

eip-agri
AGRICULTURE & INNOVATION



EIP-AGRI Seminar
Turning forest innovation
into practice
FINAL REPORT
24-25 November 2021



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1. Summary

The EIP-AGRI seminar 'Turning forest innovation into practice' took place online on 24 and 25 November 2021. This very interactive seminar with around 180 participants from 25 European countries focused on discussions, experience sharing and networking among the different types of actors in the forestry knowledge and innovation system. A broad range of innovation projects from across Europe, funded via various European, national, regional or private sources were represented and discussed in the seminar.

The seminar focused on the social dimensions of innovation processes. The main questions discussed were the challenges and opportunities for forestry innovations, fostering and hindering factors, and factors and conditions for upscaling. These questions were discussed for different innovation fields and types of innovation.

The seminar mostly consisted of interactive sessions where participants discussed practical experiences and derived lessons and insights on the guiding questions of the seminar. Grouped around different innovation fields on day 1, and types of innovation on day 2, the participants discussed inspiring projects and brought in their own practical innovation experiences. The innovation fields covered climate change mitigation and adaptation, bioeconomy, biodiversity and other forest ecosystem services around multifunctional forest management and monitoring. The innovation types ranged from new technologies and silvicultural approaches to innovative organisational and institutional solutions and forms of social engagement in forestry. These innovations included new digital solutions, various forms of cooperation, new business models and marketing, and participatory management. The main messages can be summarised as follows:

Opportunities:

- ▶ Opportunities for innovation are seen across all forest ecosystem services, i.e. all timber and non-timber goods and services provided by forests, where particularly non-wood goods and services seem to be strongly underestimated by decision makers.
- ▶ Forests provide a range of ecological values, economic opportunities for rural communities, entrepreneurs and landowners, as well as a range of social benefits for the public, which all together are the basis for developing innovations. Therefore, integrated approaches are particularly important, ranging from integrated forest management or agroforestry to new business models or institutional solutions linking landowners with user groups, stakeholders or local communities.
- ▶ Digitalisation is an important new tool for monitoring forest conditions, rationalising forest planning, and connecting landowners with managers, service providers, clients and the public.

Challenges:

- ▶ How to deal with land fragmentation and abandonment, and a growing number of landowners with decreasing connection to forestry.
- ▶ How to attract young people to forestry, as landowners, employees and workers as well as customers.
- ▶ How to connect all stakeholders related to forests, including all actors along the value chains, public and private actors as well as research, education and training. Local-level actors and cross-sectoral links were particularly emphasised.
- ▶ How to ensure profitability of forest management in both timber production as well as the broad range of ecosystem services.

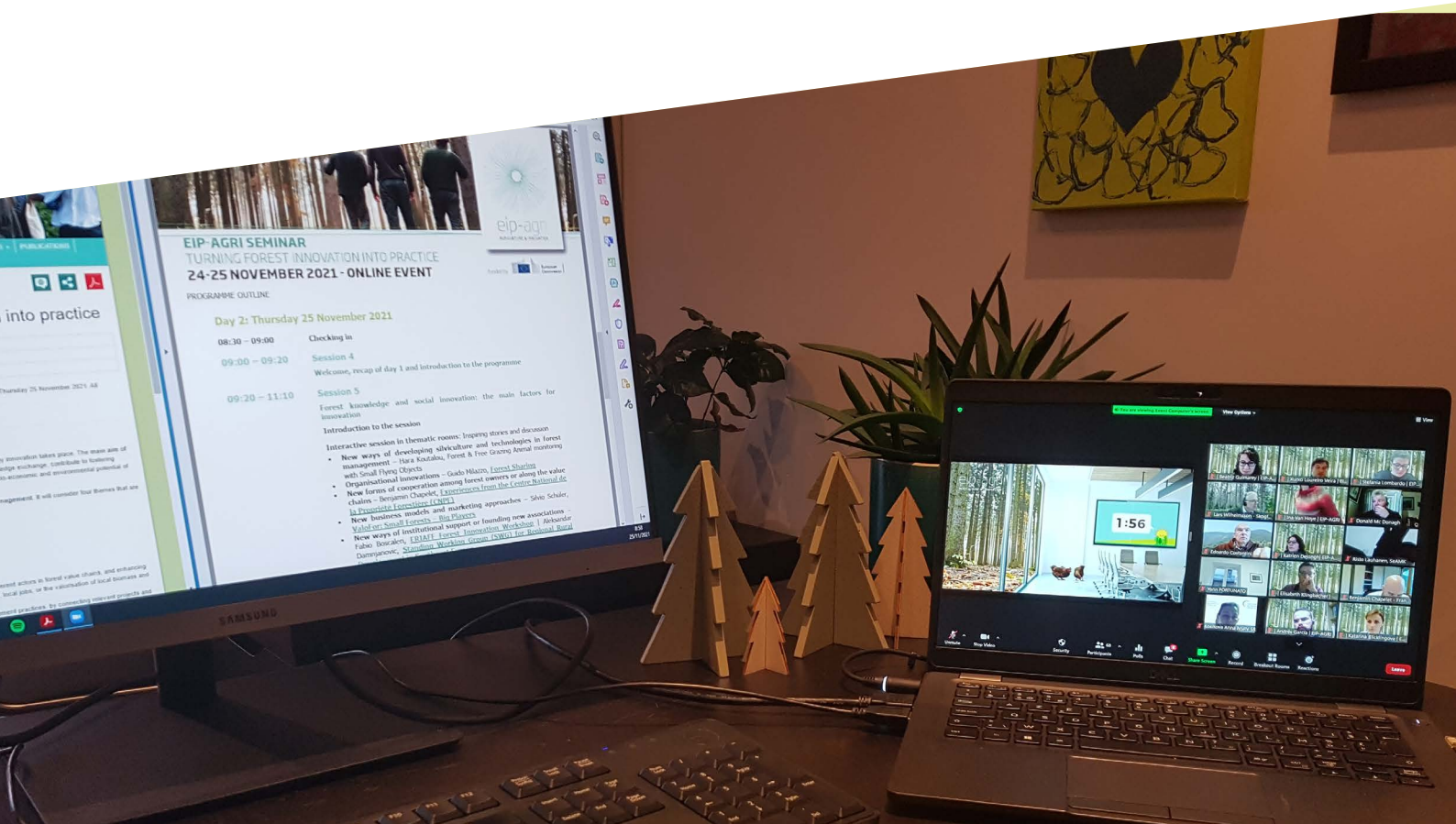
Approaches for innovation support:

- ▶ Linking of top-down and bottom-up approaches: EIP-AGRI initiatives such as Operational Groups (OGs) and innovation brokers, European programmes and initiatives such as LIFE or LEADER, and cluster programmes are good examples of support instruments because they connect local actors, interest and initiatives through local institutional structures and resources.

- ▶ Combine different systemic innovation support instruments, including a) research, information services, information exchange, education and training, b) financial support and incentives, and c) organisational support, institutional structures, collaboration support, networking, cross-sectoral links and coordination of public and private actors.
- ▶ Provide more continuous support across different phases of the innovation cycle, particularly in early and risky innovation phases and in the mainstreaming phase to promote upscaling from innovative projects to mainstream approach.

Key principles for upscaling and replication:

- ▶ Any replications need to be adapted to local conditions.
- ▶ A culture open to new ideas is conducive to developing new solutions.
- ▶ Collaboration with new types of partners supports innovation.
- ▶ User orientation or co-creation are essential for innovation.
- ▶ Create a clear plan but keep it flexible and adapt to changing developments.
- ▶ Dialogue and participatory approaches are important for developing common visions and co-creating innovative and realistic solutions.
- ▶ Supportive institutional structures are key at various levels, including municipalities, associations, governments and specific programmes that can connect top-down support to local bottom-up initiatives.
- ▶ Connect economic and emotional factors, e.g. in developing inspiration and common visions within a project and at local or regional level.
- ▶ Combine a rational "project plan" as well as a convincing "story".
- ▶ Use practical examples as "lighthouse projects" for inspiration, practical advice, and background information.



2. Introduction

In the context of the climate and biodiversity crises, forests play a central role. Innovation is important to tackle these crises and reach the related EU policy targets, among others, set by the [Green Deal](#) and the [EU Biodiversity Strategy](#), which are reflected in the new [EU Forest Strategy for 2030](#). Several EIP-AGRI activities have addressed forest-related innovation topics, including Focus Groups and a workshop, more information on the [EIP-AGRI forestry spotlight](#) page.

Despite the urgency and existing support to forest research and innovation, the diffusion of innovations is slow. The contribution of forests to climate and biodiversity goals needs to be further improved and the EU forest sector is still far from realising its full potential as economic sector and provider of ecosystem services. It is important to note that innovation is a social process. Many challenges for forest innovation do not relate to limited knowledge but to disadvantageous conditions such as a wide range of forest types, fragmented ownership structures, diverse structures of regional forest innovation systems, or a limited political awareness of the sector's importance and related innovations¹.

The seminar therefore focused on the social aspects in forest innovation and "how" innovation happens. When looking at innovation processes, we need to consider important roles of a range of private and public actors and various factors that may support or hinder innovations (Figure 1). For this reason, the seminar participants included all relevant types of actors and the various factors were translated into discussion questions for the seminar breakout groups.

Innovation processes – actors and factors



Figure 1: Innovation as a social process

This broad range of innovation factors are subsumed here under the term of "social innovation". This relates to various processes, ranging from motivation, learning, financial support to collaboration and interaction across sectoral boundaries. The main aim of the seminar was to strengthen the "Forest Knowledge and Innovation Systems" (F-KIS) through knowledge exchange, and contribute to fostering the cooperation, education, training and advice to support sustainable forest management and to unlock the socio-economic and environmental potential of forests for EU rural areas.

Innovation is important for various reasons, including both necessities and opportunities ([Table 1](#)). The former, for instance, relate to growing pressures from global markets and the climate crisis. The latter relate to economic benefits such as jobs and income opportunities in rural areas, a contribution to sustainable development and a circular bioeconomy, and to multiple social or ecological values of forests. The day 1 theme rooms 1-7 were defined accordingly.

To understand the social dimensions of innovation, attention needs to be paid to various types of innovation that are all important, not just technologies ([Table 1](#)). The day 2 theme rooms were organised according to these different types of forest-related innovation.

¹ Rametsteiner and Weiss (2006); Mavsar et al. (2008); Weiss et al. (2011); UNECE and FAO (2019); Weiss et al. (2021) Full references at section 10: References

Theme rooms day 1 - Innovation fields	Theme rooms day 2 - Innovation types
Adaptation to climate change	New ways of developing silviculture and technologies in forest management
Mitigation of climate change	Organisational innovations
Circular bioeconomy	New forms of cooperation among forest owners or along the value chains
Monitoring in forest management	New business models and marketing approaches
Forest biodiversity	New ways of institutional support or founding new associations
Managing for ecosystem services	Social engagement, participatory management and social enterprise
Multifunctional forest management	

Table 1: Organisation of theme rooms per day based on forestry innovation fields and types of innovation

Innovations only produce impact when they are sustained, scaled up, or replicated in other regions. Scaling, replication or amplification are similar concepts and may be categorised into the following processes which were particularly discussed in the breakout groups of day 2:

The seminar had the following specific objectives:

- Stimulating the uptake of innovations and fostering cooperation in sustainable forest management practices, by connecting relevant projects and initiatives in the domain of the themes proposed.
- Bridging knowledge and practice, with a particular focus on the social innovation supportive environment and on small and/or unmanaged forest holdings, looking for example at ways to scale up forest management, foster cooperation or promote vocational training or advice.
- Bringing innovation closer to rural areas by learning how to stimulate the cooperation amongst the different actors in the forest value chain and enhancing the positive spill-over effects, such as new products/value chains, services or business models, local jobs, or valorisation of local biomass and resources.
- Contributing to the research agendas and implementation of the new EU Forest Strategy for 2030 by identifying needs from practice related to the innovation supportive environment.
- Inspiring the setting-up of new initiatives addressing key challenges of the European forests, and particularly the creation of new EIP-AGRI Operational Groups (OGs), especially in those countries and regions with a lower ratio of OGs on the subject.
- Brokerage to bring potential cooperation partners together.

3. Brief description of the process

Due to the pandemic situation, the seminar was organised as an online event. The main aim was to promote lively interaction among the 180 participants. Most of the time (85%) was dedicated to exchanges among the participants.

The programme was structured as follows:

1. Welcome, introduction to the programme and getting to know each other.
2. Sharing stories and discussing forest knowledge and social innovation: upscaling and mainstreaming for sustainable forest management (interactive session in thematic breakout rooms).
3. Open Space Market on forest knowledge & innovation (self-guided brokerage session).
4. Forest knowledge and social innovation: the main factors for innovation (interactive session in thematic breakout rooms).
5. Plenary discussion and wrap-up.

For an effective and fruitful discussion, the breakout room themes and the guiding questions for discussion were designed according to the thematic focus and the state-of-play in innovation in the forest sector, and the background and interests indicated by the participants. The inspiring stories were carefully selected prior to the event and presented by the participants themselves to initiate the group discussions.

Full information about the event, including detailed programme, booklet of speakers, videos and presentations can be found [on the event webpage](#).



4. Setting the scene: Policy background, relevance of the topic, state-of-knowledge and participants

The participants were welcomed by Pierre Bascou ([video](#)), Director for Sustainability and Income Support, DG Agriculture and Rural Development, European Commission, and Pacôme Elouna Eyenga ([presentation - video](#)), Team leader at the Support Facility for Innovation and Knowledge exchange, including EIP-AGRI. Mr Bascou gave a comprehensive overview of the new EU Forest Strategy and perspectives for the forest sector, providing context for the seminar. Then Gerhard Weiss, Coordinating Expert for the event, introduced the seminar topic and clarified a few central concepts related to social dimensions of innovation ([see presentation - video](#)). He illustrated social innovation using examples from across Europe and explained how the various innovation aspects connect to the aims and structure of the seminar discussions.

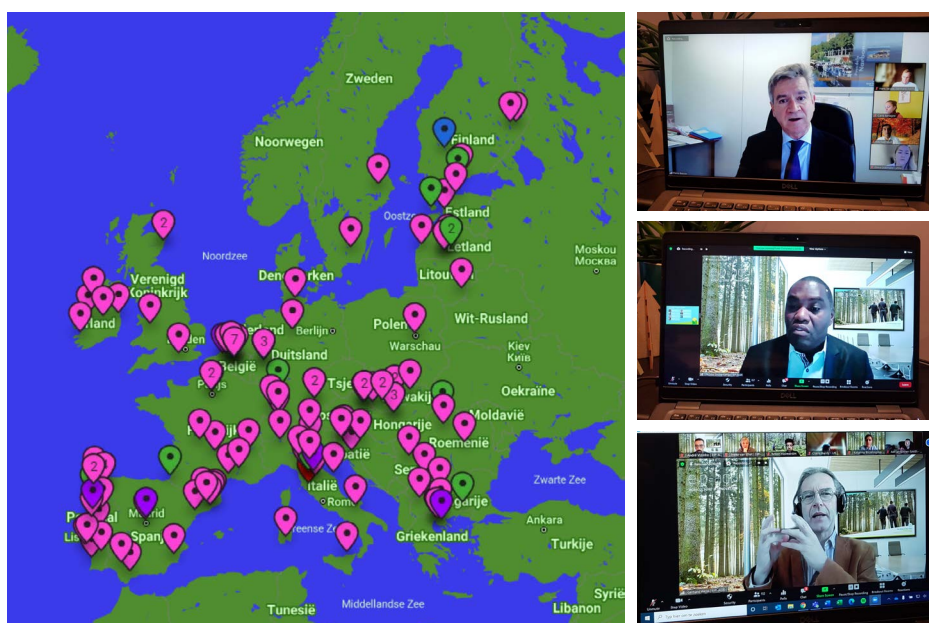
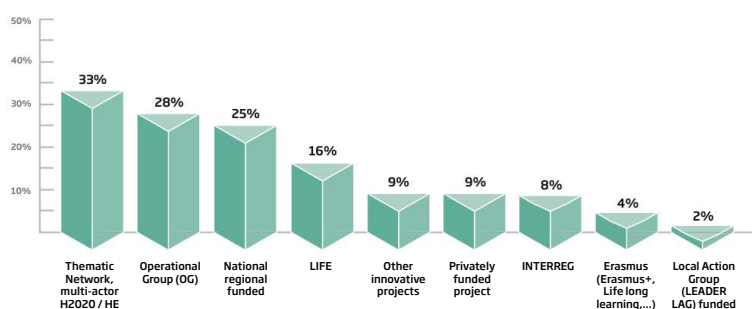
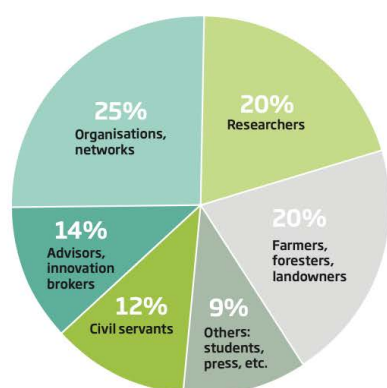


Figure 2: Impression of the geographical spread of the participants

The participants from 25 European countries represented various professional backgrounds (incl. forest owners, advisory services, project managers, public administration and research) and different types of projects (incl. various EU programmes and national, regional or privately funded projects).



5. The challenges and social dimensions of forest innovation

The first of the two interactive sessions was dedicated to exchange on practice examples of innovations and analysing these through questions on the process of innovation, covering the roles of various actors and different factors in innovation processes. For this, participants were split into the following thematic rooms:

1. Adaptation to climate change
2. Mitigation of climate change
3. Circular bioeconomy
4. Monitoring in forest management
5. Forest biodiversity
6. Managing for ecosystem services
7. Multifunctional forest management

In each room, one inspiring example was briefly presented and all participants added their own inspiring stories. The participants discussed the following questions, referring to examples they chose for this purpose:

- ▶ What was particularly inspiring?
- ▶ Is it replicable/adaptable to other contexts and how could it be put in place?
- ▶ Is this innovation specific or could it be used in other innovation fields?
- ▶ Are there any knowledge gaps to cover? Could the innovation be further improved?

The conclusions mostly focused on the main opportunities, challenges, and how to support those innovations. Across all themes, the following seem to be the central insights:



Opportunities

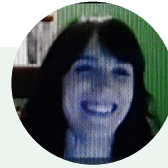
- ▶ European forests provide many opportunities for **timber, non-wood products, improvement of ecosystem services, biodiversity as well as climate change adaptation and mitigation**. It was frequently emphasised that particularly the value and opportunities of non-wood goods and services are strongly underestimated.
- ▶ Forests provide ecological value, **economic opportunities for rural communities**, entrepreneurs and landowners, as well as a range of **social benefits** for the public. To use these potentials, active promotion, support and innovations are needed.
- ▶ Among the broad range of successful examples that were presented for new ways of forest management, **supporting tools and value chains** and the importance of **integrated approaches** were highlighted. Besides the fact that trade-offs exist between ecological and economic interests, they may also mutually reinforce each other, since i) economic forest uses may provide the incentive for forest management with multiple benefits, and ii) ecological and social benefits of forests may create active support from local communities or governments.
- ▶ **Digitalisation** can provide many opportunities i) for better monitoring of the forest condition and possible threats, ii) to improve and rationalise forest planning, also for small forest properties, iii) to support the connection of landowners with professional managers or service providers and clients and iv) to create new opportunities to make the forest accessible to the public or to provide education.

Challenges and supportive factors and instruments

- ▶ **Land fragmentation and abandonment** was frequently mentioned as a major challenge relating to virtually all forest values and uses. A special theme is how to attract young people to forestry.
- ▶ A major challenge for innovation is **to connect all stakeholders related to forests**, including all actors along the value chains, public and private actors as well as research, education and training. It is noteworthy that this crucial factor was highlighted in all projects presented. Local-level actors and cross-sectoral links were particularly emphasised.
- ▶ **Profitability of forest management** was repeatedly mentioned as a condition for any innovative activities.
- ▶ In innovation support, **linking top-down and bottom-up** approaches is often seen as key. Good examples are EIP-AGRI initiatives such as OGs and innovation brokers, European programmes and initiatives such as LIFE or LEADER because they connect to local interest and initiatives.
- ▶ **Good institutional structures** such as support programmes as well as forest associations are important for innovative projects.
- ▶ **Support instruments** include financial support, research, information services, information exchange, training and technological support, e.g. through IT solutions.
- ▶ Connecting emotional and economic factors was often mentioned, e.g. in developing inspiration and common visions within projects but also on local or regional level.

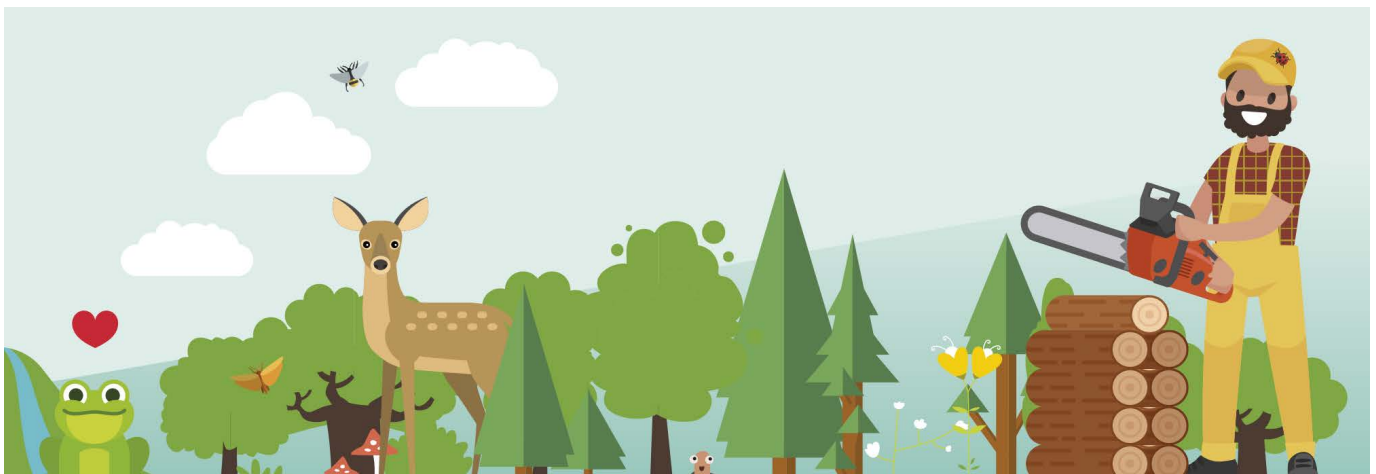
The sections below provide further information about the specific projects and initiatives shared and discussed in each of the theme rooms as well as the main conclusions and highlights. These include, for example, key opportunities or challenges identified for each specific topic or recommendations for further actions.

Adaptation to climate change



Inspiring example: [LIFE MixForChange \(video\)](#)
Lídia Guitart Xarpell,
 Associació de Propietaris Forestals del Montnegre i el Corredor

The EU LIFE project MixForChange (2014-2022) aims to contribute to the adaptation to climate change of European Subhumid Mediterranean mixed forests by increasing their resilience, ensuring their conservation and enhancing their productive, environmental and social functions. Lídia explained the development, implementation and demonstration of new forest management techniques applied on 164ha, aiming to increase the complexity of the forests to favour biodiversity, maintain the current mix of species, while improving forest structure, and paying more attention to some previously unnoticed species that have potential to generate income and/or can benefit the forest.



19 very different ideas were shared among the participants, including for example: forest fire prevention in INTERREG SUDOE [MontClima](#), climate change adaptation in pine and oak forests and mountain areas in [LIFE ADAPTMED](#) and in dehesa and montado systems, monitoring and managing the resilience of European Forest Genetic Resources in the [H2020 FORGENIUS](#) project, multiple uses of forest firebreaks in Extremadura (Spain), by mixing different elements of forestry within the landscape, creating mosaics that slow the spread of the fires ([MOSAICO](#)), a French standard for carbon offsetting in the forest sector ([Label Bas-Carbone](#)), and a mobile application that helps forest managers to diagnose their forest stands ([Bioclimsol](#)), the bioenergy farm [Bioenergiehof Böhme](#) in Germany, promoting beekeeping by [Passion Honey](#) in Greece – see e.g. [“Be a beekeeper for one day”](#).

Then, some were specifically highlighted such as for example an initiative related to forest walks for women in Eastern Bavaria (Germany) because seeing forest management and its results on the ground is essential. The walks bring together women across the forest sector to exchange perspectives and experiences. Women-only means greater freedom of expression and enquiry, builds confidence, creates a sense of belonging and creates a pathway for women to enter forestry. More info at [this page](#) and [video](#).

Opportunities identified for adaptation to climate change:

- ▶ Forest owners and managers are **interested** in diversification in terms of new species.
- ▶ There is **support** for this by forest genetic resources and climate change research.
- ▶ Municipalities or advisory services may reach new forest owners when showing potential income from the forest and/or other **benefits** of forests for society.
- ▶ There is an element of **bravery** in trying to implement something new.

Actions needed:

- ▶ **Practical examples** as “lighthouse projects” for inspiration, practical advice, and background information.
- ▶ **Collaboration** between all the actors in the forest sector – forest owners in the centre, but connecting all stakeholders to exchange ideas, practices, solutions, offer mutual support, generate new ideas, new approaches, new innovations.
- ▶ **Engage people** who work in the forest sector to develop a sense of belonging and to create fertile space for innovation.
- ▶ **Seek solutions** across national boundaries and through bottom-up exchange of ideas.
- ▶ **Adapt forests** to fire risks, as fire threat increases with more rural abandonment and increasing temperatures.

Theme 1 - Adaptation to climate change

- interest by forest owners and managers to diversify their forests in terms of species
- support for this by forest genetic resources and climate change research
- Supporting small-scale forest owners to work together in management



Mitigation of climate change



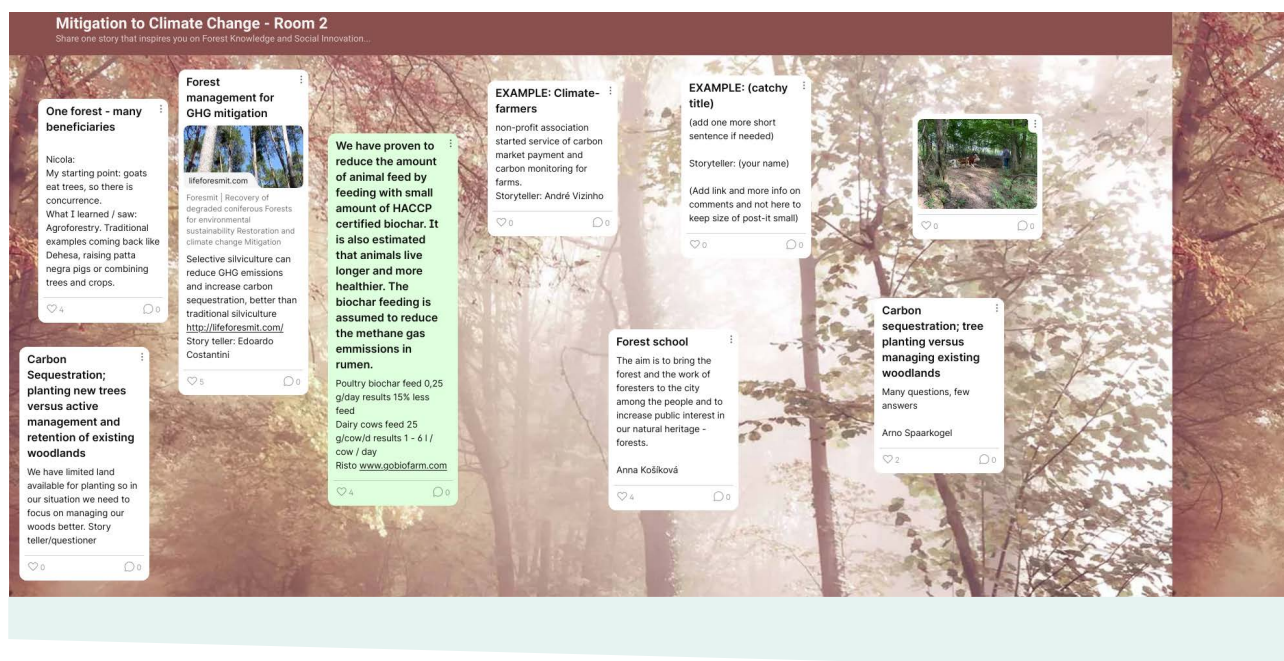
Inspiring example: Forêt de Brassac

Yann Fortunato, Racines de France

The project focuses on harvesting and maintenance of an 80-hectare forest in a formerly enclosed forest area with decaying hardwood species. After harvesting damaged wood and building forest roads, new species were planted and a mosaic of forest stands established, adapted to global warming. For the social benefit, the area was diversified with beehives and walking paths and there might be future financial returns through carbon or biodiversity programmes. For further info, please read the [EIP-AGRI inspirational idea](#) or the [press article](#).

Several projects and initiatives on carbon sequestration through tree planting versus managing existing woodlands were presented and the following ones were discussed in detail:

- ▶ The project [LIFE FOREST CO2](#) works on carbon credits, bringing together forest owners and businesses.
- ▶ The [AGROMIX](#) project studies mixed farming systems and silvopastoralism as models to mitigate GHG emissions.
- ▶ Combining animals and forests can cause competition, e.g. in Northern Germany where goats destroy the forest rejuvenation. But as Nicole Holsten reports, there are also good examples of agroforestry from different parts of the EU such as the Dehesa.
- ▶ The company [Gobiofarm](#) (Finland) produces animal feed with certified biochar made from wood (birch) with many positive effects for animal health and reduced methane gas emissions. The project is a collaboration between forest owners and cattle and poultry industries and contributes to carbon circularity since carbon sequestered by trees is brought back to the soil through biochar feed in form of manure.
- ▶ A forest school in Slovakia, attended by children and general public, aims to show how forests work and how to start businesses in forestry.
- ▶ The LIFE project [FoResMit](#) demonstrates silvicultural practices to restore peri-urban degraded coniferous forests in Italy and Greece with native broadleaf species, improving the ecological stability and climate change mitigation potential of these ecosystems. Benefits include increased touristic attractiveness; wood for energy to replace fossil fuels; and involvement of people from urban areas to work in forest areas.
- ▶ Several Spanish projects deal with various topics, such as forest restoration after forest fires ([LIFE VAIA](#)), open land management ([Interreg Open2preserve](#)), and climate-adapted building ([LIFE Lugo + Biodinámico](#)). Examples of agroforestry can be found on the [AFINET](#) website. Furthermore, the Spanish project [CHAINWOOD](#) is developing a blockchain for traceability in the Wood-Forestry sector.



Mitigation to Climate Change - Room 2
Share one story that inspires you on Forest Knowledge and Social Innovation...

One forest - many beneficiaries
Nicola:
My starting point: goats eat trees, so there is concurrence.
What I learned / saw:
Agroforestry. Traditional examples coming back like Dehesa, raising patta negra pigs or combining trees and crops.

Carbon Sequestration; planting new trees versus active management and retention of existing woodlands
We have limited land available for planting so in our situation we need to focus on managing our woods better. Story teller/questioner

Forest management for GHG mitigation
lifoforesmit.com
Foresmit | Recovery of degraded coniferous Forests for environmental sustainability Restoration and climate change Mitigation
Selective silviculture can reduce GHG emissions and increase carbon sequestration, better than traditional silviculture
<http://lifoforesmit.com/>
Story teller: Edoardo Costantini

We have proven to reduce the amount of animal feed by feeding with small amount of HACCP certified biochar. It is also estimated that animals live longer and more healthier. The biochar feeding is assumed to reduce the methane gas emissions in rumen.
Poultry biochar feed 0,25 g/day results 15% less feed
Dairy cows feed 25 g/cow/d results 1 - 6 l / cow / day
Risto www.gobiofarm.com

EXAMPLE: Climate-farmers
non-profit association started service of carbon market payment and carbon monitoring for farms.
Storyteller: André Vizinho

EXAMPLE: (catchy title)
(add one more short sentence if needed)
Storyteller: (your name)
(Add link and more info on comments and not here to keep size of post-it small)

Forest school
The aim is to bring the forest and the work of foresters to the city among the people and to increase public interest in our natural heritage - forests.
Anna Košíková

Carbon sequestration; tree planting versus managing existing woodlands
Many questions, few answers
Arno Spaarkogel

Opportunities for climate change mitigation:

- **Agroforestry:** Animal breeding and forestry can be integrated with climate mitigation benefits.
- **Forest schools:** education for children and the public to learn how forests work and how to work in the forest.
- **Innovative silviculture in peri-urban areas:** integrated management for carbon sequestration and involvement of people from urban areas.
- In summary, mitigation of climate change in forestry can offer ecological benefits (mitigation), economic benefits (utilising the forest potential and increasing added value) as well as social benefits (education).

Common challenges connected with the mitigation of climate change:

- **Finding people who want to work** in forestry may be difficult, and requires collaboration among landowners, municipalities and the public. A **good story** on new forest management models and their benefits for society, that balances social, environmental and economic benefits will help to involve communities.
- Landowners, employees and workers need to be able to earn money from new value chains.

Circular bioeconomy

Inspiring example: [ROSEWOOD4.0](#) (video)

Uwe Kies, InnovaWood



Rosewood4.0 focuses on digitalisation tools as solutions and innovations in forestry (e.g. in harvesting technology), mobilisation of forest owners and connecting actors in the supply chain, reinforcing the sustainability of forest management. The project created an online platform with fact sheets highlighting over 450 best practices across Europe. They include many examples of digitalisation to enhance communication, performance of processes, networking and collaboration in the supply chain. Rosewood4.0 is also a living community of practitioners organised through 5 regional hubs around Europe.

In the breakout rooms, 20 projects along the supply chain were presented and 8 were discussed in detail. Projects included the following:

- [Spinnova](#) is a Finnish start-up company that produces wood- and woodwaste-based textile fibres mechanically, without using chemicals.
- The transnational cooperation project "Green economy – multiple use of forest" was launched in 2018 as part of the EU's LEADER approach by eight local action groups from Portugal, Sweden, Finland and Luxembourg ([video](#)).
- The [Forest Sharing Platform](#) connects small forest owners in Tuscany (Italy), to promote the use of their land and foster the production of marketable products.
- The EU project [ForestMap](#) provides small forest owners with knowledge of their growing stock, with recommendations for managing their forest by an independent forest inventory.
- IncredibleForest gathered best practices and innovations in the Non-Wood Forest Products field and provides a [knowledge repository](#).
- An Italian [project](#) is developing a new value chain for charcoal.
- The Portuguese project [Replant](#) aims to increase transparency in wood transactions by sharing information from harvesters and forwarders among value chain agents.
- Under the name "[MojGozdar](#)" (My Forester), a portal with more than 1700 forest contractors was launched to help forest owners in Slovenia to find the most suitable contractor. There is also a national portal "[WoodChainManager](#)" to support forest owners entering the wood market.

- Finnish start-up company that produces wood- and woodwaste-based textile fibres mechanically, without using chemicals.
- The Latvian company [BF-ESSE](#) uses coniferous greenery waste and logging residues (pine and spruce) as a bio-raw material to manufacture a bioactive supplement from extraction for use in biopharmacy and bioveterinary (further info in this [article](#)).

Main opportunities:

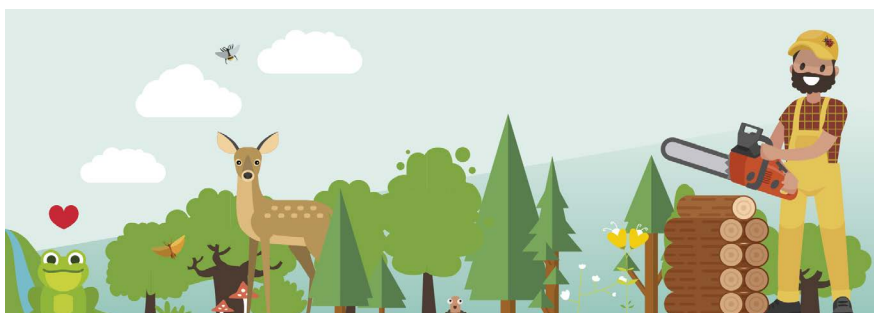
- Forest management contributes to a circular bioeconomy and environmentally friendly resource use, e.g. by carbon storage; and by substituting non-renewable materials.
- Digitalisation, data production and visualisation help to share information transparently.

Main issues and challenges in the context of a circular bioeconomy:

- To identify **new materials** for a circular bioeconomy, e.g. to use residues from different industries for new products.
- To learn **what consumers want** in order to find competitive market opportunities.
- **Barriers** include property fragmentation, abandoned forests, non-optimised supply chain logistics and lack of capital for research and development.
- Many **different national information platforms** co-exist with diverse databases along the forest value chain that are difficult to integrate in information systems.
- While young people use digital platforms, smart apps, etc. older generations may lack skills or interest to do so.
- How to increase the number of **OGs on forestry** and regional funds to also stimulate cooperation in other countries (about 70% of forest OGs are in Southern European countries such as Italy, Spain, Portugal)?

Actions needed:

- To **activate forest owners** who are less connected to their land, e.g. living in cities or younger generations, by creating associations, innovation labs, etc.
- **Foster cooperation** with a focus on owners but including all other actors in the value chains important for innovation, e.g., to link producers with owners, create demand and incentives for forest owners to manage their forests sustainably and to create new products; and to bring innovation, resources and ideas from forest owners to the markets;
- To study **consumer preferences** in order to develop new and sustainable products;
- To **set up national information portals** for forest owners and practitioners that provide information e.g. about wood markets, timber prices, how to improve forest management;
- To **support digitalisation and data visualisation** and solve open questions such as on data ownership and transparency and how to link actors and share information.
- To **share information, experiences and lessons** learnt from local projects across countries and at European level, and vice-versa, from European projects to regional initiatives.



Monitoring in forest management

Inspiring example: [OG Talking Chestnuts](#) (video)

Ilaria Mazzoli, Open Fields srl



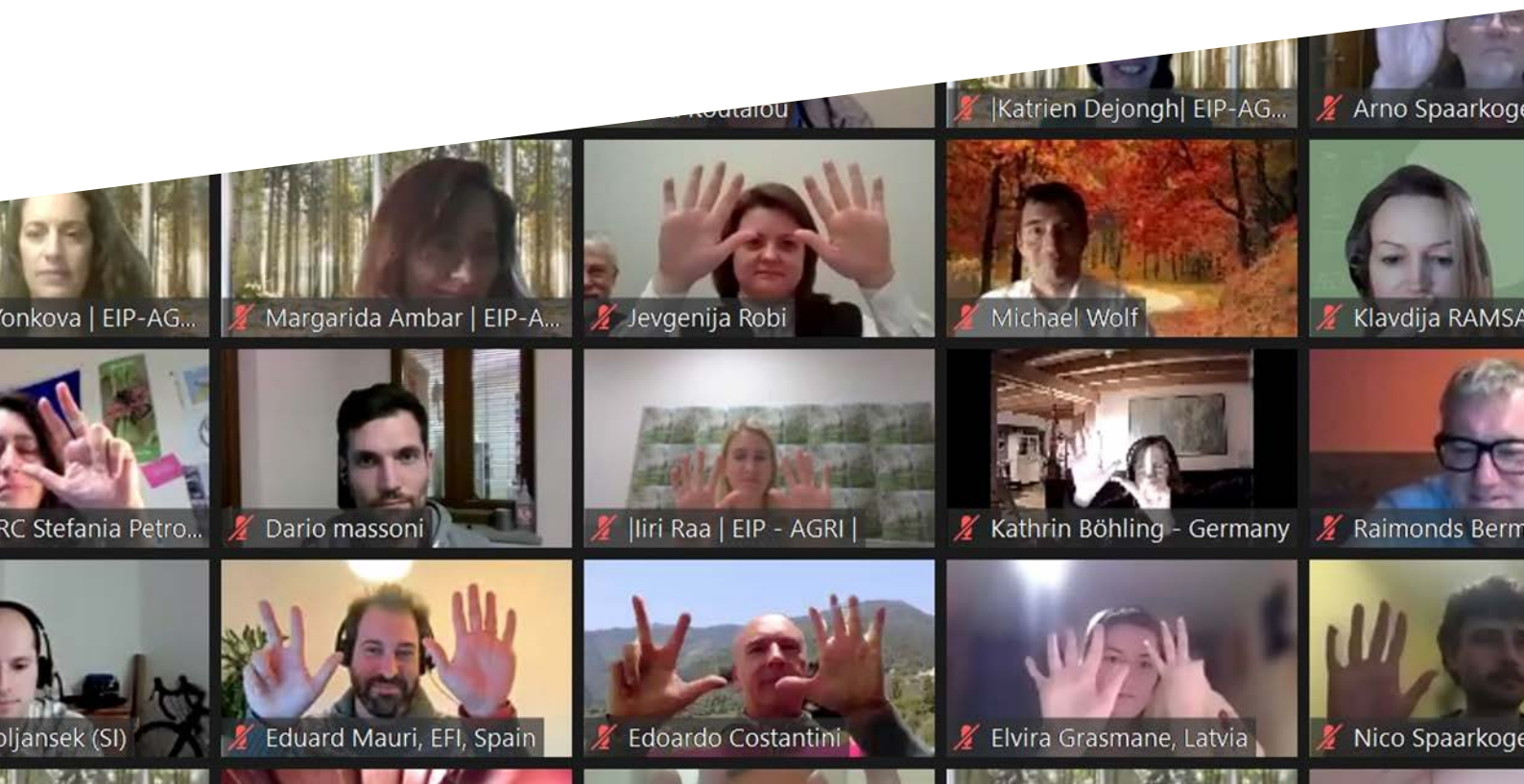
Chestnut groves used to be important for local economies, but are now often abandoned. The project aims to rediscover traditional chestnut production methods. The "TreeTalker" instruments monitor sap flow, trunk humidity, the development and stability of the trees (TreeTalker® technology). They make trees "talk" not only to scientists but also to local people. This creates public awareness, e.g. through schools, or through a mobile App called [Castani Parlanti](#), allowing everyone to monitor the trees daily and see how the trees feel. Each tree has a name of a famous scientist to increase their appeal to local people. The collaboration and support of the local communities was most important for the success of the project.

Other topics and projects discussed in this room include the following:

- ▶ The [Bikenta](#) mobile App to facilitate certification of forests as sustainably managed.
- ▶ The problem of how to combine animal grazing in others' forests in Greece and Balkan countries.
- ▶ How to encourage forest owners to take up timber trade through a trading platform by electronic labelling in Latvia (using E-waybill instead of paper waybills).
- ▶ The use of multisource systems for National (Finland) or EU forest inventory (wood volume, carbon, biodiversity etc.).
- ▶ In Uganda, forest owners obtain a 10x higher price for timber when they start to measure their forest themselves by use of smartphones. This solution democratises the forestry sector.

Main challenges regarding monitoring:

- Difficult to **reach small forest owners** with innovative projects, particularly in abandoned areas. The problem is not only providing information, but also gaining the landowners' trust.
- **Forests differ across Europe**, so local forest conditions as well as local communities have to be taken into consideration when replicating solutions.
- The **innovation processes take time** – often 20-30 years – and need continuous support. However, European projects frequently last only 3-5 years, which neither fits the timescale of forestry nor that of innovation processes.



Main opportunities regarding monitoring:

- **Sharing data from forests to create a real-time picture** of the European forest is important to increase R&D. Technologies such as IoT (Internet of Things) or drones may help but could be developed more quickly.
- **Connect models** of forest management with models of climate changes for forest management planning.
- The **technology is becoming cheaper** and this gives new opportunities to monitor and manage forests remotely, e.g. for preventing forest fires.
- The Covid crisis has brought new **people from cities to rural areas** who are interested in forest management and not necessarily in the same way as local communities. This can cause friction but can also be an opportunity since these new people can stimulate innovation and bring in digital skills.
- **Technology** can also help draw younger people into forest management.
- Cheaper technology and/or platforms connecting them to companies managing abandoned forests may attract small-scale forest owners.
- **Monitoring of forest damage is needed**, e.g. of bark beetles. There is an ongoing UNECE project on monitoring forest damage and a tool developed in cooperation by Austria and Bavaria.

Need for action and recommendations:

- **Involve** all actors in gathering information for monitoring.
- **Raise awareness** among actors on the importance of data for better forest management and profitability.
- **Provide training** to improve digitisation (including infrastructure) in rural areas.
- Create data sharing schemes.
- **Adapt forest monitoring** to local conditions with different social, environmental and productive contexts.
- **Understand the particularities** of monitoring for forest management and think in long term.
- **Investigate how new technologies** can make monitoring easier and cheaper.
- **Engage young and urban people** coming to rural areas in monitoring and forest management.



Forest biodiversity



Inspiring example: [LIFE GoProFor \(video\)](#)

Serena Corezzola, D.R.E. Am ITALIA

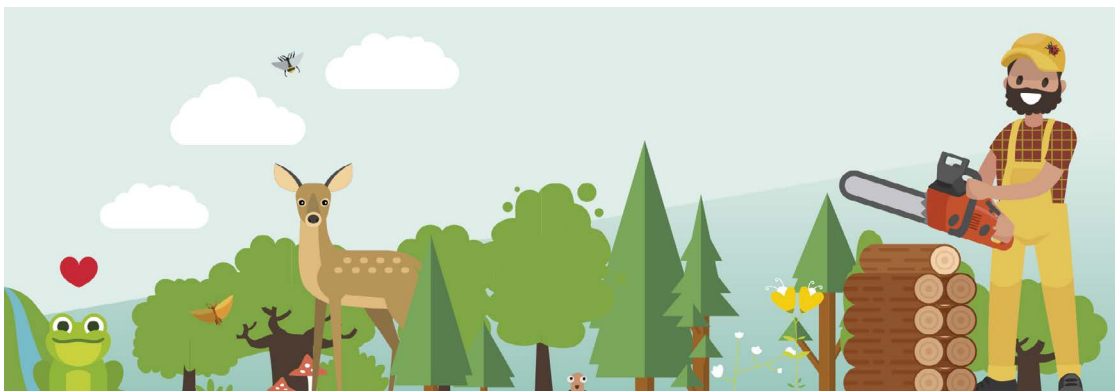
The LIFE Project GoProFor is developing a good practices network for forest biodiversity conservation through a database of best practices from the LIFE Programme (25 years of experiences) and more. This was the basis for training activities including theoretical conservation knowledge and practical application in the field. More than 400 foresters and conservationists have already been trained. Through a dialogue with public institutions, the project found a gap between forestry and conservation, pointing to the need for cross-sectoral education.

In the break-out rooms, GoProFor was further discussed, particularly how it tackled the conflict between forest conservation and management for production. The following examples were also presented

- ▶ A book on Integrative Forest Management: Krumm, F.; Schuck, A.; Rigling, A. (eds), 2020: [How to balance forestry and biodiversity conservation – A view across Europe](#). European Forest Institute (EFI); Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), Birmensdorf. 640 p.
- ▶ [Life Terra](#) is a foundation with a mission to enable people to take effective climate action. It facilitates tree planting, educates future generations, and develops tree monitoring technology.
- ▶ To protect natural forests in Romania, a [National Virgin and Old Growth Forest Catalogue](#) was developed as a legal framework. Visualisation and immersive experience were used to engage stakeholders.
- ▶ The book "[Once upon the future](#)" tells stories to children about 'sustainable place-shaping'.
- ▶ The [Life4OakForests](#) "Conservation management tools for increasing structural and compositional biodiversity in Natura2000 oak forests" aims to promote the regeneration of forests and to restore the diversity of forest structure, native tree species and micro habitats.

Summary of opportunities, challenges and actions needed:

- Using digital visualisation to show forests interactively is useful for education and to connect people with the forests.
- Access to forest land / forest management may be difficult, e.g. when landowners are not known or are not interested.
- Involving the local community (public administration and population) and stakeholders is very important for successful projects.
- Projects dealing with biodiversity need to connect owners and commercial stakeholders but also public bodies with conservationists.
- Innovation projects are often replicable, but need to be adapted to local conditions.
- Innovation projects often need continuous financing for the necessary networking activities.



Managing for ecosystem services



Inspiring example: [OG ForLEAVEs \(video\)](#)

Francesco Benesperi, Unione Comuni Montani Appennino Pistoiese

The name of the OG stands for “Forest locally added value for environment and education” and aims to tackle the fragmentation of woodland ownership, a challenge not just for Tuscany and other Italian territories but beyond. Owners often do not know their forests’ location and timber production potential, nor how to manage hydrological or fire risks. The project aims to estimate the value of the local woodlands with support from the University of Florence, to increase the interest of the owners. Another aim is to create a network of local hydromorphologists, agriculture holdings, and stakeholders. Important actors are the public administration and 2 farms planning to create a forest school or didactical forest.

A number of further initiatives were presented, most addressing timber and carbon storage, some on biodiversity and some had a specific social innovation aspect in forest management:

- ▶ [Future forest](#) initiative: This German project aims to connect forest owners, start-ups and green investment. The goal is to allow for co-creation of innovation by forest owners and start-ups and accelerate the innovation.
- ▶ The [European Medicinal and Aromatic Plant \(MAP\) Farming, Processing and Training Alliance](#) aims to support farmers and wild plant collectors to cultivate and sustainably harvest products from forests.
- ▶ The Austrian/Swiss/German Mountain Forest Volunteering Project ([Bergwaldprojekt](#)) is an initiative by the Austrian Alpine Club to engage individuals in volunteering activities in mountain forests and to connect forestry stakeholders. .
- ▶ The [Mediterranean Model Forest Network](#) focuses on local and global sustainable development/forest management through a local partnership approach.
- ▶ In the Guadeloupean project [VALAB](#) (Integrated Ecosystemic value-enhancement of the Guadeloupe Forest Agrobiodiversity), farmers have developed thriving forest farms and have become the stewards of the forest environment. The case was supported by the EU H2020 project SIMRA in an [applied innovation action](#), documented in a [research paper](#) about the initiative.
- ▶ Examples of carbon-smart forestry and social innovation based on community participation/stewardship of forestry management planning were mentioned, highlighting cases of traditional commons in Slovakia and new community forestry in Scotland. Both are documented in the EU H2020 project [SIMRA](#).
- ▶ A **project** on the LIDAR technology used for 3D digital mapping to support forest management planning focuses on timber production, forest ecosystem services, and erosion control (see this [paper](#)).
- ▶ In the [LIFE BIORGEST](#) project, private forest owners lead a project to integrate biodiversity conservation in forest planning and operations.
- ▶ The Private Forest Center of Catalonia (CPF) collaborates with the public administration to implement forest policies and to support ecosystem services initiatives ([LIFE Climark](#)) and sustainable forest [certification](#).
- ▶ The “[Agriforester](#)” project brings together agro-forestry farms in the mountain territory of the Emilia Romagna region (Italy).

Key challenges:

- Fragmentation of forest ownership.
- How to bring together and align the goals of the projects with the interest and needs of the local stakeholders.

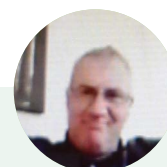
Success factors:

- Engaging stakeholders locally and creating a shared vision, building on the immaterial, emotional connection of the people with the forest.
- Co-innovating with forest owners and connecting them to solutions and to market opportunities, using new technologies like GIS, or new tools to replant trees.
- Cooperation between public actors and private owners and companies.
- Linking three main actor groups: public bodies, administration of private forest holdings, and enterprises in the forest support sector.

Two types of participatory approaches (participation vs bottom-up):

1. Participation: When projects are initiated by public actors such as the region/community, it is very important to engage the local stakeholders, not only the landowners.
2. Bottom-up approach: public support is also very important when local initiatives start without (top-down) public support. This public or institutional support can be of many kinds, e.g. know-how or financing. For example, innovation support services are a good example of institutional-level support to trigger or support local initiatives.

Multifunctional forest management



Inspiring example: LEADER LAG Silver River Parklands
Pádraig Dolan, Agricultural Consultants Association

A group of eleven forest owners own approximately 200 hectares of plantation forest in the midlands of Ireland. The forest property is very diverse in species and wildlife. The group adopted Continuous Cover Forestry as their long-term management plan and started to engage in close-to-nature tourism. LEADER, among others, supports a Feasibility Study.

The projects discussed in the small groups were from Ireland, Sardinia, Slovenia, Slovakia, Spain, Portugal and other regions, and included the following:

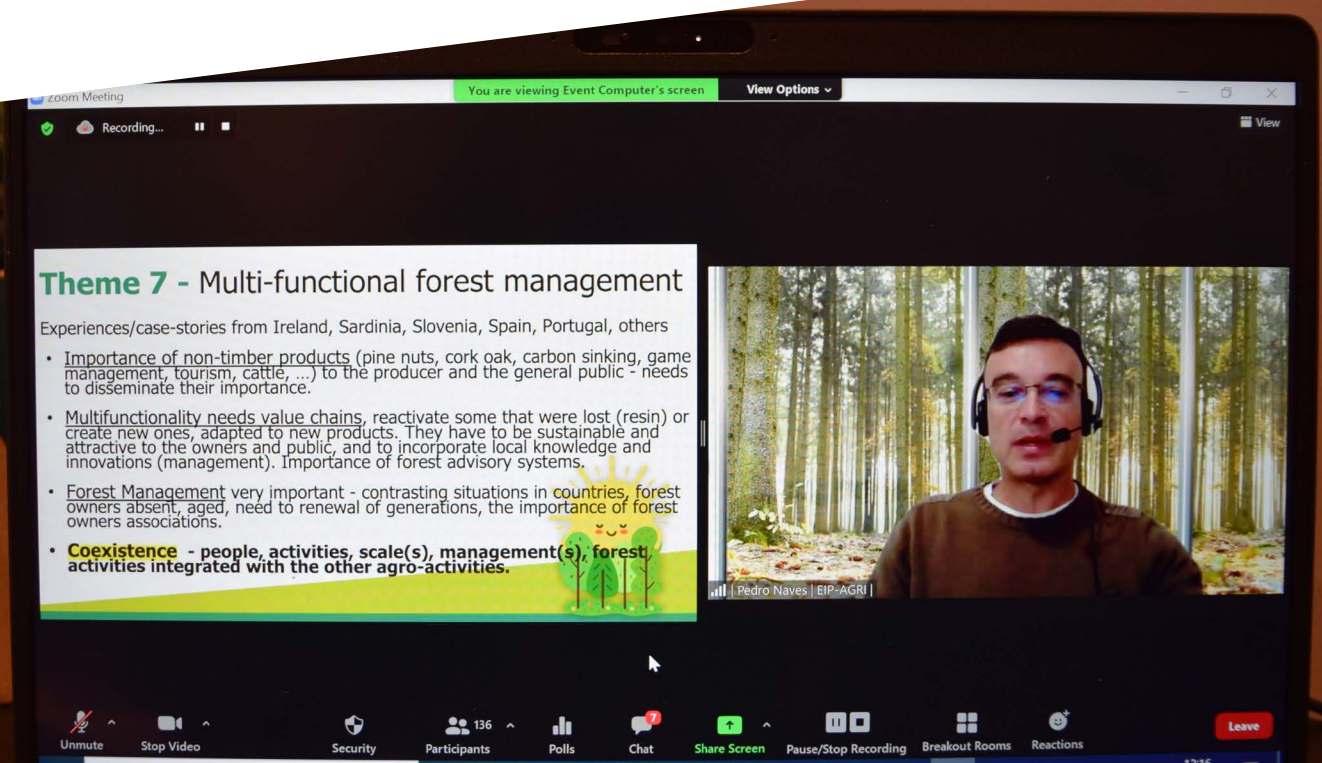
- ▶ Reactivating resin tapping in central Spain: Resin tappers come back to forest with technology transfer and managerial innovations, with the support of H2020 and Interreg projects as [SustForest](#) and [Incredible](#).
- ▶ Developing a short wood supply chain in a protected area (Italy - Gargano National Park): Gargano is a rural region affected by depopulation and marginalisation. The area is rich in forest resources that are not managed in a sustainable and productive way.
- ▶ Forest Education against forest fires: Good forest education at school, at all levels, is important for forest protection. Students came back to school to prevent fires in their town.
- ▶ Forest communities dealing with destroyed forests: Windstorms in Slovakia in 2004-2007 caused enormous damage in community forests where timber production was the main source of income. Important factors for finding solutions are trust building, communication, and knowledge sharing according to the researchers from SlovakGlobe.
- ▶ Space technology is saving my forest: Climate change has triggered an increase in forest pests. Remote sensing may help for early warning/ identification of pest attacks. Success factors are active collaboration of both academic and industrial stakeholders together with forest staff ([MySustainableForest](#)).
- ▶ Local wood construction value chains: Small forest owners working with architects in southern France discover new opportunities for their forests using local short value chains.
- ▶ The European project [InnoForEst](#) is developing new value chains for forests and wood through local cooperation in underdeveloped regions in Austria and other countries.

The most important points of the discussions were summarised as follows:

- **Multifunctionality of European forests should include non-wood forest products and ecosystem services:** Important products and services include pine nuts, cork oak, carbon sinks, cattle, game hunting/management, tourism (including new tourism strategies devoted to eco-lodges, wood trails, tree houses, comfortable camping). It is important to create awareness among the public, and policy makers, on the economic, social and ecological importance of forests, and the need to maintain healthy and resilient forests which can withstand pests and adjust to the challenges of climate change.
- **Multifunctionality needs active and profitable value chains:** We can reactivate value chains that were lost (the example of resin extraction) and develop new products/services. These value chains need to be locally adjusted and scaled (locally, regionally or globally), to be sustainable and to add value (including economic) to the forest owners and the public. Value chains should incorporate local knowledge and recent innovations (technological and management).
- **The most important “actors” involved in innovation should be forest owners, forest advisory services and policy makers:** A problem shared by many countries is the absence of forest owners, their advanced age and the small scale of the properties. This may impede innovation and forest management. Forest holdings and forestry associations can help forest owners to overcome this. Participants suggested creating a European online platform for small-scale forest owners, to connect the owners to innovation developments and to policy makers.
- **Forest multifunctionality needs cross-sectoral views:** We need “co-existence” with other activities and services outside the forest system, and there is a need to integrate multi-use forest activities with other activities in the broader agro-forestry landscape.

Actions needed:

- ▶ Develop profitable value chains for multifunctional forests.
- ▶ Integrate local knowledge and innovations.
- ▶ Strengthen forest advisory systems and forest owners’ associations.
- ▶ Disseminate the importance of non-timber products.
- ▶ Foster/Promote the involvement of younger generations for active forest management.
- ▶ Foster co-existence – i.e. integrate and connect people, activities, scale(s), management, and integrate forest activities with other agricultural activities.

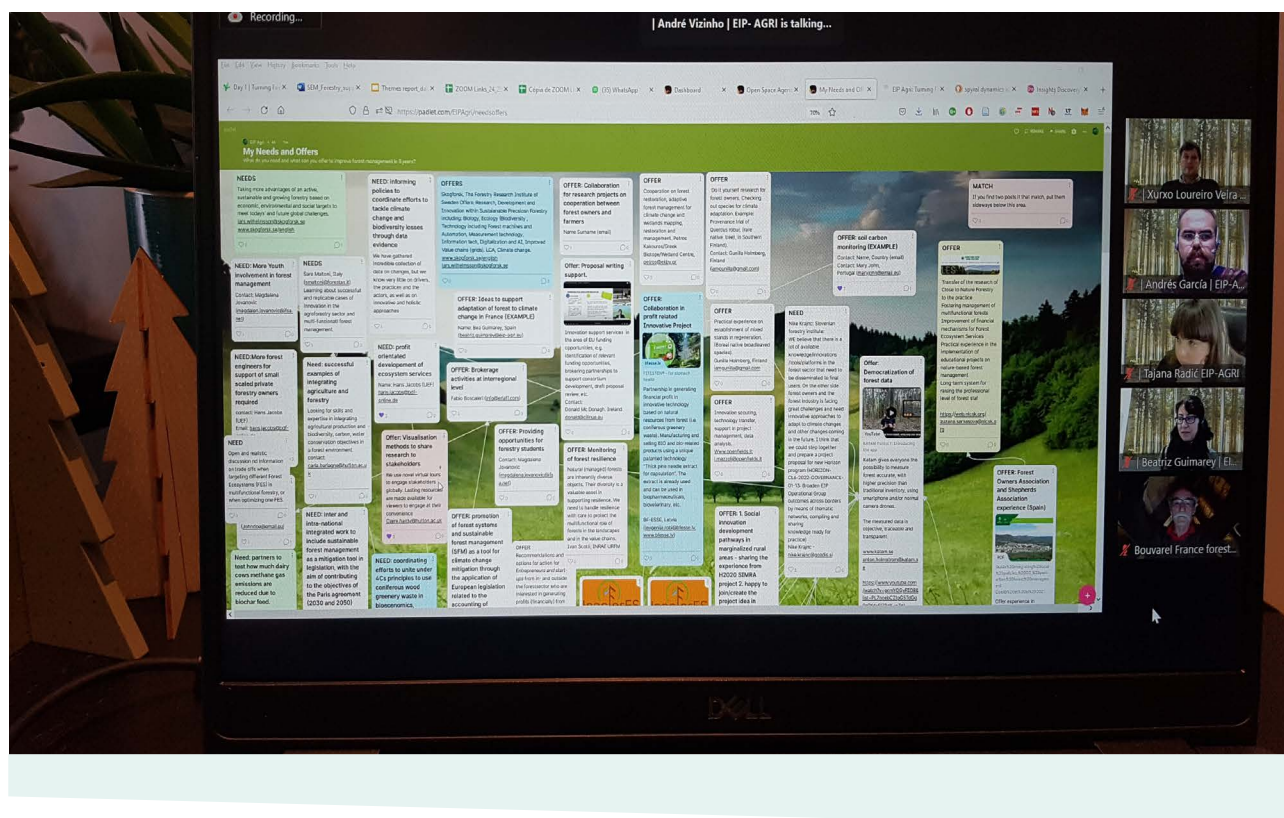


6. Open Space Market on forest knowledge and innovation

The guiding question for the Open Space Market was: “What do I need and what can I offer, to improve forest management in 5 years?” Participants were encouraged to formulate their needs and offers so specifically that they directly could identify concrete collaborations. In the second round, inspired by these ideas, participants were invited to propose topics for discussion in parallel interactive sessions. Eventually, 9 topics were addressed and briefly reported in plenary afterwards by the participants.

In brief, this is the list of topics proposed, the hosting participants and the main points discussed per topic. The full list of participants is available at the [event webpage](#):

- Identifying the most important barriers for forest stakeholders to adopt technological innovations** (Hosting participants: Almudena Sánchez, with David Garcia and Lars Wilhelmsson): Rich discussions by participants from different backgrounds and regions covered data, barriers, recommendations and conclusions. The range of topics included satellite info and ground truthing, smart phone measurement combined with satellite data, high precision data for forest management or payments for ecosystem services, communication between forest owners and companies, appropriate applications and affordable price, machine data and ownership of data. Challenges include the availability of up-to-date data for decision support, competing commercial interests of companies, or how to bring information to small-scale forest owners.
- The use of coniferous wood greenery** (Host: Jevgenia Robi): The aim of the discussion was to explore the use of extracts from the young branches and needles of coniferous trees to produce natural products for treatments of gastro-intestinal and immune system diseases. For this new business model, cooperation partners from other countries are sought to develop new applications, and other green products from the forest.



- **Democratisation in the forestry sector** (Host: Anton Holmström): How can the forestry sector and forest management improve when anyone can collect quality forest data? Although there is a need to cut trees, many forest owners have no interest to measure them and know what they have.
- **EIP Thematic Network of Operational Groups about forest issues** (Host: Benjamin Chapelet): The aim is to create a Thematic Network of OGs. There are many OGs, mostly concentrated in France, Spain, Italy and Portugal, on different topics like agriculture, forestry, silvopastoralism. The group gathered the contacts of all the participants for further discussions with the aim to develop a project proposal.
- **Trade-offs and priorities of providing forest ecosystem services** (Host: Carol Grossmann): The group discussed forest terminology for sustainable forest management, multifunctionality and ecosystem services. This changes over time and is quite complex. Their two key messages are: It is very important to have a consensus, common and clear terminology. It is generally assumed that forests provide all these different ecosystem services but there are always trade-offs – a fact for which awareness is often lacking.
- **Biochar production from woodland to offset carbon** (Host: Adrian Kinner-Smith): This reduces the CO2 outputs from dairy stock and puts carbon back to the soil.
- **Large-scale soil build-up through best practices forest management** (Host: Filipe Silva): Conversations focused mostly on practices beneficial for Mediterranean soils and it was agreed that ploughing should be avoided and soil cover enhanced. Exporting biomass should be avoided and trees should be planted to improve the biomass layer on the soil.
- **Practical examples of alternative forest uses** (Host: Linda Bürgi): In the group there were beekeepers, and a fruit grower who uses the forest as a windbreak for orchards. There were some examples of forest tourism and forest bathing, and a project on CO² sequestration as an additional income source. It can be difficult to combine other uses (recreational example) with logging.
- **Plant breeding and seedling production** (Host: Gunilla Holmberg): The situation in Bulgaria, the Netherlands and Finland was compared regarding climate change causing plant diseases. The group discussed using native or exotic species and introducing more drought-resistant species.

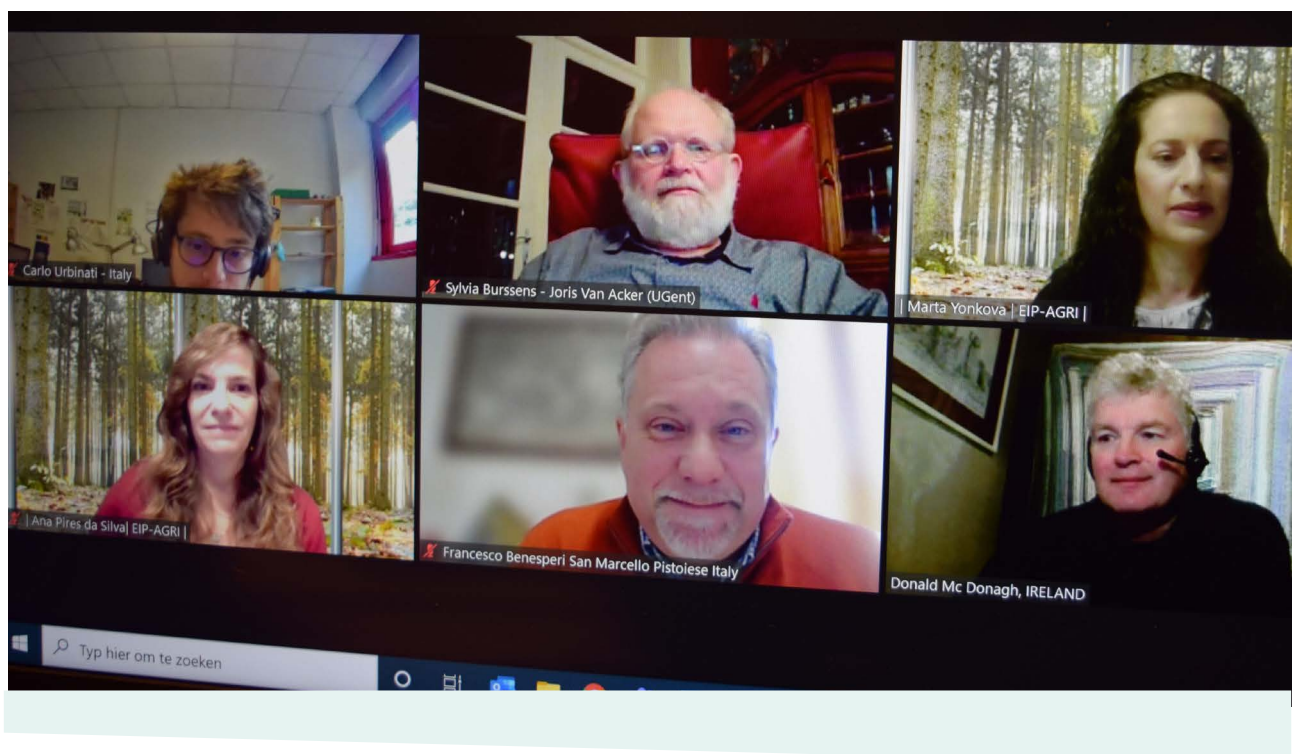
7. Factors for forest innovation impact

The second day of the seminar focused on the crucial factors in innovation processes and how to upscale them. The participants were split into the following six thematic groups to discuss practice examples from different types of innovations:

1. New ways of developing silviculture and technologies in forest management
2. Organisational innovations
3. New forms of cooperation among forest owners or along the value chains
4. New business models and marketing approaches
5. New ways of institutional support or founding new associations
6. Social engagement, participatory management and social enterprise

As in the previous day, inspiring initiatives were presented in each theme room, followed by sharing and discussing further cases by the other participants in each room. The participants were invited to address the following questions:

- What is the interest and potential for replication or scaling up?
- How to stimulate further innovations, cooperation and the amplification of positive effects?
- What are needs to support replication or scaling up: how to support initiatives, how to build “creative milieus” and “supportive environments”? What other strategies/tools could be used?
- How to consider phases of innovation (recognising the problem, finding solutions, adapting other examples to your context, what are specific needs of pioneers, adopters, and mainstream?)
- What are preconditions and supportive factors for innovation? What is the role of policies, the role of organisations, municipalities, institutions, or other stakeholders?
- What would be important recommendations for policy?



The lively, engaging and inspiring discussions produced a rich collection of insights on factors and conditions for the amplification of innovations. In summary, the following key principles can be listed.

Key principles for upscaling and replication

- Any replications need to be adapted to local conditions.
- A culture open to new ideas is conducive to developing new solutions.
- Collaboration with new types of partners supports innovation.
- User orientation is an essential innovation principle.
- Create a clear plan but keep it flexible and adapt to changing developments.
- Dialogue and participatory approaches are important for developing common visions and co-creating innovative and realistic solutions.
- Supportive institutional structures are key at various levels, including municipalities, associations, governments and specific programmes that can connect top-down support to local bottom-up initiatives.

The following sections provide further detail about the specific projects and initiatives shared and discussed in each of the theme rooms as well as the main conclusions and highlights per theme. These include, for example, key opportunities or challenges identified for each specific topic or recommendations for further actions.



New ways of developing silviculture and technologies in forest management



Inspiring example: Forest & Free Grazing Animal monitoring with Small Flying Objects ([video](#))

Hara Koutalou, GR

An SME together with a farmers' association in Greece uses IoT technology, satellite & SFO (Small Flying Objects) to manage forest land that is used for animal feeding. Monitoring the free-range animals is difficult because of steep slopes and ravines. They designed a solution with co-called HAPS (solar drones) to monitor both the animals and the forest. This technology can also be used to monitor land use, wildfires, wild animals, illegal logging, collection of plants and much more. More information: [video](#).

The small group discussions led to insights in the development and adoption of new technologies or the further development of existing technologies, focusing on the example of drones.

Opportunities/inspirations:

- ▶ The use of solar power drones (HAPS) or alternative powering technologies in forest monitoring.
- ▶ In Latvia, small forest properties were consolidated into larger plots. Latvia is very advanced because they started later and therefore embraced the latest available technology.

Challenges:

- ▶ The natural landscape and the grazing practices used traditionally may complicate the use of specific technologies.
- ▶ The internet connection is often poor in grazing areas/forests.
- ▶ Farmers are less interested in the technological details and less involved in the development process.
- ▶ Flying time and reach of drones is limited but might improve in the next years.
- ▶ In Tuscany wood encroachment over grassland is controlled by prescribed fires, but people must be convinced to adopt this old practice again because they fear forest fires. In this case drones are used to record the process for monitoring.

Important factors:

- ▶ How to reach potential users? Hands-on experience is key for taking up tech solutions. In a Swedish example, people over 65 years started to use drones before the young ones because they have better judgement on the problems and potential solutions. Forest owners may be engaged through a "snowball technique", peer-to-peer interaction works well to convince them. For most large organisations, investing in research and innovation may be easier than for SMEs, but sometimes being too big can be a constraint to innovation.

Concluding recommendations:

- ▶ Diversifying strategies and innovation is not only about technology but also about management and new business models.
- ▶ Users and beneficiaries of innovation must be involved but not necessarily at every stage: e.g. someone may like to use tech even in their spare time, others would just like to give feedback and get information but not operate the drones themselves.
- ▶ User orientation is a guiding innovation principle but needs a differentiated view:
 - End users have to be involved in the results;
 - Need for continuous development with the participation of the users;
 - Need to share and adapt to local circumstances;
 - Creating innovation groups for improving technologies.

Organisational innovations



Inspiring example: [Forest Sharing \(video\)](#)

Guido Milazzo, IT

Forest Sharing is a model to bring fragmented and abandoned forests into economic management. It is a platform which creates a marketplace through which operators are matched with the owners of unmanaged or underutilised private forest assets. Innovative management approaches include activities such as wood production, other forest products, recreational areas, adventure parks or theme paths, implementation of Rural Development Plans or ecosystem credits. The Forest Sharing platform applies a bottom-up approach where people can meet and find technical, legal or conceptual solutions for shared forest management. The Platform is thus more than a tool – it helps to develop innovative conceptual and contractual frameworks that allow people to manage forest supply chains together.

Various models for innovation were discussed, including top-down vs. bottom-up approaches and technical vs social innovation. It was concluded that all may work depending on the situation:

- ▶ **Bottom-up approach:** Examples include cooperatives of private forest owners to achieve common goals, e.g., forest certification, introduction of a new tree species. They resulted in less abandoned areas and created new supply chains. One [example](#) is biomass production by a community forest. Another specific example is the [Metsä group](#), a cooperation of many forest owners in Finland which developed into a large company, recently investing 4 billion EUR in an innovative biorefinery.
- ▶ **Top-down approach:** Examples of bringing consumers and producers together include a bioenergy example in Spain where small communities with forests produce energy for larger communities with less forest area, resulting in higher profit for forest owners and better use of the forest potential. In France, the introduction of Douglas fir stimulated the creation of various new value chains. The [SIMWOOD](#) project produced a handbook with good practices for wood mobilisation.
- ▶ **Social innovations:** To promote organisational or institutional innovations, communication with society is essential. For replications, the different national and local institutional frameworks need to be considered. Municipal and community forests can be very successful (example from Galicia). In some areas (incl. Italy and Galicia) new regulations allow public authorities to implement forest management measures on abandoned land (so-called “silent forest land” in Italy).
- ▶ **Technical innovations:** Good examples include forest/wood clusters (e.g. in Bavaria and Galicia), the Forest Innovation and Competence Center SerQ in Portugal, “Living Labs” and EIP-AGRI multi-actor initiatives such as Operational Groups or Thematic Networks. It helps to link all types of actors and support their good interaction through joint activities such as ice-breaking sessions or field excursions.

Potentials, challenges and strategies to scale up:

- ▶ Overall, participants see good potentials to replicate these innovations – when considering different local framework conditions for transferability and connecting to local actors.
- ▶ Innovation development needs broad profiles of “innovation teams” or networks: with stakeholders and experts from different sectors, backgrounds and competencies, gender balance and different types of actors spanning research and practitioners (owners, managers, companies, planners, researchers, advisors, public administration, etc.). This applies, for instance, to OGs and Thematic Networks.
- ▶ Policy support is needed for value chain development, new organisational solutions or business models such as carbon trading or eco-tourism (for instance “Biodistricts” in Italy).
- ▶ An overall policy framework at the European level is useful but there should be room for decision making at the regional level, to adapt to local governance settings.

- ▶ Strategies for replication include cooperative approaches, developing associations for different problems or value chains (e.g., linking owners and users), and providing information to the public to help citizens understand the various benefits for society.
- ▶ Creating forest and wood clusters along the triple helix approach (including industry, governments and research) and beyond (connect to social needs and ecological sustainability).
- ▶ Use pilot projects and their replication, Living Labs and lighthouse projects.
- ▶ Accelerating digital transformation, supported by public funding for commercially available solutions.
- ▶ Financial support can sometimes be very small but effective, e.g. innovation vouchers for traveling to meet innovation partners.
- ▶ Involve research and get scientific evidence.
- ▶ Culture of openness to try out new activities and collaborations with unsure, risky results.
- ▶ Involve new partners, not just the “usual suspects” or the same from previous periods or projects.
- ▶ Step-by-step approach: identify needs, test and trial, produce the evidence, reassess.
- ▶ Define your objectives, find the right partners and “write the story of how to get there”.
- ▶ Gather local needs, look for best examples, write a collaboration plan – but be flexible.
- ▶ Consider how every partner can benefit from the project.

New forms of cooperation among forest owners or along the value chains

Inspiring example: [Centre National de la Propriété Forestière \(CNPF\) \(video\)](#)
Benjamin Chapelet, CNPF (FR)



The French Private Forest Ownership Centre (CNPF) is at the intersection between public authorities and professional bodies of privately owned forests and supports private forest management through many activities. CNPF has been involved in EIP-AGRI activities since the beginning. In a national project, they disseminate the results of the most relevant EIP projects and OGs on forestry to all French forest stakeholders. CNPF is also involved in European Horizon 2020 projects, e.g. Incredible (on valorisation of non-wood forest products in the Mediterranean area) and Rosewood4.0.

In the discussions, the main challenges identified were fragmented land ownership and the difficulty to reach small woodland owners. Several projects were presented:

- ▶ App [Bioclimsol](#) in France supports the selection of species best adapted to the local climate and soil conditions.
- ▶ [Asefor](#) offers certification services for small forest owners in Spain. This web platform is managed by an SME that documents forest management activities as proof for certification. The platform is now also applied in other regions of Spain and Portugal.
- ▶ The web platforms [ForestSharing](#) (IT) and [Woodlots](#) (UK) link owners/products to buyers and services.
- ▶ In Bavaria, there are effective cooperations where small forest owners are supported by large ones, and a range of regional clusters along the forest value chain that link actors in the regions.
- ▶ [DIH DATAlife](#) from Galicia brings together different actors of the value chain.

Suggested solutions:

- ▶ New forms of cooperation of forest owners for new activities, e.g.:
 - Tech companies or start-ups that create IT solutions and services for forest owners;
 - Offering ecosystem services – this requires supportive regulatory frameworks;
 - New marketplace for joint marketing of quality wood;
 - Own sawmill (in Catalonia a federation of 23 forest associations aims to establish a sawmill);
- ▶ to promote best practice examples on forest management;
- ▶ collect best practice examples on connecting small inactive forest owners to professionals;
- ▶ collaboration of relevant stakeholders and private forest owners, particularly: small-scale local forest owners, companies, associations, public bodies, Operational Groups, coordinating agents to manage at territory level, action groups, public, clusters, municipalities, research institutes;
- ▶ to enhance societal perceptions for a better and balanced understanding of the positive roles of Sustainable Forest Management, because proactive forest owner involvement can play a major role to tackle the bioeconomy, biodiversity and climate change issues;
- ▶ to start groups/clusters of owners and users/producers;
- ▶ to stabilise and disseminate results from OGs;
- ▶ create platforms bringing together (young) forest owners with companies, start-ups, etc. to inspire each other and provide infrastructure such as sensor electronics.

New business models and marketing approaches



Inspiring example: [ValoFor: Small Forests - Big Players](#) (video)

Silvio Schöler, Austrian Federal Forest Research Centre (BFW)

5%

The EU project ValoFor aims to valorise the role of small-scale forestry for a biobased economy. Because of strong variations in forests as well as the interest of forest owners (e.g., financial or ecological), their knowledge and management capacities, different approaches for different owners are needed. Any support (such as subsidy schemes) also needs to consider the complete socio-ecological system and needs more tailored solutions.

In the discussions, several examples were given:

- ▶ feeding biochar to animals (FI);
- ▶ setting aside pieces of forest for permanent protection (FI);
- ▶ increasing ecosystem services in forestry (ES, IT);
- ▶ certification and traceability;
- ▶ forest owner cooperation to engage forest owners in forest management;
- ▶ vertical integration – companies owned by forest owners for wood marketing or processing (FR, SWE);
- ▶ develop business models and adapt regulations for non-wood products;
- ▶ female forest owners' organisations (LadyForest, FI);
- ▶ active forest owners as role models to show that forest management can be profitable;
- ▶ giving awards to active forest owners (AT).

Challenges:

- ▶ ownership fragmentation;
- ▶ restrictive regulations in some countries;
- ▶ big companies dominating timber processing in some countries makes it difficult to innovate and create new business models in forestry;
- ▶ non-management goals in biodiversity policies counteract carbon sequestration because managed forests and using wood can store more carbon than natural forests;

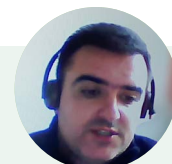
Actions:

- ▶ Make the main contributions of forestry to ecosystem services more visible.
- ▶ Provide for minimum EU rules on what owners and exploiting companies need to provide to society.
- ▶ Forestry needs positive image.
- ▶ Inclusion of local authorities, municipalities, regional authorities.
- ▶ Find knowledgeable people who work in forestry.
- ▶ Policy support for carbon growth and harvesting, not carbon storage in the forest.
- ▶ Creating supportive environment for creating consortia for vertical integration of forest production,
- ▶ Share information on forest innovation, production diversification, and profitability of forest management;
- ▶ Promote organisations among small forest owners for joint management with professional foresters.
- ▶ Share successful stories to raise awareness on the importance of active forest management.

New ways of institutional support or founding new associations

Inspiring example: [ERIAFF Forest Innovation Workshop \(video\)](#)

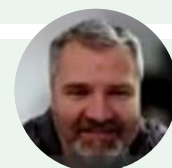
Fabio Boscaleri, Regione Toscana



The ERIAFF Network (European Regions for Innovation in Agriculture, Food and Forestry) is an informal network of more than 80 European regions. The initiative "Forest innovation workshop" started in 2014 and aims to connect forest innovation ecosystems at regional and EU level, by trying to put in contact people from different regions and innovation projects. Together with the EIP-AGRI they contributed to promoting the possibility to have interregional OGs.

Inspiring example: [Standing Working Group \(SWG\) for Regional Rural Development in Southeast Europe \(video\)](#)

Aleksandar Damnjanovic, SWG



The SWG is an intergovernmental organisation which was founded 15 years ago by the Ministries of Agriculture of the Western Balkan territories, including observers from some surrounding countries. The networking organisation supports discussion and coordination of policies related to rural development and links to relevant EU institutions. The SWG is supported by FAO, the European Commission and the involved ministries.

On the example of the SWG, important factors for replication and upscaling were discussed:

- ▶ Define common topics with added value for all actors (e.g., tourism, environment, ecology);
- ▶ Ensure funding which in the presented case comes from international donors (EU) for projects in form of micro grants of around 1 million Euro;
- ▶ Sustain the facilitation of the network, e.g. by an association and create arrangements for collaboration;
- ▶ Build on things that are shared, such as language, tradition, or economic relations;
- ▶ Support by governmental actors to facilitate, fund, and improve regulations.

Important factors in general:

- ▶ incentivise the innovation activities, in particular more ambitious ones that bring the participating organisations out of the comfort zone of conventional paths;
- ▶ create an institutional support unit for innovation ecosystems on national or regional level;
- ▶ apply a multi-actor approach, strong leadership and monitoring activities;
- ▶ ensure long-term institutional support and follow-up funding for successful projects;
- ▶ create an institutional platform for inter-regional and transnational innovation opportunities;
- ▶ potentially linked to private investors.

Social engagement, participatory management and social enterprise

Inspiring example: [Interreg Fem4Forest: Forests in women's hands \(video\)](#)

Nike Krajnc, Slovenian Forestry Institute



The Interreg project Fem4Forest studies the role of women in forestry in some Eastern European countries with strongly male-dominated forest sectors. Paying attention to female professionals and forest owners, the project has collected statistics, testimonies and more than 30 role models, to make the strengths of women and their professional work in forestry visible. The project acts as an umbrella organisation and aims to initiate women's networks and various activities such as "women's walks" in all countries. Further info [here](#).

Inspiring example: [H2020 SIMRA and Operational Group VALAB \(video\)](#)

Carla Barlagne (The Hutton Institute, UK) and Arsène Vinglassalon (SYAPROVAG, FR)



Guadeloupe is an overseas region of France in the Caribbean and it is one of the world's 'hotspots' for biodiversity, which, however, is under pressure. To find ways to benefit both biodiversity and agricultural production, the VALAB project (Integrated Value Enhancement of the Guadeloupean Forest Agrobiodiversity) is studying the feasibility of small-scale production systems with a focus on forest agrobiodiversity. With the support by SYAPROVAG (Agricultural Union of Vanilla Farmers of Guadeloupe), the project carried out 170 field surveys and interviews with farmers, animal breeders, experts and institutional actors and consumers about past and current agricultural practices in the forest. Three participatory workshops were conducted in collaboration with the H2020 SIMRA project (Social Innovation in Marginalised Rural Areas) with local stakeholders to share their visions and to develop a biodiversity-oriented management of forest undergrowth for agricultural use. More in this [press article](#).

Further examples discussed in the group include the following:

- ▶ The Mediterranean [Model Forest Network](#) is a voluntary network that involves all stakeholders (researchers, farmers, associations, public and private forest owners etc.) in the forest sector in local level "Model Forests" to exchange ideas and initiate actions.
- ▶ [Future Forests](#) is a Swedish platform for interdisciplinary forest research and communication. The platform is a collaboration between SLU, Umeå University and Skogforsk addressing forest owners, forest industry-value chains, other stakeholders and the public.

Scaling up and replication:

- ▶ Local communities have a role as a starting point for involving forest owners and other actors;
- ▶ Dialogue and participatory approaches are important for sharing models for forest management, e.g. the LEADER approach;
- ▶ Co-creation and co-design to develop a shared plan with stakeholders;
- ▶ Digitalisation may help to disseminate results and facilitate interaction;
- ▶ Any replication must adapt to local situations;
- ▶ Science needs to find new ways to communicate information and engage with society;
- ▶ Important support is needed for improved governance, social capital and networking, and funding to address: capabilities, opportunities and motivation;
- ▶ Involving young generation and dialogue with society should be important to bring more information on the relevance of forest management and maintenance of forestry, and the strengthening of biodiversity and the multifunctional role of forests.

8. Conclusions

Key lessons on forestry innovation: three steps and three support measures

The seminar discussions provided interesting practice “stories” and possibilities to learn and connect to experts and ongoing projects, also beyond this seminar. The discussions furthermore provided important insights in line with previous innovation research, and very valuable lessons, illustrations, refinements and recommendations.

For the innovation process, the following **three steps** were emphasised as crucial:

- 1. Define goals:** to define clear goals, in line with the context and aim of the innovation project:
 - a. Clear company/project goals for efficient and focused innovation management.
 - b. Especially for area-based initiatives, find clear common needs of local/regional population. This is particularly relevant for larger and more complex initiatives that rely on local/regional support and acceptance.
- 2. Connect with stakeholders:** for many different reasons, e.g. to get ideas, to get support, most of all for “learning”. Both horizontal cooperation (e.g. forest owners) but also vertical cooperation (along the various value chains) is important. Specific aspects mentioned include:
 - a. Peer-to-peer learning.
 - b. Learn from others, but always adapt to local context.
 - c. Make an effort to approach “other” or “new” actors, not the “usual suspects”.
- 3. Define a clear “plan” and a convincing “story”:** the former is the more classical approach, the latter from more recent marketing, both should be combined. At the same time, be clear that besides a plan, flexibility is also needed. Even if in the end the plan was not followed at all, it is still needed to start with.
 - a. The “plan”, e.g. a Business Plan, includes goals, steps, actions, responsibilities, time plan etc. This includes legal and financial feasibility studies and planning, market studies, stakeholder management and much more. The size of the plan may range from a few pages to a number of files.
 - b. The “story” is not just any story but one that needs to be convincing internally and externally. The story presents the inner logic that includes the motivation and ambitions and overall benefits of the endeavour.

And how to support innovations?

Measures may be grouped in three bold categories:

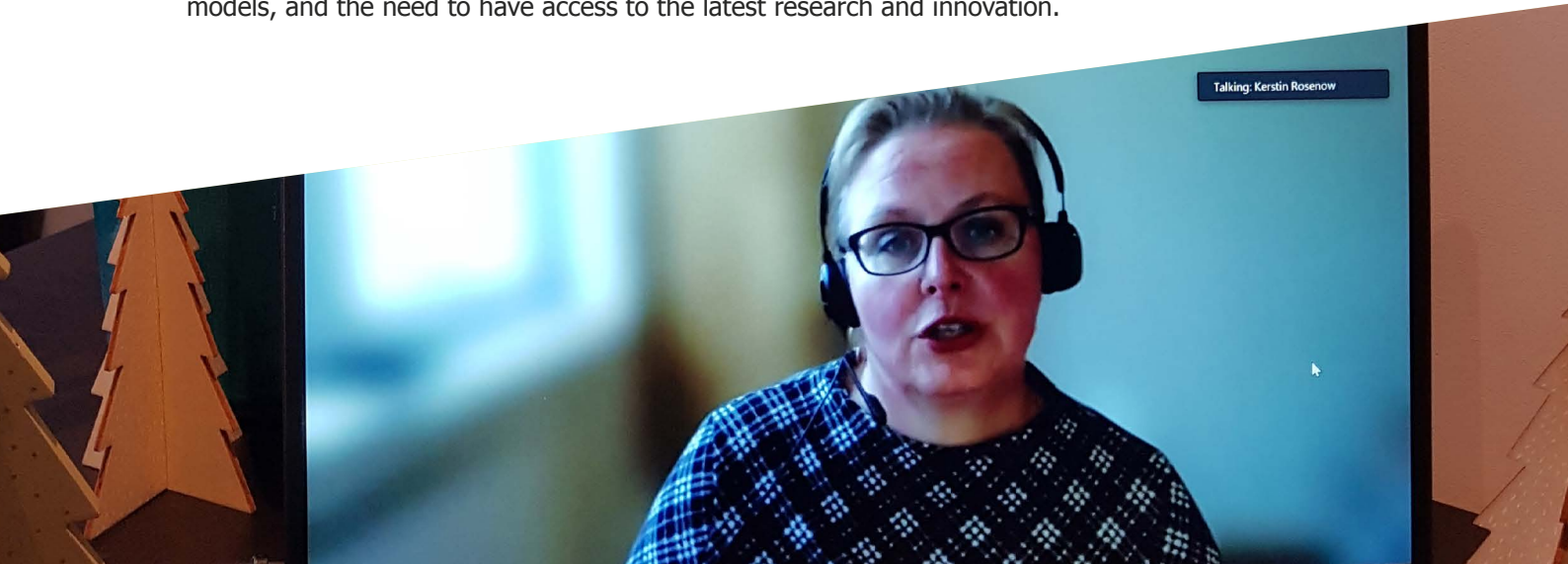
- 1. Information:** to provide knowledge and to support learning. Information ranges from technical information to business support. Various institutional structures are important, including research, education and training, advisory services, peer-to-peer learning, platforms etc. The more interactive, the more effective. And the more local the support, the more targeted it can be.
- 2. Cooperation:** Institutional structures are important. These may be local governments or existing relevant associations, but also specific innovation or regional development agencies (e.g. EIP-AGRI, LEADER groups, regional hubs or platforms etc.). They may act as important intermediary agencies in innovation support.
- 3. Financing:** various aspects were mentioned, from small-scale, easy-to-access innovation or start-up support (e.g. innovation vouchers: for advisory/research support, training courses, networking or travel) to larger participatory research, development and innovation projects. Often very small sums can make a huge impact, e.g. for start-ups. For "bigger" (e.g. national scale) topics, larger public investments may be needed, such as the development of easily accessible commercial solutions in digitalisation. However, it takes more time for innovations to establish themselves than the usual duration of research or innovation projects. Therefore, longer-term support may often be necessary, e.g. by a continuous commitment and support by official structures, such as municipalities or ministries.

Conclusions by DG AGRI

Kerstin Rosenow, Head of Unit 'Research & Innovation', DG Agriculture and Rural Development, European Commission summarised the following main messages and planned actions:

- ▶ EU forests play a crucial role in achieving the Green Deal's objectives – we need to be active now.
- ▶ The new EU Forest Strategy as a key policy framework highlights that it is important to secure livelihoods in rural areas. It supports the development of a sustainable bioeconomy and puts forward enablers to support the successful implementation and practice.
- ▶ The EC will collect the inputs and make use of the results in its work (e.g. in the Horizon programme).
- ▶ A major challenge is how to manage complex and diverse ecosystems in a sustainable way.
- ▶ We learn that there are many good practice examples on social innovation.
- ▶ The success factors identified in the discussions will be integrated in future projects (under CAP or Horizon Europe). For instance, we need to promote and integrate forest management approaches to better balance the provision of ecosystem services and the production of timber, the importance of finding new ways for cooperation also beyond the traditional forest value chains, the necessity to improve the management capacity of forest owners and their access to meaningful advice, the requirement to develop new business models, and the need to have access to the latest research and innovation.

Talking: Kerstin Rosenow



9. Research needs from practice

Structures and models supporting innovation in the longer term.

It takes more time for innovations to establish themselves than the usual duration of “projects”, especially when referring to social aspects. Therefore, longer-term support and commitment is welcome to ensure that innovations are taken up in practice, e.g. supporting peer learning, networking activities or giving continuity to knowledge platforms. The support could come from official institutions at different scales (from European Commission to ministries or municipalities) or could also rely on relevant organisations or networks.

Models and strategies to support replication and transferability of forest innovation while considering the local and regional frameworks.

Uptake of innovations is likely to occur when this is well adapted to the local circumstances and actors, which means that innovations cannot be directly transferred from one place to another. In other words, to succeed in scaling up or replicating, innovation should reply to needs and motivations on the ground, so the starting point should be always the local community with the forest owners and all other relevant local actors.

Plant breeding and seedling production in the face of climate change.

How to find proper seed sources for the future forests considering climate change, resilience and adaptability; how to make use of existing sources and find proper provenances; how to make the climate change predictions compatible with seed and plant production (producing today the plants for the forests of the future).

Setting up a real-time European forest monitoring system for forest pests and diseases and other threats.

Increasingly connected with the changing climate and taking into consideration initiatives and work done with Copernicus, but also on a national and regional basis. Forest information systems should make use of existing resources whereby the different datasets are considered. They should connect different data sources such as forest inventories, remote sensing and ground-level validation in a purposeful manner.

Understanding synergies and trade-offs of ecosystem services and setting priorities for provision of ecosystem services for different forests.

Forests provide many different ecosystem services and their interrelations differ between these ecosystem services but also depending on local conditions. Although many ecosystem services have synergistic relations, there are always trade-offs so that not all can be provided to their optimum at the same time. It is therefore needed to set priorities, develop specific integrated management models, and increase awareness about this amongst policy makers, society, and practice.

Building dialogue and common visions about the added value of forest systems and the need of management.

Part of society has a negative perception of forest management (e.g. cutting trees), some land owners have the same perception of ecosystem services (which may mean more restrictions and regulations for them), etc. It is required to develop initiatives informing about the social and economic benefits of forests, trade-offs between ecosystem services, impact of unmanaged forests, importance of non-timber products. These could be initiatives targeting schools, young people, urban citizens, etc

Value chains for multifunctional forests.

Several uses, purposes and harvests can coexist in the same forest and this complexity should work economically for each single forest owner. Some value chains have almost disappeared (e.g. resin) while new ones have to be created. And all have to be attractive, sustainable, disseminated to the public and also have demand. How to deal with all these value chains? Is an integrated approach possible? How to create value chains for new products?

Types of forest management and ways of involving new emerging types of forest owners (e.g. absent or from urban areas) in forest management.

In order to reduce unmanaged forests and land abandonment, we need to design silviculture, forest management and business models in ways that are less demanding in terms of management, and that are suitable for absent owners. This can stimulate their collaboration and information, and raise awareness of what forests can provide. Specific attention should furthermore be paid to young and female owners and professionals who are usually neglected but who have different needs and opportunities and may have an important role for future forest management.

Suitable data and tools for monitoring and inventory in small-scale forest holdings.

Current data available from Earth observation (such as Copernicus) and other remote sensing platforms is not precise enough for small-scale management or to apply for payment of ecosystem services in these holdings. Plus, many of the times forest managers are not skilled enough to use these data or tools. Up-to date and high-precision data are required, to know what happens in forests, and for payments for ecosystem services. This should be accessible to forest managers through ready-to-use platforms, tools, training and advice.

Inventories combining remote sensing data and modelling wood quality.

Currently, most of the forest inventories are only estimating volume of wood and, while in harvesting prices are mostly considering volume, timber trade works with volume and quality (most of the times, known after cutting). Combining forest inventory with modelling of wood quality would be of interest to most stakeholders across the EU, as this helps sellers to get a better price with a good independent assessment of the wood quality, and the industry can do better estimations of the supply.

Governance models for forest innovation.

How can innovation processes be best supported in forestry? Existing institutional structures in forestry have supportive and hindering effects for innovation in a circular bioeconomy. There are several weaknesses in the existing forestry innovation systems, including weak orientation for new goods and services and barriers to cross-sectoral collaboration. Good practice examples include structures that connect to local resources and initiatives, support cross-sectoral collaboration, include users and foster social innovation. Better knowledge of innovation processes in successful innovation support examples on regional, national or European level is needed in order to promote and learn from those examples and derive factors and principles for amplification of forest innovations.

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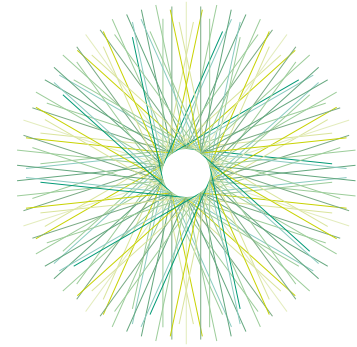
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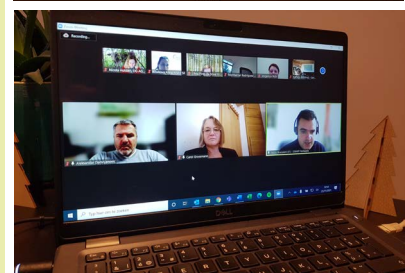
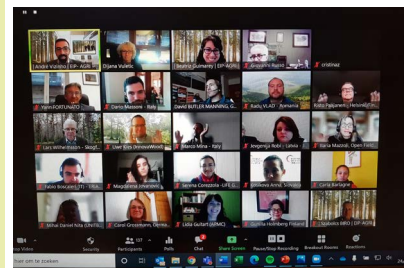
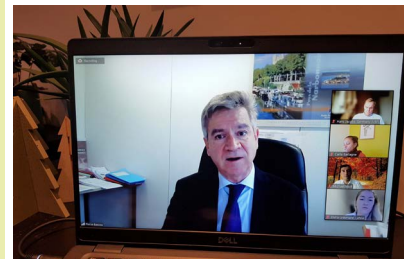
The European Innovation Partnership 'Agricultural Productivity and Sustainability' (EIP-AGRI) is one of five EIPs launched by the European Commission in a bid to promote rapid modernisation by stepping up innovation efforts.

The **EIP-AGRI** aims to catalyse the innovation process in the **agricultural and forestry sectors** by bringing **research and practice closer together** – in research and innovation projects as well as through the EIP-AGRI network.

EIPs aim to streamline, simplify and better coordinate existing instruments and initiatives and complement them with actions where necessary. Two specific funding sources are particularly important for the EIP-AGRI:

- the EU Research and Innovation framework, Horizon 2020 and Horizon Europe,
- the EU Rural Development Policy under the CAP.

You can find all forestry-related activities and publications on the [EIP-AGRI forestry spotlight page](#).



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