HORIZON 2020

Sustainable exploitation of biomass for bioenergy from marginal lands in Europe

Results in Brief

Methods and tools to exploit the high potential of renewable resources from marginal lands in Europe

Underused land with low soil quality can be exploited for biomass production. An EU-funded project has introduced new approaches to identify sustainable ways to use bioenergy from marginal lands (MagLs), thereby minimising potential conflicts with food production or biodiversity conservation.

CLIMATE CHANGE AND ENVIRONMENT

FOOD AND NATURAL RESOURCES

ENERGY

© Werner Gerwin

MagLs show great potential for producing bioenergy from biomass and for minimising food versus fuel competition in agriculture. However, clear definitions and assessment methods for selecting MagLs for biomass production and for calculating their potential are still widely missing.

The EU-funded SEEMLA project set out to establish suitable innovative land use strategies for sustainable production of plant-based energy on MagLs while improving general ecosystem services. “Our goal was the sustainable exploitation of biomass from MagLs that aren’t used for food or feed production and don’t pose an environmental threat,” says coordinator Diego Piedra-Garcia.

Novel approach to exploiting MagLs for biomass production

SEEMLA applied an approach consisting of an integrated set of biophysical criteria

to define land marginality and assess their potential for biomass production for bioenergy. The approach was pilot tested in Germany, Greece and the Ukraine where different bioenergy crops were cultivated under marginal site conditions. Proposals and feedback from regional stakeholders like farmers and foresters helped to refine the approach and increased awareness of local supply chains.

Project partners assessed the availability and suitability of MagLs as alternative production sites for renewable resources. They also evaluated the degree of marginality using the Muencheberg soil quality rating (SQR tool) to assess soil fertility as a key factor in determining marginality. This method led to the development of a geographic information system (GIS) tool that maps MagLs across Europe and a web-based application that assists in identifying and exploiting MagLs for biomass production.

Researchers devised marginality criteria and indicators based on the SQR index, and applied SQR methods to the GIS tool to assess MagL availability in Europe. To propose suitable crop species, they produced a catalogue of bioenergy crops appropriate for growing on MagLs and incorporated it into the tool. A web-based SQR calculator consisting of the criteria and indicators measures land marginality of a given land parcel.

Guaranteeing environmental and socioeconomic viability

To ensure the sustainability of current practices, SEEMLA partners performed a comprehensive environmental assessment and a socioeconomic assessment. The obtained assessments were performed on pilot cases in Lusatia (Germany), East Macedonia and Thrace (Greece), and Vinnitsa, Poltava, Volyn and Lviv (Ukraine). They revealed clear advantages and disadvantages of using MagLs for bioenergy production.

The team also identified, implemented and evaluated best practices for biomass production on MagLs. They then transferred these good practice scenarios to underused MagL stakeholders via events like workshops and conferences.

Lastly, evaluation of EU and national policies of the three target countries led to recommendations for direct policy changes. These specific proposals are considered necessary for development of a consistent EU policy regarding bioenergy production from MagLs. A guidebook for farmers presents directions for sustainable exploitation of MagLs for bioenergy production.

“SEEMLA successfully demonstrated the sustainable exploitation of biomass production and convinced key stakeholders of MagL potential by providing land use tools and raising awareness of this widely neglected option,” concludes Piedra-Garcia. “Landowners and farmers will have the opportunity to develop a new branch

for their local economies because the produced energy resulting from the exploitation of MagLs will be used at regional level.”

Keywords

SEEMLA | land | biomass production | bioenergy | farmers | bioenergy production | marginal land | bioenergy crops | soil quality rating

Discover other articles in the same domain of application

Permaculture and aquaponics allow Europeans a smart way to source food

4 October 2019

Tackling aquaculture’s health challenges with seaweed

28 March 2025

Technologies and tools to reduce agricultural pests in Europe and China

28 January 2020

Closed loop toilet can turn urine into treated water

20 March 2020

Project Information

SEEMLA

Grant agreement ID: 691874

Project website

DOI
10.3030/691874

Project closed

EC signature date
3 December 2015

Start date
1 January 2016

End date
31 December 2018

Funded under
SOCIETAL CHALLENGES - Secure, clean and efficient energy

Total cost
€ 1 629 883,75

EU contribution
€ 1 629 883,75

Coordinated by
FACHAGENTUR NACHWACHSENDE ROHSTOFFE EV
Germany

This project is featured in...

27 May 2019

Related articles

NEWS

SCIENTIFIC ADVANCES

Unlocking the market potential of community bioenergy

11 March 2022

Last update: 23 May 2019

Permalink: https://cordis.europa.eu/article/id/303128-methods-and-tools-to-exploit-the-high-potential-of-renewable-resources-from-marginal-lands-in