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.

DETALJER

VEDENS URSPRUNG

Skog

TRäTYP

--

TYP AV TRä

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

PåVERKAN På MILJö & BIOLOGISK MåNGFALD

- 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

MOBILISERINGSPOTENTIAL

Very positive

HåLLBARHETS POTENTIAL - VäRDE

Mycket positiv

ENKEL IMPLEMENTERING

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

ENKEL IMPLEMENTERING - UTVäRDERING

Mellan

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.

EKONOMISK EFFEKT

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

NYCKEL FöRUTSäTTNINGAR

Input data for the chosen mechanistic model.

Decision variables.

Constraints to be applied.

KOMMERSIELL POTENTIAL

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.

TYP AV EVENEMANG DäR DENNA BPI HAR PRESENTERATS

--

NAV

Sydvästra centrumet

EFFEKT ANTAL ANSTäLLDA

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

EKONOMISK PåVERKAN

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

KOSTNADER FöR IMPLEMENTERING (EURO - €)

--

SPECIFIKA KUNSKAPSBEHOV

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

MER INFORMATION

UTMANING SOM ADRESSERAS

1. Förbättra skogens motståndskraft och anpassning till klimatförändringar

DOMäN

Skogsförvaltning, skogskjötsel, ekosystemtjänster

Skogsskador, risker, katastrofberedskap

TYPE AV LöSNING

Modellering, DSS, simulering, optimering

NYCKELORD

Resilience/Networking/Decision support system(DSS)/

DIGITAL LöSNING

Ja

INNOVASION

Ja

UPPHOVSLAND

Belgien

POTENTIAL

kontinental

START OCH SLUTåR

2019 - 2023

KONTAKT INFORMASION

ÄGARE ELLER FöRFATTARE

Technical University of Valencia

María González Sanchis

magonsa2@upv.es

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

RAPPORTöR

CESEFOR

Ángela García de Arana

angela.garcia@cesefor.com

REFERENCES AND RESOURCES

HEMSIDA (HUVUDSIDA)

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

PROJEKTETS HEMSIDA

https://www.resilientforest.eu/

PROJEKTREFERENS

The project LIFE RESILIENT FORESTS – Coupling water, fire and climate resilience with biomass production from forestry to adapt watersheds to climate change is co-funded by the LIFE Programme of the European Union under

RESURSER

LOGO FöR BEST PRACTICE

LOGO, HUVUDORGANISATION

PROJEKT SOM DETTA FACTSHEET SKAPATS INOM

Rosewood 4.0

DATUM FöR INLäGG

8 sep 2021

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 862681

Link to Rosewood 4.0

A TOOL FROM ROSEWOOD 4.0, DESIGNED AND DEVELOPED BY