Workshop on Greece's Contribution to the EU 3 Billion Trees Pledge

15 October 2024 – Workshop in Athens

Event Overview

The Workshop on Greece's Contribution to the EU 3 Billion Trees Pledge, hosted at the Acropolis Museum in Athens, marked a significant milestone in Greece's engagement with the European Union's ambitious tree-planting pledge. The day-long event brought together stakeholders from across the environmental, governmental, academic, and civil society sectors to examine Greece's role in achieving the EU's tree-planting goals while addressing the specific challenges and opportunities presented by the Greek context. Co-organised by the European Commission Representation in Greece and the Directorate-General for Environment, the workshop served as an important platform for fostering dialogue between various stakeholders involved in forest management and tree-planting initiatives, with a particular focus on challenges and practical solutions adapted to Greece's specific environmental and social conditions.

Detailed Event Overview

Opening Remarks: Framing the Environmental Context

Tassoula Eptakili, Event Moderator

The workshop opened with moderator Tassoula Eptakili, who connected the day's objectives to current environmental challenges through the story of Ion, a young Egyptian vulture from Meteora who recently perished during migration across the Mediterranean Sea. This example served to illustrate the broader implications of biodiversity loss and ecosystem degradation, establishing a practical framework for discussing Greece's role in the EU's tree-planting pledge. Eptakili emphasised that the loss of such iconic species demonstrates the urgent need for environmental action, positioning the 3 billion trees pledge not just as a quantitative target but as a key component of broader ecosystem restoration efforts.

Niovi Ringou, Head of the European Commission Representation in Greece

In her welcome address, Niovi Ringou situated the tree-planting pledge within the broader context of Greece's environmental challenges and the European Green Deal. She provided an analysis of Greece's particular vulnerability to climate change impacts, drawing on recent experiences with devastating floods, forest fires, and extreme weather events that have significantly affected crucial economic sectors including agriculture and tourism. Ms Ringou highlighted the symbolic significance of the workshop's timing on October 15th, marking the official date for the start of the reforestation period in Greece, while also announcing several practical initiatives, including the European Commission Representation's commitment to supporting environmental projects such as the provision of recycled plastic bags for the Athens Marathon, resulting in a saving of 12 tonnes of plastic.

The presentation outlined the European Commission's new political guidelines for the 2024-2029 institutional cycle, including two major environmental initiatives to be implemented within the first 100 days: a new clean industry deal aimed at accelerating industrial decarbonisation, and a vision for agriculture and food that will reward farmers working in harmony with nature. Ringou also announced the Commission's intention to propose legally binding emissions reduction targets of 90% by 2040, alongside the creation of a new **Social Climate Fund** to finance the greening of housing and enhance access to energy-efficient solutions.

High-Level Panel: Increasing Forest Cover in Greece

Efstathios Stathopoulos, Secretary General of the Ministry of Environment and Energy

Stathopoulos presented an overview of Greece's national reforestation strategy, detailing the country's largest-ever national reforestation programme funded through the EU Recovery Fund. His presentation provided in-depth analysis of the programme's four main axes of implementation:

- Artificial Reforestation: A comprehensive plan targeting four major mountainous areas of Attica, with parallel initiatives in Thessaloniki and Central Macedonia. The programme includes the planting of approximately 4.5 to 5 million trees during the completion of five large artificial forests. Particular attention was given to the North Evia region, where 181,000 black pine seedlings are being planted to restore areas destroyed in the devastating 2021 fires.
- Agricultural Development Program Revision: A complete overhaul of existing forestry programs, including adjustments to pre-calculations and replacement of projects that faced technical challenges. This revision aims to address the critical issue of land abandonment and the reduction of beneficial human activities in forested areas.
- Urban Greening: In collaboration with the National Capodistrian University of Athens, the Ministry has initiated a programme to strengthen green spaces in 75 municipalities, which has exceeded initial targets with some municipalities achieving 5 to 10-fold increases in planned planting.
- Private Sector Engagement: The establishment of the Private Recipient of Restoration programme has facilitated significant private sector involvement, exemplified by the successful reforestation of Penteli with 350,000 trees through private sector cooperation.

Marianna Nathanail, European Investment Bank Representative for Greece and Cyprus

Nathanail delivered a detailed presentation on the EIB's role as the EU's climate bank, providing detailed insight into the bank's evolving approach to environmental financing. As she explained, the bank maintains a substantial accounting capacity of €600 billion and provides annual loans of approximately €88-90 billion. Nathanail explained how the bank made a landmark decision in 2019 to transform itself into Europe's dedicated climate bank, committing to ensure that over 50% of annual investments would support sustainable purposes and climate action. This target was achieved four years ahead of schedule, with the climate-focused threshold being crossed in 2021 rather than the projected 2025.

Looking forward, Nathanail outlined the bank's ambitious commitment to invest €1.3 trillion in climate initiatives by 2030, noting that the EIB carefully monitors and accounts for all loans to both public and private sectors to ensure alignment with these goals. For instance, in the case of Greece, she detailed that EIB loans reach approximately €2.5 billion annually, including the forthcoming Healthy Programme focused on forest protection scheduled for implementation in 2025.

In addition, Nathanail highlighted the EIB's pioneering role in green finance, particularly its introduction of Climate Awareness Bonds in 2007 – the world's first green bonds – which later expanded to include Sustainable Awareness Bonds. These financial instruments have been issued in more than 20 different currencies worldwide, with monitoring systems ensuring that generated investments directly support climate action. Notably, it was emphasised that over the past decade, the EIB has emerged as the largest financier of forestry initiatives globally, with investments totalling €15 billion, averaging €1.2 billion annually across various forestry projects both within and beyond Europe.

Prof. Georgios Tsantopoulos, Head of the Department of Forestry and Management of the Environment and Natural Resources, Democritus University of Thrace

Professor Georgios Tsantopoulos, Head of the Department of Forestry and Management of the Environment and Natural Resources at the Democritus University of Thrace, outlined how modern forestry education has evolved to meet today's environmental challenges. His presentation focused on the reforestation plan in the fire-stricken municipality of Thrace, which represents the largest coordinated tree planting effort in Greek history. The plan demonstrated a thorough approach to integrating multiple funding streams and implementation mechanisms, with particular attention to areas affected by recent fires.

The plan's emphasis on natural regeneration as the preferred approach, with artificial reforestation reserved for specific conditions where natural recovery is unlikely, is well in line with EU guidelines and reflects the ecological realities of the Mediterranean region. This is particularly evident in the North Evia project, where careful species selection and planting protocols have been developed based on local conditions and historical vegetation patterns.

Professor Tsantopoulos' presentation on forestry education highlighted the importance of continued research and knowledge sharing. The workshop recommended the establishment of a formal knowledge-sharing network among Greek implementing organisations, possibly extended to other Mediterranean countries facing similar challenges. This would include regular technical workshops, joint research initiatives and systematic documentation of best practices and lessons learned.

Prof. Theocharis Zagas, Professor of Silviculture, Aristotle University of Thessaloniki, Vice-president of Hellenic Forestry Society

Professor Theocharis Zagas of Aristotle University delivered an in-depth analysis of forest management principles and implementation strategies, drawing on both extensive academic and practical experience. His presentation began with an overview of Greece's mountainous geography, noting that 70% of the country's area lies in mountainous and alpine zones, creating unique challenges and opportunities for forest management.

Professor Zagas provided statistics on the composition of Greek forests, noting that while the forest cover (productive and non-productive) in Greeceis about 50%of the country's land, half of which is dedicated to commercial forests, producing a minimum of 1 cubic metre per hectare, while non-commercial forests cover the other half of the country's surface area. He broke down the distribution between conifers (43% of forest area) and broadleaves (57%), providing specific breakdowns for different species. Next, several practical recommendations were provided on how to increase forest cover, including the following four approaches:

- Effective protection of existing forests and reforestation;
- Systematic tending of existing forests;
- Conversion of coppice forests (mainly low oak forests) to middle or high multifunctional forests, and Rehabilitation of degraded forest ecosystems.

Finally, Professor Zagas emphasised the importance of following natural forestry principles and "close to nature" silviculture, citing the historical adage of Parade: "imitate nature, accelerate its work." He detailed two specific approaches for improving degraded forest ecosystems: first, eliminating negative human interactions while activating natural ecosystem mechanisms, and second, introducing energy into the ecosystem to improve site conditions. Professor Zagas stressed that combining these methods can be particularly effective when it successfully activates natural forest ecosystem mechanisms within a short timeframe.

Demetres Karavellas, CEO WWF Greece

Demetres Karavellas, CEO of WWF Greece, referred to Greece's approach to the EU's 3 Billion Trees Pledge, placing it within the context of the country's broader environmental challenges and opportunities. His presentation revealed that Greece's National Forestry Plan has undergone significant evolution since its 2021 announcement.

Initially targeting forest coverage of 50,000 hectares, the National Forestry Plan has been refined to focus on planting 30 million trees across 16,500 hectares by 2030. Karavellas provided important context for this target, noting that in the previous 12 years, Greece had reforested approximately 7,500 hectares – making the new goal effectively a doubling of reforestation area within a shorter timeframe.

Karavellas outlined three principles for successful implementation of the Plan:

1. Forest Management and Prevention: Karavellas emphasised that forests in Greece have suffered from years of neglect, making improved forest managed a key priority. Furthermore, Karavellas stressed that prevention through active management is both more cost-effective and ecologically sound than restoration after damage to forests occurs.
2. Natural Regeneration Priority: Using specific examples from recent fire recovery efforts, Karavellas illustrated the importance of allowing natural regeneration processes to work. He cited the case of Evros, where detailed analysis showed that of 81,340 hectares of burned forest area, only 17% required additional monitoring and merely 0.5% needed immediate

reforestation. This evidence-based approach demonstrates that artificial reforestation should be used selectively rather than as the default response.

3. Scientific Planning and Implementation: His presentation stressed the importance of moving beyond opportunistic planting based on available seedlings toward a more strategic, landscape-oriented approach. This includes careful consideration of soil conditions, current and future climate patterns, biodiversity requirements, and the presence of settlements in planning reforestation efforts.

European Commission framework: 3 Billion Trees Initiative, criteria implementation framework, guidelines and the registration process

Marco Onida, Senior Expert – Team Leader Forests, European Commission, Directorate General for Environment

Marco Onida, Senior Expert from the European Commission's Directorate-General for Environment, provided an extensive overview of the implementation framework for the 3 Billion Trees pledge, emphasising its evolution from a political pledge to a more structured program with clear reporting mechanisms. His presentation detailed how the 3 Billion Trees pledge has been strengthened by its inclusion in the Nature Restoration Law, which now requires Member States to actively contribute to the tree-planting goal as part of their restoration measures. The framework's three fundamental principles – additionality, appropriate tree selection, and long-term care – were presented not as abstract concepts but rather, as practical guidelines with specific implementation criteria.

Of particular significance was Onida's detailed explanation of the reporting mechanism through the MapMyTree platform. The current reporting total of 22 million trees across Europe, while seeming low, reflects the 3 Billion Tree pledge's strict quality control measures rather than lack of activity. This approach prioritises verified, sustainable planting over rapid numerical achievements, with Greece positioned to make significant contributions through its restoration efforts, particularly in post-fire landscapes where enhanced biodiversity and resilience can be documented as additional to basic restoration requirements.

Tree planting and reforestation

Stavros Tsilikounas, Director of Forestry and Infrastructure, Ministry of Environment

Tsilikounas detailed Greece's Ministry of Environment activities on forestry infrastructure, focusing on three critical components: seed production, nursery operations, and planting implementation. His presentation highlighted that Greece has achieved forestry mapping for 95% of its territory, with 90% of this material now officially listed. The infrastructure framework he outlined operates on a pyramid model:

At the apex is the Centre for Control and Processing of Forest Multi-Plant Material in Antalya, Attica – the country's sole facility for seed production and certification. This facility manages seed collection from selected plants throughout Greece, and either distributes the material to nurseries or maintains it in specialised storage facilities. The centre has seen significant improvements through public-private partnership, particularly through collaboration with Motoroil Greece, which has supported the facility with technological equipment, human resources, and funding for seed collection.

The base of the pyramid consists of 22 public forestry nurseries, of which 10 have been selected for upgrading. Four nurseries –Ambrosia, Organi, Langada, and Aliartos – are currently undergoing

modernisation through a €4 million contract, while additional facilities are being upgraded through private sector partnerships. This infrastructure development is strategically aligned with the national reforestation plan, with nurseries distributed across Greece to meet regional planting needs.

The tree planting and reforestation presentation by Tsilikounas outlined specific protocols for seed collection, storage, and nursery operations that ensure genetic diversity while maintaining operational efficiency. These technical guidelines are being enhanced through public-private partnerships, as demonstrated by the collaboration with Motoroil Greece, which has introduced new technologies and procedures while maintaining alignment with EU requirements.

Despina Paitaridou, Forest Genetic Resources Expert

Paitaridou provided key insight into the challenges of maintaining genetic diversity in reforestation efforts. She emphasised that Greece's high biodiversity presents both an opportunity and a challenge – while the country has access to numerous native species, each species requires specific collection and maintenance protocols. Using the example of the pomegranate of Parnitha, she illustrated the complexities of seed collection time requirements and storage, particularly following forest fires when immediate restoration is desired but seed availability may be limited by natural cycles.

The concept of productive reforestation

Prof. Alexandros Papachatzis

Professor Alexandros Papachatzis presented an innovative framework for productive reforestation, drawing on his expertise from the Department of Agro-technology at the University of Thessaly. His presentation addressed the critical challenge of combining ecological restoration with economic sustainability, particularly relevant in areas like Northern Evia, where communities previously dependent on resin collection face decades-long waits for traditional forest resources to regenerate.

Professor Papachatzis also outlined how the concept emerged from examining historic forest nursery practices, noting that many nurseries which served as genetic material banks and provided planting stock for schools and municipalities were closed in the 1990s and early 2000s. Furthermore, his approach proposes integrating fruit and nut-bearing species from the official forest species list that can provide both ecological and economic benefits.

A key innovation presented was the concept of high-density planting systems, particularly for species like olives, where modern harvesting technology can process 6-8 tonnes per hour, and in turn, significantly improving their economic viability. Professor Papachatzis reinforced how this approach could help address some of the challenges posed by climate change, particularly in regions like Crete, where water scarcity may increasingly limit traditional agricultural options.

Tree planting, biodiversity and the climate pact

Konstantina Masika, Head of Unit “Protected Areas”, Greek Ministry of Environment and Energy

Konstantina Masika offered a presentation on integrating the 3 Billion Trees initiative within Greece's biodiversity protection framework. She emphasised Greece's position as a biodiversity hotspot within the Mediterranean and Europe, noting how this characteristic both enriches and complicates reforestation efforts.

Masika outlined how the initiative aligns with multiple EU policy frameworks, including:

- The 2030 Biodiversity Strategy, contributing to the restoration of 30% of degraded ecosystems.
- The European Green Deal's climate neutrality goals.
- The EU Forest Strategy 2030.

The presentation highlighted data on Greece's Natura 2000 network, comprising 446 areas covering 27.9% of terrestrial and 20% of marine territory. Of the terrestrial Natura 2000 areas, 67% consists of forest habitats. Moreover, Masika detailed how Special Environmental Studies and management plans are being developed for these areas, divided into 23 groups, which will ultimately protect and manage approximately 31% of the country's forest areas.

She referred to the 26 different types of forest habitats in Greece under the EU Habitats Directive92/43, five of which are designated as priority habitats, including *mediterranean pine forests with endemic black pines; Alluvial forests; Palm groves; Sub-Mediterranean pine forests; and Mediterranean Juniper formations*.

Eleftheria Touloupaki, Member of the scientific team at INZEB, the Country Coordinator of Greece for the European Climate Pact

Eleftheria Touloupaki presented an overview of Greece's implementation of the European Climate Pact, reinforcing its role in achieving climate neutrality by 2050. As the national coordinator, Touloupaki detailed how the Pact serves as a platform for citizen networking and climate action mobilisation.

Furthermore, Touloupaki outlined several key principles guiding their work:

- Transparency in all actions and measurable results.
- Avoidance of greenwashing through substantial commitment requirements.
- Adaptation to local contexts.
- Inclusive participation across all social spheres.

The program currently engages 55 climate ambassadors from diverse professional and social backgrounds, with Greece maintaining a particularly dynamic presence compared to other European countries. These ambassadors organise various activities, from nature walks with children to community engagement events, designed to strengthen public participation in climate action.

Challenges and funding opportunities for tree planting

Marta Ballesteros, Associate Senior Manager, Milieu Consulting

Marta Ballesteros, representing Milieu Consulting, presented the results of an EU-wide assessment of the challenges and opportunities of planting trees for the 3 Billion Trees Pledge. The findings, based on extensive stakeholder surveys, interviews and focus groups, identified several critical challenges to the implementation of the Pledge. In particular, the research highlighted funding as a major barrier, noting that while initial project funding may be available, resources for long-term maintenance, monitoring, and land preparation are often lacking or difficult to find. This creates particular difficulties for organisations trying to plan multi-year initiatives, including critical activities such as seed collection and nursery development.

Ballesteros also outlined specific challenges related to carbon credits and legal frameworks. She explained how current carbon credit systems often disadvantage tree planting organisations, as they cannot own the carbon credits they help generate, limiting their ability to reinvest in further planting

initiatives. She cited successful counter-examples, such as legislative reforms in Andalusia that allow tree planting organisations to benefit from carbon credits. The presentation also addressed the complexities of tree planting in agriculture land when land-use reclassification as forest land is required leading to administrative barriers, particularly in countries where agricultural activities are prioritised. Flexible legal framework enabling tree planting in rural areas, agricultural land or agro-forest land are needed is several EU Member States.

Panagiota Pavlou, Legal Analyst, Milieu Consulting

Panagiota Pavlou provided an in-depth analysis of available funding mechanisms for tree planting initiatives, highlighting that while there is no dedicated funding stream for the 3 Billion Trees Pledge as EU level, many funding sources can be leveraged. For instance, Pavlou presented a comprehensive funding guide covering European, national and innovative funding sources which, was developed to help stakeholders navigate the complex funding landscape.

The presentation detailed several key funding streams available to Greek initiatives:

- The European Regional Development Fund;
- The Just Transition Fund;
- The LIFE programme;
- Horizon Europe; and
- National recovery and resilience funds.

Pavlou underlined how these different funding sources can be combined with innovative financing mechanisms such as green bonds and crowdfunding platforms. In particular, she highlighted the importance of understanding how different funding streams can complement each other, citing successful examples where multiple funding sources have been combined to support comprehensive tree planting and maintenance programmes.

Funding opportunities for tree planting and forest conservation in Greece: EU and national aspects

Vasileios Bontzorlos, Forester (M.Sc., Ph.D), Project Manager of the LIFE EL BIOS project “National Information System for the Biodiversity of Greece”, Green Fund

Vasileios Bontzorlos gave a wide-ranging overview of the role of the Green Fund in financing forestry initiatives in Greece. He explained that while the Fund's total financial resources are substantial, memorandum commitments currently limit active use of total resources, posing a significant challenge to implementation. Despite these constraints, the Fund has an annual budget of between €120-150 million and supports various forestry and environmental initiatives.

Bontzorlos outlined six main axes of funding:

1. Forest protection measures;
2. Self-management initiatives;
3. Infrastructure development;
4. Research and knowledge exchange;
5. Continuation of previously commissioned projects; and
6. Creation of fire-prevention perimeter zones.

In particular, Bontzorlos explained how the Fund has successfully leveraged public-private partnerships to expand its impact, citing examples of cooperation with organisations such as Motoroil Greece to support seed collection and nursery operations.

Vasilis Nikitas, Economic Analyst, DG Economic and Financial Affairs of the European Commission (DG ECFIN)

Vasilis Nikitas offered a key context on the European Commission's economic support for Greek environmental initiatives, particularly through the Recovery and Resilience Fund. Nikitas outlined specific projects, including 'Antinero', which involves the restoration of 5,700 hectares of degraded forest ecosystems and the upgrading of four public forest nurseries in Amvrosia, Lagada, Organi and Aliarto.

Underlining the Commission's growing concern about Greece's vulnerability to climate-related disasters, Nikitas referred to recent recommendations to strengthen disaster management systems. He outlined how various funding streams, including €1.13 billion allocated through ESPA for civil protection and climate change adaptation, are being coordinated to support environmental protection efforts.

Best practices for tree planting initiatives in Greece

Georgios Antoniou, Special Advisor to the Mayor of Ioannina

Antoniou presented a detailed case study of urban tree planting in Ioannina, a city of 110,000 inhabitants facing unique challenges as one of six Greek cities selected for the EU's mission to achieve climate neutrality by 2030. His presentation included data from a citizen science initiative that mapped urban tree coverage:

- Survey of 312 streets covering 86 km.
- Documentation of 2,950 trees (approximately one tree every 30 meters).
- Analysis showing 60.6% of streets have no trees, 12.8% have 1-5 trees, and 26.6% have more than 5 tree.

The city's approach to increasing urban tree cover includes innovative initiatives such as the bioclimatic replacement of nine school yards and the development of new bicycle paths with integrated tree planting zones.

Ioannis Spanos

Ioannis Spanos, Research Director at ELGO-DEMETER, provided an in-depth look at forestry in Greece, drawing on decades of experience in both academic and practical forestry. His presentation revealed that significant changes in forest cover have taken place in Greece, with an increase of 602,000 ha between 1992 and 2020, mainly due to Natura 2000 protection measures, forest abandonment and rural depopulation. This trend stood in stark contrast to pre-1990 practices, when Greece maintained some 100,000 hectares of commercial forests with foreign species, compared to

only 18,000 hectares today – a shift he attributed to both funding constraints and the evolving environmental priorities of the European Union.

Spanos outlined recommendations for improving Greece's approach to the 3 Billion Trees Pledge, stressing the need for a cohesive national forestry strategy. He detailed specific targets for different forest types, proposing the restoration of 30,000 hectares of degraded forests, 14,000 hectares in arid regions and 2,000 hectares in riparian zones over a ten-year period. A particularly innovative aspect of his presentation focused on agroforestry opportunities, identifying some 500,000 acres suitable for development that could help sustain rural populations while advancing reforestation goals. Finally, Spanos stressed the importance of strengthening forestry infrastructure, noting that successful implementation will require both increased staffing – calling for 1,000 new foresters and 500 forest technicians - and substantial investment in research and development capacity.

Thodoris Tzoumas, Mayor of Skiathos

Thodoris Tzoumas, Mayor of Skiathos, presented a compelling case study of successful local implementation, describing initiatives on his island, which receives around half a million visitors a year between the months of April and October. Mayor Tzoumas explained how two-thirds of Skiathos, around 30 square kilometres, has been designated as an aesthetic forest – one of only 12 such protected areas in Greece since 1978. The island is home to the unique Koukounaries habitat, one of only three such environments in Greece, making its conservation efforts particularly important.

Mayor Tzoumas described a successful initiative launched in 2015 in collaboration with the Hellenic Society for the Protection of Nature, which involved planting 1,000 stone pine trees in the Koukounaries habitat. The project demonstrated effective multi-stakeholder engagement, involving local organisations, schools, businesses and expatriate companies. A key feature of the programme was its focus on long-term commitment, with schoolchildren adopting individual trees and maintaining them for three years, resulting in a survival rate of over two-thirds. This success was attributed to the sandy soil conditions and the sustained involvement of the community, especially among young people who are now university students. The project demonstrated how local authorities can effectively combine environmental conservation with community engagement and education, creating lasting impact through careful planning and broad stakeholder involvement.

Panagiota Maragou, Head of Environmental Protection Program, WWF Greece

Panagiota Maragou presented WWF Greece's systematic approach to post-fire restoration and tree planting, drawing on extensive experience starting from the pioneer work in the Kaisariani forest, the first activity funded by WWF in Greece. Maragou discussed challenges and also opportunities for reforestation practises and shared WWF Greece's methodical approach to post-fire restoration, highlighting their work in Evros following the devastating 2023 fires. Their methodology includes four key components:

- Rapid assessment of burned areas to determine natural regeneration potential.
- Identification of priority areas requiring active reforestation (typically 15-17% of burned areas).
- Development of specific planting protocols based on local conditions and biodiversity requirements.
- Integration of volunteer training programs to ensure proper planting techniques.

Using the Evros fire as a case study, Maragou described how their assessment of 81,340 hectares of burned forest revealed that only 17% required additional monitoring and only 0.5% required immediate

reforestation as these had suffered multiple fires in short intervals. This evidence-based approach demonstrates the importance of allowing natural regeneration processes to work wherever possible. Maragou presented the tree planting activities of WWF Greece in the national Forest of Sounio with 22,500 trees and other 7,500 scheduled for this year. She also stressed the importance of proper certified planting material. Therefore, together with volunteers WWF has collected during the last year 150 kilos of seeds from 10 different species, resulting in 29,000 plants ready for deployment.

WWF Greece has also developed an innovative educational programme called 'Forest Guards', which combines citizen science with environmental education. The programme enables children over the age of 10 to follow specific protocols for monitoring forest regeneration, giving them hands-on experience while contributing valuable data to WWF's restoration efforts. Through this programme, teachers are provided with educational materials for activities before and after field visits as well, ensuring a complete learning experience that builds long-term environmental awareness and understanding of natural forest recovery processes.

Ioannis Iliopoulos, Founder and CEO, We4All

Iliopoulos presented We4All's evolution from a grassroots initiative to an organisation that has planted over 3 million trees worldwide. Their approach emphasises:

- Corporate partnerships for sustainable funding.
- Structured volunteer training programs.
- Implementation of innovative maintenance solutions, including an artificial rain mechanism deployed over 100 acres in Ancient Olympus.
- Integration of educational programs reaching over 300,000 children.

Challenges and opportunities

The workshop's diverse presentations and discussions revealed a wide range of challenges and opportunities for Greece's contribution to the EU's 3 Billion Trees Pledge. These were examined in detail through multiple stakeholder perspectives and supported by concrete examples from implementation efforts across the country.

Seeds for tree planting

A primary challenge identified through multiple presentations is Greece's current nursery capacity and seed management infrastructure. As detailed by Stavros Tsilikounas, while the country has 22 public forestry nurseries, many require significant upgrading to meet current demands. The success of recent public-private partnerships, such as that with Motoroil Greece, demonstrates both the challenge and potential solution pathway – while public resources alone have been insufficient, private sector engagement has enabled dramatic improvements in seed collection capacity, increasing from 97kg in 2021 to 563kg in 2022 at the Antalya facility. This challenge is further complicated by the genetic diversity requirements outlined by Despina Paitaridou, who emphasised that Greece's rich biodiversity necessitates maintaining numerous distinct genetic lines, each with specific collection and storage protocols that stretch existing infrastructure capacity.

Climate change and forest fires

Climate change presents another significant challenge, as highlighted through multiple case studies presented during the workshop. WWF Greece's Panagiota Maragou detailed how changing climate patterns are affecting both natural regeneration and planted tree survival rates. The extended dry

season now frequently begins in March rather than late spring, requiring significantly more irrigation than traditional management plans anticipate. This was reinforced by We4All's experience in Ancient Olympus, where they found standard irrigation protocols insufficient and had to implement innovative artificial rain mechanisms to ensure seedling survival. The city of Ioannina's experience, presented by Georgios Antoniou, further illustrated this challenge, describing how the city's climate adaptation needs have shifted from primarily winter heating concerns to requiring cooling solutions for up to six months of the year, fundamentally changing urban forestry requirements.

WWF Greece's presentation by Maragou provided especially valuable suggestions for post-fire restoration planning, including:

- Systematic assessment protocols for determining natural regeneration potential.
- Specific criteria for identifying priority planting areas.
- Detailed volunteer training procedures to ensure planting quality.
- Long-term monitoring protocols to verify restoration success.

These guidelines demonstrate how Greek implementing organisations are developing sophisticated, science-based approaches that can inform similar efforts across the Mediterranean region.

Management and Monitoring Framework

The workshop revealed a strong emphasis on monitoring and evaluation, with multiple presenters highlighting the importance of long-term tracking of planted trees. The We4All presentation by Iliopoulos demonstrated innovative approaches to maintenance monitoring, including the use of artificial rain mechanisms with integrated monitoring systems. Meanwhile, WWF Greece's Forest Guards program shows how citizen science can be integrated into monitoring efforts while supporting public engagement objectives.

Administrative and legal barriers

The workshop revealed significant administrative challenges in implementing tree-planting initiatives, particularly regarding land use permits and their legal framework. Multiple speakers highlighted the complexity of Greece's permitting system, especially in urban and peri-urban areas where competing land use demands create additional bureaucratic hurdles. This was evident in the municipal case studies, where cities like Ioannina face challenges in implementing green infrastructure projects due to complex approval processes involving multiple administrative levels.

Funding barriers

Financial sustainability emerged as a critical challenge as well, particularly regarding long-term maintenance commitments. As detailed by the European Investment Bank's Marianna Nathanail, while initial planting funds are often available, securing sustainable funding for ongoing maintenance presents a significant challenge. This was echoed by multiple implementing organisations, with We4All's experience showing how changing climate conditions can dramatically increase maintenance costs beyond initial projections. The Green Fund's representative detailed how only 2.5% of their total financial provisions can be actively deployed due to memorandum obligations, creating a significant gap between available resources and implementation needs.

Opportunities for progress

Despite these challenges, the workshop identified a number of opportunities for advancing Greece's tree-planting efforts. The country's high percentage of public forest ownership (76% according to

presented statistics) provides a significant advantage for implementing large-scale planting initiatives, reducing the complications faced in countries with predominantly private forest ownership. This is further supported by Greece's extensive mapping of forest areas, with 95% of territory now mapped and 90% officially listed, providing a solid foundation for planning and implementation.

The success of public-private partnerships emerged as a promising opportunity, with multiple examples demonstrating how such collaborations can overcome resource limitations. The Motoroil Greece partnership with the national seed centre shows how private sector engagement can dramatically improve operational capacity, while We4All's corporate partnership model demonstrates potential for sustainable funding of maintenance activities. These successful models provide templates for expanding private sector engagement across the Pledge.

Greece's rich biodiversity, while presenting certain challenges, offers significant opportunities for climate-resilient reforestation as well. The country's variety of native species adapted to Mediterranean conditions provides several options for matching species to specific site conditions, particularly important as climate change affects growing conditions. This advantage is supported by the extensive scientific expertise evident in presentations from research institutions and environmental organisations, providing the technical foundation for successful implementation.

Innovations and best practices

The final sessions of the workshop revealed several innovative approaches and best practices that could serve as models for scaling up tree-planting efforts across Greece and potentially in other Mediterranean countries as well. These innovations span technical, social, and financial domains, demonstrating the multi-faceted nature of successful implementation.

Technical innovations

The artificial rain mechanism implemented by We4All in the Ancient Olympus region represents a significant technical innovation in tree maintenance. This system, deployed across 100 acres supporting 40-50,000 new trees, demonstrates how modern technology can address the increasing challenges posed by climate change. The success of this system in maintaining tree survival through extended dry periods suggests potential applications for other Mediterranean regions facing similar climatic challenges. Furthermore, Iliopoulos's suggestion that such systems could serve dual purposes for both tree maintenance and fire prevention represents an important potential development in forest protection infrastructure.

WWF Greece's systematic approach to post-fire restoration planning has yielded innovative assessment protocols that combine scientific rigor with practical applicability. Their work in Evros following the 2023 fires demonstrated how detailed mapping at a landscape scale and assessment protocols can optimise restoration efforts, ensuring resources are directed to areas where active intervention is most needed. Their finding that only 17% of burned areas typically require active monitoring, and an even smaller percentage needs immediate reforestation, challenges conventional approaches and suggests more efficient resource allocation strategies.

Social innovation and community engagement

WWF Greece's Forest Guards program represents another innovative approach to combining citizen science with environmental education. The structured protocol of the program for monitoring forest regeneration gives participants practical experience in scientific observation while contributing to

valuable data collection. This approach not only supports monitoring efforts but helps build public understanding of forest ecosystem dynamics, particularly important in a country where forest fires are a recurring challenge.

Financial and administrative innovations

The European Investment Bank's experience with green bonds and sustainable awareness bonds, as presented by Marianna Nathanail, demonstrates innovative approaches to financing environmental initiatives. The evolution of the bank from Climate Awareness Bonds in 2007 to more comprehensive sustainable financing instruments shows how financial tools can be adapted to meet changing environmental challenges. The success in exceeding climate investment targets ahead of schedule (reaching 50% of investments by 2021 rather than 2025) demonstrates the potential for accelerated implementation when appropriate financial instruments are available.

The public-private partnership model developed for the Antalya seed centre provides a template for upgrading critical infrastructure through collaborative approaches as well. The dramatic increase in seed collection capacity achieved through this partnership is demonstrative of how private sector engagement can overcome public resource limitations while maintaining public oversight of critical functions. This model could be particularly relevant for other Mediterranean countries facing similar infrastructure challenges.

Future directions and recommendations

The discussions held during the workshop yielded several clear directions for strengthening Greece's contribution to the EU's 3 Billion Trees pledge, with specific recommendations emerging from the various stakeholder perspectives presented.

Strengthening infrastructure and capacity

A clear priority emerging from multiple presentations is the need for sustained investment in forestry infrastructure. The current upgrading of four primary nurseries through the €4 million Recovery Fund contract represents an important start, but as detailed by Tsilikounas, the remaining 18 public nurseries also require modernisation to meet projected demands. The success of the Motoroil Greece partnership at the Antalya facility suggests that expanding public-private partnerships could accelerate this process. Specific recommendations include:

The development of regional seed banking facilities to complement the central Antalya facility would improve resilience and capacity. As highlighted by Paitaridou's presentation on genetic diversity challenges, the current centralised system creates vulnerabilities, particularly when rapid response is needed following forest fires. The establishment of regional facilities, potentially through public-private partnerships, could improve response capacity while maintaining genetic diversity standards. This infrastructure development needs to be accompanied by expanded training programs for forestry personnel, especially in specialised areas such as seed collection and genetic resource management.

Financial sustainability

The European Investment Bank's presentation highlighted the need for more sophisticated financing mechanisms that can support both initial planting and long-term maintenance. The success of green bonds and sustainable awareness bonds suggests potential for expanding these instruments to support tree-planting initiatives specifically. Workshop participants recommended developing blended finance

approaches that combine public funding, private investment, and innovative financing mechanisms like carbon credits to ensure sustainable funding for both planting and maintenance.

Monitoring and Evaluation Systems

The need for robust monitoring and evaluation systems emerged as a crucial requirement for program success. WWF Greece's systematic approach to post-fire restoration assessment provides a potential model for broader application. Recommendations include:

The development of standardised monitoring protocols that can be applied across different planting contexts while maintaining sufficient flexibility to address local conditions. We4All's experience with innovative maintenance monitoring systems suggests potential for integrating technology-based solutions into broader monitoring frameworks. The success of citizen science initiatives like the Forest Guards program indicates opportunities for combining professional monitoring with structured public participation.

Research and knowledge exchange

Professor Tsantopoulos's presentation on forestry education highlighted the importance of continuing research and knowledge exchange. The workshop recommended establishing a formal knowledge-sharing network among Greek implementing organisations, potentially extended to other Mediterranean countries facing similar challenges. This could include regular technical workshops, shared research initiatives, and systematic documentation of best practices and lessons learned.

Conclusions

The workshop demonstrated both the significance of Greece's potential contribution to the EU's 3 Billion Trees pledge and the complexity of realising this potential. The combination of extensive public forest ownership, rich biodiversity, and growing technical expertise provides a strong foundation for success. However, realising this potential will require sustained attention to infrastructure development, administrative reform, and financial sustainability.

The innovative approaches presented during the workshop, from technical solutions such as artificial rain mechanisms to social innovations in community engagement, suggest that Greek implementing organisations are developing sophisticated responses to implementation challenges. The success of public-private partnerships in addressing infrastructure limitations while maintaining public interest considerations provides important models for scaling up implementation.

The workshop concluded with a clear consensus that achieving Greece's contribution to the 3 Billion Trees pledge will require coordinated action across all stakeholder groups, supported by appropriate policy frameworks and resources. The integration of this Pledge with broader environmental objectives, particularly post-fire restoration and urban climate resilience, suggests opportunities for maximising impact through strategic alignment of different environmental programs.