

## Wood Chipping Machine for mountain territories in Emilia Romagna

### Riferimenti

Tipo di progetto  
Gruppo Operativo

Acronimo  
CLEAN-ER

Tematica  
Meccanizzazione

Information  
Time frame  
2019 - 2021

Durata  
24 months

Partners (no.)  
6

Regione  
Emilia-Romagna

Comparto  
Forestale

Localizzazione  
ITH51 - Piacenza  
ITH52 - Parma

Costo totale  
€192.593,03

Fonte di finanziamento principale  
Programma di sviluppo rurale

Programma di sviluppo rurale  
2014IT06RDRP003: Italy - Rural Development  
Programme (Regional) - Emilia Romagna

Parole chiave  
Soil management / functionality  
Waste, by-products and residues management  
Farming equipment and machinery  
Forestry

Project status  
completed



### Objectives

- Construction of a small chipping machine to be used in mountainous wooded areas .
- Enhancement of chipped biomass by the action of a micro carboniser capable of converting it into thermal, electric energy and biochar.
- Use of biochar as a soil improver to improve the chemical-physical properties of the soil including the cation exchange capacity, the pH, and in particular the water retention capacity.
- Assessment of the environmental benefits obtainable from the pyrolysis of biomass for energy (syngas) and agronomic (biochar) purposes, in terms of increasing the carbon stock in the soils and reducing greenhouse gas emissions.

### Activities

- Construction of a small wood chipping machine for application in mountain territories
- Collection of wood biomass from mountain forests and their pyrolysis to obtain energy and biochar
- Application of biochar to soil to improve soil structure and soil quality
- Assessment of the environmental impacts associated with the plan following the life cycle assessment approach

Partenariato

Role	Azienda	Address	Telephone	E-mail
Leader	CIDEA Università di Parma	Parco Area delle Scienze, 42 43124 Parma PR Italy	0521 905885	alessandro.pironi@unipr.it
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Partner	Consorzio Interuniversitario Nazionale per le Scienze Ambientali	Parco Area delle Scienze 43124 Parma PR Italy	0521 905606	cinsa@unipr.it
Partner	Centro di Formazione e Innovazione "Vittorio Tadini"	Località Vignazza, 15 29027 Podenzano PC Italy	0523 524250	
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## Pratiche abstract

### Description

The general objective of the project is the conversion of woody/shrub biomass of low economic value located in mountain areas, in a logic of closed supply chain and energy valorisation. These are the processing residues of forests, stored in sites which, in addition to being dangerous causes of forest fires, tend to hinder mobility through the wooded area and, moreover, stifle the development of undergrowth products such as mushrooms and forest fruits. The removal of these residues requires a reduction in size by chipping, to obtain a biomass that is easy to transport and store. The project proposes an innovative organizational solution starting from the conversion of woody/shrub waste biomass located in mountain areas, with an innovative prototype chipping machine, of small dimensions (for use in mountainous wooded areas where the conditions of slope and presence of standing plants are not an obstacle to the passage of the vehicle), to obtain a biomass that is easy to transport and store and subsequently to be partially valorized with the conversion into thermal, electric energy and biochar, in the logic of a circular supply chain. The subsequent use of biochar to close the

cycle not only favors fungal and undergrowth production, with benefits on soil quality, reduction of greenhouse gas emissions and nutrient use efficiency, but also sequestration of carbon in soil.

### Link utili

Titolo/Descrizione	Url	Tipologia
Pagina dedicata al progetto sul sito del Capofila	<a href="https://www.centrotadini.com/progetti/clean-er">https://www.centrotadini.com/progetti/clean-er</a>	Link ad altri siti che ospitano informazioni del progetto
Sito web del progetto	<a href="https://marcoerrani.wixsite.com/website-1/clean-er">https://marcoerrani.wixsite.com/website-1/clean-er</a>	Sito web
Video del progetto	<a href="https://www.youtube.com/watch?v=PK9zjiRSQ1c">https://www.youtube.com/watch?v=PK9zjiRSQ1c</a>	Materiali utili
Linee guida	<a href="https://f605ee78-19b6-423d-bc52-2f681c3290f3.filesusr.com/ugd/e49043_1b4bc6155f...">https://f605ee78-19b6-423d-bc52-2f681c3290f3.filesusr.com/ugd/e49043_1b4bc6155f...</a>	Materiali utili