Urban Insight
By Sweco

The five key trends driving Europe's biodiversity agenda

SWECO

At the UN COP16 meeting, countries agreed on a global financing framework to stop biodiversity loss, committing to mobilise nearly €195 billion annually for nature protection.

The Global Biodiversity Framework is an international agreement aimed at halting and reversing biodiversity loss by 2030. Under this framework, countries must develop and submit National Biodiversity Strategy and Action Plans (NBSAPs), with EU members required to align them with EU targets.

Ecosystem services ensure access to clean water and air, food, medicines, and raw materials. It is estimated that more than half of the world's GDP is highly or moderately dependent on natural ecosystem services.

Technological advancements in digital tools and AI are essential for efficient biodiversity monitoring and data collection, enabling quicker informed decisions and effective conservation strategies.

The five key trends driving Europe's biodiversity agenda

Content

Introduction	**4**
- This is biodiversity	6
- Biodiversity loss – the main drivers	7
- Biodiversity and the wellbeing of people, societies and businesses	9
Global vision and targets	**11**
Trends in Europe	**15**
- Incorporating biodiversity into financial decision-making	16
- Establishing biodiversity credit markets	17
- Investment in restoration and biodiversity conservation	18
- Bringing biodiversity into cities	19
- Applying digital tools and AI in biodiversity work	20
Call for action: Reinforcing positive trends for biodiversity gain	**22**
About the authors	**25**
References	**26**

Introduction

Understanding the fundamentals of biodiversity is essential for developing effective solutions that benefit both our planet, people and businesses.

The pressing need to address biodiversity loss has never been clearer. Biodiversity loss, ecosystem collapse, climate change and critical changes to Earth systems rank among the top global risks we face in the next decade.[1]

This report aims to illustrate the key drivers for biodiversity loss while showcasing successful initiatives and innovative solutions designed to achieve positive biodiversity outcomes and support the systemic change necessary. Global trends indicate a decline across nearly all species groups: 28% of all assessed species are now threatened with extinction. In Europe, the situation is equally dire, with 25% of assessed species being endangered.[2]

Despite heightened awareness and efforts over the past decades, traditional methods to halt biodiversity decline have fallen short. Current global incentives to combat this crisis remain largely voluntary, yielding insufficient results. With over one million species on the brink of extinction – many potentially within decades – the stakes have never been higher.[3, 4]

The current rates of biodiversity loss have significant consequences for societies, businesses, and ecosystems alike, underscoring the need for comprehensive, systemic change. Maintaining a business-as-usual approach would put over half of the global GDP at risk.[5]

The international community is taking heed: at COP16, held in Cali, and concluded in Rome, countries adopted the landmark Kunming-Montreal Global Biodiversity Framework (GBF), and agreed a way forward to mobilise approximately €195 billion annually to protect nature. Among its many targets, the GBF aims to conserve and effectively manage 30% of the world's land and marine areas while ensuring standardised reporting and increased transparency from companies regarding their biodiversity impacts. The conference also highlighted the critical roles of young people, women, indigenous peoples, local communities, civil society, and the business community in biodiversity conservation efforts.

Recognising the value of biodiversity is a crucial starting point to drive stakeholder action and develop effective solutions that benefit both our planet and businesses.

This report delves into the drivers of biodiversity loss and the enablers for biodiversity gain across Europe, emphasizing the urgent need for action.

If we fail to achieve the green transition on nature's terms, it will not happen at all.

Andreas Gyllenhammar, Chief Sustainability Officer at Sweco.

This is biodiversity

So, what exactly is biodiversity? It refers to the variety of life on Earth, encompassing the different species of plants, animals, fungi, and microorganisms, as well as the genetic diversity within these species and the ecosystems they form.

Biodiversity is vital for maintaining ecological balance, supporting essential ecosystem services such as pollination, nutrient cycling, and climate regulation, and providing resources for food, materials and medicine – all of which are crucial for our survival and prosperity.

Biodiversity can be categorized into three main levels[6].

- **Genetic diversity:** the variation in genetic makeup among individuals within a species.
- **Species diversity:** the variety and number of species within a given ecosystem or on the entire planet.
- **Ecosystem diversity:** the range of different ecosystems and their ecological processes.

Abiotic factors, particularly the geological characteristics of an area, play a crucial role in shaping ecosystems. Key considerations include soil composition and the availability of nutrients, as well as groundwater levels. Additionally, geographical location and topography significantly impact biodiversity. For instance, islands tend to harbour unique species due to their historical isolation, while mountainous regions can support varied ecosystems across different elevations. Coastal areas must contend with challenges posed by salt and erosion, whereas inland regions often experience more extreme temperature fluctuations.

When considering biodiversity in Europe, there is a great variety from country to country and within countries. There are around ten different biogeographical regions in Europe ranging from Alpine and Boreal to Atlantic and Continental.[7]

Figure: People and businesses are dependent on nature's capability to provide ecosystem services. At the same time, people and businesses impact nature causing degradation of its functions.

Biodiversity loss – the main drivers

According to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, IPBES, the key direct drivers for biodiversity loss are land and sea use and the change of use, overexploitation of resources, climate change, pollution, and invasive alien species. Additionally, there are underlying factors contributing to these direct drivers, including patterns of consumption, population growth, challenges in governance, and economic models that may not fully account for environmental costs.[3]

Land and sea use, resource overexploitation, and pollution
Landuse changes, such as the conversion of forests, wetlands, and other natural habitats into agricultural land, urban areas, and infrastructure, along with habitat destruction, fragmentation, and degradation, are primary drivers of global biodiversity loss. Additionally, unsustainable sea use activities, including coastal development, deep-sea mining, and harmful fishing practices, impact marine environment.[3, 8]

Pollution from industrial, agricultural, and urban activities endangers ecosystems and various species. Different pollutants such as plastics, pesticides, and nutrient runoff cause extensive damage to both terrestrial and aquatic environments.[3] It has been estimated that nitrogen pollution costs €70-320 billion per year in the EU.[9]

Over 75% of Earth's land and 66% of the marine environment have been significantly altered.

Key direct drivers of biodiversity loss

Land and sea use
e.g. exploitable areas and their natural values

Use of natural resources
e.g. plants, wood and other natural fibres, soil, minerals and metals

Climate change
e.g. GHG emissions, extreme weather and acidification of oceans

Pollution
e.g. waste, emissions, noise, light pollution and other disturbances

Invasive species
e.g. cultivation and breeding of non-native species, spread of invasive species e.g. through logistics

Key direct drivers of biodiversity loss i.e. negative impacts of human activities on biodiversity, based on IPBES[3].

Overexploitation of natural resources cause excess replacement rates and depletion of wildlife populations and critical habitats. The current rate of species loss is tens to hundreds of times higher than natural background rates.[3] Understanding these factors is essential for informed decision-making in business development and innovation, environmental management and conservation efforts.

Climate change and invasive alien species

Climate change and biodiversity loss are strongly interlinked. Climate change causes rising global temperatures, shifting weather patterns and extreme weather, disrupting ecosystems and habitats. Biodiversity loss, in turn, weakens ecosystems' ability to sequester carbon and regulate climate, accelerating climate change. Healthy ecosystems, such as forests, wetlands, and coral reefs, play a crucial role in climate mitigation and adaptation.[10]

Invasive alien species, whether introduced intentionally or accidentally, can outcompete or prey on native species, with ecosystems such as islands and freshwater systems being particularly vulnerable to these invasions.[3] Estimating the cost of invasive alien species to society is very challenging, but an estimate has been suggested of around €12 billion annually in the EU.[11]

Recognizing the vital role of biodiversity in climate action is essential, as preserving and restoring natural ecosystems not only enhances resilience to climate change but also contributes significantly to the overall solution to the climate crisis.

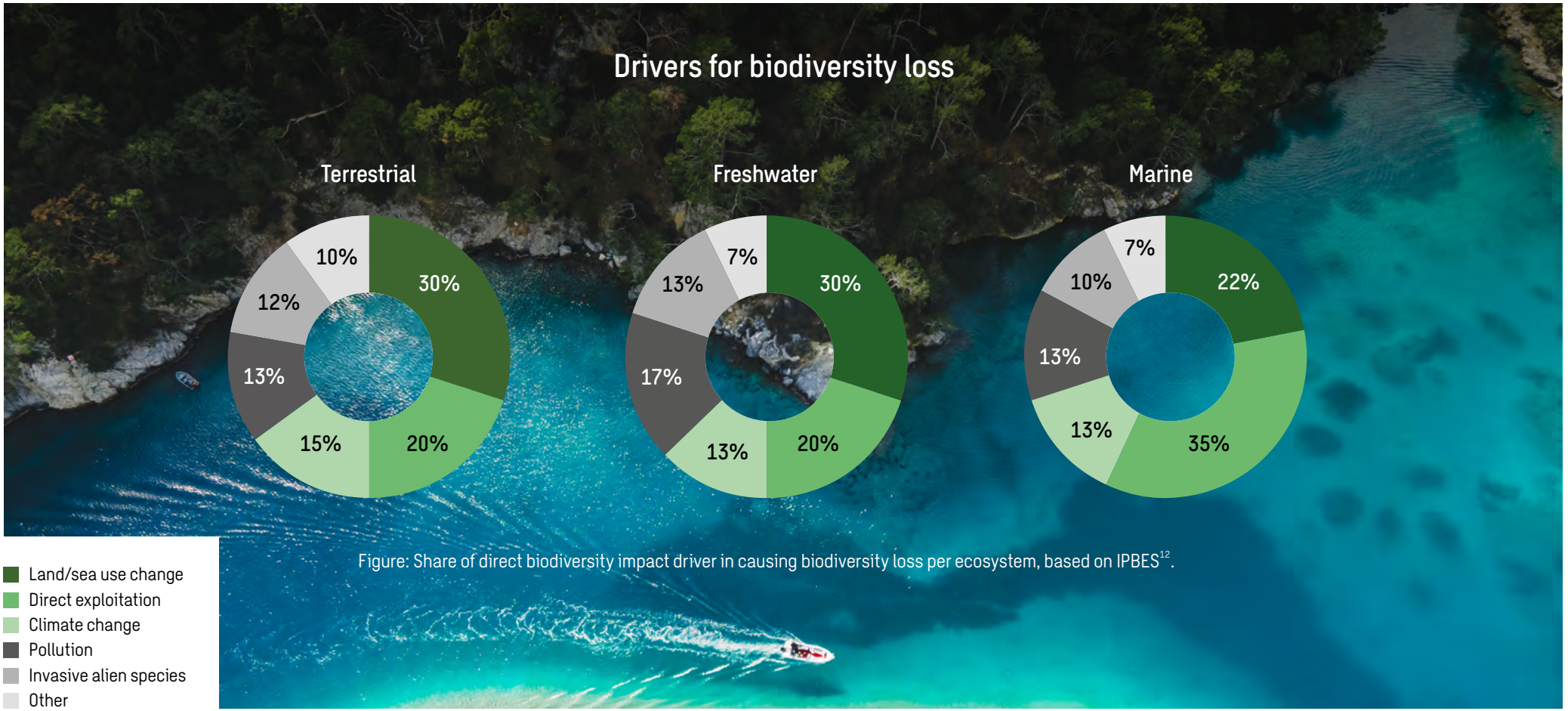


Figure: Share of direct biodiversity impact driver in causing biodiversity loss per ecosystem, based on IPBES[12].

Biodiversity and the wellbeing of people, societies and businesses

Ecosystems deliver numerous essential goods and services vital for the health and well-being of humans, animals, and the environment. Biodiversity is fundamental to the functionality of ecosystems.[3] Human activities are transforming ecosystems at a rapid pace to meet the increasing demands for natural resources.

Dependency on Biodiversity

Supporting services
e.g. oxygen production, photosynthesis, soil formation, carbon sequestration, water, nitrogen, carbon and nutrient cycling

Regulating services
e.g. groundwater formation, plant pollination, erosion and climate regulation, mitigation and prevention of floods and extreme weather events

Provisioning services
e.g. plants, fungi, animals, fresh water, fibres (e.g. wood and cotton), building materials, minerals, energy and fuels, medicines

Cultural services
e.g. identity, culture, art, spriritual, educational, aesthetic, recreational

Figure: Examples of ecosystem services provided by the nature and healthy ecosystems that people, societies and business are dependent on, based on the Millenium Ecosystem Assessment[14] definition of ecosystem services.

Ecosystem services ensure access to clean water and air, food, medicines, and raw materials. They also contribute to climate regulation, water purification, and pollination. Culturally, natural landscapes and wildlife inspire tourism and hold spiritual significance for communities and indigenous peoples. Additionally, ecosystem services are critical for disease regulation and disaster risk management.[3, 13, 14]

Besides the ecosystem services with which we are already familiar, healthily functioning ecosystems can offer resilience, solutions and support in the future that we cannot currently imagine. Nature provides an intrinsic value, and healthy ecosystems can also be considered as insurance helping us to adapt to environmental changes.

Beyond supporting human well-being, ecosystem services are essential for businesses. Healthy soil, crop pollination, pest control, and genetic resources are just a few examples of services that businesses rely on directly. Ecosystems also provide a buffer against natural disasters, mitigating economic losses.

Numerous ecosystems are being degraded or used unsustainably. The changes in ecosystems are increasing the likelihood of nonlinear and potentially irreversible changes, such as reduced availability of essential services such as clean air, water, food, and pollination or weakened ecosystem resilience to environmental changes, including climate change. Due to the economic damage caused by biodiversity loss, industries directly reliant on nature are especially threatened. Eventually all businesses may encounter biodiversity-related risks through their value chains or systemic level instabilities.

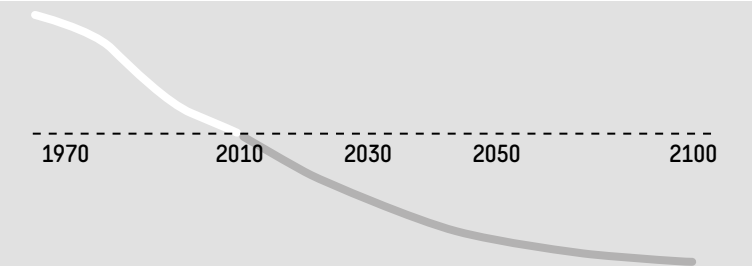
A conservative approximation indicates that collapses in ecosystem services could lead to a global GDP reduction of nearly €2.6 trillion by 2030. Low-income and lower-middle-income countries are particularly vulnerable.[15]

Continuous management of biodiversity impacts is essential in securing the resilience of nature, which in turn supports business continuity and profitability. Actions such as reducing harmful subsidies and increasing sustainability measures in production and consumption, are necessary to mitigate biodiversity loss and enhance production of ecosystem services. Incorporating environmental costs and long-term perspectives is essential.[5, 16]

Transitioning to a nature-positive economy is not just an environmental imperative – it's a business opportunity. By safeguarding the planet's resources, companies can boost their bottom lines, reduce risks, and enhance resilience. Nature positivity is a major business opportunity: by 2030, solutions that improve the state of nature could create 395 million new jobs and nearly €10 trillion worth of business globally[5].

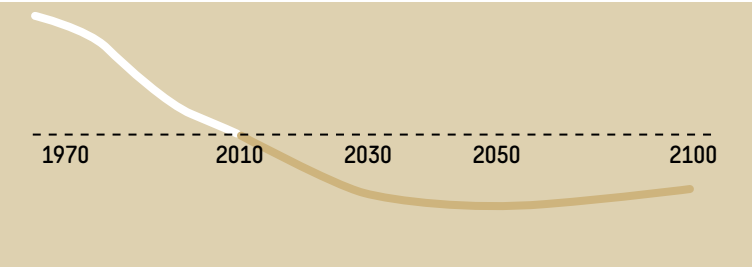
It is estimated that more than half of the world's GDP is highly or moderately dependent on natural ecosystem services[5].

Scenarios on how to tackle biodiversity loss.



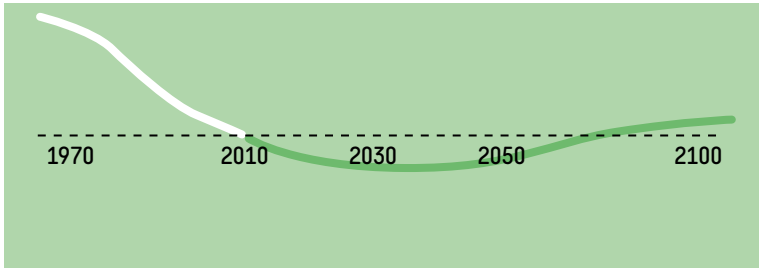
Biodiversity loss continues

- Causing negative impacts means the race for last resources is further accelerated
- Existing regulation is not enough to stop biodiversity loss globally



Biodiversity loss slows down

- New protected areas are established and negative impacts compensated for, but actions causing negative impacts continue
- Root causes, such as unsustainable consumption, are not eliminated
- Incentives for companies are not sufficient to foster permanent changes



Nature-positive transition

- New modes of operation are invented to avoid negative impacts and create more space and protection for biodiversity
- A system-level change has occurred in consumption and companies' activities
- Regulation and incentives support the transition sufficiently

Figure: Illustrative scenarios of different approaches to take on biodiversity and biodiversity loss, adapted from original figure and study on food systems by Islaam A.[17] and Leclère et al.[18] and Kunming-Montreal Global Biodiversity Framework[19].

Global vision and targets

The Global Biodiversity Framework is an international agreement aimed at halting and reversing biodiversity loss by 2030, setting global conservation targets to protect ecosystems and species. Among the 23 targets to be achieved by 2030, key objectives include conserving 30% of land and water, restoring 30% of degraded ecosystems, halving the introduction of invasive species, mobilising funding, and mandating disclosures on biodiversity impacts. Under this framework, countries must develop and submit National Biodiversity Strategy and Action Plans (NBSAPs), with EU members required to align them with EU targets.[19]

The four main goals of the GBF are:

1 Ecosystem integrity and biodiversity

Halt human-induced extinction of species and ensure that biodiversity is maintained, restored, and enhanced by 2050.

2 Sustainable use and benefits sharing

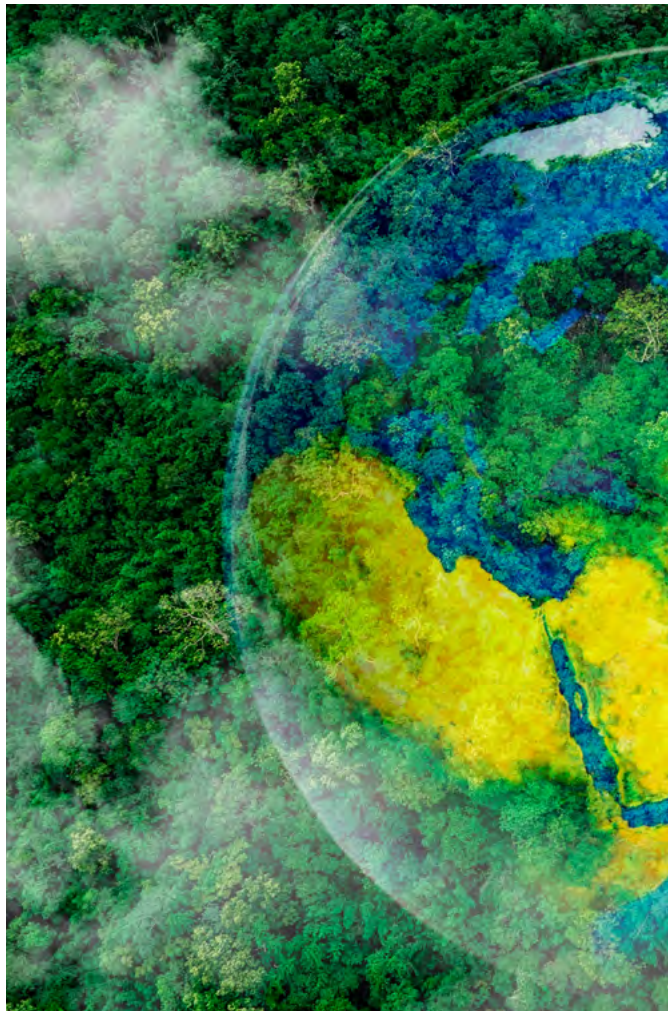
Ensure that biodiversity is sustainably used and managed, with nature's contributions to people being valued and shared equitably.

3 Fair and equitable sharing of genetic resources

Ensure the fair and equitable sharing of benefits from the utilisation of genetic resources, particularly benefiting indigenous peoples and local communities.

4 Adequate means of implementation

Ensure that sufficient financial resources, capacity-building, and technology are mobilised to support biodiversity conservation and sustainable use.



Among the 23 ambitious targets set, several stand out for their significant impact potential. The '30 by 30' deal aims for the effective conservation and management of at least 30% of the world's lands, inland waters, coastal areas, and oceans, focusing on regions crucial for biodiversity and ecosystem services (Targets 2 and 3). Target 7 seeks to halve excess nutrients and mitigate the risks associated with pesticides and hazardous chemicals, while Target 15 mandates that transnational companies and financial institutions assess and disclose their operations' impact on biodiversity.

Additionally, Target 16 aims to cut global food waste in half while tackling over-consumption, and Target 18 calls for the phasing out of harmful subsidies. Lastly, Target 19 emphasizes the need for increased funding for biodiversity, seeking to mobilise approximately €195 billion per year from various sources, and escalating international financial flows from developed to developing countries. On 27 February 2025, nearly 200 countries agreed a way forward to deliver an effective biodiversity finance system, including a roadmap leading up to 2030, and plans for a decision in 2028 on how to operate the financial mechanism.

National Biodiversity Strategy and Action Plans

As part of the Global Biodiversity Framework agreement, countries agreed to create and submit new National Biodiversity Strategy and Action Plans (NBSAPs) that explain how they will meet global biodiversity goals by 2030. NBSAPs are detailed plans that show how each country will conserve and use biodiversity sustainably, including their own specific goals. These National Targets are measurable objectives set by each country to match the global goals of the GBF, taking into account their unique situations and priorities.

The importance of countries submitting well-drafted NBSAPs cannot be overstated: NBSAPs can embed biodiversity into national development plans, ensuring that nature is prioritised in government decision-making; they can provide a framework to monitor and report progress against biodiversity goals under the GBF; they can help attract funding and technical support to assist in combatting biodiversity loss; they provide a platform for all stakeholders including indigenous peoples and local communities to collaborate on biodiversity strategies; and they can play a crucial role in educating the public about the value of biodiversity. All these things are essential if the goals of the GBF are to be met.

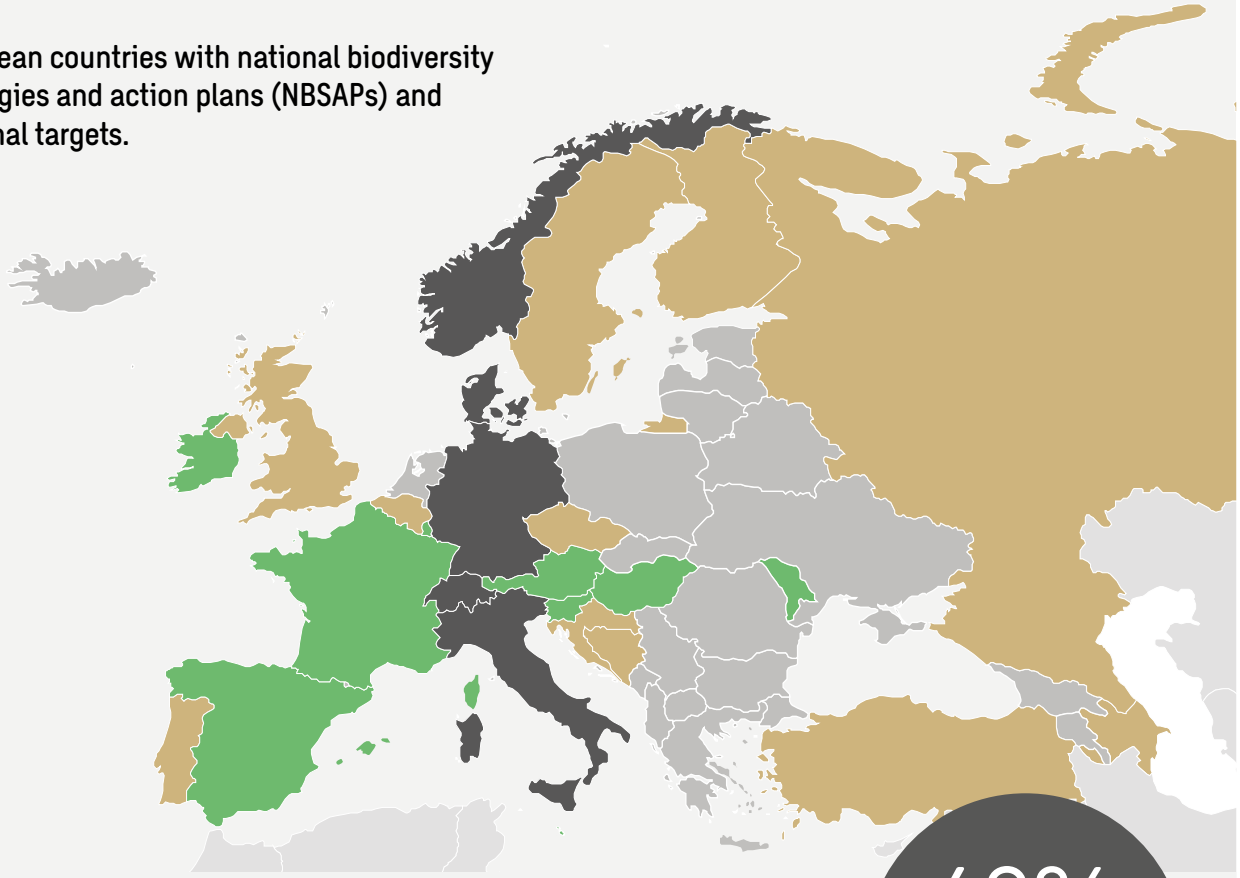
At the time of writing, only 46 of the 196 parties to the CBD have submitted their updated NBSAPs, reflecting only 23% of all parties. Not all European countries have submitted their NBSAP yet, around 68% of the European countries are still to submit their updated NBSAPs.

From an EU perspective, The EU published an overarching NBSAP in 2020. The EU Biodiversity Strategy for 2030[20], adopted as part of the European Green Deal, outlines key targets to halt biodiversity loss and restore ecosystems. Among the targets are, for example, restoring 20% of the EU's land and sea areas by 2030 and establishing ecological corridors to ensure connectivity between habitats, reducing habitat fragmentation and supporting species migration. The strategy also aims to reduce the use of chemical pesticides by 50% and reverse pollinator decline. Additionally, it seeks to increase organic farming to 25% of agricultural land and cut nutrient loss from agriculture by half. Financially, the strategy aims to mobilize €20 billion annually for biodiversity.

The EU member states are required to align their NBSAPs with the EU targets, with progress monitored at the EU level to ensure compliance and effective implementation.

In terms of National Targets, 125 parties globally have submitted at least one National Target. The EU has reported 45 National Targets as a single entity. There are 11 European countries who have submitted National Targets, but have not submitted updated NBSAPs.

European countries with national biodiversity strategies and action plans (NBSAPs) and national targets.



- Countries with at least one submitted national target.
- Countries with national biodiversity strategies and action plans (NBSAPs).
- Countries with national biodiversity strategies and action plans (NBSAPs) and with at least one submitted national target.
- Countries without submitted national biodiversity strategies and action plans (NBSAPs) and national targets.

Status of NBSAPs and national targets for countries on the UN Member State list for Eastern and Western Europe, excluding those states that do not form part of continental Europe, according to the CDB online reporting tool.[21]

68%

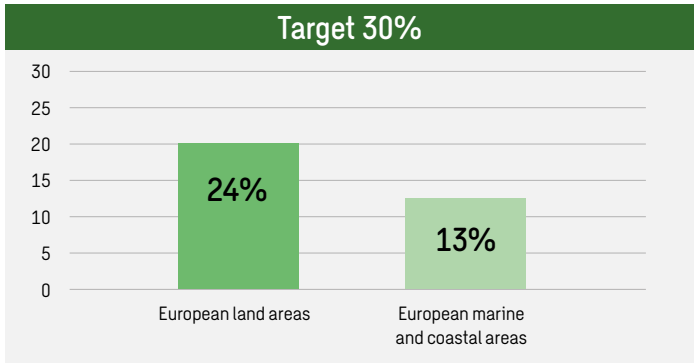
of the European countries are still to submit their updated NBSAPs

Protected areas

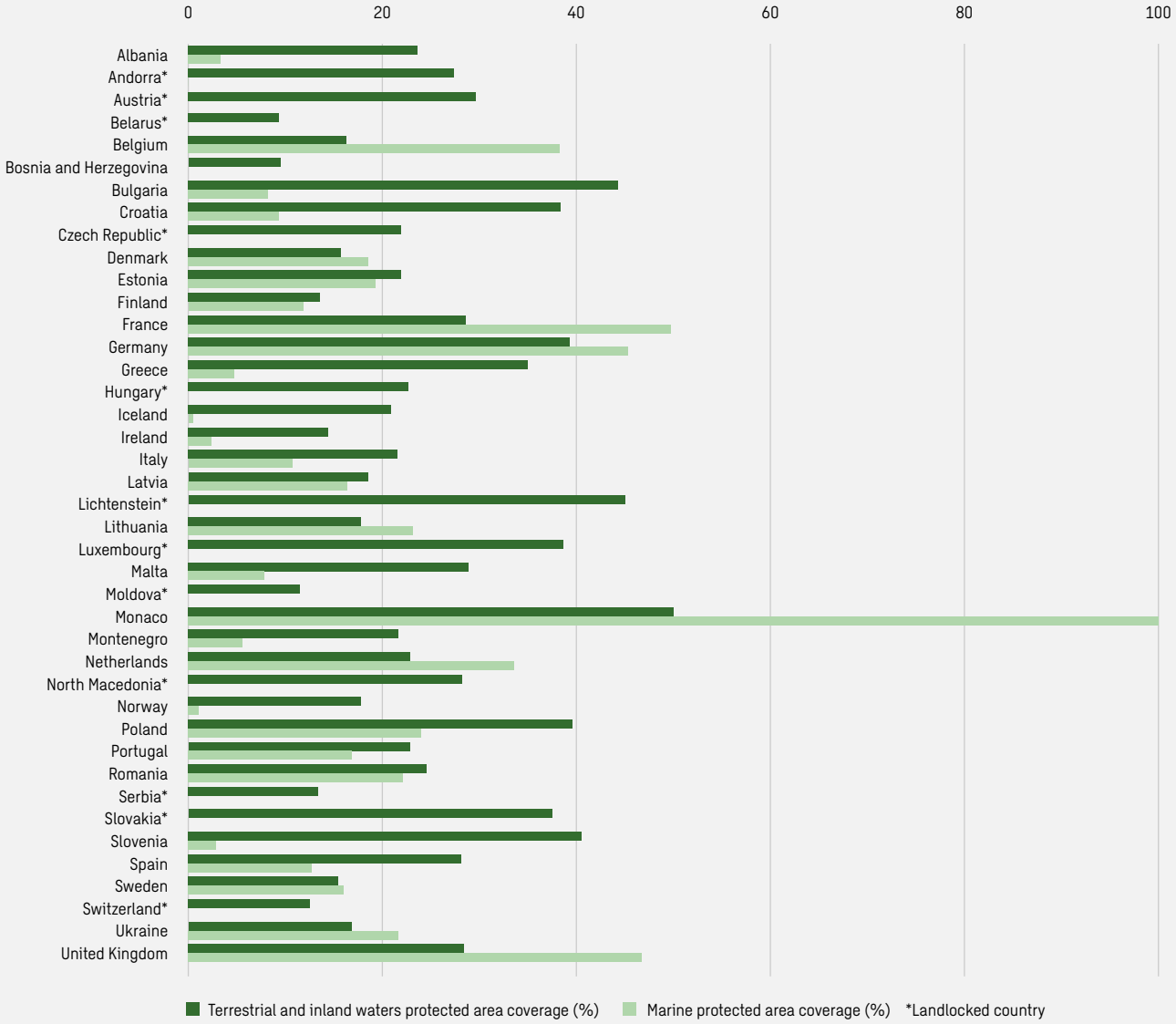
The EU has implemented a range of policies and regulations to support the GBF targets of the Biodiversity Strategy and goals of the Global Biodiversity Framework. There is still a gap to close in many of the targets. For example, the aim to protect at least 30% of the EU's land and sea areas by 2030 requires more action. The Natura 2000 network, the backbone of protected areas in Europe, extended over 18.6% of the EU land area and 9% of its marine territory in 2022. When adding other local land areas designated as protected, the total area has increased from around 10% in the 1990s to approximately 26% as of the latest updates.[22]

The figure illustrates a diverse landscape of conservation initiatives throughout Europe, with certain countries demonstrating strong commitments to protecting both terrestrial and marine environments, while others fall short in one or both areas. In some cases, the extent of protected areas in the figure may appear higher or lower than expected. This is because the World Database on Protected Areas (WDPA), provided by UNEP-WCMC, uses data from different sources such as governments, non-governmental organisations, landowners, and communities to define the protected areas. Countries are encouraged to apply IUCN and CBD definitions for a protected area, however, some countries have national definitions which may affect the data.

Although a total of 24% of terrestrial land and inland waters are protected in Europe, there remains substantial potential for improved conservation efforts, particularly in marine and coastal areas, where only 13% are protected. Improved conservation strategies are crucial to achieve the 30% conservation target by 2030 established by the UN.



Overview of progress of protected areas in European countries based on UNEP-WCMC.[23]



The review includes countries on the UN Member State list for Eastern and Western Europe, excluding those states that do not form part of continental Europe and any transcontinental states.

Trends in Europe

Several key trends have emerged in Europe that seek to advance the goals of the Global Biodiversity Framework (GBF). Below Sweco provides an overview of these trends, alongside country-specific examples of how they are being implemented plus some highlights.

1. Incorporating biodiversity into financial decision making
2. Establishing biodiversity credit markets
3. Investment in restoration and biodiversity conservation
4. Bringing biodiversity into cities
5. Applying digital tools and AI in biodiversity work

There is a clear trend across Europe towards increased assessment and disclosure of biodiversity impacts for both businesses and financial institutions[24]. Awareness of the need to manage potential financial risks arising from biodiversity loss has increased, incentivising nature-positive action and investment.

The EU Taxonomy sets out the criteria for determining sustainable activities, with a growing emphasis on biodiversity. It provides a framework for companies to report on how their activities comply with biodiversity-related criteria, resulting in greater accountability for biodiversity impacts. Many EU Taxonomy objectives link to drivers of biodiversity loss, or solutions to reduce loss. However, current EU taxonomy criteria do not specify all potential economic activities specifically from the perspective of their positive contribution to biodiversity.[25] In practice, identifying and favouring biodiversity-positive activities in financial decision-making might require extra effort.

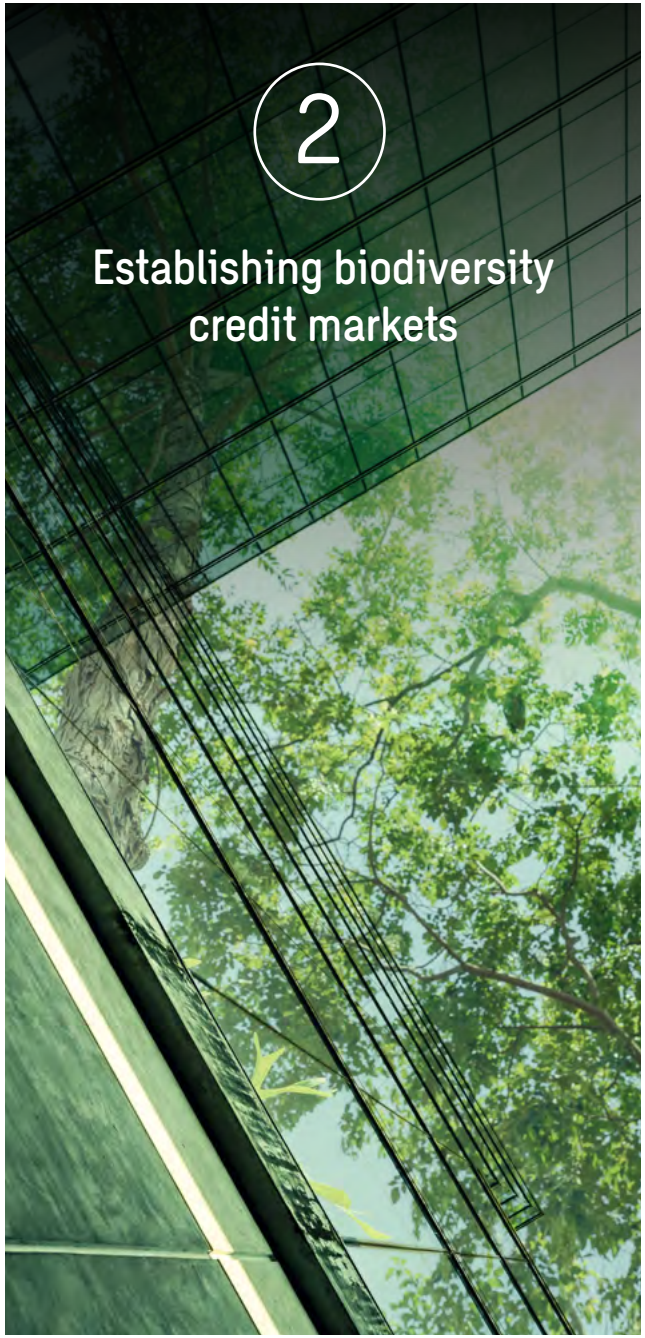
Global frameworks such as those provided by the Science-Based Targets Network (SBTN)[26] and the Taskforce on Nature-related Financial Disclosures (TNFD)[27], are increasingly used by companies to enable systematic value chain analyses, target setting and disclosures. On a European level, The Corporate Sustainability Reporting Directive (CSRD) includes reporting standards that enable companies to disclose information about their contribution to biodiversity loss through their own operations, and via value chains, and share what measures they are taking to mitigate that impact. Companies looking for biodiversity data and any related business linkages and increasing their knowledge of the potential financial risks and opportunities arising from biodiversity, are able to incorporate biodiversity into their financial decision making and business strategies.

Financial institutions are increasingly considering biodiversity risk in investment decisions[28, 29]. For example, the European Investment Bank has established its own Environmental and Social Standards[30], which include an assessment of biodiversity impact to inform decision making. Other financial institutions make use of the International Finance Corporation (IFC)'s Performance Standard 6 (PS6) as part of their due diligence process when determining whether to fund international projects. This is putting pressure on businesses to ensure that they have robust data to understand their biodiversity impacts, and that they can demonstrate that they have considered the impacts adequately.

Sustainable Finance Disclosure Regulation (SFDR)[31] requires that financial institutions disclose how they manage sustainability risks, including biodiversity risks. This regulation aims to ensure that financial disclosures reflect the actual environmental, social, and governance (ESG) risks associated with investments, forcing companies and financial institutions to evaluate and report on their biodiversity impact.

There are also national initiatives and laws that push for biodiversity as well. For example, in the Netherlands, De Nederlandsche Bank has carried out research into its potential impacts and dependencies on nature in relation to its holdings in electric utilities and ASN Bank has been actively developing tools and policies to enhance biodiversity[32, 33]. In France, Article 29 of the law on Energy and Climate requires financial institutions to publish information relating to the portion of their assets that comply with the environmental criteria set out in the EU Taxonomy. Additionally, the related decree stipulates disclosure of for example, a strategy for alignment with long-term biodiversity goals and biodiversity related financial risks[34].

In the UK, Sweco is working as part of an international framework reviewing Environmental and Social Impact Assessments and Critical Habitat Assessments on behalf of the European Investment Bank (EIB) and other financial institutions to determine if investment opportunities are meeting international, and client-specific standards relating to biodiversity. This work is enabling our clients to make informed investment decisions on large-scale energy projects, including major overhead powerline routes, hydro-electric dams and wind farms, taking into consideration their effect on nature.



2 Establishing biodiversity credit markets

Countries are establishing biodiversity offset and credit markets to incentivise private sector investment in conservation. Biodiversity offsets are mechanisms that allow private sector organisations to compensate for the biodiversity loss caused by their activities by investing in conservation or restoration efforts elsewhere. Biodiversity credits can be used and procured even without the need to compensate, depending on the definition and market system in place.

Biodiversity offsetting or credit creation are always linked to a specific location with inherent biodiversity properties and therefore it is also natural that progress has been made at the national level, and matched to each country's own regulatory framework. Because of the potential risks of this approach, high-level principles to guide the biodiversity credit market development have been published[35]. Today, biodiversity offsets and credit markets do not have a globally harmonised framework and unified system for definitions, quantification and verification. A solid and harmonised system is needed to ensure real benefits for nature when the market starts getting heated. The global demand for voluntary biodiversity credits could reach the size of nearly €2 billion in 2030 and in 2050 the market demand could reach nearly €67 billion, according to estimates.[36]

The UK Environment Act 2021 in England makes it a legal requirement for the majority of developments to achieve a minimum 10% net gain in biodiversity after completion. This so-called biodiversity net gain (BNG) is achieved through enhancing, restoring or creating new habitats on-site; or by purchasing biodiversity units from a third party (e.g. Habitat Bank or Private Landowner) who establishes the agreed habitat off-site; or by buying statutory credits from the government, who will use the funds to establish habitats in strategic locations.[37]

France has launched a national scheme for voluntary biodiversity credits, seeking to mobilise private financing to help nature conservation and restoration. Credits linked to sites approved by the government will enable buyers to both contribute to biodiversity restoration and compensate for their impacts.[38]

In Germany municipalities can create an Ökokonto (eco-account), generating biodiversity credits through habitat protection or species conservation, which can then be purchased by developers to offset the negative impact of their projects have on biodiversity.[39]

In Finland ecological compensation for nature deterioration under the Nature Conservation Act can take place either by generating nature values or through the avoided loss offset. Nature value hectares are used as the unit for compensation. In addition, a system for voluntary biodiversity credits that go beyond existing environmental offsetting provisions is being prepared. This system covers establishing national science-based criteria for generating biodiversity credits, setting up a verification and registration system, and providing guidance on the types of claims investors can make when purchasing units.[40]

In the Netherlands, Sweco is contributing to the non-profit organization The National Biodiversity Bank Foundation, to create a system of biodiversity credits in the Netherlands. Sweco's Naturepoints calculator is used to quantify biodiversity gain or loss and to translate this into biodiversity credits. Naturepoints is a scientifically based method to quantify the biodiversity value of an area and estimate the effects of planned developments projects. The National Biodiversity Bank Foundation's goal is to offer a transparent and guaranteed financing model for investments in biodiversity, working with landowners who want to strengthen biodiversity and with companies that want to finance it.

3

Investment in restoration and biodiversity conservation

Increasing restoration activities and the conservation of nature are key objectives of the GBF and the EU Biodiversity Strategy. In the EU, the Restoration Act encourages Member States to enhance their restoration efforts, while the EU Habitats and Birds Directives mandate the designation of protected areas that contribute to the Natura 2000 network. A variety of funding and investment instruments are crucial to achieve meaningful and lasting conservation and restoration efforts.

The EU has established several funding mechanisms to support biodiversity conservation and restoration, for example the Horizon Europe, the LIFE Programme, and the European Biodiversity Partnerships. In addition, countries in Europe have focused national funding on biodiversity conservation. National biodiversity funding in Europe is diverse and can include, for example government grants, environmental taxes, or private sector investments. Despite the various funding initiatives, the European Commission has found that the funds currently dedicated to nature conservation are insufficient. Thus, further funding instruments and initiatives need to be explored.[41]

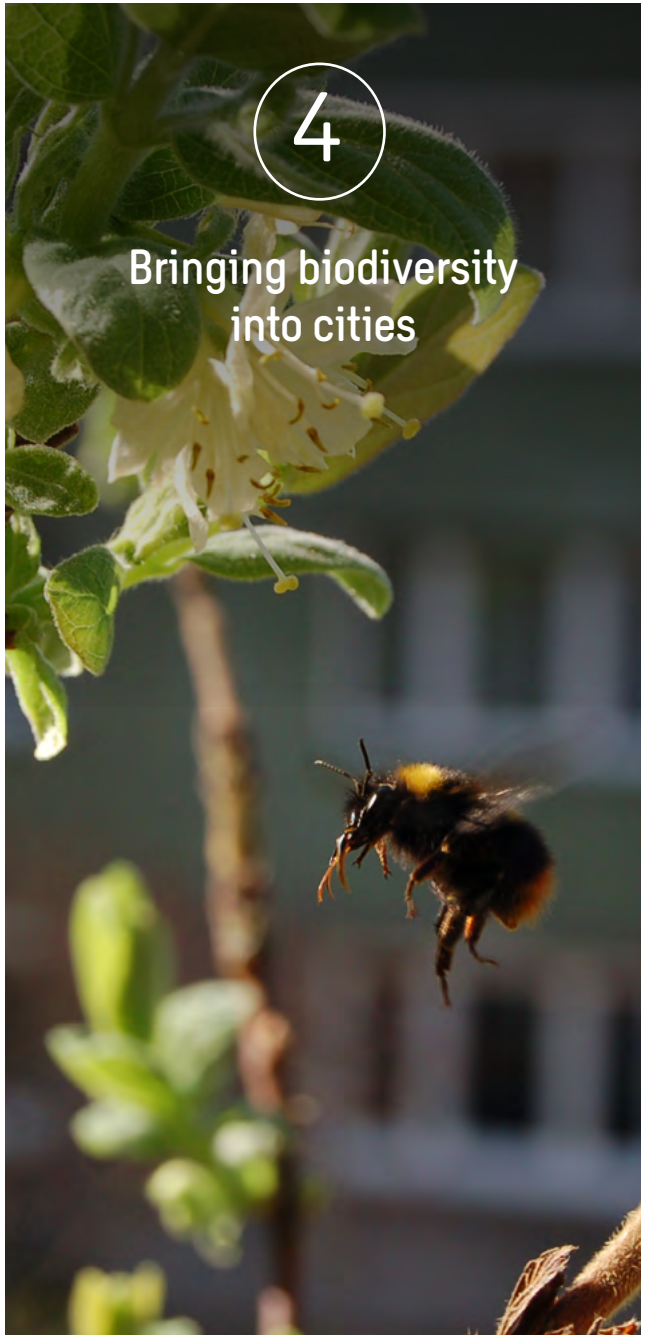
Alongside biodiversity credit markets, countries are exploring additional funding avenues for restoration and biodiversity conservation. There is a growing interest in nature-based solutions, (NbS), which leverage natural processes and ecosystems to tackle environmental, societal, and economic challenges in a sustainable way. In Germany the Federal Action Plan supports the implementation of NbS for climate and biodiversity at scale, through the conservation and restoration of a wide range of ecosystems. Until 2026, €4 billion are earmarked for the Action Plan's implementation up until 2026.[42]

Public-private partnerships, PPPs, are becoming increasingly popular as a means to finance biodiversity conservation projects. These collaborative agreements between government entities (the public sector) and businesses, NGOs, or other private organisations (the private sector) enable the funding, implementation, and management of conservation initiatives that might not be viable through public funding alone. Many European countries have utilised PPPs for biodiversity conservation funding.

Another example of a national initiative that enhances conservation efforts is the Danish Government's political agreement called 'Grøn Trepart' or 'green transition'. The goal is to stop farming on approx. 400,000 ha, which is approx. equivalent to 10% of the total land area of Denmark. Instead of farmland, 140,000 ha of carbon rich soil will be transformed into wetlands, and 250,000 ha of new forest will be planted, of which 100,000 ha will be unmanaged,. Funding for the transition comes from the Danish Government and from the private Novo Nordisk Foundation, but local municipalities will be in the driver's seat and will need to engage landowners and farmers for the transition to happen.[43]

In Finland, the regulating dam at Lake Savojärvi – originally from the 1950's and located in the middle of a National Park – was demolished and the surrounding river area was restored to a pseudo-natural state using artificial rapids. Sweco's role was to provide ecological expertise to the project. As a result, the outflow of water from the lake is no longer artificially regulated improving the ecological conditions of the lake and the river and allowing fish to move freely.

In Germany, Sweco planned the restoration of wetland habitats in Hedwigsthal, part of the Holzbachaue area. These measures led to an increased resilience of the flood plain ecosystem promoting the success of typical species and enhancing the buffering capabilities of soil and vegetation. Also, the restored wetland contributes to the retention of nutrients and pollutants and binds CO_2.



4

Bringing biodiversity into cities

The EU Restoration Act is a key driver for urban greening, as it requires the maintenance of urban green space and urban tree canopy and aims to increase the amount of urban greening up until 2030. Green space and tree canopy are used as indicators of functioning ecosystems that can provide us with highly needed ecosystem services.

Bringing biodiversity into cities through wilding goes even beyond the aims of basic greening and requirements for cities as per the EU Restoration Act. Wilding cities aims to restore and enhance natural ecosystems within cities, as restoring natural processes allows ecosystems to function with less human control. A widespread example of this is turning mown grass areas into meadows.

Reducing urban fragmentation and creating ecological corridors are important for allowing the movement of species and improving genetic diversity. New ecological corridors can be developed e.g. restoring abandoned spaces and greening rooftops with native flora and fauna are ways to support, for example, pollinators, birds, and small mammals.

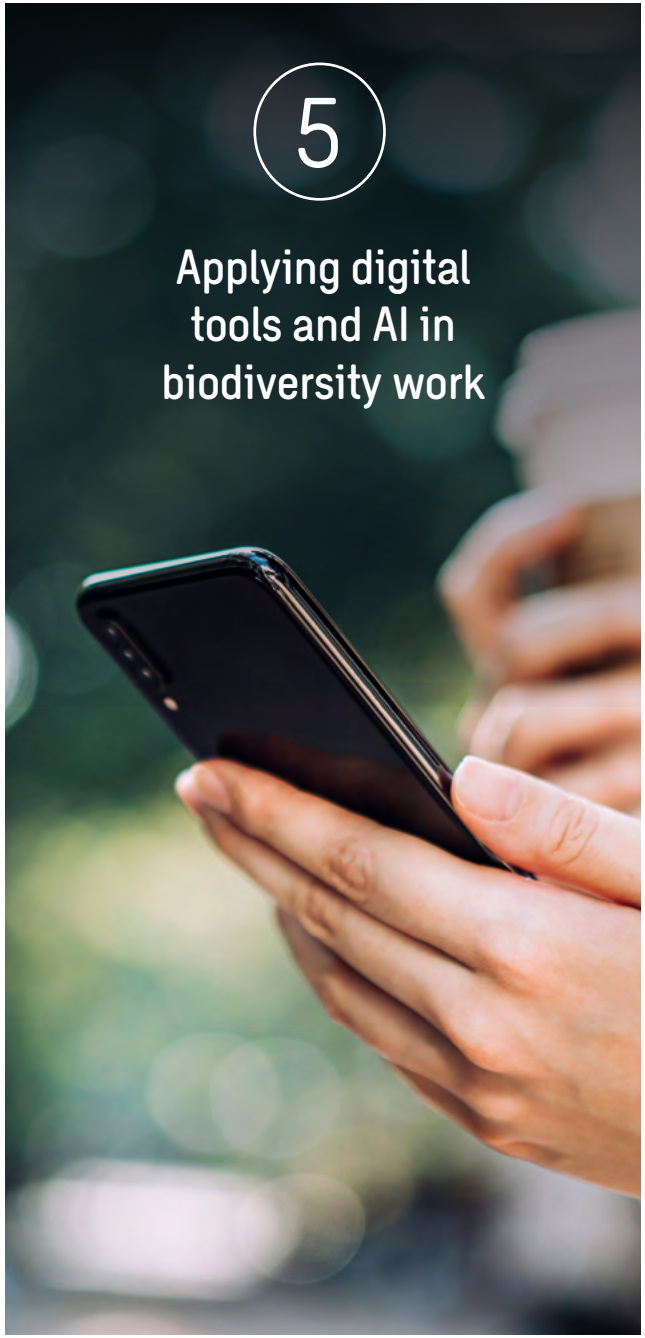
Making use of nature-based solutions such as wetlands and permeable landscapes are nature's way of controlling flooding and improving water quality, these solutions are also of benefit to the citizens. Nature-based solutions can also enhance climate resilience by cooling cities, reducing pollution, and absorbing carbon emissions.

Biodiversity in cities can take various forms. Naturally much of the guidance and support for the practical implementation of wilding lies within the cities and municipalities. For example, in Finland the capital city Helsinki has developed a guide on wilding the city, the guide is available for use in other cities as well[44]. Sweden has provided Guidance for Green Planning to support its municipalities in integrating ecosystem services and green infra into infrastructure planning etc. to foster long-term sustainable living environments for the benefit of both people and biodiversity.[45]

Engaging citizens in the planning and wilding of urban areas is important for ensuring the success of the plans from an ecological perspective and for the inclusion of people. In Belgium, the Flemish Agency of Nature and Forestry is piloting a new policy framework on government's facilitating role in promoting participatory and democratic values and thus create more local ownership for urban nature projects. In the Netherlands renewal of the building decree is underway and is about to stipulate nature-inclusive design in cities. Bats and certain birds are becoming increasingly rare in newly built environment, as there is less space suitable for nests and roosts, like cavities in walls and underneath roof tiles. Already now, it is mandatory to incorporate nest boxes and other structures for birds and bats in new buildings and large renovation projects in many municipalities.

A former industrial site in Bergen, Norway, has been transformed into a blue-green neighbourhood, with the reopening of a river as a central element. Sweco has planned a two-layered water connection to allow fish migration and flood management. The project shows how reopening of a river can serve as a central element in wilding and provide a route for trout to migrate between salt and fresh water.

The city of Antwerp in Belgium is investing in a circular water network that harnesses valuable freshwater sources which would otherwise be lost to brackish waters. The city purifies and reallocates water from pump stations for urban use, replenishing groundwater and enhancing biodiversity. The purified water sustains ponds in green spaces, promoting diverse ecosystems and bolstering green infrastructure resilience. Additionally, it helps counteract brackish Scheldt water intrusion, vital for preserving freshwater ecosystems. Sweco played a pivotal role by providing expertise in hydraulic infrastructure and water management, managing the design, and implementation, and ensuring effective stakeholder engagement. Through this initiative, Antwerp supports urban biodiversity and strengthens climate resilience efforts.



5 Applying digital tools and AI in biodiversity work

There are many business opportunities related to biodiversity. Nature tech presents new opportunities that not only address biodiversity challenges but also contribute positively to the environment. By leveraging AI-driven tools, satellite imagery, and sensor networks, it's possible to develop solutions that help reduce pressure on nature or are regenerative and give back more to nature than they take. Collecting relevant data is essential for businesses to identify impacts, dependencies, costs and benefits, and minimise risks in their decision-making.

In the digital space there are lots of new solutions for evaluating biodiversity. AI-driven tools, satellite imagery, and sensor networks are enabling us to track species, populations, ecosystem changes and habitat loss more effectively. Drones are being used to monitor the development of vegetation, especially in areas that are difficult to reach. Also, drones are being used to spot bird nests (meadow birds) and roe deer fawn.

AI-powered image recognition has transformed citizen science internationally, with mobile apps such as Seek[46], Pl@ntNet[47], OBS Identify[48] and Merlin[49] all harnessing the power of AI to help non-expert users accurately identify, and more importantly, record the plants and animals they see. This has major ramifications for different countries' ability to collect data about species distributions and population sizes.

For a long time, satellite data has for a long time been important in monitoring habitat loss and fragmentation, but this has often focused on tropical deforestation[50]. This is changing. For example, the newly developed OPERA Land Surface Disturbance Alert (OPERA DIST-ALERT)[51] is a monitoring system that uses satellite data to provide near-real-time detection of disturbances in all types of vegetation around the world. Satellite images and aerial photographs with IR-sensors are also being used to measure the amount of green space in cities[52].

AI is also being incorporated into emerging platforms designed to quantify the value of site biodiversity[53] and quantify the impact of human interventions on biodiversity[54].

Other ways that digital tools and AI are being used to support biodiversity work include creating biodiversity digital twins to model conservation strategies[55, 56], using AI to analyse camera trap footage for particular species[57], and using AI for acoustic monitoring of species[58]. Enabling new approaches for detecting bat echolocation calls and recognising bat species in audio spectrograms is crucial. Researchers across all of Europe are training AI systems to help raise classification accuracy that can be used during live recording or in an automated post-processing software. Digital tools are also being developed to allow open access to national environmental data, as has been done, for example, in Norway.

In Sweden, Sweco mapped Gotland's potential alkaline fens using remote sensing of orthophotos as well as other available geodata. Alkaline fens are wetlands that are very important hotspots for biodiversity, providing a home to many endangered species. The analysis was produced using AI modelling and machine learning algorithms. The results indicated where alkaline fens with potentially high natural values could exist and vice versa, where overgrowth had gone so far that the natural values were likely to be low. This helps the County Administrative Board in planning biodiversity enhancing measures for the region.

In Denmark, Sweco is using digital tools for more efficient ecological data collection. Sweco has used camera traps for otter and birch mouse and sound recordings of bats in several projects for The Danish Road Directorate, namely in the Environmental Impact Assessments of new and upgraded highways.

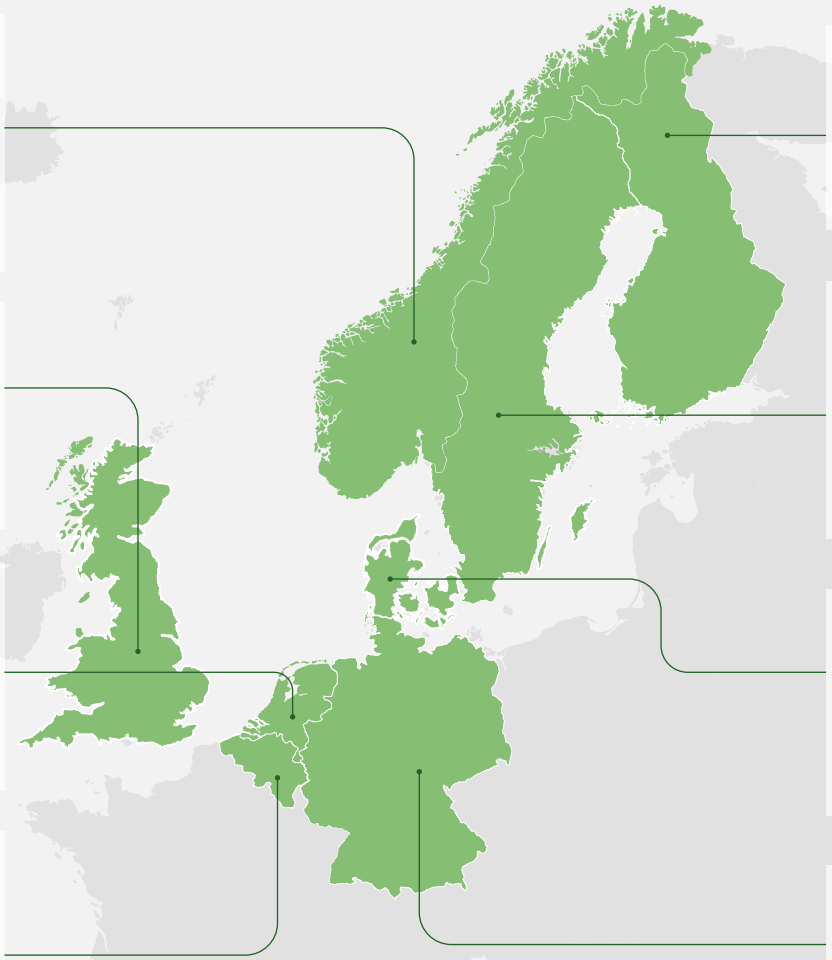
Examples of effective activities that increase biodiversity in European countries

Norway has developed open access digital mapping services through the collaboration of governmental stakeholders. These platforms provide a wide range of map layers across various themes, including environmental data relating to habitats, land resources, species, geology landscapes etc.

The UK has adopted a pioneering approach in the offsetting market through the requirement of 10% biodiversity net gain (BNG), as a minimum, for the majority of developments that require planning permission in England.

In the Netherlands, nature-inclusive design is an obligation in many municipalities. In order to secure building permits, a development project must score enough nature points through e.g. green roofs, wildlife provisions, ponds and flower-rich vegetation.

In Belgium, a new policy framework is being piloted by the Flemish Agency of Nature and Forestry relating to government's facilitating role in promoting participatory and democratic values in order to create more local ownership of urban nature projects.



In Finland, the Nature Conservation Act enables the offsetting of harm to the environment, and a process is underway to further develop and define the voluntary nature credit system and market.

Swedish municipalities are being supported in their work integrating ecosystem services and green infrastructure into planning etc. to foster long-term sustainable living environments for both people and to create biodiversity through a national Guidance for Green Planning framework.

The Danish Government has written a green transition agreement with the aim of transforming approx. 400,000 ha of farmland to wetlands and forests, an area equivalent to approx. 10% of the total land area of Denmark.

Germany has a NBSAP wich was updated in 2024 and has allocated €4 billion up until 2026 in order to implement the Action Plan covering the restoration of a wide range of ecosystems.

Call for action:

Reinforcing positive trends for biodiversity gain

Urgent action from all stakeholders is essential to ensure the long-term health of our planet and its ecosystems. Sweco has identified a range of key stakeholder actions that will support global trends needed to halt and reverse biodiversity loss.

This study underscores the urgent need for systemic change in how businesses and governments approach biodiversity. It emphasises the importance of integrating biodiversity considerations into financial decision-making and corporate strategies, ensuring these critical factors are prioritised across various sectors.

One key area of focus is the role of finance in promoting biodiversity. Financial institutions are increasingly being tasked with assessing the risks and impacts associated with biodiversity loss. This shift not only enables greater accountability, but also encourages the promotion of nature-positive investments that contribute to ecosystem preservation.

Technological advancements, particularly in digital tools and artificial intelligence, play a crucial role in monitoring biodiversity and collecting data at both global and site-specific scales. These innovations enhance the speed and efficiency of data collection and analysis, enabling stakeholders to make informed decisions more quickly and develop effective conservation strategies to proactively address the challenges confronting our natural world.

This report underscores the significance of nature-based solutions, advocating for collaborative efforts that align with natural processes to address pressing environmental challenges. By focusing on strategies that enhance climate resilience and combat pollution, stakeholders can pave the way for a more sustainable future.

Additionally, the study calls for stronger policy and legislative frameworks that incentivise biodiversity-positive business models and practices. By establishing robust legal structures, we can encourage businesses to adopt more sustainable approaches that benefit both the environment and their operations.

Community engagement is a vital aspect of effective conservation efforts. By encouraging citizen participation and demanding transparency from companies regarding their biodiversity impacts, communities can build a collective sense of responsibility.

The international community is making positive strides by adopting the GBF and aligning with its goals and targets. Several countries have achieved significant progress; however, globally advancements in submitting and implementing NBSAPs remain slower than anticipated.

Recognising the vital role of biodiversity in climate action, food security and the health and wellbeing of people is essential. Only through action on all geographic scales and levels of society can we collectively halt and, hopefully, reverse, global biodiversity loss.

The path forward requires a concerted effort to integrate biodiversity into the fabric of economic and social decision-making. By recognising the intrinsic value of nature and the services it provides, Europe can enable a regenerative economy that safeguards our planet while enhancing human wellbeing and economic resilience.

The time for action is now. The health of our ecosystems and the future of our societies depend on the choices we make today.

Key actions for supporting and reinforcing biodiversity

1 Incorporating biodiversity into financial decision making

- **Governments:** Ensure legislation mandating biodiversity reporting and disclosures is in place; incentivize nature-positive business models, such as the circular economy, through tax breaks and subsidies and remove environmentally harmful ones.
- **Public Sector:** Develop guidelines for biodiversity risk assessments and integrate these into procurement and investment strategies.
- **Companies:** Embed biodiversity into corporate strategies and identify biodiversity-related risks and opportunities. Raise awareness of the impacts and dependencies of nature in the operations and value chains. Prepare for transition plans, including finding ways to decouple the business performance not just from CO_2 emissions, but also unsustainable use of nature.
- **Financial Sector:** Enhance ESG frameworks to include biodiversity risks and incentives for investing in biodiversity-positive projects and businesses. Develop financial products that support biodiversity conservation and restoration.
- **Citizens:** Demand transparency from companies regarding biodiversity in their operations and value chains, insist that politicians make the change to incentives to favour biodiversity and support biodiversity-conscious businesses and financial institutions.

2 Establishing biodiversity credit markets

- **Governments:** Create legal frameworks and verification systems for biodiversity credits; incentivise private sector engagement.
- **Public Sector:** Establish habitat banks and manage offsetting schemes in partnership with private entities. Develop standards for biodiversity units and credits.
- **Companies:** Avoid and minimise negative impacts, restore damages, and finally invest in biodiversity offsets and partner with conservation initiatives to compensate impacts.
- **Financial Sector:** Develop financial instruments for biodiversity credits and promote biodiversity as an asset class.
- **Citizens:** Support and participate in community-driven conservation projects enabled by offset funds.

3 Investment in restoration and biodiversity conservation

- **Governments:** Allocate long-term public funds for biodiversity conservation and promote public-private partnerships.
- **Public Sector:** Implement large-scale nature-based solutions and facilitate private sector collaborations.
- **Companies:** Carry out due diligence to ensure investment opportunities won't lead to significant biodiversity impacts. Work with specialists to implement a nature-positive approach. Understand the value of incorporating nature-based solutions and functional green infrastructure.
- **Financial Sector:** Offer green financing options for conservation projects; integrate biodiversity risks into investment analyses.
- **Citizens:** Advocate for local conservation projects and participate in community initiatives.

4 Bringing biodiversity into cities

- **Governments:** Set biodiversity-based targets for urban green spaces and biodiversity corridors; mandate wilding efforts.
- **Public Sector:** Develop green urban planning strategies and provide technical support to municipalities. Create ecological corridors to connect fragmented habitats and leave space for nature to provide ecosystem services.
- **Companies:** Leverage environmental expertise to put biodiversity at the heart of scheme design to deliver nature-positive places that meets the needs of people and biodiversity.
- **Financial Sector:** Invest in sustainable urban infrastructure projects with biodiversity benefits.
- **Citizens:** Participate in urban wilding initiatives, create wildlife-friendly gardens and support biodiversity-enhancing development.

5 Applying digital tools and AI in biodiversity work

- **Governments:** Fund innovation programs for biodiversity tech and streamline data-sharing protocols. Support open data initiatives to facilitate data sharing and collaboration.
- **Public Sector:** Adopt AI and digital tools for biodiversity monitoring and enforcement of regulations. Develop platforms for citizen scientists to contribute to data collection.
- **Companies:** Develop and deploy biodiversity tech solutions; invest in AI-driven conservation strategies. Look at biodiversity as an opportunity to innovate solutions that reduce the pressure on nature.
- **Financial Sector:** Support biodiversity-focused tech startups and innovation funds.
- **Citizens:** Contribute to biodiversity monitoring via citizen science apps and initiatives.

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Urban Insight

By Sweco

Urban Insight is Sweco's international knowledge platform, where experts come together to develop and share insights, facts and solutions for how to plan and design sustainable cities and the societies of the future. Global and local initiatives will be organised throughout the year to inspire and open up discussions about sustainable urban planning.

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