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Forest EcoValue

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# TRANSNATIONAL GUIDELINES AND TOOLS FOR THE ESTABLISHMENT OF PUBLIC-PRIVATE MARKETS FOR THE SELECTED FES IN ALPINE COMMUNITIES

O.2.2

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Forest EcoValue

Interreg Alpine Space Programme

Carbon neutral and resource sensitive Alpine region
SO 2.2: Promoting the transition to a circular and resource efficient economy

**Forest EcoValue:**
**Supporting multiple forest ecosystem services through new circular/green/bio markets and value chains**

Project ID: ASP0100005

## List of the Forest EcoValue project partners

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# Summary

# 1. Introduction and main objectives

This output represents the outcome of a broad and interdisciplinary collaboration, bringing together expertise from various fields and perspectives. The results summarized in this document reflect the joint commitment of the partners to explore, test, and promote innovative approaches to recognizing and valuing forest ecosystem services. For those interested in a more in-depth understanding of the methodologies adopted, the findings obtained, and the materials developed, a comprehensive documentation is available on the project's official website, within the resources section (D 1.2.1, D 1.3.1, D 1.3.2, D 2.2.1 and D 2.3.1).

This document serves as a practical guide for individual forest owners, stakeholder groups, and organisations interested in experimenting with and applying strategies, methods, and tools to enhance forest ecosystem services in their territories. It is intended for actors willing to work both individually and collaboratively on forests and their ecosystems, encouraging them to share their experiences and initiate collective action.

The document presents the fundamental steps for applying the approach outlined in these pages across different local and regional contexts to assess forest ecosystem services (FES) and establish and manage public–private payment schemes. It highlights the main phases of the process and some possible implementation options, identifies the most suitable solutions for varying contexts, and provides an overview of applicable methodologies, tools, and governance aspects.

# 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 was carried out within the Living Labs. Stakeholders' active involvement in these labs is essential for co-designing and testing models and tools, ensuring that 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: 36 months

## Step 1: How to perform a biophysical valuation of FESs in a territory

Alpine forests constitute an essential ecological pillar of Europe, covering nearly 40% of the Alpine space and playing a decisive role in climate regulation, soil stability, and biodiversity conservation. These forest ecosystems, situated at the transition zone between mountain regions and lowlands, from valley floors to the mountain treeline, are exposed to considerable environmental constraints: steep terrain, pronounced climatic gradients, and anthropogenic pressures linked to tourism and land-use planning. This major ecological heritage fulfils vital functions for climate stability, hydrological regulation, natural hazard prevention, and the well-being of local populations.
The biophysical assessment of ecosystem services makes it possible to quantify the natural functions and the connected services provided by these forests independently of any monetary valuation. It serves as a scientific and technical tool for understanding ecological relations and dynamics, giving basis information to forest management, and anticipating the effects of climate change. It also represents the first necessary step toward conducting an economic valuation of the services under study.

The biophysical assessment of forest ecosystem services, therefore, aims to quantify, in measurable physical units (such as tons of carbon, $m^3$ of forest biomass, distribution of stand types expressed as percentages, etc.), the flows and stocks associated with these services and, consequently, the natural contributions of these forests to the ecological functioning of the territories concerned.

This chapter schematically presents the principles, methods, and indicators proposed by the Forest EcoValue project to carry out the biophysical assessment of the forest ecosystem services relevant to a territory, focusing exclusively on the ecological and physical dimensions of the processes observed. This methodology has been tested and successfully applied to the FESs selection (see Table 1) of the project's five living labs.

***Table 1**. The Forest Ecosystem Services selected for the project Forest EcoValue*

| Forest Ecosystem Service | AUSTRIA | FRANCE | GERMANY | ITALY | SLOVENIA |
|---|---|---|---|---|---|
| Provision of timber wood biomass | X | X | X | X | X |
| Provision of fuel wood biomass | X | X | X | X | X |
| Provision of habitats for wild plants and animals | X | | X | X | |
| Provision of other forest products of interest for biochemistry | | | | X | |
| CO2 storage and sequestration in forests / Climate Change Mitigation | X | X | X | X | |
| Natural Hazards (rockfalls, torrent) prevention/mitigation/control | | X | X | X | X |

| | | | | | |
|---|---|---|---|---|---|
| Maintenance of high-quality fresh waters provided by plants and animal species | | X | | X | |
| Recreation and tourism | | X | X | X | X |

## Step 1.1: A structured general outline for biophysically assessing Forest Ecosystem Services in a territory of the Alpine Space

Biophysically assessing FES (qualification, quantification, and mapping) in the Alpine Space involves a comprehensive and multidisciplinary approach that integrates ecological, physical, and geographical dimensions. The input data required to carry out this assessment depend on the size of the forest holding. Small-scale forest owners only need to rely on the specific characteristics of their management unit—mainly derived from field inventories and/or local knowledge—and therefore do not necessarily need to produce maps, whereas large-scale forest owners may use local- or large-scale data for modelling and mapping. Here's the step-by-step general framework (scalable depending on the size of the forest holding) on how to perform a biophysical assessment of FESs in a territory (graphical representation in Figure 1):

1. Identification of Forest Ecosystem Services: Begin by identifying and categorizing the ecosystem services provided by forests in the studied territory. It will be necessary to limit the number of Forest Ecosystem services to keep the workload within an acceptable frame. This includes provisioning services (e.g., timber, food), regulating services (e.g., climate regulation, water purification), and cultural services (e.g., recreation, spiritual values). This identification should be conducted using existing and recognized ES classifications such as CICES (https://cices.eu/cices-structure). Table 1 gives an overview of the ecosystem services selected in the Forest EcoValue project.
2. Stakeholder Engagement: Engage stakeholders such as local communities, forest managers, policymakers, and scientists in the assessment process. Their input is essential for understanding diverse perspectives and priorities related to FES.
3. Data Collection and Analysis: Collect relevant data on forest ecosystem structure, function, and human interactions. This may include identification of relevant input data sources and available models including existing and usable FES assessments, field surveys, remote sensing data, socio-economic data, and expert knowledge. Analyze the data to assess the status, trends, and drivers of change for each ecosystem service.
4. Mapping of Ecosystem Services: Utilize spatial data in Geographic Information Systems (GIS) and spatial analysis techniques to map the distribution of FES in the studied territory. Spatial mapping helps visualize the spatial patterns of FES and identify areas of high service provision. Such mapping can involve:
    - Compilation of ecological data (e.g., vegetation types, land cover, and forest parameters) with topographic data (e.g., digital terrain model, and rivers) and socio-economic data

(e.g., urban area, transportation networks, land use, protected areas) to identify areas of high service provision and demand.
    - Developing spatial models (if needed) that predict the spatial distribution of FES based on environmental variables and land management practices.
    - Creating maps that visualize the spatial patterns of FESs, highlighting hotspots, trade-offs, and synergies.
5. Qualification: Qualify each identified FES based on the data analysis by assessing its importance, relevance, and contribution to human well-being and stakeholders' expectations. This involves understanding the ecological processes that underpin each service.
6. Quantification: For each mapped spatial pattern of FESs, a quantification of the indicator values is carried out to give the quantitative basis for the biophysical assessment. This can include measuring parameters such as biomass increment, carbon sequestration, water quality, or biodiversity indices.
7. Validation and Uncertainty Analysis: Validate the results of the qualification, quantification, and mapping exercises through field validation and peer review. Conduct sensitivity analysis to assess the uncertainty associated with the data and models if these are used in the assessment. For instance, the influence of input data resolution and accuracy on modeling outcomes, the effect of sample size for field survey on the robustness of results, and the computation of an error rate defined as ((Measured Value − Estimated Value) / Measured Value) …
8. Integration and Synthesis: Integrate the results of the qualification, quantification, and mapping actions to provide a comprehensive understanding of FESs in the territory. Synthesize the findings to support the identification of key trends, drivers of change, and implications for sustainable forest management and conservation, including the prioritization of the efforts to be conducted.

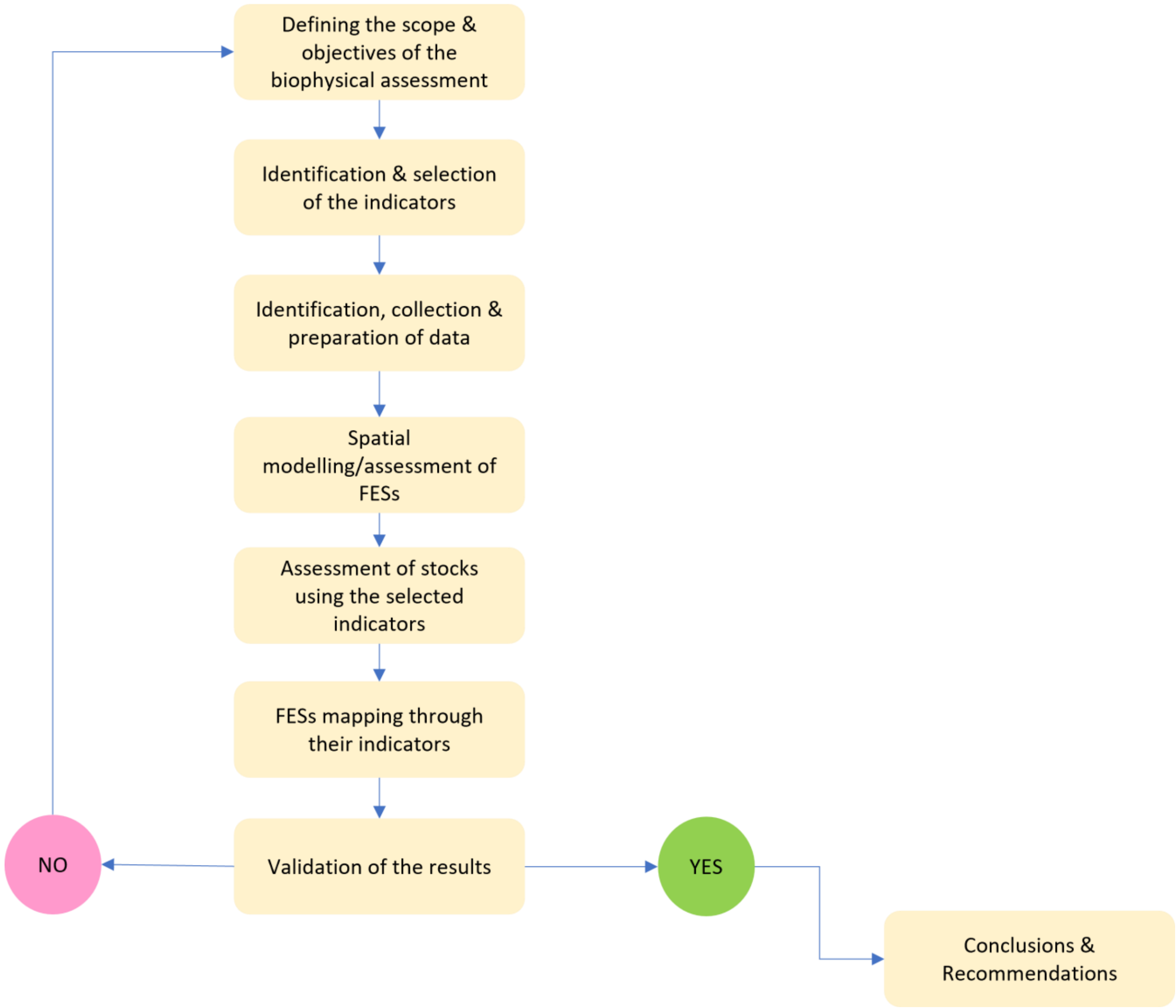



***Figure 1.*** *The graphical representation of the general frameworks' main steps for performing a biophysical assessment of FESs in a territory. Note: If the results obtained are not validated by the stakeholders, it is necessary to reconsider the initially set objectives, as well as the indicators and data used. The objectives can then be redefined, and the analysis procedure should be restarted. This process is iterative until the results are validated by the stakeholders.*

The logics underlying this general framework are:

- To mobilize existing data, knowledge, and models.
- To collect, for all forests within the study area, as basis data, the forest inventory data on the relevant dendrometric parameters for the biophysical assessment. These data have to be spatially explicit. A minimum of the 3 parameters is needed: the growing stock, the annual forest increment, and the tree species distribution. They can be used as input data to quantify the proxies for carbon storage, sequestration, biodiversity, and water quality. As these FESs cover the entire forested area, these proxies are calculated for it and expressed at the scale of each forest management unit.
- To produce a location mapping of FESs depending on topography (e.g., protection against natural hazards, accessibility, visibility, water catchment protection zones) and/or regulatory classification (e.g., Natura 2000 sites, biotope decrees). The generic indicator for these FESs is the total forest area they cover. By crossing this location map with the map of dendrometric

parameters, it is then possible to calculate the same proxies as those mentioned above for harmonizing the presentation of the result of the biophysical quantification assessment.

Data, knowledge, and models are scale dependent. Consequently, the question of scale for conducting the biophysical assessment of FESs is of primary importance, as it depends, among other factors, on the nature, quality, and geographical completeness of the data, as well as on the availability and accessibility of data across the entire study area.  The scale used to map and quantify FES also depends on the framework for using these data. Broadly speaking, two scales can be distinguished:

- Local Scale (also called 'small scale'): This scale corresponds to the action framework of practitioners and decision makers, often at the level of a watershed or municipality or even a single forest owner. It is the "tactical" scale, with a short to medium-term component to achieve set objectives. The limitation of analyses at this scale is that available data are often not geographically comprehensive, meaning they covers only certain parts of the study area and might have been collected without a harmonized protocol (e.g., differences in forest inventory methods between private and public forests). The data at this scale are sharp-edged at land parcels and can be used for forest management measures.
- Multi-territorial Scale (also called 'large scale'): This corresponds to the action framework of policy makers, usually at a regional or even national level. It is the "strategic" scale, with a long-term action plan. The data at this level give the "big picture" but cannot be used at land parcel level or for concrete forest management measures.

Transitioning from one scale to another requires upscaling or downscaling actions. Upscaling by aggregating information on a given geographical grid (e.g., aggregation at the municipal level) is generally easier than downscaling because the interpolation of data and the quality of the produced data are limiting factors for this action (e.g., interpolating meteorological data to a finer spatial resolution than that of the sensors used). In the latter case, while global data may be reliable and robust, interpolated data are often prone to errors and may even be incorrect at land parcel level.

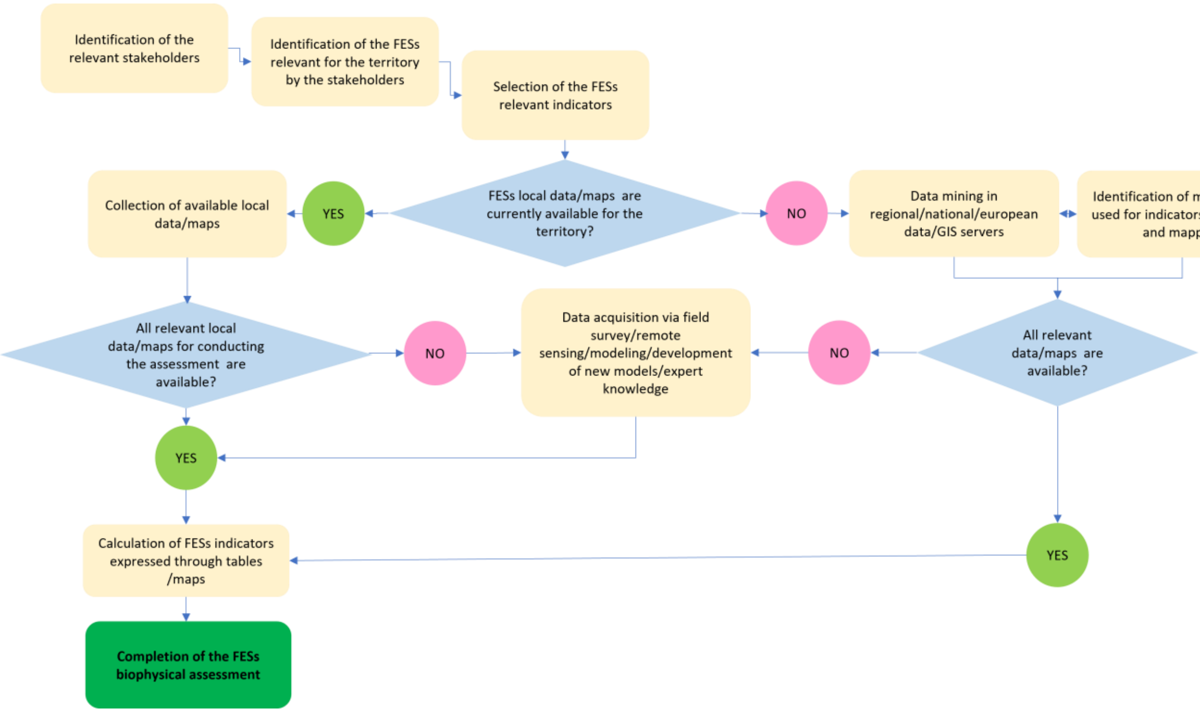
Due to these limitations, the indicators used at multi-territorial scale in Forest EcoValue are often only proxies, allowing an estimated quantification of FESs. For the studied territory, the objective is to obtain a trend and a relative quantification of FESs in comparison with different living lab areas at the territorial scale.

Data at local scale sometimes are not updated or might differ between different forest owners. Therefore, local data are to be updated, harmonised or even proxy data introduced to be ready for ecosystem service assessment. Depending on the relevant ecosystem service, this will be feasible at local level as the approach in Forest Ecovalue has demonstrated. However, such local data will not allow a transnational comparison.

A catalogue of large-scale relevant data for FES mapping and quantification, freely available, has been produced. For more details, please refer to "Deliverable D.1.2.1: Report on biophysical foundations and methodologies for the assessment of selected FES" (https://www.alpine-space.eu/project/forest-ecovalue/). Some of these datasets will be directly available in April 2026 via the web atlas of the Interreg Alpine Space project MOSAIC. For details about FESs indicators used in Forest EcoValue and mapping, please refer to Deliverable D.2.2.1 Forest Ecosystem Services assessment pilot action report (https://www.alpine-space.eu/project/forest-ecovalue/).

## Step 1.2: Decision tree for biophysical Forest Ecosystem Services assessment

The implementation of the general analysis framework proposed above requires a decision tree that identifies the necessary and sufficient steps to be carried out, as well as the logic connecting them. Figure 2 presents the decision tree proposed by the project for performing the biophysical assessment of FESs in a territory. This decision tree has been set up based on the project's partners and stakeholders' feedback on the process used in the projects' five living labs.



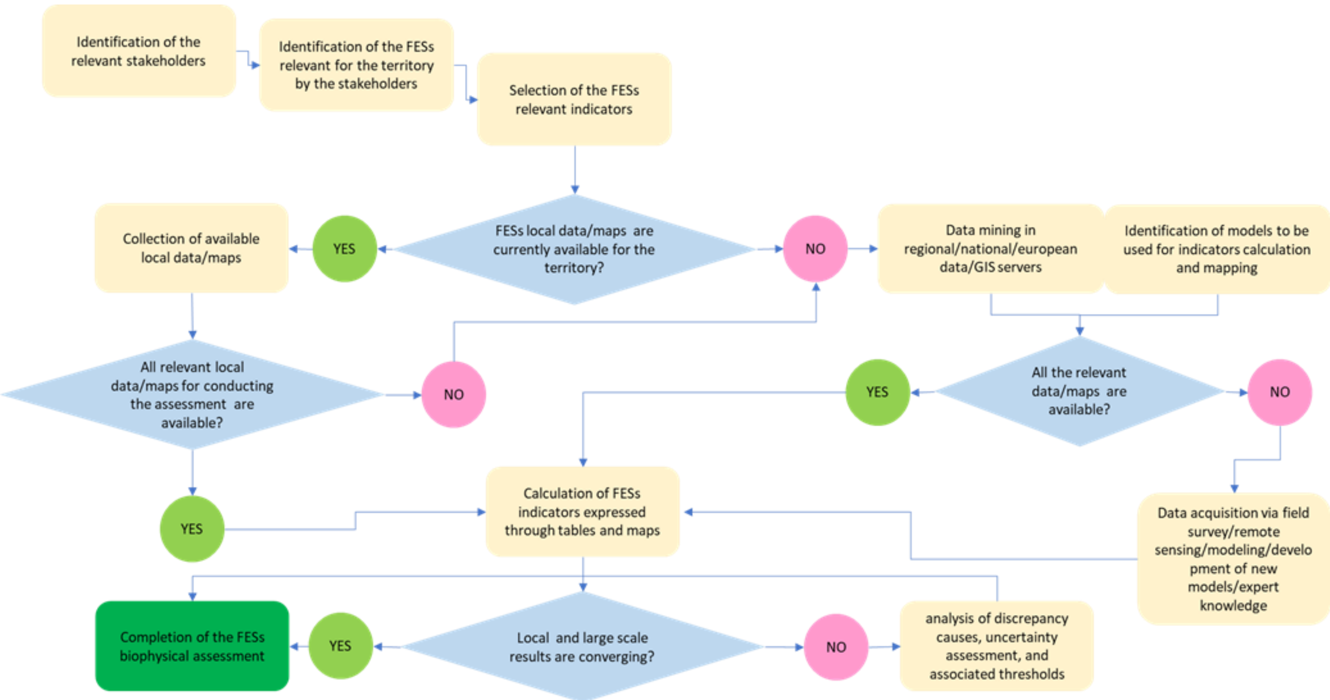



*Figure 2. Decision tree for performing the biophysical assessment of FESs in a territory*

The implementation of this decision tree ultimately enables the production of two operational documents: quantified indicator fact sheets for each FES studied and a map for each of these FESs, representing these data cartographically.

Following final validation by the relevant stakeholders of the study area, these two documents can serve as input data for the economic valuation of these FESs.

## Step 2: How to perform an economic valuation of FESs in a territory

Forest ecosystems provide critical services such as habitats for wild plants and animals, carbon storage, natural hazard prevention, and recreation. To design policies and markets that support their sustainable use, estimating the economic value of these services for society (hereinafter, social value) is essential. In this step, we apply economic valuation as a tool for quantifying the benefits forests provide, enabling better governance and decision-making.

The spectrum of economic valuation approaches is broad, encompassing both monetary and non-monetary methods. Valuation approaches with monetary expression of value are as follows:

- Direct market value, or price-based approach: Obtaining values directly from what people pay for the service or good based on prices on the market (e.g., timber prices).
- Revealed preferences: Inferring value from behavior (e.g., travel costs for recreation).
- Stated preferences: Collecting hypothetical willingness-to-pay data through surveys.
- Cost-based methods: Estimating restoration or replacement costs.
- Value transfer: Transferring existing valuation data (i.e., study sites) to new contexts (i.e., a policy site).

These approaches provide a foundation for assessing the value local communities and broader society attribute to the forest services. The choice of valuation method depends on policy objectives, geographic scale, and data availability. Due to the limited resources and data, as well as to ensure transnational comparability, the value transfer approach was deemed the most suitable to the objectives of the project. Where data was available, additional direct market valuation was performed.

Another approach to assessing the social value of ecosystem services in connection with environmental management decisions is multi-criteria decision analysis. A multi-objective, robust optimization model (ROM) developed for this step allows for implicit identification of resource management drivers and relevance of FES to management decisions, by coupling forest composition with indicators of FES provision. Such analysis leads to a better understanding of forest owners' motivations and streamlines this understanding into policy-making recommendations.

Both approaches will be introduced in more detail below.

### Step 2.1: How to estimate social value of FES using unit and adjusted unit value transfer

The value transfer approach estimates the economic value of forest ecosystem services (FES) for specific contexts by leveraging valuation data from existing studies (i.e., study sites) compiled in a database compiled for the Forest EcoValue project (D.1.3.2_Database-of-FES-values_Europe) and transferring those values to new contexts (i.e., policy site). This method provides stakeholders with an efficient way to evaluate FES across geographic scales and service types. In the project, we applied unit value transfer (i.e., transfer of an average value per ha derived from study sites to the policy site area, or LL areas in the context of the Forest EcoValue project) and adjusted unit transfer (i.e., adjusting unit value to the socio-economic context of the policy site, or LL areas in the context of the Forest EcoValue project). For more details on methodology and data collection, please refer to the D.1.3.1 Working group ECO Report.

A key component is the decision framework (Figure 3), which guides stakeholders in applying the unit value transfer method. The framework considers two main approaches:

1. Ecosystem Relevance ("yes" to the first question in Figure 3): This approach departs from the specific ecosystem service of interest and is particularly useful when studies geographically similar to the policy site (i.e., assessment area) are unavailable. Depending on the data availability, the user is invited to either broaden or narrow the scope of their valuation, following the decision tree.
2. Geographic Relevance ("no" to the first question in Figure 3): This approach departs from the geographic context of the policy site (i.e., assessment area), which could span from a specific local site (e.g., park) to the national level or specific ecozone/biogeoregion, depending on data availability. Guided by the decision tree, the user can get an overview of available value data and estimate value proxies for all ecosystem services in a specific site, region, country or ecozone/biogeoregion.


***Figure 3***. *Unit value transfer decision tree. Adapted from: Harrison et al. (2018).*

Following the decision tree and the instructions in the D.1.3.2_Database-of-FES-values_Europe, a practitioner can render a proxy for the economic value of the FES or multiple FESs that could support in communication, trade-off analysis, and policy design. While this proxy could be used for raising awareness and setting priorities, we recommend conducting primary studies when precise and context-specific data is required. The derived value proxy can be converted to euro/ha/year and simultaneously adjusted for the socio-economic differences between the study sites and the policy site with purchasing power parity (PPP) conversion factor (private consumption, Local Currency Units per international $ in 2023) for the policy site country. This factor can be extracted from the World Development Indicators provided by World Bank.

If the data availability allows, additional direct market assessment of the provisioning services (i.e., timber, firewood and fuelwood) can be performed. First, we estimate a price per unit based on the average market prices and the potential (i.e., allowed) quantity of the FEs provided (e.g., logging volume) in the policy site. Then, we estimate an economic value per ha per year with the forest area providing the ecosystem service. More details on the method application are described in D2.3.1 Transnational pilot testing of FES economic assessment and market frameworks in each LL.

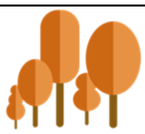
### Step 2.2: Robust optimization model: A tool for management priorities analysis

While at the previous step an estimation of the average social value of FES was provided, with this step, forestry practitioners and policymakers are invited to engage with the implicit objectives of forest owners in their management decisions. Contrary to popular belief, income generation is often not the sole and most important rationale for forest management, especially among private forest owners who are already environmentally committed (Feliciano et al., 2017; Gatto et al., 2019; Juutinen et al., 2021). Therefore, it is important to understand the various drivers of forest owners to design policies that are crowding in on existing motivations to provide non-market FES.

To do so, we have developed a survey (D.1.3.2_Multi-criteria-approach_Survey) to collect the data on the forest owners' preferences for different forest compositions and a model (D.1.3.2_Multi-criteria-approach_ROM), which determines implicit management objectives of an average forest owner in the study area based on the surveyed data. More precisely:

1. Draw a baseline: assess actual forest composition about age structure and forest stand types (e.g., coniferous even-aged, mixed uneven-aged, Table 2) in the study area, as well as forest ownership structure (share of private forest owners and plot size distribution)
2. Survey private forest owners: Forest owners are asked to evaluate six forest stand types (Table 2) based on nine indicators grouped into three main objectives:
    a. **Market Values**: Long-term income, liquidity, and the ability to meet household needs
    b. **Non-Market Values**: Carbon storage, natural hazard protection, ecological functions (e.g., maintaining biodiversity and soil quality), and general preference as a proxy for cultural values.
    c. **Management Complexity**: Costs and complexity level associated with maintaining the forest.
3. Analyze the data using a robust optimisation model (ROM): Using the survey data, the ROM creates hypothetical optimized forest compositions that align with various combinations of the indicators. By comparing these optimized compositions with actual forest types in the study area, the model identifies the implicit objectives driving current management practices. This process highlights the trade-offs or synergies forest owners prioritize, such as profitability, ecological conservation, or ease of management.

*__Table 2.__ Forest stand types. Adapted from: Chreptun et al. (2023).*

| **Schematic visualization** | ***f*** | **Forest stand type** |
|---|---|---|
|  | 1 | Conifer, even-aged |
|  | 2 | Conifer, uneven-aged |
|  | 3 | Deciduous, even-aged |
|  | 4 | Deciduous, uneven-aged |
|  | 5 | Deciduous and conifer, uneven-aged |
|  | 6 | Forests without intervention |

Details on methodology and a user guide are provided in "D.1.3.1 Working group ECO Report" and in "D.1.3.2 Methodological guidelines and tools to assess FES and develop market in Alpine communities", respectively".

The ROM is a valuable tool for forestry practitioners and policy makers who want to get a better understanding of how forest owners make decisions and consequently design initiatives that reflect local realities. By revealing implicit priorities, such as a preference for ecological stability over income maximization, stakeholders can create policies that align with these motivations. This methodology is adaptable to various regions, making it an essential part of the Forest EcoValue project's efforts to promote circular and bio-based economies in the Alpine Space and beyond.

## Step 3: How to analyze whether a market or payment scheme for FESs can be activated in a territory

In this step, the goal is to determine whether the minimum conditions exist within a given territory to initiate a market related to Forest Ecosystem Services (FES).

In economic terms, a market is a space where buyers and sellers meet to exchange goods and services voluntarily, based on their respective property rights. Its functioning is typically assessed by looking at the structure of the market, such as the number and influence of the actors involved, and its efficiency, understood as the ability to allocate scarce resources in ways that generate value for society.

Applying this logic to forest ecosystem services (FES) means creating a clear and regulated setting in which forest managers who generate benefits like clean water, soil stability, biodiversity, or landscape quality can engage with those who rely on or benefit from them. A market or payment scheme for FES makes the value of these benefits explicit - benefits that are often overlooked in economic decisions - and provides incentives to maintain or enhance them. This is why it is useful to assess whether the conditions exist, in a given territory, to activate such a mechanism: doing so helps clarify roles and interests, foster collaboration among actors, and support more effective and long-term-oriented forest management.

The procedure to assess whether a market can be established involves the following steps:

- Step 3.1 Context analysis
- Step 3.2 Evaluating the feasibility

### Step 3.1: Context analysis

Context analysis aims to understand the territorial context where a market is to be developed, or to analyze its characteristics further if one already exists.

The analysis of existing and potential markets is based on the collection of contextual information through a *FES Market Assessment Template*. This tool explores the territorial setting from different perspectives:

- Geography and scale: Defines the spatial scale of reference (local, regional, etc.), which is crucial to understanding the scope of the FES.
- Economics (Demand and Supply): Identifies the *beneficiaries* (buyers) and *providers* (sellers, often coinciding with forest owners).
- Payment mechanisms: Describes existing or potential payment channels and types (direct or indirect, contractual), as well as the source of payment.
- Benefits: Lists both ecological and social benefits provided by the FES.
- Governance and Support: Analyzes the regulatory framework, policies, and support services in place, which are essential for reducing entry barriers and transaction costs.

Table 3 provides a summary of the template's content. It is important to be as precise as possible and to provide the greatest amount of information to enable a well-informed, accurate assessment. An iterative dialogue with partners or stakeholders is essential for refining the collection.

***Table** 3. Market template for data collection*

| Entry | Description |
|---|---|
| **Title** | The title should describe the main characteristics of the potential market: particularly FES type, location, and ecosystem involved |
| **Country** | Report the country where the scheme is applied. |
| **Region** | Report the region, district, municipality, park, etc., where the scheme is applied. |
| **Entry** | **Description** |
| **Ecosystem** | Describe the ecosystem service to which the market refers. Be as descriptive as possible and include any relevant information not found in other sources |
| **FES provided** | Identify forest ecosystem service of interest, e.g., provisioning, regulating, cultural |
| **Cost of the service** | Indicate the cost to be borne for providing the FES, if possible, using a standardised indicator/metrics (such as cost per hectare, cost per cubic meter). The cost of the service provision can sometimes coincide with the forest management cost. If possible, provide a quantity/number; otherwise, proved qualitative information. |
| **FES scarcity scenario** | Indicate the likely consequences of a significant variation of the FES investigated in the case of extreme scarcity of the service itself. If possible, describe the range for variation. E.g. For water purification services, extreme scarcity (e.g., a 30–60% reduction in the ecosystem's filtration capacity) could lead to ecological consequences such as deterioration of freshwater habitats; social consequences including reduced availability of clean water for communities; and economic consequences such as higher costs for water treatment and health-related expenses. |
| **Time scale** | Indicate information on the duration of the FES in time (at least: long term, short term). Short-term refers to services that can vary or be observed within months or a few years, while long-term refers to services that persist or accumulate over decades. Not all FES require a time scale but providing it can help understand how quickly changes in management or environmental conditions may affect the service and the market. |
| **Space scale** | Indicate information on spatial borders/geographical scope of the project (local, regional, national, international). Note: Usually FES have local reach, except for some. Understanding the spatial scale |

| | |
|---|---|
| | is particularly important in cases of congestion, which occurs when the use of the service by some actors reduces its availability or quality for others. For example, excessive recreational use of a forest can diminish the experience for all visitors. Knowing the geographic reach helps design markets or payment schemes that reflect the true limits and distribution of the service |
| **Beneficiaries (demand)** | Describe the type of organizations or subjects that join the market as beneficiaries (buyers). Ideally, you can also include a detailed list of organizations or people and report the number or scale of the demand side. |
| **Providers (supply)** | Describe which types of organizations or actors participate in the market or payment scheme as providers, that is, those who supply the ecosystem service. Ideally, you can also include a detailed list of organizations or people and report the number or scale of the supply side. They might coincide with the forest owners. Be as detailed as possible. |
| **Intermediary** | Describe the role of the intermediary in the project (if any). An intermediary is an actor or organization that facilitates transactions between providers (sellers) and beneficiaries (buyers) of the service. For example, a consultancy acting as a broker can connect forest owners who maintain water quality with municipalities or companies that benefit from clean water. |
| **Aim of the market** | Clarify the desired objective of the market: e.g., preserving biodiversity, making profit, increasing public participation in natural resource management, etc. |
| **Business model** | Briefly describe how providers generate value from ecosystem services, deliver benefits to beneficiaries, and structure payments or incentives to sustain the service over time. |
| **Payment type** | Describe how the payment is organized between the parties involved. |
| **Ecological benefits** | List all the ecological benefits from FES |
| **Social benefits** | List all the benefits (impacts) from FES that contribute to societal variables and poverty reduction (or vice versa) |
| **Entry** | **Description** |
| **Regulatory framework** | Briefly discuss the regulatory context in where the project is being applied. For example, is the ecosystem service regulated? Are there, for example, policies or direct and indirect support services for the service? (e.g., a protected area does not imply the presence of a market but gives an idea of a possible framework within which to |

| | |
|---|---|
| | situate the BM and its governance; volunteering and local associations should also be considered) |
| **Policy** | Describe the main policies adopted for market development |
| **Support services** | Describe the services implemented to facilitate the success of the project |
| **Success indicators/methods** | Describe which methods have been utilized to prove the success of the project |

### Step 3.2: Evaluating the feasibility

To assess market feasibility, it is necessary to evaluate the presence and the quality of a set of standard conditions. This analysis should be compared with an "ideal market" (refer to D 1.3.1) to identify gaps and opportunities for improvement.
In the table in the Annex section, there is a checklist of conditions to support this self-evaluation, based on the information collected for the selected territory.

- Column 1 indicates the condition/characteristic of the selected market or FES.
- Column 2 provides a brief description.
- Column 3 shows the possible options that each respondent can select based on their own situation.
- Column 4 lists the answers that correspond to an ideal market situation for FES.
- Column 5 indicates the entry of the *FES Market Assessment Template (in Table 3)* where to find the corresponding information.

The results of this self-assessment help to make visible any existing gaps, shortcomings, or areas where improvements are needed in the selected territory or FES. By systematically reviewing the listed conditions, stakeholders can better understand which elements are already in place and which ones require further development or adjustment. This increased awareness supports informed decision-making and helps identify priority actions to strengthen the overall market framework. Ultimately, addressing the identified gaps and areas for improvement can increase the likelihood of successfully introducing and developing FES markets under more favourable and robust conditions.

## Step 4: How to build a business model for ecosystem services

Once the possibility of establishing, with appropriate adjustments, a market for FES has been confirmed, the next step is to identify the most suitable way to participate in it through the selection of a Business Model (BM) adapted to the chosen FES and to the socio-economic and physical characteristics of the territory.

Economic sustainability in the provision of ecosystem services is a key factor, as these services often are, or have the characteristics of, public goods — that is, they are non-rival and non-excludable (*i.e.,* their consumption by somebody does not reduce the consumption by other subjects, and the access to their services or benefits is complex to limit). This makes it generally unprofitable for private actors to supply public goods, since no market price naturally exists for them. In this step, we will explore how business models can address the absence of market prices for ecosystem services and support the financial sustainability of ecosystem service provision by attracting private investment and enabling market-based approaches.

**BOX – Business model**

*A **Business Model (BM)** describes how an organization creates, delivers, and captures value for itself, its clients, and society. It outlines how a business operates and generates revenue. In the context of FES, a BM defines how entities engaged in the ecosystem service structure their value architecture around FES-related activities.*

*Adopting business models represents an opportunity to manage FES in ways that generate revenues and motivate stakeholders to engage in the provision of ecosystem services through appropriate forest management techniques. BMs can help overcome the under-provision of public goods, a typical feature of many FES, by making their provision financially sustainable and attractive.*

***Box 1**. Business model and FES provision*

The objective of this step is to build a multistakeholder territorial network to pool expertise and co-design a shared solution for enhancing a local FES, leading to the selection of business models.

Steps for building a business model based on FES:

## Step 4.1: Identify BM archetypes

In designing FES business models, analogy or transfer of existing approaches is recommended, as it allows building on established experiences and adapting them to the local context. This approach enables practical innovation based on real, tested foundations, even beyond the specialist field of ecosystem services. A wide range of good practices and existing models can be found, including examples from other sectors. For reference, we suggest consulting the selection of good practices available on the Forest EcoValue’s website. Based on these examples, it is possible to gain a general understanding of how to structure one’s own model, which can then be adapted and customized according to the specific contextual characteristics.

We identified 10 business model archetypes (BMAs), which can be grouped into four main categories. These model archetypes are crucial as they help evaluate which business strategies are best suited to the local characteristics of an area based on the selected FES.

The type of FESs available in a territory is a fundamental factor that influences the suitability of a specific archetype. Based on this assessment, the following 10 BMAs were selected: Crowdfunding (BMA1), Environmental finance (BMA2), Experience selling (BMA3), Freemium (BMA4), Green chemistry (BMA5), Public–Private Partnership (PPP) (BMA6), Reverse auction (BMA7), Social enterprise (BMA8), Subscription (BMA9), and Trash to cash (BMA10).

Below is a brief overview of each archetype. For clarity and analytical coherence, the archetypes are discussed following the four thematic categories identified.

#### *4.1.1 Innovative Finance and Environmental Markets*

Focus: monetizing and efficiently allocating environmental assets through financial or competitive mechanisms.

| ***Archetype*** | ***Value Driver (Core Mechanism)*** | ***Ideal Application (FES Focus)*** |
|---|---|---|
| ***Environmental finance*** | *Converts environmental services (like carbon capture or biodiversity protection) into tradable credits purchased by companies or institutions seeking to offset their environmental impact.* | *Regulating FES (carbon sequestration, water purification, biodiversity).* |
| ***Reverse auction*** | *Public authorities select proposals from landowners who offer ecosystem services for the lowest possible cost, ensuring efficient use of public funds. Additional ecologic and social criteria can be integrated in the selection process.* | *Regulating and Provisioning FES* |

#### *4.1.2 Tourism, Experiences and Culture*

Focus: monetizing access, immersive experiences, and emotional connection with nature.

| ***Archetype*** | ***Value Driver (Core Mechanism)*** | ***Ideal Application (FES Focus)*** |
|---|---|---|
| ***Freemium*** | *Allows open access to a natural area or basic service while charging for premium experiences such as guided hikes, workshops, or wellness events.* | *Cultural FES (recreation, education, tourism)* |
| ***Experience selling*** | *Monetizes immersive, often transformative, nature-based activities (e.g., forest therapy, foraging, eco-retreats), building strong emotional connections.* | *Cultural FES* |

### *4.1.3 Circular Economy*

Focus: the transformation of forestry byproducts or residues to reduce waste and create new value chains.

| ***Archetype*** | ***Value Driver (Core Mechanism)*** | ***Ideal Application (FES Focus)*** |
|---|---|---|
| ***Trash to cash*** | *Turns forestry residues or damaged materials (such as upcycled furniture or biochar) into marketable goods, fostering local entrepreneurship.* | *Provisioning FES, with indirect Regulating and Cultural value.* |
| ***Green chemistry*** | *Forest resources (like resin, bark, or essential oils) are processed into bio-based compounds used in sectors such as construction, cosmetics, or health.* | *Provisioning FES with regulating and innovation potential.* |

### *4.1.4 Social and Community-Based Initiatives*

Focus: use of forest activities to achieve social objectives or reliance on recurring collaboration and relationship-based financing/services.

| ***Archetype*** | ***Value Driver (Core Mechanism)*** | ***Ideal Application (FES Focus)*** |
|---|---|---|
| ***Crowdfunding*** | *A large number of individuals contribute small donations to fund a project (e.g., reforestation or habitat restoration), driven by emotional engagement and transparency.* | *Regulating FES (carbon sequestration, biodiversity) and Cultural FES (community engagement).* |
| ***Social enterprise*** | *Uses forest-based activities to generate social impact (e.g., employing marginalized groups); profit is reinvested into social objectives as the mission is central to the business.* | *Cultural and Regulating FES with a social integration focus.* |
| ***Subscription*** | *Clients pay a regular fee to receive forest products (e.g., mushrooms, herbs) or access to services (e.g., seasonal tours), ensuring predictable income and customer retention.* | *Provisioning and Cultural FES.* |

| | | |
|---|---|---|
| ***Private-Public Partnership (PPP)*** | *Public institutions and private companies work together to protect and manage forest ecosystems, often with the private actor funding restoration in exchange for long-term benefits (like branding).* | *Regulating, Provisioning, and Cultural FES* |

## Step 4.2: Identify Key Stakeholders

The stakeholder analysis represents a preliminary step, as it allows for mapping all individuals and organizations - beyond the project's core promoting group - that are potentially involved in the delivery of a service and therefore relevant to the development of a business model. The core group leading the initiative will then need to determine which stakeholders are truly strategic and which are less so. There are various ways to support this analysis.

Key public and private stakeholders[1] in the area should be identified, such as forest owners, consortia, local governments, businesses, research institutions, citizens, local associations, and organize a meeting with them.

Entering or even starting a new market and developing a business to enhance territorial assets and values (such as FES) requires broad participation and shared vision, resources, and objectives. For this reason, a co-design phase run with an extended group and considering all actors involved is recommended.

## Step 4.3: Apply participatory design methods

Participatory design methods are useful for collectively identifying complex problems, as they offer creative ways to address such challenges, based on collaboration among diverse groups to understand, ideate, and experiment with solutions.

In territorial co-design, a participatory approach is particularly valuable because it brings together different perspectives from public authorities, businesses, citizens, and associations, and encourages reflection not only within a single organization but along the entire value chain. When applied to sustainability and ecosystem services, DT broadens its focus: rather than concentrating solely on the *end user*, it considers the entire system and its life cycle. This wider perspective helps to understand connections, identify challenges, and uncover opportunities for more durable and shared solutions.

[1] Some useful tools can be found here: https://simplystakeholders.com/key-stakeholder-identification/

**BOX – Business Model Canvas (BMC)**

*The Business Model Canvas (BMC) is both a strategic and operational management tool. It is a visual framework that helps organizations analyze, assess, frame, and plan their business models.*

*In general terms, a Business Model (BM) provides a structured description of how an organization creates, delivers, and captures value—that is, how it operates to generate revenue and, typically, profit. It can be integrated for assessing also sustainability aspects such as social and environmental benefits.*

***Box 2**. Business Model Canvas*

At this stage, the most suitable tool for participatory design of an integrated business solution based on FES is the Business Model Canvas for FES.

Within the Forest EcoValue project, the BMC has been adapted to reflect the specific nature of products and services provided by forest ecosystems. This adaptation aligns the model with the unique characteristics of *value, products, services, users/beneficiaries*, and *governance challenges* that typically arise when ecosystem services form the basis of market transactions.

The FES Business Model Canvas (FES BMC – see Figure 4) retains the original framework but introduces some key modifications:

- A tripartite Value Proposition, encompassing environmental, social, and economic dimensions. Having regard for the most common types of values associated with FES, it is suggested to focus on the categories of environmental value proposition, social value proposition, and economic value proposition. Ecosystem services are likely to deliver ecological improvements (e.g. biodiversity), socially relevant impacts (e.g. health), and economic revenues. Those three propositions can be included in the same box.
- The replacement of “Customers” with “Key Beneficiaries”, reflecting the broader range of actors who benefit from ecosystem services.
- The introduction of a Governance component, recognizing the importance of management structures and accountability mechanisms in the context of FES.

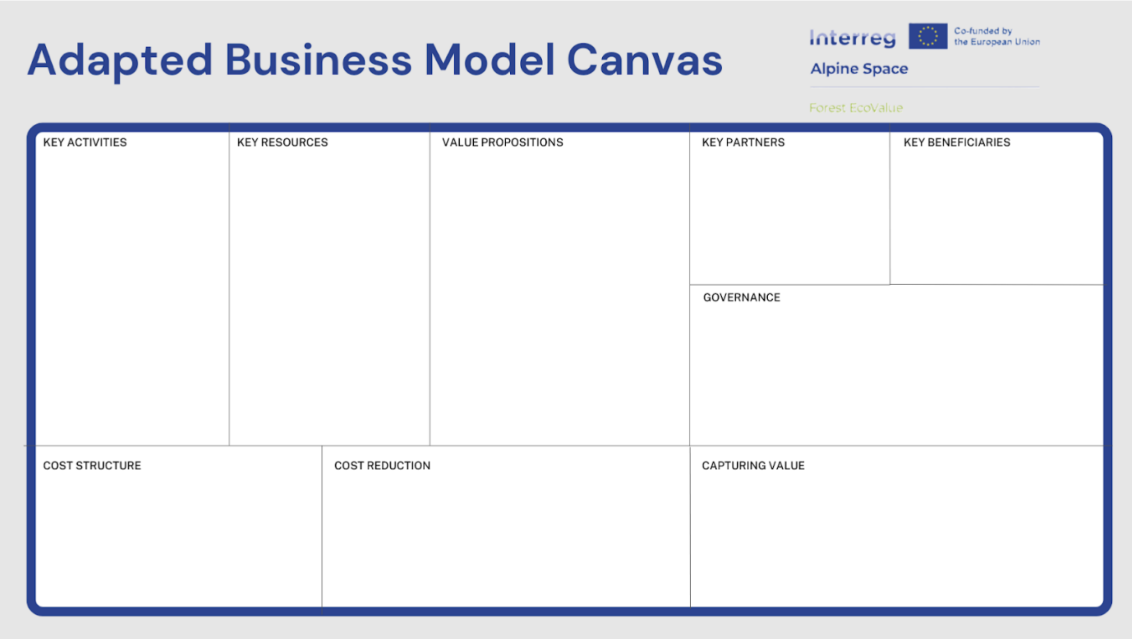



***Figure 4.*** *FES Adapted Business Model Canvas*

For detailed and specific explanations, please refer to Deliverable 1.3.2 of the project.

## Step 5 - How to choose the right business model for your territory

In addition to the participatory approach that empowers local communities by enabling the co-creation of ideas, the FEV project has also developed a methodology to more systematically identify potential business models based on the selected FES, providing Living Labs with additional practical insights.

While the scientific validation of this methodology relies on a rigorous MCA-TOPSIS (Multi-Criteria Analysis - Technique for Order Preference by Similarity to Ideal Solution)[2] approach, we recognize that forest owners and practitioners require an agile, immediate instrument for decision-making. Therefore, we translated this complex analytical framework into a user-friendly Excel Tool designed for direct use by local stakeholders, embedding user-friendly instructions.
We strongly recommend that territorial agency, regional public bodies and similar wider-range organizations use the full MCA-TOPSIS for more nuanced and comparative evaluations of business model suitability across one or more diversified regional contexts.
However, this chapter describes how to use this Practitioner's Tool[3] to identify the most suitable Business Model Archetypes (BMAs) for a specific territorial context.

[2] For a detailed technical explanation of the full mathematical steps and the definition of the "Ideal Solution," please refer to Deliverable 2.3.1.
[3] The Practitioner's Tool does not replace a professional feasibility study, business plan, or legal consultation. The rankings produced are indicative and based entirely on the self-assessment data provided by the user; biased or inaccurate inputs will result in inaccurate rankings. This tool implements a simplified weighted scoring method inspired by the logic of MCA-TOPSIS. While it preserves the multi-criteria philosophy of the full scientific model described in Deliverable 2.3.1 (e.g., concept normalization, weighting, and multidimensional ranking), it replaces complex vector-based distance calculations with a linear weighted suitability approach to ensure usability in standard spreadsheet software without macros or advanced statistical plugins.

## 5.1: The Logic: Matching Territory to Business Model

The methodology assumes that each region is characterized by a specific combination of ecological, governance, economic, and market conditions. The tool estimates the degree of similarity between the characteristics of your territory (Supply) and the structural requirements of the BMAs (Demand).

## 5.2: The Seven Key Concepts

To ensure the tool is robust, we characterize the territory based on seven concepts identified through literature review and expert assessment. These are the same concepts used in the full scientific model:

- Ecosystem Services Offered: The quantity and quality of natural assets available.
- Local Demand: The market appetite and willingness to pay.
- Regulations & Policies: The legal framework and support mechanisms.
- Operating Costs: The efficiency of logistics, labor, and energy.
- Governance & Management: The strength of local networks and cooperation.
- Social Benefits: Job creation potential and community inclusion.
- Innovation Capacity: The ability to adopt new technologies.

## 5.3: Using the Practitioner's Tool

The Excel tool simplifies the data collection and normalization phases described in the full methodology into a streamlined self-assessment process:

**A. Weighting (Strategic Priority)**
Instead of relying solely on statistical weights, the practitioner assigns a "Weight" to each of the seven concepts based on local strategic priorities. This allows the tool to adapt to the specific goals of the forest owner (e.g., prioritizing Social Benefits over Innovation).

**B. Scoring (Self-Assessment)**
In the full model, indicators are retrieved from complex official statistics. In this simplified tool, the user characterizes their territory by assigning a score from 1 (Weak) to 5 (Strong) for each concept. The tool automatically normalizes these inputs to create a consistent numerical context.

**C. The Suitability Matrix**
The tool contains a pre-filled "Suitability Matrix." This matrix represents the scientific "DNA" of the 10 BMAs, derived from the expert assessments in the full MCA-TOPSIS model. It defines how dependent each business model is on the seven concepts.

## 5.4: Results and Strategic Insights

Once the user inputs are entered, the tool calculates a Weighted Fit Score. This serves as a proxy for the "similarity to the ideal solution" calculated in the full TOPSIS model.

The tool provides three levels of output:

- Ranking: A list of BMAs ordered from best fit to worst fit.
- Top Contributors: It identifies which of the territory's strengths are driving the success of the top-ranked models.
- Watch-outs (Gap Analysis): The tool performs an automated check to flag "Critical Vulnerabilities." It identifies concepts where a chosen BMA requires high performance, but the territory currently scores low.

From the perspective of an individual entrepreneur or forest owner, these results provide guidance on which business model is worth a feasibility study, and exactly where capacity building (e.g., improving governance) is needed before implementation.

## Annex

| Condition | Description | Response options | Archetype/model answer | Template for markets - entries |
|---|---|---|---|---|
| Issue or threat | Is there a specific problem, such as loss in biodiversity, or a service, like carbon sequestration, that is recognized by at least one set of stakeholders, who are willing to pay to rectify/address the situation? | *Yes*<br>*No* | Yes<br>Buyers know that the FES they are willing to pay for will provide the desired benefit. There must be a clear cause and effect | - Ecosystem<br>-<br>FES provided<br>-<br>FES scarcity scenario<br>-<br>Aim of the market |
| Rivalry and Excludability of the FES | What kind of FES is it? Private good, public good, club… (see D 1.3.1)[4] | *- Rival/Non-rival*<br>*-Excludable/non excludable* | Private goods are more suitable for establishing MBIs, but it is also possible to address other types of goods. | FES provided |

[4] 1. Private goods
- Excludable: others can be prevented from using them (e.g., you have to pay).
- Rival: if one person uses them, others cannot use them at the same time.
- Example: a sandwich, a pair of shoes.

2. Public goods
- Non-excludable: people cannot be prevented from using them.
- Non-rival: one person's use does not reduce availability for others.
- Example: street lighting.

3. Club goods (or impure public goods)
- Excludable: access can be limited (e.g., payment or membership).
- Non-rival (up to a point): many people can use them without reducing the benefit for others, at least until saturation.
- Example: streaming platforms, a private gym.

4. Common goods (common-pool resources)
- Non-excludable: it is difficult to prevent people from using them.
- Rival: if one person uses them, less is left for others.
- Example: fish in the sea, river water.

| | | | | |
|---|---|---|---|---|
| Property right - Clearly defined | Nature and extent of the property right is unambiguous: the nature and extent of property rights need to be defined by law and confirmed through registration | *Yes*<br>*No* | Yes<br>Nature and extent of property rights are clear and there is a registration system. | Regulatory framework<br>Payment type<br>Source of the payment |
| Property rights- Verifiable | Use of the property right can be measured at a reasonable cost. | *Yes*<br>*No* | Yes<br>There is a correlation between property rights and ES. Transaction costs are low. | Actors (Buyers, sellers, intermediaries)<br>Payment type<br>Source of the payment |
| Property rights- Enforceable | Ownership of the property right can be transferred to another party at a reasonable cost. | *YesNo* | YesEnforcement of property rights is mandatory. Compulsory realization requires supporting measures, such as fines, security deposits, etc | Regulatory frameworkSupport servicesPayment typePayment mechanism |
| **Condition** | **Description** | **Response options** | **Archetype/model answer** | **Template for markets - entries** |
| Property rights - Valuable | There are parties who are willing to purchase the property rights. | *Yes*<br>*No* | Yes<br>Property rights related to ecosystem services are valuable | Actors<br>Regulatory framework<br>Support services |
| Property rights - Transferable | Ownership of the property right can be transferred to another party at a reasonable cost | *Yes*<br>*No* | Yes<br>Transaction feasibility: There is a platform for review and supervision to reduce transaction costs. | Actors<br>Regulatory framework<br>Support services<br>Cost of the service |

| | | | | |
|---|---|---|---|---|
| Low scientific uncertainty | Use of the property right has a clear relationship with ecosystem services | *Low*<br>*Moderate*<br>*High* | High<br>Use of the property right has a clear relationship with ecosystem services | Actors<br>Aim of the market<br>Regulatory framework |
| Low sovereign risks | Future government decisions are unlikely to reduce the property rights' value significantly. | *Low*<br>*Moderate*<br>*High* | Low<br>Future government decisions are unlikely to significantly reduce property rights. | Policy<br>Regulatory framework |
| Typology and number of sellers | Who owns the ecosystem service? Who is legally entitled to sell the ecosystem service? Forest owners, local governments, and firms | *Low variety*<br>*Moderate variety*<br>*High variety* | Moderate to high variety.<br>N.B. Sometimes high variety means higher transaction costs | Actors (sellers)<br>Regulatory framework<br>Payment type<br>Source of the payment |
| Typology and number of buyers | Who is going to buy the ecosystem service? Is the buyer known to the seller? Citizens, governments, NGOs, and Firms | *Low variety*<br>*Moderate variety*<br>*High variety* | Moderate to high variety.<br>N.B. Sometimes high variety means higher transaction costs | Actors (buyers)<br>Regulatory framework<br>Payment type<br>Source of the payment |
| **Condition** | **Description** | **Response options** | **Archetype/model answer** | **Template for markets - entries** |
| Are there any intermediaries? | | *yes*<br>*No* | | Actors (intermediaries)<br>Region<br>Ecosystem<br>Space scale |

| | | | | |
|---|---|---|---|---|
| Width | What scale is large enough to avoid thin markets, but small enough to ensure geographically relevant benefits for purchasers? | *small portion of the LL*<br>*Medium portion of the LL*<br>*All/big portion of the LL* | Largest relevant geographic scale to avoid thin markets. It depends on the width of the LL area. | Region |
| - | Would action have been taken without the intervention? | *Yes*<br>*No/unlikely* | No/unlikely<br>We have a baseline scenario thanks to which we can evaluate and compare the MBI implementation. | FES Scarcity scenario<br>Aim of the market<br>Business model |
| Accessibility to the market | i.e., codifying property rights, seeking out buyers or sellers, negotiating a sale, measuring the quality and quantity of goods, specifications about the transfer of property rights | *Law*<br>*Moderate*<br>*High* | Low | Policy<br>Regulatory framework<br>Support services |
| Cost structure | Are fixed and variable costs mentioned? What are the characteristics of the forest (physical features, tree species, accessibility, threats, risks, and management objectives) that might influence the cost structure? | | Management costs are known. | Cost of the service |
| **Condition** | **Description** | **Response options** | **Archetype/model answer** | **Template for markets - entries** |

| | | | | |
|---|---|---|---|---|
| Presence of market friction instruments | Are there any market friction instruments?<br>Market friction instruments are designed to remove or reduce impediments to existing or potential markets for ecosystem services and thus improve the flow of signals and incentives there in. | *Yes*<br>*No* | Yes<br>It's feasible to adopt market friction instruments to facilitate the flow of information. | Policy<br>Regulatory framework<br>Support services |

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