Eco2Adapt's Newsletter
Volume 1, Series 1
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"eco2adapt is a Horizon Europe Research and Innovation action project funded by the European Union and coordinated by INRAE. It began in September 2022 and will run for five years with 31 partners from 11 countries. The project aims to provide solutions to combat the uncertain effects of climate change and promote resilient forest ecosystems for future generations."

Eco2adapt Project Newsletter: Latest Developments and Events. Alexia stokes (Eco2adapt Project Coordinator), INRAE

Welcome to the first newsletter of the *eco2adapt* project!

This newsletter will be sent to participants and the External Advisory Board every 6 months and will provide an update of the project outcomes in terms of methods, research, management and communication. Here you will find important information relating to the overall project trajectory, as well as job adverts, training courses and meeting dates. This newsletter can also be downloaded from the *eco2adapt* website and shared with interested parties. We welcome updates from all participants and invite you to share experiences related to the *eco2adapt* project.

We are now in Month 6 of the *eco2adapt* project and have submitted almost all the deliverables and milestones indicated for this period in the CA. Spring is approaching and fieldwork will begin in earnest, with lots of activity in WP5. Questionnaires are being written and protocols devised for work in Living Labs. Training sessions for modelling tasks are being developed and instructions for uploading data to the knowledge base will be sent out soon. Communication to a broad audience has begun and we hope you can use one of the *eco2adapt* media channels to advertise the project.

Eco2adapt Kick-Off Tour: Exploring Sustainability from Helsinki to Joensuu on September 27th, 2022. Leena Leskinen, FFC.

The eco2adapt scientists were invited on a bus tour from Helsinki Aiport through Finnish countryside to Joensuu. The tour with the theme “business as usual forestry in Finland” lasted over 8 hours. About 20 brave individuals participated and survived - in spite of the moose, forest machines and felling trees. We went to two forest sites and had outdoor coffee in a pleasant garden in Arboretum Mustiala (Photo 1).

In the forest, the clear cutting and thinning cutting by harvesters were demonstrated. Forwarders collected the trunks from the forest. The whole “chain” was at the site: sisters owning the forest, contractors and Storaenso as timber buyer. Guests had a lot of questions concerning timber trade, prices – and how the fungus disease (root rot, Heterobasidion annosum) is prevented by biological control. The stumps are treated by another fungus (Phlebiopsis gigantea) – not dangerous for living trees but takes over so, that the disease cannot grow there (Photo 2).

Photo 1. Mustila Arboretum location map (*Source: Tahamina Khanam, UEF*).

Photo 2. Tree cutting in the forest first site (*Source: Sanna Nyman, Stora Enso*).

University of Eastern Finland Hosts Eco2Adapt's Inaugural Meeting in Joensuu.

We're excited to share with you that eco2Adapt's first kick-off meeting took place on September 28th-29th, 2022 in Joensuu, Finland, hosted by the University of Eastern Finland at Joensuu Science Park (Photo 3). During this productive meeting, the project team made several important decisions, including determining the types of data needed for the Living Labs, establishing key milestones, assigning tasks, identifying deliverables and internal risks, and planning for dissemination activities such as MOOC courses, summer schools, scientific outputs, newsletters, and blogs (Photo 4).

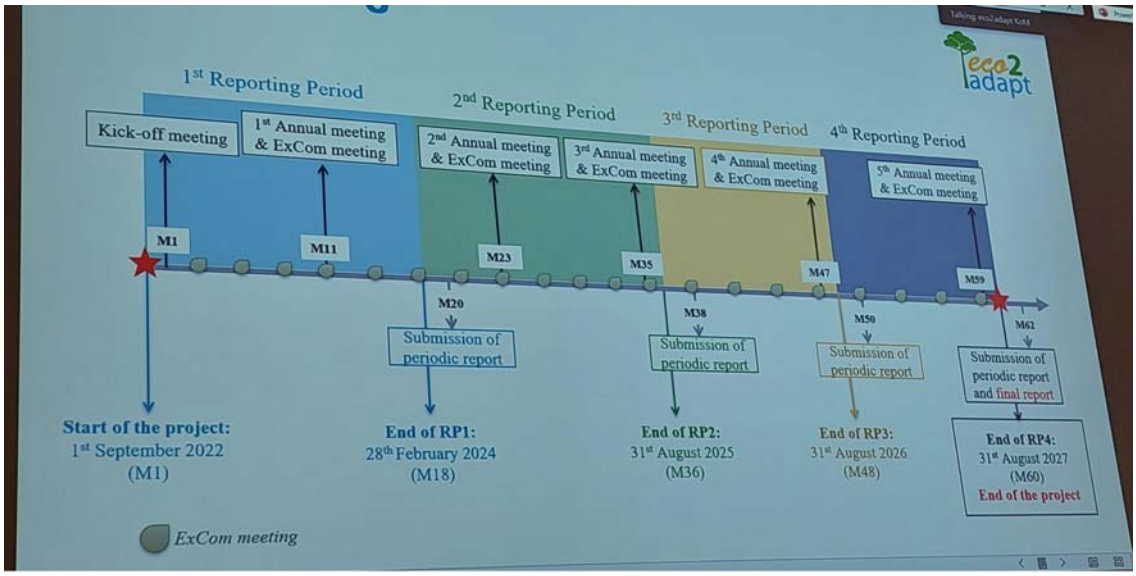

Photo 3. Day 1, Eco2Adapt presentation session (*Source: Tahamina Khanam, UEF*)

In addition, the team also discussed plans for the first general assembly. We're thrilled to have taken such an organized and comprehensive approach to planning and organizing the work ahead. We look forward to keeping you updated on our progress as we work towards our shared goals.

Photo 4. Day 1, Eco2Adapt group meeting session (*Source: Blas Mola-Yudego, UEF*)

eco2adapt: EbA and Nature-Friendly approaches for Resilient Forests across Europe and China (2022 – 2027).

The eco2adapt project brings together 31 European and Chinese expert organizations in the fields of forestry, ecology, and climate change, along with 2 affiliated entities, from 11 countries.

The project will co-create tailored innovations through Living Labs and provide solutions for resilient forests in collaboration with stakeholders in 15 climate hotspots across Europe and China (see Figure 1). Together, these experts will design portfolios of adapted management solutions, innovative bioeconomic models, and governance models to enhance the resilience of tomorrow's forests. The solutions developed in eco2adapt will ensure that the right trees are planted in the right place for the right purpose, benefiting forests, foresters, and local communities.

eco2adapt is designed to enhance two-way communication at all levels of society, from Civil society to policy-makers and from forest owners to lay-persons. The overall aim of *eco2adapt* is to help stakeholders manage forests to optimise social and ecological resilience that will cover a broad range of multiple partners operating at regional or landscape levels, forest and climate type, ranging from boreal and temperate conifer forests to tropical rainforest (see Figure 2). The specific aims are:

1) The core of eco2adapt is to develop the Ecosystem-based adaptation (EbA) framework, products, and services necessary to operationalise the framework with all levels of stakeholders. Raise

2) Help stakeholders manage forest systems to optimise social and ecological resilience through a foundation in science and data. Production of portfolios of climate-resilient species, services, and management scenarios will enhance social-ecological resilience and multifunctionality (via WP3, WP4).

3) Provide stakeholders with a novel tool named the OneForest ToolBox for measuring, monitoring, and understanding the influence of adaptive forestry on above and below-ground biodiversity and invasive species (via WP5). Our ToolBox will allow users to access and add data in a knowledge base, which will be open. Therefore, there will be a direct link between the knowledge base and the United Nations (UN) Data Hub, enabling policy-makers to access forestry and ecosystem service data.

4) Overcome bottlenecks that prevent widespread implementation of adaptive forestry through living labs that gather stakeholders. Decision Theatre technology will be adapted to stakeholders, leading to an enhanced understanding of perceptions and incentivization (via WP2).

5) As changemaking takes time, eco2adapt will create an improved legacy in the local context for all levels of society (via WP1 & 3).

6) Provide current and future researchers and policymakers with FAIR (findable, accessible, interoperable, and reusable) data that will create a knowledge warehouse. This warehouse can receive data and perform FAIRification. Data and management solutions can be accessed through a SmartPhone Application API (via WP3, WP5).

7) Provide innovative changemaking mechanisms for decision-makers (at all levels, from local communities to

awareness among society by providing information on how EbA can contribute to managing forest vulnerability, from soil to atmosphere, and from the tree to people (via WP1).

governments) that will improve social-ecological resilience. This will develop new business models for governance, insurance, and ownership, and improve consumer awareness and certification to protect forest resilience (via WP6).

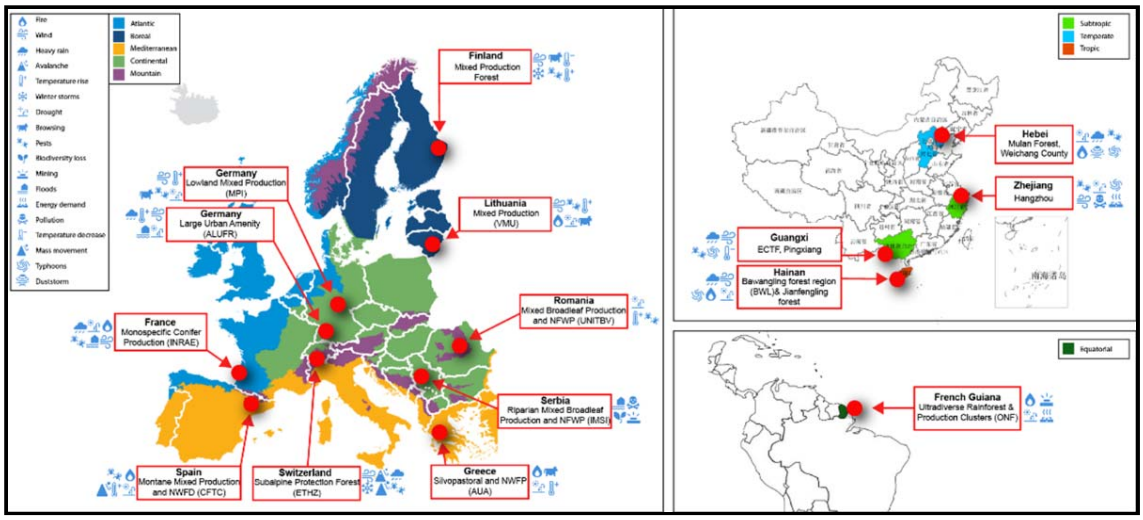

Figure 1. Living labs are situated in climate hotspots in Europe and China and along a continuum of social and ecological complexity (*Source: Inna Viriot, INRAE*)

	WP objecive	Expected result	LL	Responsible institution
eco2adapt	wp1: Legacy Provide Shaping a legacy for resilient forests --> EbA IDevelop knowledge base	Improved & tailored climate adaptive local policies EbA manage forest vulnerability from soil	1,4,15	Lead partner: UEF Deputy partners: Bitcomp, ZAFU
	wp2:Key stones Adaptation of Decision Theatre technology	Increased acceptance of non-production services Increased climate-resilient forestry	All	Lead partner: GCF Deputy partners: UEF, CAF
	wp3:Foundations Provide solid foundations for smart tools Provide FAIR data--> knowledge base	Link with the United Nations Data Hub	5,6,7,14	Lead partner: IRD/UM Deputy partners: InNovaSilva, CAF
	wp4: Building Refined models-->Multidimensional indices	Enhance social-ecological resilience and multifunctionality	3,6,14	Lead partner: ALUFR Deputy partners: ETHZ, CAF
	wp5: Tools Provide novel tool Provide FAIR data	Novel tools will be developed to examine vulnerability from the soil	4,7,8,9	Lead partner: AUA Deputy partners: IMSI, ICBR
	wp6: Changemaking Provide new business models	Improve consumer awareness Certification to protect forest resilience	1,2,4,5,10, 12-15	Lead partner: EFI Deputy partners: INRAE, CAF
	wp7: Coordinating and managing	Intellectual Property Rights (IPR) plan Evaluation management tools		Lead partner: INRAE, CAF

Figure 2. eco2adapt at a glance (*Source: Tahamina Khanam, UEF*)

EbA ecosystem-based adaptation; LL Living lab; UN United Nations; wp work package; North Karelia 1; Thuringia 2; Freiburg 3; Landes Forest 4; French Guiana 5; Grisons 6; Solsones 7; Iedera 8; Valjevo and Lajkovac 9; Manina-Xeromero Forest 10; Dzukija 11; Hainan Island 12; Pingxiang 13; Mulanweichang 14; Hangzhou 15. ALUFR Albert-Ludwigs-Universitaet Freiburg, CAF Chinese Academy of Forestry, EFI European Forest Institute, ETHZ Eidgenoessische Technische Hochschule Zuerich, GCF Global Climate Forum e.V., INRAE National Research Institute for Agriculture, Food and Environment, IRD/UM Université de Montpellier, Institute for multidisciplinary Research, IMSI Institute for multidisciplinary Research, University of Belgrade, ICBR International Centre for Bamboo and Rattan, UEF University of Eastern Finland, Zhejiang Agricultural and Forestry University ZAFU

Finnish Forest Centre - A rubric on innovation.

FFC is a state-funded organisation covering the whole country. We are tasked with promoting forestry and related livelihoods, advising landowners on sustainable management of their forests and the ecosystems therein, operating inventory of Finland's forests and enforcing forestry legislation.

In Eco2Adapt we are waiting for the researcher's predictions with various climate scenarios: how our measures for maintaining biodiversity will succeed? How to manage e.g. young forests: to make a thinning cutting or not? How the biodiversity, resilience against disturbances and the sustainable allowable cut would develop in climate scenarios in these two alternatives?
Another thing is to develop a early warning system concerning bark beetle damage risks. We have high expectation for assessing forest status by implementing a near-real time monitoring system of natural disturbances at based on the integration of high-resolution satellite data and observed disturbance records within a neural network machine learning framework. In this work, we collect the reference data and the feedback from the forest managers in our living lab.

OUTREACH: WHAT IS PL@NTNET?

Pl@ntNet is a free digital tool that is available as a mobile and web application in 44 languages, and allows you to identify more than forty thousands of species of plants thanks to your photos. The images you send are automatically compared to the millions of images we have in our collaborative botanical databases. A list of plants is then proposed (Photo 5) and based on criteria (such as %likeness and geographical location) you choose which one is likely to be the plant you want to identify!

Illustration of the potential of Pl@ntNet for eco2adapt.

The most reliable observations from Pl@ntNet are now integrated into the GBIF international database (https://www.gbif.org/). The GBIF-Global Biodiversity Information Facility-is an international network and research infrastructure funded by the world's governments to provide free and open access to data on all life on Earth to everyone everywhere.

The publication of Pl@ntNet data on this infrastructure has allowed researchers around the world to use it to conduct research in ecology, agronomy or biodiversity conservation (370 publications based on Pl@ntNet data).

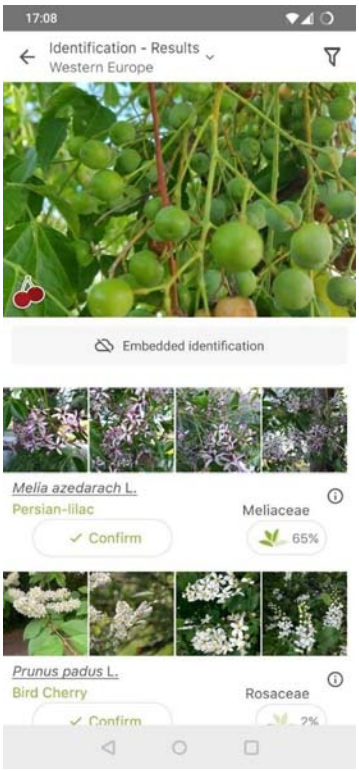

Photo 5. User interface of Pl@ntNet app (on right)

The impact of climate change on the distribution of plant species, the study of the spread of invasive alien species or the interaction of plants with pollinators are all research topics for which Pl@ntNet data will help to make a step forward.

Currently, Pl@ntNet manages 43 floras: 23 geographical ones, 6 thematic floras on

In each LL, citizens, associations, schools, universities and stakeholders will be asked to take photos to identify the species. The photos and GPS coordinates will then be shared through Pl@ntNet.

We will also develop a game for the general public. We will ask people to indicate remarkable trees in Living Labs, within Pl@ntNet groups (see Figure 3),

ornamental and cultivated plants, and 14 micro projects (see Figure 4) . In *eco2adapt*, to create a monitoring legacy via citizen science in the EU, Pl@ntNet will be used for invasive plant monitoring.

that can be found through an online Treasure Hunt game via Pl@ntNet. We will then create a networks of groups within Pl@ntNet (https://identify.plantnet.org/fr/groups).

Figure 3. Geographical distribution of Pl@ntNet groups across Europe

Figure 4. Distribution of the main geographical floras in Pl@ntNet

A Remarkable tree – Cembro pine growing at 1900 m altitude, Chamrousse, France (Photo 6). With its coordinates saved in a Pl@ntNet groups, mountain climbers can enjoy a Tree treasure hunt looking for this and other remarkable trees in the area.

(*eco2adapt* Contact at Pl@ntNet: Pierre Bonnet pierre.bonnet@cirad.fr; https://plantnet.org/en/).

Photo 6. A Remarkable tree – Cembro pine, Chamrousse, France

Insight: eco2adapt Chinese project

In March 2023, our Chinese partners defended their funding application to the Ministry of Science and Technology.

Photo 7. Photo of Dr. Yi Wang, Prof. Yong Pang, and Prof. Shuirong Wu (*From the left; Source: Yanzun Wang, CAF*)

Next coming events:

General assembly meeting (Astakos, Greece 11-13 July 2023).

Astakos (Αστακός) in the western part of Greece, located in the regional unit of Aetolia-Acarnania. It is a coastal town that overlooks the Ionian Sea and has a population of around 1,500 people, where the blue of the sea meets the green of oak forests and olive groves (Photo 8). The town is close to the valonia oak silvopastoral forest of Xeromero (*Quercus ithaburensis* subs macrolepis; Photo 9). This species is a forestry-landmark as it is well known since ancient times for hosting Zeus and many fairies.

Photo 8. Astakos, Greece *(Source: Georgios Tsarkos)*

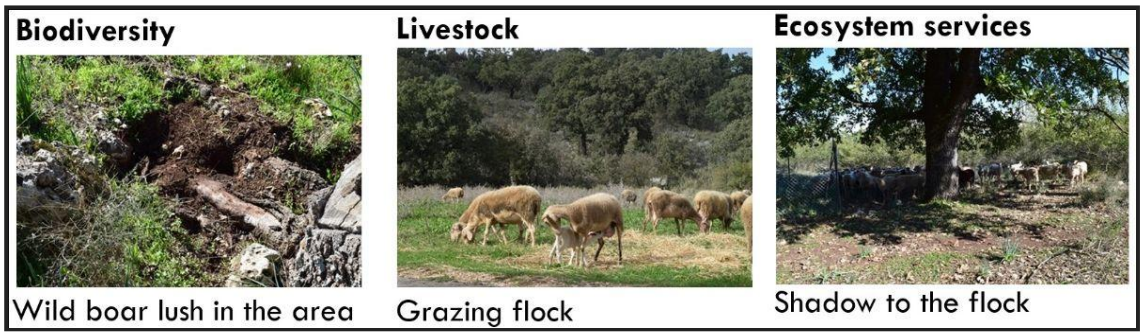

Photo 9. Valonia oak silvopastoral forest (*Source: Anastasia Pantera, AUA*).

Summer School on Remote Sensing Disturbances and Machine Learning

What? Welcome to apply to the summer school course on remote sensing and machine learning-based approaches to detect, predict and analyse changes in forests under climate change. The course will include theory lectures, practical exercises and a field trip to disturbed areas. Participants will have the opportunity to work in groups, learning how to retrieve remote sensing data, detect and analyse forest change, classify data, as well as making damage predictions.

Where? The summer school will be organised at the University of Eastern Finland in Joensuu (Finland) in collaboration with INRAE and the Horizon Europe Eco2adapt project.

When? The Summer School will take place from 7 to 18 August 2023.

How to apply? More information is under:

For more information For curriculum For organisation, logistics etc.


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