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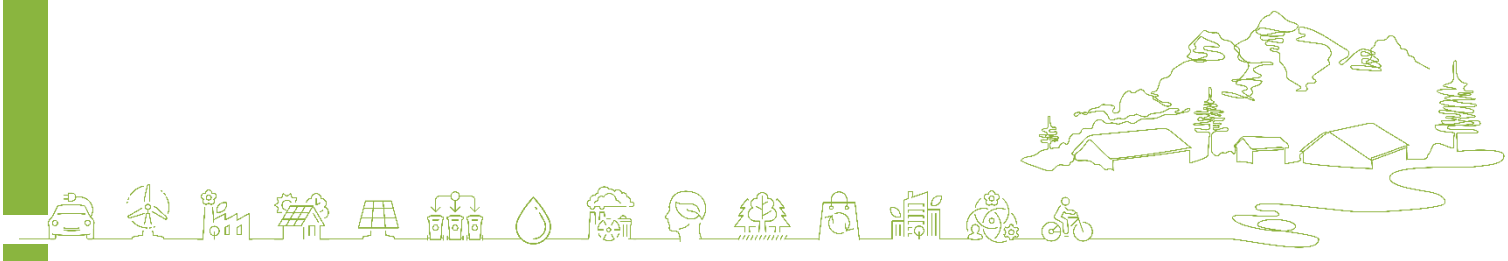
Alpine Space

Forest EcoValue

POLICY MEMO ON IMPROVEMENTS TO ENABLE/FACILITATE THE DEVELOPMENT OF FOREST ECOSYSTEM SERVICES MARKETS, PAYMENT SCHEMES AND FOREST-BASED VALUE CHAINS IN THE ALPINE REGION

O.3.1

RESPONSIBILE PARTNER: NATIONAL INRAE / PP4



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Carbon neutral and resource sensitive Alpine region
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Forest EcoValue:
Supporting multiple forest ecosystem services through new circular/green/bio markets and value chains

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List of the Forest EcoValue project partners

PP1. Finpiemonte SpA – Regional financial and development agency / **Coordinator** [FINPIE]
PP2. Lombardy Foundation for the Environment – Fondazione Lombardia per l'Ambiente [FLA]
PP4. National Research Institute for Agriculture, Food and Environment – Institut National de Recherche pour l'Agriculture, l'Alimentation et l'Environnement [INRAE]
PP5. Slovenia Forest Service – Zavod za Gozdove Slovenije [ZGS]
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PP7. Lombardy Green Chemistry Association – Cluster Lombardo della Chimica Verde [LGCA]
PP8. University of Graz, Institute of Environmental Systems Sciences [UNIGRAZ]
PP9. Regional Centre for Forest Property Auvergne-Rhône-Alpes – Centre Régional de la Propriété Forestiére [CNPF]
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Summary

Glossary

CO_2 – Carbon Dioxide

EAFRD – European Agricultural Fund for Rural Development

ES – Ecosystem Services

EUSALP– EU Strategy for the Alpine Region

FES – Forest Ecosystem Services

FESM – Forest Ecosystem Services Markets

FSC – Forest Stewardship Council

GDPR – General Data Protection Regulation

LL – Living Lab

NGO– Non-Governmental Organization

PEFC – Programme for the Endorsement of Forest Certification

RPD – Regional Policy Dialogue

SRSvS – Regional Strategy for Sustainable Development

TPF – Transnational Policy Fora

1. Introduction

In the continuously changing climatic, technologic and economic context, new challenges are emerging and new solutions are required; this applies for the technical and business models, but it is also relevant for the policy aspects. Governments need to undertake innovative actions to foster the adaptation to the new challenges, and to continuously update the legislation to keep up with a changing world.

To help address the need for policy innovation, the project developed a twofold activity:

- the first part is the policy inventory, reported in D3.1.1, dedicated to analyze and present the state of the art of the legislation in the states and regions interested by the pilot actions;
- the second part, reported in D3.1.2, dedicated to a multilevel dialogue with relevant stakeholders, aimed at identifying the main challenges and obstacles met by who works on forest ecosystem services, collect experiences and proposals for overcoming these obstacles and challenges, and identify concrete proposals for policy innovation.

These activities and deliverables, as well as feedbacks from the first transfer and take up of the project's proposed solutions, have been used for drafting the policy memo presented in this document.

This output represents the memorandum agreed among the involved policy makers, from the project partners' regions/countries but also from EUSALP action groups 2/6/8 and the Alpine Convention permanent secretariat, and beyond, with conclusions on policy actions and regulatory adaptation for supporting the set-up of FES market in the Alpine region.

This Policy Memo is deliberately designed as a concise and accessible document, to facilitate its wide dissemination among decision-makers responsible for the various policies that impact forest management, valorisation, and the promotion of ecosystem services, including green economy, tourism, cultural, and recreational activities.

The content is defined based on the insights emerging from the Living Labs and the dialogues with stakeholders and policy makers, both at regional and transnational levels.

2. Project overview

Forests of the Alpine Space play a key role in climate change mitigation and resilience, providing multiple ecosystem services (ES) and environmental and social benefits such as CO_2 absorption, air pollution reduction, biodiversity enhancement, and protection against natural hazards. However, they are threatened by abandonment, climate change, and territorial degradation, which progressively reduce natural resources and the provision of forest ES (FES). Maintenance costs of Alpine forests are high, and public funds and traditional wood value chains are insufficient to cover them. Economic valuation and payment schemes for FES are widely discussed but rarely successfully applied.

The Forest EcoValue project addresses this challenge by developing innovative, sustainable business models for forest management and maintenance, supporting new bio-based value chains and ES markets, and involving different sectors, public and private actors, and citizens. Restoring and maintaining healthy forests has been recognised as a source of value for the Alpine region, while also creating business opportunities and green jobs for Alpine communities.

The project focuses on a subset of FES from the following categories:

- **Provisioning** (e.g., biomass, raw materials, chemicals) with a specific focus on non-timber forest products, and on the production of woody biomass for energy, integrated into circular energy markets.
- **Regulating** (e.g., biodiversity, natural risk reduction, CO_2 absorption) concretely working on carbon and biodiversity credits, natural risk management through protective forests, and innovative environmental finance instruments such as green bonds and reverse auctions.
- **Cultural** (e.g., recreation, habitat experience, health) particularly enhancing recreational and tourism services and spiritual and cultural services.

These services have been explored and tested within Living Labs (LLs) across five countries, located in different Alpine territories and representing diverse ecological and socio-economic contexts:

- **Italy – Valle Tanaro, Piedmont:** The LL in Valle Tanaro explores innovative approaches to valorising chestnut groves, promoting non-timber forest products, developing carbon and biodiversity credits, and fostering experiential activities linked to forest and rural heritage.
- **France - Haute-Savoie:** Grand Annecy and Thonon LLs focus respectively on two aspects 1) recreational ecosystem services, enhancing the value of forests through the sale of experiences such as ecotourism, outdoor activities, and educational programmes 2) enhancing the value of water regulation services through a public-private partnership.

- **Slovenia – Karavanke Mountains, municipality Tržič:** The Slovenian LL addresses natural risk management with a focus on torrent control, advances solutions for wood biomass supply chains and promotes sustainable tourism and recreational use of forests.
- **Austria – Province of Styria:** The Styrian LL concentrates on biodiversity and habitat provision and carbon sequestration and storage through innovative financing mechanisms such as reverse auctions.
- **Germany – Tegernsee Valley, Upper Bavaria:** The German LL explores spiritual and cultural services, such as forest cemeteries with biodegradable urns, while also fostering habitat and biodiversity conservation through collaborative public–private partnerships.

Accordingly, the project is aiming to:

- Map and analyse the Alpine Space forests delivery capacity of FES;
- Identify and estimate the economic potential, define business models and FES market frameworks;
- Test the models/tools developed by the consortium in pilot LLs involving local players;
- Compare results at transnational level, identifying obstacles and facilitating factors;
- Analyse the need for innovative policies to foster forest maintenance, FES markets, and new value chains;
- Elaborate refined transferable tools/models and policy proposals to enable new markets and value chains and ensure the expected FES.

Throughout the project, a continuous participatory process is carried out within the Living Labs. Stakeholders' active involvement in these labs is essential for co-designing and testing models and tools, ensuring that the innovative approaches are rooted in local realities. In parallel, public events and capacity-building workshops have strengthened engagement, supported knowledge transfer, and provided regular updates on project activities. This participatory and long-term approach, tested across the five territories, is paving the way for refined, transferable tools and policy proposals that can unlock new markets and value chains while safeguarding the provision of ecosystem services in the Alpine Space.

Project duration: 42 months

3. Objectives

The Forest EcoValue project aims to contribute to promoting new markets for Forest Ecosystem Services (FES) across the entire Alpine Region and beyond, with the goal of expanding sustainable and affordable forest management and improving the quality and resilience of this vital asset. The specific objectives of the policy activities for supporting the drafting of the policy memo were as follows:

3.1 Acknowledge the key role of FES in the Alpine Region

Raising awareness of the importance of FES is essential at every level of society, and it is particularly crucial at the political level. At present, there is insufficient knowledge about the range and quality of the ecosystem services provided by forests, as well as about the need for appropriate care and management to actively protect and enhance their functions.

3.2 Identify common principles for a coordinated action at transnational level

Many FES, such as carbon sequestration, biodiversity, water quality, natural risks prevention, can impact on the wider scale. A coordinated action is necessary to ensure effective policies, sound cooperation between public and private actors, and a balanced market environment. Sharing common principles is the foundation for a synergic action even with different legislative and cultural contexts.

3.3 Promote and disseminate concrete proposals for policy innovation throughout the Alpine Region

The project aims to offer concrete and feasible solutions to address the emerging challenges related to climate change, urbanisation, cultural change, and market globalisation. Dialogue with policy makers responsible for territorial management, as well as with multiple stakeholders involved in the Living Labs, enables the identification of realistic and actionable solutions. These aim to improve the economic sustainability of forest maintenance by introducing new revenue sources in addition to traditional ones.

3.4 Offer to policy makers in the Alpine Region and beyond possible solutions that can be selected and adapted to the national and local territorial and market structure

The Alpine Region comprises states and regions with diverse legislative systems, cultural contexts, and traditions. Consequently, the project does not propose a “one-size-fits-all” approach; instead, it identifies key policy aspects capable of making a difference and presents a set of concrete, adaptable solutions that can be tailored to local legislative, cultural, and territorial conditions.

The transnational dialogue revealed both shared challenges and differing levels of progress. While the main factors influencing the sustainability and affordability of FES are similar across regions, some challenges have already been addressed in certain areas but persist in others. The proposals

emerging from this process stem both from new ideas designed to tackle evolving challenges and from mutual learning through the exchange of existing best practices.

4. Dialogue outputs

a. Key inspiring principles

From the dialogue and the project experience, especially in the Living Labs, some important principles have been focalized that should inspire the actions dedicated to forest development and protection.

- **Forests offer a wide set of ecosystem services, and are a relevant economic resource, but only if they are in good health**

There are two main reasons why forests are a resource of public interest. First, they have long been and still remain a significant source of renewable products: traditional ones such as timber, firewood, fruits, mushrooms, and game, as well as innovative ones, including bio-based chemicals that can substitute fossil-derived products and renewable energy sources. Second, there is a growing awareness of the crucial ecological functions performed by forests: they are biodiversity-rich ecosystems, key landscape elements, carbon sinks, providers of recreation and sport opportunities, protectors against natural hazards, and regulators of water quality, among many others.

All these functions constitute **ecosystem services**, which ensure employment, protection, and health benefits for Alpine communities. However, the capacity to deliver these services is closely tied to the **state of forest health**.

For example, **aged or overly dense and thin trees** not only fail to provide adequate protection against hydrogeological instability, but when they fall, they may trigger landslides, rockfalls, or obstruct riverbeds. In **mountain areas with difficult access**, the uncontrolled expansion of forest cover is causing the disappearance of open meadows, which serve as habitats for many species, thereby impoverishing the landscape. Likewise, the **carbon sequestration capacity** of forests is directly linked to their overall condition and vitality.

- **They are threatened by multiple natural and anthropic menaces: climate change pressures, diseases, abandonment.**

In the Alpine Region, as in much of Europe, the last century witnessed a significant increase in forest cover, mainly due to the abandonment of agriculture in peripheral, hilly, and mountain areas. However, this natural heritage is now endangered by climate change impacts and by the loss of forest management traditions in many regions, exacerbated by rural depopulation. In recent years, we have seen the rising frequency and severity of forest fires, the spread of invasive alien species and new pests, and the widespread damage caused by windstorms.

Passive protection policies — consisting mainly of restrictions and limitations — are no longer sufficient in this changing context. **Active policies** are needed to improve forest quality and restore both its productive and environmental functions.

- **To improve and preserve FES we need to invest in appropriated forest management, increasing resilience, and a strong, well skilled, enterprise system.**

We need to intervene to support and accelerate the natural evolution of forests, guiding them toward ecosystems better adapted to new climatic conditions and more resistant to external threats. In most cases, forests require active cultivation, involving careful management that works with natural dynamics to preserve and enhance forest heritage for future generations.

Forests should neither be overexploited nor abandoned; instead, they must be managed according to targeted criteria that consider territorial characteristics, climate adaptation needs, and the types of ecosystem services to be enhanced.

In this context, the existence and development of a strong, competent, and safety-conscious forestry enterprise sector play a fundamental role.

- **To cover the costs for appropriated management private and public cooperation is crucial.**

Ensuring the **economic sustainability** of forest maintenance is crucial, especially in morphologically challenging areas with limited accessibility, or where forest age, degradation, or fragmented ownership increase costs relative to revenues.

Experience from the regions involved in the project — and elsewhere — has shown that in many cases, forest cultivation is not economically competitive and is penalised by market conditions. Therefore, public support and synergies between the public and private sectors are needed.

However, public funds are often insufficient to cover all needs, constrained by tight budgets and competing priorities. Hence, new sustainability models must be developed — ones that maintain public intervention in the most critical and high-priority situations, while strengthening the competitiveness of forestry activities.

Cooperation between public and private actors is also important at the property level. Merging or jointly managing forest parcels from different owners can create the critical mass needed to achieve economic sustainability and market access.

- **Promoting new market opportunities and strengthening the traditional value chains is the key for the economic sustainability in order to preserve forests and their ecosystem services.**

Forest owners and enterprises can afford to continue taking care for forests only if they can obtain an adequate revenue, that can sustain job opportunities; this is especially relevant in peripheral affected by depopulation.

Nowadays we can count on three categories of opportunities, to be promoted and facilitated.

First of all, strengthening the traditional value chains, in this field relevant policies are already in place.

The second one is promoting new value chains, the most relevant is green chemistry, i.e. chemical industry based on biomass and wood components; this new value chain is growing in all Europe, but its potentialities are not known to many actors. The use of biomass for energy production, especially for heating multiple buildings, is growing together with appropriated technology to minimize emissions. Forest minor products like fruits, mushrooms and game can contribute to the economic balance.

The third one is based on acknowledging the value Forest Ecosystem Services are giving to the territories and their population and set payment models for them.

- **To ensure healthy forests and benefit from their ecosystem services we need a long-term, large-scale vision and strategy, integrating policies from different sectors.**

The policy makers and stakeholders involved in the project insisted on the importance of valorising the multiple functions offered by forests; at the same time, many sectorial policies other than the specific forest laws and strategies have a direct impact on the actions taken in this area. To influence forest evolution towards more resilient and adapted forest takes time, and a gradual cultural change.

This implies creating a shared vision and common objectives, bringing together actions from different policy sectors, involving public and private stakeholders; in the implementation phase, flexibility must be ensured to enable adaptation to unforeseen changes in natural conditions and market dynamics.

b. Main obstacles and challenges

i. Property fragmentation

Private forest properties are often very small, mainly due to inheritance chains that have progressively subdivided land among heirs. Three main situations can be identified, each with a significant impact on the development of forest-related markets:

1. Fragmented ownership through inheritance registration

When heirs formally inherit property, they often divide it into as many parcels as there are heirs and register them individually in the land registry. As a result, properties become increasingly small and scattered, even though each heir may own multiple, often non-contiguous, plots.

2. Shared ownership without formal division

In other cases, the heirs share ownership of a single undivided property. In such situations, no single owner has decision-making authority. As the property may be collectively held by dozens of co-owners, making management and investment decisions becomes nearly impossible.

3. "Silent properties"

This is the most problematic case. Some owners have died or moved away without maintaining contact with their place of origin. Since the economic value of such plots is generally low, many heirs do not formally declare the succession, and the land registry remains outdated.

In some cases, owners are unaware that they even possess forest land, as former agricultural or meadow areas abandoned decades ago have naturally reverted to woodland.

This fragmentation strongly affects market development potential in multiple ways:

- For **provisioning services**, markets require a stable and sufficient supply that can only be ensured through larger areas (the "critical mass");
- For **all types of services**, working on small, scattered plots undermines cost-efficiency and prevents economies of scale;
- For **regulatory, supporting, and cultural services**, the presence of too many owners complicates negotiations and makes payment mechanisms overly complex.

A **minimum "critical surface area"** is needed to ensure effective management, functional ecosystem service delivery, and economic sustainability. This threshold varies depending on the selected FES (or combination of FES), local territorial conditions, forest type, and market dynamics.

Reaching this critical surface is a fundamental condition for unlocking the full potential of FES.

ii. Multiple legislation from different sectors

Forest protection, management and exploitation are regulated by specific forest laws and strategies at European, National and in some cases regional level, but there are also other sectorial regulations that influence what can be done in forest areas. The most relevant include: the landscape protection and valorisation laws and plans, the environmental laws and climate change adaptation strategies.

Considering forests in their multifunctional dimension and promoting new market opportunities requires interaction with many other regulatory domains — such as water resource management, natural risk prevention, carbon footprint control, green and circular economy, enterprise regulation and innovation policies, and tourism and recreation.

In some cases, regulations from different sectors contradict one another, creating a complex framework where owners, enterprises, and even public administrations struggle to find viable solutions and legal clarity.

iii. Land morphology and accessibility

A significant portion of Alpine forests is located in mountainous areas, characterised by steep slopes and difficult terrain. These morphological conditions limit the use of modern machinery and complicate timber extraction, which may be further hindered by overhead infrastructure such as power lines.

This makes forest work more complex and hazardous, increasing costs and reducing the competitiveness of Alpine timber on the market.

Nevertheless, local enterprises have developed efficient, innovative solutions, and possess strong expertise in techniques designed specifically for mountain environments — such as the use of cable systems to transport timber down slopes, even in the most challenging conditions.

Despite being rich in forests, many Alpine countries still import timber from abroad, where forests are exploited more intensively and management costs are so low that they offset higher transport expenses

Management costs are also influenced by accessibility conditions: a solid infrastructure network is essential for efficient forest operations. In flat areas, this is relatively easy to achieve, while in hilly or mountainous regions, the creation and maintenance of forest roads are more expensive and may also impact slope stability and landscape quality. In any case, building a new forest road requires significant investment, and its maintenance further increases production costs.

Property fragmentation can also affect accessibility, as a non-cooperative landowner may deny passage across their land, complicating access to neighbouring plots.

iv. Economic sustainability

In many cases no single FES can ensure enough revenue to cover maintenance costs; public funds not sufficient. If the overall objective for forest policies is to ensure in the long term healthy, well adapted forests, together with the provision of the ecosystem services more needed in the different territories, the economic problem we are facing is not only the specific cost/benefit balance of each single service per se, but it's capacity to contribute to the costs for proper forest maintenance. In the best accessible and favourable areas, the provisioning services can usually ensure the economic sustainability of the necessary exploitation practices, but where these conditions are lacking or there is need

to limit the economic exploitation in order to ensure regulation or cultural ecosystem services, no single FES can ensure enough revenue to cover all the costs.

In areas where forests are in an abandonment state, the productive value of the aged trees is poor; to restore their productive capacity a first investment is necessary, to start cleaning, rational cutting, planting new trees, sometimes introducing new, more adapted species, guiding the evolution towards healthier and more productive forests. In the initial phase, the cost/income ratio can be negative.

The Alpine states and regions are allocating specific funds to support forest activities, especially in difficult area; they support mainly investments in production equipment capacity building, and give support to forest activities in difficult areas. However, funding is **limited and inconsistent over time**, covering only a fraction of the forested territory. Given public budget constraints, it is unrealistic to expect full or continuous coverage. This leads to the conclusion that in many cases we need to identify an appropriated combination of different ecosystem services that together can bring to the economic sustainability of the most appropriated forest maintenance.

v. Lack of knowledge about opportunities; lack of cooperation between different actors

Most stakeholders have limited knowledge of market opportunities and existing experiences in valorising forest ecosystem services and by-products.

The owners of small properties rarely consider valorising them, since they cannot make a living out of it and are concentrated on their main activities.

Cooperation among enterprises is active inside specific, consolidated value chains, but cooperation between different sectors is rare. Looking for new solutions is a very time-consuming task; small enterprises can’t do it by themselves.

In this context, the public sector can play a decisive role, fostering cross-sectoral knowledge exchange, organising B2B meeting opportunities, and promoting cooperation initiatives that involves diverse stakeholders.

vi. Awareness and willingness to pay for the services

There is a widespread recognition of the relevance of forest area for a healthy environment, especially regarding air quality, natural risks prevention and recreation, but most people are not aware that to maintain healthy forests a constant maintenance work is needed, nor that in the last century the wooded surface increased dramatically, due to the abandonment of peripheral agriculture, especially in mountain areas.

And there is no awareness of the fact that to increase forest resilience against the challenges posed by climate change, diseases, forest aging, rockfall, landslides and avalanches we need to invest in appropriated management practices. This has a cost, while the general perception is that ecosystem services are something nature offers to us for free.

While the public is somewhat familiar with certain types of FES, many others remain poorly understood and undervalued.

It is therefore challenging to convince the citizens that they should pay for something that is taken for granted, or in certain cases to convince them that they should pay more than they pay now for public services like water provision, in order to support forest maintenance.

On one hand, given the current economic situation, increasing the cost of public services could burden families already under financial pressure. On the other hand, citizens are, in fact, willing to pay for quality services, including those linked to a healthy and well-managed natural environment.

5. Policy Proposals

a. Foster public-private property cooperation and limit further property fragmentation

There is an active debate on the possible solutions to ensure the critical surface needed for appropriated management and economic sustainability; this matter has sensitive aspects since impacts on property rights and responsibilities. In principle, the owners have the right to dispose of their property as they wish, unless there is a prevailing public interest. On the other side, they held responsibility for possible damages incurring to third parties due to negligence in the maintenance of their belongings.

The instruments for addressing this fragmentation are of two main types: legal and financial. In both cases, the cultural context and social perception play a crucial role, and it is necessary to raise awareness on the value of FES and on the importance of territorial maintenance.

The policy dialogue allowed to identify three possible lines of legal action:

1. Legal Frameworks for Public-Private Cooperation

In most Alpine countries, legal instruments already exist to enable cooperation among forest owners — such as forest consortia and owners' associations — but private owners rarely take the initiative to join forces and create the necessary conditions for effective management. Successful examples are generally initiated and supported by public authorities, particularly at the local level.

Establishing such cooperation requires time, persistence, and negotiation skills. The preparatory phases are complex and demand solid technical support. Since these early stages of setting up forest management or ecosystem markets are long and demanding, projects must adopt a long-term perspective, ensuring sustainability and flexibility to adapt to natural events and market changes. Efficient governance and decision-making procedures are essential for success.

Voluntary consortia are already feasible in most contexts, while the introduction of mandatory consortia would require very strong justification — for instance, to ensure protection from natural hazards or environmental degradation — and should only be applied in limited and well-defined situations.

Two types of leverage can be used to foster cooperation:

- On one hand, by emphasising landowners' responsibility to maintain their properties so as not to cause damage to others. Fiscal disincentives (e.g., taxation for neglected land) could also be effective;

- On the other hand, by recognising the right to income, which in the most critical cases may derive from public funding, at least during an initial phase, while in more favourable conditions it could result from profit-sharing arrangements.

A crucial factor remains cultural: the persistence of a personal connection with the land, even among people whose lives and main activities now take place in urban areas. Those who still feel tied to the land understand the need to care for it, while those who have lost this connection often fail to recognise the importance of landscape and territory maintenance.

2. Legal Framework to Reduce Further Property Fragmentation

This issue touches upon sensitive aspects related to property and inheritance rights. Reducing property fragmentation requires limiting, in certain ways, the freedom to dispose of private property in inheritance or real estate transactions.

In Italy, a law once existed prohibiting the sale of land parcels smaller than a defined minimum size, but it was never effectively implemented. Difficulties in determining this threshold and the complexity of the related legal implications eventually led to its repeal.

A concrete example can be found in France, where, when a forest property is put up for sale, a pre-emption or preferential right is granted to neighbouring owners, municipalities, or other public administrations capable of managing the land effectively. This is a soft measure, not always decisive, but it contributes over time to reuniting fragmented properties or at least preventing further division.

A particularly noteworthy case, linked to strong cultural heritage, is the “maso chiuso” tradition born in the eastern Alps, still in force in some areas, for example the Province of Bolzano (South Tyrol, Italy). Originating from medieval German inheritance practices, it was codified into modern law by Empress Maria Theresa of Austria. The maso is an agricultural unit comprising both land and farmhouse that cannot be divided among heirs, in order to preserve its productive capacity and avoid impoverishment. Upon the father’s death, the property would pass to a single heir, typically the eldest son, while the others either worked on the farm or found employment elsewhere. When the area became part of Italy, locals continued to apply the system even though it was not formally recognised by law. Today, a specific provincial law, enabled by Bolzano’s autonomous status, formally regulates the system, and since 2001, women have enjoyed the same inheritance rights as men.

- **Legal Solutions for Unknown, Unreachable, or Inactive Owners**

This issue concerns “silent properties” or cases where owners remain inactive despite repeated invitations to participate in management initiatives. Such situations hinder proper forest management, as these properties may block access routes or disrupt integrated territorial planning and efficient operations.

Any intervention must be grounded in the legal principle that allows public administrations to act on private land when it serves a public interest. The first step, therefore, is to establish that a prevailing public interest exists — for instance, the need to maintain or enhance one or more significant ecosystem services.

A distinction should be made between unknown or unreachable owners and inactive owners:

- Unknown or unreachable owners: procedures could draw inspiration from expropriation frameworks, which permit action even when ownership cannot be verified. In such cases, the situation can be certified and action authorised, with decisions duly published and any corresponding financial entitlements held in escrow for potential claimants. When the objective is to enable collective forest management, property rights must remain protected — for example, by preventing adverse possession. A possible mechanism could allow the competent public body to certify the non-identifiability or unreachability of the owner and entrust the land's management to a consortium of neighbouring owners.
- Inactive owners: a similar procedure could be established, but with structured dialogue and formal communication with the identified owners before any administrative action is taken.

Legislative competence for such actions primarily lies at the national level, as the matter falls within civil law. However, regional authorities can play an important role in developing incentive schemes and guidelines, while local administrations are essential for their proximity to landowners and their ability to engage stakeholders effectively.

b. Foster management specialised guidelines for the different FES, including cost and benefit evaluation methodology

Living tools that can be updated following market and local evolution.

It is essential that forest management be carried out according to long-term sustainability principles and through methods capable of ensuring the effectiveness of the ecosystem services provided. Proper management can gradually improve forest quality, resilience, and overall ecological functionality.

Defining such management criteria is not among the specific objectives of the present project; however, several valuable experiences have been developed in other European projects — such as Manfred, ROCKtheAlps, GreenRisks4Alps, MOSAIC co-financed under the Interreg Alpine Space Programme — which have elaborated management models aimed at maintaining and enhancing protection forests, particularly against rockfalls, avalanches, and shallow landslides.

Several countries, such as France, have already issued guidelines for forest management, differentiating between public and private ownership frameworks.

During the implementation of the Forest EcoValue project, it became evident that management practices can vary significantly depending on which ecosystem services are prioritised in a given territory. This underscores the need to carefully evaluate the compatibility among different FES and to balance diverse management requirements through practical and effective solutions.

When defining management guidelines, it is important to assess their impact on operational costs, to avoid discouraging forest cultivation, which remains necessary. Moreover, a gradual introduction of new measures is advisable to allow enterprises sufficient time to adapt to the new requirements.

An accompanying phase involving training and technical support is also essential to ensure the long-term effectiveness and acceptance of these measures.

c. Dedicate environmental impact compensation funds and carbon credits forest recovery and maintenance

Forest strategy is experiencing a disrupting change, from traditional tools of protection expressed in rules (i.e.: landscape, hydrogeological, ecological constraints) to a new role through the economic value of the service to the community that the forests can perform.

The new approach aims to support this change of perspective promoting “green economy measures” to reduce “the excessive use of natural resources” and considers the carbon fixation of forests and forestry as one of the ecosystem services that must be remunerated.

In the Alpine Region there already are laws that introduce compensation measures in case of environmental or territorial impacts that can’t be avoided (residual impacts) this is often included in Environmental Impact assessment procedures that can apply both to projects and plans; this compensation can consist both in concrete actions to improve the environment situation in areas different from the one interested by the intervention and in payments that can be used for actions of public interest.

The carbon credits market can be a relevant source of funds supporting forest recovery and maintenance.

As for the forestry sector, these funds are mainly used for planting new trees in non-forested areas, but in many cases, it could be more effective to invest in the restoration and maintenance of degraded existing forests. The best way to use this money would be to boost recovery actions that can improve the forest quality, promote the provisional and other

ecosystem services, increase the forest value and foster new markets that in the medium – long term can stand by themselves on the economical point of view.

To implement this legal framework specific support is needed to overcome relevant constraints:

- Support the owners and connected actors in the preparation and initial decisional phases, through specific guidelines and methodology support, market evaluation models, technical guidelines and technical practical support. Forest Ecovalue project offers a sound contribute to these aspects;
- Allocate dedicated funds to support the preparatory and start-up phase of new initiatives;
- Providing practical tools to forest owners for a robust implementation of legal principles including methodologies for FES valuation, market creation and quantitative assessment of benefits.

As for the carbon credit market, we need to take into consideration a specific, constraining aspect: the carbon accumulated by forests in their natural growth process in some states is used as an emission offset within the framework of the achievement of the objectives subscribed at European and international level and **cannot determine economic advantages for forest owners**.

To address these issues, a possible innovative solution is the one developed in recent years by Piedmont Region: a “Voluntary Forest Carbon Market” as a contribution to regional policies for sustainable development and fighting climate change.

The Regional Strategy for Sustainable Development (SRSvS) is the operational tool used by the Regione Piemonte to achieve the sustainability goals of the 2030 Agenda and the National Strategy. for Sustainable Development. This strategy integrates all regional programs to define policies and actions for economic growth in harmony with the integrity of ecosystems and social equity.

The regional “Voluntary Forest Carbon Market” considers that only credits generated "beyond" the natural growth of the forest can be marketed, as the natural part is already considered in the international agreements.

The word "voluntary" highlights precisely that a specific management choice is asked to forest owners, as the natural growth of the forest, because it is natural, is "involuntary" and does not depend on the owner's choice.

The Region has developed a **calculation system** that estimates the quantity of carbon credits based on forest type and the regional **silvicultural regulations**. The approach is founded on **reduced harvesting practices**, cutting less than the legally allowed baseline for that forest type, thus ensuring measurable carbon savings. Participation in this system is entirely

voluntary, not mandatory. Regione Piemonte and IPLA, the in-house regional company for environmental and forestry activities, after setting up a working group with experts and stakeholders (university, professionals, companies, etc.), developed technical guidelines concerning carbon credits and the voluntary market.

To increase the voluntary market, Regione Piemonte also adopted award criteria in European Agricultural Fund for Rural Development (EAFRD) fundings for forest owners and managers that voluntarily adopt forest carbon credit schemes through forest planning and management.

Finally, a comprehensive evaluation of the carbon credit market potential is planned in the framework of the new round of forest planning, starting from the forest areas already certified according to the FSC and PEFC certification schemes.

d. Dedicated value chain certification

Certification plays a key role in highlighting the added value of products and services, in terms of quality, environmental, and social impact, that would otherwise remain unnoticed. This is true especially for innovative products; communication and promotion initiatives. Offering certified products not only guarantees compliance with specific standards but also helps raise user awareness about sustainability and responsible consumption.

In the forest sector, **two mains international certification systems** are already in place:

- **FSC** (Forest Stewardship Council);
- **PEFC** (Programme for the Endorsement of Forest Certification).

Both systems ensure that wood and non-wood products come from **sustainably and responsibly** managed forests, which respect ecological, social, and economic principles. These voluntary certifications target forest owners, companies, and consumers, and cover both forest management practices and the chain of custody for forest-based products.

During the Forest EcoValue project, the usefulness of extending certification processes to new value chains — such as green chemistry and tourism or cultural ecosystem services — was discussed. Certification and branding initiatives were considered potential drivers of attractiveness for both service users and product buyers, while also serving as powerful awareness-raising tools in areas where such understanding is still limited.

It should be underlined that introducing new certification systems entails costs, time, and the development of new skills. For this reason, the process should be gradual and supported by specific actions aimed at strengthening the capacities of certification bodies, enterprises, and sectoral associations.

e. Capacity building and raising awareness platform

At present, the most effective and practical tool to reach a broad audience and disseminate knowledge and resources is a digital platform, accessible at any time.

The goal is not to create an entirely new platform, but rather to develop new content, connect existing ones, and establish a collaborative web-based network.

The objectives of this platform are multiple and should be structured according to the characteristics of the target groups:

- **Raise public awareness about the value of forests**, the ecosystem services they provide, and the conditions necessary to preserve and enhance forest heritage — while also debunking common misconceptions that hinder positive territorial management initiatives;
- **Facilitate connections among diverse actors**: forest owners, businesses in the wood and forest value chain, enterprises in emerging or lesser-known sectors that offer new income opportunities, public authorities from different policy areas, cultural and leisure operators, environmental associations, and citizens;
- Promote new market opportunities related to forest ecosystem services and sustainable products;
- **Interact with existing networks** and applications that already connect producers of recovered raw materials with organisations developing new value chains based on their reuse;
- **Disseminate technical knowledge and guidelines**, supporting the growth of professional skills and competencies within the forestry and related sectors;
- **Share examples and best practices** that can be **replicated** in territories beyond those where they originated.

f. Integrating policies and fostering private and public cooperation on a territorial basis: a FES Strategic Plan or Forest Contract

Planning can serve as a powerful tool to foster collaboration and policy integration at the territorial level. Reflecting collectively on solutions, adopting a broader perspective, and considering the various aspects and potential of a territory can provide added value and promote the integration of different initiatives, including those related to diverse productive sectors. Such integrated planning can improve the sustainability of forest management, enhance and valorise ecosystem services, introduce new products and services, and create employment opportunities.

Given that territorial, cultural, and legal conditions vary across the regions of the Alpine macro-region, adopting a single model for all may not be appropriate. However, it is possible to build upon existing forest planning instruments already established in many countries, enriching them with participatory processes and new content. Alternatively, the model could take inspiration from tools already used in other sectors, such as River Contracts, which bring together diverse public and private actors to define and implement coordinated actions aimed at improving water quality and river ecosystems, particularly in critical areas.

Another option could be to establish a new instrument, referred to here as a Forest Strategic Plan (FSP), which integrates forest management and economic valorisation objectives. Such a plan would aim to develop multiple forest functions and identify a targeted mix of ecosystem services suited to the specific needs of each territory.

Regardless of the specific instrument chosen, several key aspects emerged from the project as fundamental success factors:

1. **Multilevel governance**

It is essential that different government levels and policy sectors work together to identify and develop shared objectives that valorise forest multifunctionality and integrate diverse ecosystem services.

Some services, such as protection forests that mitigate natural risks or safeguard water quality, must be recognised and managed by the relevant public authorities. However, it is equally important to establish facilitated procedures for the implementation of jointly agreed interventions.

2. **Stakeholders as co-planners**

Involving local stakeholders, those who benefit from, contribute to, or manage ecosystem services, is crucial for multiple reasons. On one hand, participation enables the identification of better opportunities for action and helps assess the interest and demand for potential services. On the other, it supports the growth of awareness and shared responsibility, including financial responsibility, for maintaining these services. A positive example of such an approach is the Ricefield Park (Parco delle Risaie), a peri-urban agricultural area in the southern part of the Milan metropolitan area. There, conflicts between farmers and citizens using the area for recreation were turned into an economic and social opportunity through a participatory process that involved dialogue, shared decision-making, and negotiated agreements on access and use.

3. **Cross-sector policy objectives prioritisation**

Engaging multiple sectors in defining objectives and selecting concrete actions also enables the integration and harmonisation of sectoral regulations. This participatory process can help

optimise territorial impacts, improve environmental compatibility, and enhance the economic sustainability of implemented measures.

4. Identifying and mapping forest functions; selecting the appropriate mix of FES

The strategic plan should identify and, if necessary, map the various functions performed by forests within the specific territory. Particular attention should be given to assessing "critical surface areas", i.e., the minimum spatial dimensions required to ensure the effectiveness of each selected ecosystem service, bearing in mind that these thresholds differ among FES types.

5. Identifying accessibility needs and suitable solutions

The planning process also provides an opportunity to assess and improve accessibility, both for forest operations and for users of ecosystem services. The presence of diverse stakeholders can facilitate the identification of appropriate, functional, and environmentally compatible solutions, ensuring proper integration within the landscape and ecological context.

6. Biophysical assessment

Assessment of forest ecosystem service potential using the methodology and tools developed by the Forest EcoValue project: decision tree for data selection, service qualification, quantification, and mapping; tools for analyzing forest structure through key dendrometric parameters; and definition and mapping of major indicators to support forest policy.

7. Economic assessment and business model application

Conducting an ex-ante evaluation of economic sustainability and developing a reliable business plan are key success factors. The Forest EcoValue project has developed a dedicated toolkit for this purpose, available to stakeholders wishing to apply it in their territories.

8. Co-Funding solutions (public and private)

Involving key stakeholders, owners, operators, and end users, can also lead to the identification of shared financing mechanisms in various forms. The underlying principle is to attribute a monetary value to ecosystem services. For example, in the case of services such as water quality protection, agreements may be established to apply a small surcharge on water supply costs, ensuring that part of the revenue contributes to maintaining the forest functions that provide this essential service.

6. The Policy Memo

Once the contents were agreed, a draft version of the Policy Memo was prepared and circulated among the involved policy makers. The draft was subsequently discussed and validated during the second Transnational Policy Forum.

Finally, an even more concise version of the Policy Memo was developed, intended for broader and more agile dissemination. Both versions of the document — the complete and the abridged one — are presented below.

a. Forest EcoValue – Policy Memo extended version

About this document

This document collects existing good experiences and innovation proposals borne from transnational and regional dialogues. While the selected main topics are relevant for all the participants, the implementation can differ following the local legislative, property, orographic cultural and knowledge conditions.

Principles

Forest offers a wide set of ecosystem services, are a relevant economic resource, supporting jobs and economic activities especially in peripheral areas, and ensure environment services plus landscape diversity that have a huge impact on the society.

But they ensure these benefits only if they are in good health; forests are threatened by multiple natural and anthropic menaces: climate change pressures, diseases, abandonment, natural risks, woodfires.

To improve, preserve and valorise FES we need to invest in appropriated forest management, increasing resilience, aware and well-prepared forest owners and a strong, well skilled, enterprise system; a principle of fair income for owners and enterprises is a must for economic sustainability.

To cover the costs for appropriated management private and public cooperation is crucial, together with acknowledging and assessing the economic value of FES and solidarity between forest owners and beneficiaries, to establish fairness and shared responsibility in payments and management.

Active action is necessary to guide the evolution of forests to climate change more adapted and resilient models, increasing biodiversity, supporting natural processes and fostering nature based and innovative, economic sustainable solutions.

Promoting new market opportunities and strengthening the traditional value chains is the key for the economic sustainability to preserve forests and their ecosystem services.

Policy proposals

- **Foster synergies between multiple ecosystem services**

In many cases no single FES can ensure economic sustainability; a good mix of FES, adapted to the local potential and needs, in the most appropriate solution. Legal and knowledge sharing instruments can support cooperation between owners, enterprises, NGOs, raising awareness in new value chains that can complement the traditional ones.

- **Foster cooperation between forest owners**

To ensure market sustainability a critical surface is needed; this surface is different for each FES; foster cooperation between forest owners, private and public, is a priority. Since the state of property is quite different in alpine countries and regions, a graduated toolbox of instruments is foreseen in the detailed project documents, from voluntary consortia to more mandatory instruments where property is very fragmented and there are unknown, unreachable or unactive owners. A dedicated legal framework is needed.

- **Identify strategic services**

Some services are of public relevance and quite localised, like water purification, protection forests (from natural risks); some services of public interest can be ubiquitous, like carbon sequestration; it is important to identify and map the localised ones and provide management criteria for all.

- **Dedicate compensation and carbon market money**

In many countries and at European level there are environmental compensation funds and carbon credits; part of this fund should be dedicated to compensation for production limitations, orographic difficulties, and for supporting the initial preparation of new private initiatives (feasibility, project, business models, etc.).

- **Capacity building and raising awareness platform**

Capacity building actions dedicated to all components of the value chain: on opportunities, technical and safety formation, guidelines, management criteria, legal procedures.

A transnational platform for sharing market opportunities and information, to foster new partnership opportunities should be developed, in strong connection and cooperation with existing platforms and data bases.

The same platform could include a section with innovative actions dedicated to raising awareness for different stakeholders, including the general public.

- **Promote innovative products and services**

Innovative forest products and services should be promoted, through dedicated value chain certification and labelling opportunities. Some of them are not known neither to forest owners or to the public; one example is green chemistry, based on renewable biomass instead of fossil raw materials

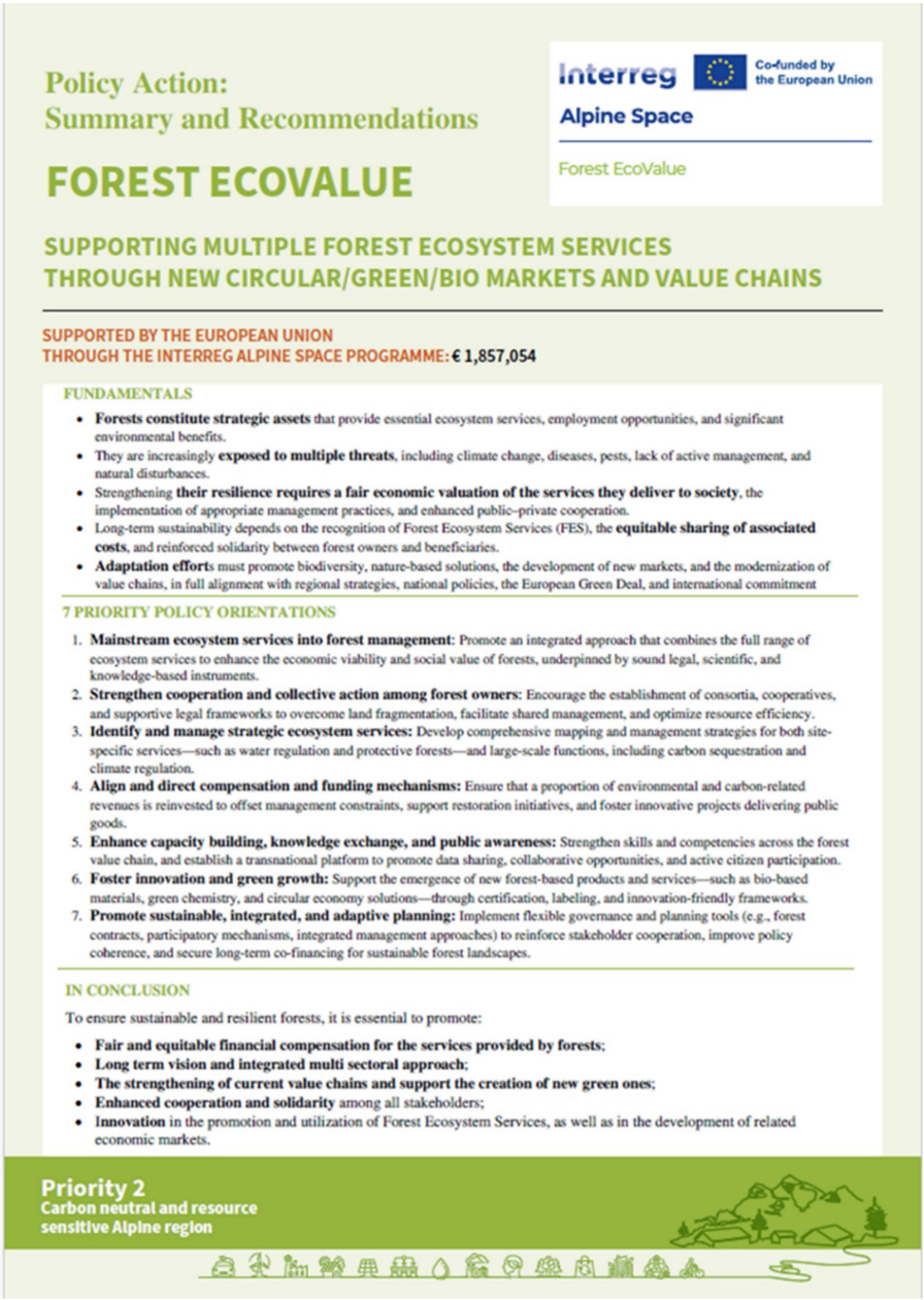
- **Strategic and flexible planning and co-planning**

Forest planning can become a relevant instrument for integrating different aspects and opportunities and foster cooperation at different levels: between owners, to reach critical surface, between owners and enterprises, especially for new products and services, between private and public entities and in some cases including the final service users.

There is a wide toolbox of instruments, from the traditional forest plans to something new like a “Forest contract”, similar to the model of the existing river contract and many intermediate models.

The solutions can be different and adapted to the local framework, but the objectives can be: more flexibility, to adapt to market conditions and natural events; cross sector policy objectives prioritisation; cooperation with different governance levels and stakeholders; identify and mapping different forest functions (mix of FES following territorial needs and opportunities); identify accessibility needs and solutions; co-funding solutions.

b. Forest EcoValue – Policy recommendations in one page



Policy Action:
Summary and Recommendations

FOREST ECOVALUE

Interreg Co-funded by the European Union
Alpine Space
Forest EcoValue

SUPPORTING MULTIPLE FOREST ECOSYSTEM SERVICES
THROUGH NEW CIRCULAR/GREEN/BIO MARKETS AND VALUE CHAINS

SUPPORTED BY THE EUROPEAN UNION
THROUGH THE INTERREG ALPINE SPACE PROGRAMME: € 1,857,054

FUNDAMENTALS

- **Forests constitute strategic assets** that provide essential ecosystem services, employment opportunities, and significant environmental benefits.
- They are increasingly **exposed to multiple threats**, including climate change, diseases, pests, lack of active management, and natural disturbances.
- Strengthening **their resilience requires a fair economic valuation of the services they deliver to society**, the implementation of appropriate management practices, and enhanced public–private cooperation.
- Long-term sustainability depends on the recognition of Forest Ecosystem Services (FES), the **equitable sharing of associated costs**, and reinforced solidarity between forest owners and beneficiaries.
- **Adaptation efforts** must promote biodiversity, nature-based solutions, the development of new markets, and the modernization of value chains, in full alignment with regional strategies, national policies, the European Green Deal, and international commitment

7 PRIORITY POLICY ORIENTATIONS

1. **Mainstream ecosystem services into forest management**: Promote an integrated approach that combines the full range of ecosystem services to enhance the economic viability and social value of forests, underpinned by sound legal, scientific, and knowledge-based instruments.
2. **Strengthen cooperation and collective action among forest owners**: Encourage the establishment of consortia, cooperatives, and supportive legal frameworks to overcome land fragmentation, facilitate shared management, and optimize resource efficiency.
3. **Identify and manage strategic ecosystem services:** Develop comprehensive mapping and management strategies for both site-specific services—such as water regulation and protective forests—and large-scale functions, including carbon sequestration and climate regulation.
4. **Align and direct compensation and funding mechanisms:** Ensure that a proportion of environmental and carbon-related revenues is reinvested to offset management constraints, support restoration initiatives, and foster innovative projects delivering public goods.
5. **Enhance capacity building, knowledge exchange, and public awareness:** Strengthen skills and competencies across the forest value chain, and establish a transnational platform to promote data sharing, collaborative opportunities, and active citizen participation.
6. **Foster innovation and green growth:** Support the emergence of new forest-based products and services—such as bio-based materials, green chemistry, and circular economy solutions—through certification, labeling, and innovation-friendly frameworks.
7. **Promote sustainable, integrated, and adaptive planning:** Implement flexible governance and planning tools (e.g., forest contracts, participatory mechanisms, integrated management approaches) to reinforce stakeholder cooperation, improve policy coherence, and secure long-term co-financing for sustainable forest landscapes.

IN CONCLUSION

To ensure sustainable and resilient forests, it is essential to promote:

- **Fair and equitable financial compensation for the services provided by forests**;
- **Long term vision and integrated multi sectoral approach**;
- **The strengthening of current value chains and support the creation of new green ones**;
- **Enhanced cooperation and solidarity** among all stakeholders;
- **Innovation** in the promotion and utilization of Forest Ecosystem Services, as well as in the development of related economic markets.

Priority 2
Carbon neutral and resource sensitive Alpine region

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