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REVIEW OF POLICY ON FOREST RESTORATION IN CENTRAL EUROPE

Deliverable DT1.2.1 Regional policy analysis

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Executive summary

This report is Deliverable DT1.2.1, prepared as part of Activity 1.2 within the RE-ENFORCE project. It contributes to the project objective of assessing the current state of regional and European-level forest restoration policies. It addresses the critical need to understand and improve the policy frameworks governing forest restoration across Europe—a need that is implicitly acknowledged in the EU Biodiversity Strategy for 2030. It identifies and analyses practical, legal, and policy gaps that may hinder effective restoration efforts, particularly in the context of mounting environmental pressures such as natural disturbances. Additionally, this report provides a comprehensive review of legislation that addresses forest restoration after calamities in eight European countries (Austria, Croatia, Hungary, Czech Republic, Poland, Italy (Veneto region), Germany (Mecklenburg-Western Pomerania) and Slovenia.

Scope: Examination of the legal and regulatory frameworks that govern restoration activities following disturbance events such as forest fire, bark beetle outbreaks, storms, droughts, and ash dieback.

Key objective: Identifying legislative barriers and opportunities that influence the success of forest restoration. We review EU and national legislation and identify opportunities and challenges for forest restoration after calamities (wildfires, drought, storms, pest outbreaks) in six categories: goals and objectives of restoration; triggers and obligations for restoration; planning and implementation; financial mechanisms and incentives; monitoring, reporting and evaluation; enforcement and compliance.

Key observation: The five most obvious observations in the area of legislation addressing forest restoration are:

- Future climate scenarios are not sufficiently taken into account, and the need to enhance forest resilience is often overlooked.
- Sufficient and stable funding is essential but often lacking; long-term forest restoration requires consistent financial support.
- Fair and active participation of all relevant stakeholders is crucial to increase the effectiveness and legitimacy of restoration efforts.
- There is considerable variability in national approaches to forest restoration. More harmonized strategies may be needed to achieve shared biodiversity and climate goals.
- Robust monitoring frameworks are lacking. These are essential for assessing long-term ecological outcomes and supporting adaptive forest management.

Key takeaway: Future policy design should address these challenges through joint and cross-border efforts, which may be crucial in combating forest degradation. Such collaboration would also help achieve the common strategic goals set out in EU policy.

This report is structured in several distinct sections. First, we introduce the topic with background information on the importance of forest degradation and forest restoration and we also relate it to European policies. Then we provide a more detailed overview of European policy documents and they also add

national-level protocols which describe how countries act in case of natural disturbances affecting forests. Then the methodological approach of the policy review is presented which is followed by a section of review outcomes. Based on our findings, we list a set of policy recommendations that serve as the starting point for a forthcoming policy brief. This brief, part of Deliverable 1.2, will build upon the current review and further elaborate the implications for policy.

INTRODUCTION

European forests are vital for human wellbeing, economic prosperity, and ecological integrity of the landscapes. However, forest ecosystems, in addition to arable land and grasslands, are facing an increasing threat from large-scale disturbances that pose a risk to both the integrity of the forests and the benefits forests provide. Restoration of forest lands that are either partially affected or entirely degraded is pivotal to ecological recovery of ecosystem functions that in turn rebuild capacity to provide ecosystem services, reverse the loss of biodiversity, and enhance ecosystem resilience. Having forest ecosystems that are in good shape and are capable of withstanding shocks, adapting to changing conditions, and continuing to deliver their ecosystem services is essential.

This report examines the influence of EU and national policies on forest restoration efforts in Central European countries (figure below). The report is linked to RE-ENFORCE project activity 1.2 (*Identifying challenges and opportunities for implementation of restoration of degraded forest ecosystems*), which provides a review of currently operational and policy challenges and opportunities for restoring degraded forest ecosystems in Central Europe. The evolving policy landscape at both EU and national levels presents a mix of challenges and opportunities for forest restoration in Central Europe. Recent strategies — such as the *EU Bioeconomy Strategy*, the *EU Biodiversity Strategy for 2030*, and the *New EU Forest Strategy for 2030* — highlight the growing expectations placed on forests as key pillars of the *European Green Deal*. These policies aim to support the transition toward a climate-neutral, sustainable, and socially equitable economy. However, translating these ambitions into effective restoration practices requires addressing knowledge gaps and responding to increasing environmental pressures, including those driven by climate change and associated disturbances.

Effective forest restoration is a complex task that can face significant challenges. These cover a wide array of elements that need to be considered carefully, and can be distinguished into three categories: ecological, social, and policy-related. The first category consists of necessary ecological conditions that either support or hamper restoration, such as soil condition, changes in hydrology, proliferation of invasive species, browsing pressure, and tree species suitability under future climate scenarios. Secondly, the availability of workforce for replanting and managing the forest, the willingness of forest owners to be involved in restoration activities, and the use of non-native species are common societal issues. The third category refers to the policy framework, as various regulations, governmental programs, and strategic visions on forestry, which define the possibilities and restrictions for forest restoration. This report focuses on the latter, third category of forest restoration aspects.

In a systematic analysis of existing policies guiding forest restoration in eight cases (countries/regions) — Austria, Croatia, Hungary, the Czech Republic, Poland, Italy (Veneto region), Germany (MecklenburgWestern Pomerania), and Slovenia — we implemented a workflow of:

- identification and collection of policy documents,
- development of an analytical approach,

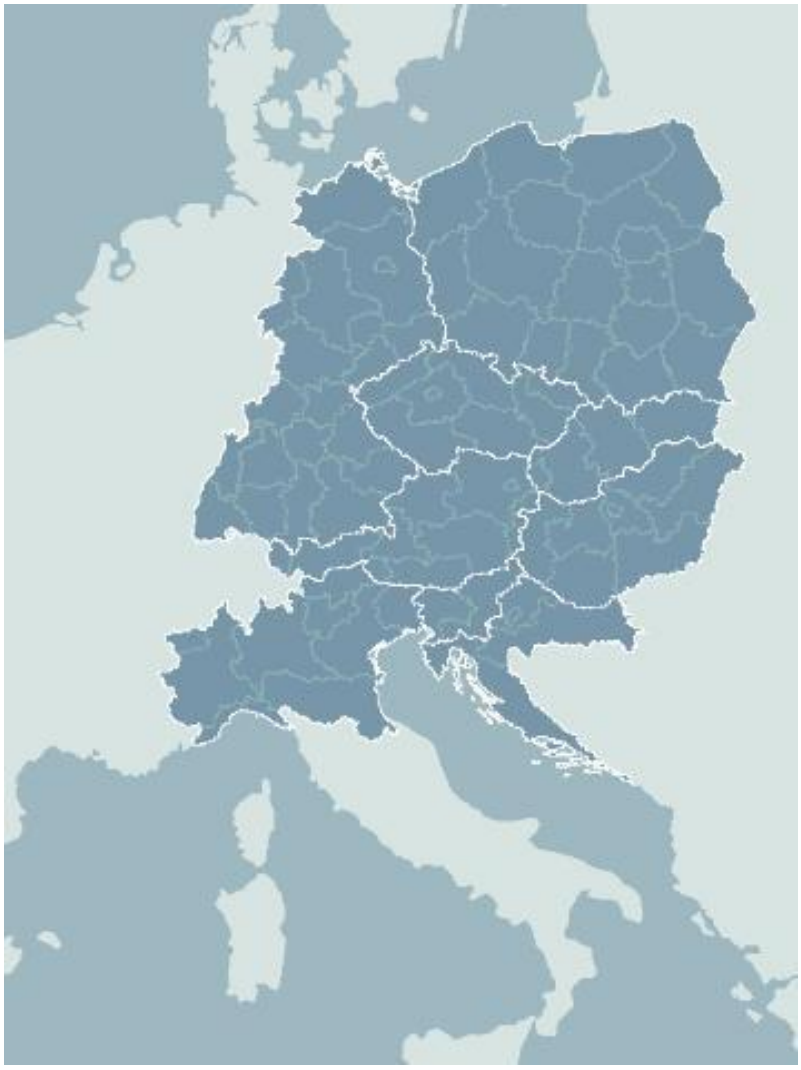
- extracting data from policy documents and synthesising the information,
- review of EU policies and national-level protocols of forest restoration,
- comparative analysis among policy documents,
- elaborating conclusions and policy recommendations.

The outcomes of the regional policy review are multifaceted. First, we provide an overview of European Union policies related to forest restoration and, implicitly, to forest degradation. This highlights the strategic direction of the EU and the current policy focus on forest restoration. Second, we present a brief overview of national-level protocols outlining how countries respond to natural disturbances. Third, we offer a synthesis of national policy documents that contain provisions relevant to forest restoration.

The review was carried out by project partners who extracted relevant excerpts from policy documents. Based on this information, a systematic summary was developed. This summary is structured around several key aspects of forest restoration, including:

- national definitions of forest restoration,
- goals and objectives of restoration,
- triggers and legal obligations associated with restoration,
- planning and implementation procedures,
- available financial and economic incentives,
- requirements for monitoring, reporting, and evaluation, and
- mechanisms for enforcement and compliance.

In addition, we explore some of the opportunities and challenges related to forest restoration. This final part of the review aims to shed light on factors that may support or limit effective restoration efforts.



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EU POLICY CONTEXT

Forest restoration in the EU is supported by a complex framework of strategic and legislative instruments. These vary in their legal weight, scope, and implementation mechanisms. This review focuses on three central frameworks — the *EU Biodiversity Strategy for 2030*, the *Nature Restoration Law* (NRL), and the *EU Forest Strategy for 2030* — while also accounting for related directives, regulations, funding mechanisms, and overarching policy initiatives that shape restoration practices, particularly following natural disturbances.

1. EU Biodiversity Strategy for 2030

This non-binding strategy aims to restore at least 30% of degraded ecosystems across the EU by 2030, explicitly including forest habitats. It promotes ecosystem-based restoration, close-to-nature forestry, and integration into national biodiversity plans. While it lacks legal obligations, it provides a critical political mandate and supports funding through instruments such as the *Common Agricultural Policy* (CAP), *LIFE Programme*, and *Horizon Europe*. However, the strategy does not offer detailed operational guidance or emergency mechanisms for forest recovery after calamities.

2. Nature Restoration Law (NRL)

Adopted on 18 August 2024, the NRL is the first legally binding EU law requiring Member States to restore ecosystems, including forests. It mandates the restoration of at least 30% of degraded forest areas by 2030, increasing to 60% by 2040 and 90% by 2050. Member States must submit National Restoration Plans by 1 September 2026, detailing area-based restoration actions, monitoring indicators (e.g., deadwood, forest birds, age diversity), and financing strategies. While offering strong legal backing, the law's practical effectiveness in post-disturbance contexts depends on how "degradation" is defined and how flexibly restoration plans address rapid-response needs.

3. EU Forest Strategy for 2030

This strategy builds on the biodiversity framework and provides a non-binding policy vision for sustainable forest management, increased resilience, and restoration. It encourages the use of close-to-nature forestry and the development of national forest plans. The strategy calls for aligning funding (e.g., *CAP, LIFE, Horizon Europe*) with restoration goals and proposes an *EU Forest Monitoring Framework* and *Forest Information System* to improve data collection. However, it lacks enforceable obligations and dedicated funding for post-disturbance recovery, making national implementation and coordination with binding legislation essential.

Complementary Legislative and Strategic Instruments

Habitats Directive (92/43/EEC) and *Birds Directive* (2009/147/EC): These binding directives, transposed into national law, require Member States to maintain or restore favourable conservation status for natural habitats and species, many of which are forest-dependent. Restoration obligations are especially relevant within *Natura 2000* areas, following major disturbances.

LULUCF Regulation (EU 2018/841): This legally binding regulation requires Member States to account for GHG emissions and removals from land use, land-use change, and forestry. It promotes afforestation, reforestation, and improved forest management as climate mitigation tools, directly supporting restoration.

Common Agricultural Policy (CAP): The CAP, while binding, is nationally implemented and provides financial support for forest restoration, afforestation, and agroforestry through eco-schemes and rural development programmes. However, access to funding is often delayed and varies across Member States, with no dedicated mechanism for emergency restoration.

European Green Deal: Though not a legal act, it serves as the overarching EU policy agenda on climate and biodiversity. It promotes ecosystem restoration, including forests, and drives legislative initiatives such as the NRL and reforms to funding frameworks.

EU Regulation on Forest Reproductive Material (FRM) (under development): This upcoming regulation aims to ensure the traceability, resilience, and genetic diversity of forest reproductive material used in reforestation. While not yet adopted, it will have significant implications for restoration quality and seed sourcing strategies.

EU Bioeconomy Strategy (revision expected in 2025): Although currently non-binding, the Bioeconomy Strategy is likely to shape the policy framework for forest resource use and restoration. A revised version may further integrate ecological restoration within circular and sustainable bioeconomy goals. Table 1: Summary of EU legislation that addresses forest restoration

Policy/Regulation	Core Objective	Post-Disturbance Restoration Role	Opportunities	Challenges

EU Biodiversity Strategy for 2030	Support ecosystembased restoration and enhance biodiversity across EU landscapes	Provides strategic direction and funding mechanisms (LIFE, EAFRD), encourages integration of restoration into national plans	Access to EU funding promotes biodiversity-focused recovery; integrates restoration into broader land use planning	Non-binding; broad and lacks specific post-calamity protocols; depends on national implementation
Nature Restoration Law (NRL)	Mandate restoration of at least 20% of degraded ecosystems by 2030	Legally obliges restoration of degraded forests, including postcalamity areas, with binding targets and timelines	Binding legal targets ensure restoration is prioritized, enables consistent national action plans, and integrates ecological indicators	Operational and funding gaps; inflexible timelines; needs technical guidance for postcalamity contexts
EU Forest Strategy for 2030	Promote sustainable forest management and adaptation to climate change	Encourages restoration after disturbances using closer-to-nature forestry; non-binding but offers guidance and funding alignment	Promotes ecological restoration principles; supports integration of climate adaptation; enables knowledge sharing	Non-binding; lacks enforcement or emergency funding; technical guidance for urgent restoration is limited

NATIONAL PROTOCOLS OF FOREST RESTORATION

In this section, we provide an overview of how the national legislation lays down the protocols of forest restoration after calamities in eight Central European countries.

Austria

In Austria, forest restoration following a calamity, such as storm damage, bark beetle infestation, or fire, is a well-structured process that combines ecological principles with legal obligations and practical support mechanisms. The procedure typically unfolds in several coordinated steps:

Initial Assessment and Consultation: After a calamity, forest owners can initiate contact with the local authority or the Chamber of Agriculture (Landwirtschaftskammer) to receive professional advice. This is especially important for small-scale private forest owners with limited knowledge of or connection to forest management. This early-stage consultation may include site inspections to assess the extent of the damage and to explore potential natural regeneration or the need for active reforestation. These initial site inspections can also be carried out independently, provided the landowner has sufficient expertise.

Site Evaluation and Planning: Forest owners, managers, and/or experts evaluate the affected area in terms of soil conditions, microhabitats, existing regeneration, and boundary delineation. If natural regeneration is not sufficient or feasible, reforestation is planned. At this stage, the landowner can apply for European or government subsidies, which often include requirements regarding the selection of tree species and the minimum planting density (e.g., number of plants per hectare).

Material Procurement: Once the plan is finalized, suitable planting stock and protective materials (e.g., fencing material) are ordered. The timing of procurement is critical to ensure the planting can be carried out during optimal periods, typically in spring or autumn.

Planting and Protection: The actual planting is carried out according to the planned spacing and species mix. Depending on the site, protective measures are implemented immediately, e.g. fences against browsing.

Young Stand Maintenance and Regeneration Monitoring: Post-planting care is essential to ensure successful establishment and is required by the Austrian Forest Act. This includes mowing for weed control, repeated application of protective substances, and monitoring for the survival rate. According to the Austrian Forest Act, the regeneration is considered legally "secured" (gesicherte Verjüngung) once the young forest is sufficiently developed and stable, which is defined by three or more growing seasons, enough plants for a full forest cover, and no major threats are to be expected.

Forest restoration in Austria is governed by a comprehensive legal framework that ensures timely and ecologically appropriate reforestation after calamities. The central piece of legislation is the Austrian Forest Act (Forstgesetz 1975), supplemented by other laws concerning forest reproductive material and state funding schemes. Section 13 of the Forest Act regulates reforestation deadlines, the definition of "secure regeneration", and the selection of appropriate tree species. Section 174 regulates penalties.

Reforestation Deadlines: Forest owners are legally required to reforest damaged or cleared areas in a "timely" manner. "Timely" means: Artificial regeneration must be completed within 5 years. Natural regeneration is permitted within 10 years, extended to 15 years at high altitudes where natural regeneration is ecologically more suitable. In special circumstances (e.g. illness or natural disaster), extensions of 2 to 5 years may be granted, provided a reforestation plan is submitted. The regeneration is only considered legally complete when it meets the criteria of "secure regeneration", which includes at least three growing seasons, sufficient plant density for forest cover, and no foreseeable risks to young growth.

Tree Species Selection: The law also mandates the use of site-appropriate forest plant material (standortstaugliches Vermehrungsgut forstlicher Holzgewächse) to ensure ecological compatibility and longterm forest health. Tree species should be chosen based on site suitability, expected ecosystem services of the future stand, as well as future climate resilience. Increasingly, digital tools and climate models support identifying species and provenances that are better adapted to expected future conditions. This proactive approach helps enhance the long-term stability and biodiversity of the new forest stand.

Penalties: Non-compliance with reforestation obligations, primarily the failure to meet legal deadlines for reforestation or to achieve secure regeneration, can result in penalties of up to €7,270 or up to four weeks imprisonment.

In cases where afforestation is subsidized with state or European funds, additional conditions apply based on the subsidy used, for example, under the *Forest Fund Act* (Waldfondsgesetz) in the national case. In this case, for example, more than 75% of the planted trees must correspond to the natural forest community, and there are requirements regarding planting density per hectare. These criteria ensure that funded reforestations support biodiversity and climate resilience goals.

The *Forest Reproductive Material Act* (Forstliches Vermehrungsgutgesetz) governs the production, import, export, and marketing of forest reproductive material, in alignment with *EU Directive 1999/105/EC*. It outlines rules for: Categorization of reproductive material (source-identified, selected, qualified, tested); Authorization of seed stands; Marketing and labelling requirements for seeds and planting stock.

The *Forest Reproductive Material Regulation 2002* (Forstliche Vermehrungsgutverordnung) complements the act above by defining: Tree species per category of reproductive material; Provenance regions (Herkunftsgebiete) within Austria for each species; Specifications for the quality and documentation of plant material used in afforestation.

These laws together form a robust legal foundation to secure long-term forest sustainability while aligning reforestation efforts with Austria's ecological, economic, and climate policy goals.

Croatia

Current legal framework for forest restoration in Croatia is primarily based on the *Law on Forests* (Zakon o šumama) and its supporting regulations. It addresses a range of natural and human-induced calamities that can affect forests such as forest fires, illegal logging, forest dieback, clear-cutting, natural disasters (floods, landslides, windthrows), harmful organisms (fungi, pests), land use after deforestation. These legal provisions are primarily focused on prevention, restoration, and penalties for inaction. Although it appears strong and comprehensive and aligned with EU standards, especially for public forests, legal framework struggles with enforcement limitations, the complexities of private ownership, and insufficient ecological flexibility.

Ecological flexibility refers to the ability of forest policies and restoration frameworks to adapt to diverse ecological conditions, site-specific needs, and broader environmental goals such as climate adaptation, biodiversity conservation, and ecosystem services. Ecological flexibility is built into the *Law on Forests* (Zakon o šumama), that encourages natural regeneration as a preferred method where possible which aligns with ecological principles, and also the Law on Forest Reproductive Material (Zakon o šumskom reproduktivnom materijalu), that promotes the use of indigenous, genetically appropriate planting material. Croatia's ecological flexibility includes basic ecological principles. However, it needs improvements through policy innovations, flexibility in silvicultural prescriptions and encouragement mechanisms for restoration projects. Improvements could be implemented by updating forest legislations, promoting adaptive management and monitoring frameworks and supporting forest restoration pilot projects.

In Croatia's forest restoration framework, enforcement gaps in forest restoration are: weak oversight on private forest lands, delayed or missing restoration after calamities, infrequent penalties or prosecution, limited tracking of forest health and regeneration, overreliance on self-reporting from private forest owners, institutional coordination which is leads to unclear accountability. They highlight the disconnect between legal framework and its effective application and monitoring. These gaps diminish capability to successfully implement forest restoration on forests affected by natural and human-induced calamities.

Private ownership adds complexity to the legal framework because the fragmented nature of private ownership (with many landowners holding small parcels) makes it challenging to implement large-scale restoration projects or to ensure consistent forest management practices. Also, private forest owners are required to comply with restoration laws, but monitoring and enforcement of these obligations are often inadequate, leading to non-compliance or delays in restoration efforts.

The Croatian legal framework for forest restoration provides a comprehensive set of regulations for sustainable forest management, restoration after calamities, and biodiversity protection. However, challenges remain in its application, notably with private ownership of forests, enforcement gaps, and limited ecological flexibility.

Croatia's Forest Law (Article 6), *Regulation on Forest Management* (Articles 58–69), and *Nature Protection Strategy* provide a legal foundation for forest restoration, offering financial support for reforestation, recovery from natural disasters, and disease control to ensure sustainable forest management. Article 6 of the *Forest Law* mandates wildlife conservation, karst forest protection, forest road maintenance, and scientific forestry research, enhancing technical and executive capabilities within the sector. The law requires the formation of genetic and seed banks to ensure high-quality reproductive material for restoration while enforcing certified quality standards for suppliers, supporting modern and traceable forestry practices.

The *Act on Forest Reproductive Material* in Croatia regulates the production, marketing, and import of forest reproductive materials, ensuring suitability for specific sites and alignment with sustainable forest management. Article 3 of the Act defines seed material, plant parts, and planting material, which are

essential for forest restoration efforts and maintenance of forest tree cultures and plantations. Funding sources and amounts are not explicitly detailed, even though financial costs are anticipated within the legislation.

Although the *Nature Protection Strategy* and *Action Plan* strengthen land use, biodiversity conservation, private forest sustainability, and public involvement, several challenges exist. Droughts, wildfire risks, disease outbreaks, and karst region erosion threaten sustainability, while legal disputes over fragmented land ownership and bureaucratic delays in forest consolidation hinder restoration progress. Infrastructure deficiencies, including poorly maintained forest roads and limited access to remote areas, further complicate restoration projects, and funding sources for improvements remain unclear, despite anticipated financial costs within the legislation. Addressing these challenges requires stronger enforcement, clearer funding allocation, and improved coordination among relevant stakeholders to ensure effective and sustainable forest restoration.

Czech Republic

The key piece of legislation governing forest management in the Czech Republic is Act No. 289/1995 Coll., the *Forest Act*. This law is highly relevant to both forest restoration and calamity events, addressing both prevention measures and post-calamity action. In terms of prevention, the Act outlines prohibited activities in forests that could contribute to calamity risks, such as lighting campfires on forest land. It also imposes a legal obligation on forest owners to manage their forests in ways that reduce the risk of calamities. This includes a prohibition against forest management practices that could endanger the stability of neighbouring forest properties. Furthermore, forest owners are required to monitor and prevent the spread of harmful agents, such as pests, through active surveillance and intervention.

After a calamity occurs, the Forest Act requires forest owners to take immediate measures to mitigate damage, including prioritizing salvage logging and restricting forest and timber management activities where necessary. Regarding forest regeneration, owners must reforest affected areas within two years and successfully establish a new forest stand within seven years. A "new forest stand" is defined as an area where trees are successfully growing and free from damage caused by game or competing vegetation. These new stands must consist of site-appropriate tree species, taking into account both latitude and longitude, i.e., the appropriate forest seed zone. However, an amendment to the Forest Act has recently been approved by the Lower House of the Czech Parliament and sent to the Senate, which proposes extending these deadlines to five years for reforestation and ten years for stand establishment. In certain cases, the relevant authority (e.g., the Ministry of Agriculture or regional offices) may grant exceptions to these obligations, particularly in the event of large-scale, state-wide calamities. In such cases, Regulatory Measures of a General Nature (opatření obecné povahy) may be issued as ad hoc quasi-legislative acts.

Related legislation:

1. *Decree No. 456/2021* provides technical details, including rules on transferring forest reproductive material between seed zones, definitions of reforested land, and the criteria for a successfully established forest stand, such as minimum planting densities and required proportions of broadleaved species.
2. Seed zones are formally defined in *Decree No. 298/2018*.
3. The handling, registration, and certification of forest reproductive material is governed by *Act No. 149/2003 Coll.*, which transposes *EU Directive 1999/105/EC* into Czech law.

Financial support: Forest owners may apply for financial support under the Strategic Plan of the National Agricultural Policy for 2023–2027, specifically under Intervention 38.73 – Investments in the Restoration of Calamity-Affected Areas. This intervention, co-financed by the European Union, supports reimbursement of costs related to:

- removal of forest stands up to 40 years of age damaged by calamities and designated for reconstruction,
- site preparation following salvage logging (e.g., root plate removal, ploughing, soil scarification, terrain adjustments, chemical soil treatments),
- artificial regeneration through planting or sowing,
- protection of newly established forest stands (e.g., fencing, individual tree protection, chemical deterrents against wildlife).

Italy

Background: There is currently in Italy no specific law governing the restoration of forests damaged by natural disasters. However, the Law No. 40 of 18th March 2025, (L. 40/2025) entitled '*Framework law on post-disaster reconstruction*' establishes a comprehensive regulatory framework for managing reconstruction in areas affected by natural calamities or man-made disasters after the State of

Emergency has concluded. The procedure described in
L. 40/2025 is also adopted for the restoration of forests affected by calamities.

The post-disaster restoration workflow:

1. Declaring the State of Emergency
   The Council of Ministers, upon proposal of the President of the Region affected by the calamity, may declare the State of Emergency with national relevance (Legislative Decree 1/2018, Art. 24). This phase allows for the activation of extraordinary Civil Protection measures.
2. Assessing the damages and planning
   The Department of Civil Protection prepares a technical report quantifying the requirements for restoring public structures and infrastructure and damaged natural areas (L. 40/2025, Art. 2, cl. 1). The Regions contribute with detailed data and assessments.
3. Declaring the reconstruction state
   By the conclusion of the State of Emergency, based on a report from the Head of the Civil Protection Department and after consultation with the involved Regions, the Council of Ministers may declare a state of reconstruction of national relevance (L. 40/2025, Art. 2). This act allows for the transition from management of the emergency to management of the reconstruction.
4. Nominating the special commissioner
   By decree of the President of the Council of Ministers (or the delegated political authority), a Special Commissioner for reconstruction is nominated, who may be the President of the Region concerned or another qualified figure (L. 40/2025, Art. 3).
5. Establishing the coordination committee
   A Coordination Committee is established to assist the Commissioner in performing guidance and monitoring activities (L. 40/2025, Art. 4).
6. Implementing restoration measures
   The Commissioner coordinates the implementation of the measures, entrusting implementing bodies: Regions, local authorities, Universities, consortia, etc. The regions, through their Forest Service, plan and implement technical measures in accordance with the principles of the Consolidated Act on Forests and Forest Sector (TUFF) (Legislative Decree 34/2018, Art. 2 and 3).
7. Managing the debris and forest materials
   The law stipulates that materials resulting from the calamity (e.g., fallen trees) may be treated, transported and reused in accordance with circular economy principles, in compliance with environmental regulations (L. 40/2025, Art. 19).
8. Environmental monitoring and biodiversity conservation
   The interventions must ensure the conservation of biodiversity and provide for environmental monitoring actions (Legislative Decree 34/2018, Art. 2, letters d and h).
9. Returning to administrative normality
   At least 30 days before the expiration of the reconstruction period, the Commissioner must issue an order for the transfer of powers back to the ordinary authorities, ensuring the continuity of activities (L. 40/2025, Art 2, par. 4).

Poland

The basic document regulating forest management in Poland is the *Forest Law*, enacted in 1991, with further revisions. It applies to all forests regardless of ownership category. The most common disaster events are wind damage, fires and outbreaks caused by harmful insects. The responsibility for restoration of damaged forests belongs to owners, and in the case of public forests covering almost 80 % of the forest area of the country - to the forest administration. Resources for this purpose come from the forest fund, created in the State Forests, mainly from write-offs on timber sales, fees for excluding land from forest production and compensation for external damage. The selection of planting material for restoration purposes is carried

out in accordance with the regulations included in the
Forest Reproductive Material Act. The origin of the seedlings must be documented and in accordance with the rules of seed regionalization. More detailed regulations on restoration methods and species composition selection according to forest site and region are contained in internal documents of the State Forests, such as „Principles of Silviculture" and the „Forest Protection Instruction". There are obligatory for State Forests and recommended for forests of other ownership forms supervised by local administration.

Slovenia

Slovenia's forests are frequently impacted by abiotic factors such as wind, ice, and snow, and biotic threats like bark beetles, fungi, and other pests.

Forest restoration in Slovenia is governed by a comprehensive legal and strategic framework that ensures sustainable recovery and management of forests following natural disturbances. Key legislation includes the *Forest Act* (Zakon o gozdovih – ZG) the *Plant Health Act* (ZZVR-1), alongside several detailed bylaws and regulations focusing on forest reproductive material and forest protection.

The *Act on Remedying the Consequences of Natural Disasters* (ZOPNN) does not apply automatically after every damaging event. For its provisions — particularly those related to financing and state intervention — to come into force, the National Assembly or the Government must officially declare the event as a natural disaster. This declaration is a prerequisite for triggering the mechanisms under the ZOPNN, such as funding for restoration or preventive measures. If there were clearer criteria or an automatic trigger for when the Act applies, it could simplify and speed up the process of forest restoration, especially in securing financial support for affected forest owners.

The *Resolution on the National Forest Programme* (ReNGP) and associated regulations provide guidelines for forest regeneration, prioritizing natural regeneration, which accounts for approximately 95% of forest renewal. For the remaining areas, reforestation is supported with nursery-grown seedlings, cultivated from seeds collected in approved and registered seed sources. This material must meet the requirements set in several decrees, including the Regulation on the Register of Suppliers and Regulations on Forest Reproductive Material.

The Slovenian Forest Service (Zavod za gozdove Slovenije) plays a central role in coordinating and approving forest restoration efforts. Based on damage assessments, it prepares restoration plans in collaboration with forest owners, local communities, and nature protection authorities. These plans categorize interventions by priority and prescribe sanitary felling, removal of infested trees, and preventive measures. Forest owners are often required to act within a legally set timeframe, or the state may enforce measures through administrative execution.

Importantly, forest owners whose land requires restoration due to natural disasters are entitled to state cofinancing for both reforestation and protective measures. Eligibility is based on a formal decision from the Forest Service and inclusion in the national forest investment program, with all work aligned with forest management plans.

Germany

Forest restoration in Germany follows a decentralized and varied approach, shaped by federal structures, differing state-level regulations, and distinctions between public and private ownership. While broad national principles — such as sustainable forest management and biodiversity protection — are in place, the actual procedures for restoration vary significantly depending on the landowner and the federal state in question.

Regarding the typical procedure of forest restoration, especially following a disturbance event such as windthrow, bark beetle outbreak, or fire, there are important distinctions between private and public (particularly state-managed) forests. Private forest owners in Germany enjoy a high degree of autonomy. If they choose not to apply for public funding, they are largely free to plant whatever species they prefer. However, once they apply for funding or subsidies — for example through federal or EU-supported restoration programs — they are required to comply with strict conditions concerning species selection, planting densities, site preparation, and long-term management. These conditions are detailed in specific policy documents and administrative guidelines, which vary by federal state and funding program (refer to the spreadsheet in supplementary materials for an overview of these rules).

In contrast, state forest administrations are bound by their respective federal state regulations. For instance, in Mecklenburg-Western Pomerania, forest restoration must follow the "Bestockungszieltypenerlass", an official directive that defines permissible combinations of tree species according to site conditions and ecological goals. Other states use different applications— ranging from forest development types to ecological site classifications — to guide restoration planning and species choice. These frameworks typically promote native and site-adapted species, often with an emphasis on increasing structural and species diversity to enhance resilience to future climate extremes.

Another important aspect concerns the legal timeframe for reforestation. Most federal states require forest owners to re-establish forest cover within a specific period — usually within two to three years — after a clear-cut or major disturbance. This regulation applies regardless of whether the disturbance was planned (e.g. final felling) or unplanned (e.g. storm damage). This legal equivalence is noteworthy: Germany does not clearly distinguish between clear-cuts and natural disturbance events in its forest law. In practice, a disturbance is often treated as a "special case" of clear-cutting, and terms such as "forest degradation" are not formally defined within German legislation.

One possible reason for this might lie in historical growing conditions. Germany's forests have traditionally benefited from favourable climatic and soil conditions, which have allowed for rapid natural regeneration and productive reforestation. As a result, there may have been little perceived need in the past to define or regulate forest degradation or to develop a distinct legal framework for large-scale ecological restoration. However, with climate change increasing the frequency and severity of disturbances, and with widespread forest dieback in recent years, this legal and conceptual ambiguity may become more problematic in the future.

Hungary

In Hungary, the supervision of forests falls under the authority of the Ministry of Agriculture. Professional forest management is overseen by the Forestry Authority operating under the County Government Offices. Hungarian forestry distinguishes between two types of forest ownership: private and stateowned. The management of state-owned forests is carried out by State Forest Enterprises or National Parks. In practice, forest management is performed by forest managers. According to Act No. XXXVII of 2009 (on forests, on the protection and management of forests), a forest manager is a lawful user registered in the forest management registry maintained by the Forestry Authority. Forest management rights and obligations - except for the exercise of usufruct rights - belong to and are the responsibility of the forest manager. The forest manager is responsible for protection against damaging impacts and harmful activities affecting the forest, the mitigation of the impacts of damage, soil protection, and the professional regeneration of the forest (Section 17 (3) a)-b)).

According to Section 56 of the aforementioned forestry act, the following are considered threats to forests or to the exercise of forest usufructs: damage caused by plant, animal, or other infectioninducing organisms (biotic forest damage); damage caused by wildlife populations; activities endangering the forest; activities endangering forest soil; snow, ice, wind, fire, air pollution, floods, changes in groundwater level, waterlogging, drought, frost (abiotic forest damage). The Forestry Authority maintains an official registry of reported forest damages containing the following data: the reporting individual's personal identification data, the location of the damage, the damage code, the extent of the damage, the area affected, and the time of detection. The National Forest Damage Registry is considered an official public registry. Under Section 57, in order to protect forest ecosystems, the forest manager is required to monitor the health status of the forest and to take necessary measures to prevent and mitigate harmful effects threatening the forest.

In practice, the above is implemented as follows. The
forest manager is required to report any damage (biotic and abiotic) affecting their forest areas quarterly using a damage report form. This form must be sent to the Ministry of Agriculture, where the data are compiled in a database. There are two types of damage report forms: Type "A" and Type "B". The "A" type Forest Protection Damage Report Form is intended for fulfilling the mandatory or optional reporting obligations specified in the forestry act. The "B" type form is to be used if the forest manager wishes to apply for a source of funding (e.g., application-based source) to assist in the restoration of the damaged forest or requests modification of the reforestation deadline (for either initial afforestation or completion) due to the damage. If the report is purely for fulfilling the mandatory reporting obligation, it is submitted as a so-called „0" report using Form A.

The form must include the following data: location, forest area, forest subcompartment, tree species, damage code, affected area, frequency, damage severity, affected timber volume, detection (month, day), method of control, control status, obligations.

Following felling or destruction of the forest due to damage, the forest manager has a reforestation obligation, which is fulfilled once the forest is officially approved by the Forestry Authority. The duration of the reforestation obligation depends on the target tree species and the intended function of the forest.

Submission of the "B" type damage report form allows for an extension of the reforestation obligation timeframe as explained above.

Following forest damage events, application-based funding is available for restoration purposes. Support schemes titled Restoration of Forestry Potential serve this purpose. The funding consists of both EU and domestic sources. Eligibility for application likewise requires the prior submission of the "B" type damage report form.

It is also worth mentioning Section 58 of the forestry act. Except for emergency pests, in cases where pests proliferate in the forest due to reasons attributable to the forest manager - and where their presence poses a significant risk to forest survival or is likely to spread to neighbouring forests - the Forestry Authority may obligate the forest manager to carry out control measures. If the pest outbreak is not due to the forest manager's fault or if effective control cannot reasonably be expected from them, the Forestry Authority orders public-interest control measures. Funding for such control measures comes from a budgetary chapter earmarked for this purpose. The control of the spread of quarantine pests regulated by specific laws is handled by the National Food Chain Safety Office. If the forest manager fails to comply with a binding decision by the Forestry Authority, the National Food Chain Safety Office may, upon request by the Forestry Authority, order control measures at the expense of the forest manager.

Primary legislation and implementing decrees governing forests in Hungary:

- Act No. XXXVII of 2009 on forests, on the protection and management of forests
- Decree No. 61 of 2017 (XII. 21.) of the Ministry of Agriculture on the implementation of Act No. XXXVII of 2009

METHODOLOGY OF THE NATIONAL POLICIES REVIEW

The methodological approach was developed by SFI but presented and discussed within the entire project consortium. A concept of this review was defined in terms of the aim of the review, use of basic definitions

to frame the review, and finally by setting the phases
(steps) of implementing a review. The national review was done by eight individual partnering countries (Austria, Croatia, the Czech Republic, Germany, Hungary, Italy, Poland, and Slovenia), while the EU level review was done by SFI. This chapter not only presents the concept of review but also provides relevant additional information that emerged during the review.

Basic definitions

The following set of definitions originated either from the project's Description of Work document or from *ad hoc* internal discussions within the project consortium.

1. The damaging agents considered in the review that can induce degradation and therefore trigger the need for restoration are:
   - windthrows,
   - forest fire,
   - drought, • bark beetle and,
   - Ash dieback.
2. Forest degradation in this review is referred to two acknowledged definitions:

"a process where forest's biological wealth is permanently diminished, which leads to decline in its health and ability to provide essential services" (IUCN[1])

"changes within the forest which negatively affect the structure or function of the stand or site and thereby lower the capacity to supply products and/or services" (FAO[2]).

3. Restoration is "…the process of actively or passively assisting the recovery of an ecosystem in order to improve its structure and functions, with the aim of conserving or enhancing biodiversity and ecosystem resilience, through improving an area of a habitat type to good condition, re-establishing favourable reference area, and improving the habitat of a species to sufficient quality and quantity …" (EC[3]).
4. Aspects of forest restoration are six fundamental elements that are key for a deeper understanding of the context of forest restoration: (1) goals and objectives of restoration, (2) triggers and obligations for restoration, (3) planning and implementation, (4) financial mechanisms and incentives, (5) monitoring, reporting and evaluation, (6) enforcement and compliance. Additionally, the policy review covered national definitions of forest degradation, opportunities and challenges that can be linked to forest restoration in national policies, and a short country-level review of the entire forest restoration process.

[1] Deforestation and forest degradation - resource | IUCN

[2] Definitional issues related to reducing emissions from deforestation in developing countries

[3] Regulation - EU - 2024/1991 - EN - EUR-Lex

For this purpose, a spreadsheet template was developed so that it would ease collection and to some extent the analysis of data. It was designed so that each country was able to input information on individual aspects of forest restoration with additional information on national definitions, opportunities, challenges and financial constraints of forest restoration. The detailed breakdown of aspects of forest restoration are:

. **National definition** of forest degradation: is there a national definition?

. **Goals and objectives** of restoration: what is the end-goal of restoration?

- *Aim (examples)*: Re-establishing forest cover; Enhancing biodiversity (e.g. habitats for species, increasing deadwood, promoting uneven-aged forests); Improving ecosystem services; Increasing forest resilience to climate change, pests or fire; Supporting sustainable timber production; Restoring specific habitat types to a favourable conservation status or good condition.
- *Targets*: if there are specific, measurable, achievable, relevant, and time-bound (SMART) targets for restoration (e.g., percentage of area to be restored, specific metrics for forest structure or biodiversity)?

3. **Triggers and obligations** for restoration

- *When is restoration required*: What events or conditions trigger a legal obligation to restore? (e.g., after clear-cutting, forest fires, pest outbreaks, illegal logging, or as part of national/regional conservation plans for degraded areas).
- *Who is responsible for the restoration*: Clearly defined responsibilities for undertaking and financing restoration activities (e.g., forest owners, concession holders, state agencies).

4. Planning and implementation

- *Restoration plans*: are there any specific provisions on planning the restoration activities.
- *Permitted/encouraged restoration methods*: (1) does the law specify or favour certain restoration techniques (e.g., planting native species, promoting natural regeneration, close-to-nature forestry, specific silvicultural practices)?; (2) Are there restrictions on certain practices (e.g., use of non-native or invasive species)?
- *Land use planning integration*: How is forest restoration integrated into broader landuse planning and landscape-level approaches?
- *Stakeholder participation*: Provisions for consultation with or involvement of local communities, indigenous peoples, private landowners, and other stakeholders in planning and implementation.

5. Financial mechanisms and incentives

- *Funding sources*: How are restoration activities funded (e.g., public budgets, dedicated reforestation funds, private investment, payments for ecosystem services)?
- *Incentives*: Are there incentives (financial or otherwise) to encourage voluntary restoration or to meet mandatory requirements (e.g., subsidies, tax breaks, certification schemes)?

6. Monitoring, reporting and evaluation

- *Monitoring requirements*: Are there provisions for monitoring the progress and outcomes of restoration activities? What indicators are used?
- *Reporting obligations*: Requirements for responsible parties or government agencies to report on restoration efforts and achievements.

- *Evaluation and adaptive management*: Processes for evaluating the effectiveness of restoration projects and adapting strategies based on outcomes.

7. Enforcement and compliance

- *Compliance mechanisms*: How is compliance with restoration obligations ensured?
- *Penalties*: What are the penalties for non-compliance with restoration requirements or for activities that lead to forest degradation requiring restoration?
- *Dispute resolution*: Mechanisms for resolving conflicts related to restoration activities.

8. **Opportunities**: external factors that an individual or an organisation can use in their advantage, which means achieving goals of forest restoration. These can be technological (managerial) developments supported by policies, or financial aids and social shifts in perception of various groups (environmental protection).

9. **Challenges**: external factors that could potentially pose obstacles for forest restoration and would thus negatively impact progress or pose risks. These are environmental factors (nature protection limitations, risk of alien species, fire risk management, …), professional capacities (lack of support for staff and knowledge, lack of cooperation among organisations, etc.), market conditions (lack/restrictions of available forest reproduction material), incoherent policies (contradiction in different policies, lack of policies, differences among regions, …). Two key categories of challenges that need to be addressed are:

   - *Legal constraints*: restrictions that originate from rules on use of FRM, restrictions of using non-native species, restrictions on changing the tree species composition etc.
   - *Economic constraints*: lack of economic support for nurseries, restoration works by owners or managers, etc.

Initially, all the information was extracted from national policy documents (laws, regulations, strategies, protocols, etc.), translated from national languages into English and then put into the spreadsheet. This was done by project partners upon their expert judgment on relevancy of policy documents for forest restoration. After that, snippets (quotations) of text from individual documents were revised and linked to specific aspects of forest restoration that outlined in the previous paragraph to have a clear and comprehensive representation of information that is available for each aspect of forest restoration.

The analysis of this text was done with a combination of text analysis AI-supported tool and manual revision/summarization. The first step in analysing the text was to identify sections that clearly refer to a specific aspect of forest restoration. Then, this information was summarised across all countries included in the analysis to see either common point or key differences. An example is given below.

Example of the translated text from the policy document: "… *defines forest and forest land management, including activities related to natural and artificial forest regeneration, afforestation of non-forested forest land, and the restoration and regeneration of forests damaged by biotic and abiotic factors*."

Reforestation (re-establishment) of forest cover may be one of the key measures to restore degraded forest ecosystems, thus text was indicated as having information on aims of restoration, and more specifically, it refers to re-establishment of forest cover. This was the analysis approach for all other aspects of forest restoration.

In some cases, the text from policy documents can be very clear on forest restoration, while in other cases it is hard to establish the link. Therefore, an additional revision of text extraction was done by each individual project partner to ensure consistency and correct interpretation.

The results are displayed in two forms, textual interpretation and a table-format summary.

THE POLICY REVIEW

NATIONAL DEFINITIONS OF FOREST DEGRADATION

This section presents a summarized overview of national definitions of forest degradation so that national contexts would be clearly displayed. This is important to understand the aspects of forest degradation countries are focused on, which implies their strategies on restoration. Given the fact that forestry policies are in national domains and there is no EU-level forest policy as there is for agriculture (CAP), a coordinated approach in dealing with degradation also depends on common understanding of forest degradation.

Common themes and similarities across definitions of degradation are:

- loss and reduction in productivity, fertility, functions of forest and productive capacity,
- explicit or at least implicit indication of causes of degradation, often by distinguishing between natural (external) drivers,
- degradation or emerging damage is, obviously, seen as an undesirable state of forest ecosystems,
- several definitions also refer to the need for intervention/action,

Degradation/damage is presented as an undesirable state compared to a healthy or properly functioning forest.

Implicit Need for Action: Several definitions directly imply or state the need for intervention (reforestation, protection, reconstruction, rehabilitation).

Key differences are related to:

- terminology used to describe degradation like devastation, endangered sustainability, damages etc.,
- the focus of degradation: forest soil in case of Austria, forest functions/ecosystem integrity in the case of Slovenia and Germany, ecosystem sustainability in case of Poland, and specific damaging drivers in case of Austria,
- some definitions are relatively explicit/direct (Slovenia, Poland) or they rely on related concepts or general legal obligations (Austria, Croatia, Germany),
- specificity of causes/drivers of forest degradation, with some definitions listing specific threats (Austria, Poland, Croatia), while other are more general (Slovenia, Germany).

Three countries have no explicit definition of forest degradation – Hungary, Germany and Italy –, even though national legislation does refer to forest restoration after damaging natural disturbances.

We have also clustered countries upon commonalities in national definitions of forest degradation, especially in terms of focuses that definitions exhibit.

1. Focus on biophysical capacity and health of ecosystems: definitions primarily concerned with the loss of the forest's physical ability to produce or regenerate
   - Austria (soil productivity, reforestation impossibility), • Germany (maintaining productive/functional capacity),
   - Slovenia (reduced vegetation/fertility).
2. Focus on forest functions and ecosystem services: definitions emphasizing the impairment of the forest's roles beyond just timber production.
   - Slovenia (impaired functions, prevented natural development).
3. Focus on sustainability, values and external pressures: definitions framing degradation in terms of long-term viability, economic value, or specific external causes/threats requiring action.
   - Poland (endangered sustainability, decline in value, links to external factors/management/industry),

- Croatia (monitoring damage factors like pollution, specific human acts like logging),
- Austria (lists specific threats).

4. Approach of general obligations and prevention: countries that address the issue through broader legal duties rather than a specific definition of the degraded state itself.

   - Germany (owner obligations, prevention),
   - Croatia (criminalizing damaging acts, monitoring).

REFERENCE TO FOREST RESTORATION

We defined six key aspects that provide a framework for restoration activities and serve as an outline for the country-level analysis and summary:

1. Goals and objectives of restoration
2. Triggers and obligations for restoration
3. Planning and implementation
4. Financial mechanisms and incentives
5. Monitoring, reporting and evaluation
6. Enforcement and compliance

Goals and objectives of restoration are deconstructed into **aims** of restoration and its **targets**. The latter refer to specific, measurable, achievable, relevant and time-specific targets, which can be either quantitative or qualitative, and are to assist in tracking the progress towards the goal. The *aims* of restoration we were interested in were:

- re-establishing forest cover,
- enhancing biodiversity (e.g. habitats for species, increasing deadwood, promoting uneven-aged forests),
- improving ecosystem services,
- increasing forest resilience to climate change, pests or fire,
- supporting sustainable timber production,
- restoring specific habitat types to a favourable conservation status or good condition.

The analysis of legal acts initially revealed that many references are indirect, and not all provide a very clear and unambiguous information on forest restoration. Thus, we indicated those references that are clearer and more concise in referring to forest restoration as “specific” in parenthesis in the table format. Those that are indirect and may not be linked entirely with the *aims* listed above are marked “general”.

Moreover, a reference can be linked to either one goal or more aims simultaneously. We first summarized those references that highlight only one, and then those that combine multiple aims.

The analysis (Table 2) of legal acts reveal that *re-establishment of forest cover* is the most frequent goal of restoration. It is referred to in all country-wise cases of legislation, except Czech Republic and Poland. There are several cases of Italian either national or regional level, where this is extended to preserving the current forest cover or establishing it as afforestation. There are three cases where restoration is also related to *improving ecosystem services* or *recovering ecosystem services*, in Austria, Germany (state and federal level) and Italy. One case (Slovenia) also refers to supporting sustainable timber production, and one (Poland; Act on forest) on the universal duty of a forest owner to protect forests.

There are several examples where more than one aim is reflected in the references to forest restoration. Czech Republic, Germany (state and federal level) and Veneto (Italy) have four documents that refer to a

combination of aims of forest restoration. Preserving or enhancing biodiversity is an aspect that is always present, whereas improving ecosystem services, supporting timber production and management of forest cover occur interchangeably. The table below provides a more detailed overview. Table 2: Overview of specific goals of forest restoration in national legislation

Country / region	**Name of the legal document**	**Goals - Stated Aims**	
		Common to more documents	Specific for one document
Austria	Austrian Forest Strategy 2020+		Improving ecosystem services
	Forest Fund Act		Increasing forest resilience (specific)
Croatia	Act on Forest Reproductive Material	Re-establishing forest cover	
	The Forest Management Regulation		
	Regulation on the Procedure, Method of Acquiring Rights, and Method of Using Compensation Funds for the Use of Public Goods Functions of Forests		Re-establishing forest cover (specific)
Czech Republic	Forest Act	Improving ecosystem services, enhancing biodiversity, increasing deadwood	Supporting sustainable, increasing forest resilience
	Act on the Protection of Nature and the Landscape		
	National Forestry Policy Framework to 2035		Enhancing biodiversity
Federal state of Germany (Mecklenburg-Western Pomerania)	Directive for the promotion of forestry measures within the framework of the joint task on Improvement of agricultural structures and coastal protection	Re-establishing forest cover (specific), increasing forest resilience to climate changes	
	State forest act of Mecklenburg-Western Pomerania		Enhancing biodiversity, improving ecosystem service, sustainable timber production, restoring specific habitat types
Germany (federal level)	Federal forest act	Re-establishing forest cover, enhancing biodiversity, improving ecosystem services, increasing forest resilience to climate change	Restoring specific habitat types, supporting sustainable timber production
	Forest strategy 2050		Restoring specific habitat types, supporting sustainable timber production (by avoiding -nutrient depleting practices)
	National biodiversity strategy		Restoring specific habitats (by expanding forest connectivity between ecosystems, research of natural forest development)
Hungary	Act on forests, forest protection and forest management		Re-establishing forest cover (specific)
Italy	Consolidated Act on Forests and Forest Sector		Re-establishing/preserving forest cover
	Decree Law on Code on Cultural Heritage and Landscape		Recovery of ecosystem services
Region of Veneto (Italy)	Regional Law on Regulations for the creation of woods in the lowland of Veneto	Enhance, preserve or provide ecosystem services; enhance or preserve biodiversity	Establishing/re-establishing forest cover, provide firewood
	Regulation on General forestry regulations and forest law enforcement adopted after article 5 of the Regional forest law		Management of forest cover, Enhance timber and wood provision
	Regional Law on Regulations for the creation of woods in the lowland of Veneto		(Re-)establishing forest cover
Poland	Act on forest		The duty of common protection of forests
Slovenia	Act on forests		Supporting sustainable timber production
	Act on Forest Reproductive Material		Re-establishing forest cover (specific)

It seems that the Czech Republic, Germany and Italian region of Veneto have the most diverse references that relate to forest restoration. All of these cases relate to several goals, where some are common to more than one legal document.

Having specific *targets* defined for restoration goals, Austria and Germany seem to have the clearest definition of restoration target, as is sets a time limit for reforestation of the degraded forest. In the case of Austria: "Reforestation must take place "timely". Timely means that artificial regeneration must take place within 5 years of the destruction or felling and natural regeneration within 10 years of the destruction or felling if complete reforestation is to be expected. At very high altitudes with slow natural growth, the regional authorities may extend the 10-year period to 15 years if natural regeneration is more suitable for the specific site ...". For Federal state of Mecklenburg-Western Pomerania (Germany) the time limit for restoration is even tighter and is set to maximum three years and its progress needs to be tracked in 10years intervals. Croatian Law on forests sets basic principles of sustainable management and regeneration, which is similar to Czech Forest act. It also sets a basic management framework that also relates to forest restoration. The Italian Consolidated Act on forests ... defines how targets are to be set, and gives regions the autonomy to do so, while Slovenian Regulation on the financing and co-financing of investments in forests refers to target co-financing rates, which depend on the type of work and importance of forest in terms of ecosystem services. Thus, it seems that targets of restoration are at best only mentioned and not defined consistently, except in the case of Austria and the state of Mecklenburg-Western Pomerania.

Triggers and obligations of restoration were analysed in terms of which are specific events that trigger the need for restoration and who is then responsible for implementing restoration and meeting one or more goals of restoration. Several countries have this aspect mentioned in the legal acts, similar to aims, it can be either one trigger or more to consider. In four cases (Italy, Poland, Czech Republic and Slovenia) a *degraded or damaged area* is key, while the exact same countries also refer to *pest or pathogens outbreaks*. *Forest fires* are mentioned three times (Italy, Czech Republic and Poland) as a trigger of forest restoration activities. The table below displays a more detailed overview. The trigger *degraded or damaged area* refers to a situation when a specific (sized) area is considered either substantially damaged or degraded. Germany has on the federal and state level (Mecklenburg-Western Pomerania) a more general statement that disasters/disturbances are triggers.

Table 3: Overview of specific triggers of forest restoration in national legislation

Country/region	**Name of the legal document**	**Triggers - When is restoration required**	
		Common to more documents	Specific for one document
Austria	Austria Forest Act		General obligation stated
Croatia		NA	NA
Czech Republic	Forest Act		Degraded/damaged areas (windthrow, snow calamities), after forest fire, pest/pathogens outbreaks, (additionally "dry periods")
Federal state of Germany (Mecklenburg-Western Pomerania)	State forest act of Mecklenburg-Western Pomerania		Natural disasters (general)
Germany	Federal forest act		Disturbances (general)
Hungary		NA	NA
Italy	Consolidated Act on Forests and Forest Sector		After forest fires, degraded/damaged areas, pest/pathogens outbreaks

	Decree of the Ministry of Agriculture on Conditions, criteria and modalities of distribution of the Fund for reforestation ...		(general need to restore)
Region of Veneto (Italy)		NA	NA
Poland	Act on forests		After pests/disease outbreaks, forest fires, degraded/damaged areas
Slovenia	Regulation on Forest Protection Forest	Degraded/damaged areas	
	Restoration Plan		
	Regulation on the Financing and Cofinancing of Investments in Forests		After pest/disease outbreaks

Given who is to implement restoration, most cases refer to forest/landowners – Austria, Czech Republic, Mecklenburg-Western Pomerania and Germany, Slovenia, Poland, Croatia. In some cases, a reference is made to state-owned companies that manage forests (Slovenia and Croatia) or even governments – federal and state for Germany and regional level and state level for Italy. In the latter case and just for this specific case, metropolitan cities can also be responsible for forest restoration. The one time, state/public agency is explicitly mentioned is the case of Slovenia, when the public forest service is to prepare the restoration plan, which is the basis for restoration works. Hungary on the other hand has no specific provisions on who is responsible.

Planning and implementation

In some cases, a management or forest restoration plan is required for restoration activities to take place. References to this in national legislation are very different in terms of explicitness. In *Austrian Forest Act* there is a diction that the period in which the restoration needs to be implemented can be extended if a restoration plan is submitted. In addition to this, *Slovenian Regulation on Forest Protection* clearly lays down the contents and extent of forest restoration plans. Those two are sole cases where reference to the restoration plan is truly tangible. *The Czech Act on the Protection of Nature and the Landscape* mentions management plans but not strictly in forest restoration context, while the Italian legislation includes multiple references, especially with the focus on different levels of governance (regions, metropolitan cities, etc.). Linked to this, the state level of Mecklenburg-Western Pomerania has provisions that restoration must be based on native species and that restrictions on use of herbicides apply.

Specific restoration measures can be either encouraged or even restricted. Information on this in national legislation is relatively diverse, and some countries may have more specifics on this than others. The table below summarizes it on a national level.

Table 4: Overview of specific encouraged/restricted restoration measures in national legislation

Country/region	**Name of the legal document**	**Restoration measures - What is encouraged and what restricted**	
		Common to more documents	Specific for one document
Austria	Austria Forest Act		Planting/Sowing; Natural regeneration
Croatia	Act on Forest Reproductive Material		Planting/Sowing

Czech Republic	Forest Act		Natural Regeneration
	Act on the Protection of Nature and the Landscape	Planting/Sowing; Native/Site-appropriate species	
Federal state of Germany (Mecklenburg-Western Pomerania)	State forest act of Mecklenburg-Western Pomerania	Native and site adapted tree species; Natural regeneration; Close-tonature forestry	Silvicultural best practises; biodiversity enhancements
	Directive for the promotion of forestry measures within the framework of the joint task on Improvement of agricultural structures and coastal protection		
Germany	National biodiversity strategy		
	Forest strategy 2050		Planting/Sowing; Natural regeneration; Mixed forests, without protection against browsing where feasible; Avoid clear-cuts
Hungary	Not explicitly mentioned		
Italy	Consolidated Act on Forests and Forest Sector		Native/Site-appropriate species; Specific silvicultural practices
	Decree Law on Urgent measures to respect the obligations expected by the Directive 2008/50/CE on the air quality		Planting/Sowing; release old trees
Region of Veneto (Italy)	Regional Law on Regulations for the creation of woods in the lowland of Veneto		Native tree and shrub species
Poland	Not explicitly mentioned		
Slovenia	Regulation on the Financing and Cofinancing of Investments in Forests	Planting/Sowing; Natural regeneration	
	Resolution on the National Forest Programme		
	Act on Forest Reproductive Material		

The summary displays clearly that restoration based on native tree mixtures is generally preferred. Natural regeneration, close-to-nature forestry are also mentioned, along with planting/sowing – the latter most likely to be the only option in large scale events, where no masting trees are remaining. In some cases, like Poland and Hungary, preferred practices are not directly mentioned.

There are two elements, which are important under the planning and implementation aspects, namely integration of forest restoration actions into land use planning and participation of stakeholders. In general information from national policy documents seems to not include those two, except for cases of state Mecklenburg-Western Pomerania and the federal level of Germany, where more explicit indications exist – need for coordination with other sectors and/or landscape level.

Financial mechanisms and incentives

The Austrian and Italian (also regional) policy documents seem to be most explicit as there are specific provisions on the amount of funds available for forest restoration. In cases of Poland and Czech Republic there are specific provisions mentioning that there are funds available, however in the case of Slovenia this is defined within a forest restoration plan. A more general approach is taken in Croatia where payments for ecosystem services also cover investing into phytosanitary measures that either prevent damages or simply support health of forest ecosystems. On a federal level of Germany policy documents give frameworks for establishing various funding sources but not explicitly state how much funds there are available for forest restoration.

Funds can be allocated in the form of subsidies, grants or other types of financial support, and this is stated in the case of Austria, Czech Republic, federal state of Mecklenburg-Western Pomerania, Slovenia and Italy.

Monitoring, reporting and evaluation

There is a variety in specificity of national policy document referring to monitoring and reporting obligations, as most countries have some provisions on this, however some are more definite. In the case of a state of Mecklenburg-Western Pomerania, there are clear requirements to monitor survival of seedlings and overall restoration success for a period of time. Both, Italian federal level and regional policy require some type of monitoring after restoration and so is the case of Slovenia. Similarly, so do policy documents of Austria and Czech Republic.

The evaluation of restoration measures can provide a rich of information for future efforts. Upon the information from policy documents only Germany on both, state and federal level has more tangible information on how evaluation is to be done. This is also linked to funding as on-site inspections are required to proceed the final payment to the owner. There are some similar provisions for the restoration plans in case of Slovenia, but no clear conditionality exists. In case of Croatia some type of evaluation is also foreseen and mentioned.

Enforcement and compliance

Policy documents are mostly not detailed or explicit on how compliance with restoration obligations are enforced. In the case of Austria, the regional authority can prohibit issuing felling licences if reforestation is not completed. Similarly, forest managers in Slovenia can issue an obligatory decree to the forest owner must implement restoration (sanitary felling, regeneration (also replanting) and reclamation of skidding trails), and if this is not met, a third party can do this, but the owner bears the costs. There are also explicit financial penalties for forest owners in the federal state of Mecklenburg-Western Pomerania that do not replant areas that have been either clearcut, logged illegally or the designated use was changed. In the case of Italy, enforcement is more obvious when forest degradation is done as an offence (illegal activities).

OPPORTUNITIES AND CHALLENGES OF FOREST RESTORATION

This review also covered aspects of challenges and opportunities, which can be related to forest restoration. Given the excerpts from national policy documents, we highlight common challenges and opportunities, and we also try to pinpoint key differences among cases (countries and regions/states).

Common challenges

1. Legal and administrative complexity can hinder effective and quick forest restoration, especially if it is connected to legal, administrative or governance hurdles, which seem to be more or less the case of Croatia, Germany and Veneto region. Identified challenges may originate from potential lack of staff capacity to prepare the necessary planning elements (Croatia) or to implement restoration (Germany), or simply that regulation linked to forest restoration imposes limitations on forest management. Surely, there are some of those challenges in other countries as well but may not be so explicitly related to policy documents.
2. Technical and knowledge gaps were highlighted in several entries (Croatia, Region of Veneto, state of Mecklenburg-Western Pomerania and Slovenia). Therefore, there is a need for more knowledge on effective forest restoration, guidelines and improved technical capacities, which again, may occur in other countries too. There is much debate on issues of planting/seeding techniques and information from provenience trials that are crucial for effective current reforestation and future forest resilience.
3. Financial constraints can be a significant limiting factor, especially if we consider future climate scenarios that imply more frequent and even more severe damaging events. Insufficient funding was more explicitly highlighted in cases of Croatia, Germany, Veneto region and Slovenia.
4. Ecological and environmental limitations are a generally highlighted challenge pinpointed explicitly by Slovenia, Croatia, Germany, Italy and Mecklenburg-Western Pomerania. This is a very broad category of challenges that relate to having to deal with difficult site conditions as degraded ecosystems may suffer from excessive erosion, hampered soil water quantity, browsing pressure and rapid colonization of ground vegetation (either native or alien). Biodiversity concerns are also important, as sufficient supply of appropriate tree species proveniences is a common issue across Europe.

Common opportunities

Despite the hurdles, forest restoration can be linked to a set of opportunities. Forest restoration can support an improvement of current biodiversity and ecosystems services like carbon storage, water regulation, microclimate, mitigation of soil erosion, new habitats and recreational opportunities. Considering the effects of tree species mixture, future forest resilience can be fostered as well. This is explicitly noted in cases of Croatia, Region Veneto, and Slovenia.

Disastrous events may also attract more attention from both the general public and policy makers, which can trigger a shift in policies and consequently more funds earmarked for forest management. This is an important driver for future policy design as there is an ongoing debate on future common agriculture policy, which in some cases provides funds for forest restoration (e.g. Slovenia). Policies related to natural resources like forestry, agriculture and fishing may not be a priority despite the central role of the *EU Green Deal* thus degradation of forest ecosystems may be an efficient tool to mobilize general awareness on importance of forests and forestry.

POLICY OPTIONS AND RECOMMENDATIONS

We have elaborated a set of recommendations for policy makers and decision-takers. The list may not be exhaustive but is based on actual policy documents and expertise of Re-Enforce project partners.

Varying scope of forest restoration

It is obvious that national (or even regional/state) level policy documents refer to forest restoration in varying scope and detail. There are significant differences among analysed countries and that may imply

that an exchange of knowledge, experiences and lessons learnt would benefit the future forest restoration strategies.

Future climate scenarios and forest resilience

Given future perspectives on changing climate and natural disturbances more focus on large-scale events is needed. It seems that national level policy documents mostly refer to forest restoration as a phenomenon that is continuously implemented with no explicit focus on extreme events. This is an aspect that proved to be crucial e.g. in Slovenia in 2014 and 2017 with sleet storms and wind damage being so excessive that the current system of forest management and especially sector of forest reproductive material (nurseries) was not able to cope with.

Sufficient and stable funding

Having resources not only to support the supply of forest reproductive materials but also to engage professionals, research, landowners and NGOs is key to successful forest restoration. This issue has been highlighted by most of the countries in the review, pinpointing this a challenge. Forest restoration and forest management in general needs a long-term perspective as forest development, being different from e.g. agriculture, cannot embed swift changes of management practices. This calls for stable financing of forest protection and forest restoration.

Fair participation

Involving different stakeholders in forest restoration as many other natural resources management activities increases the long-term success of efforts. Forest restoration has profound implications and lasting effects on not only ecosystems per se but also landscape. This means that not only forest owners and managers should have a role but others too. Tress species mixture, vertical and horizontal structure of forest stands has impacts that go beyond the forest lands. Risk of wildfires, introduction of non-native species and pests, changing microclimate and aesthetic value of the landscape affect local communities, which calls for inclusive planning and implementation of forest restoration activities. Policy designs are to account for this.

Forest restoration monitoring

Long-term ecological outcomes of forest restoration activities need to be monitored in order to effectively assess its success. This would bring more knowledge on best practices in different ecological and also socioeconomic environments and would support more transnational learning. It would support adaptive forest management, which is key in the context of future climate predictions, as some weather patterns which are now common in some regions could occur in countries where they have not been observed yet.

SUPPLEMENTARY MATERIALS

This report has a separate file (spreadsheet format) attached, where information excerpts from national (regional/state) policy documents are provided. This is basic information that was used for policy review, which is reported in this document.

Disclaimer: Parts of the language editing and content summarisation in this document were supported by the use of AI tools, including DeepSeek and ChatGPT, to improve clarity and consistency. All content has been reviewed and validated by the project team.