2024 Annual Impact Report

Carob tree
Alfarrobeira
Ceratonia siliqua

RESILIENCE

URBEM
COMMUNITY · NATURE · CONNECTION ·
www.urbem.co

And a year of growth and consolidation

SPOTLIGHT

Carob Trees

Portugal is home to one of the densest and oldest population of Carob Trees. Some magnificent specimens can live to 600 years old and remain able to produce abundant beans.

Native to Southern Europe and Mediterranean climates, carob trees (*Ceratonia siliqua*) thrive in arid climates with minimal care. Traditionally linked to the Algarve coast, they also grow in Lisbon and Arrábida Natural Park. Resilient and drought-tolerant, they act as carbon sinks, require little maintenance, and provide shade and fodder. Their nutritious pods, known as 'nature's chocolate', are rich in antioxidants and widely used in food and beverages. With deep historical and cultural roots, carob trees embody sustainability and enduring heritage where southern Europe meets northern Africa. Here at URBEM we take great inspiration from the mighty Carob trees that overcome hardship and find ways to prosper and create resilience for our city, our communities and the planet we live on.

URBEM

Our intention is to re-connect to forests, the community, and to each other.

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Urbem Forests Association is an environmental NGO dedicated to restoring urban ecosystems with native forests.

We reconnect people with nature, community, and themselves. Citizen involvement is key to helping cities adapt to climate change. We promote environmental education through our urban forests, engaging schools, communities, and public and private organisations.

Our Partners in Collaboration

CONEXUS
Conectados pela natureza urbana

LISBOA
CÂMARA MUNICIPAL

nam

PLMJ
Transformative Legal Experts

Dona Ajuda

Mini Florestas Portugal

THE LAST WORD

LIFE LUNGS

Jardins Abertos

The Big Picture

Planting seeds of hope for a better tomorrow.

The Problem

- Extreme Climate Events
- Urban Loneliness and Health Issues
- Public Budget and Staffing Pressure

URBEM

Resilient Urban Forests

The Solution

- Community Participation
- Sustainable Methodology
- Urban Biodiversity

1. Engaging communities in forest cultivation and climate action.
2. Implementing eco-friendly, financially viable forest strategies.
3. Promoting biodiversity through resilient urban forest ecosystems.

Our partners

Thank you for all the support

SIGMETUM
PLANTAS AUTÓCTONES

They are a company with 15 years of experience, pioneering in the production and commercialisation of native plants from Portugal's flora. They produce over 150 species of Portuguese plants, sourced from seeds collected in the wild, with guaranteed provenance.

tagis | Centro de Conservação das Borboletas de Portugal

The Butterfly Conservation Center of Portugal, is a non-profit organisation focused on scientific research, knowledge dissemination, and preserving butterfly habitats. We collaborate with them on knowledge sharing and the creation of informational signboards at our plots.

Nam

Our urban mini-forests are thriving, thanks to partnerships with Năm and their collaboration with Delta Cafés. By closing the loop and reducing environmental impact, Năm reuses 3 tons of coffee grounds and compost for every ton of mushrooms produced. This effort is equivalent to planting 16 trees and removing 40 cars from the road, resulting in a reduction of 1.6 tons of CO2 emissions!

LISBOA
CÂMARA MUNICIPAL

CML (Câmara Municipal de Lisboa) has been our inaugural land partner, generously supporting us with mulch transport, logs from Monsanto, plants from their nursery, and other resources. Together, we've set a new standard for private-public partnerships in sustainability in Lisbon.

António Arroio
ESCOLA ARTÍSTICA

A secondary art school located in the Alto de São João neighborhood in Lisbon. Around 80 of their students collaborated with us on an olla project, creating creative water conservation holders to water plant roots without losing water through evaporation.

PLMJ
Transformative Legal Experts

PLMJ is one of Portugal's largest and most prestigious law firms, and they have been Urbem's legal team since day one. Supporting and advising us through the incorporation of Urbem, drawing up contracts, and registering trademarks – all pro-bono.

30 anos Valorsul

A leading environmental company in the Lisbon area, managing nearly a million tons of urban waste. We collaborate with them to utilise their valuable organic compost materials.

BIOLAB Lisboa

A citizen science laboratory focused on creating an open, multidisciplinary innovation ecosystem and positioning Lisbon as the European Capital for the Integration of STEAM knowledge. We've collaborated on scientific experiments at our plot, exploring recycled bricks made from clay, straw, and waste materials.

Dona Ajuda

Planting the first mini therapeutic forest in Portugal at the Lisbon Psychiatric Hospital Center could not have been accomplished without the generous donation from Dona Ajuda. With their support, we have transformed this space into a welcoming and natural environment, bringing benefits to the wellbeing of patients, professionals, and the community.

LÚCIDA KAOSPILOT

MÉDICOS DO MUNDO

IEEE EMBS
IEEE Engineering Medicine & Biology Society

PlantArbor

earthwise ALLIANCE

Since our journey began in 2021, we've planted four Fast Forests with the help of hundreds of volunteers, adults, children, and seniors alike. Our goal: "uma floresta em cada freguesia" (a forest in every parish), and 2024 has been a milestone year.

This year, we enriched FF2 with ponds, meadows, and more planting activities. Biological monitoring of FF1 and FF2 shows promising results, and hundreds of volunteers, both public and corporate, have joined us. We were featured for the first time at Jardins Abertos, receiving fantastic engagement and feedback.

A major milestone was the creation of a therapeutic forest at Lisbon Psychiatric Hospital, made possible by the dedication of hospital staff and generous support from Dona Ajuda. Our reach has expanded as we became inaugural partners of the Miniforest Network of Portugal and saw a surge in social media followers, volunteer sign-ups, and media coverage.

Looking ahead to 2025, we'll focus on strengthening partnerships with local parishes, schools, churches, and institutional landowners, while securing deeper, more consistent funding.

None of this would be possible without our incredible Board of Directors and Associates, who have dedicated countless hours to making Lisbon greener. A heartfelt thank you to our volunteers and partners – we're just getting started.

Sasi Kandasamy
Founder/Chair

Statement from the board

It's hard to believe I only joined Urbem 2 years ago. It has been an amazing experience, in which I had the pleasure of meeting so many interesting people, participating in challenging projects, preparing proposals to our partners and clients, and sometimes even giving interviews to the media. All new experiences for me.

I strongly believe in citizen mobilisation being the solution of many social problems, and Urbem tries to tackle at least two, social inclusion and the lack of nature in the cities, by giving an enormous focus on environmental education. We believe in contributing to leave the world a better place, and incentivise our citizens to be more active and fight for causes they believe are right.

Truth be said, after these three years, we can start to see the results, and feel we can make a difference.

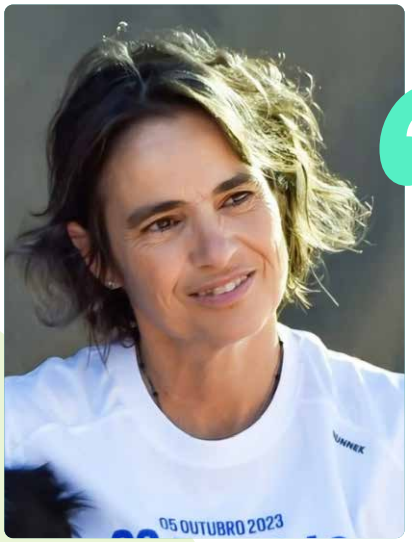
2024 was a year of growth and consolidation, but there's still a lot of work to do, that's why we fight everyday to show our will to succeed in order to get the right opportunities to show our value in society.

João Fernandes,
Vice President

Statement from the board

2024 was incredible, especially for the partnership with the hospital. Hope 2025 brings more communities and Urbem together.

Antonio Alexandre
Board Member



We created new forests in Lisbon, gained media attention, the trust of the community and other organisations such as Jardins Abertos, became partners with other environmental associations and gained the confidence to go further.

Rita Barrela
Board Member

In 2024, we went from a grassroots community to an established and respected ecological powerhouse. In 2025 I hope that we can double down on our success to bring nature for more Lisbon residents to enjoy.

James Barrett
Board Member

We have strengthened our relationships with partners, met our strategic goals, and equipped our volunteers with essential tools and technical expertise to advance forest-building within the urban matrix. Regarding biodiversity, I am particularly pleased with the progress of our experimental blue-green infrastructures and hold high expectations for their impact in 2025.

Ivo Rosa
Board Member

I've been incredibly lucky to be part of Urbem's committed and knowledgeable team and look forward to another year of making Lisbon's Forest city a reality.

Hugo Warner
Board Member

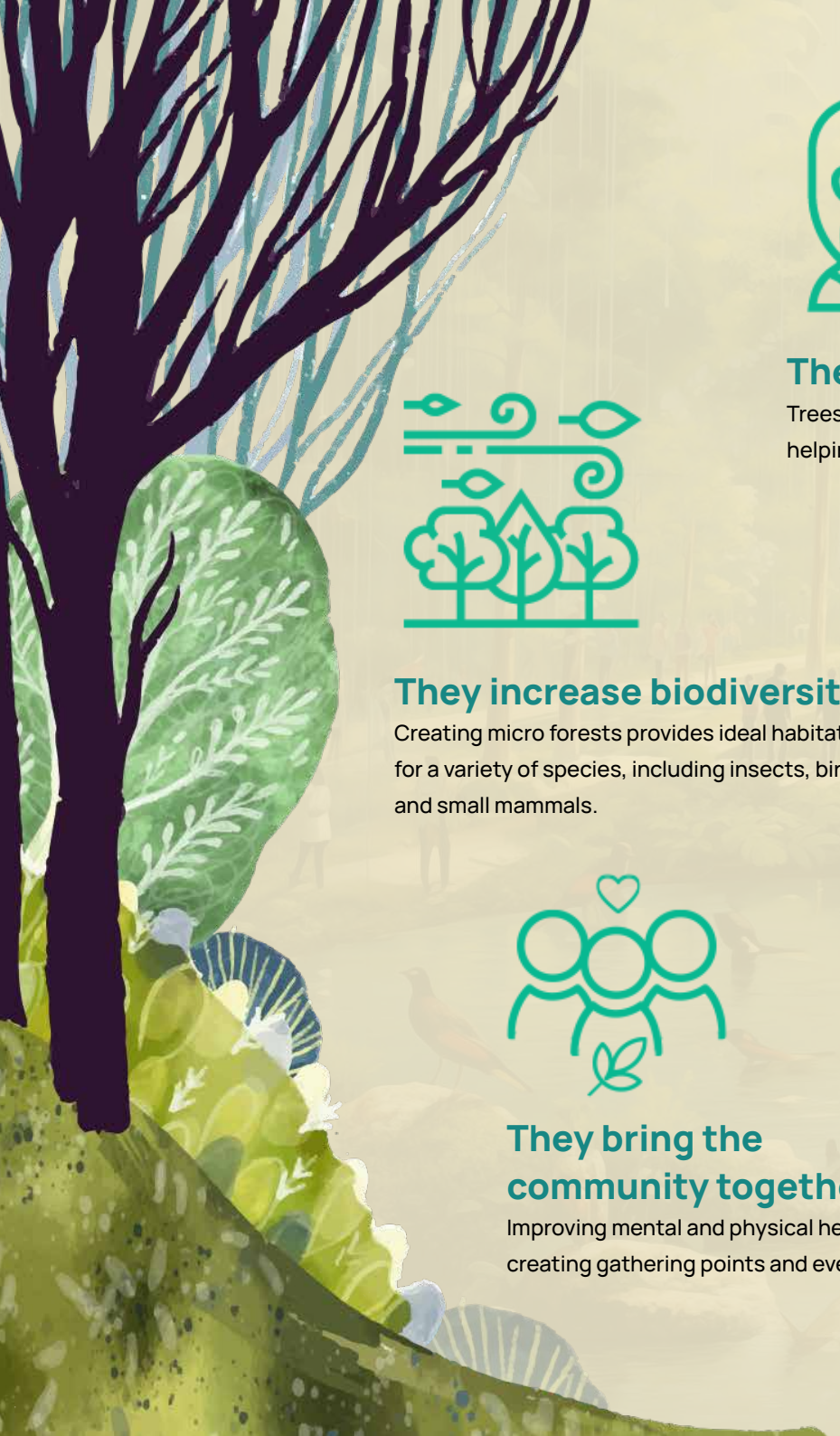
Our vision is to make greener cities, where all living beings, including humans, flora and fauna can flourish.

Our Core Values

Community

Nature

Connection



Why are micro forests so important?

They improve air quality

Trees absorb CO^2 and other pollutants, helping to purify the air we breathe.

They fight global warming

Planting trees helps capture carbon from the atmosphere, one of the most effective solutions to climate change.

They increase biodiversity

Creating micro forests provides ideal habitats for a variety of species, including insects, birds, and small mammals.

They protect soil and water

Tree roots help prevent soil erosion and maintain water resources.

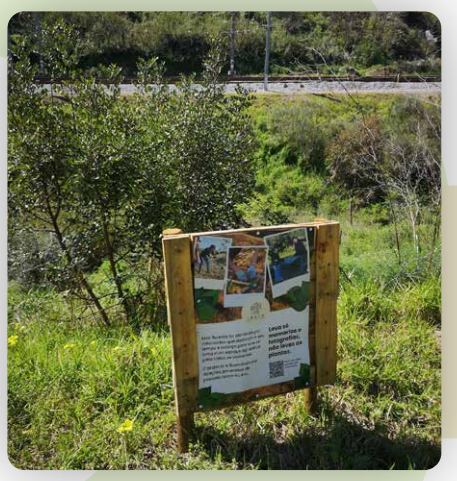
They cool urban areas

Green spaces help reduce temperatures in cities, fighting the urban heat island effect.

They bring the community together

Improving mental and physical health, and creating gathering points and events.

Updates from our growing FastForest® plots



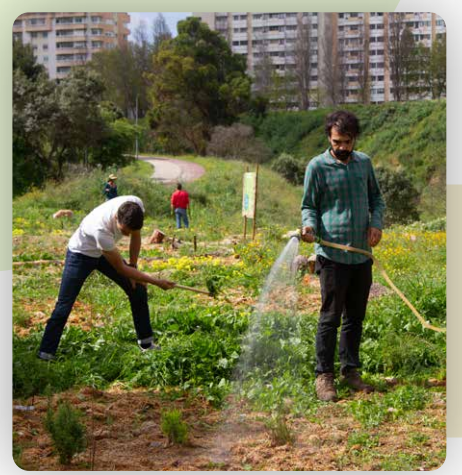
FF1

Fast Forest 1 - Park Casal Vistoso

Our original forest is thriving beyond our wildest expectations, even though the maintenance was more difficult due to the slope of the plot.

APA (Portuguese Environment Agency)

Our first example of a forest planted with a public organisation in their office premises. Maintained and cared-for by the employees, it is a fitting practical tribute to the environmental work they already do.



FF2

Fast Forest 2 - Park Vale da Montanha

The largest public Miyawaki forest in Lisbon, with very interesting experiments on pond-life, water conservation, and the centre of our regular community gatherings.

New Addition in 2024

Therapeutic Mini Forest - Centro Hospitalar Psiquiátrico de Lisboa - Unidade de Alcoologia de Lisboa (UAL)

A proud achievement for us, bringing together multiple partnerships to help the employees and patients of the Alcohol Treatment Unit at the hospital to benefit from nature therapy.

2024 Strategic Goals and Achievements

Implement the first therapeutic forest in a hospital in Lisbon

Planted the first Fast Forest at Hospital Júlio de Matos, with more than 800 plants and nearly 40 volunteers including staff and patients. We were funded by the NGO Dona Ajuda with some incremental funds received from a Pingo Doce client voting competition.

Host more community events at existing plots

We hosted weekly events at Urbem's largest plot, FF2, engaging over 1,100 volunteers, including schools like Redbridge, local scout associations, and corporate teams for team-building. A standout collaboration with Escola António Arroio pottery school resulted in over 80 ollas, some used in a water optimisation experiment at our site, while others were sold for funding.

Collaboration with other NGOs

We formed an alliance with the Portuguese Miniforest Network, resulting in a press release and media coverage highlighting the importance of urban forests and our work. Our first partnership with Jardins Abertos was a success and will continue into 2025. Tagis is also collaborating with Urbem on informational boards at our FF2 plot, and we supported Quercus in their planting events.

Obtain additional land for planting (public or private)

We are in ongoing discussions with multiple stakeholders. Securing long-term urban land leases for forestry in Lisbon is a lengthy process, as the concept is still gaining traction.

Explore Carbon Credits as a commercial venture

We explored carbon credits as a commercial venture but decided to forego it. The size of urban forests and the shorter land leases we secure make it an unviable funding option.

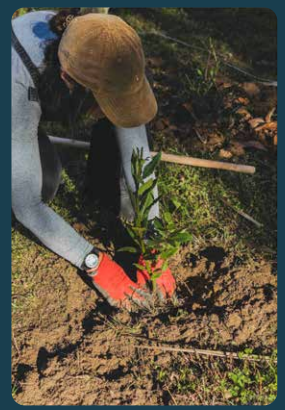
Non-monetary grant

In July 2024, we received a final non-monetary grant, providing essential materials and signage for our plot. We wrapped up the Conexus project that initially funded us and made the most of the benefits before closure (Aug 2024).

Continue engagement with freguesias (Penha de França, Areeiro etc)

Continuing to raise awareness and engagement. This is also a long cycle due to changes in policies and decision makers.

Portugal's first mini-forest in a hospital centre



Urbem helped plant a therapeutic forest at the Centro Hospitalar Psiquiátrico de Lisboa - Unidade de Alcoologia de Lisboa (UAL), Alvalade, one of the country's largest hospitals.

Spanning 400m² and featuring around 800 plants, this space will serve as a biodiversity haven and a place for patients, staff, and doctors to connect with nature.

The nursing team also developed the 'nature trails' program, integrated into alcohol addiction therapy.

We're proud to be part of the Portuguese Mini-forest Network

Urbem is collaborating with five other environmental and urban regeneration organisations to transform cities into greener, more resilient spaces.

The initiative promotes mini-forests inspired by the Miyawaki method. Urbem, together with partners like Biggest Mini Forest, Floresta Nativa / Nativawaky, Forest Impact, Ilhas de Biodiversidade and 2adapt, aims to expand these efforts across the country, creating lasting environmental and social impact from north to south.

SPOTLIGHT

JARDINS ABERTOS

Festival Jardins Abertos is one of Lisbon's major events. It began in 2017 and opens the door of private and institutional gardens, with the aim of promoting a connection with nature, combining sustainability in the urban context.

It was with pride and enthusiasm that in 2024 we received the invitation to be part of the programme for the 13th edition of this festival, in clear recognition of our impact on the city and community.

We created guided tours in partnership with Lisbon City Council and two workshops for families (Seed Bombs and Insects).

We welcomed more than 300 visitors over 2 days in our Fast Forests located in Vale do Casal Vistoso (FF1) and Vale da Montanha (FF2).

The number of participants and feedback received not only demonstrated the interest in the purpose and principles of Urbem Forests, but also our ability to be part of major events.

SPOTLIGHT

OLLA PROJECT

Water Conservation through Traditional Irrigation

Water scarcity has long been a challenge in Mediterranean regions, making the responsible use of this vital resource essential, both for human consumption and for plant irrigation. With this in mind, URBEM, in partnership with Escola Artística António Arroio, undertook a project aimed at reintroducing a traditional and highly efficient irrigation method: ollas.

Ollas are clay vessels that are buried in the soil near plants and filled with water. Due to the porous nature of clay, water gradually seeps out through osmosis, keeping the surrounding soil moist. This method ensures that plants receive only the water they need, minimising waste and promoting sustainable water use. While ollas are believed to have originated in North Africa, the oldest documented use dates back over 2,000 years in China.

As part of this initiative, more than 100 students from Escola Artística António Arroio participated in a six-month project integrated into their coursework. Under the guidance of their teachers and members of URBEM, students visited URBEM's forest areas to better understand the purpose and impact of the project. They were then challenged to design and produce their own ollas, combining technical clay-working skills with artistic expression and creativity.

The outcome of this project was the creation of over 100 unique ollas, many of which were subsequently installed in the forest. In doing so, students symbolically returned a natural material to the earth while contributing to a sustainable irrigation system that benefits both the local ecosystem and surrounding communities. The project also served as a valuable educational experience, reinforcing environmental responsibility and enriching the students' practical and artistic development.

Featured in the news and social media in 2024

Biosfera S22E07: Florestas Urbanas
Rádio e Televisão de Portugal (RTP)

Jardins Abertos Lisboa
Publico.pt

Heroína Local: Rita Barrela, a ambientalista
Timeout.pt

Resilient green zones: mini-forests transforming Portugal's urban spaces
Lider Magazine

New network transforms urban spaces into green zones
Revista Jardins

Environmental organisations form network to create mini-forests across the country
Lusa.pt

Portugal em Direto 18 June 2024
Rádio e Televisão de Portugal (RTP)

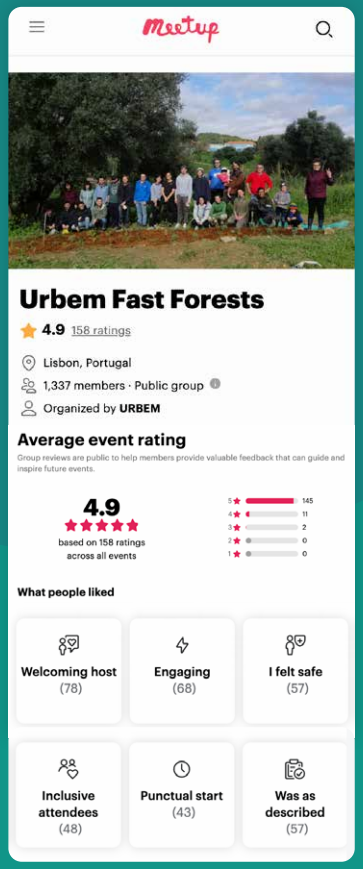
Jardins Abertos em Lisboa: o festival da "alma verde da cidade" floresce em Maio
Publico.pt

Bem-vindo à selva! Os projectos verdes que estão a mudar a cidade
Timeout.pt

View all coverage of Urbem Forests in the media by visiting **www.urbem.co/media**

Achievements on Social Media

2024 Digital Metrics



Website

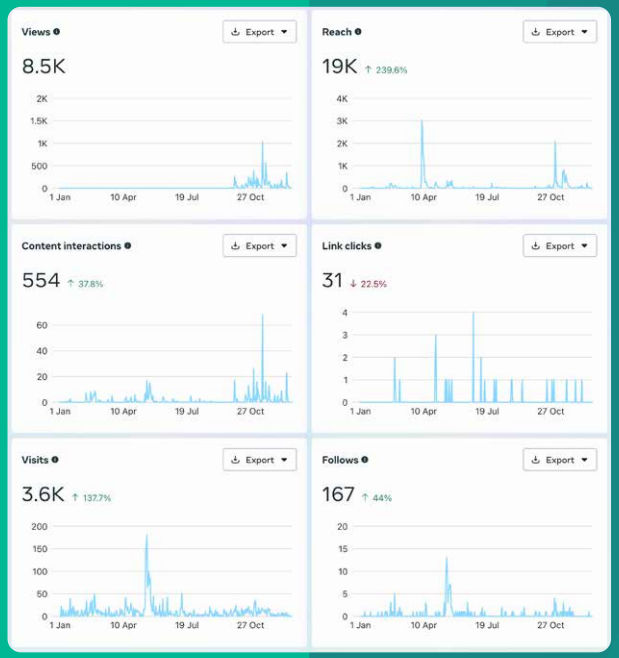
1500+
Active Users

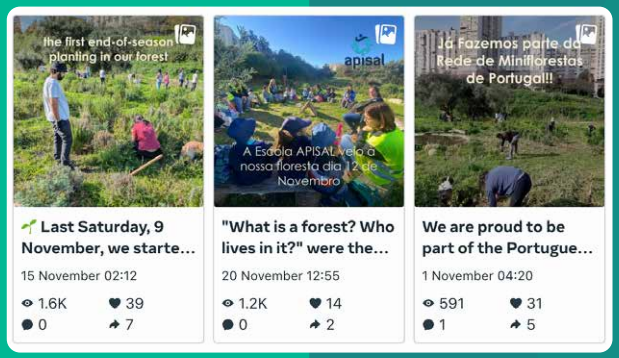
3500+
Total Post Views

230+
Newsletter Subscribers

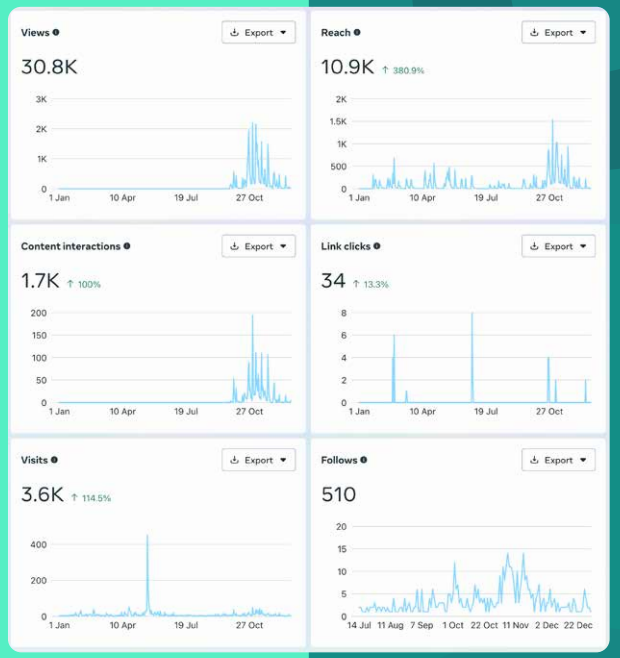
1400+
Direct and Organic Traffic

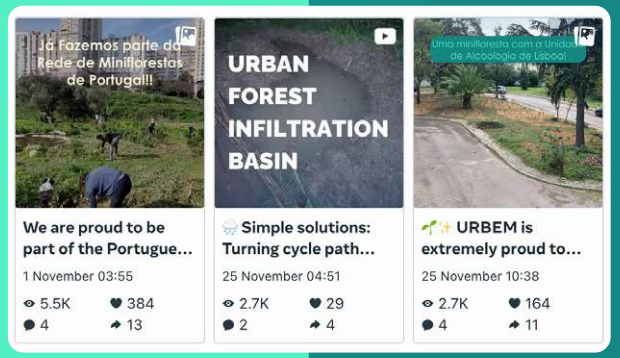
Facebook





Instagram



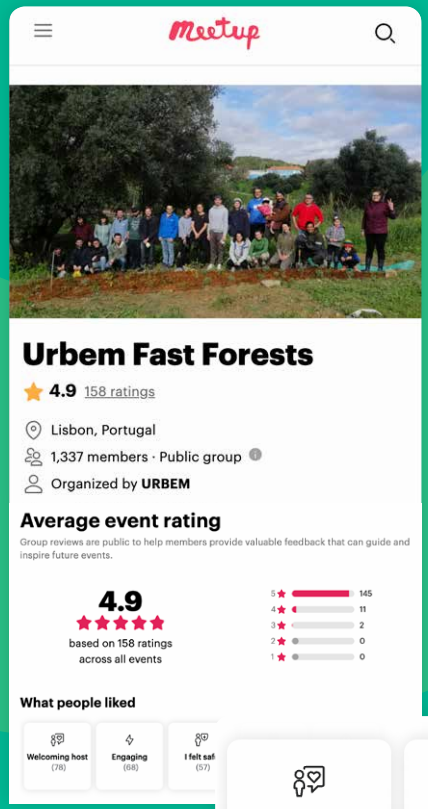


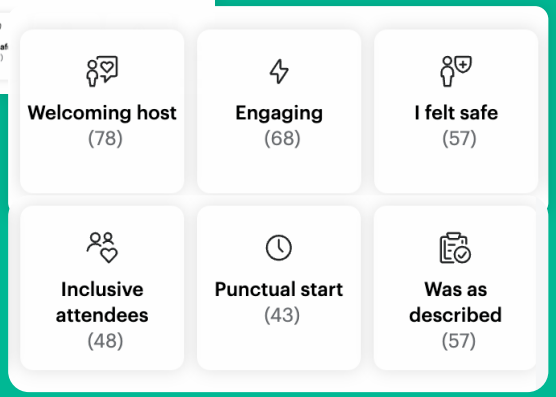
Linkedin

3000+
Impressions

130+
Reactions

Our Community





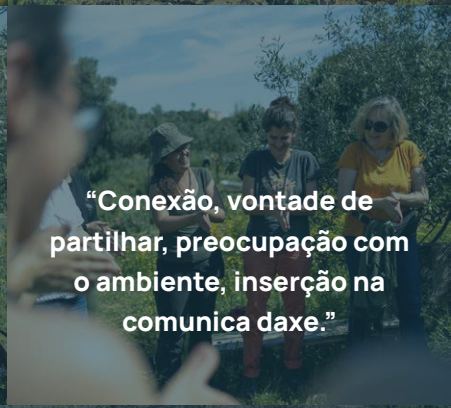
Many of our events were advertised via the online platform MeetUp. Across 158 reviews, our events were rated 4.9 out of 5 and rank highly on scores such as “welcoming host”, “engaging”, “I felt safe” and “made an impact”.

Showcased here are some of our most memorable quotes from volunteers.

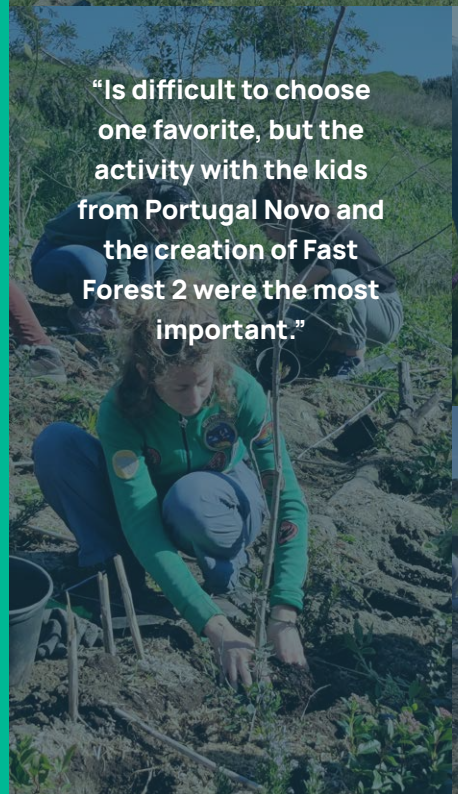
“I always had a great time. I feel like the initiative has shaped up to be very organized and active, full of committed volunteers.”

“O trabalho na terra e a comunidade”

“Para mim, todas as experiências foram memoráveis e dou, também, muito valor ao contacto com as outras pessoas, porque não somos ilhas isoladas e precisamos partilhar experiências e conhecimentos, para crescermos em conjunto.”



“Conexão, vontade de partilhar, preocupação com o ambiente, inserção na comunica daxe.”

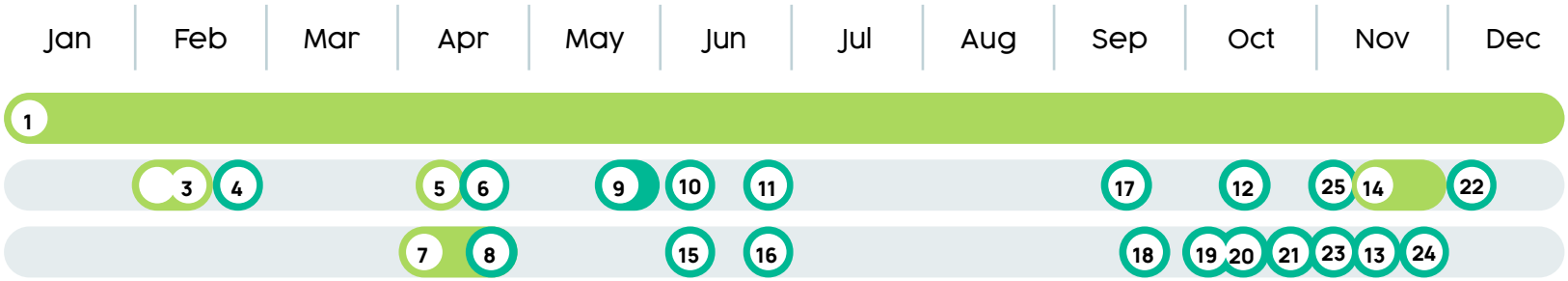


“Is difficult to choose one favorite, but the activity with the kids from Portugal Novo and the creation of Fast Forest 2 were the most important.”

“The deep passion of everyone who is involved with the work.”

Community Events held in 2024

Fast Forest Development
Social Gathering & Other Events



1,300+
Volunteers and participants in attendance

1. **Forest maintenance and pond development:** Involving watering, weeding, mulching, building structures, more planting, digging and establishing the ponds - once a month, 47 weeks, all year round
2. **International Wetlands day & Urban Pond workshop** (4th February)
3. **Insects Hotel workshop** (17th February)
4. **Environmental Robotics** (24th February)
5. **Iniciativa Quercus - minifloresta Benfica:** Urbem was a guest (13th April)
6. **Festival Jardins Abertos** pre-event (13th April)
7. **António Arroio School:** Sustainable Irrigation System with Ollas (8th, 9th and 18th April)
8. **Bosques Urbanos de Cali – Colombia** (20th April)
9. **13th Edition Festival Jardins Abertos** (18th to 25th May)
10. **Redbridge school event - Eco-schools** (4th June)
11. **Miyawaki training** (30th June)
12. **Observa Lagunas** (12th to 13th October)
13. **APISAL - Lisbon St Anthony's Pro-Childhood Association** (12th November)
14. **Therapeutic Forest:** Lisbon Central Psychiatric Hospital - Alcoholic Unit (19th and 28th November)
15. **Encontro Zero Waste Urban Parks** (5th June)
16. **Poli.NET event** (27th June)
17. **Cidade do Zero** (14th to 15th September)
18. **EU Tree Tag campaign** (19th September)
19. **Ethical Assembly** (2nd October)
20. **Forest Resilience Bonds** – USA Embassy (8th October)
21. **Joined the Portguese Mini-forest Network** (30th October)
22. **Sustainability talks** (5th December)
23. **RNLSAS x Urbem - Native Seeds workshop** (2nd November)
24. **Nova SBE:** Design thinking event
25. **Egaz Moniz school:** creating a vibrant pollinator garden (8th November)

National

Miniflorestas QUERCUS

Jardins de Polinizadores

International

CONEXUS - Pilot 1 – Renatura

CO-producing **N**ature-based solutions and restored Ecosystems: transdisciplinary ne**X**us for **U**rban **S**ustainability

LIFE LUNGS

Towards a more resilient **L**isbon **U**rba**N** **G**reen Infra**S**tructure as an adaptation to climate change

NATURESCAPES

Nature-based solutions for climate resilient, nature positive and socially just communities in diverse landscapes

Partner Projects

Sustainable Development Goals

The ODSlocal Platform aims to engage municipalities and key organisations in achieving the United Nations' Sustainable Development Goals (SDGs) at the local level. Created through a partnership with CNADS, OBSERVA, MARE, and 2adapt, and supported by the 'La Caixa' Foundation, it highlights successful projects and their impact on the SDGs using UN indicators.

Urbem's work, particularly with the Portuguese Mini-Forest Network, was recognised and included on this platform. Urbem contributes to 14 of the 17 SDGs, (Figs 1 and 2) with significant impact on SDGs 3 (Good health), 11 (Sustainable cities), 13 (Climate action), and 15 (Life on land), along with SDGs 4 (Quality education) and 17 (Partnerships).

Figure 1

FastForest 1

Figure 2

FastForest 2

Figure 3

Mini-Forest APA

How Things Are Going

FastForest® 2 (FF2) Monitoring

As outlined in the November 2023 Monitoring Report, divisions for sampling were selected to assess the evolution of the vegetation cover. The divisions were chosen to include all three sections while ensuring at least 30% representation of each species.

For each section, three divisions were selected: Divisions 1, 9, and 10 for the *Viburnum tini-Oleetum sylvestris* section; Divisions 18, 21, and 23 for the *Asparago aphylli-Quercetum suberis* section; and Divisions 26, 29, and 32 for the *Arisaro-Querceto broteroi* section (Fig. 4).

Over the two years following planting, four monitoring sessions were conducted, twice a year, before and after summer:

- → **1st Monitoring:** March/April 2023
- → **2nd Monitoring:** September/October 2023
- → **3rd Monitoring:** April/May 2024
- → **4th Monitoring:** December 2024

All plants in the selected divisions were measured using the same indicators (height, coverage, and vigor) – except for trees, where the diameter was also recorded.

Figure 4 FF2 monitored divisions

How Things Are Going

Comparing the data from all four sessions, the survival rate (Fig. 5) dropped by 18% between the second and fourth monitoring, with the largest decrease observed in the herbaceous layer (Fig. 6) and in divisions located along the plot's borders (Fig. 7).

As for the species (Fig. 8), *Phillyrea latifolia* and *Rosa canina* had the highest survival rates at 100%, followed by *Olea europaea* (94%), *Cistus salviifolius* (93%), *Quercus suber* (89%), and *Prunus spinosa* (88%).

The plants with a survival rate below 50% were *Lavandula sp.*, *Erica sp.*, *Lonicera sp.*, and *Fragaria vesca*.

For the surviving species, there has been overall positive growth in both height and coverage across all strata (Figs. 9 and 10), with the best results seen in the second year (3rd and 4th Monitoring).

Figure 5 Survival Rate

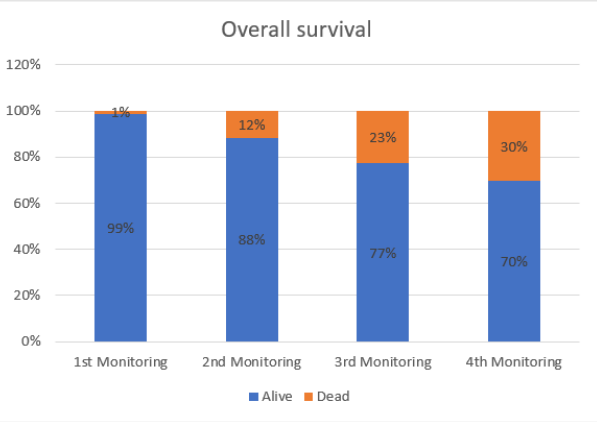


Figure 6 Survival Rate: Stratum

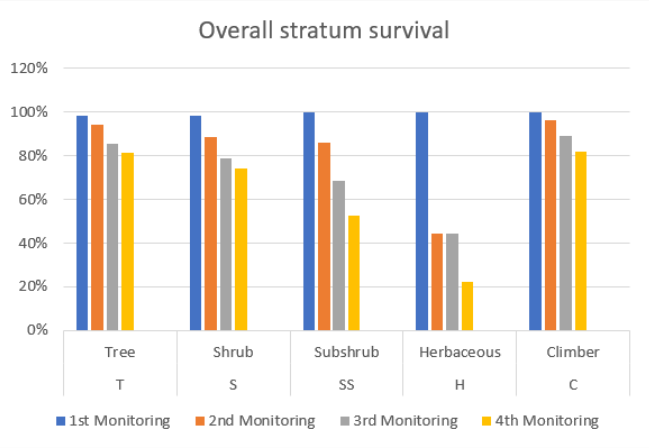


Figure 7 Survival Rate: Division

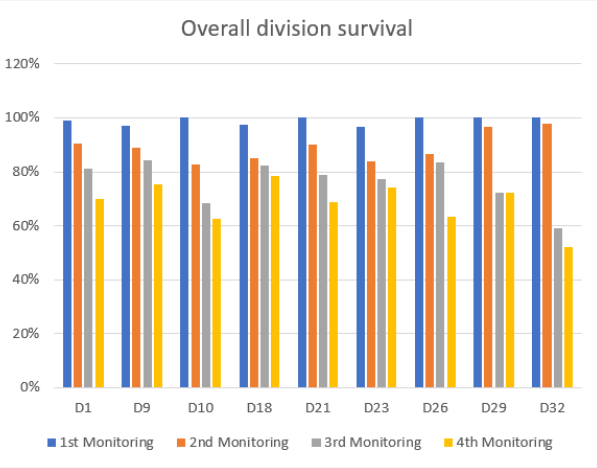


Figure 8 Survival Rate: Species

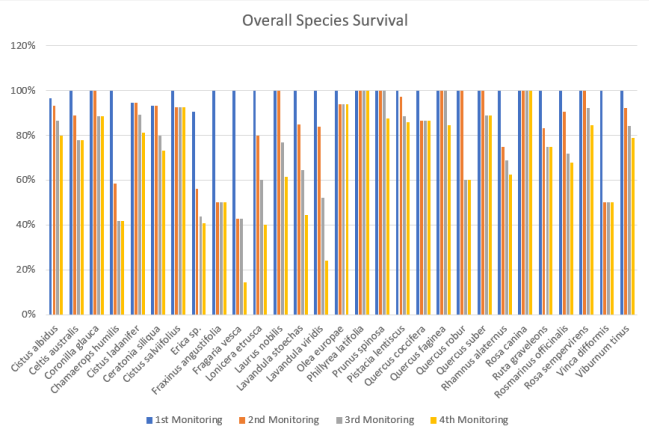


Figure 9 Average Cover Evolution

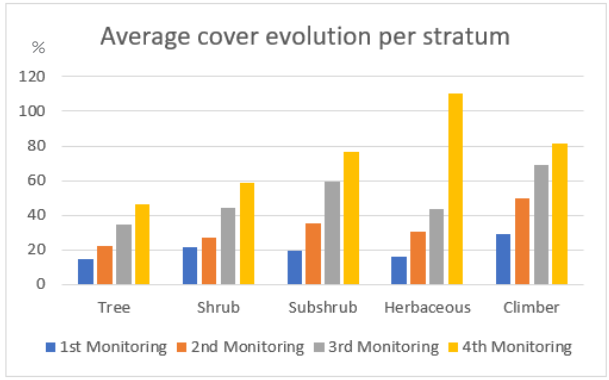
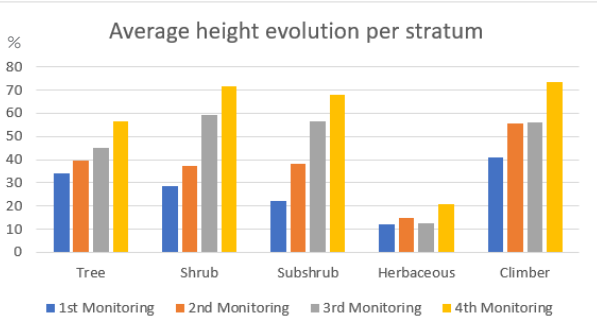


Figure 10 Average Height Evolution

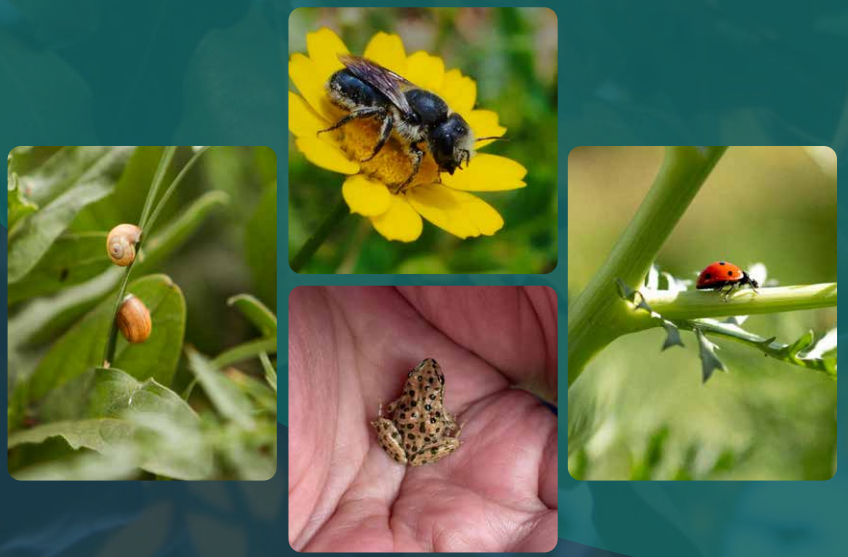


Vale do Casal Vistoso, located in eastern Lisbon, connects Parque da Belavista, one of the city's largest green spaces, with Olaias. It plays a crucial role in urban biodiversity conservation.

Urbem is committed to creating biodiversity-inclusive spaces that promote ecological balance and long-term resilience, going beyond surface-level greenery. Urban ecosystems face challenges such as habitat fragmentation and degradation, which threaten many species. While resilient species are often dominant, true biodiversity conservation requires integrating sensitive species – those that respond quickly to environmental changes and reflect the success of ecological efforts.

BIODIVERSITY

Amphibians, for example, rely on both aquatic and terrestrial habitats and are highly sensitive to pollution and ecosystem disruption. Their presence or decline offers valuable insight into environmental health (Toledo, 2009). Invertebrates, essential for pollination, decomposition, and pest regulation, also reflect habitat quality. While birds are often used as bioindicators, their adaptability can mask more subtle ecological changes, making amphibians and invertebrates key for assessing urban biodiversity (Scielo).



Fast Forest 1 (FF1): a living lab for biodiversity conservation

In line with Urbem's goal to create sustainable urban spaces, Fast Forest 2 (FF1) in Vale do Casal Vistoso serves as a demonstration site for nature-based solutions (NBS). FF1 goes beyond being a green space, focusing on enhancing habitat connectivity, providing refuge for key species, and boosting urban climate resilience. Unlike traditional urban greening projects, FF1 is designed to support sensitive species that act as bioindicators of ecosystem health.

Key conservation strategies at FF1

Measuring Success Through Sensitive Species

Success is measured not just by resilient species but by tracking amphibians and invertebrates, key indicators of ecosystem health.

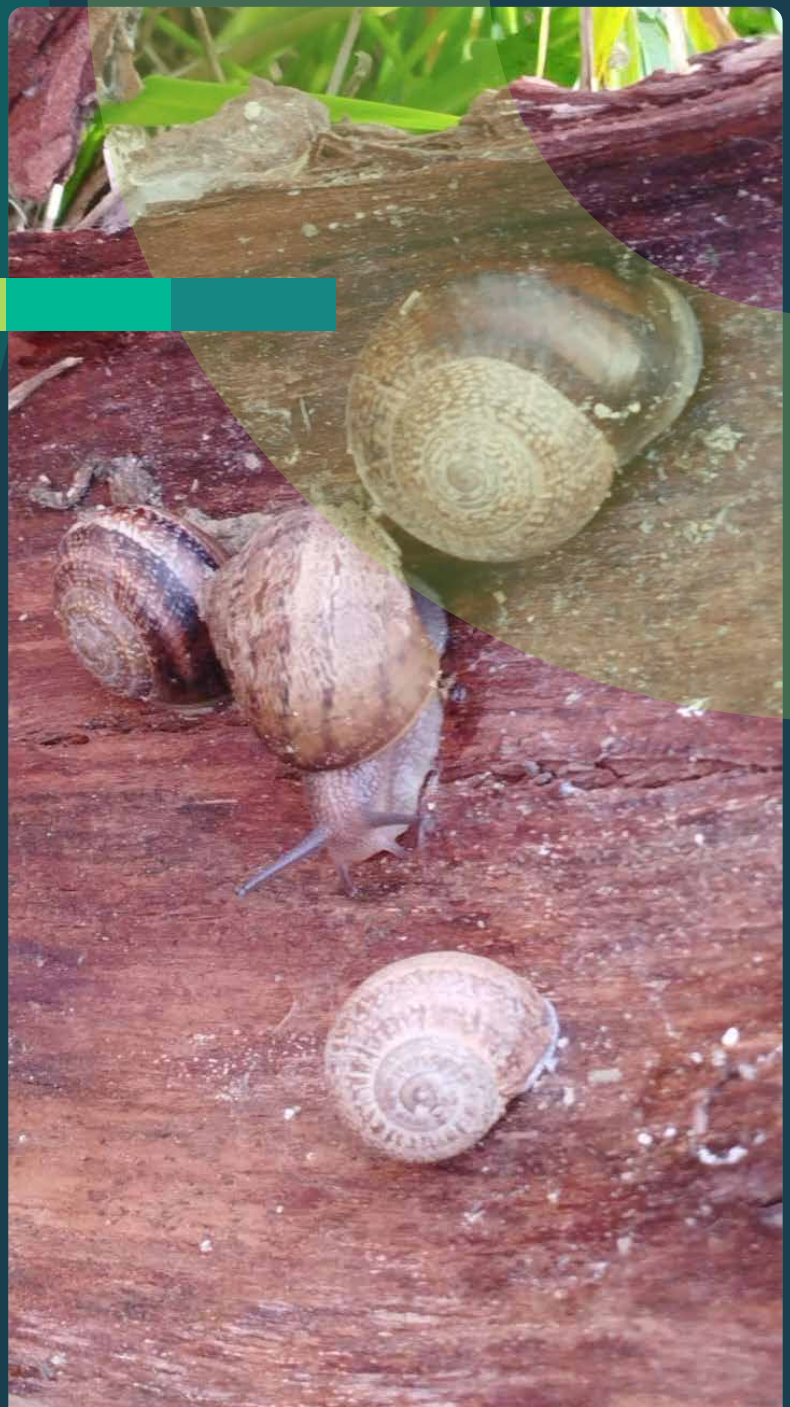
Diverse Habitat Structures

FF1 includes blue-green infrastructure like seasonal ponds, native meadows, and microhabitats (e.g., log piles, insect hotels) to support a wide range of biodiversity.

Long-Term Ecological Monitoring

FF1 serves as a testing ground for urban conservation, using species diversity and population trends to demonstrate how cities can maintain ecological resilience and biodiversity.

Through these efforts, Urbem is redefining what it means for a city to be biodiversity-friendly – not simply by increasing greenery but by ensuring that urban spaces can sustain ecologically sensitive species.



Nature-Based Solutions (NBS) at Fast Forest 2 (FF2)

FF2 incorporates nature-based solutions (NBS) to restore ecosystems, improve habitat quality, and support biodiversity beyond resilient species. These approaches go beyond traditional urban greening by mimicking natural processes and creating self-sustaining ecosystems.

Addressing challenges like habitat fragmentation, water management, and species connectivity, FF2 serves as a living lab for urban biodiversity conservation. The following NBS structures ensure our conservation efforts are effective and adaptable to urban dynamics:

Pond (Pond nr. 1) – a model for urban pond design

Pond nr. 1 (P1) is designed to mirror Mediterranean temporary ponds, a rare and ecologically important habitat. Built in 2023 as part of the URBEM project, it functions as a nature-based solution (NBS), combining biodiversity conservation with urban water management.

The pond acts as a retention basin while serving as a model for urban pond design that supports biodiversity without encouraging mosquito proliferation. In 2024, plants from nearby ecosystems in Loures and Sintra were added, ensuring ecological compatibility and promoting a diverse aquatic community.

By mimicking Mediterranean temporary ponds, Pond nr. 1 (P1) undergoes seasonal water changes that support a variety of plants and animals. Field observations show it has already attracted invertebrates, amphibians, and bird species, strengthening ecological connections in the city.

Native aquatic plants create habitat complexity, helping natural mosquito predators like dragonflies and amphibians thrive – reducing mosquito risks without harming biodiversity.

As both a retention basin and a biodiversity hub, P1 demonstrates how urban ponds can support wildlife while supporting water bodies in urban planning. It also exhibits the synergies between biodiversity conservation and urban sustainability. Ongoing monitoring will help refine its role as a nature-based solution for greener, more resilient cities.

Carex divisa

Lythrum junceum

Juncus valvatus

Juncus hybridus

Callitriche brutia

Callitriche stagnalis

Ranunculus ophioglossifolius

Ranunculus peltatus

Regeneration plots – letting nature restore itself

Urbem's regeneration plots are designated areas where nature is given space to recover with minimal human intervention. Instead of direct planting, these plots allow grasses, trees, and shrubs to grow naturally from seeds, preserving local genetic diversity and supporting biodiversity more effectively than traditional reforestation.

These plots serve as a benchmark, helping us compare natural regeneration with active planting. By observing which species thrive under local soil and climate conditions – referred to as edaphoclimatic factors, we can identify ecotypes – plants uniquely adapted to their environment.

Monitoring these areas offers valuable insights into species resilience, guiding smarter conservation and reforestation efforts. Studies show that natural regeneration often leads to healthier, more self-sustaining ecosystems.

Meadow – a low maintenance biodiversity hub

In Urbem's biodiversity work, a meadow is a plant community mainly made up of native grasses and flowering herbs and forbs (herbaceous flowering plants) that stay stable with minimal upkeep. Ecologically, meadows represent an early stage of natural vegetation growth, supporting biodiversity while requiring little intervention.


Vicia sativa


Malva trimestris


Cynara humilis


Daucus Muricatus

Why establish a native meadow?

The goal is to replace the site's previous low-diversity vegetation (dominated by *Malva multiflora* and *Glebionis coronaria*) with a richer, more balanced meadow ecosystem. This shift helps restore declining plant communities and supports local biodiversity.

Community involvement through educational programs will help promote the meadow's role in biodiversity conservation

Key benefits include:

- **Boosting pollinators:** a diverse mix of flowering plants provides a continuous food source, benefiting both ecosystems and agriculture.
- **Locally adapted seeds:** hand-collected seeds from meadows within 30 km ensure better adaptation to local soil and climate, avoiding risks from commercial seed mixes.
- **Long-term sustainability:** the meadow is designed to thrive with little intervention. Monitoring plant growth, soil health, and pollinators will guide adaptive management, such as occasional mowing, to maintain balance.

Other Structures: additional ecological features

Pond 2 (P2): a lesson in poor practices

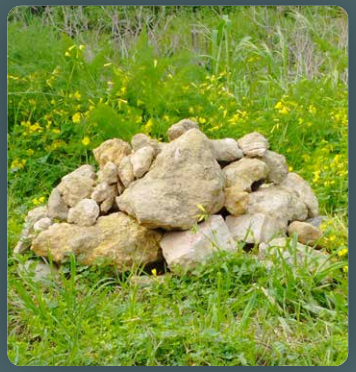
Unlike Pond 1, which demonstrates effective urban water management, Pond 2 was intentionally designed with flaws to highlight poor ecological practices. It serves as a learning tool for understanding the consequences of ineffective water and biodiversity management.

Composting bin: sustainable waste management

The composting bin turns organic waste into nutrient-rich compost, improving soil health, reducing the need for chemical fertilisers, and cutting landfill waste and carbon emissions – all in line with Urbem's sustainability goals.

Insect hotels: supporting urban pollinators

Placed throughout FF2, insect hotels provide nesting sites for solitary bees, beetles, and other beneficial insects, promoting pollination and natural pest control.



Rock and log piles: microhabitats for small fauna

Strategically placed rock and log piles provide shelter, breeding sites, and temperature regulation for reptiles, amphibians, and invertebrates. These structures enhance habitat diversity and support small wildlife.

Educational signage: spreading awareness

Five informational panels explain the ecological management units and their importance:

- → **Wetland management** – the role of wetlands in water purification and wildlife support.
- → **Meadow & grasslands** – how wildflower meadows sustain pollinators.
- → **Insect habitats** – the impact of insect hotels on ecosystem balance.
- → **Composting & soil enrichment** – the benefits of organic waste recycling.
- → **Regeneration areas** – the importance of natural plant recovery.

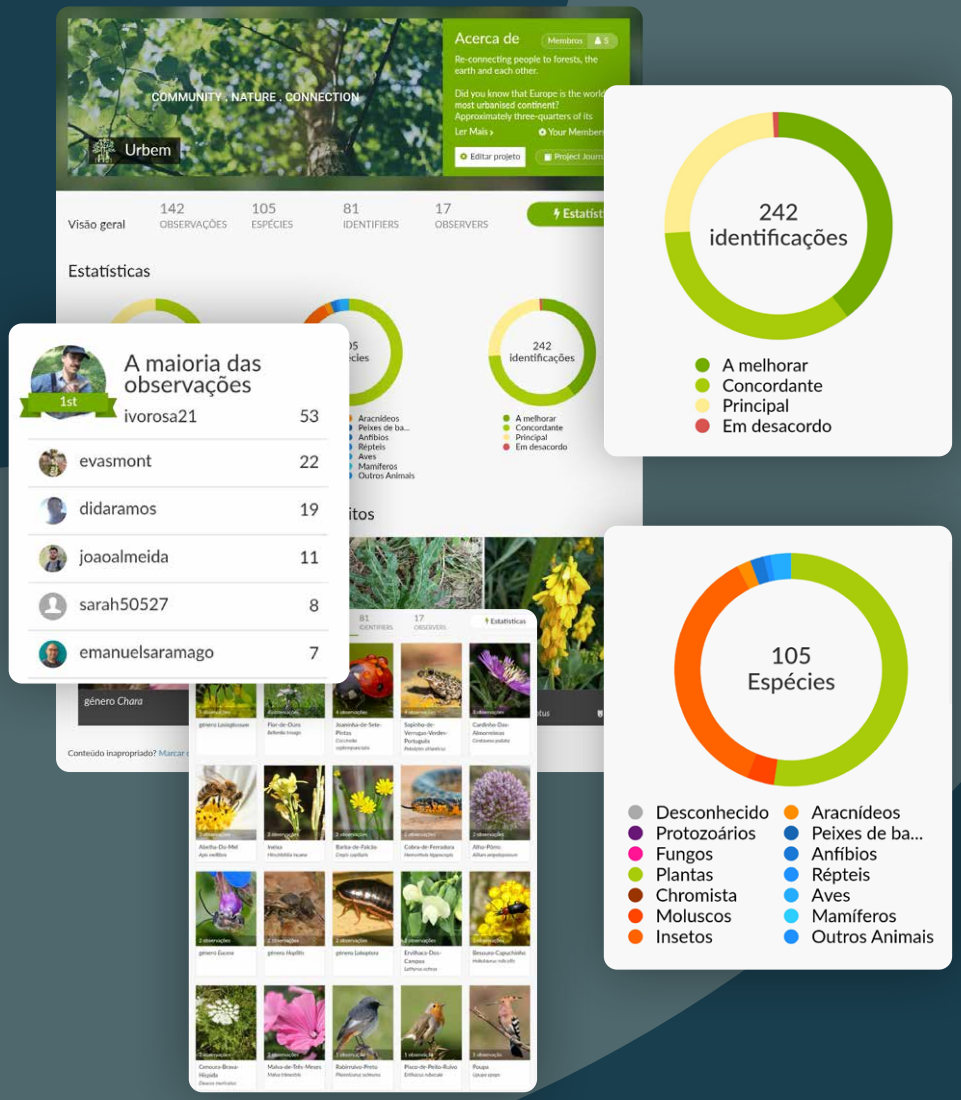
These panels engage visitors, encouraging sustainable practices and appreciation of urban biodiversity.

iNaturalist Citizen Science Project

Citizen Science has been an essential tool for monitoring and understanding biodiversity in urban environments, enabling the active participation of the community in collecting ecological data and promoting environmental awareness.

URBEM uses the iNaturalist platform to document biodiversity at Vale do Casal Vistoso. This citizen science initiative enables community participation in ecological monitoring. So far, 17 observers have recorded 133 observations of 97 species, helping track local biodiversity and raise environmental awareness.

These records help track the impact of interventions, monitor ecological recovery, and analyse local biodiversity over time. They provide valuable data to support conservation efforts in urban green spaces.



Pelodytes atlanticus

Bellardia trixago

Borago officinalis

Coccinella septempunctata

Hemorrhois hippocrepis

Ferussacia folliculum

Sources: *Toledo, L. F. 2009. Amphibians as Bioindicators. In: Neumann-Leitão,S. & El-Dier, S. (Orgs.) Bioindicators of Environmental Quality. Recife: Brazilian Pro-Citizenship Institute. Pp. 196-208; : Cano, E. et al, C.M.Ecological and Syntaxonomic Analysis of the Communities of Glebionis coronaria and G. discolor (Malvion neglectae) in the European Mediterranean Area. Plants 2024, 13, 568. https://doi.org/10.3390/plants13050568*

Impact Indicators

6100
Mulch (kg)

2000
Admin Work Hours

788
Plants

450
Volunteers

1300+
Visitors (pax) - activities & events

URBEM

Impact of financial support

All the work in this report was accomplished with just **€8,906.28** and thousands of volunteer hours, both in the field and behind the scenes - during the year 2024.

Imagine what we could achieve with more.

€8,906.28

Total Donations Received in 2024

Advancing Ecological Restoration

Looking ahead, Urbem is deepening its commitment to biodiversity by aligning with global frameworks like the UN Decade of Biodiversity and the UN Decade on Ecosystem Restoration (2021–2030).

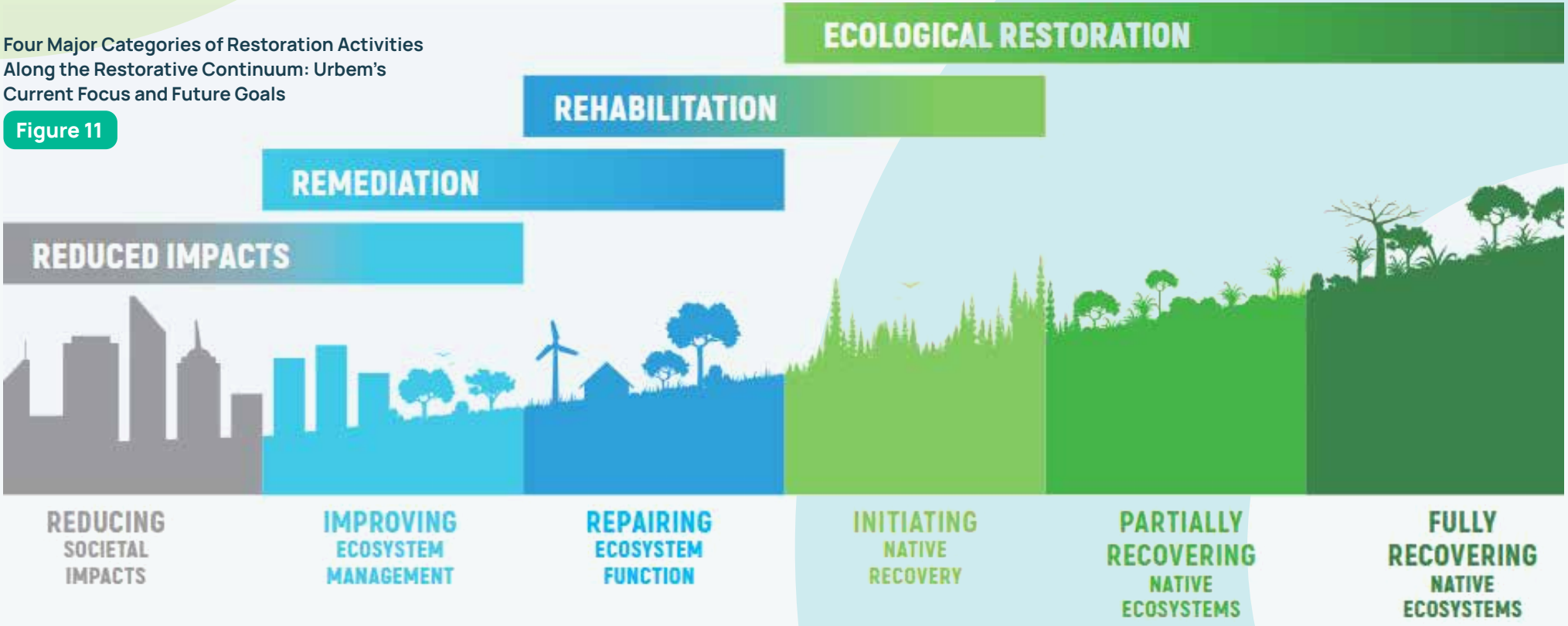
We will refine our strategies to integrate science-based, locally adapted restoration practices that regenerate degraded landscapes and build long-term resilience. Our focus includes:

- **Targeted Ecological Restoration** – Prioritising biodiversity and ecosystem services in line with global best practices.
- **Measurable Impact** – Strengthening monitoring systems to track progress against international restoration goals.

By embedding these principles into our work, Urbem aims to contribute meaningfully to global ecological restoration efforts, ensuring our initiatives are effective, inclusive, and aligned with the highest environmental standards.

Four Major Categories of Restoration Activities Along the Restorative Continuum: Urbem's Current Focus and Future Goals

Figure 11



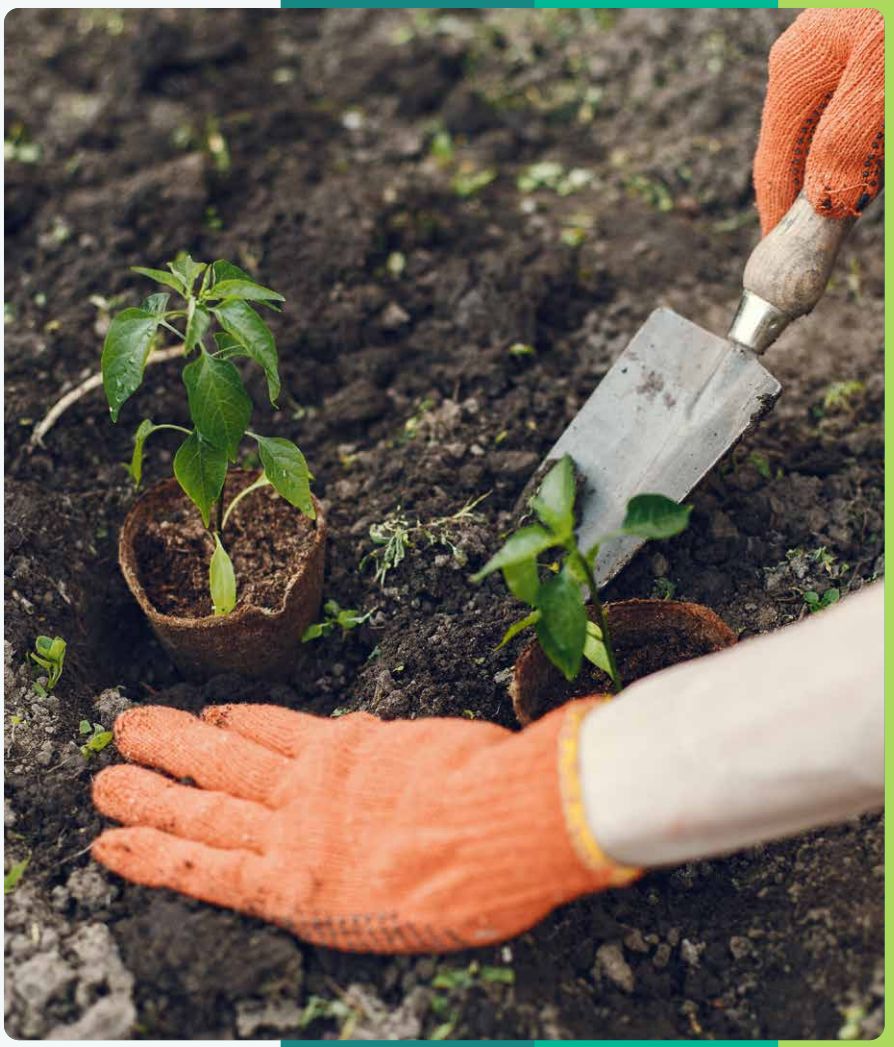
Expanding Urbem's Restoration Efforts

Urbem is currently focused on the first two stages of ecological restoration: reducing environmental harm and remediating degraded urban areas. Our next step is to rehabilitate ecosystem functions and services in heavily modified urban landscapes.

The restorative continuum consists of four key stages:

1. Reducing negative impacts (e.g., pollution, unsustainable resource use)
2. Remediation (removing contaminants and threats)
3. Rehabilitation (restoring ecosystem functions in degraded areas)
4. Full ecological restoration (guiding ecosystems back to their natural trajectory)

We aim to advance along this continuum, ensuring our interventions are both impactful and sustainable.



Source: *Modified from Gann, G.D., McDonald, T., Walder, B., Aronson, J., Nelson, C.R., Jonson, J., Hallett, J.G. et al. 2019. International principles and standards for the practice of ecological restoration. Second edition. Restoration Ecology, 27(S1): S1–S46. https://doi.org/10.1111/rec.13035*

Biodiversity in urban areas: environmental education

In Portugal, practical guidance on managing urban green spaces for biodiversity is still limited, particularly for those without an ecological background. While Lisbon's Master Development Plan highlights the importance of green spaces, accessible resources remain scarce.

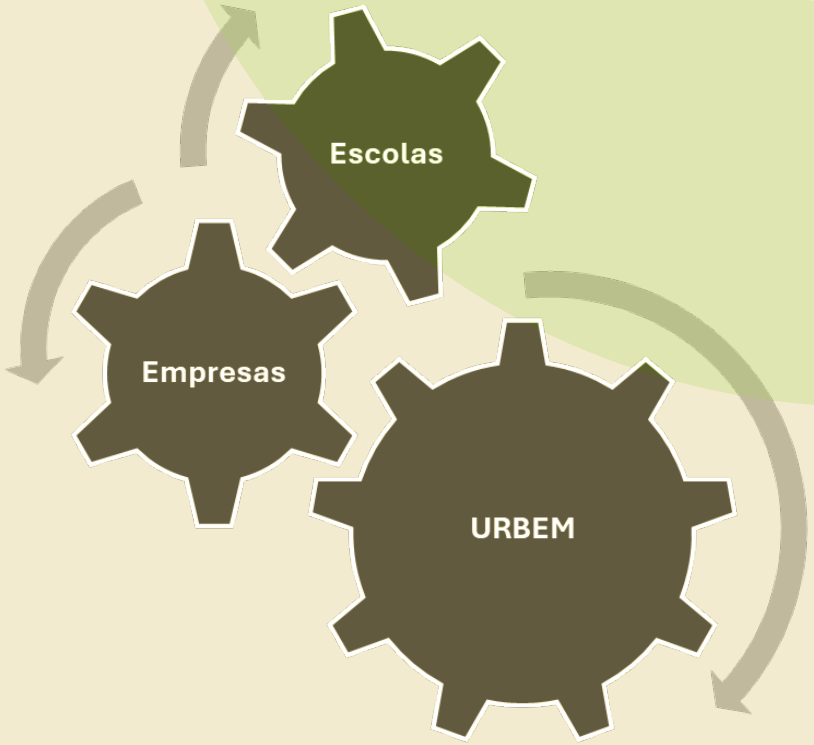
Source:European Environment Agency. (n.d.). Green infrastructure in Portugal. Biodiversity Information System for Europe. Retrieved February 27, 2025, from https://biodiversity.europa.eu/countries/portugal/green-infrastructure

To bridge this gap, Urbem is launching an environmental education hub on our website. This will feature monthly downloadable content with science-based, practical guidance on urban biodiversity – covering topics like native pollinators, habitat restoration, and wildlife-friendly gardening.

Our goal is to empower communities, urban planners, and policymakers to create greener, more resilient cities.

Next Steps

- Launch fundraising campaigns and corporate events to secure more funding.
- Begin the legal process to register Urbem as a 'public utility' for expanded activities and funding.
- Finalise a three-year strategic plan.
- Expand our fast forests (FF1 and FF2) in Bela Vista Park by at least 300 sqm, incorporating more scientific experiments.
- Plant a new forest in partnership with a Lisbon freguesia (parish).
- Establish a tree nursery to improve plant quality and availability.
- Strengthen existing partnerships and build at least three new collaborations with institutions and NGOs.
- Participate in at least five events to promote Urbem's mission and goals.
- Grow our social media reach and engagement by 30%, including our Meetup community.



By strengthening education and outreach, Urbem aims to inspire collective action for urban biodiversity conservation.

URBEM

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