown that there are some options for crops that could grow on rewetted peatlands in The Netherlands. For example, Cattail (*Typha latifolia* / *Typha angustifolia*) grows well and can be used as biomass, isolation material and animal feed⁽¹⁸⁾⁽¹⁹⁾. Reed (*Phragmites australis* / *Phalaris arundinacea*) is another good option and is mainly used as biomass⁽²⁰⁾. Other options include barnyard grass (*Echinochloa crus-galli*), rice (*Oryza sativa*), water cress (*Nasturtium officinale*), European blueberry (*Vaccinium myrtillus*), water spinach (*Ipomoea aquatica*), and cranberry (*Vaccinium macrocarpon*)⁽¹⁸⁾. It is also predicted that some East Asian crops will benefit from climate change and might be candidates for paludiculture in future, if the temperature keeps rising⁽¹⁸⁾.

At the moment, the farmers cannot be obligated to rewet/restore the peatlands they own. Since 77% of the remaining peatlands in The Netherlands are owned by private farmers, it's very important to be able to provide them incentive to do so in order to meet the goals from the EU restoration plan. For this reason, the CSV (Compensation Systematic Peatlands) was created ⁽²¹⁾. CSV systematically calculates the financial loss for a farmer when they rewet their peatlands and offers compensation in the form of money or land property exchange. Farmers can then make an agreement for a set period of time, often 6 years. After the agreement ends, a long term contract can be set up ⁽²²⁾.

Additionally, the farmer can earn carbon credits by either removing CO₂ from the atmosphere or avoiding emitting it. One tonne of CO₂ removed or avoided emitting equals one carbon credit, and those can be sold to generate income, the customers being other companies, who aim to meet their own CO₂ requirements. Peatlands have a lot of potential to generate carbon credits, so this is presented as another incentive for farmers to rewet their peatlands ⁽²³⁾. Selling carbon credits, in combination with a long term contract with the government following the CSV, can make rewetting their peatland a financially viable option for farmers. There is, however, uncertainties on the actual benefits for farmers, mostly because there is not yet data available on the established ventures. Early experiments and estimates show promising though ⁽²⁴⁾ ⁽²⁵⁾. Another issue to bear in mind is that the price of carbon credits can fluctuate. For example, from 2021 to 2022 the prices of carbon credits increased by 82%, but they sank almost completely back to the 2021 level a year later ⁽²⁶⁾. A recent market report predicts that the price of carbon credits will grow by ~32% from 2024 to 2034 ⁽²⁷⁾. If all these options realise, they combined can make rewetting peatlands a viable option for farmers. It is, however, but definitely not a guaranteed way to make profit or even break-even with the costs at the moment.

INFOBOX

A recent research has shown the potential of clay as a way to reduce CO₂ emissions from peat. By laying a small layer (1-2 cm) of clay on top of the peat, the CO₂ emissions could be lowered even by up to 46%. There was variation in the results though depending on the different clay and peat types. Also the result is based on a laboratory test. Even though more research is needed to draw general conclusions, this research shows the potential in this technique. Read more: Klei in veen als maatregel tegen veenafbraak. (2023) Louis Bolk Instituut. <https://www.veenweidefryslan.frl/uploads/Kennisbank/Rapport%20klei%20in%20veen%20Fr%20iesland%2020230301.pdf>

The key actors in sustainable use of peatlands in The Netherlands

The 5 most important organizations in terms of research focusing on peatlands in The Netherlands (based on this study) are listed below in table 1. They are sorted based on their importance from most important (top) to least important (bottom).

Table 1. The key actors related to peatland research in The Netherlands (based on this study).

Organization	Description	Website
WENR	WENR stands for Wageningen Environmental Research. It is part of the WUR (Wageningen University and Research), and it focusses on innovation related to nature and environment.	https://www.wur.nl/en/about-wur/our-research/wageningen-environmental-research

Peat Pals for Life	Peat Pals for Life is a more practically oriented organisation, working to restore and protect peatlands. They often work together with the WUR.	https://peatpals.eu/en
REWET	Rewet is an European organisation that is also very active in The Netherlands. Their goal is to minimise emissions and maximise carbon uptake of wetlands.	https://www.rewet-he.eu/
IPS	IPS is a global organisation that focusses on all aspects of peatlands	https://peatlands.org/
Other universities	Other Dutch universities, like Radboud and HAS also do research on peatlands, but not as much as WENR. They do often work together with WENR on this topic.	https://www.ru.nl/en https://www.has.nl/en/

Public opinion and media discussion regarding the peatland in The Netherlands?

As a part of benchmarking report a light media analysis was made regarding the current public discussion related to the peatlands. The aim was to find out, whether the discussion was heated, focusing on more negative aspects or is there a positive atmosphere on the new potential the peatland present. The analysis is by no means a systematic one, but aims to summarise and illustrate the main topics of the current media discussion.

Media discussion in The Netherlands regarding peatlands, at the moment, focus mostly on the problems the peatlands cause. The main topics are CO₂ emissions, concerns about loss of nature and biodiversity as well as political conflicts between farmers and politics. For example:

- Recent news about CO₂ emissions focus on the fact that CO₂ emissions from peatlands might be up to twice as high as we thought they were. (<https://www.nieuweoogst.nl/nieuws/2025/12/04/veengebieden-stoten-bijna-dubbel-zoveel-broeikasgas-uit-als-gedacht>)
- Many people care about nature and want to see it restored, but if this happens, the farmers will lose their livelihoods. This creates a big disconnection and conflict potential between farmers, general public and politics. (<https://www.nu.nl/economie/6372467/meer-dan-100000-hectare-boerengrond-moet-natuur-worden-om-doelen-te-halen.html>, <https://www.nu.nl/binnenland/6345659/als-boerenland-aan-de-natuur-wordt-gegeven-stuit-dat-op-groot-verzet.html>)

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Note: the numbered citations is used as many of the sources are Dutch websites, so the normal citation method would greatly reduce readability for non-Dutch readers.

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