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Pannon Future Forest

Forest as a reinterpreted product

business development potentials within the forest-based bioeconomy

Benchmark Study / Pannon Future Forest

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Across Europe, sustainable forest management (SFM) is increasingly understood as a multifunctional system rather than only timber production. Forests provide a wide range of ecosystem services - those direct or indirect goods and services that are provided by the natural or modified ecosystems. While scientists and environmentalists have discussed ecosystem services implicitly for decades, the Millennium Ecosystem Assessment in the early 2000s popularised this concept. According to this, these services can be grouped into the following four categories (examples linked to forests):

1. Provisioning services: providing, e.g. timber, mushrooms, fruits, and honey.
2. Supporting services: they form the basis of all other services (nutrient cycles, soil development, photosynthesis, water cycle).
3. Regulating services: evaporation, absorption of pollution, cleaning water, and carbon sequestration.
4. Cultural: recreation, landscape, environmental education, research, art.

These functions are increasingly developed and marketed as ecosystem service products. Several factors drive this trend. Forest owners face increasing economic pressure. Policy frameworks increasingly recognise ecosystem services. Market demand for sustainability solutions is growing. At the same time, measurement and monitoring technologies have improved significantly.

The other key definition is bioeconomy, which has the potential to advance the EU's environmental goals and develop a circular economy without damaging nature: all economic sectors relying on biological resources — such as animals, plants, microorganisms, and derived biomass including organic waste — to produce food, feed, bio-based products, and energy as an added-value.

These trends are closely linked to EU climate policy, too. The European Climate Law establishes the objective of climate neutrality by 2050. This underscores the importance of natural carbon sinks, such as forests, wetlands, and grasslands. In parallel, the EU Biodiversity Strategy for 2030 promotes nature-based solutions (actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature) and ecosystem restoration. These policies recognise that ecosystem services can become investable assets.

Another important driver is the EU Bioeconomy Strategy. The strategy supports circular bio-based value chains and encourages the development of new forest-based markets. Innovation increasingly focuses on non-wood forest products and forest-based by-products. Corporate regulation also plays an important role. The Corporate Sustainability Reporting Directive (CSRD) requires companies to report reliable sustainability data. This increases demand for verified forest and nature-based projects.

The goal of this Benchmark Study is to explain some emerging thematic trends of this new environmental market being recently formed both globally and in the EU, and highlight business potentials based on existing frontrunner enterprises.

Improving the ecological conditions of habitats (or at least, not harming them) in the frame of bioeconomy opens untapped economic opportunities in the target area of the Pannon Future Forest project at the Hungarian-Slovenian and Croatian-Hungarian border area, since it hosts outstanding natural values, including Central Europe's largest near-natural, partly free-flowing river system managed by the 1st '5-countries UNESCO Biosphere Reserve' in the world, as well as significant forest ecosystems (e.g. Őrség, Papuk, Mecsek) and wetlands.

Based on the Application Form, nine thematic areas (chapters) have been identified in the frame of forest-based bioeconomy, as follows:

1. Sustainable Forest Management, Innovation and Digitalisation
2. Wood-Based Design
3. Agroforestry
4. The voluntary carbon market and the voluntary biodiversity market
5. Nature-based solutions to boost landscape regeneration
6. Business opportunities by connecting entrepreneurial skills with novel ecological ideas
7. Environmental education and nature-based wellbeing as market-based activities
8. Potential of non-wood forest products within the food industry innovation
8. Visitor economy and regenerative tourism

Each chapter first explains the emerging trends of the given thematic area and then highlights the theme's business potential through concrete business cases.

Project partners will use the knowledge behind the Benchmark Study to jointly build the capacities of business support organisations (e.g. chambers of commerce, business development organisations, civil sector, nature protection organisations, forestry, local/national frontrunner businesses - if there are any), enabling them to act as "catalysers" (i.e. explore and engage the business environment) as well as to help valorise natural resources of the target area in the context of forest-based bioeconomy.

The Baseline Study should therefore become the main thematic reference point of catalysers when strengthening entrepreneurial skills and thematic knowledge of business actors (as main target group of the project: SMEs, start-ups, current and future entrepreneurs, university students, forest management companies, and current and future employees working in the forest-based green and bioeconomy) and building up and testing tailored, place-based skills development (Mentor Program) for business actors.

This is necessary for an efficient entrepreneurial discovery process around the project's novel themes and for creating added value in achieving the targets established by the relevant smart specialisation strategies.

Authors

Ferenc Albert Szigeti

Ferenc is a geographer and urbanist by profession, ecologist and journalist by heart. Since 2009, he has been designing, managing, and facilitating knowledge transfer projects across Europe in the field of urban regeneration, nature-based solutions, climate adaptation, cultural heritage, and social innovation.

His main reference is the URBACT Programme, focusing on integrated urban development, where he designed 11 successful EU networks. At the same time, he was the Lead Expert of the "CHANGE! – social design of public services", the "Come in! – Talking Houses / Shared Stories" and the "BiodiverCity: community-based approaches to foster urban biodiversity and nature-based solutions" networks. As the dedicated Lead Expert of these networks, he drafted dozens of articles, studies, and case studies, including a comprehensive urban biodiversity guidebook.

Another current key project is the People Powered Tourism (Empowerment of local communities through co-designing experience

based transformative travel to enhance visitor economy) within the Interreg Danube Region programme, where he has been working out Hungary's first regenerative tourism product in Kóspallag, and published the Benchmark Study (Visitor Economy in Practice - Opportunities for local communities to boost regenerative and transformative tourism services within the visitor economy framework). He also has profound experience in the LIFE Programme, working out flagship projects such as the Biodiverse City LIFE, the LIFE in Runoff or the LIFE Co-Clima.

Besides carrying out thematic expert tasks related to the above fields, as a freelance journalist focusing on solution journalism, he is the author of hundreds of articles and several guidebooks (including ecology and mountaineering, too), published mostly by the biggest Hungarian hiking magazine (Turista Magazin) and the magazine of the Hungarian Geographers' Association (Földgömb).

Gergely Lomniczi

Gergely is a forest engineer and a senior communication expert. He has been working in various fields of sustainable forest management since 2003. His main interests are urban forest management and the use of nature-based methods.

Working for state and private forest management companies, he gained experience in managing urban and protected forests, communicating green projects, and building partnerships. He served as a forestry spokesperson for about 10 years, gaining significant experience in communicating environmental topics.

As the General Secretary of the Hungarian Forestry Association for six years, he organized various professional forestry events and public programs, such as the "Forest Magic" Family Day, Forestry Week, and the International Day of Forests. He is a member of the editorial board and a regular author for the professional journal Forestry Papers (Erdészeti Lapok) and Our Forest (A mi erdőnk) magazine.

Since 2022, he has specifically focused on assessing the condition of urban forests, creating management plans, and generating green infrastructure development projects. He holds several training sessions and educational lectures for foresters, local governments, and NGOs about the role of green infrastructure and forests.

Zoltán Kovács PhD

Zoltán is a forest engineer who earned his PhD in Forestry Sciences. His research primarily focuses on innovation opportunities that integrate scientific results into everyday management practices. In recent years, he has played an active role in the implementation of five EIP-AGRI projects focused on forest management.

Since 2007, he has been involved in evaluating EU co-funded grants available for forestry, collecting experiences from numerous forest management projects in the process. He often works at the intersections of traditional forestry, dealing with agroforestry, urban forests, the valuation of forest ecosystem services, and the development of a biomonitoring system based on honeybee colonies. In his university teaching activities, he is responsible for courses such as Rural Development, Forest Ecosystem Services, and Beekeeping.

In his free time, he practices beekeeping and enjoys giving educational presentations about bees and the treasures of the hive to children and adults alike.

To whom are the different chapters most relevant?

A good understanding of all chapters is essential for all business support organisations specified in the Application Form, including chambers of commerce, business development organisations, civil sector, nature protection organisations, forest management companies, local/national frontrunner businesses, etc.

However, the nine topics below linked to the forest-based bioeconomy are perhaps not equally relevant for all "business actors" also preliminarily identified by the project, namely SMEs, start-ups, current/future (self-employed) entrepreneurs, university students, forest management companies, nature conservation organisations, and current/future employees working already in the forest-based bioeconomy. We hereby specify the most relevant organisations along each chapter.

I. Sustainable Forest Management, Innovation and Digitalisation

The examples in this chapter are mostly, but not exclusively, relevant to foresters and forest experts, whether they work for a state-owned forest management company, privately, or at a nature conservation organisation. However, it is important to note that the Urban Forest Innovation Lab in Cuenca was initiated by the local municipality (supported by EU Funds), with a clear vision to build up a local ecosystem within forest-based bioeconomy. Transferring this good practice and establishing something similar is a clear economic opportunity in the cross-border region of Croatia, Hungary and Slovenia, based on its unique natural assets. And Pannon Future Forest provides space and time to think over such a possibility with regional stakeholders! Last, but not least, Woodlanders.com, as a separate example, is an interesting business concept for any ecologists, foresters, nature conservation experts or communication specialists aiming to reflect on the increased public attention to sustainable land use we all witness nowadays.

II. Wood-Based Design

This theme has a broader, more general outlook regarding entrepreneurship, but most business cases introduced in this chapter are mainly linked to architecture, design and art.

III. Agroforestry

This theme, as such, is hopefully interesting for any nature lovers, as it is indeed a new and important theme in the policy arena, mixing traditional techniques with modern science. From a business point of view, it is obviously essential for farmers, as agroforestry not only provides solutions for soil degradation and increasing vulnerability to extreme weather conditions, but also for business development and economic diversification of an agricultural enterprise, generating social value too.

IV. The voluntary carbon market and the voluntary biodiversity market

Due to its innovative character, this theme might also have a general interest. Participating in these voluntary markets is a great opportunity for private or public landowners and users, as well as for nature conservation organisations, who can work with carbon or biodiversity project developers to unlock additional and more frequent revenue streams. However, it is also important to raise the responsibility and role of regional development organisations and business support organisations, again, to establish the first local connections between relevant banks and IT companies, as well as interested conservation organisations and forest management companies, with carbon project developers and enter this new market, if possible.

V. Nature-based solutions to boost landscape regeneration

EU policies have slowly been incorporating nature-based solutions, and therefore, compa-

nies that design, implement and use such solutions can find a business potential to operate with viable business plans and predictable management in a constantly expanding market. This chapter is mainly relevant for landscape architects, farmers and agricultural entrepreneurs, as well as architects.

VI. Business opportunities by connecting entrepreneurial skills with novel ecological ideas to create added value

The target group of this chapter is twofold. On the one hand, the Future Forest Initiative is another pioneering local ecosystem in Europe, boosting forest-based bioeconomy and innovation in forestry. Therefore, transferring this good practice and establishing something similar is a clear economic opportunity in the cross-border region of Croatia, Hungary and Slovenia, and Pannon Future Forest provides space and time to think over such a possibility with relevant regional stakeholders. The other, similar approach explained is the territorial CSR platform of the Nantes metropolitan area. The Corporate Sustainability Reporting Directive (CSRD) requires companies to report reliable sustainability data; therefore, and also based on the great natural assets of the cross-border region, there is a huge potential for creating a platform coordinating CSR activities and ESG resources along local environmental projects.

On the other hand, the service-based forestry business model, introduced through the Pannon Örökerdő, including nature-friendly forest management and digitalised urban forest solutions, can be an interesting business opportunity for local foresters and forest experts. The model of supporting bioentrepreneurship at Josip Juraj Strossmayer University of Osijek can be relevant to other regional universities, and cooperation among them related to forest-based bioeconomy can generate further added value.

VII. Environmental education and nature-based wellbeing as market-based activities

Environmental education is almost entirely a nonprofit mission, largely organised by NGOs, nature conservation and forest management organisations. Thus, it is not really about entrepreneurship. In this chapter, we highlight a good example of how a larger organisation makes it as a market-based activity successfully. Second, as the Benchmark Study intends to support entrepreneurial thinking and because we have dramatically lost our connection to nature and the COVID-19 pandemic painfully made it visible for all, we explain that there is a growing demand for getting back the connection to nature, and there is a still small, but growing market regarding forest bathing, forest therapy, ecopsychological walks and deep ecology trainings to facilitate human-nature connection and help people act more consciously. Last, but not least, a private school specifically embedding regeneration and nature conservation into its curricula is also introduced.

VIII. Potential of non-wood forest products within the food industry innovation

Food can be a major innovation power, through circularity, for example, targeting significant businesses. In this chapter, we focus more on smaller enterprises dealing with the edible forest and forest-to-fork concepts. This is very relevant for tourism service providers (e.g. restaurants, guest houses, tour guides) having a deep ecological knowledge to think over new viable business plans, while the last example, “Catch your trout” is an interesting business model for forest management companies.

IX. The visitor economy and regenerative tourism

This theme, as such, is hopefully interesting for anyone, as it is indeed a new and important theme in the policy arena, and frontrunner cities, like Copenhagen and Vienna, deal with it progressively. As it is about tourism, tourism service providers are the main target group of this chapter, but because the system approach behind the visitor economy concept, municipalities, destination management organisations and regional tourism boards are also very relevant.

I. Sustainable forest management, innovation and digitalisation

I. 1. Emerging trends in sustainable forest management, innovation and digitalisation

Emerging ecosystem service markets typically offer product bundles rather than single services. Carbon units may be combined with biodiversity units or water protection services. Timber production may be linked with recreation services or landscape resilience.

Reliable measurement systems are essential for ecosystem service markets. Monitoring technologies allow forest managers to demonstrate the results of specific forest management practices. Verified data transforms ecosystem services into credible, tradable products. Buyers – including companies, investors and public institutions – increasingly expect measurable and auditable outcomes.

A basic requirement for these markets is MRV (Monitoring, Reporting and Verification). MRV includes measurement, reporting and independent verification. It provides the trust infrastructure of ecosystem service markets. Without reliable MRV systems, buyers would face reputational risks, and market prices would decline. MRV solutions are therefore increasingly offered as separate services. These services include data platforms, remote sensing monitoring systems and audit packages. Ecosystem service products related to sustainable forest management can be grouped into five main categories.

- Carbon products: Carbon units generated through afforestation, restoration or improved forest management. Buyers purchase verified climate impact.

- Biodiversity products: Biodiversity units or verified nature-positive claims linked to measurable improvements in habitat quality.
- Water and risk management services: Nature-based solutions that reduce flood risks, erosion risks or water quality risks through contractual service agreements.
- Recreation and health services: Entrance fees, programme services, sponsorship agreements or corporate wellbeing programmes using forests as recreation infrastructure.
- Bioeconomy and non-wood products: Products derived from forest biorefinery side streams such as lignin or hemicellulose raw materials, as well as biopolymers, biocomposites and circular packaging materials.

For many forest owners, ecosystem service products are becoming economically important. Climate change and changing social expectations increase management costs. In many regions, timber revenues alone are no longer sufficient to cover these costs.

When forests remain unmanaged due to financial constraints, risks increase. These include forest fires, biological degradation and the spread of invasive species. Developing ecosystem service markets, therefore, also supports long-term forest management.

Many EU and national programmes support this transition. These initiatives aim to develop new forest-based markets and business models. In the long term, clearly defined ecosystem service products and reliable monitoring systems will provide the financial basis for sustainable forest management in Europe.

In summary, the product portfolio of sustainable forest management is expanding beyond timber. Ecosystem services are increasingly offered as marketable units, contractual services, verified claims or data-based products. These products provide additional income opportunities for forest owners while maintaining ecosystem services for society.

In the coming years, the key challenge will be scaling ecosystem service markets while maintaining credibility. Reliable MRV systems and quality assurance frameworks will be essential. Where these systems function well, ecosystem service products can become a stable component of sustainable forest management business models.

This benchmark study addresses several related topics, including wood-based design, carbon and biodiversity products, and recreation and tourism. The present chapter focuses on examples where forest management practices are transformed into marketable products, with particular attention to innovations related to digitalisation and monitoring technologies.

I. 2. Explanation of the theme's business potential through good examples

Across Europe, numerous initiatives aim to increase forest-based revenues and develop ecosystem service products. Sustainable forest management is a basic requirement for these initiatives. Many projects focus on data-driven decision-making and knowledge transfer. Cooperation between forest managers and research institutions is common. Several initiatives have been developed within the framework of the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI). Other projects provide additional good practice examples.


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I. 2.1. Climate adaptation projects

I. 2.1.1. The RED FAITH project

The project "Restoring Ecological Diversity of Forests with Airborne Imaging Technologies (RED FAITH)" was funded by the HU-HR CBC Programme. The cross-border region has significant natural values. Climate adaptation and environmental protection are therefore important priorities. Forest ecosystem services support biodiversity, provide biomass resources and create employment opportunities in rural areas. Forests also play an important role in recreation.

Forestry organisations in the region recognised that forest monitoring is essential for preventing the spread of invasive species and other threats. The main objective of the project was to develop a detailed monitoring system supported by airborne imaging technologies. The system provides forestry organisations and habitat management authorities with up-to-date monitoring data. This enables faster responses to emerging threats and supports more effective forest management decisions.

Within the project, forestry organisations surveyed 24,838 hectares of forest area using airborne imaging technologies and predefined monitoring parameters. In addition, three hectares of forest infested with invasive species were treated and restored using mechanical and chemical methods. The pilot project enabled the identification of tree species, the assessment of forest stand values and the detection of invasive species and diseases. The results were integrated into regional digital planning maps used for environmental and energy investment planning.

I. 2.1.2. Remote sensing forest condition monitoring system

Since 2016, the Forest Research Institute of the University of Sopron has been developing the Remote Sensing Forest Condition Monitoring System (TEMRE). The system evaluates the health condition of Hungarian forests using satellite imagery. Vegetation indices are calculated from time-series data obtained from MODIS (250 × 250 m) and Sentinel-3 (300 × 300 m) satellites. These indices allow the estimation of photosynthetic activity, which is closely related to forest health.

Disturbances in forests reduce photosynthetic activity and vegetation index values. Such disturbances may include abiotic damage such as drought, forest fire or snow break. They may also include biotic damage caused by insects or fungal infections. In many cases, these impacts occur together.

The TEMRE system can detect and monitor large-scale forest disturbances. However, identifying the exact causes usually requires additional field observations. The monitoring system uses the Normalised Difference Vegetation Index (NDVI) as a standard indicator. MODIS data are compared with the average of the past 22 years, while Sentinel-3 data are compared with the average of the past five years. This allows the system to evaluate current forest conditions relative to a normal state. The monitoring workflow uses automated R-based processing scripts. These scripts download, align and process satellite images and calculate NDVI values. The results are displayed through a geoserver-based online platform.

Additional data layers support interpretation. The system can display the distribution of the ten most important tree species within each pixel. These include beech, sessile oak, pedunculate oak, black locust, Turkey oak, Scots pine, Austrian pine, hornbeam and poplar species. Site condition maps are also available. These include forest climate classification, altitude, slope, exposure, groundwater depth, hydrology and soil characteristics.

I. 2.2. Supporting decision making in sustainable forest management

I. 2.2.1. WoodChainManager (WCM)

WoodChainManager is an innovation developed by the Slovenian Forestry Institute. It is a web-based tool designed to estimate the costs of forest biomass supply chains. The system includes three user modules. These modules allow users to calculate the material costs of individual machines or the total cost of an entire harvesting system. Users can analyse the impact of different technologies on overall costs. The tool helps optimise workflows and improve operational efficiency.

The platform visualises the timber supply chain from standing trees to final products. It provides cost calculations for different technologies and machine configurations. The main objective is to increase awareness of cost structures and support better technological decisions in forest operations.

The database includes data on more than 100 forestry machines and equipment types. This allows users to compare harvesting systems and make informed operational decisions. The online tool is freely available. Users can define which operations are included in the production chain.

These operations may include harvesting, delimbing, cutting, chipping and transport. Users can also define where these operations take place, for example, at the stump, at forest landings or along forest roads.

The tool suggests suitable technology sets for the selected operations. Users can select from various machines and equipment, including winches and forestry trailers. The calculations include not only direct material costs but also machine performance indicators. This allows cost calculations per product unit, such as €/m^3. The latest version of the system also includes labour cost calculations.

The WoodChainManager provides several functions:

- visualisation of forest production chains with cost calculations
- definition of harvesting and production standard
- unit conversion and energy calculators for different wood fuel forms
- roundwood classification
- forest road planning tools
- work quality evaluation using a checklist-based assessment.

I. 2.2.2. DualWing Forestry Ltd.

DualWing Forestry Ltd. is an innovative forestry startup based in Kőszeg, Hungary. The company focuses on integrating modern technologies into forest management, particularly drone-based remote sensing and digital data processing. The company's approach is based on data-driven forest management. Instead of relying on estimations, management decisions are based on accurate and real-time data.

DualWing solutions significantly reduce the time required for traditional forest inventory surveys. Field inventories that previously required several weeks can now be completed within a few hours. At the same time, accuracy can exceed 95 per cent. These technologies are particularly valuable in regions affected by drought, such as the Carpathian Basin. Multispectral monitoring allows early detection of stress in forest stands. This enables timely interventions, such as salvage operations or irrigation planning for newly planted seedlings.

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The main services of the company include:

- Data-driven timber logistics: Drone imagery is used to create high-resolution digital surface models. These models allow accurate volume estimation of timber piles.
- Forest monitoring: Drone-based remote sensing is used to analyse vegetation condition. NDVI-based measurements allow the detection of stress levels and estimation of wildlife damage, drought damage or frost damage.
- Transparency and planning: The company provides digital and auditable forest inventories. These support predictable site management and improve supply chain transparency.
- International cooperation: The company cooperates with several international partners. These include the Swedish company Katam Technologies in the field of data processing and the Austrian company Papierholz Austria GmbH. Together, they develop future-oriented forestry solutions.

I. 2.3. Ecosystem products and social engagement

I. 2.3.1. GreenBee Project – University of Sopron

Bees have been used for environmental monitoring for several decades. In 1935, J. Svoboda demonstrated that the honeybee (Apis mellifera) can be used to detect industrial pollution. In 1962, bees were used to detect increased concentrations of radioactive strontium-90 in the environment. Since the 1970s, bee colonies have increasingly been used to monitor industrial pollution, particularly heavy metals, agricultural pollution such as pesticides, and radioactive contamination. Technological development has expanded the possibilities of bee-based monitoring. Two main monitoring approaches can be identified.

The first approach focuses on the real-time monitoring of bee colony parameters, such as activity levels, mortality, temperature and humidity. The second approach analyses materials collected by bees, including nectar,

pollen, propolis and water. These materials can provide information about environmental pollution and biodiversity conditions. One well-known example of this method is the bee-based biomonitoring system used at airports in Germany.

Honeybees are particularly suitable for environmental monitoring for several reasons. The presence and activity of bee colonies already indicate environmental quality. Bee colonies require sufficient biodiversity to collect nectar, pollen, propolis and water. The materials collected by bees may contain environmental contaminants. These substances can be detected through laboratory analysis of bee products or the bees themselves. Bee colonies collect materials from a defined area around the hive.

This area typically covers a radius of 1.5–2 kilometres. As bees explore this area intensively, a single monitoring apiary can provide environmental data from approximately 7–12 km^2. A typical colony contains around 60,000 bees, of which approximately half are active foragers. These bees perform several foraging flights per day and visit hundreds of flowers. During this process, they collect large amounts of environmental information.

Within the GreenBee project, bee colonies are placed at corporate sites. The collected materials are analysed to detect environmental pollution and to assess biodiversity conditions through pollen analysis. The results are shared publicly as part of corporate social responsibility initiatives. This approach also supports community engagement and environmental awareness.


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I. 2.3.2. Woodlanders.com

Woodlanders is a subscription-based knowledge platform built around documentary films and essays. The platform focuses on woodland cultures, meaning traditional forest-related knowledge, crafts and land-use practices.

The project provides films, written materials, photographs and downloadable resources. The aim is to go beyond general environmental communication and provide deeper knowledge about the relationship between forests, livelihoods and long-term landscape sustainability.

From the perspective of ecosystem services, the platform has a strong educational impact. Through storytelling, it translates complex concepts such as resilience, biodiversity, water protection and risk mitigation into understandable real-world examples.

The audience, therefore, gains not only information but also practical models of behaviour. These include forest management decisions, material choices and long-term landscape stewardship practices. From a business perspective, the platform follows a creator-economy model. After the initial production costs, digital content can generate revenue for a long period through archive value. Community-supported funding and advertisement-free content strengthen credibility and provide predictable recurring revenue. Premium access includes the film archive and additional educational materials.

The model can also expand into B2B markets. Possible directions include educational licences, content packages for corporate ESG or wellbeing programmes, and partnerships with forestry or

conservation organisations. The strength of the Woodlanders project lies in presenting sustainability not as a campaign but as a long-term cultural and knowledge product. This approach can create a distinctive market position in the field of forest-related content.

I. 2.3.3. Institutional good practice: Urban Forest Innovation Lab, Cuenca (Spain)

UFIL Cuenca (Urban Forest Innovation Lab) is a programme that supports entrepreneurship and job creation based on sustainable forest management. The programme combines training, incubation and field testing in a region with extensive forest resources but underdeveloped forest-based economic activity.

The programme was initiated by the municipality of Cuenca and its partners. The region has approximately 53,000 hectares of forest, representing about 65 per cent of the municipal territory and largely belonging to the Natura 2000 network. The UFIL model does not focus on a single technology. Instead, it builds an innovation ecosystem consisting of several elements:

- training programmes on forest bioeconomy, business development and environmental innovation
- incubation and mentoring support for developing projects into prototypes
- real-world testing in the forests of Cuenca with professional monitoring
- knowledge development and sectoral action planning

From a business perspective, the programme provides an institutional pathway for market entry. Participants receive not only ideas but also access to real market needs, development tools and mentoring support. The partnership structure supports this objective. The programme involves local government, universities, regional authorities, business organisations and forestry sector partners.

The institutional model is based on four main pillars:

1. Forest as a test environment: Field validation reduces market entry risks for new solutions.
2. Integrated training and incubation: Forestry knowledge is combined with innovation and business skills.
3. Challenge-based innovation: Solutions are developed for real forestry, processing and service challenges.
4. Sectoral cooperation and action planning: New enterprises develop within a coordinated regulatory, training and market environment.

II. Wood-based design

II. 1. Emerging trends in wood-based design

II. 1.1. Wood-based design and long-term carbon storage

In contemporary design, where synthetic materials and digital aesthetics often dominate, the renewed interest in wood reflects not only aesthetic preferences but also broader environmental and societal considerations. Wood-based design increasingly represents a comprehensive design approach that combines engineering performance, human wellbeing and climate responsibility. Wood is one of the few construction and design materials that can simultaneously provide structural performance, aesthetic value and measurable environmental benefits. As a result, wood-based design is becoming an important component of sustainable construction and interior architecture.

II. 1.2. Natural aesthetics and biophilia

The popularity of wood-based design is strongly connected to the concept of biophilia, the human affinity for natural materials and environments. Research indicates that visible wood grain, natural textures and characteristic scents can reduce stress levels and support concentration. For this reason, contemporary interior architecture increasingly uses wood not only as a finishing material but also as a central design element. Design trends such as Japandi and Scandinavian minimalism emphasise the natural character of wood. Knots, growth rings

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and colour variations are considered expressions of authenticity rather than defects.

II. 1.3. Wood as a long-term carbon storage material

An important environmental advantage of wood-based products is their contribution to climate mitigation through long-term carbon storage. The production of many conventional construction materials, such as concrete, steel and plastics, is associated with significant greenhouse gas emissions. In contrast, trees absorb carbon dioxide from the atmosphere during their growth. When harvested wood is used in durable products such as buildings or furniture, the carbon stored in the biomass remains locked in the material. This process can last for decades or even centuries. On average, one cubic metre of wood stores approximately one tonne of carbon dioxide. As a result, wooden structures, floors or furniture can function as long-term carbon storage reservoirs. From a design perspective, durability therefore becomes an important climate factor. The longer a wood product remains in use, the longer carbon remains stored in the material.

II. 1.4. Renewable raw material from sustainable production

The environmental benefits of wood depend strongly on the conditions under which the raw material is produced. Wood can only be considered a sustainable material if it originates from legal and sustainably managed forests. Wood-based design is therefore closely linked to sustainable forest management (SFM). Responsible forest management integrates timber production into forest ecosystems while maintaining soil protection, water regulation, habitat diversity and climate resilience.

One of the main advantages of wood compared with many industrial materials is its renewability. Wood can be produced and regenerated within human timeframes, unlike fossil-based or mineral raw materials. Supply chain transparency is therefore a key issue. Certification systems such as FSC and PEFC, as well as other traceability mechanisms, assure the legal and sustainable origin of wood products.

Local sourcing and shorter supply chains can further reduce environmental impacts and minimise the risk of greenwashing. Long-term carbon storage benefits are meaningful only when wood originates from forests that are sustainably managed and continuously regenerated.

II. 1.5. Technological innovation and the use of underutilised species

One of the most important technological developments in wood-based design is the increasing use of underutilised tree species, such as poplar, willow or certain pine species. Historically, these species were considered less suitable for high-quality construction or interior applications due to their lower density or durability. However, recent technological developments have significantly expanded their potential.

Innovative treatments such as thermal modification, nanocellulose reinforcement and acetylation modify the structure of wood at the molecular level. These processes improve durability, dimensional stability and resistance to biological degradation. As a result, fast-growing species can now achieve performance characteristics comparable to traditional hardwoods. Species that were previously used mainly for pulp production or energy purposes can therefore be applied in long-lasting structural or design products.

This technological shift supports the more efficient use of forest resources, reduces pressure on slow-growing hardwood species and enables the utilisation of locally available timber. Wood-based design should therefore be

understood not as a short-term trend but as part of a broader transformation of the built environment. Wood is unique among construction materials in combining renewable origin, structural performance and long-term carbon storage. Technological innovation now enables a wider range of species to be used in durable products that support both sustainable construction and climate mitigation.

II. 2. Explanation of the theme's business potential through good examples

II. 2.1 Prefabricated wooden houses

Prefabricated wooden houses represent a rapidly growing segment of sustainable construction. These buildings are energy-efficient and can be assembled quickly due to factory-produced structural elements. In the Hungarian market, common solutions include lightweight panel systems, log houses and laminated timber structures.

One of the established companies in this sector is Ubrankovics Gerenda- és Készházgyártó Kft., a Hungarian timber construction company with more than three decades of experience. The family business was founded in 1990 and combines Austrian and German construction technologies with domestic market needs. Today, the company specialises in premium timber houses. The company's headquarters and manufacturing facilities are located in Ágfalva, near Sopron. Ubrankovics focuses strongly on environmentally responsible construction. Its buildings use natural materials and often achieve near-zero or positive energy performance levels. At the Ágfalva site, the company operates a demonstration house that illustrates the thermal insulation capacity of timber structures. A 95 m^2 building can be heated using a single low-power radiator. The company's activities are organised around three main segments:

- Large-panel prefabricated houses: Structural panels are manufactured in factory conditions using high-precision CNC technology, enabling rapid on-site assembly.

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- Log houses: Custom-designed timber buildings that combine traditional architectural appearance with modern energy standards.
- Outdoor timber architecture: Construction of complex timber structures such as roof systems, observation towers and other engineered wood structures.

II. 2.2. Lumar houses

The Slovenian company Lumar (Lumar IG d.o.o.) is one of the leading manufacturers of low-energy and passive prefabricated houses in Slovenia and the wider region. The company has more than twenty years of experience in sustainable construction technologies and modern architectural design.

Key characteristics of Lumar houses include:

- Wood-based structural systems: Buildings are constructed using high-quality timber materials.
- High energy efficiency: The company focuses on passive and near-zero energy buildings. Advanced insulation systems and airtight structures ensure low operational costs.


© Lumar IG d.o.o.

- Fast construction process: Prefabrication significantly reduces construction time. The period from structural assembly to completion can often be achieved within approximately 180 days.
- Factory-controlled quality assurance: Manufacturing takes place in controlled industrial conditions, enabling consistent quality standards.
- Long-term guarantees: Lumar provides a 35-year structural guarantee for its buildings.

II. 2.3. Solid wood furniture from reclaimed timber

Furniture made from reclaimed timber represents a growing niche within the sustainable design market. Several Hungarian workshops specialise in the reuse of timber originating from demolished buildings. Old beams and planks are transformed into contemporary or rustic furniture such as tables, beds and interior surfaces.

One of the leading companies in this field is Retro Holz Kft., based in Kecskemét and internationally operating under the brand Rustic and Wood. The company specialises in recycling timber from historic buildings and producing rustic furniture and interior cladding materials. The company's expertise lies in sourcing reclaimed timber from old houses, barns and roof structures. These materials are often 80–120 years old and have developed distinctive textures and natural patina that cannot be reproduced in newly harvested wood. Products manufactured from reclaimed timber are typically unique. Each piece has individual characteristics and historical value. Such furniture is particularly attractive for customers interested in loft, industrial or modern rustic interior styles. From an environmental perspective, reclaimed timber significantly reduces resource use because no additional trees need to be harvested.

The production process involves several steps:

- Selection and cleaning: Reclaimed wood is inspected using metal detectors to remove old nails and other metal components.
- Drying and heat treatment: This stage eliminates pests and stabilises the moisture content of the wood.
- Manual finishing: The natural character of the timber is preserved. In many cases, traces of traditional carpentry remain visible in the final product.

II. 2.4. Hello Wood - creating inspiring places to live, stay, and connect with nature

Hello Wood is a Hungarian award-winning architecture studio with a clear vision on shaping the future of sustainable timber architecture by creating inspiring places to live, stay, and connect with nature. Through innovative design, advanced construction methods, and CLT technology, they set new standards for contemporary architectural development. Whether it is large-scale planning, resort development or a solo cabin in the woods, they always focus on high-quality architectural developments using CLT technology and natural materials.

But Hello Wood is even more: besides designing and building, they have a lot of cool, nationally well-known and socially committed projects. As a social enterprise, for example, they believe that the education of future designers is key to our planet. This is why they organise summer university programs and design workshops based on their philosophy of learning by doing from the very beginning.

They believe in the synergy of technology and innovation, fostering live connections with universities and staying at the forefront of the latest research. Their commitment to technological innovation drives Hello Wood to create sustainable, high-quality solutions that exceed expectations and inspire positive change.

A culture of environmental responsibility drives Hello Wood's commitment to sustainability. They prioritise eco-conscious practices in all aspects of work, from design to production and beyond. They are committed to utilising renewable materials in their projects, prioritising sustainable sourcing and environmentally friendly practices. By contributing to the preservation of natural resources in their designs, they minimise their environmental footprint. Social responsibility is another key factor behind Hello Wood. Their initiatives that support education, equality, and well-being aim to contribute to a more inclusive and just society.

Hello Wood was founded in 2010 by architect András Huszár, media designer Dávid Ráday, architect Péter Pozsár, and economist Maxim Bakos. Due to its fresh, youthful, and innovative artist-architect attitude, Hello Wood has become a renowned architect and art lab, an installation artist, a distinctive social organiser, and an award-winning architect collective in the region in a short period of time. In 2020, Hello Wood Zrt. was established by András Huszár, Dávid Ráday, and Krisztián Tóth, marking a new chapter in the studio's growth and development.


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II. 2.5. Čar lesa – "the magic of wood"

Čar lesa ("the magic of wood") is an annual Slovenian exhibition series organised since 2009. The initiative promotes wood as a sustainable material and showcases timber architecture and wood-based products. The main exhibition takes place at Cankarjev dom in Ljubljana, while additional events are organised across the country. The objective of the initiative is to raise awareness among consumers about the environmental benefits of wood and the role of timber products in a sustainable bioeconomy.

The organisers include the Slovenian Wood Protection Society (Društvo za zaščito lesa Slovenije) and the Wood Council of Slovenia (Svet za les). The 2026 exhibition continues to promote the transition towards a low-carbon bioeconomy based on wood products and sustainable forest resources.

II. 2.6. A unique product in a saturated market: wooden eye-glass frames

The Hungarian brand Fabala provides an example of how a wood-based product concept can create differentiation in a saturated market such as eyeglass frames. The basic concept is simple: frames are produced from wood using manual craftsmanship in Hungary. The product, therefore, combines design value with a sustain-ability narrative based on renewable materials and long product lifetimes. Fabala products are also present on the Croatian market, and the company's website is available in both Hungarian and Croatian.

An important element of the business model is product personalisation. Customers can select frame shapes and colour combinations according to their preferences. This positions the product as a design accessory rather than a standard optical frame. The company also integrates sustainability principles into the broader product concept. Packaging avoids plastic materials and uses alternatives such as cork eyeglass cases. Fabala also supports tree-planting initiatives in cooperation with the Hungarian Forestry Association, strengthening the link between product design and responsible forest use. The business model is built around four main elements:

1. Selection of renewable materials that remain visible and tangible in the final product.
2. Combination of artisanal production and personalisation to differentiate from mass-produced frames.
3. Consistent supply chain management from raw material sourcing to packaging and environmental initiatives.
4. Cooperation with optical retailers to provide professional fitting and strengthen consumer trust.

III. Agroforestry

III. 1. Emerging trends in agroforestry

III. 1.1. Agroforestry as the sustainable land use of the future

Modern agriculture is at a crossroads. The intensive, monocultural production models of recent decades, although they ensured high yields in the short term, have by now led to serious environmental problems: soil degradation, a drastic decline in biodiversity, and increasing vulnerability to extreme weather conditions. In addition, climate change is altering site conditions and requires increasingly intensive interventions in order to maintain former average yields. In this critical situation, agroforestry appears not simply as an old-new method, but as one of the most effective tools of regenerative agriculture, capable of combining productivity with environmental stability.

III. 1.2. Synergy: more than trees on arable land

The essence of agroforestry is the deliberate and systematic integration of woody plants – trees and shrubs – into agricultural crop production or livestock farming. It is not simply a matter of scattered trees, but of a consciously designed ecosystem in which the interactions between the components create the real value of the system.

In alley cropping systems, trees create a protective framework around field crops. With their deep root systems, they take up nutrients from lower soil layers and, through falling leaves, make them accessible again to the upper

layers of the soil. Silvopasture represents a new level of animal welfare, where the shade and wind protection provided by trees directly improve the condition of livestock, while the biodiversity of the pasture also becomes richer.

III. 1.3. Climate adaptation and soil protection

In the era of climate change, one of the most important functions of agroforestry is protection. Shelterbelts and tree rows integrated between fields significantly reduce wind speed, thereby mitigating wind erosion and evaporation. During a dry summer, the microclimate created by trees can be several degrees Celsius cooler than that of an open field, which may mean a critical difference for crop survival. Shading also plays an important role in reducing extreme radiation.

At the same time, woody biomass can also function here as a living carbon reservoir. While arable crops capture carbon dioxide only seasonally, trees integrated into agricultural landscapes store carbon for decades in their trunks, extensive root systems and the surrounding soil, thereby actively contributing to the carbon neutrality of agriculture.

III. 1.4. Economic diversification and social value

Agroforestry breaks with the risks of depending on a single source of income. For the farmer, the land produces not only grain or meat, but also usable timber, fruit or even medicinal plants. This multi-layered production model increases the total yield per unit area, expressed through the Land Equivalent Ratio, and provides a safety net against fluctuations in market prices.

Technological innovation is also present in this field. Modern precision tools and agroforestry software make it possible to design tree rows in such a way that they do not hinder large-scale mechanised cultivation but complement it. The inclusion of currently underutilised, fast-growing tree species also makes it possible for farms to gain access, within a relatively short period, to their own renewable energy sources or industrial raw materials.

Agroforestry is a high-level synthesis of landscape design and food production. It is not a step backwards into the past, but a high-tech ecological solution that responds to some of the most urgent questions of the 21st century. By reuniting trees and agriculture, it becomes possible to create flexible, resilient and profitable landscapes that not only serve human needs but also become active tools of climate adaptation.

III. 2. Explanation of the theme's business potential through good examples

III. 2.1. Domaine de Restinclières (France, Montpellier)

The Domaine de Restinclières, near Montpellier, is one of Europe's most important agroforestry research sites and demonstration farms. On the experimental area of 40–50 hectares established in the early 1990s, ecological synergies between trees and arable crops were demonstrated in a pioneering way. Several combinations are studied on the estate, all of which can also be integrated into modern mechanised agriculture:

- Silvoarable system (Walnut + cereals): wheat and barley are grown between hybrid walnut trees planted with 13-metre spacing.
- Silvoarable system (Poplar + cereals): cultivation takes place between rows of poplar trees on the alluvial plain along the River Lez.
- Vitiforestry: forest belts have been integrated into vineyards in the central part of the area.

These examples show that agroforestry can be adapted not only to small-scale or traditional systems, but also to modern, mechanised agricultural production.

III. 2.2 The AFINET project

AFINET (Agroforestry Innovation Networks) was a large-scale European project whose aim was to support the transfer of agroforestry knowledge and innovation between researchers and practitioners, especially farmers. The project was funded by the European Union under the Horizon 2020 programme and coordinated by the University of Santiago de Compostela in Spain.

One of the most important practical outcomes of the project was the Agroforestry Knowledge Cloud, which contains more than 100 innovative solutions and numerous factsheets. These materials are short, accessible guides that provide answers to concrete technical and economic questions. The summary Handbook includes, among others, the following types of guidance:

1. System design and establishment

- Hedgerow planting and windbreak belts: guidance on the selection of suitable tree species and spatial design to improve wind protection and biodiversity.

- Alley cropping: how farms can be diversified by combining arable crops with tree rows.
- Protective nets and individual protection: how young seedlings can be protected against wildlife damage or grazing livestock, including practical experiences from Hungary.

2. Crop production and innovative products

- Mushroom cultivation in afforested areas: how the understorey vegetation of forest belts can be used for edible mushroom production.
- Medicinal plants in agroforestry: guidance on growing medicinal and aromatic plants in orchards or under tree rows.
- Walnut and sweet chestnut systems: specific technological descriptions for integrating these species into agroforestry systems.

3. Livestock production (silvopastoral systems)

- Benefits of shade and shelter: how tree cover improves animal welfare and meat

quality in livestock such as cattle and poultry.

- Fodder from tree foliage: the use of branches and leaves from pruning as supplementary animal feed.

4. Plant protection and soil renewal

- Biological control: for example, whether hedgerows help pest control in vineyards, with case-based evidence on the settlement of predatory insects.
- Weed control: experiences from Hungarian tree-row systems.
- The AFINET project is a strong example of how European innovation networks can transform scientific and practical agroforestry knowledge into directly usable decision-support materials.

III. 2.3. Mushroom cultivation in agroforestry systems: forest-based side product and additional income (AFINET – Finnish good practice)

Mushroom cultivation is a strong agroforestry good practice when trees do not simply "provide space" for production, but themselves become part of the production infrastructure: either in the form of logs used as growing substrate, or as standing trees that generate additional yield in a way aligned with the rhythm of forest management. A workshop organised by the Finnish RAIN network of AFINET and the Gifts from Metsä forest farm in Karjalohja presented these two models: a more intensive log-based cultivation method and a lower-intensity model integrated into forest management.

1. Log cultivation – edible and medicinal mushrooms

The essence of this model is the cultivation of species such as shiitake, oyster mushroom and reishi on birch logs, although poplar, alder and oak may also be suitable. Holes are drilled into the logs, and plugs inoculated with mycelium are inserted; in the case of larger logs, special inoculation tools can also be used. With proper management, shiitake and oyster mushrooms may produce two harvests within one season, with approximately eight weeks between harvests, and one log can remain productive for three to four years.

Business logic: this is a wood-based, non-timber product with a low entry threshold, which can be started even on a small scale, while the log, as a forest side stream, becomes a marketable cultivation substrate.

2. Chaga – a model integrated with forest management

The second approach involves the cultivation of the medicinal fungus chaga on standing birch trees, which can also be aligned with continuous-cover forestry. Inoculation is recommended for individuals that the forest manager would in any case remove during the first thinning. In the presented example, the market value of birch from thinning is only a few euros, while the value of chaga yield from a single tree may reach EUR 100. The first harvest can be expected after five to six years; after this, two additional harvests are possible, and the tree may then still be harvested, for example, for fuelwood or pulpwood.

Business logic: the same tree can be utilised as two different products over time: first as a mushroom yield, later as wood.

Elements of the business model that can serve as a model

1. Tree as production infrastructure: both logs and standing trees function as cultivation substrate, and species selection and timing are decisive.
2. Layered value creation: thinning wood can be upgraded from a low-value mate-rial into a higher value-added product, while timber value can still be realised later.

3. Knowledge transfer: workshop-based training and access to starter inoculation material reduce technological risk and accelerate testing.

This example is particularly important because it shows that agroforestry can create not only a more stable ecological system, but also new value chains based on knowledge-intensive diversification.

III. 2.4. The Blue Pig Farm (France)

The Blue Pig Farm is a model farm in western France, in Noyant-la-Gravoyère, and one of the key experimental sites of the European AGROMIX project. The farm is led by Carl Sheard, who has placed animal welfare and sustainability at the centre of the operation.

Main features of the farm

- Area: an approximately 6.6-hectare organic farm where pig farming, tree planting and forage production are combined.
- Livestock: the farm takes its name from its distinctive “blue pigs”, bred from a cross between the rustic Saddleback and a white pig breed, their colour recalling the shade of the local slate mines.
- Main objective: the farmer aims to achieve full autonomy through home-grown feed, maximise animal welfare and produce premium-quality meat.

Applied agroforestry solutions

- Natural protection: planted trees and hedgerows provide shade for pigs during hot periods and act as windbreaks in colder weather.
- Feed supplementation: the fruits and foliage of trees such as oak, sweet chestnut and mulberry provide a natural feed source for the animals.
- Circularity: pigs contribute to vegetation growth through natural fertilisation, while being able to root and move freely.
- Biodiversity: nest boxes and wildflower strips have been installed on the farm to support birds and insects, thereby strengthening the local ecosystem.

This example demonstrates how agroforestry can support a premium, welfare-oriented livestock model while also providing environmental co-benefits. There are also European networks in which Hungarian experts participate and which promote the “orchard-pig” (P’Orchard) system. The essence of the concept is that pigs are allowed into orchards, where they carry out weed control and remove fallen, diseased fruit, while the trees provide shade. By 2025–2026, this system had become the basis of several demonstration farms, because the products generated in this way can be sold at very high prices in niche markets such as premium and organic meat.

III. 2.5. PP Orahovica (Croatia)

PP Orahovica is one of Croatia's leading agricultural companies, operating in the unspoilt natural environment of eastern Croatia, between the River Drava and the Papuk Mountains. The company's activities are among the best examples in the region of a modern, large-scale approach to agroforestry, as it organically combines fruit production, livestock farming and nature protection. Its diversified portfolio allows synergies to be realised between different sectors.

Main components of the model

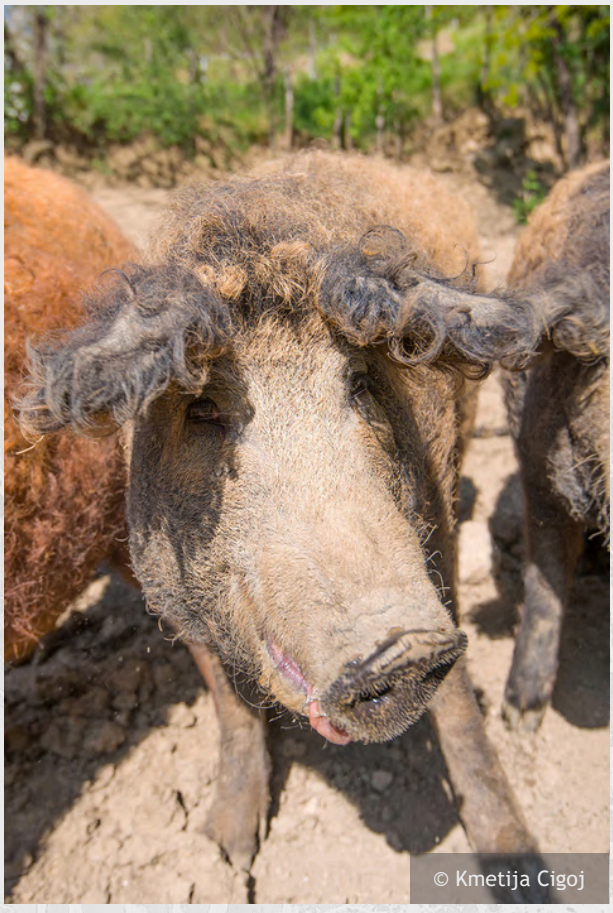
- Hazelnut production: the company is the largest hazelnut producer in the region, with more than 300 hectares of plantations. Varieties include Istrian Long, Roman and Hall's Giant. These plantations not only provide economic return but also function as ecological corridors as part of the landscape.
- Silvopastoral system (forest grazing): the company's pastures are located directly next to Papuk Nature Park. Here, cattle graze under natural conditions, often in areas with trees, which improves animal welfare through shading and supports soil fertility.
- Fish farming: more than 900 hectares of fishponds, such as Grudnjak, function as artificial wetlands of high ornithological value and form a close unit with the surrounding wooded areas.
- Arable crop production: more than 5000 hectares are managed using precision agriculture, where, in addition to growing wheat, maize and oilseed rape, strong emphasis is placed on soil protection and sustainable resource management.

The cornerstone of the company's strategy is sustainable development and the rational use of non-renewable resources. Since a significant part of its land lies at the boundary of the UNESCO Geopark Papuk, production processes are organised under strict environmental standards. Its modern processing facilities, such as hazelnut cleaning and drying units, process not only its own produce but also the products of local smallholders, thereby helping to maintain the local economic community.

The example of PP Orahovica clearly demonstrates that even large-scale agriculture can integrate agroforestry elements when diversification and nature-based management become central pillars of profitability.

III. 2.6. Kmetija Arkade (Cigoj Farm - Slovenia)

One of the most characteristic and still actively operating examples of agroforestry in Slovenia is Kmetija Arkade (Cigoj Farm), located in the Vipava Valley in Črniče. Although the farm is primarily known as a winery and hospitality venue, its production model is based on a classic silvopastoral system.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A typical agroforestry activity on the farm is forest-based pig keeping. The business is known for raising the indigenous Krško Polje pigs (Slovenian spotted pigs). The animals are not kept in stables but are free-ranging and forage in areas bordering oak forests. This method directly improves meat quality, from which the farm produces its internationally known pršut (dry-cured ham). In this integrated approach, trees provide shade and food, such as acorns and wild fruits, while pig manure improves the soils of wooded areas.

It is also important that the farm does not only produce raw material. Products are processed in its own restaurant, which means that the agroforestry method itself has become part of the farm's marketing and value proposition. This example is particularly relevant because it shows that agroforestry can serve not only as a production method, but also as a strong element of place-based gastronomy and rural tourism.

III. 2.7. Silvopasture translated into a premium product: Kumparička (Istria, Croatia)

The Kumparička organic goat farm is a good agroforestry example of how a wooded, mosaic landscape at the edge of forest and pasture – in other words, silvopasture – can be turned into a tangible business advantage. Livestock production here is not based on treeless grassland, but on land structured by trees, shrub belts and forest edges. In this system, trees are not merely landscape elements. They improve the microclimate through shade and wind protection, reduce heat stress, mitigate drying out, and extend the vegetation period of the grass layer. At the same time, woody elements bring forage and habitat diversity, including varied herbaceous species and shrubs, which ultimately becomes market value through the composition of goat milk and the distinctive character of the final product.

The key to the business implementation is that Kumparička does not sell a mass raw material, but packages and narrates the quality derived from wooded land use in a premium artisanal product, namely cheese. The customer offer is therefore not simply "good cheese", but a visibly nature-based production system: grazing under trees, strong connection to place, animal welfare and farming adapted to local ecological conditions. The benefits associated with trees – cooler microclimate, more diverse feed, and a more stable production environment – also function as risk management. In Mediterranean-type summers, heat stress and drought are direct business risks, and silvopasture can mitigate them.

Kumparička strengthens the "product + landscape" logic with experience-economy elements. Tastings, visitor programmes and hospitality help show what is difficult to communicate on a label alone: that behind the cheese stands a wooded-pasture agroecological system. This simultaneously increases trust, supports premium pricing and reduces exposure to price competition on the mass market.

The business model is built on four pillars.

1. Integration of woody elements into production: silvopasture in which shade, microclimate, diversity, soil protection and water retention are translated into business value.

2. Processing and premiumisation: instead of selling raw material, the farm produces high-value-added artisanal cheese with consistent quality positioning.

3. Direct sales and visitor experience: tastings and on-site presence function both as marketing and as an independent source of revenue.

4. Narrative and credibility: transparent communication of wooded land use and animal welfare elements supports reputation and makes a higher price level sustainable.

This is a good example of how agroforestry can

generate added value not only through production, but also through branding and visitor experience.

III. 2.8. Arable land and trees in one field: Biohof Steindl (Wolkersdorf im Weinviertel, Austria)

The Austrian Biohof Steindl is an agroforestry example of how arable production can be combined with valuable timber production while preserving the cultivability of the field. The family farm cultivates 25 hectares of arable land and has 75 hectares of mixed deciduous forest. Its crop rotation includes lucerne, winter wheat, winter rye and a triticale-pea mixture. The silvoarable system was established in 2009 on a 4-hectare field of weaker quality, partly located on a former clay extraction site and structured by slope elements.

The essence of the system is an arable field structured by tree rows. An in-row spacing of 12 metres was selected, and the inter-row distances were designed according to mechanisation logic: the spacing is divisible by 3 metres, which means that all machinery, from seed drills to cultivators, can move through the field. The trees were planted specifically with the aim of producing valuable timber. A total of 60 trees were planted, mainly hybrid walnut (Juglans x intermedia, clones NG23 and MJ209); black walnut was planted at the edge of the field, while white mulberry (Morus alba) was used in the weakest spots as a climate-tolerant hardwood species. The hybrid walnut planting material was sourced from France. In species selection, an important consideration was that the plantation should not create unmanageable side effects for arable production, for example, wildlife damage caused by fallen nuts attracting animals.

The key to the business implementation is dual utilisation. Arable production continues between the tree rows, while the trees become long-term capital assets in the form of future high-value logs. The viability of the system depends on consistent management. In the first years, lateral root expansion was controlled by deeper cultivation along the tree rows, using cultivation to a depth of approximately 25–30 cm. To produce high-quality stems, annual formative pruning and branch-free stem management for future timber sales are carried out. Protection against wildlife is also an integral part of the cost and labour requirements of the system.

The business model is built on four pillars.

1. Turning marginality into advantage: valuable timber species are planted on weaker parts of the field, supplementing arable income with a long-term forestry asset.

2. Preserving mechanisation: the 12-metre spacing and row widths aligned with machinery working widths ensure that the arable production system remains workable.

3. Quality management: annual pruning and early root management are essential because premium logs do not emerge automatically.

4. Long-term horizon and incentives: the model is based on generational thinking, since returns are realised later, while annual support payments linked to individual trees can provide additional incentive.

This example is important because it shows that agroforestry can also be integrated into highly rationalised arable systems if design and management are aligned with mechanisation and long-term value creation.

III. 2.9. Forest garden design as a service: TRIEBWERK (Germany)

From private garden to farm scale

A forest garden is a multi-layered horticultural production system built around trees and shrubs.

It imitates the structure of a natural forest while integrating edible and useful plants so that the microclimate and soil-building effects of trees directly support yield.

TRIEBWERK in Germany is a design office specialised in forest gardens (food forests) and durable perennial polycultures, and it is a good example of how the forest garden concept can be translated into a service-based business model. The company does not sell a ready-made product but offers planning and implementation-support packages for private gardens, semi-professional systems and agricultural holdings.

Here, the forest garden is not an ornamental garden but a multi-layer horticultural production system in which trees are key elements of both productivity and stability. Trees and shrubs improve the microclimate, reduce wind and heat stress, while leaf litter and the root zone build humus and improve water retention. The different layers – trees, shrubs, perennial vegetables, herbs and ground covers – are arranged so that positive interactions are strengthened, and the system becomes more resilient to climate variability.

The key to the business implementation is a standardised process: questionnaire and first consultation, followed by assessment of the site and infrastructure, target-setting and scenario building, species and species-combination selection, and finally a GIS-based concept and detailed design. The company also supports implementation through site marking, material procurement and, where relevant, assistance in financing.

The business model is built on four pillars.

1. Design as a product: forest garden and polyculture design packages for different scales, from private gardens to farm-level systems.
2. Trees as horticultural infrastructure: shade, microclimate, diversity, soil protection and water retention are used to stabilise horticultural yields.
3. Implementation support: site marking, procurement and practical support ensure that the design becomes a functioning system.
4. Economically manageable operation: in larger farm systems, diversity is organised so that labour remains manageable in cultivation units.

This example demonstrates that agroforestry is not only a production model but can also form the basis of a specialised advisory and design service market.

IV. The voluntary carbon market and the voluntary biodiversity market

Trees turn CO2 into solid carbon as they grow and act as a carbon store. This makes forests a highly effective nature-based tool for carbon removal. Afforestation, changing management practices to optimise for carbon storage or turning forests into protected areas are all relevant actions related to the upcoming voluntary markets.

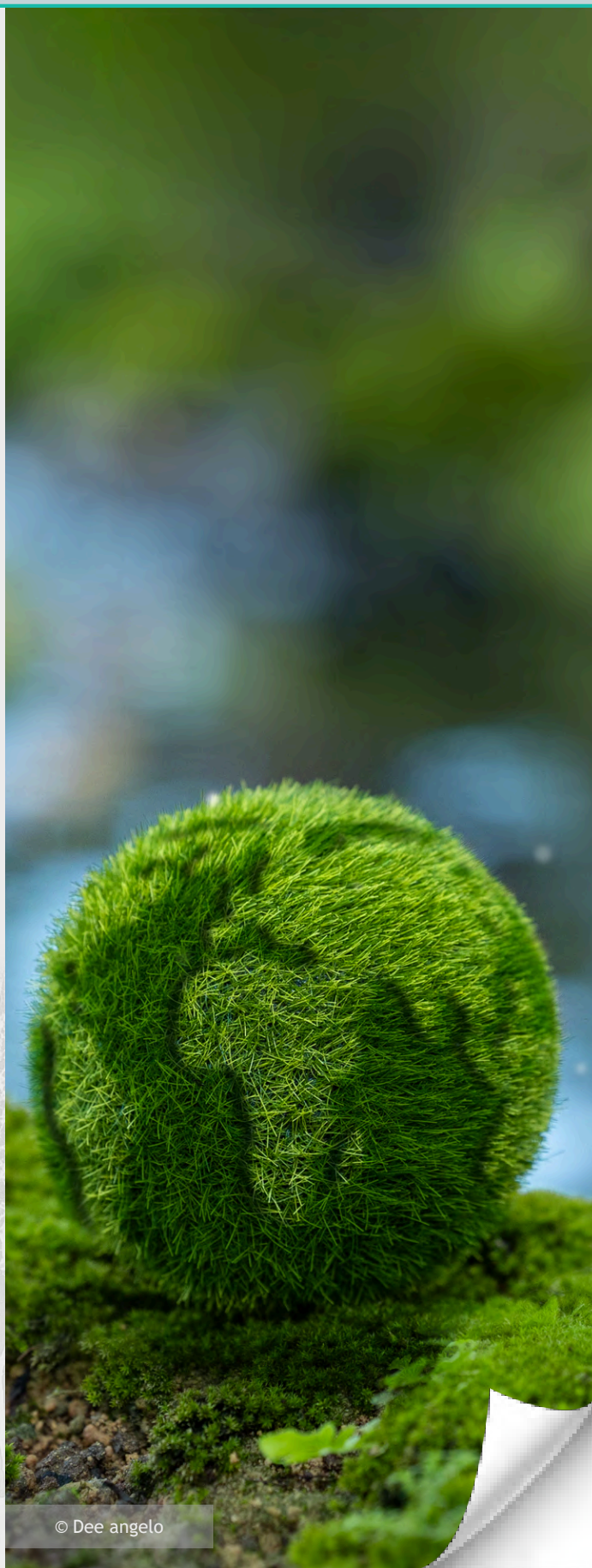
But not only forests apply in the field of carbon farming. Wetlands are the world's most effective carbon sink, storing twice as much carbon as the world's forests. Their protection and restoration are therefore critical in climate change mitigation and adaptation. Grasslands are also important, as they are among the most diverse ecosystems in Europe; their protection and restoration are also essential for carbon sequestration and biodiversity protection.

IV. 1. The emerging trends of new environmental markets

IV. 1.1. The voluntary carbon market (VCM)

There are two types of carbon markets: the compliance and the voluntary carbon markets. Although both trade with emissions, these take different forms and have different market participants. According to Arbonics, one of the key startups of the VCM:

- Compliance markets are regulatory, closed systems, where participants are determined by the government and the participants trade in allowances or permits, which allow them to emit greenhouse gas (GHG) emissions.



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- The voluntary carbon market trades credits (often referred to as offsets) between project developers and companies voluntarily purchasing credits to offset their environmental harm.

"Compliance markets are regulated carbon trading systems that have nationally, regionally or internationally determined rules, and participants are from heavy polluting industries (e.g. steelworks or car manufacturers). The European Union Emissions Trading Scheme (EU ETS) is an example of a compliance market. Voluntary carbon market gives individuals or organisations an opportunity to offset their emissions by purchasing carbon credits". Supply of carbon credits to this market comes from various carbon projects around the world, including forestry, agriculture or nature-based solutions.

Companies (typically from the IT or the banking sector) participate in the voluntary carbon market not because of regulatory frameworks, but to meet their net zero goals, improve their financing and investor relationships and reputational capital. They are motivated by various factors, but mainly by consumer pressure for low-carbon products and a wish to position their brand in the low-carbon space.

As Aurél Pásztor from PortfoLion, and investor company supporting the below showcased Pina Earth start-up, explains: *"Carbon offsets are credits generated by emissions-reducing activities such as tree planting or preventing deforestation, which can then be used by companies to help meet climate targets and offset emissions they are unable to cut from their operations"*. The voluntary carbon market is a trading system for exchanging carbon credits. Carbon credits mean units of reduction, avoidance or removal of greenhouse gas emissions. One credit (often referred to as an offset in some cases) usually represents one metric tonne of CO2 or equivalent greenhouse gas emissions (tCO2). The credit is generated by various projects: using nature-based solutions in land-use, using regenerative agriculture or other agroecological and agroforestry methods, sustainable forest management, afforestation, renewable energy, waste management or by special technical solutions like direct air capture. According to Arbonics, a key carbon project developer in Europe, in 2022, 41,4% of credits issued across major standards tackled forestry and land use. In this chapter, we focus on land use only.

The carbon project developer (like Pina Earth) contracts the landowner, they jointly set carbon capture goals based on baseline data and by using internationally approved certification methodologies, ensuring credibility, and they start a project (e.g. afforestation). It is very important to emphasise that carbon removal or storage is measured, verified and turned into carbon credits by working with internationally recognised standard and verification organisations such as Verra and Gold Standard. When the project finishes, there is an independent audit to calculate the carbon captured and credits are generated accordingly. The carbon project developer sells the credits on the market (for example, to Microsoft), who pays out to both the developer, the auditor and the landowner. Sellers and buyers exchange credits on the market, and the carbon price is determined based on supply and demand dynamics. Carbon project developers are specified in habitat types: the showcased Pina Earth or Arbonics deal with forests, while other companies are specialised in agriculture, for example, e.g. eAgronom. It is also worth mentioning that there are carbon credit developers working across Europe (e.g. Agreena working in agriculture).

The demand for these projects has been increasing as the need for nature-based solutions for carbon removal (and therefore carbon credits) increases. It is worth mentioning that there are increasing direct connections between companies aiming to do something for nature and nature conservation organisations or forest management companies. Forest management companies often have a concrete list of poten-

tial, already prepared projects, and companies can finance some of these interventions (e.g. afforestation or habitat restoration) directly. Although these actions might have a huge value in terms of marketing and PR, as well as being related to carbon storage or biodiversity, they cannot be included in net-zero pledges, as there is no independent certification behind the process.

IV. 1.2. The EU certification framework for carbon removals

The aim of the Regulation of the European Parliament and of the Council establishing a Union certification framework for carbon removals is to develop a voluntary EU certification framework for carbon removals, carbon management and carbon storage in products (CRCF) with the view to incentivise the uptake of high-quality carbon removals, in full respect of the biodiversity and the zero-pollution objectives. It was published in the Official Journal of the European Union on 6 December 2024. It created the first EU-wide voluntary framework for the certification of carbon sequestration activities.

This Regulation should set out the requirements under which carbon removals should be eligible for certification under the Union certification framework. To this end, carbon removals should be quantified in an accurate and robust way, and they should be generated only by carbon removal activities that generate a net carbon removal benefit, are additional, aim to ensure long-term storage of carbon, and have a neutral impact or co-benefit on sustainability objectives. Furthermore, carbon removals should be subject to independent third-party auditing to ensure the credibility and reliability of the certification process.

While details of the regulation will come out in the future, it seems certain that this legislation will boost carbon management activities.

IV. 1.3. The voluntary biodiversity market

According to the International Institute for Environment and Development, *"biodiversity credits, or "biocredits", are emerging as a tradeable unit of biodiversity that can incentivise nature conservation and restoration to benefit marginalised groups living with nature. Biocredits can complement carbon credits but are most effective as their own new asset class. As a purely positive investment in nature, biocredits are distinct and are preferred to biodiversity offsets, which can cause net damage to biodiversity. Demand for biocredits is growing amongst private investors, individuals and governments who want to invest in the conservation and restoration of biodiversity"*. The voluntary biodiversity market works rather similarly to the voluntary carbon market, but the background is partly different.

Rockstrom et al. (2009) identified nine so-called planetary boundaries (beyond which anthropogenic change will put the Earth system outside a safe operating space for humanity). Biodiversity loss (decrease in biodiversity within a species, an ecosystem, a given geographic area, or Earth as a whole) is the single boundary where current extinction rates put the Earth system furthest outside the safe operating space. According to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment Report, up to one million species are threatened with extinction, many within decades, while the World Bank declares that over half of the global GDP is dependent on nature directly.

Governments globally deal with climate change and biodiversity loss through two different international agreements – the UN Framework Convention on Climate Change (UNFCCC) and the UN Convention on Biological Diversity (CBD), both established at the 1992 Rio Earth Summit. Similar to the historic Paris Agreement made in 2015 under the UNFCCC, parties to the Biodiver-

sity Convention in December 2022 adopted an agreement for nature, known as the Kunming-Montreal Global Biodiversity Framework, including four goals and 23 targets to halt and reverse nature loss by 2030. The European Commission signed the Kunming-Montreal agreement. As 81% of EU protected habitats and 63% of EU protected species are in "poor" or "bad" conservation status (2020 'State of Nature in the EU' report), it is crystal clear: nature is not doing well in Europe, and action is urgently needed to bring it back and fight the climate crisis. The EU Biodiversity Strategy for 2030 also emphasises that 1€ invested into habitat restoration generates 8–38€ profit in Europe. What's more, according to the International Union for Conservation of Nature (IUCN), one-third of climate mitigation needed to meet the goals of the Paris Agreement can be provided by nature-based solutions (actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature).

The EU has set high ambitions by approving the EU Nature Restoration Law (Regulation 2024/1991) that officially entered into force on August 18, 2024. Unlike previous laws that focused solely on protecting existing nature, this mandate requires member states to actively restore degraded ecosystems. It has the following core targets and timeline:

- The overarching goal is to cover at least 20% of the EU's land and sea areas with restoration measures by 2030, and all ecosystems in need of restoration by 2050.
- Habitat Restoration: Member states must restore at least 30% of habitats in "poor condition" (forests, grasslands, wetlands) by 2030, increasing to 60% by 2040 and 90% by 2050.
- Pollinators: A legal requirement to reverse the decline of pollinator populations by 2030.
- Free-Flowing Rivers: At least 25,000 km of rivers must be restored to a free-flowing state by removing obsolete man-made barriers by 2030.
- Agricultural Land: Farmers are encouraged to improve biodiversity indicators.
- Urban Greening: A commitment to ensure no net loss of urban green space and tree canopy cover until 2030, with a focus on increasing these areas thereafter.

The law provides flexibility in how targets are met. Each member state must submit a National Restoration Plan to the European Commission by September 2026. These plans must outline specific measures, monitoring processes, and funding sources.

However, these ambitious global and European goals lack funding. Therefore, the Kunming-Montreal Global Biodiversity Framework (target 19) *"encourages the private sector to invest in biodiversity" utilising, amongst others biodiversity credits"*. So, a huge market is emerging. According to the UN's Global Biodiversity Framework, 20+ trillion euros in assets are under management by signatories of the Finance for Biodiversity Pledge. While $598 824 billion additional funding is needed annually to reverse the biodiversity crisis by 2030, 1843 billion USD is the estimated annual biodiversity credit market revenue in 2050.

Biodiversity credits are standardised units of verified positive biodiversity outcomes. A unit represents a unit of biodiversity that is being restored or preserved. Verified outcomes are always evidenced, measured and monitored by independent organisations. Biodiversity credits are nature positive - they cannot be used for offsetting. Biocredits bridge those who regenerate nature with those who are willing to pay for that. There is a whole range of reasons why companies are motivated to buy biodiversity credits:

- Mitigating nature-related risks

- Progress towards nature targets
- Resource efficiency
- Access to markets
- Product and service innovation
- Financing and investor relationships
- Reputational capital
- Improved employee morale

As biocredit schemes develop and become more common, biocredits are being applied broadly in three ways: to avoid biodiversity loss, measure improvement, or reward successful management of pristine sites. For the market to function, there must be clear and accepted metrics underlying biocredits. These metrics, provided by a growing number of service providers, are referred to as three main methodologies: measuring the increase of the species population in a target area, ecosystem scoring and positive change in the land area. For example, Savimbo' credits represent one hectare of 100% conserved biodiversity in a biodiversity hotspot for two months with photo or video evidence. Biocredit developers ensure integrity and prevent greenwashing in the following ways:

- Transparent, science-based, explainable methods
- 3rd party or "trustless" verification
- Inclusion of IPLCs and equitable benefit sharing
- Social and environmental safeguards
- Additional outcomes compared to a no-intervention baseline
- Data-driven impact reporting for buyers

IV. 2. Explanation of the theme's business potential through good examples

IV. 2.1. Pina Earth

Pina Earth (formerly known as Tree.ly) is one of the approximately two dozen carbon project developer companies in Europe dealing with forest ecosystems. Pina Earth *"connects forest owners with companies, helping forest owners earn extra income by managing forests for climate resilience. Companies can purchase high-quality CO_2 credits, backing forest owners and showing their commitment to measurable climate protection"*. Pina Earth offers high-quality carbon credits from local forests in Europe, including Germany, Austria, and Switzerland, for long-term stable, biodiverse, and climate-resilient ecosystems.

As Aurél Pásztor explains in his article, right after the voluntary carbon market was born, buyers, mostly from Western developed economies, wanted large volumes of credits for low prices. *"Project developers could meet this in the Global South, where most rainforests grow, land is comparatively cheap and local environmental protection is weak, so a strong argument for additionality can be claimed. With buyers (and their consumers) being detached from the financed projects somewhere in a distant land, project developers often could get away with lax project management or even fraud. From 2023, scandals appeared on the way, the most notable of which was the once celebrated Kariba REDD+ project in Zimbabwe, where mismanagement was investigated by The New Yorker, while a Guardian investigation claimed 90% of rainforest-based credits certified by the leading Verra standard were "phantom credits" that did not represent genuine carbon reductions"*.

Pina Earth has brought European forests and environmental concerns into the picture 4-5 years ago, since the degradation of European for-

ests had become more and more visible. European consumers were shaken by the above scandals and therefore became interested in financing carbon projects in Europe.

The Austrian startup, one of the pioneering companies in this field in Europe, was *"founded by seasoned tech entrepreneurs Christian and Jodok (founders of Crate.io, Polaroid Originals) to develop forest-based projects with the involvement of forest owners, municipalities, corporates and citizens in respective local communities. What sets them apart is the combination of their local approach, science-based methodology and cutting-edge technology.*

The credits are only sold to companies within the country where they were generated, and the buyers are personally introduced to the forest managers. The projects are developed according to Pina Earth's ISO certified proprietary carbon sequestration method, created by a team of Swiss and Austrian forestry experts and is externally verified. All elements of the process are streamlined on a SaaS platform that includes geospatial engines, ML-powered stock measurement, species detection and stock change modelling capacities. The project is then followed by a carbon management module that enables tracking. Credits are only issued when project results are audited and approved by TÜV, a household name in quality certification in Europe and followed up with a tight yearly monitoring scheme.

Just within a year on the market, Pina Earth has secured contracts spanning 105,299 hectares across Austria, Germany, Italy, the Netherlands, and the Czech Republic. The team (ca. 25 persons) has already locked in a CO_2 storage capacity exceeding 2.8 million tons, demonstrating an impressive 3x year-on-year growth. The company is on track to scale its climate protection projects to over 1 million hectares involving local stakeholders and buyers in several European countries."

A key challenge for Pina Earth is to expand in Central Europe and become a leading developer of high-quality regional carbon projects. However, it is not so easy to enter a new country as habitats vary very much in different biogeographical regions, and therefore the methodology has to be tailored to them (e.g. in Hungary, there is no forest-related carbon development project in February 2025).

IV. 2.2. Boosterra: bridging the gap in voluntary biodiversity markets

As the voluntary biodiversity market emerges as a critical new asset class distinct from carbon offsets, Boosterra positions itself at the forefront of this shift toward "nature-positive" investments. While traditional carbon markets focus on emissions reduction, the voluntary biodiversity market — and specifically "biocredits" — seeks to incentivise the direct conservation and restoration of ecosystems.

Boosterra operates within this expanding landscape, where verified positive biodiversity outcomes are becoming standardised, measurable units. By leveraging the growing demand from private investors and corporations motivated by nature-related risks and reputational capital, Boosterra helps bridge the divide between those regenerating nature and those willing to pay for its preservation.

In alignment with the Kunming-Montreal Global Biodiversity Framework and the EU Nature Restoration Law, Boosterra supports the urgent need to halt and reverse nature loss by 2030. By focusing on high-integrity, science-based methodologies and transparent reporting, Boosterra addresses the core challenges of the modern environmental market: preventing greenwashing while unlocking new revenue streams for landowners and conservation organisations.

Building on the principles of the voluntary biodiversity market, the Global Biodiversity Credit (GBC) serves as a standardised, tradeable

unit of verified nature-positive outcomes. Unlike traditional carbon offsets that focus on emissions, a GBC represents a specific unit of biodiversity — such as a 30x30 cm area of habitat — that is actively being restored or preserved. These credits bridge the gap between those regenerating nature and those willing to pay for it, providing a transparent and science-based method to measure improvements in species population or ecosystem health. By utilising data-driven impact reporting and independent verification, the GBC ensures that every micro-investment translates into a high-quality, permanent benefit for the planet's most threatened ecosystems.

V. Nature-based solutions to boost landscape regeneration

According to the International Union for Conservation of Nature (IUCN), nature-based solutions (NbS) *"are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature"*. Conservationists have been restoring habitats for decades, but now, in the shadow of the ecological crisis, there is a huge emphasis on the "other side of the coin", the unbelievable ecosystem services natural and modified ecosystems can provide (besides providing habitats for species), and what can be monetised, as explained in chapter 4. Nature-based solutions are in the spotlight, because the EU Biodiversity Strategy for 2030 and the historic Nature Restoration Law require member states to actively restore degraded ecosystems since 81% of the EU's protected habitats and 63% of its protected species are in 'bad' or 'critical' condition (2020 'State of Nature in the EU' report).

The growing challenges have an increasingly evident impact on health and the economy, which we need to mitigate. Based on the EU goals, economic and environmental interests will overlap to some extent, hopefully, more and more significantly, and recognising this, increased investment will be made to support NbS. The most important EU policy instrument in connection with landscape restoration, the Common Agriculture Policy (CAP), has slowly been incorporating nature-based solutions, and therefore, companies that design, implement and use such solutions are finding it easier to operate with viable business plans and predictable management in a constantly expanding market. This chapter, therefore,

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briefly explains how NbS is becoming visible in the mainstream Common Agriculture Policy and highlights some key "NbS enterprises" from across Europe.

V. 1. The emerging trends of using NbS in mainstream policies: the case of the CAP

In the current CAP, there is a consensus at the practical implementation level that, without adequate ecological conditions, it is not possible to produce goods economically and to a high standard. This is also reflected in the national programmes, although it should be noted that most Member States have sought to make minimal commitments in cases where farmers' short-term interests are harmed or perceived to be harmed. Among the elements of the current CAP, three main innovations should be highlighted in relation to this topic:


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- Conditionality: if someone wants to receive support at all, certain minimum environmental standards must be met. Nine GAEC (Good Agricultural and Environmental Condition) standards apply to all farmers, aimed at protecting the climate, water, soil and biodiversity. For example, it is prohibited to grow arable crops on sloping land where there is a risk of erosion, crop rotation is mandatory, and landscape features (tree lines, wetlands, etc.) must be preserved.

- Eco-schemes (a new feature): eco-schemes are annual payments, financed entirely from the EU budget, which are made to farmers who voluntarily undertake to go beyond the mandatory minimum environmental practices. Participation is voluntary for farmers, but Member States are required to offer at least one such scheme. The specific eco-schemes offered vary greatly from one Member State to another.

- Agri-environmental measures (AEM) under Pillar 2: these are longer-term, more substantial commitments (e.g. conversion to organic farming, management of Natura 2000 sites). The budget for Pillar 2 has been increased to 35% (from the previous 30%).

A long-awaited and very important innovation is the inclusion of previously unsubsidised, but agroecologically valuable biotopes (wetlands, tree rows, etc.) in the subsidy system. This means that it is no longer only possible to apply for subsidies for the area where actual production takes place on a given farm. The creation of new agroecological areas will help to meet new green requirements. Farmers will have no interest in converting these areas into arable land to receive subsidies. As a result of the change, new non-productive elements (water retention and soil conservation) may be developed in new areas.

Among the previous elements of greening, the maintenance of permanent grassland, crop diver-

sification/crop rotation and the designation of ecological focus areas (EFAs) are now included in the basic requirements and are mandatory. New elements include the protection of wetlands and peatlands, a ban on stubble burning, regulations on the protection of water resources, and regulations on water protection zones. Another important element is Natura 2000, domestic regulations on the protection of wild birds and habitat protection. A forward-looking innovation is the maintenance of non-productive elements on a certain percentage of arable land; the maintenance of protected landscape elements; and a ban on cutting bushes and hedges during the bird breeding and nesting season.

V. 2. Explanation of the theme's business potential through good examples

V. 2.1. Willow architecture by landscape architect Edvárd Takács and Ilona Mill Workshop

In 2023, Edvárd Takács was awarded as Landscape Architect of the Year in Hungary, because he creates harmony between the built and natural environments in a completely unique way: by introducing willow architecture to Hungary. The great advantage of willow trees is that their branches are flexible and can be planted and woven together to take root, and after they have grown, they can be used to make fences or garden structures that provide shade. In this way, experts can create a carport, garden trellis, doghouse, fence, garden bench or shade structure.

The landscape architect is a member of the Ilona-malom Műhely (Ilona Mill Workshop), whose main source of income is the construction of natural playgrounds throughout the country and the manufacture of related equipment. They create spaces that are close to nature and suitable for free play, using natural materials as much as possible. This is in line with a trend in the EU: natural play areas that involve creating playgrounds that incorporate nature-based solutions (e.g. rain gardens, wildflower meadows) and recycled felled trees. These areas are not officially playgrounds, but are designed so that families can meet there and children can connect with nature through their play experiences.

Edvárd Takács was born in Subotica and grew up in Palic. He maintains close ties with his Slavic colleagues, including Slovenian architect Ira Zorko. He organises international courses and creative camps, which have enabled him to successfully combine earning an income with sharing the experience he has gained over decades.

V. 2.2. Salix River & Wetland Services: designing and building with nature

Salix, unique in the UK construction industry, specialises in sustainable nature-based solutions that replace traditional hard engineering methods. Improving water quality, restoring natural habitats and enhancing biodiversity in rivers, wetlands, lakes and coastal environments. It provides complex design and construction services related to soil and water protection equipment. As an additional source of income, they also sell seeds and plants that support their landscape rehabilitation work. Their areas of expertise are wetlands, restoring ecosystems, re-

ducing flood risk and improving habitats. Among other things, they have numerous references in the following areas:

- Riverbank stabilisation: Use of natural materials and bioengineering techniques.
- Erosion control: Implementation of biodegradable systems and vegetation planting plans.
- Water ingress protection: Solutions that protect critical structures such as bridges and culverts.
- Habitat creation: Creation of diverse aquatic and riparian habitats using native species.
- Flood risk reduction through nature-based engineering solutions.
- Soil bioengineering

V. 2.3. Paul Lamb, the Westcountry Hedgelayer

"For centuries, hedgerows were used as the primary method for enclosing fields in the UK. They served primarily to shelter crops and retain livestock, alongside creating a valuable habitat for farmland wildlife. While hedgelaying was once a common practice across the UK, different regions developed their own unique styles based on local farming needs and available materials."
Paul Lamb uses traditional tools and works by hand to restore and create living space dividers that benefit local fauna, prevent erosion and preserve the atmosphere of the British countryside. Paul travels seasonally around the region in his caravan, planting hedges and creating hazel dividers, with a deep respect for the rhythms of the land and nature. His work is rooted in centuries-old traditions, and his expertise reflects his careful observation of nature.

In addition to his practical work, Paul is committed to passing on the knowledge and techniques of hedge laying to the next generation. He believes that this rural craft, once essential to agricultural life and now increasingly rare, is worth preserving not only for its ecological value but also for its cultural and historical significance. Paul's sources of income are as follows:

- Courses: daytime course for beginners introduces tool use, traditional hedge laying techniques and ongoing hedge maintenance, while highlighting the importance of hedges for wildlife.
- Hazel products: Using traditional techniques, Paul can weave hazel fences and panels, as well as custom hazel structures. The sourcing of base wood from sustainably managed ancient woodlands also contributes to the protection of biodiversity.
- Hedge restoration: hedge management and restoration services. Using traditional techniques, Paul ensures that these hedges remain rich, thriving ecological corridors and provide lasting value to the countryside.
- New hedge planting.


© Westcountry Hedgelayer

V. 2.4. Private nature conservation? - the case of the Somogy Nature Conservation Organisation

In 1989, they were the first civil organisation in Hungary to purchase ecologically valuable land for nature conservation purposes within the framework of the Somogy Wild Water Programme. This marked the beginning of so-called private nature conservation in Hungary. Today, practical nature conservation management is carried out on 800 hectares of privately owned habitat. They maintain the traditional methods of farming and land management that have ensured the preservation of ecological values for centuries. They cultivate the traditions and cultural heritage of fishing, shepherding and keeping traditional Hungarian domestic animal breeds. Their lands form a continuous ecological corridor. This continuous, passable corridor ensures that individual species can find a continuous food source, undisturbed migration routes and breeding sites.

© Somogy Nature Conservation Organisation

Their business model is multifaceted. In addition to state and civil subsidies, they operate two accommodation facilities, Kund Castle and Xantus Grove. Their main attraction is the Petesmalmi Otter Park, attracting many visitors to the area every year, generating income for other hospitality establishments as well. Their activities also include grazing livestock and organising events. The organisation is also involved in regenerative tourism, with more than two decades of cooperation, in which students from the Salem Gymnasium in Germany help with our land management tasks during their annual nature conservation field trip.

V. 2.5. Hemp concrete: the sustainable construction material

Hemp (Cannabis sativa) has been cultivated for thousands of years and was grown primarily for its fibre and not for nutritional purposes until very recently. In fact, until the end of the 19th century, it was the most widely grown agricultural crop on the planet, and the industry built around it was one of the most important industrial segments globally. Due to its psychoactive THC (tetrahydrocannabinol) content, this "suspicious" plant was then blacklisted in many countries (even though industrial hemp contains only 0.3% THC), and a significant portion of products made from it were replaced by cheap plastic and wood.

The entire industry collapsed, but today it seems that the cult of industrial hemp will be revived in the fight against climate change! In France, which is now a major hemp-producing country, mortar made from hemp was already being used in a bridge in the 6th century. It is no coincidence that hemp concrete was first used here in 1989 to build houses. The first pioneer was Yves Kuhn, who discovered that high-quality and completely environmentally friendly building and insulation material could be made from the woody stems of hemp by adding lime.

Following its discovery in France in the 1990s, experiments with hempcrete began quickly, and soon after, the first experimental hemp house was built. Hempcrete is concrete in name only,

although a specific mixture of hemp stalks (shives), a binding agent containing lime, and water can harden over time to a similar hardness as concrete. Due to its high silicon dioxide content, hempcrete is resistant to all weather conditions, especially humidity, and does not rot or burn. In return, it is an extremely good heat and noise insulator and humidity regulator, performing better than any other material on the market. The spongy pith inside the hemp stalk plays a key role in all this, as its micro-tube structure gives it excellent thermal insulation properties.


© Kenderház Magyarország

Hempcrete can be used to build easily, quickly, and with a positive carbon footprint, as the carbon dioxide captured by the plant is incorporated into the wall. Hemp is easy and economical to grow because it grows quickly (second only to bamboo) and does not require chemical treatment. In return, the crop can be harvested within four months. The speed of construction is because hempcrete can be quickly poured into any formwork structure, saving a significant amount of work compared to traditional construction methods. In addition, hemp walls can be of any thickness, provide perfect moisture control (moisture generated inside the building does not condense on the surface of the walls, but is released to the outside world through the hempcrete masonry), are allergy-free and have no harmful effects on health, and are also fire-resistant (hempcrete has achieved the highest fire safety rating in the category of building materials containing plant-based raw materials), pests (the resistance of the hemp plant to pests is retained in hempcrete), and last but not least, it is completely recyclable, i.e., compostable.

The most significant Hungarian pioneer of hempcrete is Kenderház Magyarország, which was originally founded by 12 committed individuals active in the field of healthy food supply and healthy homes. In 2014, they became familiar with hempcrete technology in Italy, and in 2016, they were the first in Hungary to receive a National Technical Assessment for the hempcrete they submitted.

V. 2.6. Hemp concrete: the case of Konopljina Iža

A concrete example is the Konopljina Iža project in Slovenia, where hemp shives mixed with lime (hemp concrete) are used as a main construction material. The combination of hemp and wood contributes to a favourable indoor microclimate. Hemp-based walls provide advantages such as fire resistance, humidity regulation and improved indoor comfort.


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Hemp concrete is linked to wood-based design because it follows the same natural, renewable and low-emission architectural approach. In the Konopljina Iža project, timber structures provide structural and aesthetic value, while hemp-lime

wall systems support moisture regulation and natural material use. The example shows that wood-based design often appears in practice as a hybrid bio-based material solution.

The innovation lies not only in the material but also in its market positioning. Konopljina Iža operates as a boutique accommodation facility in the Goričko Landscape Park, where the hemp-based house is presented as a distinctive architectural experience. Natural materials, spatial experience and environmental quality form the core of the concept.

From a business perspective, the project shows how bio-based construction can support higher-value tourism services. The initiative offers a differentiated visitor experience based on sustainability and natural materials. The investment was linked to the expansion of accommodation capacity and supported by digital marketing and an online booking platform, partly financed by EU funding. In this model, bio-based architecture functions simultaneously as a real estate, tourism and branding strategy.

V. 2.7. Straw bale house, the superhero

The straw bale house is a by-product of the Industrial Revolution. This was when baling machines came into use, and in the Sandhills region of Nebraska, settlers, lacking wood, had the sudden idea of building their temporary homes out of straw bales, which they plastered in the traditional way with mud. Over time, they realised that they had created a unique and durable house. Among other things, the fire resistance of straw bale houses had already been proven at that time: the mud plaster protected them from the sparks that often flew out of steam engines, while wooden houses often caught fire. In the fever of modernism, humanity forgot about straw bale houses for a long time, and it was only in the 1970s, with the rise of environmental awareness, that attention was once again drawn to this old yet modern technology. The original self-supporting structure was then replaced by a wooden frame, which bears the weight of the floor and roof, and into which the straw bales are built. Today, there are around 30,000 straw bale buildings with different functions around the world (around 200 in Hungary), all of which are built from the straw of a cereal crop (wheat, rye, rice, oats, millet, barley), but straw bales are now also used for retrofitting existing buildings with thermal insulation.

Straw bales — which are essentially made of cellulose — owe their outstanding properties to their material structure. According to the latest measurements, their thermal insulation capacity is absolutely competitive with that of the most modern synthetic thermal insulation materials, but they do so with an incredibly low ecological footprint. Without the use of extra, very costly and energy-intensive thermal insulation techniques, straw walls are a hundred times better at insulating than concrete panels and more than ten times better than brick walls. In practice, this means that, given the climatic conditions in our countries and careful planning, it is not necessary to install air conditioning in a straw bale house, and heating costs are significantly

lower (in Switzerland, there is a straw bale house at an altitude of 1,800 m that does not require heating). Moreover, with the use of renewable energy-based machinery and efficient windows and doors, a straw bale house can achieve the technical standards of a passive house. In addition, it has excellent sound insulation properties and, because it is flexible, it is also resistant to earthquakes. The bale wall plays a key role in all this, as it breathes and its low moisture content (approx. 14%) evaporates in high temperatures, which results in heat extraction. Although straw has a low heat storage capacity, this is offset by another key element of the house, the traditional 5-7 cm outer mud plaster and the adobe brick wall often built on the inside, both of which allow the wall to breathe.

The external and internal mud plaster (adobe plaster) makes the straw bale house completely durable, so much so that several of the early straw houses built in the 1800s are still standing today in perfect condition, and the wall that was broken down as an experiment revealed intact straw. The key is to prevent the walls from getting wet, so during the design phase, special attention must be paid to protection against heavy rain. Straw does not contain any edible parts, so no animals, insects or rodents will move into a carefully sealed, plastered wall. However, there is a real danger that rodents looking for a place to spend the winter will move into the unplastered wall during the early autumn construction period, which is why it is necessary to work quickly at the end of summer. Furthermore, straw does not contain pollen, as it is a flowerless plant stem, and any weeds that may be present in it cannot cause any problems through the plastered wall.

It is not a miracle that there is a growing number of industrial interests to use this real sustainable construction method.

VI. Business opportunities by connecting entrepreneurial skills with novel ecological ideas to create added value

According to the European Commission, the bioeconomy is defined as activities that deliver sustainable solutions based on biological resources to create added value. The newly adopted Bioeconomy Strategy fosters a clean, competitive, and resilient European economy, reducing its dependency on fossil fuels. As explained in Chapter 1, corporate regulation also plays an important role in supporting innovation in the forest-based bioeconomy, as the Corporate Sustainability Reporting Directive (CSRD) requires companies to report reliable sustainability data. This chapter explains how to connect entrepreneurial skills with novel ecological ideas to create added value.

VI. 1. The emerging trends of pushing enterprises to invest in sustainability

The EU's Non-Financial Reporting Directive (NFRD) (Directive 2014/95/EU) requires certain large companies to disclose information on environmental, social, and governance (ESG) matters in their annual management reports. The directive applies primarily to large public-interest entities with more than 500 employees, including listed companies, banks, insurance companies, and other firms designated as public-interest entities by Member States (around 11,000–12,000 companies in the EU). These companies must publish a non-financial statement describing their business model and their policies, outcomes, risks, and due diligence processes related to key sustainability topics such as environmental protection, social and employee issues, human rights, anti-corruption

and bribery, and board diversity. The aim is to increase transparency for investors and stakeholders about how companies manage sustainability risks and impacts.

The Corporate Sustainability Reporting Directive (CSRD) (Directive 2022/2464) significantly expands and strengthens the NFRD framework. It broadens the scope of companies required to report, covering all large EU companies (generally those meeting at least two of: 250 employees, €50 million turnover, €25 million assets), listed SMEs, and certain non-EU companies with substantial EU activity — raising the number of affected companies from about 11,700 to roughly 50,000. It also introduces more detailed and standardised reporting requirements through the European Sustainability Reporting Standards (ESRS), requires companies to conduct double-materiality assessments (both impacts on society/environment and financial risks from sustainability), mandates independent external assurance of sustainability information, and requires digital tagging of disclosures for machine-readable reporting. Overall, the CSRD transforms the NFRD's relatively flexible disclosure framework into a broader, more standardised, and audited sustainability reporting regime integrated into companies' annual reports.

NGOs can benefit from the CSRD in several indirect but significant ways: CSRD empowers NGOs with better data, stronger advocacy tools, collaboration opportunities, and a seat at the regulatory table, turning mandatory corporate reporting into a resource for civil society action. However, platforms are needed to bring together innovations and ESG resources, independent of the appropriate thematic area. Based on the extraordinary natural assets of the transnational target area of the project, there is a huge potential for creating a platform coordinating CSR activities and ESG resources among local environmental projects, enabling all players and companies, whatever their size, to do something for it.

VI. 2. Explanation of the theme's business potential through good examples

VI. 2.1. The Future Forest Initiative

Innovation and digitalisation in the institutional ecosystem: Future Forest Initiative (GER) – field testing and market launch of forestry innovations.

The Future Forest Initiative (Future Forest) is an innovation centre focused on forests and climate, to bring forestry-related startups and technological solutions to practical application. The organisation supports the rapid market development of innovations through accelerator programs, a partnership network, and testing in real-world environments.

A central element of its operations is the innovation base organised around Blankenburg in the Harz region, where field testing plays a key role. Future Forest follows the logic of acceleration-scale-standardisation: solutions are tested for feasibility and impact, then prepared for scaling. During the process, they first test whether the solution works in forestry practice; if so, they adapt it to run reliably on a larger scale; finally, they add a set of measurements and operating rules so that it can be introduced in the same way by other foresters and the results can be verified comparably.

The portfolio is based on innovations and digitalisation related to sustainable forest management. Focus areas include smart forestry, ecosystem services, and climate solutions; the target group is typically early-stage startups that already have a prototype or business model. Two major directions are highlighted: stabilising commercial forests (pests, storm damage, forest fire risk, digitalisation, and robotics) and developing regenerative forest management systems.

From a business and financing perspective, the strength of the model is that it provides startups with a specific package of resources: mentoring, workshops, investor access, and networking opportunities. The packages are worth around €25,000. Some of the support provided to startups in the program is de minimis (small amounts of state aid), so beneficiaries can count it toward their three-year aid ceiling.

A key element is the MRV (Monitoring–Reporting–Verification) focus: field testing of measurement and verification technologies required for nature restoration and ESG projects. This sends the message that forestry innovation is not only a technological issue, but also a matter of verification and compliance: without indicator-based, verifiable data, it is difficult to build a market for biodiversity and restoration solutions.

Elements of institutional operation serving as models:

1. Accelerator and field validation together: solutions that can be tested in real forest environments, in addition to mentoring.
2. Network market building: startups, forestry practice, investors, and corporate partners in one ecosystem.
3. Focus on measurement and compliance: MRV and indicator-based thinking, which is key in nature restoration and ESG markets.

In addition, the Future Forest Initiative Acceleration Event, particularly the Future Forest Forum, works as a marketplace, bringing startups in forestry, wood, and climate tech together with investors. It features pitches, networking, and expert mentoring to advance innovations in biodiversity, digitalisation, and monitoring.

VI. 2.2. The territorial CSR platform of the Nantes metropolitan area

A European-level good practice to harmonise CSR efforts in a given geographical area is the CSR platform of the Nantes metropolitan area. In response to the emerging need to federate stakeholders, to gather initiatives and to encourage good practices, in 2011, Nantes Métropole decided to create its own CSR Platform. Strongly requested from companies, the CSR platform soon became a coordination hub collecting all the CSR initiatives undertaken, financed and supported by the city or its partners. Based on shared governance and on a collaborative method of contributing to the platform, the initiative is mainly aimed at bringing together stakeholders around selected themes through working groups and at guiding companies' approach to CSR. Managed by a dedicated leadership team, the Nantes CSR Platform is a community of public and private players committed to the development and promotion of CSR.

VI. 2.3. Service-based forestry business model: Pannon Örökerdő (HU) – nature-friendly forest management and digitalised urban forest solutions

Pannon Örökerdő is a forestry service provider that treats sustainable forest management and urban green infrastructure development as a complete process: it carries out projects from strategic and professional planning and fundraising, through legal and administrative procedures, to implementation, maintenance, and monitoring. Its client base is particularly broad: in addition to private forest owners, farmers, and professional managers, local governments, municipalities, and companies are also part of its target group. The common thread is tree stand management aimed at maintaining the ecosystem services of forests, which is not specifically focused on timber production.

Their complex activities combine several types of interventions for a single client: nature conservation monitoring, community planning, revitalization of existing forests, maintenance and enrichment of other habitats, development of agroforestry systems and park forests, and

planting of new forests—the goal is for the "green project" to be not just a single action, but a manageable program with measurable results.

They rely heavily on digital technologies in their planning and work: in addition to tree surveys using laser scanners and multispectral cameras, they also use geographic information systems (GIS) and sensor data. All of this is also very important in terms of the presentability of their activities.

The credibility of their operations is reinforced by the fact that they publish a price list for their forestry consulting services. The remuneration covers tasks related to administrative procedures and field work (e.g., notifications, markings, inventory, on-site inspections), hourly rates, and travel expenses, which is a transparent engineering service model. Elements of the business model that serve as examples:

1. The entire project process in one hand: site research, fundraising and partnership building, planning, implementation and maintenance, followed by monitoring and analysis.
2. Digitisation as a value-adding layer: digitally displayed laser scanner and sensor measurements also support innovative work planning and external presentation.
3. Complex approach: forestry, agroforestry, and related habitat management can be interpreted in a single program, enabling greater customer value and longer-term cooperation.
4. Transparent service pricing: published, itemised fees for typical forestry management and consulting tasks.

VI. 2.4. Supporting bioentrepreneurship at Josip Juraj Strossmayer University of Osijek

The lifelong learning program is intended for people who have completed one of the studies offered at the Department of Biology, as well as masters and engineers in the field of natural, biomedical, and biotechnical sciences, who have not acquired sufficient knowledge on the aforementioned topic, and who want to start or improve an existing entrepreneurial venture. The program can also be enrolled in by people who do not want to pursue an entrepreneurial career, but who need to develop entrepreneurial competencies and strengthen green skills in order to successfully carry out business activities.

The goal of the program is to train participants to recognise business opportunities and create ideas and visions in which innovative solutions are developed for the purpose of a competitive economy that harmoniously affects the environment and the development of society, using modern biological knowledge. The program connects knowledge from the fields of basic natural sciences (biology and environmental protection) and economics.

VII. Environmental education and nature-based wellbeing as market-based activities

Environmental education is almost entirely a nonprofit mission, largely organised by NGOs, nature conservation and forest management organisations. Thus, it is not really about entrepreneurship. If there is a corporate donor behind the process, NGOs can make a profit, but unfortunately, it is not the standard. However, in this chapter, we highlight a good example of how a larger organisation makes it as a market-based activity successfully. Second, as the Benchmark Study intends to support entrepreneurial thinking and because we have dramatically lost our connection to nature and the COVID-19 pandemic painfully made it visible for all, there is a growing demand for getting back the connection to nature, and there is a still small, but growing market regarding forest bathing, forest therapy, ecopsychological walks and deep ecology trainings to facilitate human-nature connection and help people act more consciously. Last, but not least, a private school specifically embedding regeneration and nature conservation into its curricula is also introduced.

VII. 1. The emerging trends of environmental education and nature-based wellbeing

VII. 1.1. Environmental education on the rise!?

The Danish EU Presidency formally submitted the European Union's Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change on 5 November 2025. By officially incorporating climate education across its 27 member states, the EU joins more than 60 other countries — helping

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to cement climate literacy as a global standard for climate action. This decision of the European Union to integrate climate education into school curricula from kindergarten through grade 12 is an important step toward equipping students with green skills and countering climate disinformation. This progress has been made possible through the collective engagement of civil society organisations working in dialogue with public authorities. Strengthening green skills in curricula will make young Europeans better prepared and more competitive in the green job market. The World Bank's Choosing Our Future: Education for Climate Action finds demand for "green skills" outpaces supply. The green transition will create over 100 million new jobs globally in the next decade. According to Kathleen Rogers, president of EarthDay.org, "this is non-negotiable for global economic growth and prosperity".

This is also important as, according to the European Union and the Education and Training Monitor, 2024, despite progress, learning for sustainability often relies on individual schools or teachers, limiting its broader impact. What's more, only 42% of young people report having had a meaningful opportunity to learn about sustainability in school, while teachers cite a lack of time, space and suitable guidance and resources to integrate sustainability in their teaching. 84% of young people also believe sustainability is important, but less than one-third take action for sustainability in their daily lives.

The European competence framework on sustainability sets out the following 4 competence areas for all learners:

- Embodying sustainability values: promoting fairness, valuing nature
- Embracing complexity in sustainability: understanding interconnected systems, recognising long-term impacts
- Envisioning sustainable futures: using creativity to imagine future scenarios, adapting to change, thinking critically about sustainability solutions
- Acting for sustainability: participating in collective efforts, understanding decision-making related to sustainability

As the ultimate goal is green transition, both in heads and everyday life, within the case studies below, we focus on activities aiming at this transformation.

VII. 1.2 The story of shinrin-yoku: increasing market of facilitated nature connection

Shinrin-yoku is a Japanese word that literally means "forest bathing" or "forest therapy," referring to the experience of immersing oneself in the atmosphere of the forest through the five senses. In 1982, in one of the world's most urbanised countries, Japan, the Ministry of Agriculture, Forestry, and Fisheries coined this term to reduce the stress caused by the metropolitan environment, which was causing increasingly visible health symptoms at the time. Let's not forget that Japan has a very high proportion of forests and is also the country of Zen, haiku, and cherry blossoms, where admiration of nature is deeply ingrained in the culture. The original plan was to get as many people as possible to spend as much time as possible in forests and city parks, because trees have been known since ancient times to be good for people living in increasingly stressful urban environments. To this end, shinrin-yoku trails and forest bathing clubs were organised by the State throughout the country. Later, shinrin-yoku was officially embedded into the social security system, followed by European countries experimenting with green social prescribing supporting people to engage in nature-based interventions and activities to improve their mental and physical health (in Hungary, for example, a "green prescription" pilot at Budapest district 12 was followed by a national movement). Shinrin-yoku is not about hiking or education: the only goal is to slow down and connect to nature through our senses.

In recent years, shinrin-yoku has enjoyed huge popularity – unsurprisingly - in the Western world, which is also highly urbanised and heavily influenced by consumerism, where the movement is often viewed as a kind of "new yoga" or "new camino" (NB. the average American spends more than 85% of their time indoors).

The positive mental effects of forest experiences are well known (they reduce anxiety and depressive symptoms) as ecopsychology has dealing with this interesting topic for decades now, but shinrin-yoku gained a significant shift in 1990, when a Japanese scientist, named Dr. Yoshifumi Miyazaki, from Chiba University conducted a short experiment with test subjects walking in the Yakushima forest, considered Japan's most beautiful primeval forest, and, in parallel, with an urban control group. The professor claimed that after only a 40-minute, non-strenuous walk in the forest, the test subjects in the forest not only reported an increased sense of well-being, but also a proven decrease in the level of cortisol, known as the stress hormone (while it rises in all urban environments, meaning that all urban environments cause stress). This was a huge scientific discovery, and since then, a series of scientific experiments in various parts of the world have shown that forest bathing has a measurable positive effect on both physical and mental health. All experiments report that the forest experience reduces symptoms of depression and hostility, improves sleeping habits, creates a feeling of well-being, and energises. However, these subjective feelings are supported in all cases by concrete physical values: cortisol levels, blood pressure, and heart rate actually decrease during forest bathing. It is also important to note that even a short walk in a city park has a beneficial effect on the body, too.

What's more, research has clearly shown that spending time in the forest boosts the immune system, as it stimulates the activity of natural killer cells (they play a key role in defending against viruses and are even the first to respond to the appearance of tumour cells). Time spent in the forest can improve not only fatigue-induced concentration problems in children, but also the symptoms of attention deficit hyperactivity disorder (ADHD). It is, therefore, no surprise that in Japan and South Korea, accredited forest therapy courses are covered by several health insurance providers.

The secret is simpler than we might think, and in fact, many of us use this natural remedy. According to current scientific knowledge, the beneficial effects of shinrin-yoku are primarily due to antimicrobial organic compounds produced by plants, known as phytoncides. These substances, mostly essential oils, inhibit decay and fermentation caused by microorganisms, as well as prevent animals from eating the plant (garlic's antiviral, antibacterial, and antifungal effects are, for instance, well known and widely used in home remedies). More than 5,000 types of essential oils protect plants from bacteria, fungi, and insects, including forest trees, which produce large amounts of these substances, which, when inhaled, appear to strengthen the human body. The exact mechanism of action of the forest experience is still not completely known.

VII. 2. Explanation of the theme's business potential through good examples

VII. 2.1. From shinrin-yoku to planetary health through mental well-being: Ági Berecz

Whether we talk about forest bathing, ecopsychology, forest therapy, medicine walk, or any other, massively growing number of participatory walks and contemplative group events taking place in nature, the focus is always on reconnecting: with our own life, with each other and with ecological systems.

In line with the philosophy of the Benchmark Study, we highlight below the case of Ms Ági Berecz, a Hungarian forest bathing guide and deep ecology group work facilitator, mainly because of her complex approach, helping clients to move forward from wellbeing (shinrin-yoku) to deep ecology through self-development. She also works in international projects, aiming to promote that what nature gives us is needed for understanding regeneration better (what we can give to nature).

Ági Berecz is an environmental educator, eco-therapeutic self-awareness mentor, forest bathing guide, deep ecology group work facilitator, and trainer. Since 2005, she has been running domestic and international learning programs on the topics of ecological awareness and inner development. Her overall goal is to help clients on their journey towards a harmonious, balanced life in which they are connected with themselves and nature. Her toolkit includes empathic group facilitation, ecotherapy-based self-awareness groups, forest bathing, and deep ecology group work.

In 2004, she established the Öko Kuckó Environmental Education Centre in Pécs with the Zöld-Híd Foundation, where they helped school-children move towards a more sustainable life. From 2006, as a trainer for the European Youth Program, she facilitated international, non-formal training courses. Between 2007 and 2010, she studied psychologically based ecological methodologies in England: "Cambridge Carbon Conversations" and "Work That Reconnects" deep ecology self-awareness work, while working on youth and global education projects. She was trained at the GAIA Education trainer training program in the Findhorn eco-community in Scotland and studied group facilitation at Schumacher College in England.

Since 2010, she has been working as a trainer for the leaders of the Conscious Consumers Association's "Eco-Circles" and as a facilitator for the Goals For Goods program. Since 2012, she has been the founding president of the Pandora Deep Ecology Spiritual Centre Association. During the association's operation, she has organised, led, and facilitated several youth exchange programs, adult learning programs, international training courses, and strategic partnerships on ecological topics.

Her personal experience of motherhood led her to create the international Mother Nature project, which she led from 2017 to 2022. Together with colleagues, they created the Mother's Path nature-based self-discovery methodology, which helps women process the

experience of motherhood in nature. She currently teaches this complex methodology at the Mother Nature Hungary Mother's Path Facilitator Training. Another significant work of the past few years was leading the international partnership "Inner Pathways To Sustainability," in which Ági researched the relationship between inner regenerative practices and external ecological lifestyle changes and activism. In the Accessible Forest international project, she participated in the creation of professional publications for leading nature connection programs targeting specific groups. Between 2014 and 2019, she studied integral psychology, supportive conversation, and mentoring at the Integral Academy. Subsequently, during the British Tariki Trust's ecotherapy training, she learned how to lead nature-based therapeutic and self-awareness-oriented sessions and group work. She learnt the forest bathing toolkit at the Portuguese Forest Therapy Hub in 2021.

She has been leading groups since 2010 based on the deep ecology group work method created by Joanna Macy, The Work That Reconnects. This work aims to recognise and explore our difficult feelings towards our fragile ecological system and to translate them into constructive action. She learnt The Work That Reconnects methodology in England from Anna McIvor and then from Joanna Macy. Being an international kundalini yoga teacher, she also integrates the tools of yoga into her work.

Ági works as a self-entrepreneur, currently finishing her PhD studies, and according to her renewed website, she is keen on explaining to people what nature can give us (forest bathing), leading clients to self-development (medicine walk) and facilitating this learning process further to deep ecology (living in harmony with nature). However, she intends to continue working as a trainer on sustainability projects, and the related activities should remain her main income. This business model provides great freedom to work in forest therapy from the heart. IT is also important, because although the demand for forest bathing or any other activities reconnecting with nature is also growing, still, very few people earn enough money to work only as a forest therapy expert.

Lessons learnt? This case highlights that forest bathing is neither a spiritual nor a very complex activity in itself. The internet is full of good methodologies (an example) about how to reconnect to nature; forest bathing is not rocket science, and no specific higher education is needed, unlike ecopsychology. Ági's case is great, because she has a profound ecological knowledge about nature as well as broad experience as a trainer working with groups – this makes her more complex approach unique. It might have a good business potential for individuals already having businesses related to forest, edible forest or permaculture (see the food chapter).

VII. 2.2 Market-based Environmental Education: The Budakeszi Wildlife Park Forestry School

The Budakeszi Wildlife Park Forestry School opened in 1979 to introduce visitors to the wildlife and forest ecosystems of Hungary. From the outset, the park's mission has been to present animal species native to Hungary and the Carpathian Basin in environments that resemble their natural habitats, thereby strengthening public understanding of forest ecosystems and the relationship between humans and nature.

Located in a seven-hectare protected forest area, the wildlife park functions as a "gateway to the forest," presenting natural values authentically and engagingly. Although legally classified as a zoo, it differs from traditional zoological institutions: animal enclosures are generally larger than average, reflecting a strong emphasis on ecological authenticity. The park is fully owned by Pilis Parkerdő Zrt., the state-owned forest management company operating around Budapest, and its core mission remains the interpretation and presentation of forest ecosystems and their wildlife.

Over the past decade, the park has undergone significant development while maintaining its

original vision. Improvements in infrastructure, visitor services, and educational programming have transformed it into a modern family recreation centre that combines nature conservation, recreation, and environmental education. With more than fifty animal species, a petting zoo, thematic trails, playgrounds, and daily programs, the park offers accessible “green adventures” about twenty minutes from the centre of Budapest.

Environmental education plays a central role in the park’s activities through the Forestry School, which has operated in its current form since 2016. Led by qualified forest and zoo educators, the Forestry School provides structured programs based on experiential outdoor learning. These initiatives enable children to engage directly with natural processes and wildlife while complementing formal school curricula and promoting environmental awareness.

The Forestry School offers a variety of thematic programs that encourage exploration, teamwork, and ecological understanding. Activities include wildlife tracking experiences such as In Pursuit of Big Game, interactive sessions like The Living Earth, and discovery-based activities such as Forest Treasure Hunt. Physical engagement is integrated through programs such as the Forest Obstacle Course and Trail-Following Orienteering, while sessions like Tree Giants and the Forest Workshop focus on forest ecology and natural materials.

Maintaining the park’s educational and professional focus requires deliberate strategic choices. Although exhibiting exotic species might attract additional visitors, the wildlife park adheres to its original mission of presenting the forest communities and native wildlife of the Carpathian Basin. In addition to animals, the park also highlights the work of forestry professionals.

The park has become a nationally recognised educational, conservational and community space. Visitors can explore nature trails and playgrounds designed to reflect elements of forest ecosystems, supported by visual storytelling and playful learning methods that help communicate ecological concepts, particularly to younger audiences. The park also participates in conservation initiatives, including national ground squirrel and wildcat protection programs, and provides space for research and environmental education.

A central challenge has been ensuring that these activities remain economically sustainable. The Budakeszi Wildlife Park has therefore developed a model of market-based environmental education in which most educational activities operate on a service-based basis. External funding accounts for less than five per cent of the park’s budget, meaning that the majority of activities are financed through programs that visitors and institutions choose to purchase.

These services include birthday events, family programs, school sessions, camps, and outreach activities. Experience suggests that participants

tend to value programs more when they actively choose and pay for them, although this model requires consistently high-quality educational content. The success of the park's programs, therefore, depends heavily on the expertise of its forest and zoo educators.

To ensure year-round sustainability, the park has developed a diversified program structure. During the school year, the pool of educators (employees or hired external experts) frequently travels to schools and kindergartens to deliver thematic sessions, including animal-assisted educational activities. Weekends focus on birthday and family events at the park, while school holidays — especially the summer period — are dedicated to camps and extended educational programs. This complex structure ensures continuous employment for educators and reduces reliance on seasonal activities.

Overall, the experience of the Budakeszi Wildlife Park demonstrates that environmental education and financial sustainability can reinforce one another. By offering a diverse portfolio of programs — school activities, camps, outreach education, and on-site experiences — the park maintains a stable professional framework for educators while reaching broad audiences and strengthening environmental awareness among younger generations.

VII. 2.3. Walk with a Forester! - when environmental education meets tourism

In 2024, Pilis Parkerdő launched a unique hiking series guided by its forestry district managers. During these special tours, participants can explore both well-known and lesser-known forest routes through the "lens" of the park's forestry professionals. These excursions are more than simply guided walks. Through the perspective of the forestry profession, participants gain insight into the relationship between people and forests and are introduced to the complex world of forest management. During the tours, led by forestry experts, nature enthusiasts can learn about the hidden aspects of forestry work while discovering the routes most favoured by foresters themselves—many of which are lesser-known or rarely visited trails. In addition, linked to the different forestry areas, more professional topics are also explained, like sustainable forestry, for example.


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VII. 2.4. When regeneration is officially embedded into the school curricula: the case of REAL School, Budapest

REAL School Budapest is a not-for-profit, international primary and middle school (ages 5-14) for the curious, creative and courageous kids. It is a private school, so as a business model, it can be of interest only for the regional centres of the disadvantaged rural target areas of the project. But as its main focus on regeneration is indeed unique, it is worth learning about it.

REAL School was founded in 2019 by parents who wanted something more purposeful for their own children. At the moment, ca. 90 pupils (from 25 nations) are in the institution. The yearly fee is high, but ca. 20% of the students receive financial support to be able to take part in the school. REAL School has been awarded the top Accredited Member status with the premier global association for British schools overseas, the Council of British International Schools (COBIS). This means they have been quality assured against a strict set of standards and recognised as offering a high-quality British edu-

cation. As a special show of recognition, COBIS has awarded REAL School with two Beacon School statuses: one for its ethos and values, and the second for its leadership in the School. REAL School is the only one in Hungary that has received this status. REAL School is also fully licensed by the Hungarian Interior Ministry as a Kindergarten to grade 8 school.

As the website says: *"our children's generation has the chance to lead recovery so much needed for Earth. At REAL School, children are inspired and empowered to dream and build a beautiful world"*. At REAL School, driven by a clear mission, children connect knowledge to action through real-life, project-based learning. The curriculum balances core academics with nature, smart tech, wellbeing, entrepreneurship, and regeneration. The project-based learning process is called "Dream to Reality": children grow up experiencing that they indeed can imagine a better world and can develop the skills to build it. They do this every 6-12 weeks, over many years, based on the process below.

In line with this, children's education here goes beyond memorising facts. The school is built around the so-called ANSWER competencies, aligning with the four EU competency frameworks: GreenComp, EntreComp, DigComp, and LifeComp.

Regarding the Benchmark Study, Nature and Regeneration is the most important issue. As for Nature, the entire city is the classroom. On Wednesdays, the children deep dive into nature because they will only protect what they love, and they will only love what they connect with. The students sometimes go to the city, not only because it is filled with learning opportunities, but also because it is a core area for sustainability challenges. These trips are always purposefully connected to the school projects. As for Regeneration, REAL School's ambition is for children to be equipped with knowledge, mindsets and skills to live sustainably and actively regenerate communities and ecosystems. Children are actively involved in small-scale regenerative projects.

VIII. Potential of non-wood forest products within the food industry innovation

Forests and trees can offer a whole range of ecosystem services, including provisional ones. Collecting, harvesting or growing forest goods like nuts, berries, mushrooms, honey, medicinal herbs, or oils can potentially improve the current food system, which largely relies on a small pool of staple crops. This clearly aligns with the trends established by the world's arguably best restaurant, noma, 20 years ago: *"exploration of the natural world, which began with a simple desire to rediscover wild local ingredients by foraging and to follow the season"*.

Non-wood (or non-timber) forest products (NWFPs) help foster sustainable livelihoods, healthy diets and lifestyles, and according to Europe's largest and most dynamic food innovation community, EIT Food, which accelerates innovation to build a future-fit food system that produces healthy and sustainable food for all, three (food as medicine, regenerative thinking and super-local food products) out of the five current key trends of the food industry support the use of NWFPs on a very local level. And this trend is also boosted by the ecological crisis, as climate change threatens food security and farmers' livelihoods. *"Across the political spectrum, there is agreement that our food system must change"*.

VIII. 1. The big picture: emerging trends of the food industry in the mirror of NWFPs

VIII. 1.1. Increasing demand for non-wood forest products

According to the European Environment Agency, NWFPs can play a *"major role in emerging bio-*

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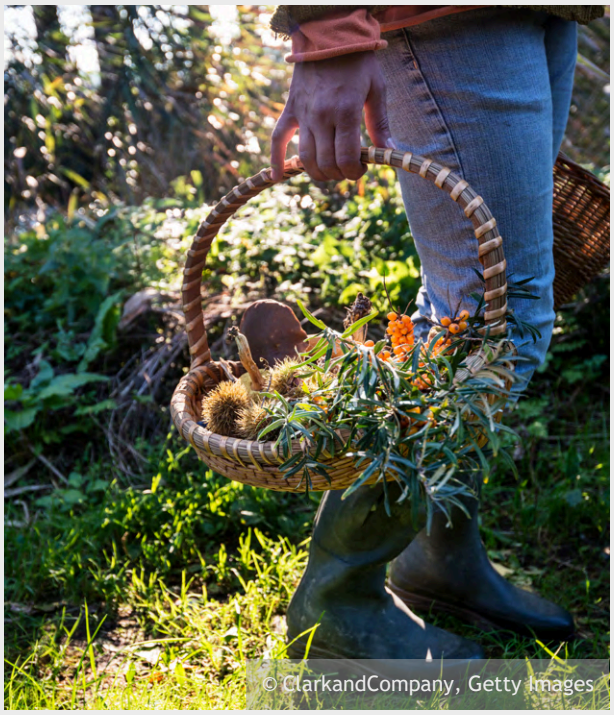
based economies, providing biological resources that can contribute to the transition to a more sustainable bioeconomy for food and agriculture". Their potential has been recognised by frontrunning EU-founded projects, such as INCREDIBLE, StarTree and FOREST4EU. The summary below, based on the European Environment Agency's linked article, underscores both the importance of NWFPs for livelihoods and their significant untapped potential to contribute more substantially to local economies and global markets.

Globally, an estimated 3.5 to 5.76 billion people use non-wood forest products, while the total annual economic value of collected NWFPs is approximately 23.3 billion euros, more than 80% of which is self-consumed rather than sold. In Europe, the total value of NWFPs was 2.2 billion euros in 2015 and showed only modest growth, reaching 2.8 billion euros in 2020. The highest share is concentrated in Central-West Europe. A successful example comes from Italy, where a local association promotes chestnut production. This initiative has enabled local producers to market high-quality chestnuts and value-added products, fostering innovation such as the development of a creamy chestnut liqueur. At the same time, it has stimulated regional tourism and supported the restoration and preservation of the local landscape.

Promoting the sustainable management of NWFPs represents a win-win strategy for landowners, consumers, and the environment. Integrating NWFPs into broader forestry strategies can strengthen economic, social, and ecological resilience, particularly in the face of global challenges such as climate change and food insecurity.

Products such as mushrooms, honey, herbs, and wild berries allow landowners to diversify their income streams. These high-quality goods are valued for their nutritional and medicinal properties, offering consumers healthy and sustainable alternatives. Furthermore, the production and trade of NWFPs can reduce pressure on overexploited resources, contributing to more balanced and sustainable ecosystems.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Forests and trees play an important role in diversifying food systems. However, high commercial demand for certain forest products may result in overharvesting, depletion of wild resources, and negative impacts on biodiversity. Promoting sustainable forest management and regulating harvesting rights for NWFPs are therefore essential to ensure sustainable extraction levels while also safeguarding recreational opportunities for both hobbyists and professional collectors.

Forest food products also possess a dual value. In addition to their market value, they generate significant social value, reflected in people's willingness to gather them personally — even when the opportunity cost is higher than purchasing them.

VIII. 1.2. Regenerative farming shaping the food industry

The dramatic degradation of soil (both quality and quantity) shows that the paradigm shifts in agriculture, the No. 1 threat to biodiversity, are inevitable and speeding up the transition is of utmost importance. *"By 1950, half of the*

*world's land supply had been rendered unfit for cultivation by increasingly intensive agricultural technology" (*Poisoned Soil*).* According to the 6th Assessment Report of the IPCC (Intergovernmental Panel on Climate Change), droughts, heat, and water scarcity will make production impossible on a third of the world's cropland by the end of the century. Soil moisture in nearly half of Europe's agricultural areas has declined substantially in recent decades (while agriculture in general consumes 70% of freshwater resources). It is therefore clear from the data that there is also a dramatic erosion and deterioration of soil quality, which intensive technology users believe can be offset, for a time, by increasing fertilisation. In the meantime, more and more people need to be fed, while more severe droughts cause hundreds of billions of euros of damage in agriculture as well as serious health risks. By now, we know that with regenerative agriculture methods, it is possible to multiply the amount of soil organic matter in a few years, even on a large-scale farm, while reducing the use of chemicals and machines, but not necessarily reducing yields. Many of us ask the same question: if we are currently in the last moment to save the soil, isn't it a now and here moment for change, to finally produce healthier food while improving the environment and sequestering a lot of carbon dioxide?

As regenerative concepts become mainstream, they are becoming entangled with broader politics. There are various forms of regenerative agriculture, but the focus is always on restoring soil health, enhancing ecosystem resilience, and adapting to local contexts. *"In the past few years, regenerative concepts have shifted from niche scientific interest to a mainstream strategy in the food system. 50 of 79 global food giants (collectively worth over $3 trillion) mentioned regenerative agriculture initiatives in their disclosures, in a recent FAIRR survey,"* says EIT Food.

Yet lots of farmers in Europe worry about their futures and the investments needed to transition towards eco-friendly farming practices. *"Fortunately, we are starting to see more conversations about sharing the risks across the food value chain and removing barriers to the adoption of regenerative practices".*

VIII. 1.3. Food viewed as holistic medicine for the full life cycle

Across the food sector, people are also recognising the medicinal role of food in supporting overall wellbeing. This trend of the food industry is rather broad, starting with the emerging need for real food, which fits very well with the scope of the Benchmark Study, and continued by very technical issues such as how AI unlocks groundbreaking opportunities in personalised nutrition and health optimisation, which is not the scope of the current study.

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Regarding the first theme, it is well known that there is an alarming rise in diet-related non-communicable diseases, such as cardiovascular diseases, diabetes, and cancer. Recent umbrella studies outline links between ultra-processed food consumption and adverse health outcomes. *"There is a growing recognition that food products can support optimal health and disease prevention at all ages. There is also a growing demand for "real" foods from natural processes that feel authentic and promote both physical and emotional well-being".*

VIII. 1.4. Pivot from supply chain globalisation to local solutions

Governments and consumers that once embraced globalised food are turning more and more to local food products and supply chains. In

the past couple of years, EIT Food has highlighted how countries can plan better for food security and be better prepared for climate-driven food shocks. *"With climate and conflict continuing to impact global food supply chains, the issue of local resilience remains critical at all levels of governance. Consumer sentiment appears to align with this trend. According to the upcoming EIT Food Trust Report 2024, 38% of European consumers intentionally choose foods grown locally, and 62% prioritise seasonal fruits and vegetables. Consumers associate agriculture with employment, therefore local production is associated with local prosperity".*

Another trend within the food industry is circularity, through innovations in food waste reduction and side-stream valorisation. *"Startups like MaGie Creations are turning brewer's grains into nutrient-rich flours, while NapiFeryn BioTech produces food-grade proteins from rapeseed press leftovers. And look out for the first products from the Ellen Macarthur Foundation's 'Big Food Redesign Challenge'. You can expect pasta from wrinkled peas, a snack using banana peel, and juice from cacti. These are just some of the products developed by companies ranging from startups to household names like Danone and Nestlé. As this circular movement grows, there will be more collaborations between sectors. For example, the Centre for Circular Economy in Coffee was launched recently to stimulate new innovations using the 40 million tonnes of biomass produced each year in coffee production. This coffee "waste" can be turned into fuel and materials. By 2040, the market will be mature enough to produce cosmetics and other high-value ingredients".*

VIII. 2. Explanation of the theme's business potential through good examples

VIII. 2.1. Forest to fork: the case of Dzsindzsa

In Hungary, one of the best examples of an entrepreneur specialised in the Forest to Fork movement is Dzsindzsa, founded by Sára Megyeri. Although the market is growing everywhere, it is still very small in Hungary: there are only around ten similar entrepreneurs operating in the country.


© Dzsindzsa, Instagram

Originally a newswriter specialising in gastronomy and a trained sommelier, Sára's connection to nature goes back to her childhood, when she often went out to the forest with her father to pick mushrooms. However, the creation of Dzsindzsa is mainly the result of hard self-education and personal experimentation. She started the business five years ago, gradually building it into a growing small enterprise.

Dzsindzsa's main profile is closely linked to personal events, such as cooking workshops (e.g. a monthly workshop in cooperation with a major Hungarian gastronomy portal), lectures, and market appearances, alongside an online webshop where customers can purchase the products Sára collects and processes. She operates as a self-employed entrepreneur, and this activity now accounts for around 70% of her income — a proportion that continues to grow. Her typical customers are health-conscious,

middle-class women between the ages of 40 and 50, and she primarily sells at farmers' markets and designer markets, mostly in Budapest.

Personality and direct personal connection with customers play a key role in her business model, especially because many of the wild plants she works with are unfamiliar to the average consumer. For example, she can not distribute her products through culinary shops, simply because selling them requires in-depth product knowledge and personal explanation, which shop assistants usually cannot provide.

She holds a small-scale producer's license and works in a separate, officially approved kitchen rather than at home, which is essential for meeting regulatory requirements. According to Hungarian legislation, she must apply for and submit a collection permit to the relevant forest management authority if she collects more than 2 kilograms of wild plants. She is not allowed to gather plants in protected areas, while working on private areas is theoretically possible, but it is administratively very complicated.

A major challenge is that in Hungary, it is not possible to obtain an ecological certification for plants collected in the wild. Due to the lack of such certification, she cannot sell her products at certain organic markets, for instance, even though similar certification systems exist in other European countries. Her key partners include fine dining restaurants such as the Michelin-starred Costes in Budapest or Hotel Palota Lillafüred, where Dzsindzsa products regularly appear on thematic menus and even on the breakfast buffet. The city of Miskolc has also included Dzsindzsa products in its official municipal gift packages (Miskolc has a very conscious tourism strategy related to Forest to Fork, awarded recently by Green Destinations as one of the 100 most sustainable tourism practices in the world).

Her main activities include supplying fine dining restaurants, providing professional consultancy, running workshops, managing her webshop, and selling at markets. Her most important resource is her own expertise — she works entirely alone, which is also her biggest challenge. At present, her income does not allow her to hire a colleague to assist with administration, marketing, or packaging. Despite the business challenges, Dzsindzsa remains a "love project" for Sára. She does not want to lose the joy of going into the forest and gathering plants. These are luxury products, she emphasises, and she does not intend to turn the venture into a large-scale business, but it would be essential to grow a bit, allowing her to employ someone for administration, marketing, or packaging.

VIII. 2.2. Forest to fork: other cases

Several other grassroots initiatives in the HR-HU or HU-SI region and beyond are exploring the connection between forest and plate, blending wild plant knowledge, nature experiences, education, and small-scale production.

Gaztronomia for example, focuses on wild plant foraging, fermented foods, and immersive nature activities. The entrepreneur offers wild plant walks in the Balaton-region countryside, where participants learn to identify edible and medicinal species in their natural habitats, combined with tasting opportunities and discussions about incorporating heritage techniques like fermentation into modern cooking. Workshops, events, and a collection of recipes aim to build community interest in seasonal, locally foraged foods and deepen participants' connection to the landscape.

Another example is Biobia from Mecsek, a project that integrates wild plant pedagogy with experiential gastronomy and ecological catering. Led by its founder and collaborators, Biobia offers wild edible picnics, eco-catering events, and team-building workshops that combine hands-on plant identification, seasonal foraging experiences, and preparation of forest-inspired meals. The enterprise highlights a holistic approach: blending traditional techniques, such as preserving wild greens and mushrooms, with educational programming for groups of all ages. Activities include guided forest tours (often in-

cluding picnic or ritual meals), cooking sessions using wild herbs and fungi, and creative workshops designed to expand participants' understanding of foraged ingredients in culinary contexts.


© Biobia

In the realm of wild-food products and small-batch forest-to-fork goods, Banyaerdő operates as a social enterprise in Southern Transdanubia. It collects and processes wild ingredients into consumable products, marketed locally and online. Their webshop includes jams, smoked and preserved forest mushrooms, pestos, and seasonal specialities that bring forest flavours into everyday meals. Banyaerdő products are offered via markets and partner retailers nationwide, and their portfolio spans syrups, oils, dried fungi, and herbal condiments that reflect traditional and contemporary uses of wild harvests in pantry staples.


© Banyaerdő webshop

A third illustrative case from outside Hungary is Wildflower Tea House, a small webshop-based enterprise focusing on herbal tea blends, tinctures, and plant-derived wellness products drawn from wild and cultivated botanicals. Their online catalogue features blends aimed at supporting wellbeing (e.g., immunity, relaxation, women's health) and emphasises careful selection and natural packaging. While not a traditional forest foraging business, the Wildflower Tea House demonstrates how wild and semi-wild plant materials can be translated into value-added goods for a health-oriented consumer niche, combining aromatic plant knowledge with e-commerce accessibility and artisanal branding.

Pajta, the only Michelin-starred restaurant in the border region of HR-HU-SI, also combine a "progressive international cuisine with a strong focus on local ingredients". It's important to them to feel responsible for using and showcasing high-quality organic ingredients and wild mushrooms to their guests.


© Pajta

But this story also applies to forest management companies. Mecsek Discovery Centre, operated by Mecsekerdő, also helps guests to explore the magic world of the edible forest. The new visitor centre has a room specifically designed for this theme, based on the book of a local university teacher, Andrea Dénes.

VIII. 2.3. The truffle experience

There is a growing number of small enterprises offering experience-based gastronomy events around truffles. Érsek Éden Truffle gastronomy plantation offers quality truffle programmes for private individuals, as well as for innovative representatives of the tourism, catering and hotel industries. The company's main profile is

beyond simply selling the truffles we grow. *"During our programme, you will gain an insight into the magical world of truffles. After showing you around the plantation, we will guide you through what you need to know about truffles, how to search, store and use them, and you will even get to know different varieties of truffles. After that, you will be invited to join our highly trained dogs for an exciting truffle hunt, and then an experienced chef will be waiting for you in the garden area of the plantation".* It is worth mentioning that specific expertise is needed to establish such a company: a good constellation of a biologist, a chef and an experienced truffle hunter.

VIII. 2.4. Catch your trout!

Visegrádi Pisztráng (Apátkúti Valley, Visegrád, Hungary) is a forest- and watershed-linked food/experience initiative. It sells trout not only as a product, but also as an on-site service. It has two main pillars: the Ördögmalom Forest Restaurant (hospitality) and the Trout Lakes (seasonal operation), located within walking distance from the restaurant. The core idea is to build on local natural conditions — clean, cool water, a forest microclimate, and a recreational landscape — and offer gastronomy, activities, and take-away food at the same place. Services offered:

- Eat on site in the forest restaurant, where grilled and smoked trout are key menu items.
- A "catch and cook" experience: visitors can catch trout from the lakes and have it cooked on site. This turns fishing into an immediate food experience.
- Take-away sales: kitchen-ready, salted fresh trout, and locally smoked, vacuum-packed trout. Smoked fish (marinated, then smoked on hardwood chips) and vacuum packaging create higher added value and better shelf life.
- Gift vouchers: these help smooth demand and support more predictable revenue.


© Trout Lakes & Ördögmalom Forest Restaurant

Visegrádi Pisztráng ("trout") is a multi-income, place-based model. It connects "production/fish farming – processing (smoking, kitchen preparation) – restaurant – direct sales" locally, so more value stays in the area. It also packages trout as an experience (catching and immediate cooking), which usually increases willingness to pay and strengthens the brand compared to selling raw fish only. In addition, take-away and processed products (especially vacuum-packed smoked trout) help manage seasonality and extend the on-site visit into home consumption. From an ecosystem services point of view, the model is indirect monetisation. It does not sell credits; instead, it builds the value of clean water, the forest microclimate, and the recreational setting into product quality and the customer experience. This is a strong example of how forest-linked food products can be marketed in a way that uses landscape advantages responsibly while creating stable, diversified revenue.

IX. The visitor economy and regenerative tourism: “when tourism is not only about seeing the world anymore, but saving it too”

Due to our impact on the planet, we face never-before-seen ecological and societal challenges, and these pose huge tasks and responsibilities for the growing tourism industry as well. Following the fundamental economic, security, and pandemic turmoil between 2008 and 2021, international tourism is regaining its ground. Over-tourism hits the most frequented urban destinations again, and the environmental footprint of the sector is drastically growing. Following the Glasgow Declaration on Climate Action (2021), COP28 in 2023 clearly stated that sustainable tourism is an urgent necessity. The required transformation of the industry will include decarbonization, increasing the sector's capacity to enact concrete climate action, connecting to the renewable energy revolution, establishing stronger infrastructure, and smarter planning, as well as reacting to current trends in other thematic fields, such as farm-to-fork strategies and the boom in agroecology.

A lot of different approaches have been developed in recent years to support the industry in better meeting this - evergreen - challenge. In line with the broader theory of ecotourism and sustainable tourism, the concept of the “visitor economy”, or as some refer to it, “new tourism”, the well-being and satisfaction of both visitors, locals and service providers have been put in the spotlight. The rise of the concept of the visitor economy is parallel to many new trends of ecotourism (travelling environmentally and socially responsibly). Among them, “regenerative tourism” is a key and emerging concept: a tourism practice that seeks to leave destinations in a better ecological state than

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they were found and which directly aims at nature conservation and community empowerment. Or simply: regenerative tourism gives back more than it takes, and this brand-new trend is about small-scale, community-led experiences in rural areas that reconnect people with nature, boost local pride, and make each place heal.

The renewal of the tourism industry is also in line with the expectations of visitors: the number of eco-minded travellers is significantly growing, and besides their everyday life, they are willing to do something good while they are on holiday. According to a global survey made by Booking.com, 68% of global travellers would consider participating in cultural exchanges to learn a new skill, followed by a volunteering trip with 54%. According to a recently published article, *"over 83% of travellers globally indicate a preference for sustainable travel, with 66% wanting to leave destinations better than they found them. The sustainable tourism market, valued at USD 2.01 trillion in 2024, is projected to reach USD 8.43 trillion by 2033, growing at 17.3% annually. Regenerative tourism sits at the premium end of this market, where travellers do not just seek to "do no harm" but actively want to contribute to restoration"*.

Within its Green Scheme of the Slovenian Tourism (GSST), the country, which was declared the world's first green country by Global Green Destinations Day 2016, has already made steps to push service providers towards a more sustainable operation. The Green Scheme is a tool developed at the national level as well as a certification programme that, among others, offers tools to destinations and service providers that enable them to evaluate and improve their sustainability endeavours, and promotes these green endeavours through the Slovenia Green brand. It also helps service providers to explore the benefits that the GSST offers to support their everyday sustainable business operations, such as reduced operating costs by lowering energy, water, and waste consumption, while increased efficiency, visibility and marketing value can be realised.

Besides explaining these novel thematic fields, in this chapter, we highlight concrete entrepreneurial cases answering these brand-new trends and explain how all of this works in practice.

IX. 1. The emerging trends of visitor economy and regenerative tourism

IX. 1.1. The concept of Visitor Economy

> *When the visitor does something good for the destination, while getting unique experiences and rewards.*

We are witnessing the transition of the well-known "old" world of tourism to the world of "new tourism" or "visitor economy", centred around the so-called "quality experience spaces", where both the visitors, the residents and the service providers are satisfied and educated.

The issue is that the old world of tourism has put too much focus on the tourists, who therefore simply over-dominated the entire tourism ecosystem, while the host environment has become nothing else than the "servants" of tourists. Whereas in the past, tourism professionals aimed to satisfy the needs of tourists as much as possible, today the visitor management process is increasingly integrating the needs of locals as well. Through these new quality experience spaces, the goal is to inspire and educate visitors and locals at the same time and create public value. To create new quality experience spaces, new narratives are needed: the visitor economy, by nature, shares the values of sustainable tourism and dispersing guests and benefits, helping visitors discover new destina-

tions, and generating new revenues for families, businesses and communities that have not previously benefited from tourism. A visitor economy strategy is always based on new metrics (e.g. satisfaction of hosts, visitors arriving by train) and strong networking among players that cooperate along long-term sustainability rather than short-term benefits. Countries and cities with well-developed tourism institutions and strong planning traditions have in recent years begun to refine their tourism economies to apply the visitor economy approach, which is centred around the following four principles:

- **Quality Experience Spaces**: while organising unique experiences and educational opportunities for visitors as well as locals, the question is no longer what a destination can do for tourists, but how tourists can contribute to improving the quality of life of local communities.
- This needs completely **new narratives** to be told by new actors: a key part of the experience is the replacement of impersonal visits by iterations based on real human interactions between the visitor and the person in the place, managed by "encounter moderators", formerly known as guides.
- **New metrics** are also needed for this paradigm change. The new approach puts people in the centre. It aims at measuring the success of tourism in the satisfaction of all actors: locals, visitors and the service providers. Vienna has launched, for instance, the tourism acceptance indicator: a regular representative survey among locals about their satisfaction with tourism.
- **Coopetition (networking):** the visitor economy concept fosters strong networking to reach long-term sustainability rather than short-term benefits. The globally unique Vienna Tourism Card, for example, consists of only services with approved green certificates.

IX. 1.2. Nature-positive travel: the Regenerative Tourism

> *When tourism directly aims to restore destinations and biodiversity*

Regenerative tourism is often described as a practice that seeks to leave settlements or destinations in a better state than they were found before travelling there. It draws inspiration from regenerative agriculture, which emphasises restoring ecosystems and enhancing biodiversity. Regenerative tourism is more than sustainable tourism and asks whether today's tourism is making destinations' ecosystems, communities and wellbeing healthier or more degraded? It was a core question of the webinar organised by the EUROPARC Federation in December 2025 on Regenerative Tourism, where nearly 500 people from across Europe registered. They say: *"for three decades, sustainable tourism has helped us reduce impacts. But in the face of climate breakdown, biodiversity loss and growing social tensions around housing and overcrowding, doing less harm is no longer enough. Keeping a degraded system as it is… is not sustainability, it's slow decline."*

As Sustainable Rural Development International Limited UK pointed out, *"regenerative tourism has rapidly entered the mainstream vocabulary of destinations, investors, and development institutions. It is invoked in strategy documents, funding proposals, and marketing campaigns with increasing frequency yet with decreasing precision. As a result, the concept is now at risk of becoming diluted, misapplied, or dismissed as aspirational rather than actionable"*. Regenerative tourism is too often framed as an ethos

rather than a system or a daily practice; governments are unsure how to regulate it, investors are unsure how to assess it, and communities are unsure how it will materially benefit them. Nine key aspects have been identified in international literature to differ the regenerative tourism from sustainable tourism. Let's see the most important ones:

- Paradigm: according to sustainable tourism, tourism is an industry, while propagators of regenerative tourism say that tourism is a living system that coexists with the regenerative paradigm.
- Purpose: sustainable tourism intends to minimise the social and environmental impact of tourism while pursuing economic growth. Regenerative tourism intends to enable communities and ecosystems to evolve, renew, and restore.
- Approach: sustainable tourism seeks ways to lessen the impact of tourism on ecosystems and communities; regenerative tourism aligns with nature and achieves harmony in economic, social, cultural, spiritual, and ecological development.

The most important difference, however, is that regenerative tourism directly aims to restore, regenerate and rejuvenate destinations, benefiting both ecosystems and local communities. Regenerative tourism emphasises the interdependence between travellers and destinations, where tourism activities contribute positively to the environment and society. Regenerative tourism redefines the travel experience by putting restoration, community and sustainability at the forefront, and obviously, long-term sustainability is more important for regenerative tourism businesses than profit maximising. Four principles guide this approach:

- Ecological restoration: travel activities actively contribute to restoring ecosystems and habitats, enhancing biodiversity and environmental resilience.
- Community engagement: local communities play a central role in the decision-making process, ensuring that tourism supports their needs while protecting cultural heritage.
- Economic inclusiveness: by supporting local businesses and reducing economic leakage, regenerative tourism creates resilient economies that directly benefit residents.
- Holistic impact assessment: environmental, social and economic impacts are carefully assessed to maximise the positive contribution of tourism, and new ways of measuring success are established (soil, water, species, equity, quality of life – not just arrivals).

IX. 2. Explanation of the theme's business potential through good examples

IX. 2.1. CopenPay

> *Copenhagen attractions reward thoughtful actions*

One of the globally best-known city-wide examples of the new visitor economy concept is the CopenPay system in Copenhagen. Copenhagen, one of the most liveable cities, which is also famous for its effort to make the city carbon neutral, recognises that tourists can contribute to the beautification, cleanliness and sustainability of the city by encouraging them to do so. In this spirit, a system has been developed whereby if a visitor is willing to volunteer for the city or its inhabitants, they are rewarded with

small tokens to be used at attractions. CopenPay, initiated by Wonderful Copenhagen, unlike many initiatives, CopenPay is not meant to increase tourism, but rather make it more sustainable and rewarding for both visitors and the city.

CopenPay, first introduced as a pilot in 2025 and expanded later, offers tourists the chance to access local experiences by engaging in environmentally friendly actions. For example, visitors can earn a free boat ride by picking up litter in the harbour, gain entry to a museum workshop by arriving on a bike or train, or receive a complimentary vegetarian meal by helping remove invasive plants. The initiative aims to raise awareness among travellers about the impact of their choices and encourage them to give back to the places they visit. There is a wide range of opportunities for everyone to find the discounts and incentives that interest them and contribute to the sustainability of Copenhagen. You can find all the great CopenPay offerings on its website.


© VisitCopenhagen

As more destinations adopt this model, CopenPay is becoming a symbol of a global movement (DestinationPay) toward responsible tourism - where experiences are earned not just with money, but with meaningful contributions to the local environment and community. According to the EU Tourism Platform, a *"growing number of European destinations are now adopting similar programs to promote more mindful travel. Over 100 cities have expressed interest, with major urban centres in Germany and Finland preparing to launch their own localised versions"*. In addition, cities across Asia and North America are also eager to learn from Copenhagen's approach.

This more complex systematic example can be inspirational for regional tourist cities to reshape their destination offer, and can also boost cooperation between cities (tourism boards) with forestry branches and nature conservation organisations. Cities are often frontrunners of innovations, and in line with this, destination management organisations are "conductors" of innovative thinking and approaches, enabling the tourism industry to become a lab of urban innovation.

IX. 2.2. GreenKayak

One of the flagships behind CopenPay is the GreenKayak initiative, established in 2017 by an environmental NGO (it is now operational in several countries: Sweden, Germany, Finland and Norway). The NGO simply involves visitors as volunteers in the fight against pollution while kayaking. The green kayak service makes the kayaking experience free for those who are willing to collect litter in the water during paddling and share the experience on social media using the hashtag #GreenKayak. Since 2017, tens of thousands of people have paddled in sturdy, double-decked GreenKayaks in the harbours, rivers and lakes of five European countries, collecting more than 100 tonnes of litter. As a result of green kayaking, people are becoming more careful about how they handle plastics and other waste in their daily lives, while local harbours become cleaner.


© GreenKayak

The initiative is a great and very effective way for residents and visitors to act locally, connect themselves and others to water, and start a dialogue about what we all need to do to combat plastic pollution in our environment. As well as contributing to the development of the local environment, the initiative is an excellent example of involving visitors in the development of responsible behaviour towards the area they visit, and it is also an excellent opportunity to participate in a unique sightseeing programme.

This example can be inspirational for any tourism service providers in the region. However, the business model has to be redesigned as none of the local attractions has such a big number of visitors as a major tourist destination.

IX. 2.3. When the green mindset becomes an attraction in a luxury hotel

Hundreds of hotels are searching for ways to minimise their ecological footprint, but in a city like Vienna, which makes sustainability a core organising principle within urban development, there are even frontrunner luxury hotels in this field. Boutiquehotel Stadthalle is the first city hotel with a zero-energy balance in Austria. By using photovoltaics and solar energy, and by doing without energy-guzzling appliances, the hotel is now able to produce as much energy per year as it consumes.


© Boutiquehotel Stadthalle

The green mindset is basically an attraction in the hotel: they have turned their idyllic courtyard into a peaceful green oasis. Their lavender roof is not only for guests enjoying the view or a glass of wine, but also for pollinators, who reward the hotel with their best honey that visitors can even taste as part of their delicious organic breakfast. In addition, hotel rooms are dedicated to Sustainable Development Goals and most rooms are furnished with stuff collected from the flea market and upcycled during regular workshops organised by the hotel. This is facilitation of the green mindset of both visitors and employees, which is so important in this high-class hotel that even the used clothes of employees can be reused in the hotel as a cover for furniture, for example, prepared during an upcycling workshop. What's more, environmental awareness pays off at Boutiquehotel Stadthalle: they use a green bonus. Guests arriving by train or by bicycle receive a 10% discount on the price of their room. In Boutiquehotel Stadthalle, everyone is involved in the storytelling of the new concept: doing something good is a good feeling and the goal of tourism development.

IX. 2.4. Examples of practical application of the regenerative tourism concept

Between 2014 and 2024, almost 8 million people left rural EU regions, while cities gained over 10 million. Empty houses, closed shops, and fading traditions are now common in the countryside. The regenerative tourism concept sounds great, but very few examples showcase how it works in everyday life, and most examples are high-level accommodations or resorts. Although concrete examples are mentioned below, it is worth mentioning that vocational education training (VET) programs for marketing professionals to support small-scale rural/regenerative travel are also a growing trend (see this example).

IX. 2.5. When sustainability is not just a nice-to-have policy for the destination management

One of the best-known examples of Regenerative Tourism is Grootbos Private Nature Reserve in South Africa. The Nature Reserve is home to 765

plant species, 100 of which are endangered. It started as a self-catering facility in the 90s and now offers guests exquisite 5-star accommodation offerings. It is not only nature to be experienced, but conservation efforts, education and community empowerment as well. As a result, they had more nature-based experiences to offer to travellers than before. The Grootbos Foundation, formed in 2003, is a true example of how a tourism product can make a difference to both guests and visitors alike. They helped establish community-owned enterprises, protected endangered plant species, restored ecosystems, and created multiple education programs. The cornerstones of the model are:

- A key pillar of the foundation is its Green Futures project, which, among other things, offers Horticulture and Life Skills College, established in 2003. Since its inception, 118 young people have graduated, and 90% of graduates have found employment.
- The foundation also manages a successful project to combat invasive alien species, employing 61 previously unemployed people from the surrounding community.

© Grootbos

- The Siyakhula Organic Farm, which was established in 2009, now employs a full-time staff of six and runs as a commercial enterprise to make an income for foundation projects and provide fresh food for the hotel.
- The foundation runs a successful football academy which provides the youth in surrounding communities with access to facilities, life skills training, HIV education, female empowerment and more.
- Guests are often seen immersing themselves in the local culture by joining the youth for a game of football or assisting in clearing invasive vegetation or getting their hands dirty on the organic farm.
- Guests are also constantly reminded about how their actions contribute to the greater good of the community, which is achieved by using many channels of communication.

So, in the Grootbos Private Nature Reserve Lodges, sustainability is not just a nice-to-have policy. The foundation and associated non-profit programmes now employ ca. 150 full-time staff, more than 80% of whom are from locally disadvantaged communities.

One of the European examples EUROPARC Federation used (e.g. CerdanyaViva a tourism business evolving into a regenerative living lab in the Pyrenees) is similar to Grootbos Private Nature Reserve: accommodations that use sustainability and regenerative thinking as a key brand: they use their profit to make the hotel more green and zero-carbon, they invite guests as well as the local community to be a part of this journey. They established an organic farm to feed the hotel; they train local people and invite guests to learn about regenerative thinking by working a few hours in the garden.


© CerdanyaViva

This example can be inspirational, obviously for hotels and other accommodation services. Besides having a major investment (e.g. changing the heating system of a hotel), relatively smaller projects are in the pipeline too: working together, for example, with an organic farm to provide food.

IX. 2.6. Think bigger! - Foundation Pioneers of our Time and related Biodiversity Festivals

During the webinar organised by the EUROPARK Federation, different community-based festivals promoting biodiversity were also highlighted from Southern Europe, where tourism is becoming a force for regeneration:

1. SentimLaMuga – a river-basin movement & festival in the Muga valley (Catalonia)
2. Anaga Biofest – a biosphere-reserve festival in the Anaga Mountains (Tenerife)
3. REGENERATe Tenerife – island-scale engagement and restoration actions

These festivals are the entry points of something much bigger: landscape regeneration projects. Foundation Pioneers of our Time is, for example, dedicated to establishing a new regenerative operating system for humanity. Based in the Muga Valley in the Spanish Pyrenees, it operates on 100.000 hectares. They intend to be a living demonstration case, showcasing innovative solutions that can be replicated across the thousands of similar valleys in the EU. They embrace a holistic, systems-thinking approach, collaborating closely with the dozens of local actors from the local ecosystem to drive meaningful change. They are facilitators to implement a vision in the bioregion:

- Forest management is essential for healthy, resilient forests. In the Muga Valley, they enhance the forest's ability to store carbon, regulate water, and support wildlife. Sustainable forest management also reduces wildfire risk. These practices ensure forests stay vibrant and sustainable for future generations.
- They experiment with the emerging market of climate credits, explained in Chapter 4. They introduced their place-based climate credit, generating credits that enhance water quality, sequester carbon, and support wildlife. These credits ensure a steady water supply for Costa Brava North, crucial in this drought emergency. Businesses and individuals can use them to offset their environmental impact and protect the local landscape.


© JackF, Getty Images

- River stewardship: they collaborate with local stakeholders to restore and protect 23 kilometres of the Muga River. This effort enhances water quality, ensures a reliable water supply, supports wildlife, and promotes healthier ecosystems. Integrated with sustainable forest management, their activities stabilise riverbanks, reduce erosion, and filter pollutants.
- Vulture recovery program: the aim is to return one of the four Iberian vultures after almost a century in the Muga Valley (rewilding vultures in different points of Europe is one of the most successful conservation works in Europe). Vultures play a crucial role in helping maintain healthy ecosystems by cleaning up carcasses and preventing disease spread. Additionally, it offers unique opportunities for nature enthusiasts to observe these impressive birds in their natural habitat.

IX. 2.7. Engage with the nature – the case of Mario Romulić, Croatian photographer

Mario Romulić is a renowned Croatian photographer and multimedia artist, best known for his wildlife photography and spectacular visual portrayals of Croatia, especially the Kopački Rit Nature Park and Baranja region. In recent years, he has focused on nature, sustainable living, and eco-tourism through his "Čudesna Šuma" (Magical Forest) eco-estate near Osijek, where he combines photography with environmental education, workshops, and immersive visitor experiences.


© Čudesna šuma

Čudesna šuma is about a life change – a transition from an intensive, global photography job to living and working in nature. On his estate near Bilje, Romulić developed a self-sustainable food production system based on biodynamic principles and the idea of living in balance with nature. His main income comes from the products he grows himself, using the services of partners who produce products in the same way as he does. As a known photographer, he has his own circle of visitors who appreciate him. He currently has 3 groups a week and does not want to increase the number of visits because then his business model would be jeopardised, although there is interest. Through workshops, visits and conversations, he wants to spread awareness about sustainable living. He emphasises that everyone can make small changes – growing their own food, spending time in nature and having a more responsible attitude towards the environment. Romulić shows through his own example how to combine ecology, agriculture, tourism and education into one meaningful life project, emphasising that harmony with nature is a long-term personal and social solution. As migration from rural areas to cities is increasing, there is a huge potential in projects like Magic Forest. There is a large upward trend and interest in its business, and this type of business has great potential for growth and expansion.

IX. 2.8. Generating income at forest management companies through ecotourism: the case of Mecsekerdő

Across Europe, forestry needs to differentiate its income to tackle the mismatch generated by the fact that while societal demands for cultural (e.g. recreation, outdoor tourism, educational, health-related or spiritual activities) as well as for regulating (climate and biodiversity) ecosystem services are increasing, forestry income is predominantly related to provisioning services, with wood supply being by far the most important source of income.


© Mecsekerdő

Mecsekerdő is a good example of how to strengthen the ecotourism portfolio of a forest management company. The company has 16 rentable forest houses and all of them are renovated, partly supported by a targeted na-

tional programme. Furthermore, it actively manages 2 forestry schools, the MecsExplorer adventure park with 6000 guests yearly, and a 6 km long railway (14-17 thousand visitors yearly). Not to mention the various thematic trails. In the near future, Mecsekerdő will enlarge the area of the MecsExplorer adventure park with accommodation facilities, a water playground, and a new trail dedicated to land art.

IX. 2.9. Hungary's first regenerative tourism product in Kóspallag

Kóspallag is a small village in the Börzsöny mountains, close to the Danube Bend, which is a prominent tourist region of Hungary. However, Kóspallag hardly profits from the tourism of the region. Based on this fact, as well as on the decade-long community building process in the village targeting indigenous ecological knowledge and traditional land use, the local community worked out 3 different programme packages for individuals as well as for corporate team buildings through Humtour, a travel agency that first got the Good Travelseal certification in Hungary.

1. Herbs, mushrooms, excursion to silvopastoral and basket weaving in Kóspallag (11 April, 17 May) - full programme
2. Cooking workshop in the organic farm with a master chef (6 June, 19 September) - full programme
3. Herbs, essence oils, forest and horses in Kóspallag (2 May, 18 July, 3 October), specialised on families - full programme

These are all about rethinking the traditional lifestyle, showcasing indigenous knowledge and traditional land use, and the local community identified the following 3 unexploited assets: having a biointensive, community-supported vegetable garden in the village, the use of continuous tree cover forestry in the area and rethinking locals' remaining connection to nature (e.g. edible forest).

This pilot tourism package puts sustainability and renewed connection to nature in the centre, while visitors should also do some voluntary work, giving something back to the destination, being literally the first regenerative tourism product in Hungary.