# C.A.F.E. | Carbon, Aqua, Fire & Eco-resilience Decision Support System



***C.A.F.E. determines the optimum silvicultural activities to manage multiple products, goods and services such as biomass production, C2 sequestration, fire risk, water provisioning , climatic resilience or biodiversity, for a selected solution.***

This tool determines the optimum silvicultural activities to manage multiple products, goods and services such as biomass production, CO2 sequestration, fire risk, water provisioning, climatic resilience or biodiversity, which are simultaneously quantified in time and space for a selected solution. Main advantages include:

- Changing the mono-objective approach in order to include a group of ecosystem goods and services.
- Improving the economic performance of low productive areas by quantifying and valorising other resources that could be remunerated attending to the environmental value.
- Holistic optimization of multiple goods and services out of forest management.
- Adequacy to the specific characteristics of each site.
- Multi-scalar results (plot, forest working unit, catchment, etc.).

C.A.F.E. is a tool that combines eco-hydrologic dynamic simulation with many-criteria optimization, where the user can carry out forest management according to more than one product at the same time, and choose the relevance of each objective/product. This software is capable of working under different climatic regions thanks to the previous calibration of the eco-hydrological simulation. Furthermore, it is possible to modify the spatial scale moving from plot to catchment, integrating a strong biophysical unit. In the same way, simulating different climatic scenarios is also possible. The result is a group of possible solutions among which forest manager can decide and apply.

## Подробиці

Походження деревини

Ліс

Тип деревини

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Потенціал для мобілізації

**Very positive**

Потенціал для сталості - Цінність

Дуже позитивно

Тип деревини

**All wood produced in the forest system (trunk, branches, roots).**

Легкість впровадження

**It is not easy to use, but we are developing user guides to make it easier.**

Вплив на навколишнє середовище та біорізноманіття

- Demonstration and replication of a successful, innovative forest management scheme at a watershed scale. At the beginning it will be applied at sub catchment level in Spain (415 hectares), then at catchment level in Germany, Portugal and Spain (7,824 hectares) and finally it will be further expanded up to 350,000 hectares within five years from the project completion.
- Reinforcement of mechanisms to develop climate change adaptation measures in rural areas and to ensure its socioeconomic sustainability;
- Increased water reserves of 45-200 l/m²/year and increased water availability downstream, leading to a reduction in energy extraction costs to 5 W/hm;
- Increased sustainable biomass production for bioenergy uses, between 10 and 15 t/ha year, including both forest and

Легкість впровадження - Оцінка

Середній

agricultural residues traditionally burned and usually the cause of wildfires.

- Reduced fire hazards by 30%, protecting rural populations currently residing in risk areas
- Increased resilience of 25% of forest areas to withstand droughts, pests and disease outbreak.

### Вплив на створення прибутку

**If the management objective is to maximise productivity, revenues will also be maximised.**

### Потенціал для використання

**High, as it is based on mechanistic modelling it can be applied in any climatic region. Furthermore, by including a wide range of ecosystem services, it can meet the needs of different types of forest management.**

### Концентратор

Південно-Західний вузол

### Економічний вплив

**The tool is free, so the economic impact is positive as you provide a very powerful management tool at 0 cost.**

### Потреба в особливих знаннях

**Knowledge of Geographic Information Systems is necessary to be able to prepare the input data for the tool.**

### Ключові передумови

**Input data for the chosen mechanistic model.**

**Decision variables.**

**Constraints to be applied.**

### Тип події, на якій було представлено цей BPI

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### Вплив на створення робочих місць

**The management that is proposed always generates jobs to carry it out.**

### Витрати на впровадження (Євро - €)

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## Детальніше

Виклик вирішено

1. Покращення стійкості лісів та їх адаптації до зміни клімату

Домен

Лісове господарство, лісівництво, екосистемні послуги, стійкість

Природні лісові катастрофи, ризики, реагування на назвичайні ситуації

Тип рішення

Моделювання, DSS, симуляції, оптимізація

Ключові слова

**Resilience/Networking/Decision support system(DSS)/**

Цифрові рішення

так

Інновація

Так

Країна походження

Бельгія

Масштаби застосування

Континентальний

Початок і кінець року

**2019 - 2023**

## Контактні дані


Власник або автор

**Technical University of Valencia**

**María González Sanchis**

**magonsa2@upv.es**

**https://www.iiama.upv.es/iiama/en/technology-transfer/software/cafe-i.html**

Репортер

**CESEFOR**

**Ángela García de Arana**

**angela.garcia@cesefor.com**


## REFERENCES AND RESOURCES

Основний веб-сайт

**http://www.resilientforest.eu/wp-content/uploads/2020/05/DSS-TOOL-.pdf**

Веб-сайт проекту

**https://www.resilientforest.eu/**

Посилання на проект

**The project LIFE RESILIENT FORESTS – Coupling water, fire and climate**

Ресурси

resilience with biomass production from forestry to adapt watersheds to climate change is co-funded by the LIFE Programme of the European Union under contract number LIFE 17 CCA/ES/000063

логотип кращої практики




логотип основної організації




Краща практика розроблена в рамках проекту

Rosewood 4.0

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## A TOOL FROM ROSEWOOD 4.0, DESIGNED AND DEVELOPED BY

