# WHEN NATURE SHOWS THE WAY Supporting biodiversity for Europe's

# green recovery



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### INTRODUCTION

Biodiversity loss and climate change are the biggest environmental threats we face today. To address such crises, the EU has set in place a series of climate and environmental objectives as part of the European Green Deal.<sup>1</sup> These include, among others, the target to reduce greenhouse gas emissions by 55 per cent, and the commitment to protect 30 per cent of land and sea by 2030. However, in order to achieve these objectives, significant increases in funding and investments are needed in the next decade. Addressing both crises can no longer be seen as separate, but instead deeply interconnected, with action required on both fronts if such objectives are to be met.

Europe's economic recovery represents a key opportunity for achieving this by transitioning away from the business-asusual approach that led to the current status of biodiversity loss and instead investing in the green future we urgently need. Now is a decisive moment to abandon traditional investments in grey infrastructure in favour of financing the transformative changes needed to halt biodiversity loss.

However, objectives for nature restoration and preventing biodiversity loss are not being met. For example, despite the fact that the EU aimed to have 50 per cent more species assessments with a favourable or improved conservation status by 2020, only 6 per cent of species are showing improved trends while one-third are still deteriorating. The target to restore 15 per cent of degraded ecosystems by 2020 was also never reached.<sup>2</sup> These failures have exacerbated the degradation of biodiversity and resulted in an even greater pressure to deliver on the targets for 2030. We cannot afford to make the same mistake in the next decade: the cost of inaction for addressing biodiversity loss and nature degradation vastly outweighs the investments needed for its restoration.

<sup>&</sup>lt;sup>1</sup> European Commission, <u>A European Green Deal: Striving to be the first climate-neutral continent</u>, accessed 30 June 2021.

<sup>&</sup>lt;sup>2</sup> European Environment Agency, State of nature in the EU. Results from reporting under the nature directives 2013–2018, 2020.



Although there is an overall positive trend towards increased financing for climate action, largely through investments in the energy sector, this is not the case for funding for nature. Evidence of this can be seen in the recently submitted national recovery plans.<sup>3</sup> While Member States generally allocated 37 per cent of spending in their recovery plans to contribute to climate action, less than 0.5 per cent were directed into measures relating to biodiversity.

The considerable climate, environmental, and economic potential of supporting and restoring nature is therefore currently not being seized, despite the fact that it is needed to deliver on EU targets. Furthermore, climate and nature targets should not be seen as independent from one another but instead as complementary.

This report introduces a selection of five case studies from central and eastern Europe highlighting successful biodiversity restoration and/or conservation projects that are also able to deliver climate adaptation and mitigation measures. At the same time, these have proven to provide a wide range of economic, social and health benefits. Therefore, these examples serve to create awareness about the many ways nature can be a key part of rebuilding our economies and lead to increased future implementation of similar projects. These can be replicated and developed by a wide range of actors from EU funds and national and regional governments, as well as the finance sector and business.

<sup>&</sup>lt;sup>3</sup> As of June 2021, 24 Member States have submitted their national recovery and resilience plans to the European Commission for assessment.

### BACKGROUND

A healthy and diverse natural ecosystem is not only essential for the rich flora and fauna of the EU, but it also underpins the well-being of people. It provides a healthy environment through less pollution, supports healthier lifestyles and reduces socioeconomic disparities.

In October 2020, the European Environment Agency released its *State of nature in the EU* report, revealing that a shocking 81 per cent of habitats now have a poor status and more than a third at the EU level continue to deteriorate.<sup>4</sup> In the context of the extraordinary amount of money now available to Member States through the recovery funds and EU budget, there has never been a better time to start investing in nature.

In order to improve the poor condition of biodiversity, the European Commission released in May 2020 the EU Biodiversity Strategy for 2030,<sup>5</sup> a key component of the European Green Deal. The EU Biodiversity Strategy for 2030 aims to restore biodiversity for ecosystem services, to increase protected areas and to address the root cause of biodiversity loss. This builds on other existing initiatives, such as the EU Birds and Habitats Directives, whose objective is to improve ecosystem connectivity and create a network of nature protection areas in the form of Natura 2000 sites.<sup>6</sup> All these policies address the issue of nature restoration and conservation in connection with climate change and its socio-economic impacts.

One of the key components of the strategy is the need for increased investments in nature conservation and the recognition of the enormous social and economic benefits this can bring. As part of the EU's stimulus package to recover from the COVID-19-induced crisis, the Recovery and Resilience Facility (RRF) requires Member States to allocate at least 37 per cent of the EUR 672 billion to climate and the environment, including biodiversity. The RRF, if used to complement other funding schemes, provides a unique opportunity to invest in systematic solutions to the societal challenges posed by climate change and at the same time support the restoration of biodiversity.<sup>7</sup>

In addition, the Commission outlined in the Biodiversity Strategy for 2030 the objective of upscaling biodiversity spending for the next EU budget from 1 per cent to 7.5 per cent by 2024, and 10 per cent by 2026. However, this will be a significant undertaking that will only be achieved with a coherent framework in place for implementation. Without clear guidance over how and where these funds and investments will be allocated, there is a strong likelihood that the Commission's ambitious biodiversity spending targets will never be realised and consequently be watered down. These funds and investments for biodiversity must be released as early as possible to achieve the target shares. This means biodiversity conservation must be part of this recovery planning, particularly through the restoration of ecosystems and their services.

Despite this, recent assessments from CEE Bankwatch Network show that there is a complete absence of measures focusing on biodiversity and rare inclusion of restoration and sustainable management of ecosystems in the plans. Furthermore, some of the plans' proposed interventions would threaten biodiversity.<sup>8</sup>



<sup>&</sup>lt;sup>4</sup> European Commission, The state of nature in the European Union Report on the status and trends in 2013 -2018 of species and habitat types protected by the Birds and Habitats Directives, European Commission, 15 October 2020.

<sup>&</sup>lt;sup>5</sup> European Commission, <u>Biodiversity strategy for 2030</u>, May 2020.

 <sup>&</sup>lt;sup>6</sup> Sandra Naumann and McKenna Davis, '<u>Biodiversity and Nature-based Solutions: Analysis of EU-funded projects</u>', *European Commission*, 2020.
<sup>7</sup> CEE Bankwatch Network, <u>The EU Recovery Funds: time to start properly investing in biodiversity and nature conservation</u>, *CEE Bankwatch Network*, <u>18</u> March 2021.

<sup>&</sup>lt;sup>8</sup> CEE Bankwatch Network, <u>Building Back Biodiversity: how EU Member States fail to spend the recovery fund for nature</u>, CEE Bankwatch Network, 20 May 2021.



### WHY INVEST IN BIODIVERSITY?

If well planned and implemented, these projects will be cost-effective solutions not only for the protection of habitats and species and combatting dangerous climate change, but also for a wide range of additional societal challenges such as human health and social inclusion. They must be rooted in a deep understanding of ecosystems and how they function, as well as the challenges that may arise for these ecosystems in the future, in order to provide long-term benefits.<sup>9</sup>

Improving the health of biodiversity can be done through a range of activities. These can include, among many others, the sustainable management of natural habitats and creation of protected areas; the creation of new ecosystems and the restoration of degraded biodiversity to enhance ecosystem services and improve conservation status; and increased diversity in urban nature.<sup>10</sup> In addition, supporting such actions has proven to deliver the following benefits:

### Successfully addressing climate change through both climate mitigation and adaptation

- » In addition to reducing the chance of destructive forest fires, forests currently absorb the equivalent of 8.9 per cent of the total EU greenhouse gas emissions.<sup>11</sup> Through improved management, research shows that this figure could be doubled.<sup>12</sup>
- » The restoration of peatlands, wetlands and soil all help regulate the climate through carbon sequestration.
- » Natural coastal protection, in particular improved river management, reduces the impact of sea level rise.
- » Increased natural water retention and storage is a key tool to prevent drought.

#### Delivering economic benefits and job creation for Europe's recovery

- Investments in climate adaptation which often constitute biodiversity investments – could generate up to 500,000 jobs by 2050.<sup>13</sup>
- » Every EUR1 billion invested in the management of Natura 2000 sites already generates 30,000 jobs both directly and indirectly.<sup>14</sup>
- » The overall ratio of the benefits of protecting nature globally compared to the cost of inaction is estimated to be at least 100 to 1.<sup>15</sup>
- » Particularly in the context of Europe's economic recovery, investments in biodiversity conservation cannot only deliver more jobs than grey sectors such as mining and road transport, but can also create jobs sooner, when the stimulus effect of investments is most needed. This is particularly true for investments in forestry and wetlands, where the ongoing nature of these activities also means long-lasting jobs.<sup>16</sup>

#### Ensuring health and wellbeing

- » A more resilient economy will be better equipped to deal with the impacts of future pandemics and other economic downturns.
- » Biodiversity investments have proven to be key for reducing the spread of diseases, preventing further pandemics and improving overall human health.
- » The development of green infrastructure and spaces improves urban liveability, cooling and water retention in cities and has been shown to mitigate pollution to some extent, in particular by improving air quality, a significant driver of premature deaths.

<sup>&</sup>lt;sup>9</sup> Sandra Naumann and McKenna Davis, 'Biodiversity and Nature-based Solutions: Analysis of EU-funded projects'.

<sup>&</sup>lt;sup>10</sup> Ibid.

<sup>&</sup>lt;sup>11</sup> European Parliament, <u>Climate change: using EU forests to offset carbon emissions</u>, 11 July 2017.

<sup>&</sup>lt;sup>12</sup> Greenpeace European Unit, <u>The Future of Forests in the European Union Untapped potential for nature conservation and climate change mitigation</u>, December 2020.

 <sup>&</sup>lt;sup>13</sup> Institute for European Environmental Policy, <u>Natura 2000 and Jobs</u>, April 2017.
<sup>14</sup> Ibid.

<sup>&</sup>lt;sup>15</sup> Cameron Hepburn, Brian O'Callaghan, Nicholas Stern, Joseph Stiglitz and Dimitri Zenghelis, <u>Will COVID-19 fiscal recovery packages accelerate</u> or retard progress on climate change?, Smith School Working Paper No. 20-02, 4 May 2020.

<sup>&</sup>lt;sup>16</sup> Vivid Economics, '<u>Fund Nature, Fund the Future: EU Recovery Plans miss the triple win opportunity for nature, climate and the economy</u>', June 2021.

### THE EUROPEAN UNION'S ROLE IN SUPPORTING BIODIVERSITY PROJECTS

The European Commission has spearheaded research on such projects, often referred to as 'nature-based solutions<sup>17</sup> with the aim of making the European Union a pioneer in their research and implementation. The Commission has dedicated significant resources to developing large-scale demonstration projects in this field within the framework of the Horizon 2020 programme.<sup>18</sup> This research will continue with the Horizon Europe initiative (2021 to 2027), focusing on the impact assessment and promotion of these.

Despite numerous and mounting bodies of research, there is a lack of widespread recognition and acceptance over the clear role biodiversity plays in tackling climate change. In December 2020, 50 of the world's leading scientists affirmed that the climate and biodiversity crisis must be tackled together or not all, with nature cited as a crucial solution, namely through the restoration of degraded land.<sup>19</sup>

Therefore, as a significant political and global player, the EU must capitalise off of this momentum, amplifying the importance of biodiversity to ensure it is not overshadowed by climate action, and instead promote the message that overcoming the climate and biodiversity crises can only be done if both are tackled simultaneously. Overall, recent years have shown increasing political will to increase investments in climate related measures, largely initiated by the EU. Evidence of this can be seen in the recently submitted national recovery plans. Although Member States generally allocated 37 per cent of spending in their recovery plans to contribute to climate action, less than 0.5 per cent were directed into measures relating to biodiversity.



A target of 30 per cent of the new EU budget for 2021 to 2027 will be dedicated to climate action, yet there is no specific earmarking for biodiversity spending.<sup>20</sup> Overall, there has been comparatively little political will by national governments or widespread public concern for halting biodiversity loss.

More specifically, CEE countries are among the biggest recipients of both recovery funds and the EU budget. Around 41 per cent of all public investments come from EU funds, and this means they significantly shape how money is spent in this region. Investment decisions made today for biodiversity will, therefore, also condition all public and private investments in the sector for the next decade. This is particularly important given the CEE region's abundant areas of species-rich farmland and biodiversity rich protected areas.

The following case studies from central and eastern Europe aim to illustrate how supporting biodiversity can also be used to successfully tackle climate change and provide the socio-economic benefits needed during Europe's recovery. Although there is no one-sizefits-all framework for these projects, showcasing good examples of design and implementation can encourage the development of similar examples in other locations.

<sup>&</sup>lt;sup>17</sup> We chose not to use this term due to a lack of agreed definition and concerns about the term used for greenwashing ineffective and socially harmful carbon or biodiversity offsetting projects, particularly in the Global South.

<sup>&</sup>lt;sup>18</sup> Hilde Eggermont et al., '<u>Nature-based Solutions: New Influence for Environmental Management and Research in Europe</u>', *Ecological Perspectives for Science and Society* 24, no. 4 (2015): 243-248.

<sup>&</sup>lt;sup>19</sup> IPBES and IPCC, <u>Biodiversity and Climate Change Workshop Report</u>, June 2021.

<sup>&</sup>lt;sup>20</sup> Nathalie Seddon et al., '<u>Getting the message right on nature-based solutions to climate change</u>', *Global Change Biology* 27, no.8 (2021): 1518-1546.

### RECOMMENDATIONS

There has never been a better time to rethink how and where funds should be allocated. This should be the impetus needed to finally start properly financing nature after years of neglect. Based on the role that biodiversity can play in climate change adaptation and mitigation, as well as in the COVID-19 recovery, the examples presented in this report show a way forward. Therefore, the European Commission needs to take the following actions:

#### At the policy level

- 1) The EU must better emphasise and promote the clear need for biodiversity restoration and conservation activities, as well as their important role in delivering on climate action. Currently, there is still a widespread and systematic lack of recognition of the importance and urgency of addressing biodiversity loss. Biodiversity and climate must be framed as interconnected, with this message becoming mainstream to avoid disparities in progress between these objectives.
- 2) As well as increasing funding and investments, biodiversity proofing must be applied across all EU funds and investments. The RRF process has shown that investing in climate action can come at the detriment of nature and biodiversity; investing in hydropower, for example, is an alternative to fossil fuels. However, this obscures the damaging impact on biodiversity. Even planting trees is only a positive measure if biodiversity considerations are integrated and mainstreamed. Therefore, it is absolutely imperative that, in addition to specific amounts being earmarked for biodiversity, 100 per cent of all future funds do not cause harm to biodiversity. This is currently not the case.
- 3) The Commission has announced the development of a new biodiversity tracking methodology. However, no information is publicly available about this. With an unprecedented amount of funding soon to be released, it is crucial that **an effective tracking methodology is implemented** in order to accurately assess biodiversity spending and to provide transparency over what is being funded. This tracking methodology must accurately reflect real biodiversity spending, rather than merely the assumption of the potential impact.
- 4) The recently updated Prioritised Action Frameworks (PAFs) provided by Member States show that there are numerous measures that are needed to be financed for the proper management of Natura 2000 sites, reflecting that current biodiversity needs are not being met. Measures outlined in PAFs are entirely reliant on EU funding sources, yet this funding is not guaranteed. The Commission must therefore ensure that there is sufficient and guaranteed funding for the measures outlined under the updated PAFs. This could be achieved through securing funding from sources such as the European Structural and Investment Funds or InvestEU.

#### At the implementation level

- 1) The Commission must provide implementation tools to Member States to encourage the development and uptake of biodiversity restoration and conservation projects. In order for such projects to serve their full potential in biodiversity protection, restoration and all other areas, a measurable programme, sufficient indicators and systemic assessment are required. This research and development would improve the comparability, measurability and systemic evaluation of these projects, while also providing an evidence base on their wide range of benefits.<sup>21</sup>
- 2) The Commission must provide a framework for technical assistance and capacity building that would accelerate the preparation of investments in biodiversity by Member States (including local governance, international organisations and local NGOs) with the dissemination of information, guidance materials, tools and approaches to encourage biodiversity project implementation. This has already been started to some extent through the development of LIFE projects, which have shown success and deliver co-benefits. Given the highly ambitious objective of upscaling biodiversity spending to 7.5 per cent by 2024 and the ongoing development of operational programmes, this framework must be developed as soon as possible.
- 3) The Commission must promote the involvement of civil society in the implementation of national recovery plan measures and local communities in the implementation and management of local recovery measures. Several studies have shown that local people's inclusion contributes to more effective and legitimate outcomes beneficial for both nature and society.<sup>22</sup> They bring a unique perspective and knowledge of the local socioecological system. They can also take an important role in the adaptive management, monitoring and assessment of these interventions.



<sup>&</sup>lt;sup>21</sup> Sandra Naumann and McKenna Davis, 'Biodiversity and Nature-based Solutions: Analysis of EU-funded projects'.

<sup>&</sup>lt;sup>22</sup> Nathalie Seddon et al., 'Getting the message right on nature-based solutions to climate change'.



### CASE STUDIES

**Botanical** Garden in the Marszewo Forest Gdynia, Poland



The Botanical Garden in the Marszewo Forest is a 50-hectare area located on land managed by the Gdańsk Forestry Inspectorate in Gdynia, Poland close to the coast of the Baltic Sea. The Garden was established in 2010 by the Gdansk Forest District in close cooperation with the city of Gdynia and the University of Gdansk and is expected to reach its full size in 20 years from inception. The Botanical Garden specialises in the conservation and research of trees, shrubs and herbaceous plants, particularly species indigenous to the Pomorze Gdanskie region.<sup>23</sup> It currently has 31 plant collections with specimens of nearly 300 plant species and various ecosystems including native and alien species, as well as managed and wild areas that provide habitat for animals and insects.<sup>24</sup>

Since 2016, the Botanical Garden has also aimed to raise awareness and increase the environmental knowledge of visitors about the forest ecosystem and its sustainable use. In addition to opening the garden for recreational purposes, it also offers various educational trails, interactive workshops for children and adults alike about forestry, botany, ornithology and more in the garden's education centre. By complementing tourism opportunities with the ongoing development and implementation of the educational offers, the Garden's management intends to utilise the natural and cultural potential of the Garden without exposing naturally valuable areas to biodiversity loss through increased tourist traffic.<sup>25</sup> The Botanical Garden is in close proximity to several urban areas, offering a unique recreational and educational opportunity for individual visitors as well as school groups. Since 2016, the Garden is also a member of the Council of Botanical Gardens and Arboretums in Poland.<sup>26</sup>

<sup>&</sup>lt;sup>23</sup> Naturvation Urban Nature Atlas, <u>Botanical garden in the forest "Marszewo"</u>, accessed 24 May 2021.

<sup>&</sup>lt;sup>24</sup> Official website of the Forest Botanical Garden Marszewo, accessed 24 May 2021.

<sup>25</sup> Official Website of the Gdańsk Forest District, accessed 24 May 2021; Piotr Kossobudzki and Kordian Kochanowicz, Koncepcja strategii Leśnego. Ogrodu Botanicznego Marszewo (Nadleśnictwo Gdańsk) na lata 2016-2018 (The concept of the strategy of the Marszewo Forest Botanical Garden (Forest District Gdańsk) for the years 2016-2018), The Forest District of Gdańsk official website, 2016, accessed 24 May 2021.

<sup>&</sup>lt;sup>26</sup> Official website of the Forest Botanical Garden Marszewo.

### Purpose of the project

The objective of the botanical garden was two-fold. On one hand, it was created to protect the local natural landscape and environmental resources characterising the area and to provide facilities required for their monitoring and research. On the other hand, it serves as a recreational area and aims to bring visitors closer to nature and improve their environmental knowledge on the local flora and the importance of nature conservation.<sup>27</sup>

#### Accordingly, the activities implemented included:

- » The preservation and enhancement of the existing habitat and ecosystem as well as the creation of new green areas in the form of plant collections. The plant collections focused both on specific species conservation (beech and pine forest phytocoenosis) and on whole ecosystem protection (succession of unmanaged forest vegetation, pond).<sup>28</sup>
- » The development of ecosystem monitoring and documentation practices for research purposes.
- » Participation in scientific research projects focusing on the conservation of endangered species.
- » The establishment of educational programmes and facilities for visitors, such as thematic forest trails, workshops and the creation of an education centre.<sup>29</sup>
- » The construction of various recreational sites and activities such as a playground, a Greek theatre, a bicycle shelter, a roofed open-air classroom and a bonfire site.<sup>30</sup>

### Governance, stakeholder collaboration and financing

The Botanical Garden was initiated by the Gdansk Forest District and the University of Gdansk with the cooperation of the city of Gdynia. The concept of the Garden was developed at the request of the Gdańsk Forest District by scientists from the University who were also responsible for designing the plant collections. Since its establishment, the Gdansk Forest District has been responsible for the maintenance and development of the Garden.<sup>31</sup> Accordingly, in 2016, the development project of the Botanical Garden (the Comprehensive development of the Marszewo Forest Botanical Garden in Gdynia') began, focusing on the revitalisation of the garden facilities and its educational programme.<sup>32</sup>

The establishment of the Botanical Garden and its development was realised using funds from the Forest District Gdansk, the National Fund for Environmental Protection and Water Management and the Voivodship Fund for Environmental Protection and Water Management and complemented with financial support from the European Regional Development Fund.<sup>33</sup>



<sup>&</sup>lt;sup>27</sup> Naturvation Urban Nature Atlas, Botanical garden in the forest "Marszewo".

<sup>30</sup> Official website of the Forest Botanical Garden Marszewo; Naturvation Urban Nature Atlas, Botanical garden in the forest "Marszewo".

<sup>&</sup>lt;sup>28</sup> Official website of the Forest Botanical Garden Marszewo.

<sup>&</sup>lt;sup>29</sup> Naturvation Urban Nature Atlas, <u>Botanical garden in the forest "Marszewo"</u>; <u>Official website of the Forest Botanical Garden Marszewo</u>; <u>Official Website of the Gdańsk Forest District</u>.

<sup>&</sup>lt;sup>31</sup> Naturvation Urban Nature Atlas, <u>Botanical garden in the forest "Marszewo"</u>.

<sup>&</sup>lt;sup>32</sup> Official Website of the Gdańsk Forest District; Piotr Kossobudzki and Kordian Kochanowicz, Koncepcja strategii Leśnego Ogrodu Botanicznego Marszewo (Nadleśnictwo Gdańsk) na lata 2016-2018 (The concept of the strategy of the Marszewo Forest Botanical Garden (Forest District Gdańsk) for the years 2016-2018).

<sup>&</sup>lt;sup>33</sup> Naturvation Urban Nature Atlas, Botanical garden in the forest "Marszewo"; Official Website of the Gdańsk Forest District.



#### **Benefits**<sup>34</sup>

#### **Environmental**

- » With the Botanical Garden, the protected area in the Marszewo Forest has increased, safeguarding valuable ecosystems, native plant species and geological formations.
- » The established plant collections promote temperate and herbaceous trees, shrubs and plants of the nemoral and boreal zone, with particular emphasis on species native, endangered and/or rare in the Pomorze Gdanskie region. These include species of biocenotic importance, Oak-hornbeam phytocoenosis, young hornbeams and deciduous trees in the humidity gradient such as beech and pine forest phytocoenosis, etc.
- » Thirty-one plant collections give a home to almost 300 plant species and provide a diverse set of ecosystems and habitats for a wide variety of animals and insects.
- » Besides the restoration and protection of local and alien flora species, the Garden is an area of habitat monitoring and ecological research that contributes to the conservation efforts of the Forest District.

#### Economic

- » The Botanical Garden is a public entity that generates profit from tickets and related sales.
- » The Botanical Garden created new jobs and supports sustainable tourism practices.

#### **Social**

- » The Botanical Garden is in close proximity to Gdynia, a large urban agglomeration with approximately 750,000 inhabitants, increasing residents' access to green areas and creating an opportunity for them to engage with nature.
- » The Garden raises awareness through activities and environmental education programmes, which increase visitors' understanding of the role and importance of the local forest ecosystem and encourage environmental stewardship.
- » Educational programmes and workshops are offered for kindergarten and school groups, contributing to their development of environmental knowledge and appreciation of nature.
- » As a nature preserve, the Botanical Garden protects the natural and cultural heritage of the area.
- » Through volunteering opportunities, participants can develop their interests related to the forest, botany or work with children.

<sup>&</sup>lt;sup>34</sup> Naturvation Urban Nature Atlas, <u>Botanical garden in the forest "Marszewo"</u>.



### Renovation of Gaštanica Park Bratislava, Slovakia



In response to extreme weather conditions in Bratislava, Slovakia, the local government adopted an Adaptation Strategy for Climate Change in 2014.<sup>35</sup> The action plan was accompanied by the project 'Bratislava Preparing for Climate Change', which included measures to improve the resilience of the city against the impacts of climate change, in particular against intense rainfall and heat island effects, which was supported by a pilot application of rainfall management in urban areas.<sup>36</sup>

In 2014, Gaštanica Park, in the Nové district, was revitalised in the framework of this project under the leadership of the municipality of Bratislava and partner organisations and funded by European Environment Agency (EEA) and Norway Grants.<sup>37</sup> The Park is an approximately 5,000 square metre public green space that was created on a former chestnut orchard in an urban forest area. The Park was home to more than 100 chestnut trees, half of which were attacked by a fungal bark cancer.<sup>38</sup> Therefore, the objective of the Park rehabilitation was to halt the degradation of its ecosystem, treat and preserve the existing chestnut trees, and secure the natural development of the green area.<sup>39</sup>

Moreover, Gaštanica Park is located on sloping terrain prone to landslides and erosion; heavy precipitation increases the risk of such occurrences, making rainwater retention another priority of the project. The infiltration trenches along the contour lines of the slopes allow for rainwater retention in the area and gradually drain the water into the groundwater. Since climate change and extreme weather events in Bratislava affect some groups more intensely than others, the newly renovated park offers an open green recreation zone for citizens, especially the elderly and children.

<sup>&</sup>lt;sup>35</sup> Zelen Architectura, Bratislava sa pripravuje na zmenu klímy, Zelen Architectura, 2016.

<sup>&</sup>lt;sup>36</sup> Zelen Architectura, Bratislava sa pripravuje na zmenu klímy; Naturvation Urban Nature Atlas, Gaštanica Park Renovation, Naturvation, 2020; Climate Adapt, EEA grants supporting the city of Bratislava to implement climate adaptation measures, EEA Climate Adapt Database, 2016.

<sup>&</sup>lt;sup>37</sup> Climate Adapt, <u>EEA grants supporting the city of Bratislava to implement climate adaptation measures</u>.

<sup>&</sup>lt;sup>38</sup> Climate Adapt, <u>EEA grants supporting the city of Bratislava to implement climate adaptation measures</u>; Bratislava zelenaj sa, <u>The Chestnut</u> <u>Orchard "Gaštanica" – new public space</u>, Bratislava zelenaj sa, 2017; Martina Juhász, <u>Na Kolibe pribudol nový park</u>, SME Bratislava, 26 May 2017.

<sup>&</sup>lt;sup>39</sup> SITA, <u>`Obnovený park Gaštanica na Kolibe chcú otvoriť v máji'</u>, Metropola, 2017, accessed 24 May 2021.

### **Purpose of the project**

#### The goals of Gaštanica Park Renovation focused on three areas:

- The healing and preservation of existing greenery, » namely the rehabilitation of the native chestnut forest suffering from disease.40
- The creation of an effective rainwater retention » system to benefit the local vegetation and prevent erosion and landslides.<sup>41</sup>
- The creation of a new recreational zone in a green open space for residents of the Nové district, with special attention to marginalised groups.<sup>42</sup>

#### Accordingly, implementation activities included the following:43

- » Trees beyond recovery were felled and burned, and more than 140 trees were treated.
- Twenty-nine trees were planted in the opened-up » space in harmony with the natural ecosystem (sweet chestnuts, as well as oak and hornbeam).
- The footpath surfaces were reinforced with water-» permeable concrete to reduce surface stormwater runoff by filtering it to the subsoil.44
- Infiltration trenches in the orchard were installed » to prevent the flooding of residential areas in close proximity.<sup>45</sup> These are shallow strips filled with layered gravel and stones, which temporarily store and gradually drain storm water into the ground.
- Benches, gazebos, children's playgrounds, fitness » elements, space for dogs and information boards were created as part of the recreation zone.

#### Governance, stakeholder collaboration and financing

The Gaštanica Park revitalisation was initiated as part of Bratislava's climate change adaptation project 'Bratislava Preparing for Climate Change' as a pilot application of sustainable rainwater management measures. The project was led by the city of Bratislava in close collaboration with the Nové city borough authority and stakeholders from the private and public sector.

The Bratislava Regional Conservation Association, Bratislava Water Company, City Committee of Slovak Nature and Landscape Conservation Union, City Forest in Bratislava and Nature Sciences Faculty at Comenius University in Bratislava also took part in the planning process.

Bratislava's overarching climate change adaptation project was financially supported by the EEA and Norway Grants and complemented by the state budget of the Slovak Republic and the municipal budget of Bratislava.<sup>46</sup> The revitalisation of the Gaštanica Park cost FUR 330,000, out of which FUR 225,000 was covered by the EEA and Norway Grants and the remaining amount by the Nové district.47

<sup>&</sup>lt;sup>40</sup> SITA, <u>'Obnovený park Gaštanica na Kolibe chcú otvoriť v máji';</u> Naturvation Urban Nature Atlas, <u>Gaštanica Park Renovation</u>.

<sup>&</sup>lt;sup>41</sup> Naturvation Urban Nature Atlas, Gaštanica Park Renovation; Martina Juhász, Na Kolibe pribudol nový park.

<sup>&</sup>lt;sup>42</sup> Juhász, M. <u>Na Kolibe pribudol nový park</u>.; Bratislava zelenaj sa, <u>The Chestnut Orchard "Gaštanica" – new public space</u>.

<sup>&</sup>lt;sup>43</sup> Naturvation Urban Nature Atlas, <u>Gaštanica Park Renovation</u>.

 <sup>&</sup>lt;sup>44</sup> Bratislava zelenaj sa, <u>The Chestnut Orchard "Gaštanica"</u> – new public space.
<sup>45</sup> Bratislava zelenaj sa, <u>The Chestnut Orchard "Gaštanica"</u> – new public space; Naturvation Urban Nature Atlas, <u>Gaštanica Park Renovation</u>.

<sup>&</sup>lt;sup>46</sup> EEA and Norway Grants, About us, EEA and Norway Grants, accessed 24 May 2021.

<sup>&</sup>lt;sup>47</sup> Ján Borčin, <u>V Novom Meste pribudol unikátny park Gaštanica</u>, Bratislava Nové Mesto, 26 May 2017.

#### **Benefits**

#### Environmental<sup>48</sup>

- » With the elimination of the chestnut trees beyond recovery, the treatment of sick trees and the planting of new ones, the ecosystem of the area has been restored and the acute biodiversity loss to disease was halted. A total of 140 chestnut trees were treated for fungus infection and 29 new ones were added.
- » The planting of new chestnut, oaks and hornbeams created a canopy cover, contributing to the improvement of the local climate, temperature regulation and air quality improvement.
- » With the installed infiltration trenches in events of heavy rainfall, the stormwater is retained and then gradually released into the soil and to the roots of the trees, preventing overflow and flooding.<sup>49</sup>
- » The water retention measures also contribute to safeguarding the soil and preventing landslides.

#### Social<sup>50</sup>

- » The new Park has barrier free entrance, increasing the accessibility of green open space for every citizen.
- » With a diverse set of amenities including a playground, benches, fitness area and paddock for dogs, the Park offers recreational opportunities for everyone.
- » The running track provides opportunities for physical activity, fostering visitors' well-being.



<sup>&</sup>lt;sup>48</sup> Naturvation Urban Nature Atlas, <u>Gaštanica Park Renovation</u>.

<sup>49</sup> Martina Juhász, Na Kolibe pribudol nový park.

<sup>&</sup>lt;sup>50</sup> Naturvation Urban Nature Atlas, <u>Gaštanica Park Renovation</u>.



### Bird and Amphibian Support in the Josefov Meadows Hradec Kralove, Czech Republic

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The Josefov Meadows Bird Park, established in 2006, is a 70-hectare wet meadow located on arable land in the north-eastern part of the Czech Republic known as the Hradec Kralove region, close to the Josefov Fortress. The project was initiated by a local amateur ornithologist, who brought the idea of restoring a traditional irrigation system and practice in the grasslands of the Metuje Valley to the attention of the Czech Ornithological Society.<sup>51</sup> The aim of the project was to restore the wet meadows and thus, support the return of wetland birds and amphibians, creating a reserve.<sup>52</sup>

At the beginning of the 20th century, the floodplain of the Metuje River was regularly flooded. Water management measures were applied, including an elaborate irrigation system with channels, gates and bridges to secure the water supply of the neighbouring arable land in the dry season. At the turn of the millennium, the shift in agricultural practices and livestock production resulted in the declining need for arable land in the Metuje Valley, resulting in the abandonment of the historical irrigation system.<sup>53</sup>

The Josefov Meadows Bird Park aimed to rehabilitate the wetland and grass meadow ecosystem and promote the enhancement of the local biodiversity with the restoration of traditional irrigation systems and the creation of new ecosystem elements, such as ponds that provide food for birds and living space for many endangered species of invertebrates.

Secondly, the project also provides environmental education to visitors in the forms of environmental trails and an observatory – creating 'a park for birds and people', as its motto states. The project brought together many stakeholders including NGOs, farmers, the local government and individual donors. The Czech Ornithological Society also collaborates with the farmers who manage the connected meadows, in order to provide sustainable management solutions for the bird park.<sup>54</sup>

- <sup>53</sup> Czech Ornithological Society, <u>Josefovské meadows</u>.
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54 Ibid.

<sup>&</sup>lt;sup>51</sup> Oppla, <u>Birds and amphibians support on wet meadows</u>, *Oppla*, 2020, accessed 24 May 2021; Jaroslav Prazan, Hana Sejnohova, Klara Camska and Marta Mrnustik-Konecna, Case Study: <u>Birds and amphibians support on wet meadows</u> (Czech Republic), *PEGASUS Project*, 2017, accessed 24 May 2021; *Czech Ornithological Society*, <u>Josefovské meadows</u>, Czech Ornithological Society, accessed 24 May 2021.

<sup>&</sup>lt;sup>52</sup> Jaroslav Prazan, Hana Sejnohova, Klara Camska and Marta Mrnustik-Konecna, <u>Case Study: Birds and amphibians support on wet meadows</u>. (<u>Czech Republic</u>); Czech Ornithological Society, <u>Josefovské meadows</u>.

#### Purpose of the project<sup>55</sup>

#### The intervention primarily has biodiversity restoration and protection related goals with secondary cultural objectives:

- » The restoration and increase of biodiversity of alluvial meadows and wetlands, especially for wader birds and amphibians.
- » The provision of environmental educational opportunities for the public to increase their environmental knowledge about local flora and fauna.
- » The conservation and display of a unique traditional irrigation system as a cultural experience for visitors.

### Accordingly, the project implementation activities include:

- » Restoration of shallow pools and great bodies of water to recreate an ideal wetlands habitat for wader birds and amphibians, whose numbers have declined.
- » Reparation of the historical irrigation system, thus bringing water to previously dry areas.
- » Reduction of arable vegetation cover.
- » Establishment of environmental education facilities, such as an environmental trail, observatory, information signs and recreation areas.

## Governance, stakeholder collaboration and financing

Although the project idea came from an individual, the realisation of the Bird Park was carried out by the Czech Ornithological Society, a non-governmental organisation leading and coordinating all of the project activities and also the owner of a part of the land.<sup>56</sup> The Czech Union for Nature Conservation 'Jaro Jaroměř' (CSOP) collaborates with Society and is responsible for technical tasks and monitoring of the habitat and its wildlife. The Environmental Department of the local municipality helped with the permits for water use/management and documentation for water management laws and rules and also addresses additional administrative issues. Farmers manage land both on the grasslands and around it and have been involved in discussions about the project since its early stages. Many have signed agreements with the Czech Ornithological Society to ensure that their farming activities do not compromise conservation activities.57 Donors contribute to the maintenance of the Bird Park with donations of in-kind support.

<sup>55</sup> Czech Ornithological Society, Josefovské meadows.

<sup>&</sup>lt;sup>56</sup> Jaroslav Prazan et al., <u>Case Study: Birds and amphibians support on wet meadows (Czech Republic)</u>; Czech Ornithological Society, <u>Josefovské</u> meadows.

<sup>&</sup>lt;sup>57</sup> Jaroslav Prazan et al., <u>Case Study: Birds and amphibians support on wet meadows (Czech Republic)</u>.



#### Benefits<sup>58</sup>

#### Environmental

- » With the creation of a large partial wetland designed for the needs of target species of mudflats, the landscape has been restored and optimised for water birds.
- » With the digging of 21 smaller ponds, a habitat was created for amphibians and aquatic insects.
- » Following the intervention, there was a dramatic increase in amphibian numbers, especially in crested newts. Also, species that had not been recorded in this territory before soon appeared – the fire toad, the green toad and the green tree frog.
- » The number of birds is constantly growing. By 2020 more than 180 species of birds were recorded, including the Common Snipe (Gallinago gallinago), Northern Lapwing (Vanellus vanellus), Redshank (Tringa totanus) or Spotted Crake (Porzana porzana).<sup>59</sup>
- » With the rehabilitation of the wetland ecosystem, the Josefovské meadows are flooded occasionally, boasting flowers, which indicates that the nature in the Bird Park is still in good condition.

- » The rehabilitated Bird Park is also home to an increased number of plant species. Between 2011 and 2017, there was a significant enrichment of flora with new species.
- » The Bird Park is home to 30 species of dragonflies, several hundred species of beetles and 35 species of diurnal butterflies. Many insect species observed in the park are rare, declining and endangered in the rest of the country.

#### Social

- » Visitors' environmental knowledge is improved through educational activities such as field workshops and events.
- » Schoolchildren's environmental education is also supported through excursions in the Bird Park.
- » The observatory and environmental trail provide educational and recreational activities for visitors.

<sup>58</sup> Czech Ornithological Society, Josefovské meadows.

<sup>59</sup> Ibid.



### Preserving the 'Salt of Life' at Atanasovsko Lake Burgas, Bulgaria

Atanasovsko Lake is located to the north of the city of Burgas, on the Black Sea coast. It is divided into two separate bodies of water by the road between Burgas and Varna. The hyper-saline lake is an important area for biodiversity in the Black Sea biogeographical region. It is a Natura 2000 site<sup>60</sup> and part of the Burgas Wetland Complex; it is one of the sites with the highest conservation value in Bulgaria and Europe. Salt from Atanasovsko Lake has been produced since 1906, in a traditional manner with no negative effects on the inhabitants of the Lake.

The diverse habitats in and around the lake provide a home for 333 bird species, 127 of which are listed in the International Union for Conservation of Nature Red Data Book of Bulgaria and identified by Birdlife as Species of European Conservation Concern (SPEC).<sup>61</sup>The Lake is located on the Via Pontica migration flyway and it hosts migrating birds from northern, eastern and central Europe (up to 240,000 storks and up to 60,000 birds of prey).<sup>62</sup>

The Atanasovsko Lake Natura 2000 site faced various threats before the start of the project. The coastline was greatly affected by urbanisation, and it was important to preserve the lagoon for the conservation of the biological diversity along the Black Sea coastline. In addition, floods in 2010 destroyed dykes, barriers, and nesting and roosting sites for endangered bird species. The floods were considered one of the main reasons for the decline of the populations of groundnesting birds and led to the Natura 2000 site receiving an unfavourable conservation status.<sup>63</sup> Additionally, the basic infrastructure for controlling the levels of sea and rainwater in the Lake was damaged, decreasing the salinity of the lagoon and disrupting salt production.

To solve these problems, the six-year project 'The Salt of Life' was initiated to achieve a favourable conservation status for the habitat and its associated protected species.



<sup>60</sup> Natura 2000 site code SPA/SCI BG0000270.

<sup>&</sup>lt;sup>61</sup> European Commission, <u>Urgent Measures to Restore and Secure Long-term Preservation of the Atanasovsko Lake Coastal Lagoon</u>, *European Commission*, *LIFE public database*, accessed 30 June 2021.

<sup>&</sup>lt;sup>62</sup> The region is known for the largest concentrations of migrating white pelican (Pelecanus onocrotalus), Dalmatian pelican (Pelecanus crispus), marsh harrier (Circus aeruginosus) and red-footed falcon (Falco vespertinus) in Europe and for the second largest concentration of the lesser spotted eagle (Aquila pomarina) after the Bosporus.

<sup>&</sup>lt;sup>63</sup> Radostina Tzenova, Spas Uzunov, Diyana Kostovska, Diana Pavlova and Nada Tosheva, <u>Layman's report of Salt of Life project</u>, Salt of Life, 10 December 2018.

#### Purpose of the project

The main goals of the project were to establish functional infrastructure for water management of the coastal lagoon in Atanasovsko Lake and to provide long-term improvements to habitat conditions, enabling adaptation to the effects of climate change.

The project also focused on improving the visitor experience at the site, enhancing public understanding of the values of coastal lagoons and sharing the project results with a wider European audience of site managers, ecologists and the general public.

#### Many activities were implemented during the project:

- » Restoration of the system of dykes and barriers and management of the water levels and salinity in the basins.
- » Cleaning 23,000 metres of the bypass channel that surrounds the lake and prevents freshwater influx that changes the ecosystem.
- » Restoration of the nesting and resting sites of target bird species. Introduction of an innovative technology for the restoration of wooden barriers using small dykes which do not require a solid foundation, timber or heavy hand work and can be built more quickly and cheaply.
- Building of five artificial islands for nesting and resting of key bird species in Atanasovsko Lake
  new safe areas, protected from floods and predators.
- » Educational and cultural activities that were established during the project: the Avocet Trail, Salt Festival, exhibitions, educational programmes for students, etc.

### Governance, stakeholder collaboration and financing

The project was led by the Bulgarian Biodiversity Foundation (BBF) with the Bulgarian Society for the Protection of Birds (BSPB / BirdLife Bulgaria) and by the private salt production company 'Chernomorski Solnici' JSC (BS Salinas Ltd.). The total budget of the project amounted to EUR 2.01 million, of which 74.95 per cent of the expenses were covered by the LIFE+ Programme of the EU.

The implementation of the project established a model for the inclusion of businesses such as the salt production company in the management of protected areas and Natura 2000 sites<sup>64</sup> through facilitating their participation in direct conservation actions and demonstrating the ecological, social and economic benefits of preserving the Lake.

Additionally, in 2019 the Atanasovsko Lake Public Council<sup>65</sup> was established to monitor, advise and guide project implementation. So far, it has been an important catalyst for future effective collaboration and management of the Atanasovsko Lake.

More than 600 volunteers were involved in various project activities, such as maintenance of breeding habitats, building artificial islands and organising the Salt Festival.

<sup>&</sup>lt;sup>64</sup> Atanasovsko lake Managed Reserve, protected site Burgas Salinas and Natura 2000 site Atanasovsko Lake/BG00002700.

<sup>&</sup>lt;sup>65</sup> Bulgarian Biodiversity Foundation, Public Board, Atanasovsko Lake - Lagoon Of Life, accessed 30 June 2021.



#### Environmental

**Benefits** 

- » The project contributed to the restoration of the favourable conservation status of the coastal lagoon habitat of Atanasovsko Lake to the benefit of the targeted bird species.
- » The first comprehensive monitoring scheme for Atanasovsko Lake was developed during the project. It defines and supports the implementation of important measures necessary to maintain the favourable conservation status of the habitat and its associated species.
- » All six key bird species from Annex 1 of the Birds Directive present at the site show a positive trend in their nesting behaviour according to the monitoring carried out for the project.
- » The plant species Ruppia maritima was rediscovered, even though it was considered extinct from the Lake.

- A new habitat, the inland salt meadows, was discovered during the project. The project allowed researchers to map this rare habitat, which made Atanasovsko Lake the second most important area in Bulgaria for the preservation of this important habitat.
- » The newly emerged freshwater habitat area in the bypass channel created a favourable environment for fresh water-dependent organisms.
- » The project team also created and tested a pilot training programme for wetland management oriented towards ecology students and high school students.



#### **Economic**

- » The project created 23 new jobs. The activities of the project were direct investments in BS Salinas Ltd. and thus contributed to the economic sustainability and development of the company – one of the most important employers in the region.
- » The project provided over EUR 2 million of direct investments to restore the lagoon and improve the tourist and visitor infrastructure of Atanasovsko Lake, creating opportunities for recreation, sports, environmentally-friendly tourism and environmental education.
- » The project team supported environmentally-friendly businesses which created new products associated with the salt found in the protected area.
- » In addition to direct investment and job creation, the increased visitor stream generated financial revenue for local businesses (cafeterias, car parks, souvenir shops, companies producing salt and other lake products).

#### Social

- » The project enhanced the cultural value of Atanasovsko Lake through the newly established annual Salt Festival, exhibitions, videos, bird species, and restoration activities. The Lake became an important part of the urban environment of Burgas.
- » During the project, the team organised a variety of educational and qualification courses, lectures, presentations and materials.
- » The project promoted the natural wealth of the area and the benefits of the Natura 2000 protected zones. There is a better understanding and respect for the processes taking place in the Lake, its biodiversity, as well as Bulgarian sea salt and the salt extraction process.
- » There was an increase in visitors to the area seeking free spa treatments with healing mud and lye from the Lake.
- » The project also included an innovative educational programme for children to learn about processes at the Lake, watch birds and learn more about biodiversity.



### Vértes Nature Park Csákvár, Hungary



Established in 2005, Vértes Nature Park is the first officially declared nature park<sup>66</sup> in Hungary. The Nature Park is not only a prime example of sustainable landscape management but also of successful regional cooperation, bringing together 17 municipalities of the Vértes region. It has helped facilitate self-governance and civic activity in this region. The nature conservation activities of the Vértes Nature Park, together with the administrative, managerial and educational tasks, are provided by the Pro Vértes organisations.

#### Purpose of the project

The main objective of Pro Vértes is to run a nature conservation management organisation that, in cooperation with state conservation bodies, NGOs and local governments, ensures the sustainable management of the area.

Pro Vértes takes an active role in organising and conducting nature conservation activities and tourism projects in cooperation with the region's local governments. Other activities include research, monitoring, education, awareness-raising, training, capacity building and the preservation of local cultural heritage. This is particularly important for the area, as the natural forests, marshes and loess meadows in and around Vértes are valuable habitats and thus need to be preserved and managed harmoniously with nature conservation objectives.

It is important to develop and implement sustainable management plans that do not harm nature conservation interests and contribute to the long-term maintenance of the areas. In addition to nature conservation activities, another priority objective of Pro Vértes is the preservation, reconstruction and utilisation of significant monuments in the area that are of cultural value.

A core element of the work is the maintenance of grasslands by moderate grazing. In the Zámoly Basin area, 365 hectares of arable land has been converted into grassland, which is a much more adequate use of land than crop fields. These restored grasslands are maintained by the grazing of 513 cattle, predominantly old Hungarian breeds and 333 buffalos. Pastures are mowed in a bird-friendly manner, thus providing silage for the animals during the winter while protecting the species that have found habitat in the grasslands. Almost 1,000 artificial nest boxes have been installed to promote the nesting of birds and the reproduction of local bird species.

<sup>&</sup>lt;sup>66</sup> Nature parks are a type of protected area in Hungary, usually consisting of extensive areas within the country with a distinct character in terms of natural and cultural value. The designation of nature parks are bottom-up processes, but the status affords them a certain level of legal protection. They are used for active recreation, healing, sustainable tourism and education. As well as nature conservation, these parks also provide sustainable farming, and are managed by a public foundation or an association established by local municipalities and private citizens.



## Governance, stakeholder collaboration and financing

The main body of the Nature Park is the Nature Park Council, which consists of the elected municipal leaders (mayors) of the area and the president of Pro Vértes.

Pro Vértes Nature Conservation Foundation was established in 1991 to solve nature conservation tasks in and around the area on a non-profit basis. It was transformed into a public foundation in 1994, and since 1998 it has been operating as a non-profit organisation. In 2009, a non-profit private limited company has been established as well. The whole area of the park is 35,838 hectares and 69 per cent of the area is forest, most of which is located in the Vértes Mountains. Significant areas are occupied by pastures and grasslands (15 per cent) and arable land (7 per cent). More than 80 per cent of the Nature Park area is owned by the Hungarian state and Pro Vértes. 69 per cent of the Vértes Nature Park area is under some kind of protection, including two Natura 2000 areas. The population of the area exceeds 130,000 people.

#### **Benefits**

#### Environmental

- » Traditional nature management ensures the preservation of species and habitats, maintains the diversity of the landscape, helps to preserve the genes of native breeds and implements habitat reconstructions and habitat improvements, as well as landscape reconstruction.
- » The results of the grassland maintenance are monitored and various research activities have taken place. The research topics are: the impact of mowing on wildlife and the best methods for machine mowing, nature management technology, and impact on wildlife.
- » The encouragement of light grazing and the increased diversity of its pastures has led to the area becoming a substantial carbon sink.<sup>67</sup> Abandoned agricultural lands were also restored and a high diversity of grassland species reappeared.
- » Two thousand hectares of habitat has been restored, and water management measures have been implemented on 630 hectares. Predatory birds have repopulated the area: two pairs of imperial eagles, six pairs of saker falcons, a pair of short-toed snake eagles, three pairs of peregrine falcons and a pair of white-tailed eagles have found habitat in the Nature Park. Continuous monitoring of these species is taking place.
- » This restoration has also had the following impacts: regulating the water cycle, mitigating drought and floods; generating and preserving soils and renewing their fertility; providing valuable plants, like herbs and fodder, as well as meat and dairy, and improving their quality; and providing a high amount of nectar for pollinators.

#### Economic

» Meat and dairy are direct products of the organisation, but local food producers also benefit from the quality of the land: craft beer, wine, fruit syrup, honey and soap are sold by local manufacturers.

- » Ecotourism revenue supports the local economy and is a strong source of employment.
- » Twenty-one people work for Pro Vértes year-round and about 200 farmers own land in the area.

#### Social

- » A serene area like Vértes Nature Park has huge appeal for people looking for ecotourism and low impact recreational activities like hiking, biking and watching. The clear priorities and gentle management of the area has contributed to more sustainable tourism in the area.
- » Traditional nature management also promotes healthy, nutritious products and traditional land use, as well as the revival of vanishing life forms, ancient folk arts and crafts, and the traditions associated with them.
- » Old folk traditions related to animal husbandry have been revived, like St George's Day and St Michael's Day, the two notable days for shepherds in spring and autumn, when animals are herded to and from the pastures.
- » Pro Vértes organises capacity building events and training courses and is involved in officially recognised training courses for farmers.
- » Pro Vértes has published numerous books based on its long-term experience on natural grassland management.
- » The organisation puts an emphasis on educational programmes and raising awareness among younger generations. Local nursery and elementary schools can participate in birding projects where nest boxes and feeders are installed in their gardens, and educators teach about birds at thematic events throughout the year.

<sup>&</sup>lt;sup>67</sup> Jinfeng Chang et al., '<u>Climate warming from managed grasslands cancels the cooling effect of carbon sinks in sparsely grazed and natural grasslands</u>', *Nature Communications* 12, 118 (2021); Yuanyuan Zhao, Zhifeng Liu and Jianguo Wu, '<u>Grassland ecosystem services: a systematic review of research advances and future directions</u>', *Landscape Ecology* 35, 793–814 (2020).

