FOREST4EU

ITHub 5 – Agroforestry Systems

FOREST4EU partner: SOLUTOPUS

OG: GOTECFOR

OG's country: Portugal

Type of Innovation: Technological innovation

Technology for the mobilization and use of forest biomass in agroindustry

Introduction

TECFOR was a OG from the initiative of a foresters association, in collaboration with SMEs and research institutes. The main objectives were: *Promote the use of forest biomass (FB) for valorization of the forest and territory and increased productivity/interconnection among agroforestry activities; • Reduce costs associated with associated production activities to protected crops (heat needs); • Promote comprehensive management of forest resources and value products considered residual, in order to reduce imports of fossil fuels; • Promote the use of more efficient, safer and more suitable machines and equipment for the Portuguese reality; • Promote the development of new sustainable, low-carbon and more efficient value chains in terms of use of resources; • Stimulate innovation and technological development to provide response to the needs of the various agents related to the use of FB. More specifically, it intended to identify technological development solutions that contribute to overcoming existing barriers; to test existing technical solutions for collecting FB in a more efficient - Identify the main obstacles to along the value chain and test support tools within the scope logistics processes to optimize the supply chain; to propose integrated models of energy production solutions depending on the type of consumers; to disseminate appropriate techniques and technologies for the use from FB and apply results from the European FOCUS project to manage the biomass supply chain in Portugal.

Results

The results highlighted by the team are: 1) a roadmap for floral biomass processing equipment that can be presented to forestry companies; 2) Biomass mobilization models will be presented as best practices for forest owners; 3) The application of biomass management software will give the percentage of efficiency that the forestry company "Floresta Jovem" obtained in terms of lower operational and logistical costs whose preliminary results are estimated at 9% efficiency in relation to previous biomass management; 4) For the agroindustry, in the case of "Floralves", it is expected that the cost associated with the acquisition of forest biomass (chip) decreases by 82% relative to natural gas. The amortization of the investment of the Biomass boiler is not included in the calculations. Eventually, "Floralves" productivity may decrease with the use of forest biomass as a source of fuel, in relation to the previous use of natural gas; 5) To improve productivity,

physical or mechanical reduction of CO2 emissions from the biomass boiler, using a cyclonic separation method that removes particulate matter. Ash from the biomass boiler is being used by "Floralves" as fertilizer for land near the greenhouse. They are not used in greenhouses, as flower production is hydroponic. The team considered very valuable the achieved benefits (environmental, economic, social); a special emphasis is put on the networking skills.

Lessons learned

Transferability of the results and methodology is real, due to some similarities among regions and countries (e.g. among north Portugal and Galiza/Spain). The technological innovation through demonstrations is a vehicle to interact with other EU Projects where the problematic is similar. The valorization of forest biomass for heating greenhouses brings together forest owners, forestry companies and agribusinesses around the use of a natural resource, renewable energy and which is currently little used economically, in accordance with the principles of the circular economy. This approach, which values the forest and reduces energy costs of companies, calls the attention to: a) Lack of more efficient collection, planning and transport models forest biomass; b) Lack of more adapted and automated machines to reduce costs, increase safety and reduce operator effort forestry, during the collection and pre-processing of biomass and to c) Lack of resizing, adaptation or alteration of greenhouse heating equipment for the use of biomass forestry chip, increasing efficiency and reducing costs energy.

The information presented in this factsheet was developed by the FOREST4EU partner, drawing on the innovations and knowledge generated by the indicated operational group with their explicit authorization.

Further information

https://gotecfor.pt/publications

Funded by the European Union

Funded by the European Union (Grant n. 101086216). Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or REA. Neither the European Union nor the granting authority can be held responsible for them.