



## MAIL Newsletter 2

### Editorial —

Dear friends and colleagues,

Welcome to the new issue of the MAIL (Identifying Marginal Lands in Europe and strengthening their contribution in a CO<sub>2</sub> sequestration strategy, GA No. 823805, H202-MSCA-RISE-2018) project newsletter. MAIL is a cooperation European project funded by the Research Executive Agency (REA). This is the second of a total of six newsletters over the course of the MAIL project. The 2<sup>nd</sup> issue presents a brief outline of the progress that has been achieved over the previous period, focusing in the definition of marginal lands, and the investigation and collection of available datasets.

Since the official start of the MAIL project almost one year ago, there have been significant advances in defining marginal lands in the context of the project and collecting and evaluating the freely available datasets. Furthermore, the first steps for the development of the methodology and workflows for the detection of marginal lands in a European level have been implemented. In addition, an extensive literature review consistent with the IPCC methods and UNFCCC requirements was performed focusing on the estimation of different carbon stock types in a forest. Finally, there was great progress towards the definition and monitoring of the financial, social, environmental and technical aspects of the sustainable development of marginal lands and investigating the potentialities of emerging stock exchange markets for carbon transactions and proposed policies.

During the 1<sup>st</sup> year of the project a total of 10 secondments adding to 24 person months were implemented.

I believe that this brief review of technical progress included in our 2<sup>nd</sup> newsletter, is a good opportunity for us to present our activities and results, exchange information with you and create awareness in management and usage of marginal land as potential carbon stocks.

Please do not hesitate to send your suggestions on this publication as well as on project activities.

**Petros PATIAS**

MAIL Coordinator

Director of AUTH's Laboratory  
of Photogrammetry and Remote Sensing

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### Editorial Board —

EDITORIAL -P. Patias, Ch. Georgiadis,  
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### – The MAIL project —

The global climate change is a worldwide problem where its mitigation is one of the 17<sup>th</sup> Sustainable Development Goals of the UN. An effective mitigation strategy should assess all the possible sustainable actions that can contribute to this direction. A challenging and very prominent contribution to raise CO<sub>2</sub> sequestration could come from the Land Use Land Use Change and Forestry sector (LULUCF sector) and the utilization of Marginal Lands (MLs) that today are widely available in the EU. MLs can play significant role as potential Carbon Sinks. Especially those on mountainous and semi-mountainous areas (m/sm MLs) are of great capacity and can contribute actively to that goal having no effect in the agri-food production sector. Even though MLs' contribution is acknowledged the influence of their active inclusion in the climate change mitigation strategies has not yet been estimated in depth.

MAIL focuses on m/sm MLs in order to classify them into Carbon sequestration capacity categories based on innovative approaches fully consistent with the IPCC methods and the UNFCCC requirements. The final goal is to deliver a methodology and application set in a web-based platform format, which will be valuable for policy makers, stakeholders or researchers. Free open access data of other EU initiatives will be combined, (land cover, soil, topography, climate, etc.) in order to detect the potential existence of m/sm MLs. These, will be further examined, validated and classified in Carbon sequestration capacity groups through stratified field sampling. State of the art remote sensing (RS) techniques and free open access satellite images with improved spatial and radiometric resolution will be used in order to augment the accuracy of the produced pilot thematic maps. In addition, actions that have to be taken in order to increase the Carbon sequestration capacity will be proposed, while their feasibility will be assessed. A final methodology will be delivered for on-demand production of thematic maps within Europe.





## 1<sup>st</sup> project meeting

The 1<sup>st</sup> project meeting was held in Soria, Spain, from the 22<sup>th</sup> until 23<sup>th</sup> October 2019. The meeting was hosted by CESEFOR. All the consortium partners were present at the 1<sup>st</sup> project meeting. During the first day representatives from all consortium partners discussed about the progress achieved during the first year of the project. The meeting focused on the following issues:

- Definition of marginal lands
- Methodology development for the detection of marginal lands
- Financial, social, environmental and technical aspects of the sustainable development of marginal lands.
- Potentialities of emerging stock exchange markets for carbon transactions.

During the second day of the meeting discussions were focused on forming the work plan for the year 2020,

secondments, research activities, pilot case studies, dissemination and awareness. In the afternoon the CESEFOR Foundation has organized a field trip to show examples marginal lands in Soria and ongoing restoration projects. During these two days 11 people from 6 entities (AUTH, HOMEOTECH, CESEFOR, IABG, UPV, CBK PAN) participated in meetings and presentations.



The "Literature review and existing models report" (Task 2.1) aims to set the basis for the definition, under MAIL scope, of the term Marginal Land.

Although the concept of Marginal Land has been broadly applied, a generalized understanding of the concept is limited. What it is understood by Marginal Land has evolved across time, space, and discipline and is often interchangeably used with other terms such as unproductive lands, waste lands, under-utilized lands, idle lands, abandoned lands, or degraded lands. We aim to encourage a holistic rethinking of marginal land use issues in order to optimize their use in the framework of climate change mitigation.

Especially since the mid of the 20<sup>th</sup> century, the intensification of land uses has increase. As consequence uses on the limits of profitability are being abandoned. Additionally the policy landscape, e.g. Common Agricultural Policy, has led to the abandonment of many agricultural lands. Land use change dynamics, together with the contaminated sites restoration areas and the abandonment of highly impact activities as mining increases the amount of lands that could be classified as Marginal Lands.

Marginal lands are lands that have little value due various constrains such as soil undesirable characteristics, physical isolation, insufficient water supply, severe slope....

## Definition of Marginal Land

The marginalization depends on the interaction of physical, environmental, social and economic aspects. This implies that abandonment can occur everywhere, even in areas with a high yield potential. Additionally, land that is designated marginal in one location may not qualify as marginal if it were in a different region.

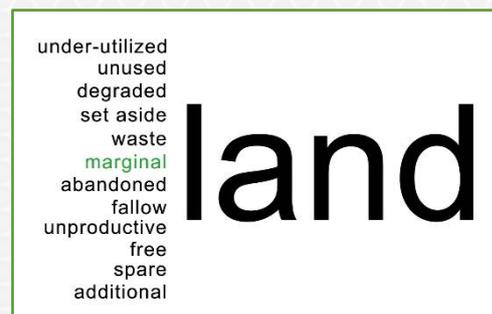


Figure 1. Synonyms of marginal land term.

## Datasets collection

Category	Datasets	Subsets
Land cover/use	8	27
Terrain	2	8
Soil – Geological	21	147
Climate	2	15
Ecological – Environmental	2	2
Socio-economic	2	2
<b>SUM</b>	<b>36</b>	<b>201</b>

Table 1. List of analysed datasets.

One of the first tasks was the extended review and evaluation of available European and global datasets which could be useful for assessment of land cover and characteristics related to marginality (acidity, salinity, nutrition, organic matter, slope values, etc.). In total, 36 datasets containing 201 subsets were collected and analysed. They were gathered into 6 main thematic categories (land cover/use, terrain, soil, climate, ecological, socio-economical). The task was led by AUTH and implemented by HOMEOTECH secondees to CESEFOR.

More details are available in the Report on Collection of appropriate existing European/Global datasets.





## Secondments

1. Mr. Rodrigo Gomez (CESEFOR) successfully finished his secondment to IABG working on Task 2.3
2. Ms. Anna Argyroudi (HOMEOTECH) successfully finished her secondment to CESEFOR working on Task 2.5
3. Mr. Nikolaos Gounaris (HOMEOTECH) successfully finished his secondment to CESEFOR working on Task 2.5

4. Mr Vasileios Tsioukas (AUTH) successfully finished his secondment in IABG working on Task 5.3
5. Ms. Natalia Verde (AUTH) successfully finished her secondment to IABG working on Task 2.3
6. Mr. Charalampos Georgiadis (AUTH) successfully finished his secondment to IABG working on Task 5.2



*My name is Rodrigo Gómez and I am the head of the ICT and Knowledge Management area of the Foundation. Member of CESEFOR since 2004. Director of projects related to software development, indicator systems, cartography and advanced data management.*

*Responsible for marketing projects of forest products, traceability and promotion, climate change as well as communication projects such as events and conferences at regional, national and international levels.*

*During my secondment in IABG, at Dresden/Germany, for the MAIL project, in the summer of 2019, I was working on task 2.3, designing the marginal lands data model, working with spatial data as sources for the analysis needed within the project to identify these territories in Europe. The methodology has to be valid for its replicability in different countries, and the final dataset must commit the European INSPIRE directive.*

[Watch video](#)



*My name is Anna Argyroudi and I am a biologist.*

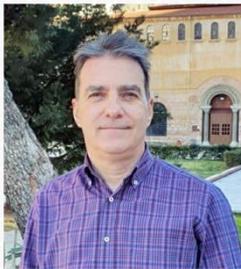
*I graduated from the Aristotle University of Thessaloniki (2007) and I hold a Master Diploma in Integrated Water Resources Management*

*(IWRM) from the Swedish University of Agricultural Sciences (SLU) of Uppsala (2009). Being an active professional on providing environmental services consultancy since 2011, I am currently working in HOMEOTECH. My interests and experience focus on the Management of Protected Areas of Natura 2000 network, Management of Ecosystems under Climate Change, Water Resources Management etc. and all relevant European Funding Mechanisms for Programmes oriented towards Environmental Management.*

*During my secondment in CESEFOR, at Soria of Spain, I have been working from October till December 2019 on Task 2.5 EXISTING MODELS (IPCC, ETC.) CUSTOMIZATION - EVALUATION - VALIDATION, CONSIDERING LOCAL ASPECTS. During this task I performed a literature research on the existing methodologies for the estimation of different carbon stock types (e.g. above-below ground biomass, deadwood, litter and soil) in a forest. The review of this research has ended up in a report where the following question is finally answered "Which are the most suitable methods and tools to use for the estimation of different carbon pools in European Marginal Lands? Specific methods from the Good Practices for Land Use, Land-Use Change and Forestry are eventually suggested as detailed in the IPCC Guidelines for estimating, measuring, monitoring, and reporting carbon stock changes.*

[Watch video](#)





*My name is Nikolaos Gounaris, I am Forest Engineer and CEO of HOMEOTECH Co.*

*HOMEOTECH Co. is a company that provides environmental consultancy services and one of the 6 partners of the MAIL consortium. We provide services*

*in several environmental sectors from which most significant are those related to biodiversity monitoring and protection, invasive species monitoring and control and forest and urban green management under the scope of climate change mitigation and adaptation. HOMEOTECH was established in 2001 in Thessaloniki Greece and since then shows vigorous development fulfilling ambitious and challenging goals in the preparation, supporting and implementation of environmental projects.*

*Part of the idea of MAIL project is based on accumulative experience on marginal lands gained as HOMEOTECH has already participated in two projects focusing on marginal lands and their role as carbon sinks or as biomass production sites for energy purposes before MAIL submission. My secondment in CESEFOR premises, Soria, Castile y Leon, Spain lasted 2 months from October 20<sup>th</sup> until December 20<sup>th</sup>, 2019. I have been working together with Anna Argyroudi, providing assistance in the reporting of the Task 2.5 "Existing models - customization - evaluation - validation, considering local aspects". This was the primary goal of my secondment but several collateral achievements other than the experience gained during MAIL 2.5 reporting can explain why my engagement in MAIL project as a secondee was useful. These include better understanding of the challenges of HOMEOTECH received or sent secondees are facing, collaborative work conditions and development of employees' social and working skills which in turn leads to improved productivity of the working teams.*

[Watch video](#)



*My name is Natalia Verde and I am a Surveying Engineer with a MSc in Geoinformatics. Since 2018 I am a PhD candidate at the Aristotle University of Thessaloniki (AUTH) in the Laboratory of Photogrammetry and Remote Sensing. My PhD is on mapping Sustainable Development*

*Goals indicators at a national scale, using Remote Sensing and cloud computing technologies. I have a strong background in coding and my research interests also include GIS and Photogrammetry.*

*My secondment for the MAIL project, at IABG in Dresden, took place from 1<sup>st</sup> November till 31<sup>st</sup> December 2019. I worked for Task 2.3 "Methodology development of mountainous/semi-mountainous MLs detection". More specifically, I developed a MLs detection methodology, by selecting a proper set of indicators, criteria & thresholds, and set the ML classification scheme that will be used in the project, based on the literature review done in T2.1. Moreover, I developed an initial GIS, containing the datasets that will be used in the next stages of the project, by taking into consideration the work done in T2.2.*

[Watch video](#)



*Dr. Vassilios Tsioukas obtained his Ph.D in 'Digital Photogrammetry' from the Aristotle University of Thessaloniki, Greece. He is a specialist in Digital Photogrammetry, Remote Sensing, Laser Scanning and CAD for Surveying and Medical*

*and since 1993 has been working in many national and international Research Programmes. He was an assistant professor in the Dept. of Architectural Engineering in the Democritus University of Thrace (2003-11) and in 2011 was elected Associate Professor in the School of Rural and Surveying Engineering at the Aristotle University of Thessaloniki. In 2015 he was elected ordinary Professor in the same School. He is also serving as an invited Professor since 2005 in the "Environmental Management" Postgraduate Programme of The Mediterranean Agronomic Institute of Chania (M.A.I.Ch).*

*During my secondment at IABG I was working for task 5.3. More specifically I had the task to investigate the carbon markets and their connection to Land Use Land Use Change and Forests-LULUCF and the MAIL project. In my deliverable that includes 9 chapters I give a thorough report about the history of the Carbon markets (Clean Development Mechanism-CDM and Joint Implementation-JI from the Kyoto Protocol) the currently operating compliance and voluntary markets, the Carbon Offset projects and the accounting standards that are used either in the voluntary and compliance cases. Special reporting is given about the European public and private initiatives as well as the future carbon markets that will operate, i.e. the Effort Sharing Mechanism in Europe and the sectoral carbon market of the International Aviation Companies (Carbon Offsetting and Reduction Scheme for International Aviation) and other private initiatives that are trying to tackle the Climate Change problem worldwide.*

[Watch video](#)





Charalampos Georgiadis is an Assistant Professor at the School of Civil Engineering in the Aristotle University of Thessaloniki. 1997, Diploma Rural and Surveying Engineering (AUTH), 2000, M.sc. Protection, Preservation, and Restoration of Cultural Monuments (AUTH), 2005 PhD Department of Spatial Information Science and Engineering (University of Maine, USA).

His research interests include among others Photogrammetry, Remote Sensing, Cartography, GIS, UAV, Mobile Mapping Systems, 3D modelling, laser scanners, Image processing and analysis, Spatial data analysis. Scientific Responsible or member of research groups in 40 Research projects Funded by National, European or USA Organizations. Scientific reviewer in 12 Journals.

Charalampos Georgiadis secondment was realized in IABG Geodata Factory, located at Dresden, Germany from October 1<sup>st</sup> until December 31<sup>st</sup>, 2019. During his secondment he worked on task 5.2 "Financial, social and technical aspects of the sustainable development of MLs". During his work he performed an extensive literature review in order to define variables and indicators that will help to assess the sustainability of marginal lands used as carbon sinks. Furthermore, he developed workflows that will be used for the sustainability assessment of marginal lands used as carbon sinks considering the financial, social, environmental and technical aspects of an afforestation project implemented in marginal lands. The task will continue with secondments that will be realized during the second and third year of the project.

[Watch video](#)

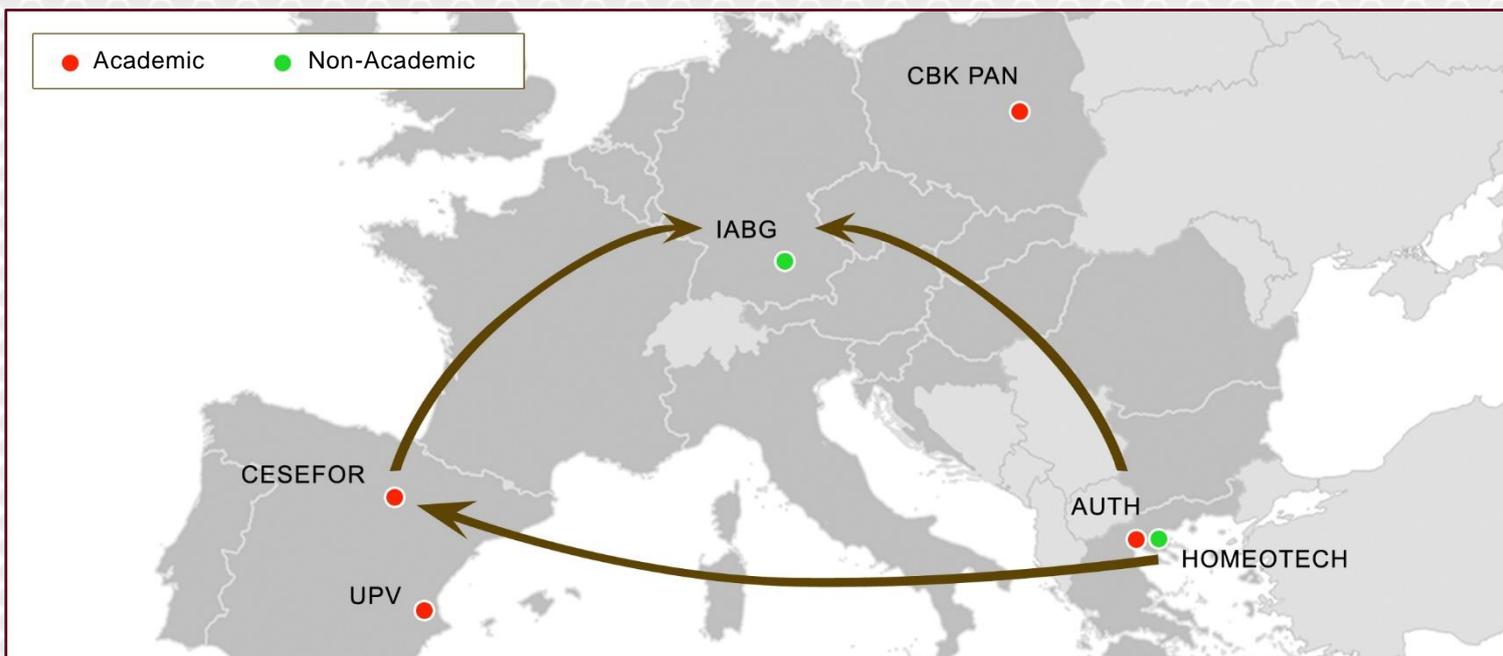


Figure 2. The directions of secondments from period September and December 2019

## About the Project

- Topic: MSCA-RISE-2018 Marie Skłodowska – Curie Research and Innovation Staff Exchange
- Title: Identifying Marginal Lands in Europe and strengthening their contribution potentialities in a CO2 sequestration strategy
- Project Duration: 36 months
- Official start of the project: 01/01/2019
- Total budget: 800,400.00 €
- EU funding: 800,400.00 €

## Consortium



Figure 3. Consortium partners

