



LIFE Eucalyptus Energy - Eucalyptus  
Integrated Wood Processing Project

LIFE12 ENV/ES/000913



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Project description:

Background

In the EU, Spain and Portugal are significant producers of eucalyptus, with a total combine cultivated area of 1.4 million ha. Eucalyptus is one of the most common sources of short fibres for the production of wood pulp for making paper. Other products that can be obtained from the tree include charcoal and biochar, dyes and eucalyptus oil.

Eucalyptus plantations generate a significant amount of biomass residues in the form of branches and leaves – estimated for Spain and Portugal at some 2.8 million tonnes/yr. Tree residues left on the forest floor increase the risk of forest fires. Simple disposal methods such as burning on site can also create or contribute to other environmental hazards, including soil erosion and emission of pollutants. Risks of erosion and poor soil quality can be already high because eucalyptus plantations tend to be on relatively steep slopes.

However, there is potential to transform the waste eucalyptus branches and leaves to make new products locally. As well as using them as a source for extracting some of the standard products associated with eucalyptus trees, they could also provide a source of biomass for generating heat and electricity.

Objectives

The project aims to increase the efficiency of the valorisation of eucalyptus

biomass. By adding value to leaves and branches that would otherwise be treated as waste, it hopes to improve the sustainability of eucalyptus forests/plantations. This should improve the quality of the forest, reducing waste and environmental threats at the same time as improving the economic activity of rural areas.

Specific objectives of the project include:

- Undertaking a technical and economic analysis of electricity production from eucalyptus branches and leaves. It will work to optimise the efficiency and sustainability of this electricity production;
- Developing intelligent pellets using biochar and studying their effectiveness as a carbon storage tool through a complete carbon balance of the project. It will test its reliability and examine the potential use of biochar as a biofuel;
- Improving the recovery of valuable products from a pyrolysis plant – which is used to produce charcoal from eucalyptus. Notably, it hopes to demonstrate its potential as a biorefinery, by using the organic phase of the pyrolysis liquids as a biofuel and for producing valuable chemicals;
- Integrating the whole processes of: biomass harvest; pyrolysis; syngas clean-up; electricity generation; and biochar utilisation; and
- Exploring the potential of using other biomass sources, such as municipal green waste or agricultural residues, to supplement the eucalyptus material.

The project expects to demonstrate improved sustainability of eucalyptus forests, with positive impacts on soil fertility, wood yields, soil erosion, tree diseases and forest fires. It will hope to show these environmental advantages together with increased economic activity in rural areas and an analysis of the social effects of the full implementation of this project in Spain.

Expected results: The project expects to achieve the following results:

- Production of 1 176 Gwh/yr of renewable electricity from eucalyptus biomass;
- Prevention of 403 million tonnes of CO<sub>2</sub> emissions/yr by replacing fossil fuel;
- Production of 280 000 tonnes/yr of biochar as a carbon sink;
- Removal of 1 120 million tonnes/yr of CO<sub>2</sub> from the atmosphere;
- Production of valuable oils and chemicals;
- Additional CO<sub>2</sub> emissions reductions from other biomass sources such as municipal green waste or agricultural residues;
- Improved soil quality and reduction of risk of forest fires; and
- More sustainable rural economic activity and social benefits.

Results

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Environmental issues addressed:

Themes

Industry-Production - Wood - Furniture

Waste - Waste recycling

## Keywords

renewable energy, by-product, use of waste as energy source, waste recycling, wood

Natura 2000 sites

Not applicable

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## Beneficiaries:

Coordinator	Ingeniería de Mantenición Asturiana, S.A.
Type of organisation	SME Small and medium sized enterprise
Description	INGEMAS is a private company that provides a variety of technical services to industry, including consultancy, operations and logistics, software solutions, and the design, implementation and management of projects.
Partners	Anergy Limited, United Kingdom ASMADERA, Spain Fundación Cartif, Spain

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## Administrative data:

Project reference	LIFE12 ENV/ES/000913
Duration	02-SEP-2013 to 02-SEP -2017
Total budget	1,776,197.00 €
EU contribution	845,098.00 €
Project location	Galicia(España) Asturias(España) Cantabria(España) País Vasco(España) Navarra(España) Rioja(España) Aragón(España) Madrid(España) Castilla-León(España) Castilla-La Mancha(España) Extremadura(España) Cataluña(España) Comunidad Valenciana(España) Balears(España) Andalucía(España) Murcia(España) Ceuta y Melilla(España) Canarias(España) North(United Kingdom) Yorkshire and Humberside(United Kingdom)

East Midlands(United Kingdom) East  
Anglia(United Kingdom) South East (UK)(United  
Kingdom) South West (UK)(United Kingdom)  
West Midlands(United Kingdom) North West  
(UK)(United Kingdom) Wales(United Kingdom)  
Scotland(United Kingdom) Northern  
Ireland(United Kingdom) Gibraltar(United  
Kingdom)

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