



SEEMLA Newsletter - July 2018

Dear reader,

SEEMLA is approaching the last 6 months of its implementation... Pilot case studies in Germany, Greece and Ukraine are ongoing, life cycle assessment is being performed and first results deriving from the GIS-tool could be presented.

It has been a very active first half of 2018, and SEEMLA has elaborated several publications in e.g. BE Sustainable, Biobased Future, or the open access journal SOIL. Moreover, the 2nd International Symposium entitled "Sustainable biomass production from marginal lands: Potentials and challenges in the European context" was held as side event on the occasion of the European Biomass Conference and Exhibition (EUBCE) in Copenhagen on 15 May, 2018. The half day workshop was divided into three sessions: the status in SEEMLA, other projects that are also focusing on the use of MagL for bioenergy production, e.g. FORBIO and MAGIC, as well as BonasRES Signal, GRACE and CPEP, and future perspectives and the significance of MagLs have been highlighted, also by the EC's R&I DG.

SEEMLA is especially actively collaborating with the H2020 partner project FORBIO. Both projects will end this year and will present their main outputs soon. Hence, another exciting 6 months are ahead of SEEMLA, preparing the final conference and offering two more free SEEMLA webinars.

We are looking forward to keeping you informed and welcoming you at one of our events.

On behalf of the SEEMLA consortium,

Best regards,
Wibke Baumgarten
(FNR)

 **Focus**

SEEMLA actively participated in the 26th European Biomass Conference and Exhibition (EUBCE) in Copenhagen, hosted by ETA-Florence, by contributing to the plenary event and by organizing its Second International Symposium.

This event brought together the SEEMLA project partners with other European funded projects as Forbio, Magic, Bonares and Grace. SEEMLA focused on the mitigation of bioenergy and food security competition. Furthermore, during the event were shown the experience producing energy crops on former mining sites in Vietnam. Finally, Nils Rettenmaier, from the Institute for Energy and Environmental Research (IFEU) was chaired the Panel about the role of bioenergy in the European policy

In the following you can find the plenary contribution and a report about the Second International Symposium.

REVEALING BIOENERGY POTENTIALS: MAPPING MARGINAL LANDS IN EUROPE: THE SEEMLA GIS-TOOL



Marginal land (MagL) use for biomass production has received a lot of attention in the past decades. This alternative land use is free from conflicts with food crops, however it presents multiple challenges. The major issue to be resolved is the definition of marginal lands, which varies between disciplines and is often determined based on management goals. Moreover, concerns over the impacts of MagL use on environment, ecosystem services and sustainability have to be addressed.

In response to these issues, the SEEMLA approach proposes an algorithm and tools to support MagLs identification and mapping, as well as the assessment of their potential for biomass production. The SEEMLA algorithm assesses land marginality using the Muencheberg Soil Quality Rating (M-SQR) developed by Mueller et al. (2007). The algorithm also incorporates criteria to eliminate MagLs that may not be exploitable for bioenergy due to ecological and environmental issues or regulatory and legal restrictions or constraints posed by national or EU policies applied. Finally, MagL which is suitable for bioenergy production is categorized based on climatic zone and crop suitability.

Alternative exploitation scenarios are developed for each class of MagL. Life Cycle Assessment (LCA) will determine the sustainability of each scenario, considering also the results of the pilot sites that have been established in Germany, Greece and Ukraine.

Purpose of the work and approach

The SEEMLA project aims to develop an approach for the reliable and sustainable exploitation of biomass from marginal lands (MagL), which are neither used for food nor for feed production and are not posing any environmental threat. The SEEMLA algorithm was developed to that end.

The first step was to define MagL in a clear and objective manner based on land productivity. This was provided by the M-SQR which incorporates soil quality, topography (slope) and climate (soil thermal & moisture regimes). M-SQR scores range from 0 (very poor soil conditions) to 100 (very good soil conditions). Considerations regarding e.g. nature protection or restrictions posed by other applied policies, were translated into elimination criteria to identify MagL that can be used for bioenergy production. The ecological requirements of specific bioenergy crops were then investigated in order to determine which crops are suitable for each MagL according to marginality type. A GIS tool and a web platform (<http://www.seemla.eu/wa/>) were developed to support this process. Also pilot sites were established in order to provide insight into the requirements, constraints and cost-efficiency of cultivating bioenergy crops in Germany, Greece and Ukraine.

The economic evaluation and overall Life Cycle Assessment (LCA) will provide the necessary input for the sustainability assessment of the exploitation scenarios of each class of MagL. The scenarios include the most common exploitation practices of each final bioenergy crop product and in addition the energy crop are categorized along with their key elements to reflect three priorities: environmental, economic and logistic.

Scientific innovation and relevance

The SEEMLA approach is an integrated set of processes, analyses and tools that incorporates environmental, ecological, social, economic and biophysical criteria. It addresses the need to assess biomass potentials and land availability at local, regional, national or EU level by taking into account aspects of resources mapping and biomass logistics.

Furthermore, the SEEMLA approach incorporates the development of exploitation scenarios for MagL types and the sustainability assessment of each one, in order to support land use planning (policy development) at regional, national and international level.

Preliminary results and conclusions

Approximately 45% of the total EU area are considered marginal (220 Mha) but only 13% can be used for biomass production (63 Mha), based on the preliminary results of the SEEMLA GIS tool. The remaining 32% are not considered exploitable due to various constraints. This percentage may be even smaller when data validation and crosschecking with field observations will be completed.

The results from the pilot sites will provide data on the cost-efficiency of cultivating MagL for biomass as well as data for the LCA that will result in the sustainability assessment process of the exploitation scenarios. Issues related to the accuracy of the results are still under investigation, which will be addressed during the sensitivity and uncertainty analysis in order to optimize the GIS tool. However, based on the preliminary results, the overall area of MagL availability for biomass production after further investigation is expected to be sufficient to sustain biomass production at industrial scale in Europe.

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THE SECOND SEEMLA INTERNATIONAL SYMPOSIUM AT EUBCE 2018



The 2nd SEEMLA International Symposium was held in Copenhagen on 15th May during the EUBCE, the 26th European Biomass Conference organised by ETA Florence.

The symposium was divided into three panels: the first one on the SEEMLA project and its interim results, the second one on other projects in the field of marginal land and the third one on policies around bioenergy and marginal lands.

In the first panel, the results achieved by the project during the first two years were illustrated, highlighting the so-called "SEEMLA approach", an integrated set of processes, analyses and tools that incorporate environmental, ecological, social, economic and biophysical criteria, with its main objective: the biomass production avoiding the "food vs. fuel" conflict.

The SEEMLA approach, implemented by the project, started with the identification and mapping of the marginal lands in Europe and then assessed the yield potential of bioenergy crops grown on marginal lands.

One of the aspects which was addressed was related to the environmental and socio-economic impacts of bioenergy from lignocellulosic crops grown on marginal land in Europe, which were examined through the Life Cycle Assessment tool, supplemented by a Life Cycle Environmental Impact Assessment (LC-EIA), and able to adequately address local environmental impacts.

Another useful tool - and one of the most challenging parts which was realized by the project - is the SEEMLA Web application which provides assistance on the identification of marginal lands and its exploitation potential for biomass production.

The web application works as an M-SQR calculator for localized assessments: the assessment of the soil is measured, the application calculates the M-SQR value and determines whether the land is marginal and which bioenergy crops can be grown on this specific parcel.

The second panel involved other European and national projects related to the issue of bioenergy. These included representatives from FORBIO (Fostering sustainable feedstock production for advanced biofuels on underutilised land in Europe), MAGIC (MArginal Lands for Growing Industrial Crops), GRACE (GRowing Advanced Industrial Crops on marginal lands for biorEfineries), SIGNAL (Sustainable intensification of agriculture through agroforestry in Germany), and a project on the "Cultivation of energy crops on former mining sites in Vietnam".

The last panel focused on policies: first, Maria Georgiadou, from the Renewable Energy Sources Unit of the European Commission (DG Research & Innovation) provided the European point of view on clean energy innovation and about opportunities and challenges for bioenergy & renewable fuels in the European context. The symposium ended with an open discussion, which involved the key representatives of the meeting.

In all three panels, it became clear that further research is necessary since there is still a number of challenges connected with marginal lands. The moderator of the panel identified the following three ones:

First of all, marginal land needs to be defined (which is far from easy) and identified in a spatially explicit manner using GIS tools. As said above, the SEEMLA GIS tool aims exactly to quantify and localise marginal lands in Europe, using biophysical criteria to map them. By the way, there is still a big remaining challenge which is to identify unused marginal land since only unused marginal land is 'iLUC-free', i.e. doesn't lead to conflicts with food and feed production.

Secondly, agronomists and plant breeders need to identify and provide suitable crops and varieties that can with the harsh growing conditions on marginal land. A successful cultivation of non-food crops is the cornerstone of a successful value chain. This can be regarded as a bottom-up approach from the field to the market.

However, thirdly, it is also necessary to take a top-down view from a market perspective (in terms of biomass composition and quality) back to the field in order to select suitable crops for which there is a market demand.

Today, we are in a chicken-and-egg situation: there is relatively little cultivation of perennial crops because farmers need long-term contracts with biomass users, which in turn don't consider using perennial crops because there are only small quantities of such biomass available. With regard to marginal land, biomass logistics play a crucial role since it is expected that marginal land is often scattered in the landscape, consisting of small plots and not properly connected to the road network. This might require extra efforts regarding storage (e.g. technical drying and pelleting) which increase costs for the biomass user.

Another important conclusion is related to the environmental assessment. The discussion showed that bioenergy from marginal lands can provide potentials for climate change mitigation together with comparatively low (other) environmental impacts – as far as typical LCA impact categories are concerned. However, LCA is not (yet) able to adequately address local environmental impacts, e.g. negative impacts on biodiversity, water and soil. Thus, a potential conflict between climate change mitigation and prevention of (further) biodiversity loss was identified. That means decision makers should not only take into consideration the Paris Agreement but also lower the rate of biodiversity loss, a planetary boundary which humanity has already transgressed.



News

Seemla survey invitation: tell us about your experience about marginal lands and biomass exploitation

Dear friends, we invite you to participate in a brief survey regarding the exploitation strategy of marginal land for bioenergy purposes. The purpose of this questionnaire is to get feedback on the approach developed through the SEEMLA project.

Please click the link below to go to the survey web site (or copy and paste the link into your Internet browser).

<https://ec.europa.eu/eusurvey/runner/SEEMLASurvey2018>

The questionnaire will be open until 06/08/2018 so please provide your input before that time. Your participation in the survey is completely voluntary and all of your responses will be kept confidential. Thank you very much for your time and cooperation!

Mapping marginal land for bioenergy: the SEEMLA approach

“Biobased future”, a newsletter from the International Energy Agency (IEA) published an article about “Mapping marginal land for bioenergy: the SEEMLA approach”.

Thanks to the authors: S. Galatsidas, N. Gounaris, D. Vlachaki, E. Dimitriadi from the Democritus University of Thrace, and C. Volkmann, FNR.

Read the article [HERE](#)

BE-Sustainable magazine: Unveiling the bioenergy potential of marginal lands through geospatial analysis

BE-Sustainable has just published an article about the SEEMLA GIS-tool, entitled “unveiling the bioenergy potential of marginal lands through geospatial analysis”.

Thanks to our partners for their contribution: Dr. Spyridon Galatsidas, DUTH, Greece; Nikos Gounaris, DUTH, Greece; Despoina Vlachaki, DUTH, Greece; Elias Dimitriadis, DUTH, Greece; Dr. Christiane Volkmann, FNR, Germany; Dr. Wibke Baumgarten, FNR, Germany.

Click [HERE](#) to read the article.

Seemla keynote speech was held during the “Industrial Crops in Evros” workshop (Orestiada, Greece)

On 14 March 2018, the Department of Biomass of the Centre for Renewable Energy Sources and Saving (CRES) of Greece, in collaboration with the Faculty of Agricultural Sciences and Forestry of Democritus University of Thrace, organised a workshop about “Industrial crops in Evros prefecture”. The workshop took place in the framework of the projects *Magic* “Marginal lands for Growing Industrial Crops” and *PANACEA* ‘Non Food Crops for a EU Bioeconomy’ and Decentralised Administration of Macedonia and Thrace-**DAMT** was invited to participate with a presentation about the SEEMLA project. [READ MORE](#)

BE-Sustainable magazine: The potential of marginal lands for bioenergy

A SEEMLA article about the potential of marginal lands for bioenergy has been published from BE-Sustainable, a magazine from the ETA-Florence Renewable Energies.

Thanks to the authors: Dr. Werner Gerwin (BTU), Germany, Dr. Vadym Ivanina (IBC&SB), Ukraine, Dr. Frank Repmann (BTU), Germany, Dr. Christiane Volkmann (FNR), Germany and Dr. Wibke Baumgarten (FNR), Germany.

Read the full article [HERE](#)



Upcoming events in SEEMLA – Save the date!

November 2018 (date to be defined): Seemla final conference in Bruxelles

Dear followers,

following the new General Data Protection Regulation ("GDPR"), that came into effect last May 25, 2018, we inform you that the personal data and email address collected from the interested party or from public sources will be processed by LEGAMBIENTE ONLUS, on behalf of the Seemla project, for the purpose of sending communications about our services and will be saved as long as there is a mutual interest to do so. The data will not be shared with third parties, except when required by law. We inform you that you can exercise the rights of access, rectification, portability and deletion of your data and those of limitation and opposition to their processing by contacting f.barbera@legambiente.it

You can also cancel your registration at any time or change your data, by sending an email to: seemla-leave@newsletter.legambiente.it

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