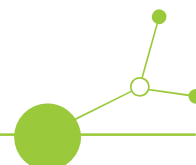


Deliverable 2.4.2

Report on Open Day for Pilot Actions



Version 1
05 2026





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Introduction

Within Deliverable D.2.4.2, the RE-ENFORCE project partners organised Open Days for Pilot Actions implemented across Central Europe. These events were primarily designed as awareness-raising and dissemination activities aimed at the wider public, while also remaining open and relevant to local stakeholders, forest practitioners, public authorities and other interested groups. Their main purpose was to present forest degradation processes, restoration measures tested within the project, and the practical relevance of nature-based solutions in an accessible and understandable way.

The Open Days provided an opportunity to introduce different types of forest degradation addressed by the project, including ash dieback, drought, fire, bark beetle outbreaks, storm damage, and improper management of riparian forests. Each event reflected the specific ecological, silvicultural and management context of the respective Pilot Action and demonstrated how restoration approaches can be adapted to local site conditions, disturbance history and future climate-related risks.

The events were organised in different formats, including field excursions, practical demonstrations, stakeholder-oriented visits and public presentations. This diversity of formats allowed project partners to communicate both scientific and practical aspects of the Pilot Actions to non-specialist audiences. Participants were introduced to experimental designs, restoration methods, monitoring approaches and preliminary observations from the pilot sites in a way that supported public understanding of forest restoration challenges. In several cases, Open Days also created space for direct discussion between researchers, forest managers, public authorities, conservation practitioners, local stakeholders and interested members of the public.

A common objective of all Open Days was to make the Pilot Actions visible as practical demonstration sites and learning platforms for a broader audience. The events helped translate project activities into an accessible form, showing how research, monitoring and field-based restoration trials can support more resilient forest management. They also contributed to the dissemination of project outputs, increased public awareness of nature-based forest restoration, and strengthened the connection between the RE-ENFORCE partnership and relevant stakeholder groups at local, regional and national levels.



Open day for Pilot Action 1 and 4 - Ash dieback and Improper management of riparian forests (Hungary)

The Duna-Dráva National Park Directorate (DDNPD) organized an Open Day on 4 May 2026 at the sites of its experimental restoration activities in Danubian floodplain forests, in the vicinity of Dunaszekcső and Bár. The event presented two Hungarian Pilot Actions implemented by DDNPD within the RE-ENFORCE project: Pilot Action 1 focused on ash dieback and Pilot Action 4 focused on improper management as a driver of degradation in riparian forests.

The Open Day was organized as a field-based event providing participants with direct insight into restoration activities carried out under real forest management conditions. Specialists from the Baranya and Tolna County Government Offices, Gemenc Forest and Game Management Co. and the Kiskunság National Park Directorate attended the event. The programme began with a brief introduction to the RE-ENFORCE project and a professional overview of the pilot activities, followed by a field visit to the experimental areas.

The main aim of the Open Day was to present the practical implementation of restoration measures in degraded floodplain forests and to support exchange of experience among conservation managers, forestry practitioners and public authorities. Participants were able to observe different underplanting and direct seeding methods, discuss the selection of native tree species, and compare the advantages and limitations of individual restoration approaches.



Figure 1: Field-based discussion on restoration methods in Danubian floodplain forests.

The field visit focused on forest sub-compartments Dunaszekcső 23/E and Bár 19/C-D. These sites are dominated by native white poplar, with admixture of hybrid poplar and invasive green ash. In the first phase of the intervention, intensive thinning of white poplar was carried out, while hybrid poplars and invasive species were removed. Subsequently, several underplanting and direct seeding methods were tested beneath the remaining canopy.



At the Dunaszekcső 23/E site, participants were introduced to three different experimental approaches. The first plot demonstrated underplanting with large-sized pedunculate oak seedlings combined with direct seeding of European white elm and field maple. The second plot presented underplanting with small bare-root seedlings of several native tree species, including pedunculate oak, Turkey oak, Pannonian ash, European white elm and field maple. The third plot demonstrated direct seeding with pedunculate oak acorns, representing a less labour-intensive method closer to natural regeneration processes.

The field visit also included the Bár 19/C and Bár 19/D sites. At Bár 19/C, pedunculate oak seedlings were planted beneath the existing white poplar canopy using a power auger. At Bár 19/D, a more intensive restoration method was demonstrated, based on large nursery-grade seedlings of pedunculate oak, European white elm and field maple protected with individual plastic tree shelters.

Several practical challenges were discussed during the Open Day. One of the key issues was the presence of invasive tree species, particularly green ash and box elder, which create strong competitive pressure on planted native seedlings. Game damage caused by deer and wild boar was also highlighted as a major threat to successful underplanting, making fencing or individual tree protection an important part of restoration practice. The hydrological regime of floodplain forests, characterized by spring floods and summer droughts, was presented as another important factor influencing seedling establishment and survival.

Overall, the Open Day provided valuable first-hand insight into the conservation-oriented transformation of Danubian floodplain forests. It demonstrated how different planting and seeding methods can be tested under field conditions and how restoration measures can be adapted to specific ecological and management constraints. The event also showed that successful restoration of floodplain forests requires an integrated approach combining forestry expertise, nature conservation objectives, wildlife management and practical knowledge of local site conditions.



Open day for Pilot Action 2 - Drought (Czech Republic)

On 13 May 2026, an Open Day for the public was held at the Czech Pilot Action site close to Pilsen. The event was organised as a field excursion entitled “Scots pine and drought in practice” and focused on the experimental Scots pine plot established within the RE-ENFORCE project.

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Odborná exkurze na pilotní výzkumné ploše: Borovice a sucho v praxi

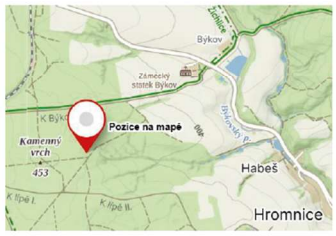
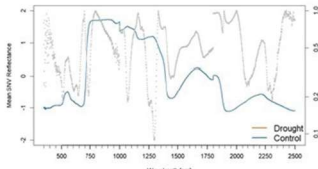
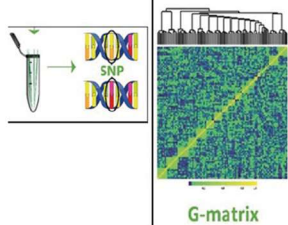
ve středu 13. května 2026
ve 13:00 hodin
Plocha nedaleko Zámeckého statku
Býkov, Hromnice (Třemošná)

Přijďte se podívat a popovídat si s výzkumníky z Fakulty lesnické a dřevařské ČZU a z Přírodovědecké fakulty UK o tom, jak v terénu sledujeme reakci borovice lesní na sucho a proč jsou podobné pokusy důležité pro budoucí obnovu lesů.

Akce je vhodná pro každého, kdo se zajímá o les, krajinu, změnu klimatu a moderní metody sledování zdravotního stavu stromů. Těšíme se na setkání v terénu!

Co se dozvíte?

- Jak se využívá genetika a fyziologie v lesnictví
- Jak se měří a hodnotí vitalita, růst a fyziologický stav stromů
- Co nám o stromu prozradí odraz světla od jehlic
- Uvidíte postupy moderních fyziologických měření



Jak se na plochu dostanete?
Z parkoviště u Zámeckého statku Býkov se vydejte po zelené značce směr Horní Bříza.



Fakulta lesnická a dřevařská
LESYČR
Přírodovědecká fakulta
Univerzita Karlova
Správa veřejného statku
Píseň

Figure 2: Invitation to the Open Day, which was disseminated to the public via social media.

Participants were invited to visit the pilot research area and discuss with researchers from the Faculty of Forestry and Wood Sciences, Czech University of Life Sciences Prague how Scots pine responds to drought stress and why such experiments are important for future forest restoration. The invitation also presented the event as suitable for anyone interested in forests, landscape, climate change and modern methods for monitoring tree health.



Figure 3: Open Day participants at the Czech Pilot Action site, Pilsen region.

The Open Day was linked to the broader project activities focused on forest degradation and nature-based restoration strategies.

During the field visit, the Czech team presented the implementation, experimental design and objectives of the Scots pine drought experiment. The pilot action tests whether early drought exposure of seedlings can induce stress memory and whether such legacy effects influence later field performance. Both drought-treated and control seedlings were planted at the site in spring 2023. The planting material included three genetically distinct provenances of Scots pine: Plasy and Třeboň, representing lowland origins, and Děčín, representing a montane origin. In total, 820 individuals were genotyped before planting, allowing the experiment to combine ecological, physiological and genetic perspectives.

Several key topics were addressed during the Open Day. First, participants were introduced to the role of genetics and physiology in modern forestry. The discussion focused on how genetic information can help to describe differences among provenances and how such knowledge may support future decisions on forest reproductive material under changing climatic conditions. The importance of provenance choice, local adaptation and drought tolerance was highlighted in relation to forest restoration after large-scale disturbances.

A major part of the field excursion was devoted to the monitoring of tree vitality, growth and physiological condition. Researchers explained how survival, height, diameter, root collar diameter and overall health status are repeatedly assessed in the field. Particular attention was paid to the comparison between drought-treated seedlings and the control group, as well as to differences among the three Scots pine



provenances. Preliminary findings indicate that early drought stress has not been clearly reflected in survival rates, while some drought-related effects can still be detected in traits such as root collar diameter and needle length after three growing seasons.



Figure 4: Demonstration of growth and vitality assessment of Scots pine seedlings at the pilot plot.

The participants were also introduced to physiological and remote-sensing methods used to evaluate tree responses to drought. Researchers demonstrated contact measurements of needle reflectance, showing how optical properties of needles can be measured directly in the field and used as non-destructive indicators of physiological condition. The programme also included a demonstration of data acquisition using a drone, illustrating how aerial imagery can support monitoring of the pilot plot and provide spatial information on tree condition and stand development. These demonstrations were complemented by explanations of other physiological measurements, including chlorophyll fluorescence and pigment-related traits. The demonstration opened a discussion about the complexity of detecting long-term drought effects under field conditions.

In addition to classical field measurements, modern approaches for monitoring tree architecture were presented. The pilot action also includes the creation of 3D models of individual trees to assess geometrical traits such as branching angles, stem straightness and the formation of forks. These traits are relevant not only for ecological performance but also for future timber quality. The participants were informed that increased bud production on terminal shoots may represent one of the responses to induced stress conditions, including drought. To support the evaluation of this trait, CZU developed an automated image-based application for bud counting.

The field programme was complemented and concluded by an expert discussion. Participants discussed the practical relevance of drought experiments for forest restoration, the selection of suitable tree species and provenances, and the challenges connected with the recovery of degraded spruce stands. The field-based



format allowed participants to see the experimental plot directly and to better understand how genetic, physiological, growth and remote-sensing data are collected and interpreted under real field conditions.

Overall, the Czech Open Day demonstrated how experimental research on Scots pine drought responses can contribute to the development of adaptive restoration strategies in Central European forests. The event highlighted the importance of combining genetics, physiology, field monitoring, contact reflectance measurements, drone-based data acquisition and modern non-destructive methods to better understand tree performance under changing climatic conditions practical insights for nature-based forest restoration.



Open Day for Pilot Action 3 - Fire (Poland)

On 14 May 2026, an Open Day for Pilot Action 3, focusing on the post-fire forest restoration, was held in the Myszyńiec Forest District (Nadleśnictwo Myszyńiec), Poland. Participants included attendees of the stakeholder workshop for national and regional authorities (Deliverable 3.2.2), as well as representatives of relevant regional stakeholder groups. During the field excursion, participants visited areas affected by a large-scale forest fire in 2014 and discussed practical approaches to post-fire forest restoration under challenging site conditions.

During the field visit, three different restoration approaches implemented after the fire were presented and discussed: active restoration (i.e., conventional artificial regeneration - planting), passive restoration (i.e., natural regeneration), and a combined restoration model integrating both approaches. Restoration activities focused primarily on Scots pine (*Pinus sylvestris*), complemented by naturally regenerating silver birch (*Betula pendula*).



Figure 5: Group at the post-fire site during the first stop discussing active restoration.

The restoration process proved challenging due to the extremely poor site conditions and meteorological characteristics of the post-fire period, particularly very dry years 2015 and 2018. The affected areas are located on sandy soils representing remnants of inland dune systems, characterized by very low water retention capacity and high exposure to drought stress. Under these conditions, within the active restoration



scenario, one-year-old seedlings showed relatively low survival rates of approximately 60% during the initial establishment phase.

Participants discussed the practical difficulties associated with reforestation on dry and nutrient-poor substrates, especially under increasingly warm and dry climatic conditions. South-west facing slopes of sand dunes were identified as the most problematic areas because of intense solar radiation, the effect of wind and limited water availability. Even nearly twelve years after the fire, these exposed sites remain largely without stable forest cover.

Despite these constraints, the overall restoration effort was assessed positively. Field observations demonstrated that almost twelve years after the disturbance, a stable young forest ecosystem has successfully developed across most of the affected area.

The active restoration strategy primarily relied on planting Scots pine at a high density of 8,000 to 10,000 trees per hectare, following site preparation that included ploughing and deadwood removal. This established a gradual restoration process aimed at stabilizing dune environments vulnerable to wind erosion. Although the initiative experienced a major failure in 2018 due to severe drought, intense wind erosion, and poor water retention in the sandy soil, the overall project has otherwise been successful to date.

Despite persistent environmental challenges such as drought and wind, a combined active restoration approach reveals clear differences in technique performance. Direct planting has proven significantly more effective than sowing, with container saplings achieving the highest overall success rates. Incorporating wood chips provides the best growth conditions for establishment, while direct sowing resulted in the lowest success rates, performing worse than business-as-usual (BAU) practices.

The passive restoration approach has resulted in the successful natural regeneration of both pine and birch, with fire playing a particularly critical role in stimulating pine growth. While birch initially established a high share of the composition, these forest dynamics proved highly fluid, reaching a peak in 2017. Overall, the approach has fostered a rich dendroflora that includes *Pinus*, *Betula*, *Quercus*, *Populus*, *Salix*, *Juniperus*, and *Frangula*, though it has also seen a moderate presence of the invasive alien species *Prunus serotina*. Moving forward, the exact role and long-term impact of surviving trees within this regenerative process remain open questions for further evaluation.

The Open Day offered valuable insights into long-term post-fire restoration practices on highly vulnerable sandy sites and facilitated knowledge exchange among forest practitioners, researchers, local authorities, NGOs, and the public. Discussions highlighted the ecological challenges posed by climate stress and site limitations, as well as the importance of adaptive management approaches that combine artificial and natural regeneration methods, taking site-specific and legal constraints into account to establish climate-resilient forests in Central Europe.

The success of post-fire restoration depends heavily on local site conditions and weather patterns, particularly extreme events such as drought. Continuing with business-as-usual practices is becoming increasingly challenging, and while passive management approaches have been highly successful, other intervention techniques are not always satisfactory. Navigating these outcomes is further complicated by legal constraints, regulatory uncertainties, and the diverse perspectives of stakeholders. To build long-term resilience, further research must focus on the ongoing fitness and success of tree regeneration, the adaptation of other tree species, and the preservation of biological legacies to support biodiversity.



Figure 6: There were lively discussions and perspective exchanges among the participants regarding the Pilot Action area.



Open Day for Pilot Action 5 - Bark beetle (Austria)

On 22 April 2026, an Open Day for the public was held at Pilot Action 5 (bark beetle) in Japons. Participants included attendees of the stakeholder workshop for national and regional authorities (Deliverable 3.2.2), as well as representatives of relevant regional stakeholder groups. All participants were invited to join a field excursion to the Pilot Action area affected by bark beetle outbreaks, owned by the Associated Partner Hoyos Estate and Forest Management Company (Horn).



Figure 7: Open Day participants on Pilot Action 5 in Japons, Austria.

During the field visit, several key topics were addressed:

Bark beetle outbreaks in 2019 caused severe damage to Norway spruce (*Picea abies*) stands, resulting in several thousand cubic metres of salvage timber and extensive degraded areas. These former spruce stands were subsequently reforested, primarily with oak (*Quercus spp.*), small-leaved lime (*Tilia cordata*), and hornbeam (*Carpinus betulus*). Planting design and spacing were chosen to allow for mechanical maintenance, such as mowing, while ensuring sufficient tree density for future high-quality timber production.

Early maintenance measures were also discussed. In artificially regenerated areas, mechanical mowing between planting rows is carried out twice per year, while manual mowing or, in some cases, chemical treatment is applied within rows. After several growing seasons, early pruning becomes necessary to reduce forking and to promote high-quality stem development.

Browsing damage caused by high game populations - such as roe deer, red deer, wild boar, and lagomorphs - represents a major challenge during early stand development. Positive examples of cooperation between the forest owner and regional authorities responsible for game management were highlighted. Measures



such as extended hunting seasons and increased hunting quotas have been implemented to support forest regeneration with climate-resilient tree species. However, browsing pressure remains a significant constraint.

Large-scale disturbances and the associated loss of timber production led to considerable economic challenges. During the discussions, representatives of the forest enterprise emphasised the high costs of reforestation and the lack of income in the medium term. As a result, alternative income sources are becoming increasingly important. In this case, revenues from renewable energy production and agricultural land use contribute to co-financing forest restoration measures, as forestry alone is no longer economically sufficient.

The use of non-native tree species and assisted gene flow (choosing site adapted forest reproductive material) was discussed extensively. The forest enterprise presented experimental plots with oak provenances originating from southern Europe. Practical experience shows that legal constraints can pose significant challenges in this context. In addition, non-native species such as Douglas fir (*Pseudotsuga menziesii*) and northern red oak (*Quercus rubra*) demonstrated good growth performance, even on sites where Norway spruce has disappeared.

The Open Day provided valuable insights into practical forest restoration under real-world conditions and facilitated exchange between stakeholders from science, practice, and the public. It highlighted both the ecological and economic challenges of large-scale disturbances, while showcasing concrete management approaches and adaptive strategies for establishing climate-resilient forests.



Figure 8: There were lively discussions and exchanges among the participants regarding the Pilot Action area.



Open Day for Pilot Action 6 - Storm (Italy)

The TESAF Department of the Università degli Studi di Padova was invited by the non-profit organization Associazione Gruppo Arcobaleno CTG APS of Padova to contribute to a cycle of public conferences on forest ecosystems. The aim of the conference series was to raise public awareness of forest ecosystems, forest ecology and various issues related to forest management. As representatives of the Department, the research group was asked to deliver a lecture on sustainable forest management and threats to forest ecosystems.

Given the close link between these topics and the objectives of the RE-ENFORCE project, on 5 May 2026, Davide Marangon, representing the research group, gave a lecture to more than 20 participants. The lecture focused on forest ecology, forest disturbances and sustainable forest management, and also introduced the RE-ENFORCE project and its relevance to current forest restoration challenges.



Figure 9: Participants of the conference on sustainable forest management organised by Associazione Gruppo Arcobaleno CTG APS.

During the conference, several topics were discussed. The lecture started with a general introduction to forest science and forest ecosystems, including the definition of forests and the main components of forest ecosystems. The concept of forest ecosystem services was then introduced, highlighting the importance of forests in both national and international contexts.



The second part of the lecture focused on factors driving forest ecosystem degradation worldwide, with particular attention to the Central European and Italian contexts. Forest disturbances, climate change and adaptive forest management were introduced to the audience, generating considerable interest among participants.

In the final part of the lecture, restoration strategies were presented, with a specific focus on nature-based solutions (NBS) as innovative and site-adapted tools for achieving conservation and restoration objectives in degraded forests.

To provide practical examples of the concepts discussed, Davide Marangon presented the RE-ENFORCE project. Several slides were dedicated to the project background, the partners involved and the Pilot Actions. By presenting the individual Pilot Actions, the lecture linked the different forest disturbances and degradation drivers introduced earlier in the presentation to concrete examples from across the project area. This helped to highlight the transnational scale of the challenges addressed by the project, as well as the need to develop transnational strategies to mitigate and respond to these problems.

Finally, more detailed information was provided on the restoration actions implemented in Taibon Agordino in relation to Pilot Action 6 - Wind and Pilot Action 3 - Fire. These included passive restoration through the monitoring of natural regeneration, as well as active restoration through trials of tree seedling planting near biological legacies in order to enhance seedling establishment and survival probability.

The audience showed strong interest in the topics presented and asked several questions concerning forest degradation drivers, forest ecosystems in general and the RE-ENFORCE project itself. The event therefore contributed to raising public awareness of forest degradation and restoration challenges and helped disseminate the project's aims and Pilot Action activities to a broader non-specialist audience.



Figure 10: Presentation of the RE-ENFORCE project and the Pilot Actions during the conference.



Conclusions

The Open Days organized within Deliverable D.2.4.2 successfully demonstrated the practical implementation of RE-ENFORCE Pilot Actions under real ecological and management conditions. As public-oriented dissemination events, they helped communicate complex issues of forest degradation and restoration in a clear and accessible way. Together, the events covered a broad range of degradation drivers and restoration challenges relevant for Central European forests, including pathogen-driven decline, drought stress, post-fire recovery, bark beetle disturbances, storm impacts and the transformation of degraded riparian forests.

Across the Pilot Actions, the Open Days highlighted that forest restoration cannot rely on a single universal approach. The presented examples showed the importance of site-specific planning, appropriate tree species and provenance selection, support of natural regeneration, active planting where needed, protection against browsing pressure, control of invasive species, and the use of modern monitoring methods. The events also demonstrated that restoration success is strongly influenced by local conditions such as soil properties, water availability, disturbance intensity, microclimate, legal constraints and forest management objectives.

An important added value of the Open Days was their field-based and demonstrative character, which made them particularly suitable for communication with the wider public. Participants were able to observe restoration activities directly at pilot sites or through practical presentations, which made the project outputs more tangible and easier to understand. This supported knowledge transfer from research to practice and helped raise awareness of why forest restoration, climate adaptation and nature-based solutions are important for society as a whole.

The Open Days also confirmed the relevance of combining scientific knowledge with operational forestry experience and stakeholder feedback. Discussions with participants showed strong interest in adaptive forest restoration, nature-based solutions, climate-resilient tree species, long-term monitoring and the practical use of project results. In this respect, the events contributed not only to public dissemination, but also to the broader learning process within the project.

Overall, the Open Days fulfilled their role as awareness-raising and knowledge-transfer activities linked to the RE-ENFORCE Pilot Actions. They helped present the project's restoration work to a broad audience, supported exchange between researchers, practitioners and interested members of the public, and demonstrated how different restoration strategies can be tested, monitored and evaluated across diverse Central European forest ecosystems. The experience gained from these events will further support the development of restoration recommendations, transnational guidelines, the Decision Support System and the broader project objective of promoting nature-based solutions for restoring degraded forests.