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.

DETTAGLI

ORIGINE DEL LEGNO

foresta

TIPO DI LEGNO

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TIPO DI LEGNO IN QUESTIONE

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

IMPATTO SULL'AMBIENTE E LA BIODIVERSITà

- 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

POTENZIALE DI MOBILITAZIONE

Very positive

POTENZIALE SOSTENIBILITà - VALORE

Molto positivo

FACILITà DI IMPLEMENTAZIONE

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

FACILITà DI IMPLEMENTAZIONE - VALUTAZIONE

Medio

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.

EFFETTO SUL REDDITO

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

PREREQUISITI CHIAVE

Input data for the chosen mechanistic model.

Decision variables.

Constraints to be applied.

POTENZIALE DI SFRUTTAMENTO

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.

TIPO DI EVENTO IN CUI QUESTO BPI è STATO PRESENTATO

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HUB

Hub sud-ovest

EFFETTO SUL LAVORO

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

IMPATTO ECONOMICO

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

I COSTI DI ATTUAZIONE (EURO - €)

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CONOSCENZE SPECIFICHE NECESSARIE

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

Più DETTAGLI

SFIDA RISOLTA

1. Migliorare la resilienza delle foreste e l'adattamento ai cambiamenti climatici

DOMINIO

La gestione forestale, selvicoltura, i servizi ecosistemici, resilienza
disturbi della foresta, i rischi, risposta ai disastri

TIPO DI SOLUZIONE

Modellazione, DSS, la simulazione, l'ottimizzazione

PAROLE CHIAVE

Resilience/Networking/Decision support system(DSS)/

SOLUZIONE DIGITALE

Sì

INNOVAZIONE

Sì

PAESE D'ORIGINE

Belgio

SCALA DI APPLICAZIONE

Continentale

INIZIO E FINE ANNO

2019 - 2023

CONTATTI

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REFERENCES AND RESOURCES

SITO PRINCIPALE

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

SITO WEB DEL PROGETTO

https://www.resilientforest.eu/

PROGETTO DI RIFERIMENTO

The project LIFE RESILIENT FORESTS – Coupling water, fire and climate resilience with biomass production from forestry to adapt watersheds to climate

RISORSE

change is co-funded by the LIFE Programme of the European Union under contract number LIFE 17 CCA/ES/000063

LOGO DELLE MIGLIORI PRATICHE

LOGO DELLA PRINCIPALE ORGANIZZAZIONE

PROGETTO NELL'AMBITO DEL QUALE QUESTA SCHEDA è STATA CREATA

Rosewood 4.0

DATA DI INSERIMENTO

8 Set 2021

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A TOOL FROM ROSEWOOD 4.0, DESIGNED AND DEVELOPED BY