WWF

Conservatoires d'espaces naturels



# CULTIVATING A PEAT-FREE FUTURE: current assessment and perspectives in France and Europe

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WWF is an independent nature conservation organization. It has more than 38 million supporters and an active network of national foundations and associations in more than 100 countries. Its mission is to stop the degradation of the planet's natural environment and to build a future where humans live in harmony with nature, by conserving global biological diversity, ensuring the sustainable use of renewable natural resources and encouraging the reduction of pollution and waste.

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Véronique Andrieux is the Chief Executive Officer of WWF France.

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The French Mire Center is a program led by the Federation since 2002. Its mission is to encourage the conservation and sustainable management of peatlands in France. To achieve this, the Hub works to raise awareness among local and national stakeholders regarding the importance of this type of ecosystem, promote scientific and technical knowledge about peatlands and support restoration and preservation projects for these fragile environments.

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*Aerial view of a peat extraction site*

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# EDITORIAL - PEATLANDS: A LITTLE-KNOWN HERITAGE, A PRIORITY FOR THE FUTURE





***By Véronique Andrieux, Chief Executive Officer of WWF France, and Christophe Lepine, President of Federation of Conservancies of Natural Areas***

Though unassuming and often overlooked, peatlands are actually among the most precious ecosystems in our natural heritage. Because they form over millennia through the slow accumulation of organic matter in waterlogged environments, they serve as archives of past climates and landscapes. In fact, some French peatlands date back nearly 12,000 years.

For a long time, an unflattering reputation overshadowed these environments. Dismissed as unhealthy, mosquito-ridden swamplands or unproductive grounds, they were frequently perceived as frontiers to be conquered, drained, or exploited. This narrow vision, however, masks their core role for our societies.

Peatlands are vital allies in confronting environmental crises: they regulate the water cycle, shelter remarkable biodiversity, and store considerable amounts of carbon. Because these wetlands stay permanently waterlogged, the organic matter accumulated over centuries successfully locks away captured atmospheric carbon for the long term.

Today, however, this delicate balance is weakened. Globally, peatlands are disappearing 10 times faster than they form, with 500,000 hectares still destroyed every year1 by drainage, land conversion, and peat extraction. Once these environments are degraded, their vast carbon reserves progressively leak back into the atmosphere, contributing to accelerated climate change.

Given this reality, the takeaway is clear: preserving remaining intact peatlands and restoring those that have been degraded is an absolute necessity for our climate, biodiversity, and sustainable water management.

This report focuses specifically on one of the historical causes of degradation in these environments: the extraction of peat. While direct peat extraction recently ceased within French borders, what is less widely known is that our footprint extends far beyond them. French consumption still weighs heavily on the degradation of peatlands across Europe because imported peat remains heavily into potting soils and growing media for hobby gardeners, professional horticulture and nurseries.

Our goal with this document is to clarify the challenges surrounding peat extraction, analyze our market dependencies, and chart viable phase-out pathways. By doing so, we aim to enable all stakeholders involved to play their part in preserving these exceptional ecosystems.

**PEATLANDS ARE VANISHING 10 TIMES FASTER THAN THEY FORM, WITH 500,000 HECTARES STILL DESTROYED EVERY YEAR**

1. *Heinrich-Böll-Stiftung et al. (2023)*



# SUMMARY


The extraction and consumption of imported peat pull us a little further away from our climate and environmental goals every day. Formed over several millennia, this non-renewable resource is destroyed in just a few years, initially to be used as fuel, and today primarily for the manufacture of horticultural growing media.

Horticulture accounts for more than two-thirds of the peat volumes extracted worldwide, and **Europe[2] alone concentrates nearly 80% of this extraction.** The extraction of horticultural peat in the European Union is responsible for approximately **10 million metric tons of $CO_2$-eq per year.** By way of illustration, a 60-liter bag of potting soil containing 80% peat generates more than 10 kg of $CO_2$-eq, or the equivalent of a trip of nearly 100 km in a thermal car.

France remains a heavy consumer and dependent on this imported resource, notably through **the consumer market, which alone accounts for nearly half of the peat volumes consumed in horticultural growing media (e.g., potting soil for gardens).** Yet, this dependence can no longer be explained by a lack of solutions. Alternatives to peat already exist and are being used successfully in many contexts. While certain professional sectors still require technical adaptations or longer transition periods, case studies from across Europe demonstrate that reducing peat use is both realistic and economically viable.

**10 KG**

**of $CO_2$-eq are generated per 60-liter bag of potting soil containing 80% peat, or the equivalent of a trip of nearly 100 km in a conventional car**

France also possesses significant assets to succeed in this transition. Alternative resources derived notably from the wood industry, composting, and the circular economy could cover a significant portion of future needs and help structure new value-creating industries within the territory. Several European countries, such as Germany, the United Kingdom, Switzerland, or the Netherlands, have already launched strategies to reduce their dependence on peat, showing that proactive public action can accelerate the transition.

The phase-out of peat is therefore an environmental necessity and an economic opportunity that must be better known by the general public. To achieve this, this report formulates four priority recommendations:

1. **Commit France to a progressive peat phase-out trajectory:** 2030 for private individuals, 2035 for local authorities and landscapers, 2040 for professionals;
2. **Bring professional stakeholders together and remove obstacles to the transition;**
3. **Structure the supply chains for peat alternatives;**
4. **Carry a coherent European ambition to reduce the extraction and use of peat.**

The question is no longer whether the transition to peat-free growing media is possible, but how quickly it can be organized. **The end of dependency on peat thus appears as an environmental necessity and a political choice for the future.**


2. *Including Iceland and all countries on the European continent up to the Black Sea, including Russia, excluding Turkey. In this report, figures relating to "Europe" without further specification correspond to this geographical definition.*

# 01 PEAT EXTRACTION: A THREAT TO PEATLANDS AND THEIR CRITICAL FUNCTIONS

## 1.1 UNDERSTANDING PEATLANDS AND PEAT FORMATION

### 1.1.1 PEAT, A RESOURCE DERIVED FROM PEATLANDS

Peat corresponds to the accumulation of partially decomposed organic matter. Its formation is made possible by the so-called "anoxic"[3] conditions of the environment, which limit the activity of the microorganisms that decompose organic matter. The main characteristic of peat is its high organic matter content (greater than 30%).

**Key takeaways**

- On a global scale, peatlands store twice as much carbon as all the world's forest biomass combined, despite their small surface area.
- Extraction transforms carbon sinks into emission sources: a resource formed over millennia is destroyed in a few decades to the detriment of the climate and biodiversity.

Its formation rate is relatively slow, between 0.5 and 1.5 mm[4] per year. In the Northern Hemisphere, the establishment of peatlands began at the start of the Holocene[5]; they have often been able to accumulate several meters of peat. While the median value for peat thickness seems to be around 1.3 meters[6], the depth of peatlands is highly variable and can reach several dozen meters. Peat deposits can also be found in sedimentary records up to several hundred meters, as is the case in Greece for the Philippi peatland[7].

Peatlands are natural environments whose soil is composed of peat. They form complexes of highly variable sizes, ranging from a few square meters up to 167,000 square kilometers for the largest peatland in the world, identified in 2017 in the Congo Basin[8] (equivalent to a third of metropolitan France).

Peatlands are present in almost every country on the globe, from boreal lands to the tropics, with a heavy presence in both latitudes. They cover about 3% of the world's land surface[9].



***Sphagnum peat***

3. *Total or near-total absence of available oxygen in the environment*
4. *Swindles et al. (2025), Baize and Girard (2009)*
5. *Liu et al. (2025)*
6. *Skye et al. (2025)*
7. *https://europe.wetlands.org/wp-content/uploads/sites/6/2025/07/Greece.pdf*
8. *https://www.unep.org/news-and-stories/story/critical-ecosystems-congo-basin-peatlands*
9. *https://www.unep.org/fr/actualites-et-recits/recit/sept-choses-savoir-sur-les-tourbieres*



In France, the distribution of peatlands remained poorly understood until recently: the last national inventory dated back to 1949, with an update by the Service of Observation and Statistics in 2012, whose work was coordinated by the French Mire Center of the Federation of Conservancies of Natural Areas (FCEN). To fill this gap, the Marie and Louis Pasteur University has been conducting a vast data collection and analysis project[10] since 2022, with the scientific support of the Federation of Natural Area Conservancies (FCEN) and financial backing from WWF France to develop it into an Atlas.

The 2025 national inventory of peatlands provides unprecedented knowledge about these spaces, serving as a shared scientific baseline to guide protection and restoration actions. More than 150,000 hectares of peatlands are thus mapped, comprising approximately 60% lowland peatlands and 40% mid- and high-mountain peatlands.

**OVER 150,000**
**hectares of peatlands are mapped**

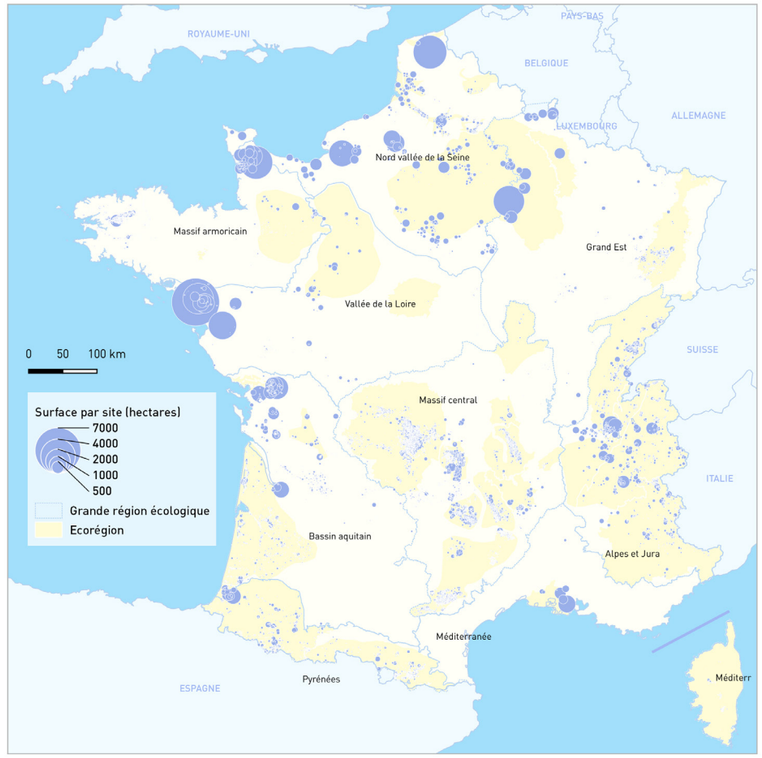
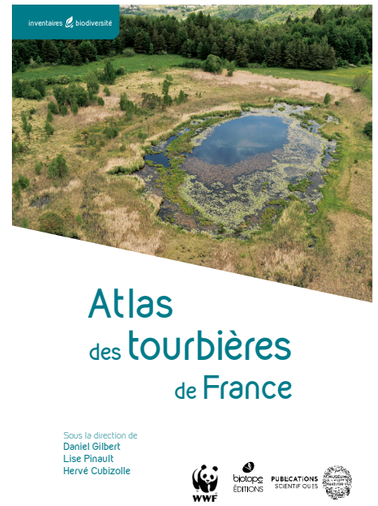



Figure 1: Mapping of Peatlands in France, Pinault, 2025




***Atlas of French Peatlands, Gilbert, Pinault, Cubizolle, 2026***

### 1.1.2 ECOSYSTEMS WITH IRREPLACEABLE FUNCTIONS

**Climate: exceptional carbon stores**

Peatlands are the terrestrial ecosystems that store the most carbon in soils, and do so most durably. Thanks to the slow accumulation of organic matter in a water-saturated environment, they have trapped atmospheric carbon for millennia.

Most of the peat currently present in peatlands formed over the last 10,000 years. This is referred to as a "subfossil" carbon stock, preserved over the very long term and capable, if conditions permit, of leading to the formation of lignite or coal over geological timescales. By durably sequestering $CO_2$ removed from the atmosphere, peatlands have played a central role as carbon sinks over these millennia[11]. **Peatlands are thus one of the few ecosystems capable of permanently removing carbon dioxide from the atmosphere, acting as the highly sought-after carbon sinks in the fight against climate change.**

10. *Pinault (2025)*
11. *Liu et al. (2025)*

**Nearly 2 TIMES MORE** carbon stored in peatlands than in forests

On a global scale, peatlands store nearly twice as much carbon as all the world's forest biomass combined[12]. However, if the water level drops (e.g., through pumping or drainage), peatlands become sources of greenhouse gas emissions. This is mainly linked to agricultural and forestry drainage, but also to peat extraction (*see section 1.3*). **Within the EU, peatlands span 35 million hectares, and their degradation emits 220 million metric tons of $CO_2$-eq per year, representing 7% of European greenhouse gas emissions [13].**

For example, in France and based on current knowledge, it is estimated that peatlands subject to unsuitable agricultural or forestry use emit approximately 1.2 million metric tons of $CO_2$-eq each year [14]. These wetlands have an emission potential of 690 million metric tons of $CO_2$-eq, even though they cover only 0.3% of the territory. If these stocks were to be released into the atmosphere through the complete disappearance of all peatlands [15], it would represent nearly two years of emissions for the entirety of France.

### Water: peat is at the heart of the hydrological cycle

Water is essential for the existence of peatlands. Without water-saturated soils, peat can neither form nor persist.

**THE PEATLANDS OF FRANCE: A NATURAL STOCK OF 1.5 BILLION CUBIC METERS OF FRESH WATER**

In return, peatlands provide numerous services. Like other wetlands, they help improve water quality, slow down runoff, and limit certain flood risks[16]. They can also retain considerable amounts of water in the landscape and release it progressively, providing a buffering effect during droughts for surrounding and downstream environments. These properties make peatlands essential allies for regional resilience against future climate changes. However, their role varies according to their state of conservation and their position in the watershed.

**In France, a volume of 1.5 billion cubic meters of fresh and often high-quality water is stored thanks to peatlands across the country[17]**

**IT IS FAR MORE THAN A QUESTION OF SURFACE AREA**
Surface area and stored carbon worldwide, by ecosystem

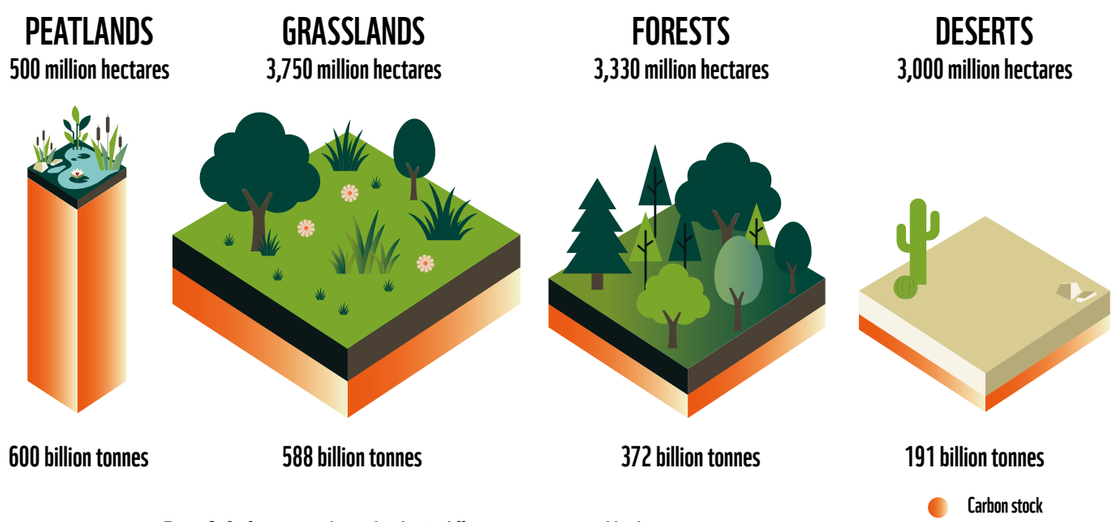



Figure 2: Surface area and stored carbon in different ecosystems worldwide.
Data source: Peatland Atlas (Heinrich-Böll-Stiftung et al., 2023)

12. *Heinrich-Böll-Stiftung et al. (2023)*
13. *Heinrich-Böll-Stiftung et al. (2023)*
14. *Pinault (2025)*
15. *Lise Pinault, personal communication, 2025*
16. *https://www.manchester.ac.uk/about/news/restoring-eroded-peatlands-reduces-flood-risk-for-communities-downstream/*
17. *Daniel Gilbert, Lise Pinault, op-ed "Restaurer les tourbières, c'est participer à moindre coût à atténuer le changement climatique" (Restoring peatlands means contributing to climate change mitigation at a lower cost) published in Le Monde, October 17, 2024*



### Biodiversity: havens for remarkable species

Peatlands are among the most important wetlands for biodiversity[18]. They harbor highly specialized fauna and flora adapted to specific living conditions rarely found elsewhere. They thus actively participate in preserving freshwater animal and plant species, which are currently the most threatened on the planet[19]. They also play a unique role in maintaining genetic biodiversity due to their isolation and habitat heterogeneity[20].




***Cordulia aenea***

### Heritage and culture: real libraries of the past

Peatlands are not just reservoirs of carbon or biodiversity; they also constitute precious natural archives. Due to the low decomposition of organic matter, they preserve pollen, plant remains, and other traces of the past for thousands of years.

Studying these elements makes it possible to reconstruct the evolution of climates, landscapes, and human activities. In western France, analyzing the pollen and spores present in several peatlands has traced over 10,000 years of environmental history, notably the transformations linked to the development of agriculture[21].

These environments also occupy an important place in the collective imagination. Long associated with legends and folk beliefs, they are recognized today for their scenic, cultural, and tourism value. Sites like the Yeun-Elez in Brittany illustrate this rich heritage, which contributes to the identity of many regions[22].

18. *Bonn et al. (2016)*
19. *WWF (2024)*
20. *Parish et al. (2008)*
21. *Barbier (1999)*
22. *This marsh is thus said to shelter the "Youdig", one of the gateways to hell. This is often linked to will-o'-the-wisps and unstable, hard-to-access marshes that favored these legends. See Espace des sciences: Landes et tourbières, le pays des légendes (Moors and peatlands, the land of legends) No. 408 - Published March 29, 2023*

# 1.2 HOW PEAT BECAME AN EXPLOITED RESOURCE

## 1.2.1 PEAT USES AND EXTRACTION

The peat present in peatland soil has been exploited as a resource for several centuries, particularly in Europe. First used as a fuel[23], it has also had a variety of uses—some of which continue today but in limited quantities—such as textiles, construction, filter manufacturing, livestock bedding, whisky smoking, or even balneotherapy.

However, it is its use in horticulture[24] that experienced the most significant boom starting in the second half of the 20th century, and today it constitutes by far the main market for peat in France. It is predominantly used as a constituent of soilless growing media or "potting soils,"[25] for example in pots containers, or plugs (*see section 2.1*). A small portion of its use also occurs directly in the ground or as an organic amendment.

Initially a manual, artisanal craft, peat extraction progressively industrialized during the 20th century. This activity required the drainage of peatlands, leading to a profound modification of their functioning: vegetation is destroyed, the water level is lowered, and the peat is extracted progressively, either by mechanical shovel, by milling followed by vacuum collection (milled peat), or in the form of blocks (sod peat). Once extracted, the peat is dried, processed to achieve the desired particle size, and blended with other components to create a growing medium tailored for both professional growers and home gardeners.

Several types of peat are used in horticulture. A main distinction is made between sphagnum peats (white or black depending on their state of decomposition), which are highly sought after for their agronomic properties, and Carex peat. All share the common characteristic of originating from an extremely slow natural process (as a reminder, peat accumulates between 0.5 and 1.5 mm per year in a functioning peatland). Because extraction involves removing one to several meters of peat depth over a few decades, peat is a non-renewable resource.




***A conserved mire: Lispach peatland (Vosges département)***




***A peatland used for peat extraction (Germany)***

23. *A fuel relies primarily on materials rich in carbon and hydrogen, that is to say, hydrocarbons or organic compounds like oil, coal, or peat.*
24. *The terms "horticulture" and "horticultural peat" are used here in a broad sense and cover uses in vegetable production, ornamental production, nurseries, mushroom farms, the landscaping sector, as well as amateur gardening.*
25. *Potting soil is a mixture of organic and mineral matter used as a growing medium to nourish, aerate, and promote the rooting of plants.*



## 1.2.2 THE HISTORY OF PEAT EXTRACTION IN FRANCE

Peat extraction has historically constituted one of the primary factors in the degradation of French peatlands, affecting all regions of the territory, from mountain peatlands to large lowland peatland complexes. Chiefly oriented toward the exploitation of brown to black Carex peats[26], it took various forms depending on local contexts.

Production thus coexisted in artisanal forms, at the family or communal scale[27], alongside industrial operations. Unlike Nordic and Baltic countries, where operations often cover vast surface areas, extraction in France was mainly characterized by small sites, generally under 50 hectares. The methods employed varied according to hydrological conditions and site accessibility[28], with a predominance of dry extraction requiring the drainage of the peatlands[29].

Documented since the Middle Ages in several French regions[30], peat extraction expanded sharply during the 19th century under the pressure of growing demand for fuel. In a context locally marked by wood scarcity, peat became an important energy resource[31], allowing national production to reach its peak in the mid-19th century. Peat production, primarily for fuel use, thus increased in the 19th century to reach a peak in 1845 with more than 600 kilotons of extracted peat[32] (*see Appendix 1*). The figures are probably underestimated because peatlands were not clearly defined at the time, and this ambiguity combined with the fact that not all exploited peatlands were inventoried[33].

Starting in the second half of the 19th century, the boom of coal and then other energy sources led to a progressive decline in production. Periods of high peat consumption resumed, however, during both World Wars due to difficulties in obtaining fuel supplies[34]. This strategic importance of peat in times of crisis notably explains the execution, between 1941 and 1945, of a national inventory of exploitable peatlands, which led to the publication of the first Atlas of French Peatlands in 1949[35].

**THE USE OF HORTICULTURAL PEAT IN FRANCE SKYROCKETS AFTER THE SECOND WORLD WAR**

After World War II, the energy use of peat progressively gave way to horticultural and agricultural uses. The expansion of soilless cultivation, commercial horticulture, vegetable production, and growing media production has driven a sharp increase in demand.[36]. In the 1970s, the peat market also diversified with the growth of the consumer market, which then represented about 15% of the volume consumed[37]. This period was marked by a sharp expansion in national production, which increased almost continuously between 1960 and 1981. The thresholds of 50,000 tons and 100,000 tons of annually extracted peat were crossed in 1966 and 1971, respectively, while production stabilized around 150,000 tons per year between 1973 and 1979.

In total, French production grew. Simultaneously, imports increased sharply, rising from 19,000 tons in 1965 to 151,000 tons in 1980, primarily originating from the Netherlands, Germany, and Poland[38] (*see section 2.3*).

26. *Barthélémy (1999)*
27. *Bégeot and Richard (1996), Cubizolle (2019), Neau (1976)*
28. *Cubizolle (2019)*
29. *Barthélémy and Hervio (2000)*
30. *Beauchamp et al. (2025), Cloquier (2006)*
31. *Porteret et Sacca (2020)*
32. *Eulry (1983), Sacca (2009)*
33. *Cubizolle (2019)*
34. *Eulry (1983), Sacca (2009)*
35. *Ministry of Industry and Commerce et al. (2021)*
36. *Bégeot and Richard (1996), Cubizolle (2019), Neau (1976)*
37. *Platel (1982)*
38. *Eulry (1983), Neau (1976)*

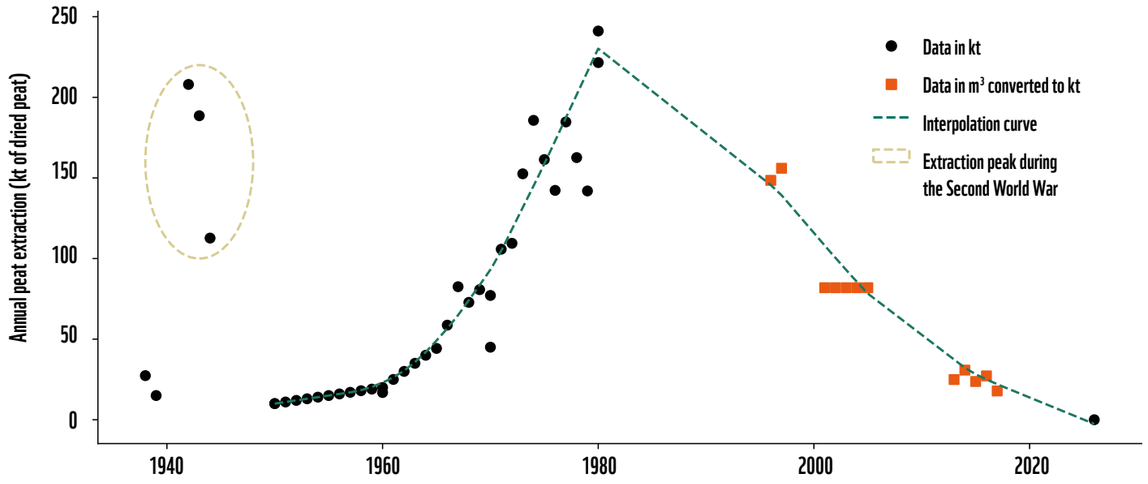



**Figure 3: Peat extraction in France from 1938 to 2026**
**(Altmann, 2008; Barthélémy, 1999; BRGM, 1998; Eulry, 1983; Hirschler and Osterburg, 2022; Platel, 1982)**
**A bulk density value of 0.3 metric tons per cubic meter was used to convert the data from cubic meters to tons (Hirschler and Osterburg, 2022)**

Starting in the 1980s, national production experienced a continuous decrease with the progressive closure of extraction sites. The main reasons for this cessation were economic, linked to the rise of a higher quality and more competitive supply from abroad, but also to the emergence of conservation policies for wetlands and peatlands[39].

Today, peat extraction for horticultural and fuel purposes has definitively ceased in France since the closure of the last extraction site in Baupte (Manche) in 2026. Yet, France continues to consume considerable volumes of imported peat, thereby exporting the environmental problems associated with its extraction (*see section 2.3.1*).

# 1.3 PEAT EXTRACTION DESTROYS THE ECOLOGICAL FUNCTIONS OF PEATLANDS

## 1.3.1 SUBSTANTIAL GREENHOUSE GAS EMISSIONS

The extraction and use of peat cause major impacts on the climate and ecosystems. While the peat contained within the water-saturated soil of a peatland durably stores large quantities of carbon, this carbon is released back into the atmosphere as $CO_2$ via microbial activity when it comes into contact with air after extraction. This process happens even faster when fertilization is added, as is the case during horticultural use. Consequently, using a peat-containing potting soil in a garden allows it to decompose in the open air, emitting $CO_2$ into the atmosphere. This release is instantaneous when peat is burned for energy use. Thus, the primary source of emissions associated with peat lies within the material itself. Because extraction removes the bulk of the organic matter stock accumulated over centuries or even millennia in just a few years, it represents—relative to its surface area—one of the most destructive forms of peatland exploitation for the climate and the environment in general.

In the greenhouse gas (GHG) emissions inventories reported by countries members of the United Nations Framework Convention on Climate Change (UNFCCC), emissions from horticultural peat are classified under the "Wetlands" category of the "Land Use, Land-Use Change, and Forestry" sector (LULUCF). This category also includes emissions linked to extraction sites. Emissions linked to peat combustion, on the other hand, are classified under the "Energy" category.

39. *For example: 1986 Ratification of the Ramsar Convention by France; 1995-2000 1st national plan for wetlands; LIFE Tourbières de France 1995-1998; 2001 Creation of the Wetland Coordination Hubs…*



**In total, emissions from the "Wetlands" and "Energy" categories represent approximately 10 million metric tons of $CO_2$-eq and 5 million metric tons of $CO_2$-eq per year, respectively, for the European Union over the 2021–2023 period.**

**15 MILLION METRIC TONS OF $CO_2$-EQ PER YEAR ASSOCIATED WITH PEAT IN THE EUROPEAN UNION**

The climate footprint of peat also includes emissions associated with its extraction, processing, and transport. According to the life cycle assessment (LCA) by Stichnothe (2022)[40], using one cubic meter of peat generates a total of 183 kg $CO_2$-eq for white peat and 257 kg $CO_2$-eq for black peat, which equates to roughly one kilogram of $CO_2$ per kilogram of peat for each type. According to these figures, **a 60-liter bag of potting soil containing 80% peat emits more than 10 kg $CO_2$-eq[41], or the equivalent of a trip of nearly 100 kilometers in a gas car[42].**

Emissions associated with peat extraction are attributed to the producing country. France, which no longer extracts peat, therefore does not record these emissions in its national inventory. Yet, it continues to import significant volumes, notably from the Baltic countries (*see section 2.3*). The emissions associated with this consumption are thus accounted for in the exporting countries. **In Latvia and Estonia, for example, peat extraction represents nearly 10% of total national GHG emissions[43].**

This issue is of particular importance within the context of European climate targets. The European Union has committed to making the LULUCF sector a net sink of 310 million metric tons of $CO_2$ by 2030. However, the degradation of European forests and peatlands currently jeopardizes the achievement of this target. Projections indicate a deficit of 77 to 127 million metric tons of $CO_2$-eq compared to the set goal[44]. In this context, **reducing peat extraction, which is responsible for about 10 million metric tons of $CO_2$-eq per year in the EU, appears to be a concrete and immediately available lever to help close this gap.**


© Shutterstock

***Aerial view of a peat extraction site***

## 1.3.2 ECOSYSTEM DEGRADATION AND BIODIVERSITY LOSS

Beyond its climate impact, peat extraction causes significant environmental degradation at local and regional levels. Because extraction is accompanied by the drainage of surface areas and the removal of soil volume, the water retention capacity of the landscape is drastically reduced, limiting the regulatory capacities that peatlands naturally provide. This effect impacts not only the surface area targeted for extraction but also surrounding areas, which dry out as well due to the drainage.

Hydrological disruptions, shifts in ground levels created by operations, and the disappearance of a portion of the growing media make the restoration of natural conditions particularly complex. Even when restoration actions are initiated, returning to an ecological functioning close to the initial state can require several decades and often remains incomplete[45][46].

Deleterious effects of extraction on downstream water quality [47] are also notable, threatening aquatic ecosystems. In certain countries, such as Germany, peat extraction is carried out only on surfaces already partially drained for agriculture. However, this is not the case everywhere; in the Baltic countries or Canada[48], natural or semi-natural peatlands are destroyed for extraction.

Preserving these fragile environments is therefore an essential challenge for the climate, water management, and nature conservation alike.

40. *This source is consistent with other existing LCAs based on the "cradle to grave" model, such as Stucki et al. (2019), Fuhrmann & Strasser (2024), Peano et al. (2012) or Toboso Chavero et al. (2021).*
41. *with an equal mix of white and black peat: (50% x 0.183 + 50% x 0.257) x 60 x 80% = 10.6*
42. *Calculation based on an average consumption of 111 g CO2-eq/km. Source: Ademe https://impactco2.fr/outils/transport/voiture-compact-diesel*
43. *https://bankwatch.org/story/the-need-for-phasing-out-peat-to-reduce-climate-crises-latvia-s-challenges-and-opportunities*
44. *https://www.eea.europa.eu/en/analysis/indicators/greenhouse-gas-emissions-from-land*
45. *Räsänen et al. (2023)*
46. *Kreyling et al. (2021)*
47. *Donahue et al. (2022), Kauppila et al. (2016)*
48. *Clark et al. (2023)*

# 02 DESPITE ITS IMPACTS, PEAT DEPENDENCY PERSISTS

## 2.1 WHY PEAT REMAINS THE BENCHMARK FOR GROWING MEDIA

**Key takeaways**

- Despite its known environmental impacts, industrial extraction of horticultural peat at the European scale still accounts for 80% of global volumes, remaining a structural pillar of European horticulture;
- In France, peat usage is massive, particularly for the retail consumer market, which accounts for nearly half of all volumes consumed;
- The ongoing use of peat is no longer justified by a lack of alternatives, but rather by economic and technical inertia.

### 2.1.1 TECHNICAL FUNCTIONS OF GROWING MEDIA

In this report, growing media—also referred to as substrates—are defined as the material in which plants take root when they are not grown directly in the ground. They simultaneously provide mechanical stability for the plants and ensure the supply of water, air, and nutrients to the roots. This definition includes both commercial and home gardening uses. It is extended to certain open-ground applications by home gardeners and in the landscaping sector. For growing media intended for retail consumers and home gardening, the more specific term "potting soil" will be used.

The quality of a growing medium depends on a wide range of parameters, as well as the specific application and the plant species in question. These requirements concern, in particular[49]:

- Aeration and structure, which ensure the supply of oxygen to the roots,
- Water-retention and re-wetting capacities, which determine watering requirements,
- Chemical properties (pH, buffering capacity, cation exchange capacity) that play a decisive role in fertilization management,
- Biological and physical stability (compaction), which is important particularly for long crop cycles,
- Safety for both plants and users,
- Practical factors such as weight, storability, or the tendency to generate dust.

Growing media are utilized across a wide spectrum of horticultural activities, with the main categories of use being:



**Home gardeners:** repotting shrubs or potted plants and flowers in containers or planters, use for seed sowing and vegetable patches in the garden or raised beds, and planting shrubs and trees in open ground. The NF "Growing Media" standard[50] defines several designations for amateur potting soils according to these specific uses[51];

**Landscaping:** creation of public green spaces, lawns, plantations, urban greening initiatives, green roofs[52], and living walls. This application also concerns local authorities that maintain public green spaces;

**Production of ornamental foliage** and flowers in containers;

**Nursery stock:** production of hardy ornamental plants in containers or in open ground. The production of fruit trees and agroforestry plants generally takes place in open ground for bare-root planting and does not require a growing medium;

**Vegetable seedling production:** in soil blocks, pots, or plug trays for open-field vegetable production and soilless food cultivation;

**Berry production:** strawberries and other soft fruits grown in containers;

**Button mushroom production:** the top surface layer known as "casing soil."

49. *For more details, see: Gruda (2021)*
50. *https://cdn.afnor.org/download/reglements/FR/REGNF142.pdf*
51. *Universal / horticultural potting soil, Geranium / balcony planter potting soil, Green plant / indoor plant potting soil, Seedling potting soil, Potting soil for acidophilic plants.*
52. *https://www.plante-et-cite.fr/projet/fiche/8/carcterisation-agronomique-des-substrats-pour-toitures-vegetalisees-extensives*



Every application and plant species requires a growing medium with distinct and often highly specific properties, particularly for commercial growers, for whom uniformity and batch-to-batch consistency are critical factors.

### 2.1.2 THE HISTORICALLY CENTRAL ROLE OF PEAT

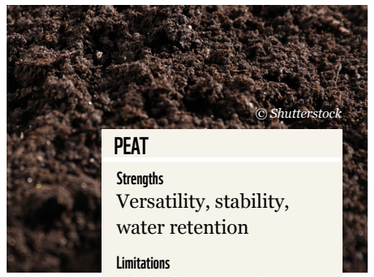
Historically, peat has occupied a central position in horticultural growing media. Indeed, the agronomic properties of peat perfectly meet the technical requirements of growing media (*see Section 2.1.1*): a high water-retention capacity, favorable chemical characteristics, excellent long-term stability, and—in the case of white peat—good aeration and low bulk density. However, the primary qualitative advantage of peat lies in the uniformity of these properties, which allows for the establishment of standardized cultivation systems for large-scale plant production. Similarly, its natural acidity and lack of intrinsic nutrients are major assets, as they allow producers to easily adjust the soil acidity level and tailor fertilization based on the specific crop in question. Furthermore, both the quality and competitive edge of peat over alternative materials have been secured by the establishment of highly organized supply chains. The widespread adoption of horticultural systems built around peat-based media has further locked in a structural dependency on this material. The central role of peat in modern horticulture is therefore explained not only by its favorable properties but also historically by the industrial lock-in of supply chains onto this material.

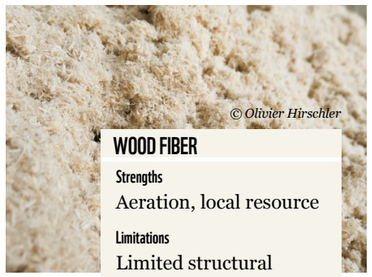
## 2.2 ALTERNATIVE CONSTITUENTS

### 2.2.1 PRIMARY ALTERNATIVES TO PEAT

Despite the dominance of peat, commercial growing media rarely rely on a single constituent. Instead, they result from blending several organic and mineral constituents whose properties complement one another. In practice, growing media manufacturers look for an optimal balance between water retention, aeration, stability, fertility, and durability to meet the specific needs of different crops.

Over recent decades, numerous alternatives to peat have been developed, such as wood fibres, composted bark, coir (coconut fiber), green waste compost, cultivated sphagnum moss, and various mineral materials. Each presents its own advantages and limitations, but combining them makes it possible—in a growing number of situations—to significantly reduce or even completely eliminate the reliance on peat (*see Section 3.1*).



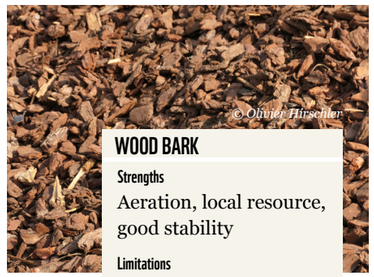













**Figure 4: Table of the primary growing media constituents**

### 2.2.2 A REDUCED ENVIRONMENTAL FOOTPRINT

**Existing LCAs (Life Cycle Assessments) show that alternatives have a significantly lower climate footprint than peat.**

It is important to note that emissions linked to carbon mineralization during peat use cannot be avoided. In contrast, emissions from alternative constituents are tied to transport and processing; these could be reduced in the future through the decarbonization of transport and energy, alongside the optimization of manufacturing processes.

However, the importation of coir (coconut fiber) raises concerns, both regarding transport and the production conditions in exporting nations. The assurance of ecologically and socially sustainable products can be strengthened through the development of certification schemes such as Horticert[53].

Beyond the climate impact of peat extraction, the destruction of peatlands leads to the loss of numerous—and sometimes millennia-old—environmental services (*see Section 1.1.2*). Alternatives, on the other hand, have a more limited impact on ecosystems, particularly because they are derived from renewable biomass, function as by-products, and do not utilize specialized land or fossil-like resources.

Solutions to be promoted must incorporate social, environmental, and economic criteria, maximizing the use of non-competitive by-products. Consequently, green waste compost, wood fibres, and composted bark appear particularly advantageous in France, whereas coir-based materials or biochar can present different limitations regarding sovereignty and energy consumption, for example.

Finally, cultivating sphagnum moss in wetlands—a practice known as paludiculture[54]—is of specific interest due to the opportunity it provides to re-wet peatlands in order to carry out this activity. This delivers a dual benefit by restoring degraded peatlands and preventing the creation of new peat extraction sites.

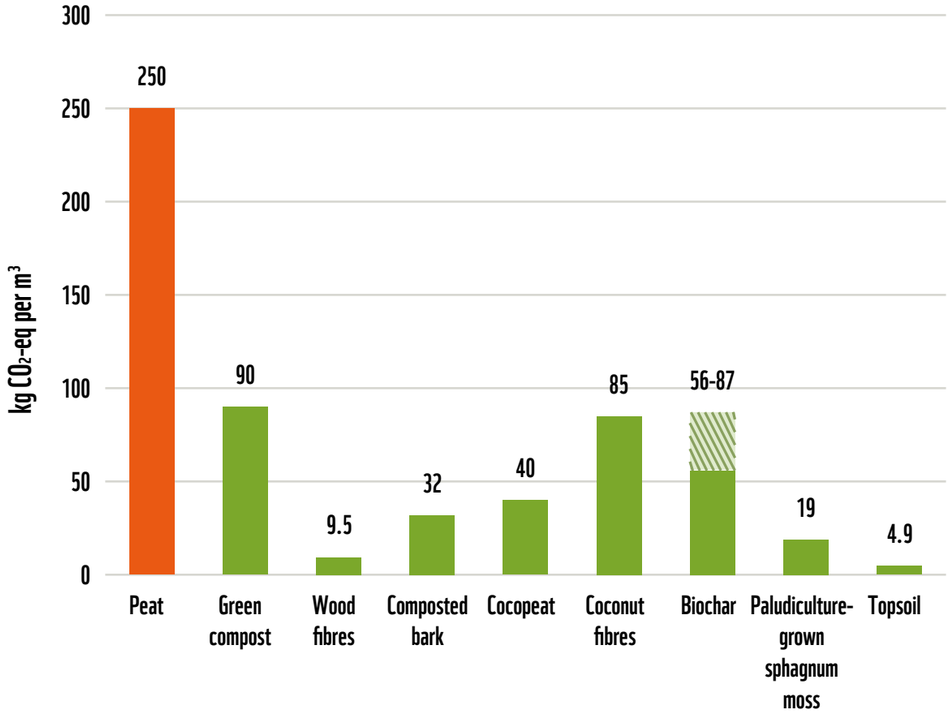



Figure 5: Assessment of different constituents in terms of climate impact (Stucki et al. 2019)

53. *https://www.horticert.org/*
54. *Paludiculture is the productive use of wet and rewetted peatlands that preserves the peat soil and thus minimizes CO2 emissions and soil subsidence. Wetland International.*



## 2.3 A FRENCH MARKET THAT REMAINS LARGELY DEPENDENT

### 2.3.1 PEAT CONSUMPTION IN FRANCE

Driven by the decline and ultimate cessation of domestic peat extraction in France, imports now account for virtually all of the peat supplied to the French growing media industry. These imports originate primarily from Germany, Belgium, and the Netherlands—countries that themselves import a large share of their peat from the Baltic states before re-exporting it either as raw peat or as advanced growing media formulations.

For the purposes of this report, AFAIA[55] provided estimates regarding French growing media production, the market share breakdown across different sectors, and the corresponding peat content. Based on these estimates, international trade data, and our own assumptions, **a comprehensive overview of peat and growing media usage in France is presented in Figure 6.**

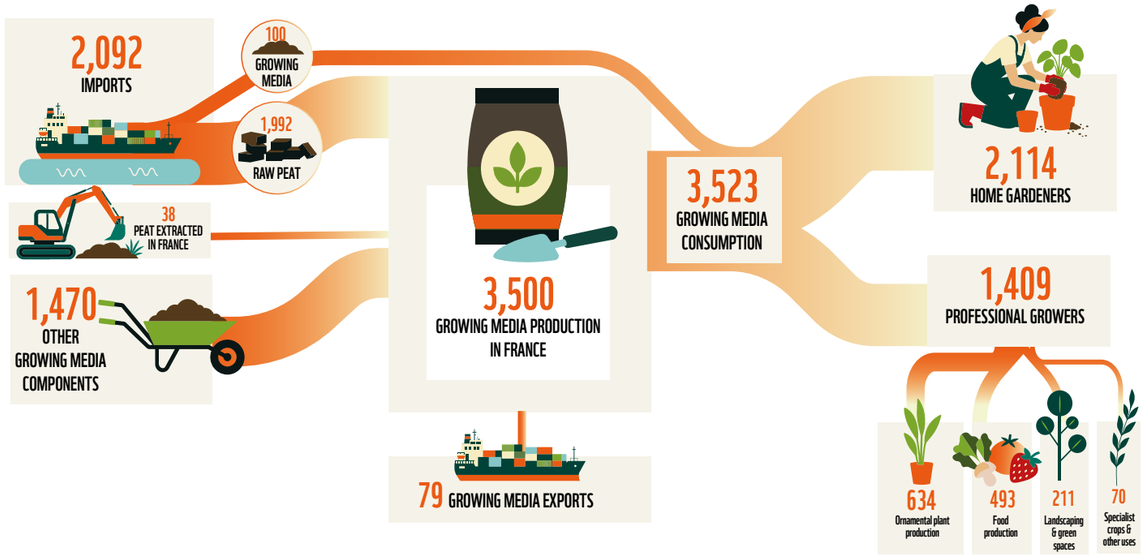



Figure 6: Estimated balance of peat and growing media usage in France over the 2020-2023 period, in thousands of m³

Several major takeaways can be drawn from these data:

- In total, **peat accounts for more than half of the volume of growing media used in France**, representing approximately 2 million m³ per year.
- Potting soil for retail consumers accounts for approximately 60% of growing media consumption in France and utilizes over one million m³ of peat per year, **representing more than half of total national consumption.**
- **Growing media formulated for food production is estimated to account for only one-seventh of total output.** The vast majority—86%—of growing media volumes are intended for non-food uses, such as ornamental plant production (flowers, foliage plants, shrubs, and perennials), landscaping, and home gardening.
- The production of growing media destined for local authorities (predominantly for landscaping and ornamental plant production) is estimated at around 300,000 m³, or roughly **9% of total volume.**

**HALF OF ALL PEAT CONSUMPTION IN FRANCE IS DRIVEN BY RETAIL CONSUMERS**

These figures should be treated with caution and considered as estimates, given the discrepancies observed when compared against data published by AFAIA a few years ago (*see Appendix 3*).

55. *Professional trade union representing companies that supply fertilizing materials and inputs for plant crops*

### 2.3.2 FOCUS ON THE RETAIL CONSUMER MARKET IN FRANCE

To better understand the retail potting soil sector and its associated challenges, we conducted an unprecedented data collection initiative based on a participatory survey of potting soils available for sale. The survey was deployed in May 2026 across 56 stores (including large and medium-sized specialized garden centers, supermarkets, grower-retailers, florists, and small shops) spanning the entirety of metropolitan France.

**In total, 489 observations covering 249 distinct potting soils were recorded.** Data was collected on both retail pricing and on-bag labeling information. The potting soils were not tested for agronomic quality. The full survey methodology is detailed in *Appendix 4.*

**In light of the findings from this survey:**

- **71% of the product offering and 72% of the potting soils contained peat.** This is higher than the results of a similar study conducted in Germany in 2023[56], which found that 60% of the product offering contained peat—despite peat being theoretically more accessible and less expensive in Germany than in France.
- Among the potting soils that were peat-free in France, only 47% were explicitly labeled "peat-free" on the front of the bag, whereas this practice is systematic in countries like Germany. **These findings suggest that French gardeners remain largely unaware of the environmental impacts of peat.**
- A few brands and specific retailers nevertheless stand out for their peat-free offerings[57] [58]. Out of the 56 stores surveyed, those offering no peat-free products at all—totaling 16 stores (29%)—only carried a limited selection of 3 potting soils or fewer. **All major garden centers with more extensive ranges consistently offered peat-free products.**
- Across the various potting soil application categories, the proportion of peat-free options varies significantly. Only potting soils designed specifically for seed sowing systematically contain peat. Conversely, peat-free formulations exist for all other types of media, including "premium" or "horticultural" grade potting soils. Potting soils intended for open-ground use contain peat in 39% of cases, despite peat offering no significant advantage for this application—providing neither nutrients nor biological life—when compared to soil amendments such as compost-based products. Similarly, orchid potting soils—which must be free-draining and are generally bark-based—contain peat in 44% of cases. These specific applications therefore represent highly accessible levers for a rapid reduction in peat volumes.
- Aside from peat, the most common components found in potting soils are green waste compost (63% of products), bark—most often composted—(63%), and wood fiber (53%), followed by topsoil (23%), coir (22%), and ericaceous compost/heather soil (13%).
- On average, potting soils are sold at €0.58/liter (with a median of €0.35/liter), showing wide variability that is heavily linked to bag volume. Among the factors identified as affecting price, the presence of peat plays a role that varies depending on bag size. For a 5-liter or 10-liter bag, the price difference is not significant. However, **for volumes between 20 and 60 liters, peat-free potting soils are significantly cheaper than those containing peat, costing between 13% and 16% less on average. "Budget-tier" potting soils are also very frequently peat-free, even if they are not explicitly labeled as such.**
- Several labels are used to suggest that a potting soil has a low environmental impact, notably UAB ("Utilisable en Agriculture Biologique" / Suitable for Organic Farming) and "Natural Product." It is critical to note that these labels place no restrictions whatsoever on the presence of peat in the potting soil. Similarly, the RPP ("Responsibly Produced Peat") label, observed on 23% of peat-containing potting soils, does not mitigate the environmental impacts of peat extraction (see callout box below).

**72%**
**of potting soils sold in France contain peat**

56. *Hirschler and Osterburg (2025)*
57. *Such as "Verve", "KB" or "Fertiligène"*
58. *Such as Weldom and Castorama*





© Olivier Hirschler

### RPP-CERTIFIED PEAT: SUSTAINABLE PEAT?

The RPP ("Responsibly Produced Peat") label is a certification scheme that applies to peat and peat-based growing media[59]. It guarantees compliance with a specific set of criteria regarding operating practices at extraction sites and within the extraction company itself. Despite the stated intent to reduce the environmental footprint, the vast majority of extraction impacts on climate and hydrology are directly tied to the physical volume of extracted peat itself (*see Section 1.3*). These impacts cannot be avoided, even through improved operational practices. **Simply put, peat extraction, even when certified, can be neither sustainable nor renewable.** Furthermore, the RPP certification has significant limitations: it does not prevent peatlands with a good conservation status from being extracted, fails to guarantee site rehabilitation after extraction is complete, and permits a growing medium to be certified even if only 50% of the peat meets the criteria.

## 2.4 EUROPE DOMINATES GLOBAL PRODUCTION AND CONSUMPTION

### 2.4.1 EUROPE AT THE HEART OF THE GLOBAL MARKET

As in France, most European countries long exploited peat for energy purposes before these uses were progressively supplanted by horticultural applications during the second half of the 20th century. Other outlets have existed or still persist, notably as bedding material for livestock in certain Scandinavian countries, but these represent relatively modest volumes that are generally integrated into horticultural peat statistics.

However, this transition has not been uniform across Europe. Countries such as Finland, Ireland, Belarus, or Russia have continued to support the energy exploitation of peat through proactive public policies, particularly for heat and electricity production. Between 2013 and 2017, the volume of peat destined for fuel use in the European Union still exceeded that used in horticulture[60]. Since then, the energy sector has experienced a spectacular decline (-79% between 2013–2017 and 2020–2023), driven by the combined effects of low economic competitiveness, the strengthening of climate policies, and rising carbon prices on energy markets.

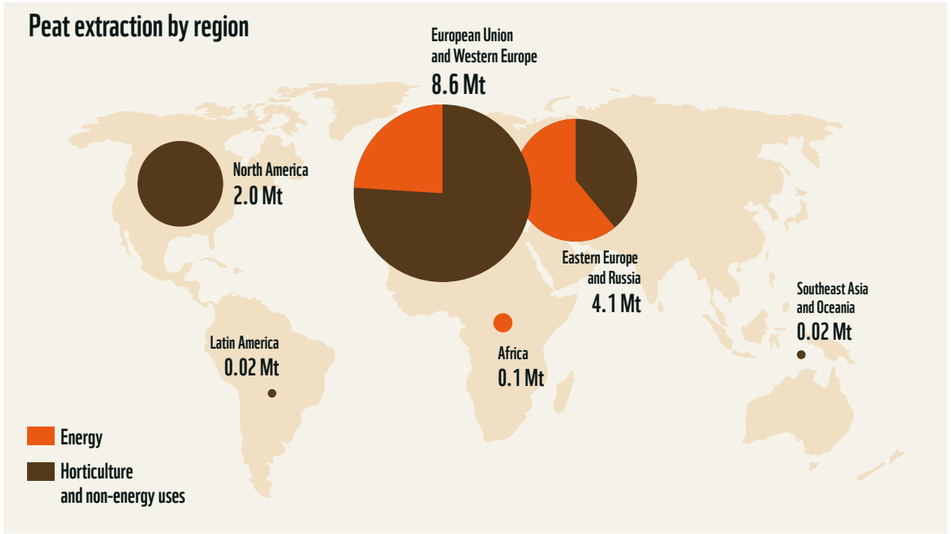
**10 MILLION**
**metric tons of peat extracted each year are destined for horticulture, representing more than two-thirds of global extraction.**

**Horticulture has now firmly established itself as the primary outlet for peat on a global scale (*see Figure 7*). According to our estimates[61], between 2020 and 2023, horticulture accounted for more than two-thirds of globally extracted volumes**, representing approximately 10 million metric tons of peat per year, which corresponds to nearly 40 million cubic meters. These volumes remain globally stable compared to the 2013–2017 period.

The other key finding from the data analysis is the central role Europe plays in the global horticultural peat economy. **Europe[62] alone accounts for 80% of the volumes extracted worldwide, with the European Union alone accounting for 62%.** North America—Canada and the United States—constitutes the main other production basin, with approximately 20% of the volumes extracted for horticulture.

59. *RPP (2021)*
60. *Hirschler and Osterburg (2022)*
61. *In order to characterize the current situation of the international peat market, the most recent available statistics on peat extraction and trade were mobilized, averaged over the 2020-2023 period. The observed trends are compared to those described by Hirschler and Osterburg (2022) based on the 2013-2017 period.*
62. *Including Iceland and all countries on the European continent up to the Black Sea, including Russia, excluding Turkey. In this report, figures relating to Europe without further specification correspond to this geographical definition.*

## PEAT EXTRACTION AND INTERNATIONAL TRADE



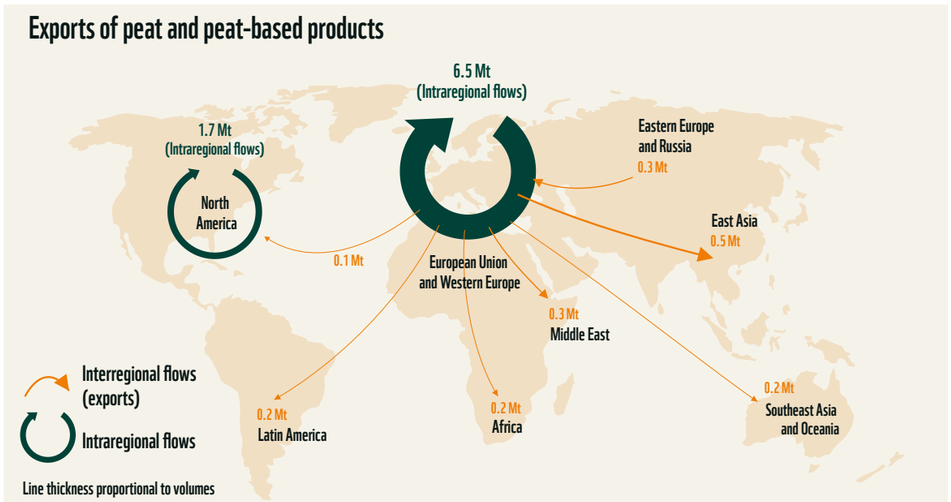




**Figure 7: Global peat extraction and international trade (Average annual data 2020-2023, in million metric tons (Mt))**

**Peat production itself is concentrated in the Baltic and Nordic countries**. Since the 1990s, the geography of European horticultural peat production has gradually transformed. Historically at the core of the sector, Germany—a major player in the extraction, processing, and consumption of horticultural peat—is seeing its resources progressively depleted, with a complete end of extraction anticipated by the 2040s[63].

63. https://ivg.org/2024/05/06/heimische-torfvorraete-deutlich-geringer-als-angenommen/



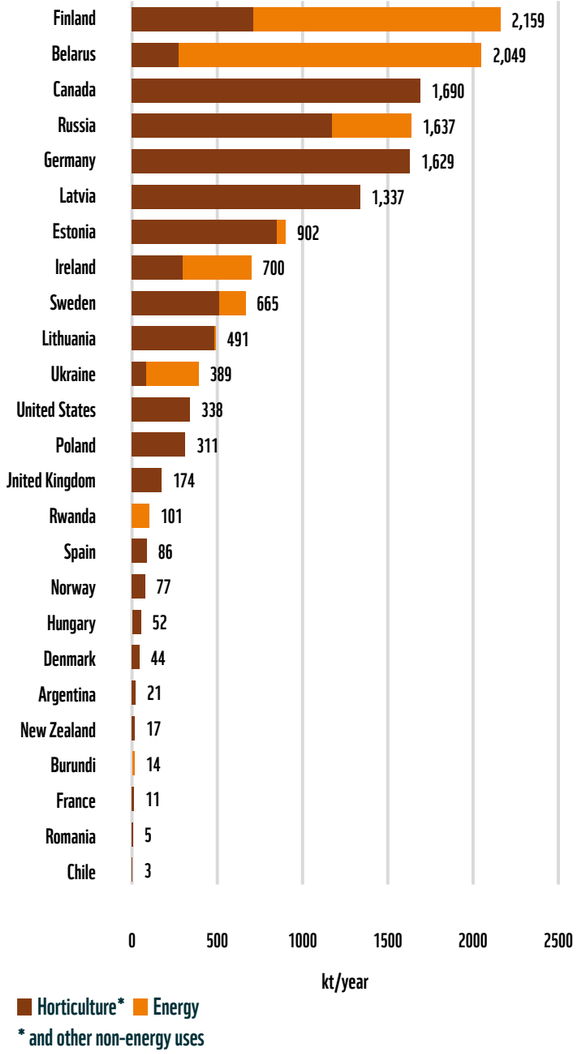



**Figure 8: Peat extraction by country over the 2020-2023 period**

Concurrently, the primary production centers have shifted toward the Baltic and Nordic countries, where a growing share of exploited resources is now concentrated.

**Trade flows reflect this regional specialization.** Unlike energy peat, which is generally consumed in the country where it is extracted, horticultural peat is heavily traded Indeed, 56% of globally traded volumes circulate within the European Union. Within the EU, peat is exported from producing countries to major centers of growing media production and horticultural consumption, notably Germany, the Netherlands, and Western European countries, including France.

The European Union also occupies a unique position on the global market, as it remains the only significant exporting region to other continents. Conversely, Canada exports almost exclusively to the United States, and Russian exports to the EU, which were already limited before 2022, have been halted following the invasion of Ukraine. The vast majority of peat remains in Europe, which also constitutes by far the world's leading region for horticultural peat consumption, accounting for nearly two-thirds of global volumes.

**10 kg**

**of horticultural peat consumed per person per year in Western Europe, compared to 0.2 kg in most other world regions**

**On a per capita basis, the annual use of horticultural peat averages approximately 10 kg per person in the EU and Western Europe[64], between 5 and 6 kg in North America, Eastern Europe (non-EU), and Russia, and roughly 200g in other regions of the world.**

The highly significant disparities in consumption across different world regions demonstrate that horticultural systems already operate under extremely variable levels of dependency. This reality invites a more nuanced view of the frequently advanced argument that a significant reduction in peat usage is technically impossible. It also underscores the distinct responsibility borne by Europe, which concentrates a large share of global horticultural peat consumption and its associated emissions.

64. *Includes, in addition to the EU: the United Kingdom, Switzerland, Norway, and Iceland.*

## 2.4.2 FRANCE FALLING BEHIND IN REDUCING PEAT DEPENDENCY

The volumes of growing media produced and the average peat content for various European countries have also been estimated. A full country-by-country breakdown is available in *Appendix 5*.

A comparison with 2013 data[65] shows that several European countries have achieved a significant reduction in the proportion of peat within their growing media over a timeframe of roughly ten years:

- Germany: from 81 to 48%
- Netherlands: from 67 to 63%
- United Kingdom: from 55 to 25%

This shift reflects the combined impact of peat supply constraints, public policies, voluntary industry commitments, and the steady development of alternatives to peat (*see Section 3.2*).

**In France,** the average proportion of peat in growing media has historically been limited—ranking among the lowest in Europe according to various studies conducted by the International Peatland Society (IPS) in 2000, 2008, and 2013[66]. This was due to the lower quality of local peat and high import costs. Yet, unlike its European neighbors, France's peat inclusion rate has remained relatively stable over the last decade, ticking up from 46% in 2013 to 48% in 2020. According to estimates provided by AFAIA (*see Appendices 3 and 5*), the peat content in growing media produced in France in recent years has even risen to 58%. **France does not appear to be following the trend toward reducing peat use that other European countries have embraced and risks losing its leadership role in the development of alternatives to peat.**

### THE AVAILABILITY OF PEAT DATA.

*The available data on volumes of extracted, processed, and traded peat are highly fragmented and contain significant uncertainties[67]. While they allow for the identification of major sector trends, their use for fine-grained analysis must be approached with caution. A major challenge stems from the use of differing units of measurement across sectors: volumes are generally used for horticultural extraction, whereas energy use and commercial trade are expressed in mass. In the absence of systematic reporting on the moisture content of the products concerned, conversions between these units remain subject to a substantial margin of uncertainty.*

*International trade statistics also present limitations[68], as customs codes group both raw peat and products containing peat together, making it impossible to precisely isolate pure peat quantities. Furthermore, data concerning extraction and growing media production originate primarily from industry sources and are only partially published. The most recent consolidated European statistics on horticultural growing media date back to 2013[69].*

*These gaps raise critical issues regarding transparency, comparability, and neutrality, particularly for monitoring peat reduction policies.* ***The development of independent statistics is therefore a vital prerequisite for improving knowledge regarding the sector and its monitoring.***

65. *In comparison with the study by Schmilewski (2017) on the year 2013*
66. *Bohlin (2022), Schmilewski (2008), Schmilewski (2017)*
67. *Hirschler and Osterburg (2022)*
68. *Under the classification code HS2703*
69. *Schmilewski (2017)*



## 2.4.3 A SECTOR AT A CROSSROADS

Several experts and researchers anticipate strong growth in global demand for horticultural growing media, particularly in China[70]. This trend could thus boost European peat exports— a prospect supported by some in the industry—and further exacerbate the associated climate and environmental impacts.

However, the peat sector is also facing supply chain bottlenecks. Over the long term, the cessation of extraction in Western Europe and the structural dependency on the Baltic states have lengthened and complicated supply networks. This heightens market volatility when weather conditions in extracting countries are unfavorable, as evidenced by recent industry concerns in 2025[71]. Interestingly, the search for alternatives intensifies specifically during periods of supply strain for peat, a pattern previously seen in the 1980s before the Baltic states opened up to the European market[72].

Caught between market growth ambitions, economic constraints, and a growing awareness of its impacts on the climate, biodiversity, and peatland ecosystems, horticultural peat stands at a crossroads today. The future of the growing media and horticulture industry will depend on its capacity to develop and mainstream sustainable alternatives.




***Peat extraction site (Germany)***

70. *Nguyen et al. (2026)*
71. *https://www.valhor.fr/actualites/septembre-2025-penuries-pour-le-secteur-des-terreaux-et-substrats*
72. *Neumaier and Meinken (2015)*

# 03 PHASING OUT PEAT IS POSSIBLE

## 3.1 CONDITIONS FOR SUCCESS

Reducing dependence on peat does not rely on a single solution. Several levers can be combined according to the sectors, crops, and uses. These solutions must be applied progressively and sometimes temporarily (volume reduction, recycling) to achieve a phase-out of peat over varying timelines.

**Key takeaways**

- Technical and supply-chain solutions exist, even if they cannot be deployed across all sectors within the same timeframe, particularly between home gardeners and professionals;
- The availability of local biomass for alternatives is theoretically sufficient to replace peat, notably in France. This represents a real opportunity to develop new sustainable supply chains and break free from import dependence;
- Experience in Europe shows that a rapid reduction in peat use is possible with the support of proactive public policies;
- In France, economic and grassroots stakeholders are already committing to a peat-free future.

### 3.1.1 ADAPTING TECHNICAL METHODS

Substitution is currently one of the primary levers utilized to reduce peat usage in growing media. For example, work[73] by ASTREDHOR[74] focused on potted plant and nursery production highlights substitutions using wood fiber, composted bark, and coconut-based products. This research shows that these materials can replace a significant portion of peat. In many situations, peat content can be heavily reduced or even eliminated.

**Key insights from this study include:**

- The study, based on trials conducted since the 2000s, lists a range of nursery stock and potted plant crops for which positive results were achieved using growing media with reduced peat content—often around 50%, and down to 10%—or even completely peat-free formulations.
- Beyond a certain threshold, transitioning to low-peat or even peat-free growing media generally requires adjusting crop management practices;
- For growers and users seeking to reduce peat usage, the primary challenge lies in understanding and monitoring the properties of the growing medium in order to adapt their practices accordingly;
- For irrigation, peat-free potting soil generally requires a higher watering frequency, applied in smaller quantities. In this regard, technical solutions are available to fine-tune the properties of peat-free formulations.

More broadly, beyond the alternatives explored by the ASTREDHOR study, other components can serve as peat substitutes to some degree. This is the case for high-quality green compost, which is already used in France and is the top component used in Germany after peat, experiencing strong growth in recent decades. Products from wetland management or paludiculture—particularly fresh sphagnum moss[75], as well as reeds (*Typha*[76])—have significant qualitative potential to replace peat, though their use is currently limited by the lack of an established supply chain.

**Other levers can also be utilized to reduce peat usage in growing media.** They represent partial solutions that help lower consumption while waiting for the mass deployment of peat-free alternatives. These include:

- **Recycling growing media while maintaining equivalent volume.** Recycling growing media reduces the consumption of raw materials, including peat, while lowering procurement costs. Trials conducted under professional conditions show that this practice can be implemented without a major drop in performance[77]. However, implementing this approach remains highly impractical in sectors where the growing medium is sold along with the plant or incorporated directly into the ground (such as potted plants, nurseries, and vegetable production). It is therefore more viable for soilless cultivation systems, home gardeners, or for reclaiming spent media from public green spaces and cemeteries. Recycling does not eliminate dependence on peat; it merely reduces its consumption.

73. *Haxaire (2026)*
74. *Institute for Professional Horticulture*
75. *Gaudig et al. (2018) (2018)*
76. *https://moorwissen.de/files/img/Projekte%20und%20Praxis/TyphaSubstrat/2025_%20Typha-Substrat-Broschüre.pdf https://www.pole-tourbieres.org/international/50-tourbe-en-moins-culture-legumes-resultats-prometteurs/*
77. *Vandecasteele et al. (2024)*



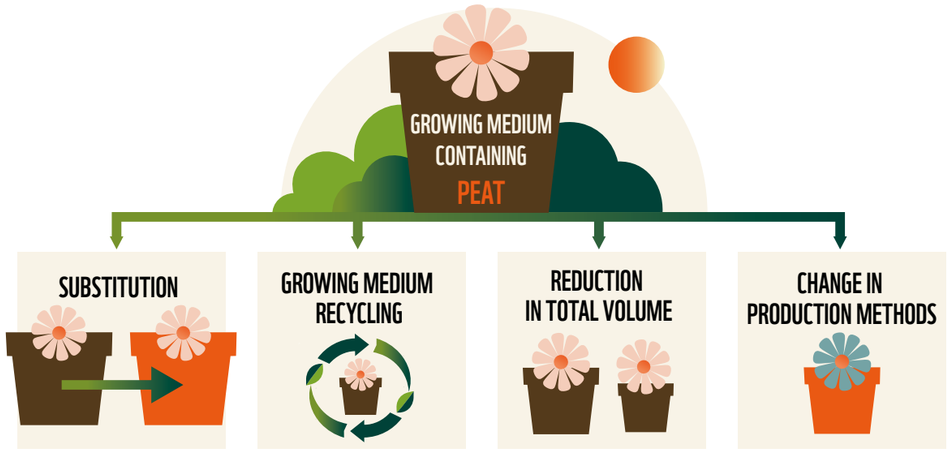



Figure 9: Schematic diagram of solutions for reducing and avoiding the use of peat.

- **Reducing growing media usage while maintaining equivalent production yields**
  Decreasing the volume of growing media used can be achieved by utilizing smaller containers, adjusting plug sizes, or switching to alternative production systems. While these solutions lower overall media requirements, they often require technical adjustments and, in some cases, capital investment in new equipment or cultivation practices.

- **Adapting supply and consumption**
  Reducing peat dependence can also rely on shifting the horticultural supply. Since some plants are more dependent on peat-rich growing media than others, developing plants that are better adapted to available alternatives serves as an additional lever. This shift could support a broader transition toward more local plants that are more resilient to climate change and less water-demanding.



**GOING FURTHER: PRODUCING A "HOME-MADE" GROWING MEDIUM.**

*This approach fits into a broader framework of relocation, cost reduction, and user autonomy, moving away from peat as well as from commercial growing media. It is specifically presented in the training course "Making Your Own Peat-Free Potting Soil" offered by Les Épigées (https://les-epigees.org/), designed for home gardeners, local authorities, and vegetable growers alike. While this practice requires an adaptation period, testing phases, careful organization, and dedicated spaces, it offers greater control over the properties of the growing medium.*

## 3.1.2 DIFFERENTIATING CHALLENGES ACROSS SECTORS

For each of the previously identified levers, the existing options and the ease of implementation heavily depend on the category of use.

- **For home gardeners (retail consumers), using peat-free potting soils is highly accessible**. In the data collected (*see 2.3.2*), significant potential for easy reduction was highlighted, for example, with "in-ground" and "orchid" potting soils. Regarding potted plants, numerous control and irrigation systems are available to better manage water supply. Because they manage a more limited number of plants, home gardeners have the advantage of being more flexible than professionals, and their expectations are less stringent from an agronomic standpoint. Supporting home gardeners is an important lever, notably through better information.
- **For the landscaping sector**, where growing media use is often restricted to open-ground planting, peat usage is limited and a phase-out appears—as it does for home gardeners—highly achievable.
- **For the commercial production of potted plants**, the challenge is to achieve a standardized quality at a specific moment to meet distributor requirements, sometimes at the expense of the plant's medium-term robustness. This requires a reliable production system. In this context, reducing peat usage requires alternative growing media of sufficient and consistent quality. However, the stakes vary greatly depending on the specific crop and the equipment available at the horticultural facility.
- **For nursery shrubs, as well as for the in-house production of local authorities**, plant quality is less standardized and the focus is on long-term plant health, rendering the use of peat in growing media less essential than for flowers and potted plants.
- **For vegetable seedlings,** the fragility of young plants when faced with water stress makes it more difficult to do without peat. Furthermore, using soil blocks of a certain firmness—which dictates the equipment and cultivation systems used—is generally dependent on black peat. In addition to requiring less growing medium, plug trays offer more options for reducing the peat content. On the other hand, switching from one system to another implies significant changes in equipment and practices. A portion of vegetables can also be sown directly into the ground. Although this practice requires increased monitoring during the period following emergence, it avoids the use of a growing medium entirely and simplifies the technical process.
- **For mushroom production,** the properties of the casing soil, particularly its water-retention capacity, are essential for mushroom growth. This soil generally contains high peat content, but examples in the United Kingdom[78] and Germany[79] show that going peat-free is both possible and viable.

Even though certain sectors are more sensitive than others to reducing peat use, experiences (*see section 2.3.2*) already showcase "peat-free" pathways for nearly all production sectors. It will, of course, be necessary to support, adapt, and secure these pathways to make production processes reliable.

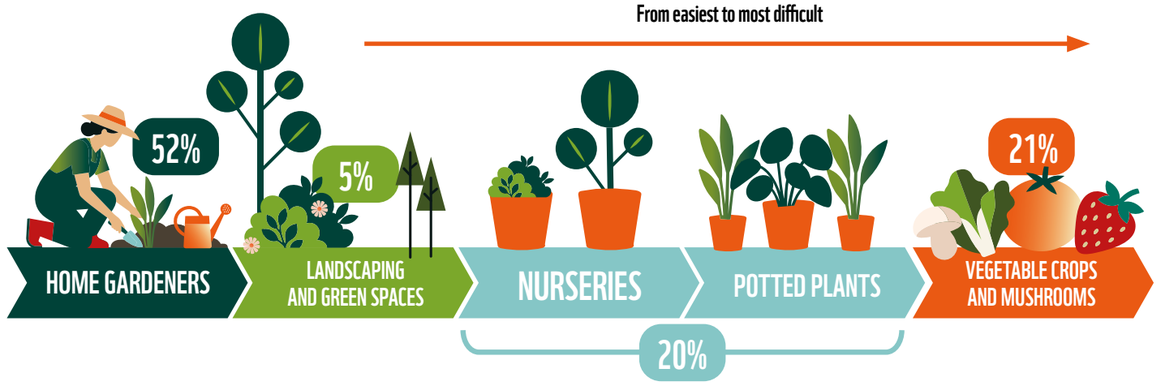



**Figure 10: Estimation of the difficulty of reducing/phasing out peat use by sector**
**The percentages correspond to the distribution of peat use by sector**

78. https://www.monaghan.eu/sustainability/peat-free/
79. https://www.mykodeck.de/



## 3.1.3 SECURING ACCESS TO ALTERNATIVE RESOURCES

**THE SUPPLY PROBLEM MUST NOT BE TREATED AS A SIMPLE LACK OF RESOURCES, BUT RATHER AS AN ISSUE OF ORGANIZING SUPPLY CHAINS.**

Beyond technical levers, supply chain challenges are central to ensuring production of sufficient quantity and quality, particularly in the face of rising global demand for growing media. Unlike raw materials (green waste and wood by-products), the supply of finished materials as alternatives to peat (quality green compost, wood fibres, composted bark) is still limited.

Yet, the volume of local biomaterials—green waste and wood by-products—produced in France and Europe would theoretically be sufficient to satisfy industry demand in the event of a complete replacement of peat, even alongside an expansion of growing media production[80].

Compared to other European countries, France has particularly abundant local resources, which constitute an asset in view of a transition of the industry at the European level (*see figure 11*). The supply problem must therefore not be treated as a simple lack of resources, but rather as an issue of organizing supply chains. Thus, it would theoretically be possible to produce 19 million m³ of growing media equivalent from forestry by-products and green waste, compared to a maximum projected demand of around 6.7 million m³ of growing media equivalent per year and current consumption of 1.5 million m³ of growing media equivalent per year.

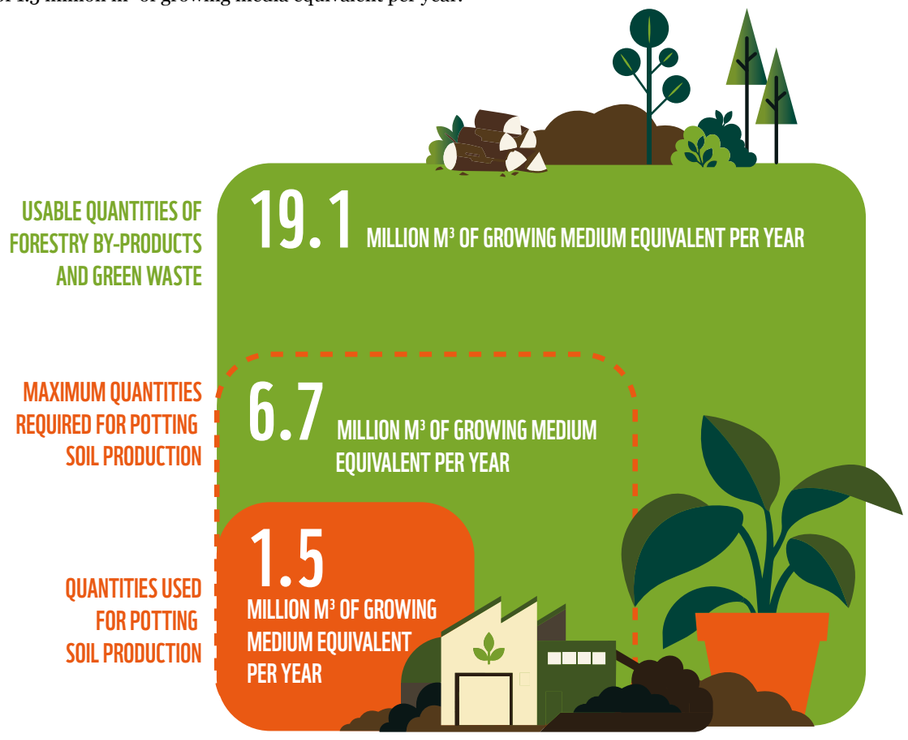



**Figure 11: Estimation of the biomass volumes that could be mobilized in France compared to volumes currently used and maximum projected volumes given a significant increase in growing media demand**
**Data from Hirschler et al. 2022 for France**

Feedback from industrial players in the French sector obtained for this study, as well as the study by Hirschler & Thrän (2023) conducted with the growing media industry in Germany, helps outline the challenges associated with supply. For instance, suppliers are still few in number and sometimes far away, which can generate significant logistical costs. The quality of the supply is also uncertain. In particular, a compost that is both usable and attractive for growing media production must be based on pure green waste free of impurities, contain sufficient woody material, undergo a complete composting process, and be sourced locally, as the weight of compost makes its transport costly.

80. Hirschler et al. (2022)

A potential source of tension for the biomass supply is its use in other sectors. In particular, the wood chips at the base of wood fiber production for growing media are heavily used for bioenergy—which is partly subsidized—or the production of biomaterials. Bark is also used for the production of landscaping mulch and bioenergy. Green compost is used as an organic soil amendment in agriculture—particularly in organic farming—and green waste is also partly used in bioenergy. Measures can help offset this competition, notably by integrating the biomass needs associated with replacing peat into national bioeconomy strategies (*see section 4*).

In conclusion, the challenges related to supplying materials to replace peat require a quantitative and qualitative development of the infrastructure for their processing, as well as a structuring of the supply chains. Several incentive levers are detailed more specifically in section 4.



***Wood industry residues intended for the production of horticultural growing media (Germany)***

## 3.2 ONGOING TRANSITIONS

### 3.2.1 PUBLIC POLICY IN EUROPE FACING THE CHALLENGE OF PHASING OUT PEAT

In Europe, governments are gradually committing to reducing their reliance on peat. Within this landscape, France is among the countries lacking a clear strategy.

These changes were initially driven in the 1980s by early opposition to the expansion of peat extraction, which was primarily focused on protecting peatlands as natural habitats. Today, however, the climate crisis is the main driver behind recent initiatives to limit peat extraction and use. Specifically, state climate commitments—notably following the 2015 Paris Agreement—alongside a growing awareness of the critical role peatlands play in climate regulation and the critical situation of the Land Use, Land-Use Change, and Forestry (LULUCF) greenhouse gas emissions sector, are prompting reductions in peat extraction emissions.



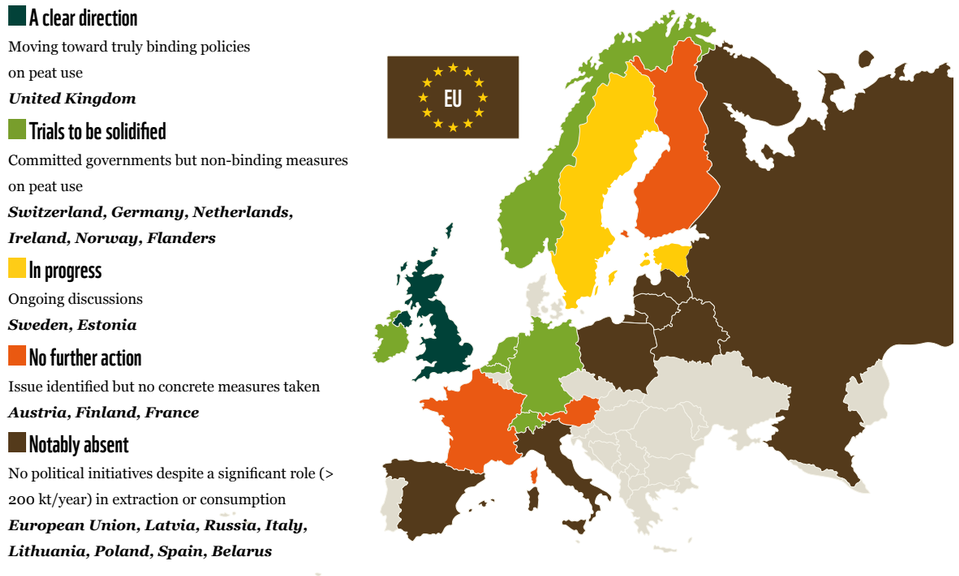



**Figure 12: Policies for the reduction/phase-out of peat use and/or extraction in Europe**

A review of initiatives and strategies in this field across Europe was published by Gruda et al. (2024). In this report, the elements of that publication are integrated and updated to produce a map indicating the progress level of various European countries (*see Figure 12*). A detailed analysis of European public policies can be found in *Appendix 6*.

**Three key takeaways from European experiences:**

- **The reduction of peat use is already underway in many countries**
  From Switzerland to the United Kingdom, several governments have set targets for the reduction or gradual phase-out of horticultural peat. Switzerland provides an inspiring model, having achieved a near-total phase-out of peat in hobby gardening potting soils since 2020, following an ambitious government strategy and strong commitment from industry stakeholders. This serves as large-scale proof that phasing out peat for amateur gardeners is entirely feasible.
- **Transitions rely on industry support and guidance**
  The most advanced strategies combine support for innovation, development of alternatives, sector-wide consultation, and consumer information. In Germany, for instance, demonstration and support networks for horticulture professionals have been structured to develop new practices with professional growers. Peat use in professional horticulture began to drop significantly starting in 2023, a success that can be partly attributed to these initiatives. The UK National Committee of the IUCN published a reference document in 2021 (updated in 2023) detailing numerous examples of peat elimination across several categories of economic actors[81].
- **A lack of public action slows down the transition**
  The experience of several countries (*see figure 12* and *Appendix 6*) shows that establishing a clear strategy for a gradual peat phase-out is indispensable. Purely voluntary political commitments struggle to meet their targets—as Germany recently experienced, and as the United Kingdom observed multiple times before initiating a formal regulatory process. In particular, the absence of EU-wide initiatives and targets within the single market slows down member states or companies wishing to commit to reducing peat use, as it exposes them to direct competition from neighboring countries that do not participate.

81. *Holmes and Bain (2021)*

## 3.2.2 SEVERAL FRENCH ACTORS LEAD THE WAY

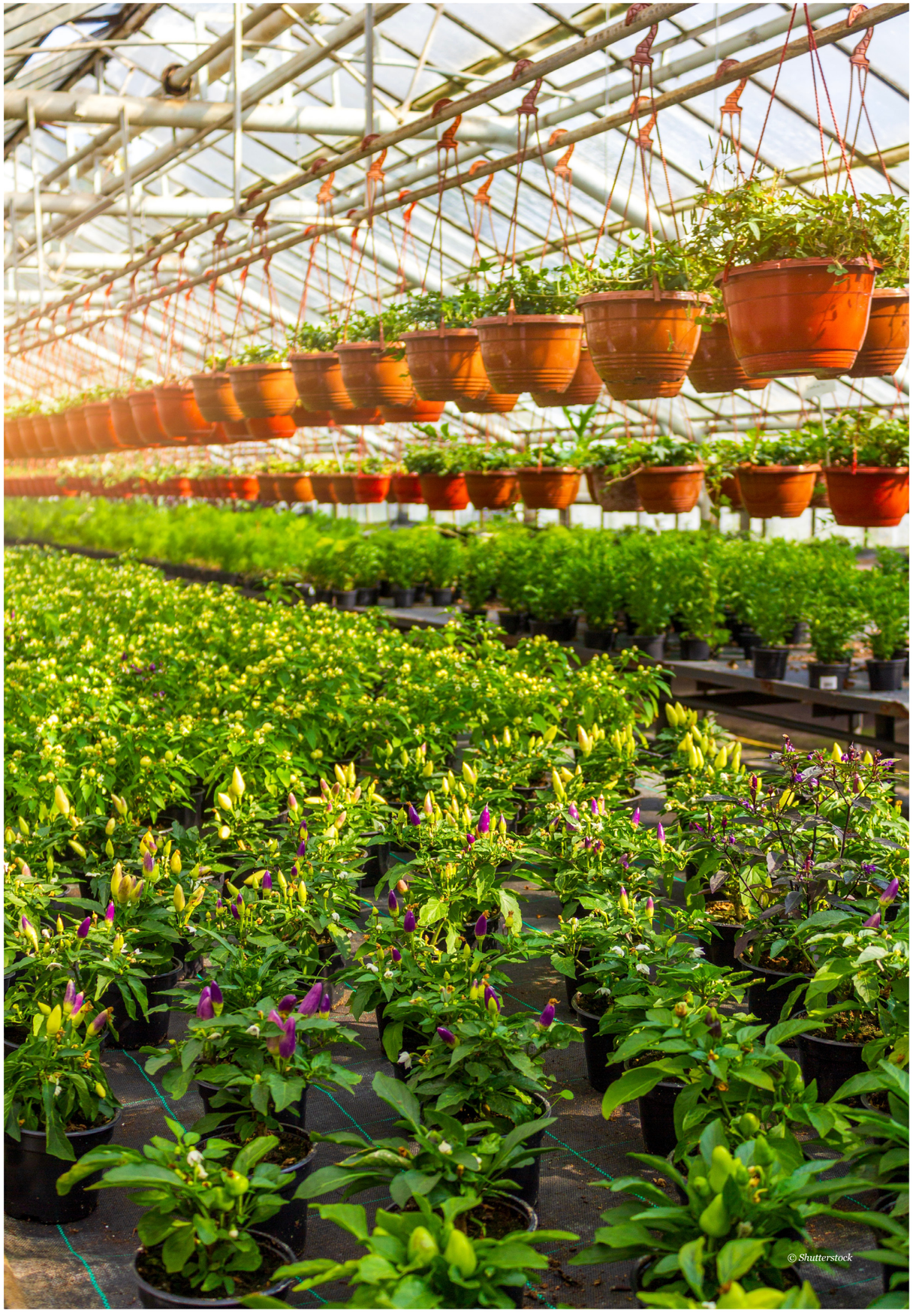
- **Florentaise**, a French company of international scope and publicly traded since 2023, has been a European pioneer in the technological development and production of low-peat and peat-free growing media. It manufactures the wood fiber **Hortifibre®**[82] and the bark fiber **Turbofibre®** in Europe, the USA, and China, serving as 100% substitutes for peat worldwide. These fibres are produced through high-temperature thermomechanical extrusion of bark and wood chips. These products were patented in Europe in 1984 (Hortifibre®) and globally in 2015 (Turbofibre® and Hortifibre®).

- **The French Mire Center** of the Federation of Conservancies of Natural Areas (FCEN) hasbeen working for many years on the issue of peat-free potting mix. In 2007, the FCEN organized an international symposium on the use of peat in horticulture. In 2022 and 2026, the FCEN co-organized webinars on the topic—the first with the participation of various French horticulture stakeholders, and the second tailored for local authorities. The Federation's efforts are also characterized by public outreach and communication work, both through information sharing (website, brochures, documentary resources) and participation in events targeting various audiences[83]. The Federation also produces a directory of commercially available peat-free potting soils, updated in 2025.

- **Castorama shows the way toward a peat phase-out for amateur gardeners**
  As part of its environmental strategy, Castorama committed in April 2025 to removing peat from its range of potting soils. Sourcing for peat-based potting soil was immediately halted for its private labels (such as Verve), with national brands following suit in December 2025. Consequently, once remaining stocks are cleared in 2026, the product line will be entirely peat-free. To offer peat-free potting soils of equivalent quality, Castorama draws specifically on advanced research from the Kingfisher Group. B&Q, a British retailer within the same group, completed this transition in 2023 and is now committing to selling only peat-free plants for its brands. For Castorma's range, the change in product offerings is rolling out smoothly with no current impact on prices, sales volume, or customer satisfaction. The main challenge involved the educational guidance of teams and consumers to raise awareness about this issue and product quality. Castorama's approach demonstrates that a peat-free transition for the consumer market in France is achievable quickly, on both a technical and economic level.

- **La Joyeuse Pépinière: a pioneering approach in France incorporating "peat-free"**
  Since launching in 2020, Baptiste Canevet from La Joyeuse Pépinière has been producing plants in secondhand pots using a growing medium entirely free of both peat and coconut coir for both retail consumers and plant professionals. His methodology also integrates organic fertilization based on human urine and drip irrigation. To build his system, he had to undertake extensive testing and learn things the hard way. Specific support opportunities for professionals utilizing peat-free growing media remain limited and difficult to access. As his experience grows year over year, his growing system is now well-established. He has custom-adjusted his own formulas, making his potting soil to order, and frequently hosts visits from educational institutions and professional peers.

- **Angers: no peat for green space management**
  The city of Angers, which hosts SIVAL—an international horticulture trade show—every year, is located in the heart of a historic and vibrant horticultural region. True to this identity, the city produces nearly 150,000 plants annually and aims to showcase a wide variety of green and flowering plants across its public spaces. The entire production of annuals and biennials, as well as decorative displays like the seasonal greening of the Place du Ralliement, is done using peat-free potting soils. The city committed to this environmental approach in 2019. Thanks to the team's experience and guidance from its suppliers, the technical management of production is highly proficient.



© Shutterstock

82. https://www.florentaise.com/fr/innovations/hortifibre
83. https://www.pole-tourbieres.org/type-action/terreaux-sans-tourbe/

# 04 OUR RECOMMENDATIONS FOR TAKING ACTION AND ACCELERATING THE PHASE-OUT OF PEAT

Peat dependency is no longer inevitable. Alternatives exist, European case studies demonstrate the feasibility of the transition, and the climate and environmental benefits are substantial. Faced with the urgent need to preserve peatlands and reduce emissions associated with their exploitation, France—which possesses significant advantages to reduce its dependence on this imported resource—must now establish a clear strategy. We formulate four recommendations to initiate a gradual phase-out of peat and support stakeholders through this transformation.

## 4.1 ENGAGING FRANCE IN A GRADUAL PEAT PHASE-OUT TRAJECTORY

On the occasion of the extension of the National Wetlands Plan 2030, we propose setting a national objective for a progressive phase-out of peat in horticultural growing media: **moving toward a peat exit by 2030 for home gardeners, 2035 for local authorities and the landscaping sector, and 2040 for ornamental and food production.**

As a country heavily dependent on the use of imported peat, but also possessing significant potential regarding its alternatives, France has a key role to play in reducing the climate and ecological impacts associated with its extraction. The significance of the retail consumer market, which accounts for more than half of the peat consumed in growing media in France, also represents a tangible and accessible lever for reduction in the short term.

This clear commitment would provide the necessary visibility for producers, distributors, and users to invest, adapt their practices, and develop alternative supply chains. This transition also offers an opportunity to reduce France's dependence on peat imports while creating value from local resources originating, notably, from the wood sector, composting, and the circular economy.

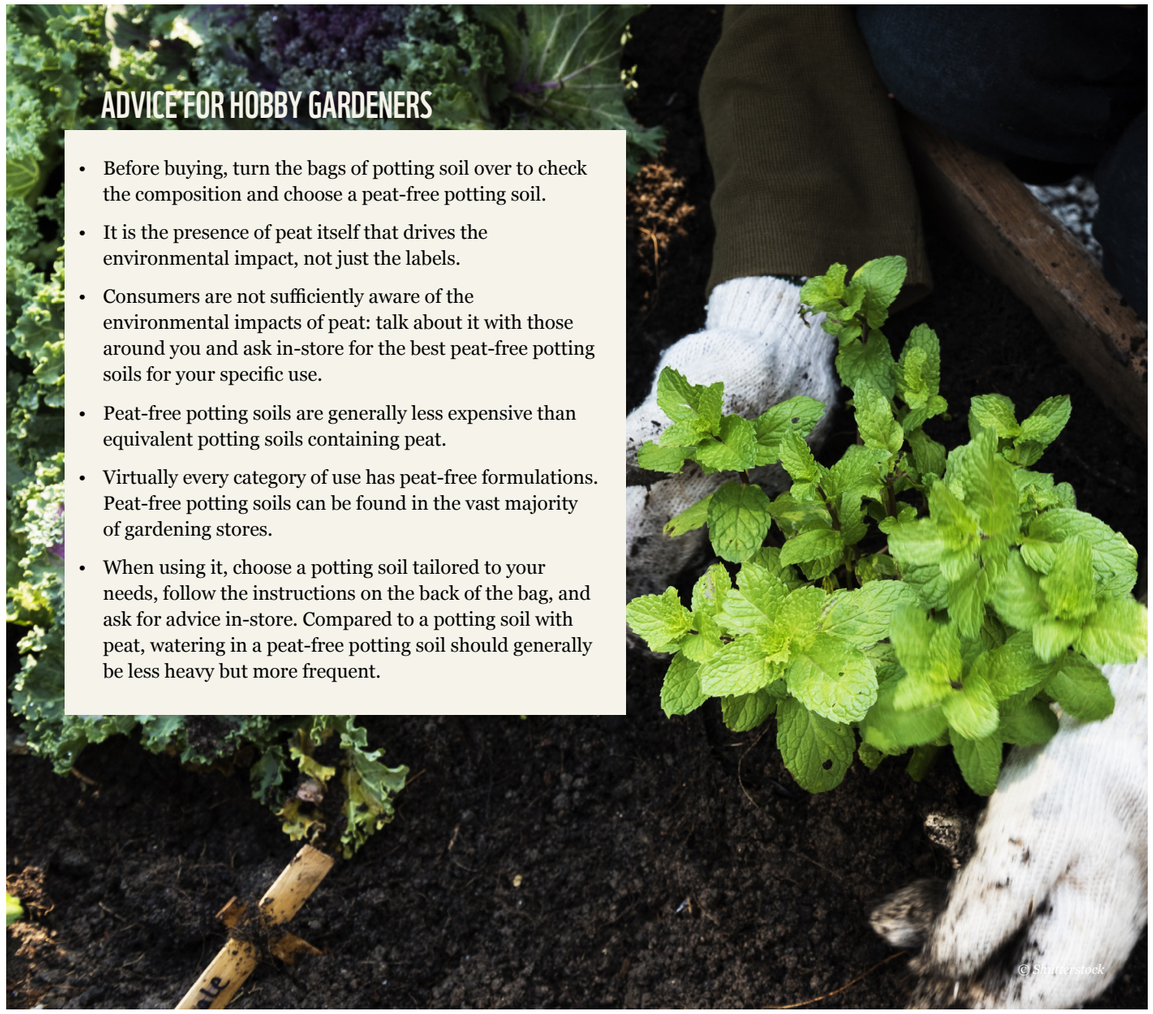
The transition must be built upon a coherent set of measures: public awareness campaigns, the integration of "peat-free" criteria into public procurement contracts for green spaces, support for research and technical guidance, as well as a better integration of these issues within horticultural education. Resources currently exist in France through ASTREDHOR, the CTIFL (engaged in the SPIN-FERT[84] project), and AC3A[85] (engaged in the Buffer+ project). These resources can serve as a foundation for deepening and disseminating knowledge and for guiding professionals. **In parallel, enhanced user information is necessary**, both to raise awareness among the general public regarding the issues surrounding peat usage and, more importantly, to address the watering and fertilization requirements of alternative growing media.

Furthermore, the experience of other countries shows that voluntary approaches are insufficient to transform the market. A regulatory framework must therefore accompany this evolution, particularly for hobby uses where alternatives are already widely available.

Finally, **the success of this strategy requires transparent monitoring of peat consumption** through public statistics or verified industry data.

84. *https://www.ctifl.fr/spin-fert-revolutionner-la-gestion-des-sols-et-substituer-la-tourbe-pour-une-agriculture-durable-infos-ctifl-406*
85. *https://ac3a.fr/en/buffer-2/*






## 4.2 BRINGING TOGETHER PROFESSIONAL STAKEHOLDERS AND REMOVING BARRIERS TO THE TRANSITION

The success of a gradual peat phase-out requires the mobilization of all relevant stakeholders. A structured dialogue should be initiated immediately under the auspices of the ministries responsible for the Ecological Transition, Agriculture, and the Economy. This dialogue should bring together growing media industry representatives, environmental organizations, horticultural and agricultural sectors, organic farming stakeholders, retailers, research institutions, technical education entities, and local authorities. This consultation would allow for the sharing of feedback from past experiences, the identification of remaining technical and economic obstacles, and the construction of a shared roadmap to accelerate the deployment of alternatives.

Concurrently, specific work could be launched to update certain standards and frameworks capable of facilitating the adoption of peat-free growing media. For instance, recognition programs like the Villes et Villages Fleuris (Towns and Villages in Bloom) label would benefit from being re-examined in light of climate challenges and peatland preservation goals.

## 4.3 STRUCTURING ALTERNATIVE SUPPLY CHAINS

Reducing dependency on peat requires active support for the development of alternative supply chains. The State should integrate the biomass needs associated with replacing peat into national bioeconomy strategies to guarantee a coherent vision for resource allocation. Biomass uses for the production of growing media should, in particular, be better accounted for in public support mechanisms, on equal footing with other value chains such as bioenergy.

The development of alternative raw materials also depends on structuring local supply chains. In consultation with local authorities and economic stakeholders, public authorities should encourage the creation or adaptation of composting units capable of producing compost that meets the quality requirements of horticulture. Such an approach would strengthen the circular economy while adding value to organic waste locally.

Furthermore, the emergence of new solutions deserves to be supported. Implementing pilot projects for sphagnum moss production on restored peatlands could help develop a promising alternative, reconciling horticultural production with the maintenance of soil carbon stocks.

To reassure users and improve confidence in these new materials, the development of certifications and quality standards for peat alternatives also appears necessary. Finally, targeted investment aid should be considered to support the modernization of equipment, the development of production capacities for alternative growing media, and the adaptation of infrastructures for horticulture professionals.

## 4.4 CARRYING A EUROPEAN AMBITION TO BREAK FREE FROM PEAT DEPENDENCY

The European Union currently accounts for the largest share of global emissions related to the extraction of horticultural peat. It therefore possesses a decisive lever to accelerate the transition toward low-climate-impact growing media and preserve remaining peatlands. As such, it carries a unique responsibility in accelerating the reduction of peat extraction, protecting remaining peatlands, and restoring degraded ones.

The transition toward peat-free growing media cannot be effectively managed at the national scale alone. Given the highly integrated nature of the European growing media market, the trade of peat and horticultural products between Member States, a common European strategy is indispensable. Coordinated action would ensure an ambitious and equitable transition while minimizing the risks of production relocation, unfair competition between Member States, or carbon leakage.

This transition must also provide support for the territories most economically dependent on peat extraction. The regions involved must be able to benefit from dedicated assistance in order to develop new economic activities compatible with climate objectives and the preservation of biodiversity and habitats.

Several member states, notably Germany and the Netherlands, have already launched proactive initiatives to reduce peat usage. These efforts must be supported and scaled up within the framework of a coherent European strategy, preventing the efforts made by certain countries from being negated by the inaction of other actors.

The European Union should also update the regulations concerning fertilizing products and growing media to allow member states who wish to do so to restrict the sale of products containing peat. In parallel, EU should reinforce the fight against illegal extraction, ensure strict protection for peatlands with high ecological value, and establish a timeline for a gradual phase-out of peat extraction across Europe.

In this context, France has significant strengths. The experience gained in developing low-peat growing media, alongside the availability of alternative resources from the forestry sector, places it in a favorable position to become a driving force in the European transition.

Article 9 of the Soil Conservation Protocol of the 1998 Alpine Convention—signed and ratified by Alpine countries, including France, as well as the European Union—states that “the use of peat shall be discontinued completely in the *medium term*.” **Thirty years on, have we not reached the medium term?**



# CONCLUSION

The extraction and consumption of imported peat pull us a little further away from our climate and environmental goals every day. Formed over several millennia, this non-renewable resource is destroyed in just a few years, initially to be used as fuel, and today primarily for the manufacture of horticultural growing media. Yet peatlands represent invaluable allies for climate change mitigation and adaptation, from a global scale down to our local communities.

The phase-out of peat therefore constitutes both an environmental necessity and an economic opportunity that must take root in public debate and among citizens. To achieve this, this report formulates four priority recommendations.

The question is no longer whether the transition to peat-free growing media is possible, but how quickly it can be organized. **Ending this dependence on peat thus emerges as an environmental necessity and a political choice for the future.**




***Mazerolles marsh acquired in 2026 by WWF France and LPO France.***



*Green sandpiper (Tringa ochropus)*

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# APPENDICES

## APPENDIX 1 - HISTORICAL PEAT EXTRACTION VOLUMES IN FRANCE BEFORE 1945

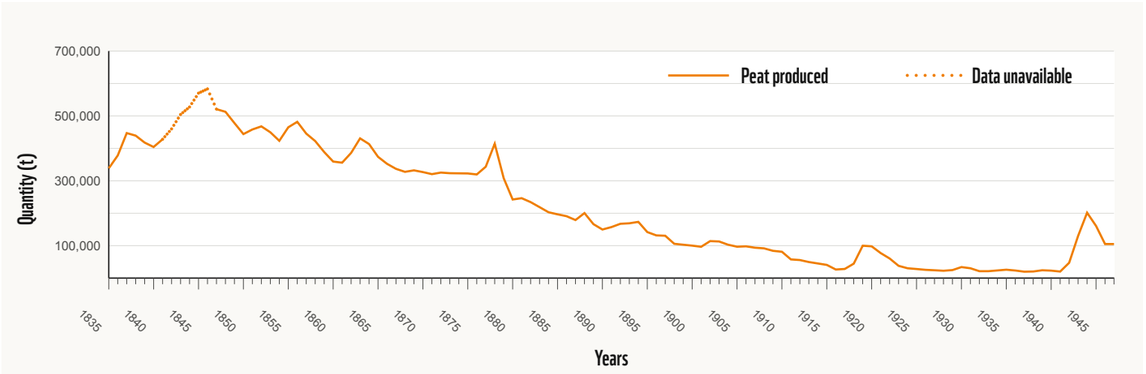



Figure A1: Reconstruction from historical data of dry peat production in France from 1835 to 1945 (Sacca 2009)

## APPENDIX 2 – DETAILED BREAKDOWN OF GROWING MEDIA COMPONENTS

Growing media are composed of a blend of organic materials and, depending on the application, mineral components. Their physical and chemical properties result less from a single material than from the combination of several complementary constituents. Each raw material possesses specific characteristics, which can themselves vary based on its origin, quality, and processing method. In practice, growing media manufacturers look for an optimal balance between water retention, aeration, stability, fertility, and durability to meet the specific needs of different crops.
The main constituents are:

- 01. **Peat** has long been the reference material for the sector due to its properties being particularly well-suited for horticultural production. It features an excellent structure, good water retention, a low pH, and structural stability, which earn it the status of an ideal component for growing media. White peat features high porosity. Black peat features lower aeration but higher water retention. A drawback of white peat is its low re-wetting capacity after drying out.
- 02. **Wood fiber** is produced from conifer wood chips, which are a by-product of the timber industry. These chips are processed into wood fiber using various mechanical or thermo-mechanical methods. The key advantages of wood fiber are its aeration and lightness. The limitations of its use are linked to its low biological stability and the associated nitrogen immobilization. This drawback can be offset by adding nitrogen fertilizer during processing or directly into the growing medium.
- 03. **Barks**—particularly pine bark—are also by-products of the timber industry. They are often shredded and composted to limit phytotoxicity issues and increase stability. However, fresh barks can also be used, notably for orchids. They provide favorable aeration and good stability but feature low water retention.




























- **04. Coconut fiber products** are by-products of the coir fiber industry (brooms, mats, padding, etc.), which are themselves by-products of coconut production. These products consist of either short fibres or coconut dust, also called “cocopeat” due to its resemblance to peat. Coir fibres have excellent physical properties and can be used on their own as a growing medium. They sometimes exhibit salinity issues that require intensive washing.
- **05. Green or plant-based compost** comes from the composting of green waste. For use in a growing medium, it requires a good balance of materials with sufficient woody matter, zero impurities, aerobic composting, and an advanced stage of maturity. When these conditions are met, it provides good structure and retains water, but its pH is often relatively high and it can also present problematic salt levels.
- **06. Fresh sphagnum moss** comes from production on rewetted peatland soils—paludiculture, which helps maintain carbon stocks in the ground and represents a promising avenue. It can also be harvested from semi-natural peatlands, such as in Chile and Scandinavia, which can degrade ecosystems in those instances. Sphagnum moss exhibits highly favorable physical-chemical characteristics for a growing medium, similar to those of white peat.
- **07. Other biomass products** exist, such as cattails (Typha) from paludiculture, biochar, fermented flax fibres, miscanthus, hemp fibres, rice hulls, or composted manure. These have the potential to be further developed and utilized but often suffer from unfavorable physical-chemical characteristics or high costs.
- **08. Mineral components** such as perlite, pozzolana, vermiculite, clay, sand, or rockwool primarily contribute to the physical properties of the growing medium. Depending on the specific materials and needs, they can notably improve porosity, aeration, water retention, or drainage.
- **09. Fertilizers and amendments** do not contribute to volume and are generally added to ensure nutrient supply, adjust certain properties like pH, or stimulate microbial life.



# APPENDIX 3 – PEAT CONSUMPTION DATA IN FRANCE

The estimations shared by AFAIA, which apply to recent years (since 2020, with AFAIA's response dating from July 2026), should be considered with caution as they indicate surprising trends and contain inconsistencies: They report a 50% peat content in growing media sold to amateur gardeners. However, according to other data communicated by AFAIA (2020), peat accounted for 36% of the volumes intended for amateur gardeners in 2018, which would imply a significant increase in peat usage in this sector since then—running counter to the trend observed in other European countries over the same period. By combining the latest estimations on the share of different sectors and their associated peat contents, the overall peat content for total growing media production comes out to 58%. However, official communications from AFAIA (2022) reported a peat content of approximately 48% in 2020. Furthermore, the 70% peat content cited for professional growing media is inconsistent with the specific estimations provided for the food production (80%) and ornamental (50%) sectors, which had to be corrected in the proposed model.

# APPENDIX 4 – METHODOLOGY OF THE PARTICIPATORY SURVEY ON THE GROWING MEDIA MARKET IN FRANCE

Data collection was carried out by authors and volunteers between April 24, 2026, and June 16, 2026. The protocol consisted of visiting a store and taking photos of the front and back of all available bags of growing media, as well as their price tags. Multi-pack bags and bulk growing media were ignored. Based on the available photos where the information on the bag was legible, a spreadsheet database (N=489) was established. Identical growing media products were identified by composition and properties to allow for product-by-product analysis. This database serves as the foundation for analyses relating to composition, use category, and product marketing. To analyze the factors influencing price, only the non-promotional price per bag was considered. This analysis involved a smaller dataset (N=416), excluding (1) observations for which price data was missing (N=26), (2) observations for which the presence of at least one component could not be traced (N=31), and (3) specialized categories that are fundamentally highly correlated with the presence of certain components and had a low number of observations: pure sphagnum moss (N=1), pure peat (N=8), pure coconut fiber (N=2), and special uses (terrarium, carnivorous plants, aquatic plants) (N=5). Several other factors potentially affecting the price were integrated into the model: bag volume, type of point of sale, region, brand type, bag format, use category, and the presence of different constituents. Since bag volume visually exercises a major influence, the cross-effect of the presence of peat combined with bag volume was tested. To test this effect, an ANOVA was used to compare two models, one factoring in and one omitting the “presence of peat” variable and its cross-effect with the “bag volume” factor in modeling the price per bag (dependent variable). The result (Table A1) shows a significant difference, indicating that the presence of peat and/or its cross-effect with volume accounts for a portion of the price variance. To break down these influences alongside those of the other variables, a Type II ANOVA was used to test all variables (independent variables) against the price per bag (dependent variable). The result (Table A2) confirms a significant influence of the presence of peat, and reveals that this influence depends on the bag volume. This influence is illustrated in Figure A1. The quantification of this influence is performed using the method of estimated marginal means for specific given volumes, as presented in Table A3.

Table A1: ANOVA result for models with and without the “presence of peat” factors and its cross-effect with the “bag volume” factor. Dependent variable: price per bag. Independent variables: presence of peat (depending on the model), bag volume, type of point of sale, region, brand type, bag format, use category, presence of compost, presence of wood fiber, presence of bark, presence of coconut fiber, presence of topsoil, presence of heather soil.

| Model | Res.Df | RSS | Df | Sum of Sq | F | Pr(>F) |
|---|---|---|---|---|---|---|
| without “Presence of peat” (peat-free) | 389 | 1628.5 | | | | |
| with “Presence of peat” “Bag volume” | 387 | 1529.7 | 2 | 98.716 | 12.487 | 5.557e-06 *** |

Table A2: Results of the Type II ANOVA Dependent variable: Price per bag. Independent variables: see table.

| Independent variable | Sum Sq | Df | F value | Pr(>F) |
|---|---|---|---|---|
| Bag volume | 2798.38 | 1 | 707.9466 | < 2.2e-16 *** |
| Presence of peat | 74.77 | 1 | 18.9156 | 1.75e-05 *** |
| Type of point of sale | 345.15 | 3 | 29.1062 | < 2.2e-16 *** |
| Region | 1.43 | 1 | 0.3627 | 0.5473521 |
| Brand type | 450.09 | 5 | 22.7730 | < 2.2e-16 *** |
| Bag format | 2.55 | 1 | 0.6454 | 0.4222373 |
| Use category | 117.56 | 9 | 3.3046 | 0.0006708 *** |
| Presence of compost | 32.45 | 1 | 8.2083 | 0.0043973 ** |
| Presence of wood fiber | 2.28 | 1 | 0.5760 | 0.4483278 |
| Presence of bark | 18.91 | 1 | 4.7837 | 0.0293284 * |
| Presence of coconut fiber | 1.12 | 1 | 0.2826 | 0.5953123 |
| Presence of topsoil | 2.80 | 1 | 0.7090 | 0.4002824 |
| Presence of heather soil | 4.24 | 1 | 1.0739 | 0.3007226 |
| Bag volume x Presence of peat | 23.95 | 1 | 6.0579 | 0.0142798 * |
| Residuals | 1529.74 | 387 | | |

Table A3: Results of the estimated marginal means for volumes 5L, 10L, 20L, 40L, 60L.

| Volume (L) | Marginal means price per bag [95% confidence interval] (€) | | Difference test | | | |
|---|---|---|---|---|---|---|
| | peat-free | with peat | Estimate (€) | SE | t.ratio | P-value |
| 5 | 4.77 [3.51 - 6.03] | 5.27 [4.17 - 6.38] | -0.503 | 0.473 | -1.064 | 0.2880 |
| 10 | 5.45 [4.25 - 6.65] | 6.12 [5.03 - 7.22] | -0.671 | 0.424 | -1.580 | 0.1150 |
| 20 | 6.82 [5.71 - 7.93] | 7.82 [6.74 - 8.91] | -1.01 | 0.348 | -2.888 | 0.0041** |
| 30 | 8.18 [7.11 - 9.25] | 9.52 [8.43 - 10.61] | -1.34 | 0.315 | -4.252 | <0.0001*** |
| 40 | 9.55 [8.39 - 10.7] | 11.24 [10.09 - 12.4] | -1.69 | 0.345 | -4.899 | <0.0001*** |
| 60 | 12.3 [11.0 - 13.6] | 14.6 [13.4-15.8] | -2.35 | 0.506 | -4.633 | <0.0001*** |

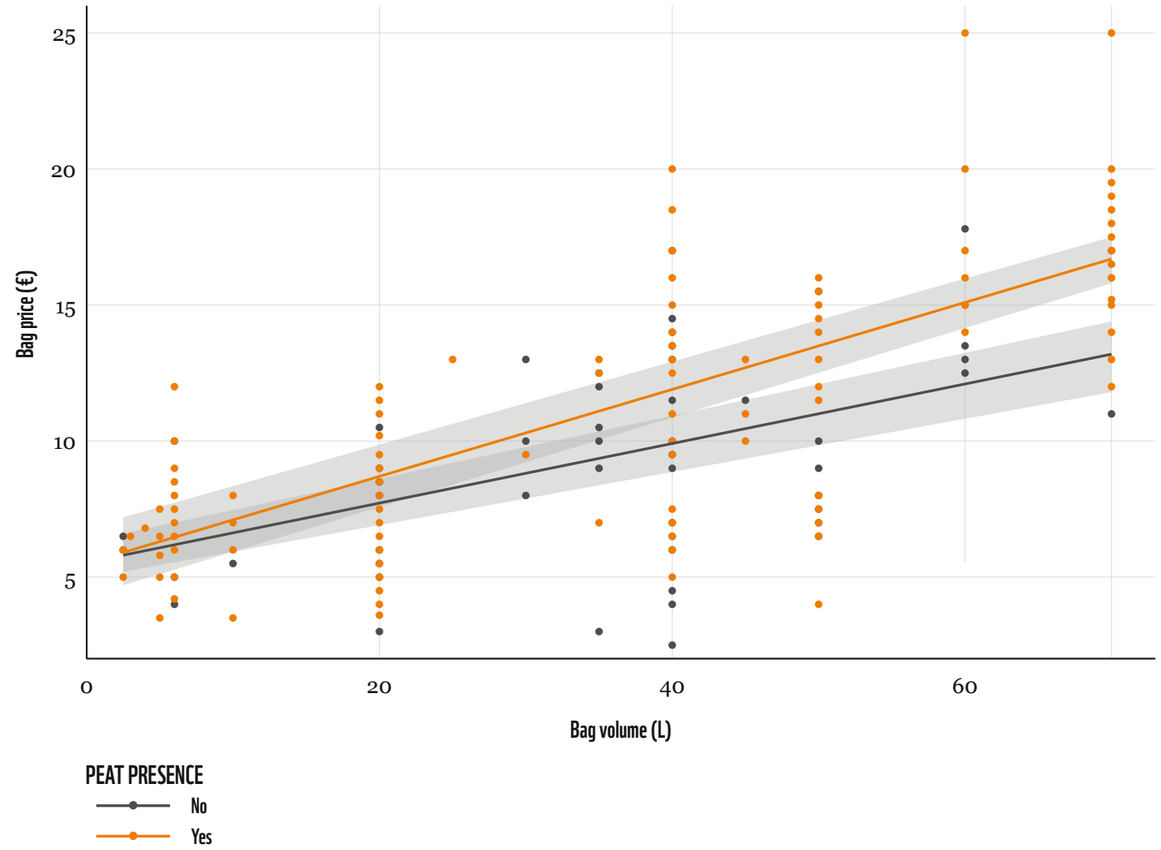



Figure A2: Bag price based on volume and peat content

# APPENDIX 5 – GROWING MEDIA PRODUCTION VOLUMES AND AVERAGE PEAT CONTENTS FOR DIFFERENT EUROPEAN COUNTRIES

Table A4: The table below presents, based on the most recent data, the volumes of growing media produced and the average peat contents for different European countries. The figures for peat-exporting countries, particularly the Baltic states, must however be interpreted with caution, as the distinction between raw peat and growing media is not always clearly established in the available statistics. After Germany and the Netherlands, which largely dominate production in Europe, France is among the major producers.

| Country | Quantity (1000m³) | Average peat content (%vol) | Reference year | Source |
|---|---|---|---|---|
| Germany | 7900 | 48% | 2025 | Calculated from IVG & GGS (2026) |
| Netherlands | 7500 | 63% | 2024 | From VPN (2025); Calculated from Covenant (2025) |
| United Kingdom | 4063 | 25% | 2022 | HTA et al. 2024 |
| Italy | 3833 | 64% | 2013 | Calculated from Schmilewski 2017 |
| France | 3500 | 58% | 2020-2025 | Calculated from AFAIA estimations |
| Latvia | 2123 | 92% | 2013 | Calculated from Schmilewski 2017 |
| Lithuania | 1984 | 99% | 2013 | Calculated from Schmilewski 2017 |
| Poland | 1880 | 97% | 2013 | Calculated from Schmilewski 2017 |
| Sweden | 1752 | 84% | 2020 | Calculated from Svensk Torv 2022 |
| Spain | 1631 | 30% | 2005 | Calculated from Schmilewski 2008 |
| Estonia | 1150 | 99% | 2013 | Calculated from Schmilewski 2017 |
| Belgium | 980 | 83% | 2013 | Calculated from Schmilewski 2017 |
| Finland | 905 | 88% | 2013 | Calculated from Schmilewski 2017 |
| Ireland | 884 | 87% | 2013 | Calculated from Schmilewski 2017 |
| Norway | 400 | 80% | 2017 | Calculated from Norwaste 2020 |
| Austria | 313 | 59% | 2013 | Calculated from Schmilewski 2017 |
| Denmark | 333 | 87% | 2013 | Calculated from Schmilewski 2017 |
| Portugal | 135 | 3% | 2013 | Calculated from Schmilewski 2017 |
| Total | 41116 | 63% | | Calculated from country-specific data |



# APPENDIX 6 – DETAILED ANALYSIS OF EUROPEAN POLICIES

A review of initiatives and strategies in this field across Europe was published in 2024 by Gruda et al. In this report, elements from that publication are incorporated and updated. They notably served as the foundation for developing the map in *section 3.2.1.*

## 1. United Kingdom

The United Kingdom, which is heavily dependent on peat imports from Ireland, was the first country to make commitments regarding the reduction of peat use following civil society mobilizations, supported in particular by the Prince of Wales, now the King of England. A first debate on peat resources was organized in the British Parliament in 1990[86] In 1995, a mineral planning directive (Mineral Planning Guidance 13) targeted an increase in the share of peat alternatives up to 40% within 10 years, which was supplemented in 1999 under the UK Biodiversity Action Plan[87] by a target of 90% in 2010. Following the failure to achieve these targets, the 2011 Natural Environment White Paper[88] targeted a phase-out of peat use by 2015 for the public sector, 2020 for amateur gardeners, and 2030 for professional users. In 2021, faced with the failure of voluntary targets, the government announced in the England Peat Action Plan[89] its intention to legally ban the use of peat—a regulatory first. Targets were set for 2024 and then 2025, but the legislative process to enforce this ban is still ongoing in 2026[90]... Finally, particular efforts in Scotland should be noted, along with a reference document for the transition to "peat-free[91]."

## 2. Switzerland

In Switzerland[92], where peat extraction has been banned since 1987, the Federal Council published a Peat Phase-out Plan in 2012 in response to a parliamentary motion. Without setting a priori targets, it subsequently relied on declarations of intent with stakeholders from various sectors, applying to both production and marketing (including imports). The target of 5% peat by 2020 for the consumer bagged growing media sector was achieved. For ornamental plants, the established targets are 70% in 2020, 50% in 2025, and 5% in 2030; for landscaping and cemetery maintenance, 5% in 2025; for vegetables, 70% in 2025 and 40% in 2028; for aromatic plants, 50% in 2025, 20% in 2028, and 5% in 2030; and for berries, 50% in 2025, 40% in 2028, and 25% in 2030. The public sector is also committed to no longer using peat.

## 3. Germany

In Germany, the objective of reducing peat use was first anchored in 2016 within the Climate Action Plan 2050 (Klimaschutzplan 2050), and was subsequently incorporated into political texts regarding climate and peatland protection. In 2022, the Federal Ministry of Food and Agriculture[93] published a peat reduction strategy (Torfminderungsstrategie), which set clear targets: a phase-out of peat use for amateur gardeners by 2026 and a reduction "as far as possible" by 2030 for professional horticulture. This strategy relies on a non-binding framework for the sectors involved, organizing roundtables, supporting research and development through dedicated projects, and launching information and awareness campaigns. In response, representatives from the industry and the horticultural sector, deeming these targets too ambitious, published their own agendas. In parallel, Lower Saxony, where nearly all peat extraction takes place, halted all new permits at the end of 2023, thereby scheduling the end of extraction for the 2040s with the expiration of current licenses. In 2026, the date by which the hobby gardener sector was supposed to be entirely peat-free, the Ministry launched a major consultation with industry and sector stakeholders, opening the way for a redefinition of its targets.

86. https://api.parliament.uk/historic-hansard/lords/1990/may/09/peat-resources
87. https://data.jncc.gov.uk/data/9c2e576a-31b7-4bae-a620-972d99177a1f/UKBAP-Tranche2-ActionPlans-Vol6-1999.pdf
88. https://www.gov.uk/government/publications/natural-environment-white-paper-implementation-updates
89. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1010786/england-peat-action-plan.pdf
90. https://bills.parliament.uk/bills/3886
91. https://era.ed.ac.uk/server/api/core/bitstreams/51f3bbdb-b13a-4e20-a2d6-ac2aa11ac87d/content
92. https://www.bafu.admin.ch/fr/tourbe
93. https://www.bmleh.de/DE/themen/landwirtschaft/pflanzenbau/gartenbau/weniger-torf-moor-schutz.html

## 4. Norway

Norway's intention to phase out peat use was declared in a report by the Ministry of Climate and Environment in 2016. Following the publication of expert reports on the matter, the Ministry committed in 2021[94] to stop opening new extraction sites, tax existing extraction, and encourage peat substitution in horticultural growing media. The ban on new extraction sites was implemented in 2025.

## 5. Netherlands

In the Netherlands, the reduction of peat use made its political entry with a parliamentary motion[95] in 2021, leading in 2022 to a broad, non-binding agreement (Covenant[96]) between ministries, industry, horticultural sectors, certifying institutes, and an NGO, Turfvrij ("peat-free"), including targets that were further specified later on. The targets for the consumer market are 60% renewable materials in 2025 and 85% in 2030, and for the professional market, 35% in 2025 and 50% in 2030. A general target of carbon neutrality and 90% renewable materials is set for 2050. Concurrently, growth targets are established regarding the use of compost and the RPP certification rate of peat (*see box 2.3.2*). In 2026, Turfvrij announced its withdrawal from the agreement, denouncing the double game played by the industry, which, while taking part in reduction commitments, conducts lobbying activities for the expansion of peat extraction sites in Europe.

## 6. Belgium

In Flanders, the issue of peat use has been discussed in Parliament over recent years without leading to concrete measures. In contrast, a consortium bringing together the Flemish authorities, industry, the horticultural sector, and research bodies committed[97], in 2022, to cap the use of "traditional" peat in horticultural growing media at 65% by 2025—excluding certified (RPP) and reused peat.

## 7. Ireland

Peat extraction in Ireland in recent decades was intended for large-scale electricity and heat production via the semi-state company Bord na Móna, for the production of briquettes for domestic heating ("turf cutting") at small-scale sites, and across large surface areas for horticulture—including a portion of Bord na Móna's volumes—primarily oriented toward export. The end of extraction by Bord na Móna was announced in 2015 and completed in 2021[98]. In 2022, the government also announced[99] a ban on the sale—though not the extraction or use—of peat for heating, which is responsible for significant air pollution. Concurrently, a long-standing regulatory conflict exists between the Environmental Protection Agency (EPA), the EU, and certain companies due to illegal extraction in sensitive areas[100]. In 2019, a Supreme Court decision banned large-scale peat extraction—for horticulture—due to non-compliance of permit conditions with European law. Faced with this situation and appeals from the horticultural sector, new permit conditions were formulated, and the government commissioned a working group to propose solutions. The resulting report[101] called for short-term emergency measures to ensure the supply of horticultural peat, and proposed a phase-out trajectory for peat use by 2025 for the amateur market and by 2035 at the latest for the professional market. Despite this, a report[102] from the Environmental Protection Agency (EPA) indicates that large-scale peat extraction continues illegally without authorization, and massive exports of horticultural peat persist.

94. https://www.regjeringen.no/contentassets/a78ecf5ad2344fa5ae4a394412ef8975/en-gb/pdfs/stm202020210013000engpdfs.pdf
95. https://www.tweedekamer.nl/kamerstukken/moties/detail?id=2021Z13415&did=2021D28569
96. https://convenantpotgrond.nl/over-het-convenant/
97. https://vlaco.be/sites/default/files/generated/files/news/20221117-overeenkomst-duurzame-substraten-getekend-door-bpf-avbs-pcs-ilvo-inagro-agrolink-pcfruit.pdf
98. https://www.bnm.ie/bord-na-mona-announce-formal-end-to-all-peat-harvesting-on-its-lands/
99. https://www.gov.ie/en/department-of-climate-energy-and-the-environment/press-releases/government-agrees-new-regulations-on-solid-fuels/
100. https://www.irishtimes.com/environment/2023/03/06/government-failing-to-prevent-illegal-turf-cutting-12-years-after-ban-says-conservation-group/
101. https://www.gov.ie/en/department-of-housing-local-government-and-heritage/publications/review-of-the-use-of-peat-moss-in-horticulture-final-report-of-the-chairman-of-the-working-group/
102. https://www.epa.ie/publications/compliance--enforcement/peat/Peat-Enforcement-Report-2025-(June-2025).pdf



## 8. Sweden

Following a 2025 report[103] on options to meet climate targets for the LULUCF sector in Sweden, the government[104] is studying measures to restrict extraction and/or reduce the use of horticultural peat.

## 9. Estonia

The Estonian government's draft legislation for a climate-resilient economy provides greenhouse gas (GHG) emission reduction targets by sector. In 2024, the working group tasked with land-use assessment formulated proposals to reduce the volumes of extracted peat[105], which constitutes a major emission source for the country. The process is still under discussion.

## 10. Finland

In Finland, the government set a target to reduce fuel peat[106] in 2019, which was ultimately surpassed by a collapse in consumption driven by rising carbon prices. Regarding horticultural peat, the intent to encourage its replacement was mentioned in the 2023 Climate Plan for the Land Use Sector[107], but without any specific targets or concrete measures.

## 11. Austria

In Austria, the intention to reduce peat use was incorporated into the government's peatland strategy (Moorstrategie 2030+[108]) in 2022, without specific targets or distinct measures.

## 12. France

In France, a 2020 legislative proposal in Parliament aimed at protecting water resources included a ban on peat extraction and imports in France, but it was rejected. Published in 2022, the fourth National Wetlands Plan 2022–2026[109] from the Ministry of Ecological Transition notes, without making any binding commitment, that "the question of a 'peat-free growing media' alternative could be raised at the international level."

## 13. European Union

On May 24, 2022, Germany called for a European strategy to reduce the use of peat in horticulture at the Agriculture and Fisheries Council of the European Union. This proposal has not led to any concrete follow-up since then.

103. https://www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2025/02/sou-202521/
104. https://www.lanssty relsen.se/download/18.376917b71975d4650e513741/1749804775960/Milj%C3%B6m%C3%A5lsberedningens%20delbet%C3%A4nkande%20SOU%202025%2021.pdf
105. https://balticnews.com/the-climate-resilient-economy-act-being-drafted-in-estonia-is-sparking-opposition-among-industrial-leaders/
106. https://ym.fi/en/-/minister-of-the-environment-and-climate-change-krista-mikkonen-budget-brings-welcome-boost-to-climate-work
107. https://julkaisut.valtioneuvosto.fi/server/api/core/bitstreams/b696e0e5-d468-4ae5-ae5f-aa0eb874c30b/content
108. https://www.bmluk.gv.at/service/publikationen/wasser/moorstrategie-oesterreich-2030.html
109. https://bassinversant.org/ressources/plan-national-milieux-humides-2022-2026/

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