



EUROPEAN UNION



EU MISSIONS

ADAPTATION TO CLIMATE CHANGE



July 2024

EU Mission Adaptation Community

Summary of the event: Igniting Awareness: Strategies for Wildfire Resilience and Readiness.

Wednesday 3rd July 2024

1. Introduction: the event at a glance

Registration & participants

120 registrations and 61 participants, including:

- 15 from Charter Signatories
- 17 Mission projects
- 8 Friends of the Mission
- 20 Others, including:
 - 3 European Commission representatives
 - 2 NCPs and Member State representatives
 - 2 Regions or Local Authorities participating in projects.
 - 3 MIP4Adapt.team members.
 - 10 general public

Event's objective & highlights:

The event aimed to increase awareness of wildfire risks and share mitigation strategies. It featured presentations on innovative solutions and initiatives from various European projects, highlighting experiences and best practices in reducing wildfire impacts.

The presentations and recording of the event can be accessed [here](#).

Key findings

- Community involvement and early warning systems are crucial for enhancing wildfire resilience and readiness.
- Have a proactive approach focusing on prevention, early detection, and efficient response to mitigate wildfire impacts.
- Data integration is essential for effective wildfire risk forecasting and management.
- The solutions from various projects complement each other, addressing different aspects of fire safety and effectively tackling critical issues.
- Further research is needed to ensure citizen safety in fire-prone areas.

For further details see Section "Findings and outputs".

2. Summary of the Event

The event provided regions with insights into various experiences and projects related to wildfire resilience and readiness. Presentations covered fire prevention, fire management, forest management, and emergency management, followed by Q&A sessions and breakout discussions.

Jesús San-Miguel-Ayanz from the European Forest Fire Information System at the Joint Research Center (Italy) – presentation on the situation of wildfires in the EU and their impact in the past decades. Key highlights include:

- **Trend Analysis:** Since 2016, the EU has seen an increasing trend in the number of wildfires and the area burnt, attributed to climate change extending fire seasons.
- **Impact of Extreme Fires:** Fires larger than 500 hectares represent less than 3% of all fires but account for over 60% of the total burnt area in the last three years.
- **Economic Losses:** Annual economic losses due to wildfires are estimated between 2 and 2.5 billion Euros, not accounting for biodiversity loss, with potential losses reaching 10 billion Euros in severe scenarios.

Andrea Trucchia from CIMA Foundation (Italy), – presentation on the wildfire risk projections studied in [CLIMAAX project](#). Key highlights include:

- **Risk Assessment Workflow:** Introduction of a novel GIS-based wildfire climate risk assessment for Municipal and Regional Authorities, learnable within a month. Publicly available code on [GitHub](#) includes extensive commentaries.
- **Open call:** The project is open for participation by regions, public bodies, and non-profit organizations.
- **Vulnerability Maps & Hazard Matrix:** Development of these tools by integrating wildfire susceptibility data with plant functional types using CORINE classification. Novel GIS-based wildfire climate risk assessment for Municipal and Regional Authorities. All the code produced is public available on the

Ragni Fjellgaard Mikalsen from RISE Fire Research (Norway) – presentation on the two technologies that are being developed in the [TREEADS project](#). Key highlights include:

- **Seedball Technology:** Utilizes drones for replanting after wildfires, featuring containers with seeds, a jellifying agent, and soil microorganisms.
- **VR Training System:** Virtual reality training for firefighters and first responders to enhance situational awareness and response time.
- **Adaptability:** These technologies are designed to be versatile and can be easily adapted for different regional conditions..

Gianni Picchi from the National Research Council (Italy) – presentation on the new solutions for preventive silviculture light machinery studied in the [FIRE-RES project](#). Key highlights include:

- **Integrated Management:** The project emphasizes integrated management solutions to support resilience against extreme wildfires.

- Infrastructure Investment: Significant investments are required for building and maintaining wildfire prevention infrastructures.
- Cost Reduction through Living Labs: Implementation of living labs aims to reduce maintenance costs for wildfire prevention and recovery infrastructures. Alternative work systems in forest fuel removal and post-wildfire regeneration are proposed to lower expenses..

Lovorko Maric from MicroDigital (Croatia) – presentation on the integrated wildfire management platform of the [SILVANUS project](#). Key highlights include:

- Decision-Making Platform: Development of a platform with over 20 components for Regional and National authorities responsible for wildfire management, including a citizen engagement app.
- AR/VR Training: Use of augmented and virtual reality for training firefighters in virtual environments.
- Prevention Strategies: Establishment of multiple defence lines and policies, integrating various data sources such as biodiversity index maps, fire forecasts, and sensor data. Drones and robots are employed for visual inspections and identifying evacuation routes.

Beatriz Oliver Pozo from Fundación Global Nature (Spain) – presentation on the outcomes of the [LIFE Soria ForestAdapt project](#) related to fire prevention as a driving force for rural development. Key highlights include:

- Forest Management: 43% of Soria, Spain, is covered by forests, with only a third managed by local authorities. Rural abandonment has led to increased unmanaged areas.
- Investment Formula: Creation of an investment and return formula to attract private investment for maintaining fire prevention infrastructure.
- Social Awareness: Emphasized the importance of social awareness and community involvement in fire prevention efforts..

The Q&A focused on barriers and challenges that can be found in those kinds of studies and projects. For a full compilation of the questions asked and answers, please refer to the Annex.

In the closing remarks, **Giorgios Boustras**, a **Mission Board Member** emphasized the need for adopting a horizontal agenda in societal and governmental actions concerning wildfires and highlighted research fields requiring further investigation, including early detection schemes, integrated fire management, advanced fire modelling, and adaptive policy-making.

3. Findings and outputs

Based on insights gathered from the Slido questionnaires, several key lessons and findings have emerged:

- **Key Challenges:**
 - TREEADS Replanting Technologies: 44% of participants identified budget constraints as the primary challenge in adopting these technologies.

- TREEADS Virtual Reality Training: 33% of participants cited budget limitations as the main obstacle.
- **Sources of Information for Wildfire Risk Management:** Participants primarily relied on Climate Adapt, EU sites, National Authority Websites, meteorological data websites, case study websites, technical reports, and Google for information.
- **Event Perception:** All participants found the session informative and appreciated the insights into innovations in wildfire management; some participants requested more information on budgets and suggested extending the duration of the event.

Additional key lessons and findings:

- **Climate Risk Management Communication:** A [communication on managing climate risks](#) was published in March, addressing the EU climate risk assessment.
- **Innovation and Technology:** The emphasis on embracing new tools and strategies is crucial to address evolving challenges posed by climate change and increasing wildfire risks.
- **Collaboration and Best Practices:** Effective wildfire management requires collaboration between different projects and sharing of best practices. This holistic approach underscores the importance of knowledge exchange and cooperation in tackling wildfire risks.

4. Next Steps

The recording and presentations have been uploaded after the event to the online [EU Mission Adaptation Community site](#).

Find more information about upcoming events in the [EU Mission Adaptation Community site](#). Upcoming announced events and other key dates include:

- Thematic July Month: Temperature Rising.
- [Drying landscapes: Embracing Water Resilience in a Changing Climate](#), 17 September.

For any queries from members of the Community of Practice on associated activities and events, specific concerns about your climate adaptation planning process, communications and press releases, and IT technical issues with the website, contact us via the [Helpdesk form](#).

Annex

Q&A Compilation

Questions for Andrea Trucchia of the CLIMAAX project (CIMA Foundation, Italy)

The answers to these questions were provided by Andrea Trucchia during the event.

Could you tell a little bit more about the call for CLIMAAX?

The call has just opened some days ago, so there's still a long time for preparing and wherever there's any candidate who might be interested in replicating what you have been showing the analysis of wildfire risk increase or other assessments.

The [call](#) is open to NGOs, local municipalities and regions that want to be part of the climate risk assessment is a multihazard, not just wildfires, but also strong winds, heatwaves, riverine floods, coastal among others. If further information is needed and anybody needs help in filling the proposal, CLIMAAX consortium is eager to facilitate the information and structuring a little bit the proposal. For example, what can be done and what cannot be done by a wildfire workflow implementing partner.

Does your analysis include any scenarios other than climate change? Such as socioeconomic developments

In the simplest analysis we used just carbon emissions while in the other analysis we used SSSP as so they are like the socioeconomic part.

Using different methodologies but aim the same problem it's very important so that we can both share our methodologies and eventually our results and see how we can contribute to develop better policies to adapt and prepare for the future of the fires in Europe. Did you make a similar study considering different scenarios and socioeconomic development? Did you cover the entire European territory?

It's important just to check the methodologies and to also provide reliable data to people who participate. There is always room for collaboration between existing program and there also a lot of programs that can provide some solutions but maybe neglecting some mitigation measures or using the modelling chains that are not really considering variability, land cover, land change, etc. We don't have the goal to forecast everything in the future, but we want to shift and change the mentality of the regional government at also municipal scale by communicating the basis for future, a future awareness for a more sustainable network among these regional entities and government. The collaboration between existing projects is something that needs to be stressed out and by participating in activities such as this one could set the difference.

How is the mechanism for regional authorities to have access to this tool? How could regional authorities have access to this tool so we could forecast the probable outcomes for forest fires?

Regarding CLIMAAX projects which support future trend analysis that would be undertaken, for forest fires and the multi-hazard dating, all the code produced will be open source and are already on the [GitHub of the project](#) including extensive commentaries. It is possible to learn about AI from the documentation, since it is very didactical, even when it's not high resolution but it can help to get started and have your GIS team inside of the regional authority well-formed about the future hazard.

If you participate in the open call, you would be part of the new implementations, and you could ask for some tweaks.

Questions for Ragni Fjellgaard Mikalsen of the TREEADS project (RISE Fire Research, Norway)

The answers to these questions were provided by Ragni Fjellgaard Mikalsen during the event.

What is the cost of producing these seedballs and using the drones? Do you have financial backing from government agencies?

Since we are doing research and innovation, we are not very cost efficient. But the end goal implies to be cost efficient (in terms of the hours it takes and amount of trees that sprout), and that this overall will be cheaper process than doing manual replanting.

For now, this research is supported by the EU-funded project.

Are you developing VR training system for firefighters? Could you also share more information and tell us how safe is this form of training?

Yes, we have a virtual reality training system that is developed as one of the technologies in [TREEADS project](#), for firefighters and First Responders. The objective is to reduce response time for firefighters in case of fire hazards such as wildfires. This VR tool, being developed by SIMAVI partner, helps to familiarize fire First Responders with new technologies and to increase situational awareness. In the video presented were some examples of how it looks inside of the VR training tool, in the field and in the command centre. So, it could be used for prevention in terms of rehearsing and training, for acting during an incident to increase situational awareness (for inspect the area during an incident), or training personnel on situational awareness before an event.

In term of safety, we know that a lot of exposure that fire service personnel is exposed to (smoke exposure), is in connection with training sessions. So, when you use the VR training tool, the personnel aren't exposed to smoke, and so it's physically safer for them.

We are using this VR technology as part of three different pilots and triads in Romania, Germany and Austria. The tool is quite adaptive, so it can be adapted to local conditions.

The link for their YouTube channel was shared through the chat: <https://www.youtube.com/channel/UCpfC3NUIFk-gr55Zr9QfrGQ>

How do you integrate these solutions? Are you overall working on a platform that brings together all of these solutions?

We have a holistic platform developed in TREEADS that will put together all the outcomes, results, learning points, knowledge and key aspects of the technologies that can be used both for prevention, response and adaptation. TREEADS holistic platform is in beta version at least, and online at the moment, so feel free to register: <https://knowledge-hub.treeads-project.eu/>

Beyond the pilots, is the idea to upscale the solutions that you developed to other areas exposed to wildfires? E.g.: Greece, Spain, etc.

At the moment, we are developing technologies, materials and more. Some of the Work Packages in the project are working on demonstrations in selected pilot sites and then the idea is that the technologies should be flexible and be able to adapt to different conditions and different climatic zones and other local aspects. For example, you could plant according to your local conditions, as one of the partners did using different seeds for the Norwegian pilot as for the Spanish pilot, both because of the different climatic zones but also because of the different plants that are growing regionally.

Questions for Gianni Picchi of the FIRE-RES project (National Research Council, Italy)

The answers to these questions were provided by Gianni Picchi during the event.

Can you do anything to 'win over' the forest owners that today object to using your machines? Are they also worried about soil compaction?

In our case we had different constraints, which were some of them from the public authority owing the forest where we were working or the private owners because we worked in two different cases in private or public forest. We listened to them to include brainstorming trying to identify the most suitable machine, considering their concerns as well.

In the case of Catalunya for instance, the problem was not soiling compaction, which is a very typical problem with machines, but they were concern about the fact that the opening into the forest would be excessive, they didn't want to open large corridors. In this case selection would be leaving the good plants and just removing the small ones. The demonstration was useful to clearing the doubts that they had and to show the suitability of the machinery.

In Spain there are large forest machines, but no small ones or machinery dedicated to tringing because they are less productive but, in these cases, we are looking for preventiveness, not productiveness.

We know that we need to rely on subsidies, and for instance in the case of Sardinia the problem was very sensitive areas, in this case que forest owner was public and was even more concerned about the impact. That's why we imagine a work system and not even enter the forest. We had to work within 30 meters of

reach from the road so we could work with a winch being on the boom, it could extract the trees half suspended, and the results were much better.

There isn't a single recipe to convince owners, but what has to be done is to understand which is their fear and concerns, and to identify which can be the best solution. There isn't any universal machine that can do anything, so, each time you would have to identify what is suitable.

Questions for Beatriz Oliver Pozo of the LIFE Soria ForestAdapt project (Fundación Global Nature, Spain)

The answers to these questions were provided by Beatriz Oliver Pozo during the event.

How do the costs of using your tech compare to traditional planting? Does it work for any tree species, or only for some? Can it sow mixed stands?

Market analyses are still underway, and we are at a TRL level that is not quite market ready but getting there so for now the cost is higher that they should be once its market ready. The improvements made to the production line will enable us to reduce costs, but based on our knowledge and expertise as foresters it should be cheaper than doing it manually, but not cheaper than just using direct seeding which is basically just throwing the seeds on the ground, although direct seeding is not very efficient (around 4%). In contrast, manual planting is very side dependent but much more efficient. The technology that we are developing should be somewhere in the middle.

On the other hand, this technology is adaptable and can use mixed seeds, different kind of tree species and plants, for example, several species within one seed ball, anything that the site or the owners require. The ones we're working with now is pioneer's species so quite small seeds, but it could be adapted to be rather larger, like oak seeds.



Publications Office
of the European Union

Luxembourg: Publications Office of the European Union, 2021

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PDF ISBN 978-92-76-41167-3 doi:10.2777/500470 KI-01-21-194-EN-N