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Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

Deliverable 4.3

COMPLETED MONITORING REPORTS BASED ON PROJECT PROGRESS REPORTS

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GENERAL INTRODUCTION

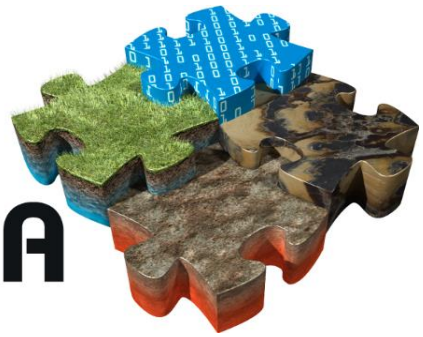
GeoERA launched a Joint Call for Joint Research Projects [hereafter referred to as Projects] with the aim of enforcing a more integrated and efficient management and a more responsible and publicly accepted exploitation and use of subsurface resources. The Joint Call resulted in 15 GeoERA funded Projects running for three years from July 2018 until June 2021. With the Projects, GeoERA aims to achieve the objectives set in Description of work (DOW). Progress of the Projects are monitored regularly, since GeoERA's objectives depend upon the success of these. Twice per project lifetime projects submit their Project Progress Reports. This document compiles all Midterm Project Progress Reports.

EXECUTIVE REPORT SUMMARY

GeoERA work package 4, Follow-up and monitoring of projects resulting from the Joint Call, is concerned with monitoring of the Projects to ensure timely delivery and quality of implemented Project activities are in line with the strategic objectives, goals and scope of GeoERA. Administrative monitoring of the Projects is carried out by evaluating the submitted Project Progress Reports, which projects are required to submit every 18 months. The evaluation of the research part of each Project is carried out at two Review Meetings with members of Stakeholder Council. The progress of the Projects will be summarized in the Technical Review Report, which represents part of GeoERA monitoring and evaluation process for the Projects. The Technical Review Report consists of four sections, each representing one level of monitoring and evaluation of the project.
This document compiles projects' doc no 2B: Midterm Project Progress Reports on which the monitoring and evaluation are based. The projects follow instructions described in two documents:

- PI doc no 1 Reporting procedures and monitoring indicators; and
- PI doc no 2 Reporting templates & e-tool, with annexes

- PI doc. no. 2A Information on cumulative expenditures (in word form)
- PI doc. no. 2B Project Progress Report (in excel form)
- PI doc. no. 2C Final Project Progress Report (in excel form)
- PI doc. no. 2D Costs after Project end (in excel form)
- PI doc. no. 2E Technical Review Report (in word form)



Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	3D geomodeling for Europe
Project acromyn:	3DGEO-EU
Project reference number:	GeoE.171.005
Project topic:	Geo-energy
Project specific research topic:	GE5 - ADVANCEMENTS IN DEVELOPING AND USING 3D TRANSNATIONAL GEOMODELS
Project website address:	http://geoera.eu/projects/3dgeo-eu/

Period covered from: 01.07.2018 to: 31.12.2019

Report submission date: 30.01.2020
Project coordinator: Stefan Knopf (BGR)

Contact person for the project: Stefan Knopf
Tel: +49 511 643 2744
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IDENTIFICATION OF PROJECT PARTICIPANTS

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	Bundesanstalt für Geowissenschaften und Rohstoffe	Federal Institute for Geosciences and Natural Resources	BGR	Germany	999429413	Project Lead
2	Ceska Geologicka Sluzba	Czech Geological Survey	CGS	Czech Republic	999546783	Project Partner
3	Geological Survey of Denmark and Greenland	Geological Survey of Denmark and Greenland	GEUS	Denmark	999459677	Project Partner
4	Landesamt für Bergbau, Geologie und Rohstoffe Brandenburg	State Office for Mining, Geology and Raw Materials Brandenburg	LBGR BRB	Germany	923483942	Project Partner
5	Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern	State Office for the Environment, Nature Conservation and Geology Mecklenburg-Vorpommern	LUNG	Germany	919805993	Project Partner
6	Landesamt für Bergbau, Energie und Geologie Niedersachsen	State Office for Mining, Energy and Geology Lower Saxony	LBEG	Germany	991377831	Project Partner
7	Landesamt für Geologie und Bergwesen Sachsen-Anhalt	State Office for Geology and Mining Saxony-Anhalt	LAGB	Germany	921579444	Project Partner
8	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek	The Netherlands Organisation for applied scientific research	TNO	Netherlands	999988909	Project Partner
9	Państwowy Instytut Geologiczny – Państwowy Instytut Badawczy	Polish Geological Insitute	PIG-PIB	Poland	999492463	Project Partner
10	Instituto Geológico y Minero de Espana	Geological Survey of Spain	IGME-Sp	Spain	998737803	Project Partner
11	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund of Ukraine	GEOINFORM	Ukraine	947331392	Project Partner
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PUBLISHABLE SUMMARY

Ornamental stone is today a raw material produced with great skills all over Europe, SME's and larger enterprises exploiting the vast diversity of European natural stone resources. Today's European stone industry is not only large and important but also highly dispersed throughout Europe, making a backbone industry for particularly rural areas. In Italy alone, there are more than 1000 stone quarrying enterprises and the sector in total employed more than 50 000 in 2011.

Ornamental stone has contributed significantly in shaping our rural and urban landscapes, through its use in our built heritage from different historical periods. Ornamental stone is today a raw material produced with great skills all over Europe, exploiting the vast diversity of European natural stone resources. Yet, the actual use of local and regional stone resources in Europe is decreasing, and so is the knowledge of the resources, traditions and skills. EuroLithos is founded on the idea that increased knowledge of the geology, quality and history of use of natural stone in Europe will stimulate both more sustainable use of stone resources in Europe for the benefit of SME's and our cultural heritage, and a sound land use management for the safeguarding of ornamental stone deposits. Yet, such information is scattered, diverse and not harmonised, and do not exist at a European level.

Objectives

In the context of the GeoEra partnership, the best way of contributing to meet this challenge is a ornamental stone information platform, providing documentation, databases and recommendations covering the most important aspects of natural stone resources in Europe; partly, by feeding existing solutions, and partly by adding new ones. Or, said with simpler words, put the ornamental stone resources on the map.

This main challenge was broken down to a series of objectives

1) Identify and define: a descriptive framework for natural stone resources in Europe;

2) Collect and characterize: following the framework, carry out an inventory of natural stone resources in partner countries;

3) Make an atlas: template and trial versions for a geological atlas on natural stone on a European and country level linked to databases and directories

4) Make a directory: database of stones and their properties

5) Identify heritage values: producing guidelines for assessing heritage values to natural stone

6) Communicate and collaborate: stakeholder interaction and communication, building networks for continuation;

7) Integrate and distribute: harmonise and provide data to the forthcoming solutions provided by RM1 and IP1

8) Promote and disseminate: promoting natural stone information platform to stakeholders

9) Maintenance and continuation: secure long-term life and growth of EuroLithos solutions

The objectives were assigned to 6 work packages:

WP1: Project management NGU

WP2: Dissemination and communication NGU (Objective 6, 8,

WP3: Atlas of European Ornamental Stones LNEG (Objective 2, 3)

WP4: Directory of Ornamental stone properties HSGME (Objective 2, 4)

WP5: Ornamental stone heritage HGI-CSG (Objective 5)

WP6: Link to information platform NGU (Objective 1, 7, 9)

Eurolithos is thus all about

- developing a framework of information infrastructure for ornamental stone for spatial (WP3) and technical data (WP4), develop and test prototypes (WP6) and implement this with guidelines for the partner countries

- through case studies covering a range of subjects related to ornamental stone, create guidelines for assessing values of ornamental stone resources on a community/national and EU level, beyond strictly economic/industrial ones (WP5). The case studies will also be fundamental for publication of a scientific paper collection by the end of the project

- communicate project and results to a range of stakeholders

Focus areas first 18 months

The first focus area during the first period of the project was to define and agree upon how a descriptive framework (Objective 1,2,3,4) of European ornamental stone will look like and how to organise and develop this in practice. Moreover, what is realistic to achieve within the framework of GeoEra. Much of the project activities have been concentrated about this in WP3 and WP4.

The second focus area was to get the communication activities up and running (Objective 6), primarily website, social media and newsletter.

The third focus area was to define and start case studies, that are to be finished by M24 (Objective 5).

Results first 18 months

Descriptive framework

Mapping gaps: Eurolithos have partners from 14 countries, but only 8 of these delivered data about ornamental stone to Minerals4EU, some only partially, and none in a harmonised way. A few other GeoEra partners but not members of Eurolithos, also delivered. The reason for “non-delivery” was primarily that Minerals4EU strongly focused metallic ore and industrial minerals, i.e. ornamental stone was not considered to include critical raw materials and thus not highly important. The reason for lack of harmonised data was not lack of standards but lack of 1) harmonisation between EN12440/EN12670 and INSPIRE, 2) good “step-by-step” guidelines describing which kind of INSPIRE data to deliver and how to use the codelists. Contradicting standards (INSPIRE versus EN versus national) became a subject of discussion, and although such issues cannot be solved within the GeoEra timeframe, it should be a matter of discussion for a long term harmonisation.

Creating a spatial data infrastructure: Deliverable D3.1 (July 2019) addressed the partners of Eurolithos, what kind of spatial data they have and what they are able to deliver to the EGDI. 12 of the

partners will make a selection of stone resources they, from their professional knowledge, believe is of interest on a European scale. 2 of the partners will deliver information they have about all ornamental stone resources in the country. All partners can deliver point coordinates to EGDI, but only 9 can in addition deliver polygons. Only 4 have possibilities to deliver spatial information about resources not yet exploited, and 6 partners have polygon information about "geological provinces with possibilities of future exploitation". Given the range of possibilities and limitations, Deliverable D3.2 will provide a guide for partners (and non-partners) for how to collect and deliver data to the spatial database, within the framework on INSPIRE/Minerals4EU, in a way that creates a harmonised and uniform presentation of European ornamental stone resources.

An issue raising early in the project work, was some particular concerns that makes ornamental stone different from other mineral commodities, namely the role of uniqueness. Since ornamental stone is applied the way geology shaped it, subtle differences in appearance, colour and technical properties are of great importance to its use. This has through history, created a tradition of "unique names" or "trade names" that are highly important for characterising the resource. The "Carrara Marble" is not just one of many resources of the "marble commodity", but carry unique properties, history of use and reputation. In the EN standard 12440, such unique stone names for all European countries are listed in an annex, all together more than 700. We decided to use this as a benchmark list for each country, and the partners are now using this for making updated, national lists of unique stone types to be included in the infrastructure. This contribution from partners is due to February 1, 2020.

The unique name will provide and important link between datasets. The ornamental stone commodity list, even if combined with lithology, do not provide sufficient identification of a resource, and thus the Unique name will be important to any database or directory addressing ornamental stone. After discussions including GIP-IP, we are now concluding that these unique names, after revision of national lists, will be introduced as structured data involving a specific codelist of such names. See also Deliverable 6.1 March 2019).

Moreover, as colour (or main groups of colours) is an important property of ornamental stone, we have proposed this also as structured data involving a new codelist in the Minerals4EU model.

Creating the directory: The unique name codelist will provide a link between spatial data and directory of stone properties. The latter was finally agreed at a workshop in Athens March 2019, and later slightly adjusted based on advice from GIP-IP. This agreement took longer time than anticipated, and we have still issues not finalised, such as harmonising tables containing mineralogical and geochemical data of relevance to several GeoEra projects – it will not be wise to deliver same type of data on different formats from different GeoEra projects.

The Directory is actually a data repository, and we propose a central uploading service. Of texts, photos, tables and links, related to each of the unique names. This will mainly provide unstructured data, however linked to the spatial data through unique name.

A challenge of the directory is the inclusion of tables containing technical and geochemical analyses; such tables may be common among several GeoEra projects, and one should secure a harmonised way of delivering and displaying them.

After discussions within the consortium and response from GIP-IP, the directory contains the following entries:

- Preferred label (unique Name)
- Other labels (alternative names)

- Commodity (INSPIRE codelist)
- Short description text (macroscopic)
- Short description text (microscopic)
- References (link to bibliographic references)
- Status (technical)
- Colour description (New codelist)
- Lithology (INSPIRE codelist)
- Links to vendors/other databases (external directories)
- Uploaded images
- Links to images
- Geographic name
- Lat/Long coordinates
- Country (name of country)
- Linked data (links to other data services)
- Uploaded table Mineral content
- Uploaded table Physical properties
- Uploaded table Main element geochemistry
- Uploaded table Trace element geochemistry
- Uploaded table REE geochemistry
- Link to other site describing the stone
- Keywords

Details on formats, uploading services etc. still remain to be clarified.

Note on use of stone: in the project proposal, it was proposed to make a spatial database for the use of stone, i.e. location of buildings and other constructions (part 2.3, “Spatial data on the use of ornamental stone (buildings, monuments, other)”). This was later considered to be unrealistic, for two reasons: 1) it will create much work on a structure that in any case will be difficult to maintain, 2) there are several open map services for constructions that may be linked to the geological resources. Thus, the conclusion was to explore such options in the case studies (see below).

Note on the vocabulary: the consortium largely agree that the INSPIRE commodity code lists for ornamental stone are not satisfactory, for example, they deviate from other European standards (such as EN12670). In the sort term, we will relate to the codelists as they are, but wish to present a new proposal and mapping routine from existing to new before the end of the project.

Communication activities

After discussion with GIP-IP we decided to create an own website in addition to (and linked from) the official GeoEra site. www.eurolithos.org is a more dynamic and regularly updated site containing results but also profiles of ornamental stone resources from different perspectives. This was launched in July 2019. Website visitor statistics, including geographic location, should be available in March 2020. Currently, the webpage serves to provide general information about EuroLithos and its activities. The website was modified for both full screen and mobile viewing.

The rate of engagement on the Eurolithos Facebook page is 2.8% vs while for Twitter, it is only 1.6%. The average rate of interaction with EuroLithos social media content (sharing, comments, likes, and clicks) is considered "fair-good" from a general marketing standpoint, where anything over 2% is considered good. We have relied on an "organic" distribution of our posts; that is, we have not paid the platform provider to promote EuroLithos material. Other GeoERA projects, stakeholders and partners eagerly assist disseminating EuroLithos information and visa-versa.

When the low number of followers is taken into consideration (ca. 50 for Twitter and 90 for Facebook) the engagement and impression rate for many posts has been extremely high. This is particularly true for Twitter where follower/engagement rate can be between 5%-100% when non-followers are engaging in a post, as in cases where our top followers retweet our posts to their audience. Spikes of engagement from both followers and non-followers occur when we post attractive photos and information about stone types used in Europe.

We emailed two issues of Eurolithos Newsletter to our 44 partners plus associates and 140 stakeholders (April and July). We received 10-12 requests to be added to the mailing list, but more importantly, several public institutions, interest groups and enterprises reposted our newsletter on their web and social media platforms.

There are yet no scientific publications directly due to the project. We consider the scientific work to be predominantly confined to the case studies in addition to some main results. We have thus planned to make a specific, EuroLithos volume of papers by the end of the project, most likely as a part of NGU Special Publications series.

Case studies

Although we planned to define case studies by M3, we did not conclude until M12. This was mostly related to the need for some more discussion among the partners.

We defined three main subjects of case studies in the Project Description, suggesting at least 2 case studies in each group:

- Ornamental stone resource value assessment – including a framework for description and characterization of stone quarries and quarry landscapes, defining the best methodological practice to assess the values of such
- Stone and built heritage – develop methods for practical inventories of stone resources and built heritage, including a framework for assessing the importance of stone types for maintenance, restoration and new construction.
- Stone and intangible heritage (crafts) – focused on the unitary designation and description of the immaterial crafts in a way that can be used in the heritage stone assessments.

In our consortium meeting in July 2019, we, furthermore, decided to include one or several case studies in an additional new subject – sustainable ornamental stone production. This was mainly reasoned in the increased urgency in finding sustainable solutions along the range of raw materials, and due to recent innovative developments in the industry. We will primarily focus 1) zero waste, 2) environmental footprints (life cycle) and 3) sourcing of ornamental stone products.

IN total, we are carrying out 11 case studies distributed on the four subjects. They will be presented in forthcoming D5.1, and all case studies are due to be finished by M24.

Obstacles and problems

One partner – Regione Toscana (RT) decided to withdraw from the GeoEra consortium spring 2019. The limited amount of funding was transferred to partner GSD.

The first deliverables (D2.1, D2.2, D6.1) were delayed from M6 to M9.

D2.1 (website) was from M1 made as a one-pager at the GeoEra main web portal (https://geoera.eu/projects/eurolithos1/). At the Kick-off meeting we planned to gradually deliver material for regular update and expansion of this site, delivering new contributions to GIP-IP. This turned out to be not efficient since it would load too much workload on the GIP-IP. Parallel to Deliverable D2.1, registered M9 (update and expansion of web information delivered), we decided to make a project website outside the GeoEra portal and got this published by M12 (www.eurolithos.org). At the same time, a facebook page (https://www.facebook.com/europeanstonestories/) and Twitter were published.

EuroLithos first Newsletter was also delayed from M6 to M9, mostly due to DGPR-routines at NGU. But from M9 this has worked, and second Newsletter was in M7. GeoEra evaluation team proposed to make one deliverable from the newsletters instead of 6 biannual ones, i.e. 6 newsletters delivered by M36.

D6.1 was delayed from M6 to M9, mainly due to that agreement about the content, particularly the directory, was reached at Athens workshop in M9.

None of the above mentioned delayes have, or will have, serious consequences for the progress of the project.

The WP2 Lead (Jacob Keiding) terminated his work at the Geological Survey of Norway (NGU) June 2019. He was shortly after replaced by Anne Liinama Dehls. There have been no consequences for the project.

Concluding remarks

The discussions and preparations of the content and structure of the knowledge platform did take longer time than anticipated, and there are still problems to solve. This do raise the need for more communication across GeoEra project boundaries, particularly about data tables common to several projects.

This delay has caused some consequences, particularly for partners with minor financing, waiting for delivering data. We yet hope to have prototype of data deliverances ready by M24.

A main conclusion is the shortterm use of the existing Minerals4EU data model for spatial data, with a few and minor additions. The most urgent needs are descriptions on how to use this model and harmonise the content.

We have agreed upon and proposed a vocabulary for the directory, which, in addition to few structured data for linking with the spatial data, will consist of predominantly a repository of non-structured data.

After some delay, communication activities are getting to speed, and we will continue to interact with stakeholders. As solutions for data deliverable and directory improves, we will involve particular stakeholders for collaboration on specific fields, i.e. links to other directories.

Case studies will be finished by M24, to provide the ground for guidance documents and scientific publications.

PROJECT CONTRIBUTION TO GeoERA PROJECT

3DGEO-EU is a project with a focus on testing and developing methods and workflows needed for generating harmonized coherent cross-border 3D geomodels. The work packages put a lot of effort in the first months of the project with fundamental work like covering the state-of-the-art regarding existing geomodels or data in the considered cross-border pilot areas before even starting to test or develop methods. The main results like best practices & optimized workflows and harmonized cross-border 3D geomodels that contribute to GeoERA's aims and ambitions will be finally achieved in the last few months of the entire project. The deliverables accomplished so far represent interim results – like a few pieces of a jigsaw puzzle. Describing 3DGEO-EU's contributions to the aims and objectives of GeoERA up to now after 18 project months is not meaningful. To stick to the metaphor above, the full jigsaw puzzle is needed to evaluate the motif. As the project and the work packages are on track in regard of the work plan, it can just be stated, that the project is on a good way to achieve the planned goals until June 2021.

The main objective of GeoERA "is to contribute to the optimal use and management of the subsurface. GeoERA will … aim to support 1) a more integrated and efficient management and 2) more responsible and publicly accepted, exploitation and use of the subsurface." 3DGEO-EU will contribute to these objectives, as the project results will provide ways and means to harmonize underlying geological base data, which is necessary for all kind of consistent and reliable subsurface assessments and thus eventually for planning of the optimal use and management of the subsurface.

The results of 3DGEO-EU mainly aim at experts from European Geological Survey Organisations and the scientific community, thereof especially the geomodeling community, who can use the methods and best practices regarding cross-border harmonization and optimization of 3D geomodels to create coherently harmonized 3D geomodels in Europe. By this way, the 3DGEO-EU results will pave a part of the road towards the future goal of creating a consistent database for pan-European assessments of subsurface resources. Therefore, in the end stakeholders, decision makers, politics and the public will also have a benefit from those technical expert results to be accomplished in 3DGEO-EU.

This project relates to the GeoEnergy Specific Research Topic (SRT) GE5 "Advancements in developing and using 3D transnational geomodels". The results of 3DGEO-EU will contribute to some aspects of the SRT GE5 scope, for example:

- The development and evaluation of unified and substantially tested methods and workflows for cross-border harmonization of geological data and 3D geomodels holds the potential to significantly improve the development and supply of 3D subsurface information to stakeholders and decision makers in a pan-European dimension.

- The achieved technical methods and solutions in the field of cross-border harmonization are applicable to multiple countries, regions and organisations in a wide range of geological settings and with different states of exploration. They are essentially necessary for the development, evaluation and application of regional to transnational geomodels and practical multinational case studies.

- The constructed state-of-the-art 3D geomodels in different European pilot areas can be used as examples and keystones for further transnational developments.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Reported by WP leads

Work package 1: Cenozoic geothermal reservoirs in the northern onshore Dutch-G Duration: 1-36

One of the aims of this work package is to generate a harmonized 3D model for the crossborder region between the Netherlands and Lower Saxony in task 1.2, which will be the base for the following tasks in the second half of this project. As base an inventory report (deliverable D1.1) was written to compare and describe existing 3D models along both sides of the the border.
Collaboration and cooperation is positive and constructive. Teamwork is organised in following ways: monthly WebEX meetings with project members from LBEG and TNO, email communication and face-to-face meetings.
First face to face meeting in Hannover: Kick off and getting to know each other, clarifying general issues (concerning communication, meetings, tasks and study area) and starting with the discussion how existing data and 3D models could be harmonized.
Second face to face meeting in Utrecht: preparation of the first deliverable D1.1 „inventory report“, discussion of problems by transformation of 3D model data into a common coordinate system, mutual exchange of 3D modeled layers in existing 3D models and Ccenozoic geothermal reservoir maps, detailed discussion about harmonization of 3D models.
Third face to face meeting in Hannover: report for task 1.2 how the modeled layers fit together in detail. Analysis of depth deviations for corresponding horizons as base for harmonization. Selection of a pilot faultzone for testing harmonization of faults along the border.
At face to face meetings also the next activities are coordinated and planned. Work on task 1.3 has already started at LBEG concerning remodelling of base Miocene and base Oligocene.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D1.1	Inventory report	LBEG	Report	PU	M6	Completed	
D1.2	Harmonized 3D model	TNO	3D model	PU	M24	Pending	
D1.3	Maps of Cenozoic geothermal reservoirs	LBEG	Digital data	PU	M30		
D1.4	Database of geothermal properties	LBEG	Digital data	PU	M30		
D1.5	Geothermal property maps	TNO	Digital data	PU	M36		
D1.6	Map of hydraulic barrier	LBEG	Digital data	PU	M34		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification	
1	Kick-off Seminar	M3	Completed		Related WPs: 1-8
2	State-of-the-Art and inventory in pilot areas documente	M12	Completed	Delivery of D1.1, D2.1, D3.1	Related WPs: 1-3
3	Mid-Term Seminar	M18	Completed		Related WPs: 1-8
4	Harmonized crossborder 3D geomodels in Pilot areas	M33		Delivery of D1.2, D2.3a, D2.3b, D3.8	Related WPs: 1-3
5	Final Seminar	M36			Related WPs: 1-8
6	Best practice and lessons learned for cross-border harmonization documented	M36		Delivery of D2.4, D3.9, D4.4, D5.2, D6.5, D8.5	Related WPs: 1-8

Note from Project lead: Milestones in 3DGEO-EU are defined as general project milestones, marking important points along the 3DGEO-EU project timeline (related to several WPs). They do not mark WP-specific work steps. Hence, the other Milestone tables below will not be filled out by the WP leads.

Work package 2: Cross-border harmonization of selected horizons and structures i Duration: 1-36

First, the existing database along both sides of the Polish-German border (well and seismic data, results of gravimetric and magnetic surveys) and the results of former cross-border projects (starting from first co-operations in the 1970s) were evaluated. The evaluation was summarized in the State of the Art Report (deliverable D2.1, submitted in M9). To complete the databases numerous wells, seismic sections and maps were digitized from the partners. Additionally the possibilities and restrictions of data exchange in both countries were analyzed and discussed. It has to be noted that primary data from wells can be exchanged only limited (data of scientific wells) and primary geophysical data can't be distributed because of legal restrictions in both countries. So the workflow of cross border harmonization was mainly based on interpreted data (modelled surfaces and structures, which were obtained using of seismic reflection horizons and well marker). In a next step a comparison and harmonization of these geological and geophysical interpretations were done (well stratigraphy and seismic stratigraphy, velocity models). According to the work package plan a harmonized model of the pilot area 1 (border region of Brandenburg and Poland) was finalized in M18 (deliverable D2.3a). The model covers the major stratigraphic boundaries from the base of the Permian salt to the Cenozoic in an area of >7.000 km². Construction of a similar harmonized model of the pilot area 2 (border region of Poland and Mecklenburg-Western Pomerania) and the merging of both models will be the goal for the next project phase between M19 to M33 (deliverable D2.3b). Furthermore, compiling, digitizing and processing of gravimetric data were completed for both pilot areas in order to test its applicability to fine-tune data-poor parts of the models (in cooperation with WP6, see D6.3).

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D2.1	State of the Art	LBGR/LUNG	Report	PU	M9	Completed	
D2.2	Documentation methods, workflows and results	LBGR/LUNG	Report	PU	M33		
D2.3a	Harmonized 3D geomodel pilot area 1)	LBGR/LUNG	3D model	PU	M18	Completed	
D2.3b	Harmonized 3D geomodel pilot area 2)	LBGR/LUNG	3D model	PU	M33		
D2.4	Final report incl. lessons learned	LBGR/LUNG	Report	PU	M36		

Milestones see comment in cell H16

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 3: North Sea area NL-DE-DK Duration: 1-36

Work package 3 (WP3) of the GeoERA research project "3D Geomodeling for Europe (3DGEO-EU)" aims to integrate existing national (and regional) geomodels into a harmonized, consistent cross-border geomodel of the North Sea area between the Netherlands, Germany and Denmark. The Netherlands Organization for Applied Scientific Research (TNO, NL), the Geological Survey of Denmark and Greenland (GEUS, DK) and the Federal Institute for Geosciences and Natural Resources (BGR, GER) are responsible for the cross-border harmonization in this pilot area.
In the first 18 months of the project the following deliverables have been produced:
1) State-of-the-Art report providing an overview of existing model and map data of the North Sea area (NL-DE-DK) primarily developed by the project partners in the last decades. Recent research activities of the project members are summarized as also an evaluation of the legal constraints in sharing subsurface data among the different national project partners. Furthermore, the results of an initial analysis of cross-border discrepancies between existing geomodels are presented in the annex of this report.
2) Building of a 3D generalized depth model of the Entenschnabel region, which is based on eight seismically interpreted horizons and which has been used as input for analysis executed in the GARAH-project.
3) The third deliverable titled "Harmonized stratigraphic chart for the North Sea area NL-DE-DK" provides an overview of the relationship of the Dutch, German and Danish North Sea lithostratigraphy. The results from this report together with the correlation profiles in the fourth deliverable "Lithostratigraphic/ chronostratigraphic correlation profiles through the study area" (in progress, the delivery month has been amended to March 2020) are essential parameters to ensure a successful harmonized cross-border 3D model.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D3.1	State of the art report	TNO/GEUS/BGR	Report	PU	M12	Completed	
D3.2	Generalized cross-border 3D depth model of (a part of) the Entenschnabel region	TNO/GEUS/BGR	3D model	PU	M10	Completed	Delivered to GARAH for Petroleum System modelling
D3.3	Harmonized stratigraphic chart for the North Sea area NL-DE-DK	TNO/GEUS/BGR	Report	PU	M18	Completed	
D3.4	Lithostratigraphic/ chronostratigraphic correlation profiles through the study area	TNO/GEUS/BGR	Report	PU	M18	In delay	Finalization will be delayed until mid March 2020 (M21)
D3.5	Harmonized seismostratigraphic concepts and structural interpretations	TNO/GEUS/BGR	Report	PU	M24		
D3.6	Summary of the harmonization work on time model for seismic interpreted main horizons incl. main fault planes	TNO/GEUS/BGR	Report	PU	M24		
D3.7	Harmonized cross-border velocity model	TNO/GEUS/BGR	3D model	PU	M24		
D3.8	Harmonized structural 3D models	TNO/GEUS/BGR	3D model	PU	M30		
D3.9	Final report incl. lessons learned	TNO/GEUS/BGR	Report	PU	M36		

see comment in cell H16

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 4: Uncertainty in geomodels **Duration: 1-36**

The first deliverable D4.1, a report on the state of the art in uncertainty visualization, has been finished and the corresponding results and findings have been communicated on several international conferences and workshops as talks and posters. A first preliminary version of the deliverable D4.3 has been provided to the GIP WP2 as some information on the visualization requirements for the information platform was needed in advance as input for the tasks 2.2 and 2.3 of the GIP-P. Further some of the work package partners have been already working on methods for the estimation of uncertainty in 3D models. The Czech Geological Survey, for example, has formulated semi-quantitative calculation methods to estimate model uncertainty for regions with relatively scarce and heterogeneous geological data that comprise crystalline and sedimentary rocks and developed the necessary algorithms to test this method in one case study of a 10x10x1,5 km large geological model from the western part of the Czech Republic. Another partner, TNO, has also developed workflows to assess uncertainty in their 3D models. These kind of methods to propagate the uncertainty from field data and interpretation during the 3D modelling process will be part of Task and corresponding deliverable 4.2, on which the participants of the work package 4 have started to work on, together with the discussion of the sources of uncertainty.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D4.1	State of the art in uncertainty visualization	BGR	Report	PU	M12	Completed	
D4.2	Sources of uncertainties in geomodels	BGR	Report	PU	M24	Pending	
D4.3	Uncertainty visualization requirements for EGDI	BGR	Report	PU	M30	Pending	
D4.4	Example data sets/geomodels containing uncertainty information	BGR	Gocad, VTK; including c	PU	M36		

Milestones see comment in cell H16

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 5: Faults **Duration: 1-36**

This work package focusses on consistent cross-border fault mapping- and characterization in the 3DGEO-EU pilot areas and is acting as an interface to the GeoEnergy project HIKE. WP5 communicates the requirements and specifications of the HIKE Fault Database to the 3DGEO-EU modelling work packages.
Being an interface to HIKE, the activities in WP5 also reflect the activities and the status of the HIKE project itself. As requirements and specifications of the HIKE Fault Database had to be developed in HIKE during the reporting period, the WP5 activities within 3DGEO-EU were quite limited in that period. Most work for WP5 will be done in the second half of the project.
To plan the work to come for WP5, a HIKE – 3DGEO-EU interaction meeting was held on 23 October 2019 at BGR in Hannover.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D5.1	3D fault objects with metadata and attributes	TNO	Map series, 3D models	PU	M30	Pending	
D5.2	Reporting	TNO	Report	PU	M36		

Milestones see comment in cell H16

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 6: Optimizing reconstructions of the subsurface to reduce structural **Duration: 1-36**

During the first 18 months, WP6 has focused on three main activities: 1) Data harvesting, acquisition, harmonization and 3D model building for D6.1, 2a & 2b (Pyrenean case study). 2) Data harvesting, harmonization and scheduling for D6.3 (Polish-German border). 3) Discussion, agreement and writing of the first version of the Workflow of 3D modeling based on potential field geophysics (D6.5).
Activity details:
1) Pyrenean case study: Major efforts were done during the first month of the project in harvesting data from databases. Geological maps, bedding attitudes, stratigraphic columns, etc. were rapidly obtained from IGME servers. Further efforts were needed to compile the seismic information, beyond data from IGME (about 10% of the actual coverage), we performed an official request to the Technical Hydrocarbons Archive, as well as personal contacts to universities and oil companies. All in all, we were able to compile about 30% of the existent seismic coverage. However, the main purpose of this activity is harmonizing the subsurface information by means of homogeneous gravity data. Thus, this is not a major drawback in the development of the project and, in fact, may reflect a common situation in Europe. Strong efforts were concentrated in gravity data acquisition: more than 2000 previous and heterogeneously distributed have been complemented with more than 1400 new data (5 intense campaigns), one of them includes the data acquisition in high mountainous region (altitudes close to 3000m). In M18, we have acquired 85% of the planned coverage (about 4000 points in total). The difference is due to very early snow during the 2019 fall in the N and NW part of the target area, together with a functioning failure of one of our gravimeters (actually caused by a meteorological accident during the data acquisition). Both problems have precluded finishing at 100% the data acquisition. On the other hand, and beyond the access to petrophysical databases, we have compiled and acquired from IGME lithotheques more than 150 robust density data. Some additional data were (and will be) taken in the field to get an even distribution of lithologies and rock ages needed for the data modeling. Finally, the building of the digital 3D model (D6.1&2) is progressing well; including the enlargement and reviewing of previous serial cross sections, seismic and well interpretation, etc.
2) Polish-German Border: After the definition of a clear roadmap (compilation and harmonization of vast and heterogeneous [including analogic] gravimetric datasets, compilation of abundant petrophysical data [including wells], definition of target horizons, etc.), important progresses have been done during the first half of the project. A working meeting for the modeling of the border at depth merging all this information is scheduled in summer 2020.
3) Finally, the main methodological goal of this WP was to squeeze the networking (all across the GeoERA-Energy group) to improve a workflow for 3D modeling focused on potential-field geophysical data. This scope try to face the harmonization of subsurface information in many settings where seismic information is not available (or accessible). IGME has almost finished a first draft of the document, that we expect to enrich during 2020-21 with the rest of our partners.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D6.1	Report on a 3D model of the South western Pyrenees	IGME-Sp	Report	PU	M36	Pending	Compiled seismic and well information as well as balanced sections. Hundreds of structural and petrophysical data revored from diverse IGME databases. Most gravimetric data acquisition (main goal) is done (pending 15% of gravimetrics because of early snow fall 2019).
D6.2a	3D model of the South western Pyrenees	IGME-Sp	Digital data	PU	M30	Pending	3D model in progress; enlargement and improvement of previous balanced and serial cross sections 70% done. 2,5D and 3D modeling (contrasting sections and final gravimetric network) expected in 2020.
D6.2b	Major faults in the South western Pyrenees model	IGME-Sp	Digital data	PU	M35	Pending	Major faults identified, final 3D digital files will depend upon the final 3D model of the structure. Expected results in fall 2020.
D6.3	Report on harmonization procedure with gravmag in East GER/ West Poland border	PGI, LBGR, LUNG, IGME-Sp	Report	PU	M36	Pending	Major advances in data harvesting and harmonization, final meeting schedule for summer 2020.
D6.4	Report on case study North Sea	BGR	Report	PU	M36	Pending	Work for D6.4 has not started; a final workmap is not defined yet (a reduction of person months for D6.4 by lead participant BGR is under discussion, as well as the transference of this deliverable to WP4).
D6.5	Optimized 3D reconstructions workflows	IGME-Sp, with all WP6 partners	Report	PU	M36	Pending	Draft version 1 (IGME researchers) finished, will be send to GeoERA partners at 29 February 2020.

Milestones see comment in cell H16

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 7: Information Platform Interface **Duration: 1-36**

The content of the activities carried out by work package 7 was as expected. The main field of activity was to organize the communication between the 3DGEO-EU partners and the Geo-Information Platform (GIP). This was done by using standard communication techniques, such as email and telephone but also teleconference or face to face meetings. The effort varied in time and depended on the demands of the different 3DGEO-EU work-packages or the GIP. In addition to the mentioned daily communication work the deliverable “Technical requirements for project data and results” (D.7.1) was completed on schedule. It provides an overview of the 3DGEO-EU goals and results, which will be transferred and published via the GeoERA-Information Platform (GIP) project.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D7.1	Technical requirements for project data and results	LAGB	Report	PU	M12	Completed	
D7.2	Data exchange report	LAGB	Report	PU	M36		

Milestones see comment in cell H16

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 8: Project Management and Coordination **Duration: 1-36**

The daily operational management by the Project lead was carried out as planned. That involves, among other things, communication with GeoERA Executive Board, monitoring team and other projects, monitoring of 3DGEO-EU project progress (together with Project Board members), the organisation and coordination of face-to-face and teleconference meetings and check & approval of deliverables and subsequent upload to the GeoERA monitoring platform. For all Project Board and Project meetings, minutes documents are produced and stored on the GeoERA 3DGEO-EU Intranet, allowing all partners to keep up to date with project progress. At the end of the project, the minutes documents will be compiled in the D8.1 report "Minutes of meetings". Furthermore, during the reporting period the project lead wrote the "Project Data Management Plan" (D8.2), which is conceived as a document to be updated in subsequent revisions in the course of the project. For more information on project management, see also sheet "7. Project management".

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D8.1	Minutes of meetings	BGR	Document	CO	M1	Pending	Minutes will be continually produced and stored on the 3DGEO-EU Intranet
D8.1	Minutes of meetings	BGR	Document	CO	M36	Pending	At M36 all minutes documents will be compiled in one D8.1 report "Minutes of meetings"
D8.2	Project Data Management Plan	BGR	Document	PU	M6	Completed	
D8.3	Midterm Project Progress Report	BGR	Report	CO	M19	Completed	
D8.4	Final Project Progress Report	BGR	Report	CO	M36		
D8.5	Synthesis Report on final results	BGR, with contributions of all partners	Report	PU	M36		

Milestones see comment in cell H16

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
WP3, Deliverable D3.4 "Lithostratigraphic/ chronostratigraphic correlation profiles through the study area": the finalization will be delayed until mid March 2020 (M21). This delay is related to the availability of the technical drawing department of GEUS, which is needed to draw the correlation profiles.		No	Yes, the delivery date in the work plan will be changed accordingly.

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)
MEETINGS	Internal project meeting	4.07.2018	SCIENTIFIC COMMUNITY		all 3DGEO-EU partners		
MEETINGS	Internal project meeting	11.09.2018	SCIENTIFIC COMMUNITY		LBEG, TNO		
MEETINGS	Meeting with other GeoERA projects	11.-13.09.2018	SCIENTIFIC COMMUNITY		BGR, GEUS, TNO		
MEETINGS	Internal project meeting	25.09.2018	SCIENTIFIC COMMUNITY		IGME		
MEETINGS	Meeting with other GeoERA projects	24.-15.10.2018	SCIENTIFIC COMMUNITY		LAGB, BGR (meeting with GIP-P)		
MEETINGS	Internal project meeting	04.-05.02.2019	SCIENTIFIC COMMUNITY		LBEG, TNO		
MEETINGS	Meeting with other GeoERA projects	11.-12.03.2019	SCIENTIFIC COMMUNITY		BGR, GEUS, IGME, LAGB, LBGR, LUNG, PGI, TNO		
MEETINGS	Internal project meeting	12.03.2019	SCIENTIFIC COMMUNITY		BGR, GEUS, IGME, LAGB, LBGR, LUNG, PGI, TNO		
MEETINGS	Internal project meeting	27.-29.05.2019	SCIENTIFIC COMMUNITY		BGR, GEUS, TNO		
MEETINGS	Internal project meeting	09.-10.07.2019	SCIENTIFIC COMMUNITY		LBGR, LUNG, PGI		
MEETINGS	Internal project meeting	18.-19.09.2019	SCIENTIFIC COMMUNITY		BGR, GEUS, TNO		
MEETINGS	Internal project meeting	22.-23.10.2019	SCIENTIFIC COMMUNITY		BGR, GEUS, IGME, LAGB, LBEG, LBGR, LUNG, PGI, TNO		
MEETINGS	Internal project meeting	22.-23.10.2019	SCIENTIFIC COMMUNITY		BGR, GEUS, TNO		
MEETINGS	Meeting with other GeoERA projects	23.10.2019	SCIENTIFIC COMMUNITY		BGR, GEUS, IGME, LAGB, LBEG, LBGR, LUNG, PGI, TNO		
MEETINGS	Internal project meeting	24.10.2019	SCIENTIFIC COMMUNITY		LBEG, TNO		
MEETINGS	Internal project meeting	19.11.2019	SCIENTIFIC COMMUNITY		BGR, TNO		
MEETINGS	Internal project meeting	4.12.2019	SCIENTIFIC COMMUNITY		BGR, GEUS		
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, …)	02.-08.09.2018	SCIENTIFIC COMMUNITY		BGR	Björn Zehner	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, …)	21.-24.05.2019	SCIENTIFIC COMMUNITY		TNO	Hans Doornenbal	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, …)	21.-24.05.2019	SCIENTIFIC COMMUNITY		BGR	Björn Zehner	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, …)	21.-24.05.2019	SCIENTIFIC COMMUNITY	ca. 100	CGS	Staněk, F., Franěk, J., Jelínek, J.	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, …)	11.-14.06.2019	SCIENTIFIC COMMUNITY		LBEG	Melanie Witthöft	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, …)	10.-13.09.2019	SCIENTIFIC COMMUNITY		BGR	Björn Zehner	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, …)	22.-25.09.2019	SCIENTIFIC COMMUNITY		BGR	Björn Zehner	

INSTRUCTIONS
Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, …)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	INTERNAL PROJECT MEETING
	MEETING WITH OTHER GEOERA PROJECTS
	MEETING WITH NATIONAL BODY
	MEETING WITH INTERNATIONAL BODY
	OTHER
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

PROJECT MANAGEMENT

See also sheet "4. Work progress" (WP8 Project Management and Coordination), which contains a short description of the management and coordination activities. Monitoring of project progress is carried out together with the Project Board members. In the first year of project, communication of PL with Project Board members was mainly done by e-mail, phone, or sometimes in face-to-face meetings. To improve exchange of information and project coordination, a regular monthly WebEx meeting of the Project Board was implemented - starting on June 6, 2019. The progress of the work packages and the status of upcoming deliverables is reported by the WP leaders (or co-leaders) during the meeting. Furthermore, PL informs on and discusses general project issues (e.g. requests from the GeoERA Executive Board, requirements from GIP-P, possibilities to present results in conferences) with the board members. For each meeting, a minutes document is created and stored on the GeoERA 3DGEO-EU Intranet, allowing all 3DGEO-EU partners to keep up to date with project progress. Communication between PL and consortium is mainly done with e-mails. Yet, once a year a face-to-face 3DGEO-EU status meeting ("Project Assembly") is held, giving an overview of project status and room for discussions (e.g. regarding Project Plan amandments). The first status meeting was held on 22.-23.10.19 at BGR in Hannover (Germany). On the level of work packages, the WP leads organise communication between WP partners themselves. Next to mails and phone, WP leads also use WP internal WebEX meetings and face-to-face meetings (work meetings and workshops) for communication and WP coordination. Cooperation with other GeoERA projects mainly concerns the projects GARAH, GIP-P, and HIKE. The cooperation between 3DGEO-EU and GIP-P and HIKE is organised in WP7 (Interface to GIP-P; following requirements for data delivery) and WP5 (Interface to fault data base of HIKE; delivery of fault data to the database) respectively. Regarding cooperation with GARAH, a generalized cross-border 3D depth model of the ‘Entenschnabel’ region in the North Sea was created by WP3 (D3.2) and transfered to GARAH. That model is used by GARAH for Petroleum System modelling. Further cooperation with GARAH is not planned.

IMPACT STATEMENT

A full impact statement will be provided after the end of the project for the Final Project Progress Report. Here a first short statement for the Midterm Report:
The project 3DGEO-EU can generate its expected impacts after the results have been achieved in the last stages of the project in summer 2021. Especially a synthesis of best practices & optimized workflows regarding cross-border harmonization and optimization of 3D geomodels needs to be found. If the planned results will be achieved, then 3DGEO-EU can provide good advice to other Geological Survey Organisations (GSO) and the scientific community on how cross-border harmonization can be done in other regions in Europe. Helping to create coherently harmonized 3D geomodels in Europe could be considered as an important impact for sure. As the project is in general on track after the first 18 month in regard of the work plan, the signs are optimistic that the main results will be achieved as planned and therefore the hoped impacts could be generated.
In addition to best practices, the establishment of cross-border harmonized 3D geomodels in the 3DGEO-EU pilot areas will enhance the state of knowledge for such regions, allowing for consistent cross-border resource assessments. Close cooperation of involved GSOs during the work process will increase mutual understanding regarding geology, concepts and applied methodologies.
Furthermore, the established cross-border harmonized 3D geomodels can be the nucleus for further transnational harmonization projects in Europe.
Improved visualization methods for uncertainties will help to enhance the reliability of 3D geomodels for future resource assessments in Europe.
As an example of already accomplished and used results, Work Package 3 (North Sea area NL-DE-DK) has created a generalized cross-border 3D depth model of the ‘Entenschnabel’ region in the North Sea (delivered in Month 10). That geomodel is used by the GeoEnergy project GARAH for Petroleum System modeling.

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
	Actual			(0,25*A+B)				
1. BGR	276.867,01	8.818,77	0,00	71.421,45	357.107,23	29,70%	106.060,85	251.046,38
2. CGS	2.164,00	0,00	0,00	541,00	2.705,00	29,70%	803,39	1.901,62
3. GEUS	143.514,35	9.769,81	0,00	38.321,04	191.605,20	29,70%	56.906,74	134.698,46
4. LBGR	199.503,12	49.796,02	0,00	62.324,79	311.623,93	29,70%	92.552,31	219.071,62
5. LUNG	114.708,20	25.046,56	0,00	34.938,69	174.693,45	29,70%	51.883,95	122.809,50
6. LBEG	253.446,10	2.115,18	0,00	63.890,32	319.451,60	29,70%	94.877,13	224.574,47
7. LAGB	59.193,67	47.568,00	0,00	26.690,42	133.452,09	29,70%	39.635,27	93.816,82
8. TNO	94.640,97	6.760,81	0,00	25.350,45	126.752,23	29,70%	37.645,41	89.106,81
9. PIG-PIB	14.246,54	2.743,79	0,00	4.247,58	21.237,91	29,70%	6.307,66	14.930,25
10. IGME-Sp	125.156,57	24.156,53	7.499,58	37.328,28	194.140,96	29,70%	57.659,86	136.481,09
11. GEOINFORM	1.193,03	0,00	0,00	298,26	1.491,29	29,70%	442,91	1.048,38
					1.834.260,87		544.775,48	1.289.485,39

Date: 29.01.2020

Person responsible: Stefan Knopf

Insertion of financial information as reported by the partners.

FINANCIAL STATEMENT FOR PP 1 - BGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1. BGR	276.867,01	8.818,77	0,00	71.421,45	357.107,23	29,70%	106.060,85	251.046,38

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	27,37	WP3	188.398,08
	6,37	WP4	50.741,00
	0,02	WP5	163,95
	0,16	WP6	1.256,95
	0,02	WP7	155,16
	4,88	WP8	36.151,87
			276.867,01

Other direct costs	Description	Category	Associated WP	Costs
	Zehner, Brüssel	Travel	WP4	531,28
	Zehner, Hannover	Travel	WP4	101,50
	Zehner, Halle/S.	Travel	WP4	70,15
	Zehner, Hannover	Travel	WP4	105,30
	Zehner, Utrecht	Travel	WP4	737,66
	Zehner, Olomouc	Travel	WP4	1.124,65
	Knopf, Ljubljana	Travel	WP8	674,22
	Knopf, Wien	Travel	WP8	657,08
	Jähne-Klingberg, Wien	Travel	WP3	553,88
	Thöle, Kopenhagen	Travel	WP3	763,84
	Zehner, Bern,	Travel	WP 4	1.325,59
	Zehner, Nancy	Travel	WP 4	1.100,87
	Zehner, Münster	Travel	WP 4	1.072,75
				8.818,77

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - CGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
2. CGS	2.164,00	0,00	0,00	541,00	2.705,00	29,70%	803,39	1.901,62

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,545454545	WP4	2.164,00
			2.164,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 -GEUS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
3. GEUS	143.514,35	9.769,81	0,00	38.321,04	191.605,20	29,70%	56.906,74	134.698,46

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	16,31	WP3	112.145,63
	1,25	WP4	10.456,24
	1,25	WP5	10.456,24
	1,25	WP7	10.456,24
			143.514,35

Other direct costs	Description	Category	Associated WP	Costs
	Kick off Meeting in Brussels, july 2018	Travel	WP3	440,30
	Project Meeting in Hannover, september 2018	Travel	WP3	2.462,09
	Project Meeting in Wien, march 2019	Travel	WP3	832,68
	Project Meeting in Hannover, may 2019	Travel	WP2	999,36
	Project Meeting in Hannover, may 2019	Travel	WP3	2.483,37
	Project Workshop in Hannover, october 2019	Travel	WP3	1.430,68
	Project Meeting in Hannover, december 2019	Travel	WP3	831,98
	Project Meeting in Copenhagen, september 2018, catering	Other	WP3	65,44
	Project Meeting in Copenhagen, september 2019, catering	Other	WP3	223,91
				9.769,81

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - LBGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
4. LBGR	199.503,12	49.796,02	0,00	62.324,79	311.623,93	29,70%	92.552,31	219.071,62

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	30,29	WP2	183.570,56
	0,25	WP4	1.514,41
	1,61	WP5	9.550,42
	0,8	WP6	4.867,73
			199.503,12

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA-kickoff-meeting, Brussels, Belgium, 3.-5.7.2019	travel	WP2, WP4, WP5, WP6	777,77
	meeting at Brandenburg Surveying and Geoinformation Office (LGB), University Potsdam (Potsdam), Germany, 6.11.18	travel	WP6	120,00
	meeting, Company Geophysik Leipzig (GGD) Leipzig , Landesamt für Geologie und Bergwesen Sachsen-Anhalt (LAGB), Halle, Germany, 19.11.18	travel	WP2, WP5, WP6	118,00
	project meeting, Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern (LUNG), Güstrow, Germany, 4.3.19	travel	WP2, WP5	117,00
	project meeting, Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern (LUNG), Güstrow, Germany, 28.-29.5.19	travel	WP2, WP5	125,60
	project meeting, Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern (LUNG), Güstrow, Germany, 1.7.19	travel	WP2, WP5, WP6	91,00
	GeoERA 3DGEO-EU WP2 meeting, Warschau, Poland, 9.-10.7.2019	travel	WP2	464,33
	project meeting, Landesamt für Geologie und Bergwesen Sachsen-Anhalt (LAGB), Halle, Germany, 10.10.19	travel	WP5, WP6	98,00
	project meeting, Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern (LUNG), Greifswald, Germany, 18.10.19	travel	WP2, WP5, WP6	106,00
	GeoERA 3DGEO-EU meeting, Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover, Germany, 22.-23.10.19	travel	WP2, WP4, WP5, WP6	251,10
	project meeting, Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern (LUNG), Güstrow, Germany, 28.-29.5.19	travel	WP2, WP5	142,60
	participation conference "5th European meeting on geological 3D-Modelling", Bern, Switzerland, 20.-24.5.19	travel	WP2	1.027,84
	GeoERA 3DGEO-EU WP2 meeting, Warschau, Poland, 9.-10.7.2019	travel	WP2	486,65
	participation conference "GeoMünster 2019", Münster, Germany, 23.-25.9.2019	travel	WP2	609,15
	project meeting, Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern (LUNG), Güstrow, Germany, 28.-29.5.19	travel	WP2, WP5	179,81
	participation conference "5th European meeting on geological 3D-Modelling", Bern, Switzerland, 20.-24.5.19	travel	WP2	1.040,55
	project meeting, Landesamt für Umwelt, Naturschutz und Geologie Mecklenburg-Vorpommern (LUNG), Güstrow, Germany, 28.-29.5.19	travel	WP2, WP5	19,20
	Licences 3D modelling software GOCAD Paradigm, 26.6.2018	Equipment	WP2, WP5	4.987,20
	Licences 3D modelling software GOCAD Paradigm VAT, 15.01.2019	Equipment	WP2, WP5	947,72
	Licences 3D modelling software GOCAD Paradigm VAT, 10.08.2019	Equipment	WP2, WP5	1.353,94
	Licences 3D modelling software GOCAD Paradigm, 22.08.2019	Equipment	WP2, WP5	7.125,36
	Digitizing of analog geophysical data (Gravimetry), 27.09.2019	Other	WP2, WP6	6.949,60
	Implemenation english version web presentation 3D-geomodell Brandenburg, 06.11.2019	Other	WP2	17.735,76
	Digitizing of analog geophysical data (Gravimetry), 01.12.2019	Other	WP2, WP6	1.309,00
	Implemenation english web presentation 3D-geomodell Brandenburg, 15.12.2019	Other	WP2	1.970,64
	Digitizing of analog geophysical data (Gravimetry), 28.12.2019	Other	WP2, WP6	1.642,20
				49.796,02

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - LUNG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
5. LUNG	114.708,20	25.046,56	0,00	34.938,69	174.693,45	29,70%	51.883,95	122.809,50

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	18	WP2	101.914,16
	1	WP4	5.150,88
	1	WP5	7.643,16
			114.708,20

Other direct costs	Description	Category	Associated WP	Costs
	TUNB Meeting (15./16.11.2018 in Berlin, Germany)	Travel	WP2	72,50
	GeoERA GeoModelling Workshop (11./12.03.2019 in Vienna, Austria)	Travel	WP2	574,45
	GeoERA WP2 Meeting (05.04.2019 in Berlin, Germany)	Travel	WP2	36,50
	5th European Meeting on Geological 3D Modelling (20.-24.05.2019 in Bern, Switzerland)	Travel	WP2	2.553,52
	GeoERA WP2 Meeting (09./10.07.2019 in Warsaw, Poland)	Travel	WP2	629,23
	3DGEO-EU Status Meeting (22./23.10.2019 in Hannover, Germany)	Travel	WP2	37,00
	TUNB Meeting (12./13.11.2019 in Berlin, Germany)	Travel	WP2	122,80
	SKUA-GOCAD License 2018	Equipment	WP2	3.985,05
	SKUA-GOCAD License 2019	Equipment	WP2	10.592,79
	ArcGIS Software Maintenance 2018	Other	WP2	1.429,79
	ArcGIS Software Maintenance 2019	Other	WP2	1.410,00
	Neuralog Software Maintenance 2018	Other	WP2	1.762,27
	Neuralog Software Maintenance 2019	Other	WP2	1.840,66
				25.046,56

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - LBEG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
6. LBEG	253.446,10	2.115,18	0,00	63.890,32	319.451,60	29,70%	94.877,13	224.574,47

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	44,24	WP1	253.446,10
			253.446,10

Other direct costs	Description	Category	Associated WP	Costs
	2xKickoff Brussels	Travel	WP1	794,80
	3xUtrecht	Travel	WP1	483,88
	Freiberg, Brehlingen, Itterbeck	Travel	WP1	836,50
				2.115,18

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - LAGB

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
7. LAGB	59.193,67	47.568,00	0,00	26.690,42	133.452,09	29,70%	39.635,27	93.816,82

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,6	WP4	3.699,74
	3,4	WP5	20.285,65
	2,3	WP6	13.153,29
	3,5	WP7	22.054,99
			59.193,67

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA meeting Brussels July 2018	Travel	WP7	569,68
	GeoEra meeting Brussels October 2018	Travel	WP7	1.090,31
	GOCAD licences (proportional) 2018	Equipment	WP5	4.027,68
	Software Didger	Equipment	WP6	830,22
	Software Surfer	Equipment	WP6	1.570,25
	Notebooks	Equipment	WP5	4.036,72
	(Storage) memory	Equipment	WP6	14.841,20
	Whiteboard	Equipment	WP5	4.219,03
	Mobile hotspot (internet connection)	Equipment	WP7	0,80
	PC-system	Equipment	WP5	8.407,35
	GeoERA meeting Vienna	Travel	WP7	694,24
	GeoERA meeting Hannover	Travel	WP7	164,00
	GOCAD licences (proportional) 2019	Equipment	WP5	7.116,52
				47.568,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - TNO

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
8. TNO	94.640,97	6.760,81	0,00	25.350,45	126.752,23	29,70%	37.645,41	89.106,81

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5,7	WP1	31.297,54
	8,91	WP3	53.147,41
	0,38	WP4	2.176,22
	0,59	WP5	3.598,28
	0,59	WP8	4.421,52
			94.640,97

Other direct costs	Description	Category	Associated WP	Costs
	Meetings: Hannover (23-24 Oct 19, Kruisselbrink)	Travel	WP1	354,88
	Meetings: Copenhagen (17-19 Sep 2019), Hannover (23-24 Oct-2019) - Den Dulk, Doornenbal)	Travel	WP3	1.389,86
	Meeting: Vienna (10-13 March 2019) - Middelburg/Doornenbal/Ten Veen	Travel	WP4	245,44
	Meetings: Hannover (10-13 Sep 2018, 27-29 May 2019, 22-24 Oct 2019), Vienna (10-13 March 2019) - Doornenbal, Den Dulk, Middelburg, Ten Veen	Travel	WP8	4.554,01
	Sodexo banqueting - Meeting Utrecht - Feb 4-5, 2019	Equipment/consumables	WP1	196,22
	Consumables - Meeting Utrecht Nov 19, 2019	Equipment/consumables	WP4	20,40
				6.760,81

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - PIG-PIB

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
9. PIG-PIB	14.246,54	2.743,79	0,00	4.247,58	21.237,91	29,70%	6.307,66	14.930,25

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	6,89	WP2	13.974,45
	0,01	WP4	31,40
	0,11	WP5	240,69
			14.246,54

Other direct costs	Description	Category	Associated WP	Costs
	Meetings: Brussels (kick-off), Hannover, Vienna (2 persons)	Travel	WP2	2.743,79
				2.743,79

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - IGME-SP

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
10. IGME-SP	125.156,57	24.156,53	7.499,58	37.328,28	194.140,96	29,70%	57.659,86	136.481,09

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,11	WP2	9.875,86
	0,11	WP4	514,86
	0,5	WP5	2.340,25
	23,52	WP6	110.085,36
	0,5	WP7	2.340,25
			125.156,57

Other direct costs	Description	Category	Associated WP	Costs	
	1-I-Field Campaign fall 2018 (Agustin González). From: 29/10/18 plus 31 days.	Travel	WP6	1.974,40	**Field campaings**
	2-I-Field Campaign fall 2018 (José Mª Llorente). From: 29/10/18 plus 31 days.	Travel	WP6	2.873,08	
	3-II-Field Campaign spring 2019 (Agustin González). From: 5/3/19 plus 31 days.	Travel	WP6	1.974,40	
	4-II-Field Campaign spring 2019 (José Mª Llorente). From: 5/3/19 plus 31 days.	Travel	WP6	2.957,91	
	5-III-Field Campaign spring 2019 (Agustin González). From: 23/4/19 plus 30 days.	Travel	WP6	1.385,88	
	6-III-Field Campaign spring 2019 (José Mª Llorente). From: 23/4/19 plus 30 days.	Travel	WP6	1.957,35	
	7-Support High Mountains campaing summer 2019 and circuit of bases (Concepción Ayala). From: 25/8/19 plus 4 days.	Travel	WP6	502,60	
	8-Support High Mountains campaing summer 2019 and circuit of bases (Carmen Rey). From: 25/8/19 plus 4 days.	Travel	WP6	584,12	
	9-IV- Field Campaing fall 2019 (Agustin González). From: 16/9/19 plus 11 days.	Travel	WP6	827,82	
	10-IV- Field Campaing fall 2019 (José Mª Llorente). From: 16/9/19 plus 11 days.	Travel	WP6	1.271,07	
	11-V- Field Campaing fall 2019 (Agustin González). From: 7/10/19 plus 18 days.	Travel	WP6	1.166,88	
	12-V- Field Campaing fall 2019 (José Mª Llorente). From: 7/10/19 plus 18 days.	Travel	WP6	1.772,66	
	13-VI- Field Campaing fall 2019 (Carmen Rey). From: 11/11/19 plus 5 days.	Travel	WP6	385,40	
	14-VI- Field Campaing fall 2019 (Emilio L. Pueyo). From: 11/11/19 plus 10 days.	Travel	WP6	795,77	
	15-Kick-off meeting-Brussels (Emilio L. Pueyo). From: 2/7/18 plus 4 days.	Travel	WP6	1.319,98	**Meetings**
	16-WP6 kick-off meeting-Madrid (Emilio L. Pueyo). From: 24/9/18 plus 5 days.	Travel	WP6	308,30	
	17-GeoERA-Energy technical workshop-Wien (Emilio L. Pueyo). From: 10/3/19 plus 4 days.	Travel	WP6	839,11	
	18-Project meeting (M16)-Hannover (Emilio L. Pueyo). From: 21/10/19 plus 4 days.	Travel	WP6	1.113,35	
	19-Petrophysical meeting-Madrid (Emilio L. Pueyo). From: 28/10/19 plus 2 days.	Travel	WP6	146,45	
				24.156,53	

Subcontracting	Supplier	Description	Associated WP	Cost
	Lope Ezquerro	Processing and harmonization of gravimetric data (Western Pyrenees)	WP6	3.749,79
	Alejandro Montañes	Aquisition of gravimetric data at high elevations (Western Pyrenees)	WP6	3.749,79
				7.499,58

FINANCIAL STATEMENT FOR PP 1 - Geoinform

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
11. Geoinform	1.193,03	0,00	0,00	298,26	1.491,29	29,70%	442,91	1.048,38

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,079619917	WP4	384,75
	0,082224766	WP5	397,34
	0,085040315	WP6	410,94
			1.193,03

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	European Ornamental Stone Resources
Project acronym:	EuroLithos
Project reference number:	GeoE.171.017
Project topic:	Raw materials
Project specific recearch topic:	RM2 – CONSTRUCTION MATERIAL
Project website address:	www.eurolithos.org

Period covered from: 1.07.2018 to: 31.12.2019

Report submission date: 18.01.2020
Project coordinator: Tom Heldal

Contact person for the project: Tom Heldal
Tel: 4799091739
E-mail: tom.heldal@ngu.no

IDENTIFICATION OF PROJECT PARTICIPANTS

[use dropdown menu]

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	NORGES GEOLOGISKE UNDE	Geological Survey of Norway	NGU	Norway	999466758	Project Lead
2	LABORATORIO NACIONAL DI	The National Laboratory of Energy and Geology	LNEG	Portugal	994187921	Project Partner
3	Sveriges Geologiska Underso	Geological Survey of Sweden	SGU	Sweden	995575991	Project Partner
4	*Instituto Geológico y Minero*	Geological Survey of Spain	IGME-Sp	Spain	998737803	Project Partner
5	Institouto Geologikon kai Me	Institute of Geology and Mineral Exploration	IGME-Gr	Greece	925968015	Project Partner
6	Regione Emilia Romagna (Se	Geological, seismic and soil survey, Emilia Romagna Region	SGSS	Italy	999482375	Project Partner
7	Regione Toscana	Regional geological survey	RT	Italy	998823842	Project Partner
8	Geološki zavod Slovenije	Geological Survey of Slovenia	GeoZS	Slovenia	999466370	Project Partner
9	Geologische Bundesanstalt	Geological Survey of Austria	GBA	Austria	998164145	Project Partner
10	Institutul Geologic al Român	Geological Institute of Romania	IGR	Romania	998906874	Project Partner
11	State Research and Develop	State Research and Development Enterprise State Information Geological Fund	GEOINFORM	Ukraine	947331392	Project Partner
12	Department of Communicat	Geological Survey of Ireland	GSI	Ireland	996559280	Project Partner
13	Istituto Superiore per la Prot	Italian Institute for Environmental Protection and Research	ISPRA	Italy	997905349	Project Partner
14	Hrvatski geoloski institut	Croatian Geological Survey	HGI-CGS	Croatia	972614345	Project Partner
15	Ministry of Agriculture, Natu	Cyprus Geological Survey Department	GSD	Cyprus	999434845	Project Partner
16	Administration Des Ponts et	National geological survey	SGL	Luxemburg	983408408	Project Partner
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PUBLISHABLE SUMMARY

Ornamental stone is today a raw material produced with great skills all over Europe, SME's and larger enterprises exploiting the vast diversity of European natural stone resources. Today's European stone industry is not only large and important but also highly dispersed throughout Europe, making a backbone industry for particularly rural areas. In Italy alone, there are more than 1000 stone quarrying enterprises and the sector in total employed more than 50 000 in 2011.
Ornamental stone has contributed significantly in shaping our rural and urban landscapes, through its use in our built heritage from different historical periods. Ornamental stone is today a raw material produced with great skills all over Europe, exploiting the vast diversity of European natural stone resources. Yet, the actual use of local and regional stone resources in Europe is decreasing, and so is the knowledge of the resources, traditions and skills. EuroLithos is founded on the idea that increased knowledge of the geology, quality and history of use of natural stone in Europe will stimulate both more sustainable use of stone resources in Europe for the benefit of SME's and our cultural heritage, and a sound land use management for the safeguarding of ornamental stone deposits.
Yet, such information is scattered, diverse and not harmonised, and do not exist at a European level.

Objectives
In the context of the GeoEra partnership, the best way of contributing to meet this challenge is a ornamental stone information platform, providing documentation, databases and recommendations covering the most important aspects of natural stone resources in Europe; partly, by feeding existing solutions, and partly by adding new ones. Or, said with simpler words, put the ornamental stone resources on the map.
This main challenge was broken down to a series of objectives
1) Identify and define: a descriptive framework for natural stone resources in Europe;
2) Collect and characterize: following the framework, carry out an inventory of natural stone resources in partner countries;
3) Make an atlas: template and trial versions for a geological atlas on natural stone on a European and country level linked to databases and directories
4) Make a directory: database of stones and their properties
5) Identify heritage values: producing guidelines for assessing heritage values to natural stone
6) Communicate and collaborate: stakeholder interaction and communication, building networks for continuation;
7) Integrate and distribute: harmonise and provide data to the forthcoming solutions provided by RM1 and IP1
8) Promote and disseminate: promoting natural stone information platform to stakeholders
9) Maintenance and continuation: secure long-term life and growth of EuroLithos solutions

The objectives were assigned to 6 work packages:
WP1: Project management NGU
WP2: Dissemination and communication NGU (Objective 6, 8,
WP3: Atlas of European Ornamental Stones LNEG (Objective 2, 3)
WP4: Directory of Ornamental stone properties HSGME (Objective 2, 4)
WP5: Ornamental stone heritage HGI-CSG (Objective 5)
WP6: Link to information platform NGU (Objective 1, 7, 9)

Eurolithos is thus all about
- developing a framework of information infrastructure for ornamental stone for spatial (WP3) and technical data (WP4), develop and test prototypes (WP6) and implement this with guidelines for the partner countries
- through case studies covering a range of subjects related to ornamental stone, create guidelines for assessing values of ornamental stone resources on a community/national and EU level,

beyond strictly economic/industrial ones (WP5). The case studies will also be fundamental for publication of a scientific paper collection by the end of the project
- communicate project and results to a range of stakeholders

Focus areas first 18 months
The first focus area during the first period of the project was to define and agree upon how a descriptive framework (Objective 1,2,3,4) of European ornamental stone will look like and how to organise and develop this in practice. Moreover, what is realistic to achieve within the framework of GeoEra. Much of the project activities have been concentrated about this in WP3 and WP4.
The second focus area was to get the communication activities up and running (Objective 6), primarily website, social media and newsletter.
The third focus area was to define and start case studies, that are to be finished by M24 (Objective 5).

Results first 18 months
Descriptive framework
Mapping gaps: Eurolithos have partners from 14 countries, but only 8 of these delivered data about ornamental stone to Minerals4EU, some only partially, and none in a harmonised way. A few other GeoEra partners but not members of Eurolithos, also delivered. The reason for "non-delivery" was primarily that Minerals4EU strongly focused metallic ore and industrial minerals, i.e. ornamental stone was not considered to include critical raw materials and thus not highly important. The reason for lack of harmonised data was not lack of standards but lack of 1) harmonisation between EN12440/EN12670 and INSPIRE, 2) good "step-by-step" guidelines describing which kind of INSPIRE data to deliver and how to use the codelists. Contradicting standards (INSPIRE versus EN versus national) became a subject of discussion, and although such issues cannot be solved within the GeoEra timeframe, it should be a matter of discussion for a long term harmonisation.
Creating a spatial data infrastructure: Deliverable D3.1 (July 2019) addressed the partners of Eurolithos, what kind of spatial data they have and what they are able to deliver to the EGDI. 12 of the partners will make a selection of stone resources they, from their professional knowledge, believe is of interest on a European scale. 2 of the partners will deliver information they have about all ornamental stone resources in the country. All partners can deliver point coordinates to EGDI, but only 9 can in addition deliver polygons. Only 4 have possibilities to deliver spatial information about resources not yet exploited, and 6 partners have polygon information about "geological provinces with possibilities of future exploitation". Given the range of possibilities and limitations, Deliverable D3.2 will provide a guide for partners (and non-partners) for how to collect and deliver data to the spatial database, within the framework on INSPIRE/Minerals4EU, in a way that creates a harmonised and uniform presentation of European ornamental stone resources.
An issue raising early in the project work, was some particular concerns that makes ornamental stone different from other mineral commodities, namely the role of uniqueness. Since ornamental stone is applied the way geology shaped it, subtle differences in appearance, colour and technical properties are of great importance to its use. This has through history, created a tradition of "unique names" or "trade names" that are highly important for characterising the resource. The "Carrara Marble" is not just one of many resources of the "marble commodity", but carry unique properties, history of use and reputation. In the EN standard 12440, such unique stone names for all European countries are listed in an annex, all together more than 700. We decided to use this as a benchmark list for each country, and the partners are now using this for making updated, national lists of unique stone types to be included in the infrastructure. This contribution from partners is due to February 1, 2020.
The unique name will provide and important link between datasets. The ornamental stone commodity list, even if combined with lithology, do not provide sufficient identification of a resource, and thus the Unique name will be important to any database or directory addressing ornamental stone. After discussions including GIP-IP, we are now concluding that these unique names, after revision of national lists, will be introduced as structured data involving a specific codelist of such names. See also Deliverable 6.1 March 2019).

Moreover, as colour (or main groups of colours) is an important property of ornamental stone, we have proposed this also as structured data involving a new codelist in the Minerals4EU model.
Creating the directory: The unique name codelist will provide a link between spatial data and directory of stone properties. The latter was finally agreed at a workshop in Athens March 2019, and later slightly adjusted based on advice from GIP-IP. This agreement took longer time than anticipated, and we have still issues not finalised, such as harmonising tables containing mineralogical and geochemical data of relevance to several GeoEra projects – it will not be wise to deliver same type of data on different formats from different GeoEra projects.
The Directory is actually a data repository, and we propose a central uploading service. Of texts, photos, tables and links, related to each of the unique names. This will mainly provide unstructured data, however linked to the spatial data through unique name.
A challenge of the directory is the inclusion of tables containing technical and geochemical analyses; such tables may be common among several GeoEra projects, and one should secure a harmonised way of delivering and displaying them.
After discussions within the consortium and response from GIP-IP, the directory contains the following entries:

- Preferred label (unique Name)
- Other labels (alternative names)
- Commodity (INSPIRE codelist)
- Short description text (macroscopic)
- Short description text (microscopic)
- References (link to bibliographic references)
- Status (technical)
- Colour description (New codelist)
- Lithology (INSPIRE codelist)
- Links to vendors/other databases (external directories)
- Uploaded images
- Links to images
- Geographic name
- Lat/Long coordinates
- Country (name of country)
- Linked data (links to other data services)
- Uploaded table Mineral content
- Uploaded table Physical properties
- Uploaded table Main element geochemistry
- Uploaded table Trace element geochemistry
- Uploaded table REE geochemistry
- Link to other site describing the stone
- Keywords

Details on formats, uploading services etc. still remain to be clarified.
Note on use of stone: in the project proposal, it was proposed to make a spatial database for the use of stone, i.e. location of buildings and other constructions (part 2.3, “Spatial data on the use of ornamental stone (buildings, monuments, other)”). This was later considered to be unrealistic, for two reasons: 1) it will create much work on a structure that in any case will be difficult to maintain, 2) there are several open map services for constructions that may be linked to the geological resources. Thus, the conclusion was to explore such options in the case studies (see below).
Note on the vocabulary: the consortium largely agree that the INSPIRE commodity code lists for ornamental stone are not satisfactory, for example, they deviate from other European standards (such as EN12670). In the sort term, we will relate to the codelists as they are, but wish to present a new proposal and mapping routine from existing to new before the end of the project.

Communication activities

After discussion with GIP-IP we decided to create an own website in addition to (and linked from) the official GeoEra site. www.eurolithos.org is a more dynamic and regularly updated site containing results but also profiles of ornamental stone resources from different perspectives. This was launched in July 2019. Website visitor statistics, including geographic location, should be available in March 2020. Currently, the webpage serves to provide general information about EuroLithos and its activities. The website was modified for both full screen and mobile viewing.
The rate of engagement on the Eurolithos Facebook page is 2.8% vs while for Twitter, it is only 1.6%. The average rate of interaction with EuroLithos social media content (sharing, comments, likes, and clicks) is considered "fair-good" from a general marketing standpoint, where anything over 2% is considered good. We have relied on an "organic" distribution of our posts; that is, we have not paid the platform provider to promote EuroLithos material. Other GeoERA projects, stakeholders and partners eagerly assist disseminating EuroLithos information and visa-versa.
When the low number of followers is taken into consideration (ca. 50 for Twitter and 90 for Facebook) the engagement and impression rate for many posts has been extremely high. This is particularly true for Twitter where follower/engagement rate can be between 5%-100% when non-followers are engaging in a post, as in cases where our top followers retweet our posts to their audience. Spikes of engagement from both followers and non-followers occur when we post attractive photos and information about stone types used in Europe.
We emailed two issues of Eurolithos Newsletter to our 44 partners plus associates and 140 stakeholders (April and July). We received 10-12 requests to be added to the mailing list, but more importantly, several public institutions, interest groups and enterprises reposted our newsletter on their web and social media platforms.
There are yet no scientific publications directly due to the project. We consider the scientific work to be predominantly confined to the case studies in addition to some main results. We have thus planned to make a specific, EuroLithos volume of papers by the end of the project, most likely as a part of NGU Special Publications series.

Case studies
Although we planned to define case studies by M3, we did not conclude until M12. This was mostly related to the need for some more discussion among the partners.
We defined three main subjects of case studies in the Project Description, suggesting at least 2 case studies in each group:

- Ornamental stone resource value assessment – including a framework for description and characterization of stone quarries and quarry landscapes, defining the best methodological practice to assess the values of such
- Stone and built heritage – develop methods for practical inventories of stone resources and built heritage, including a framework for assessing the importance of stone types for maintenance, restoration and new construction.
- Stone and intangible heritage (crafts) – focused on the unitary designation and description of the immaterial crafts in a way that can be used in the heritage stone assessments.

In our consortium meeting in July 2019, we, furthermore, decided to include one or several case studies in an additional new subject – sustainable ornamental stone production. This was mainly reasoned in the increased urgency in finding sustainable solutions along the range of raw materials, and due to recent innovative developments in the industry. We will primarily focus 1) zero waste, 2) environmental footprints (life cycle) and 3) sourcing of ornamental stone products.
IN total, we are carrying out 11 case studies distributed on the four subjects. They will be presented in forthcoming D5.1, and all case studies are due to be finished by M24.

Obstacles and problems
One partner – Regione Toscana (RT) decided to withdraw from the GeoEra consortium spring 2019. The limited amount of funding was transferred to partner GSD.
The first deliverables (D2.1, D2.2, D6.1) were delayed from M6 to M9.

D2.1 (website) was from M1 made as a one-pager at the GeoEra main web portal (https://geoera.eu/projects/eurolithos1/). At the Kick-off meeting we planned to gradually deliver material for regular update and expansion of this site, delivering new contributions to GIP-IP. This turned out to be not efficient since it would load too much workload on the GIP-IP. Parallel to Deliverable D2.1, registered M9 (update and expansion of web information delivered), we decided to make a project website outside the GeoEra portal and got this published by M12 (www.eurolithos.org). At the same time, a facebook page (https://www.facebook.com/europeanstonestories/) and Twitter were published.
EuroLithos first Newsletter was also delayed from M6 to M9, mostly due to DGPR-routines at NGU. But from M9 this has worked, and second Newsletter was in M7. GeoEra evaluation team proposed to make one deliverable from the newsletters instead of 6 biannual ones, i.e. 6 newsletters delivered by M36.
D6.1 was delayed from M6 to M9, mainly due to that agreement about the content, particularly the directory, was reached at Athens workshop in M9.
None of the above mentioned delayes have, or will have, serious consequences for the progress of the project.
The WP2 Lead (Jacob Keiding) terminated his work at the Geological Survey of Norway (NGU) June 2019. He was shortly after replaced by Anne Liinama Dehls. There have been no consequences for the project.

Concluding remarks
The discussions and preparations of the content and structure of the knowledge platform did take longer time than anticipated, and there are still problems to solve. This do raise the need for more communication across GeoEra project boundaries, particularly about data tables common to several projects.
This delay has caused some consequences, particularly for partners with minor financing, waiting for delivering data. We yet hope to have prototype of data deliverances ready by M24.
A main conclusion is the shortterm use of the existing Minerals4EU data model for spatial data, with a few and minor additions. The most urgent needs are descriptions on how to use this model and harmonise the content.
We have agreed upon and proposed a vocabulary for the directory, which, in addition to few structured data for linking with the spatial data, will consist of predominantly a repository of non-structured data.
After some delay, communication activities are getting to speed, and we will continue to interact with stakeholders. As solutions for data deliverable and directory improves, we will involve particular stakeholders for collaboration on specific fields, i.e. links to other directories.
Case studies will be finished by M24, to provide the ground for guidance documents and scientific publications.

PROJECT CONTRIBUTION TO GeoERA PROJECT

EuroLithos addresses several aspects of the RM2 scope. Below, we have summarized the scopes, Eurolithos response, and results so far:

1) Develop inventories in conjunction with the Information Platform: Propose and deliver contribution to the IP central database, web-portal and digital archive, propose and deliver standardized spatial information tailored for Natural Stone resources to the EGDI. Results so far: Eurolithos has delivered proposals for the archive and spatial data to the IP and carried out discussions with and received advice from the IP. We are at or very close to a final data structure. What remains is to populate the data structure with data, first by prototype, thereafter permanently. A data delivery guideline is due to publishing (D3.2).

2) Information of Europe's exploitation sites and prospective areas of ornamental stone deposits and provide a visualization which can be used for land-use planning: Country and regional case studies addressing one or several: spatial distribution of geological units of importance for natural stone production (provinces), quarries and quality, use and heritage. Close liaison with H2020 projects MINATURA2020 and MinLand.

Results so far: exploitation sites and prospective areas will be covered by Minerals4EU data model. It is not clear, however, how many of the partner that can provide polygon data for this on the short term, see forthcoming D3.2.

3) Explore the applicability and interoperability of standard codes among partners for harmonised reporting of resources: Natural stone will be addressed as a case study in the RM1 WP UNFC. EuroLithos will provide an assessment of codes and propose a G-axis coding for UNFC. Results so far: Case study on UNFC will be ready M24 under the Mintel4EU project.

4) Ensure data coherence within a given raw material and among GeoERA partner countries: From EN standards and INSPIRE, demonstrate the adaptability of classification and standards and provide guideline for data description and coherence for natural stone. Results so far: In EuroLithos, se have evaluated the existing INPIRE standards, and conclude that they are not satisfactory nor in harmony with EN12440. We will adapt to existing standards on the short term, provide proposals of change before project end and a guideline for translating data.

5) Provide appropriate input to SRT RM1: Assess and provide guideline for input of spatial data, and demonstrate through data delivery for selected partner countries. Results so far: all partners are evaluating their delivery to the EGDI, and will provide a list before February 2019.

6) Provide advice on how forecasting for the demand of these materials can be improved so that policy formulation and government resource management can be enhanced and capital investment by industry can be prioritised: For natural stone, such generic forecast studies will have little impact. EuroLithos will instead provide advice on how government authorities can improve their resource management through collaboration, i.e. for improving both heritage management and SME conditions. Results so far: In EuroLithos, we have so far no particular advise on ornamental stone, except that we believe that 1) environmental footprints and 2) other stone-related properties including responsible sourcing, will be more important than before for the selection of stones. Thus, we have included a fourth perspective of case studies – sustainable ornamental stone production.

7) Provide readily accessible information and easy to use decision making tools for the public and local authorities, respectively: Providing guidelines and best practices for different aspects of importance to natural stone management, and provide easy accessible and readable atlases aimed at raising the interest and awareness of natural stone production, history and use. Results so far: None, this is aimed at the last part of the project.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: Project Management **Duration:** **M1-M36**

WP 1 has two main tasks: T1.1 project consortium meetings, and T1.2 Management and reporting. In addition to the kick-off meeting, consortium meeting was held early M13, according to plan. D1.1, D1.2 and D1.3 were delivered according to plan.

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Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D1.1	Cumulative expenditures report 1	NGU		GEOERA	M6	Completed	
D1.2	Project progress report	NGU		GEOERA	M18	Completed	
D1.3	Cumulative expenditures report 2	NGU		GEOERA	M18	Completed	
D1.4	Project review meeting presentation 1	NGU		GEOERA	M21	Pending	
D1.5	Cumulative expenditures report 3	NGU		GEOERA	M30	Pending	
D1.6	Final project progress report	NGU		GEOERA	M36		
D1.7	Project review meeting presentation 2	NGU		GEOERA	M39		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M1	Kick-off meeting	M1	Completed	Minutes
M4	Annual meeting 2019	M12	Completed	Minutes
M6	Annual meeting 2020	M24	Pending	
M9	Final meeting	M36	Pending	

Work package 2: Dissemination and communication **Duration:** M1-M36

After discussion with GIP-IP we decided to create an own website in addition to (and linked from) the official GeoEra site. www.eurolithos.org is a more dynamic and regularly updated site containing results but also profiles of ornamental stone resources from different perspectives. This was launched in July 2019. Website visitor statistics, including geographic location, should be available in March 2020. Currently, the webpage serves to provide general information about EuroLithos and its activities. The website was modified for both full screen and mobile viewing.
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There are yet no scientific publications directly due to the project. We consider the scientific work to be predominantly confined to the case studies in addition to some main results. We have thus planned to make a specific, EuroLithos volume of papers by the end of the project, most likely as a part of NGU Special Publications series.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D2.1	Project web site	NGU	web	general	M6	Completed	Delayed until M9 (amendment 2)
D2.2	Stakeholder Newsletter	NGU	newsletters	general	M6	Completed	Changed to M36 - 6 newsletters (amendment 2)
D2.3	Printed atlases	NGU	booklet	general	M36	Pending	
D2.4	Scientific volume	NGU	paper collection	scientific	M39	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M10	Scientific publication, papers received	M36	Pending	

Work package 3: Atlas of European Ornamental Stones **Duration:** M1-M36

The goal of WP3 is to develop a first edition of an Atlas of European Ornamental Stones and to integrate this into the European Raw Materials Knowledge Base (EURMKB) in close connection with the GeoEra Information Platform. The Atlas will identify, collect and harmonize existing available data on the provenance of European Ornamental Stone resources. Focus will be on the geology, available resources, prospective areas, quarrying sites and competing land uses. The period has focused tasks T3.1 and T3.2. WP3 had one deliverable in the period, D3.1 “Summary on the nature and type of available spatial data in each partner country and framework for the Atlas”. This was based on a questionnaire to the partners and to discussions at the Athens workshop. The next deliverable is due to M18, D3.2 “Country-level and European-level Atlas templates for input of harmonized data”. This is slightly delayed, due for delivery M19. With minor delays, the WP has fulfilled the scheduled tasks.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D3.1	Summary on the nature and type of available spatial data in each country partner and framework for the Atlas	LNEG	Report	GEOERA	M7	Completed	
D3.2	Country-level and European-level Atlas templates for input of harmonized data	LNEG	Report	GEOERA	M18	Pending	January 2020 (M19)
D3.3	Country-level atlases and a European Atlas of Ornamental Stones	LNEG	Spatial data	General	M36	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 4: Directory of Ornamental stone properties **Duration:** M1-M36

The main objective of this WP is to develop a European “identity card” for ornamental stone, providing basic information regarding their composition, physical properties and “performance in use” criteria. The “identity card” will form the core of a European directory (or database) of ornamental stone properties.
In the period, focus has been on tasks T4.1 and T4.2. The first proposal for the directory was delivered from the WP Lead M4. This was later adjusted M9, and a proposal was filed to GIP-IP M13. Later adjustments about the structure of the directory data took place between M12 and M18. At present time, there are similar discussions in other projects and in GIP-IP about how to bring further different requests for data repositories. Yet, I pilot has not been possible to carry out, and we expect this to be possible before M24. The WP had no deliverables in the period.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D4.1	Working version of the directory containing information from selected countries		Data repository	general	M36	Pending	
D4.2	Guideline for using the Directory		Guideline	general	M36	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 5: Ornamental stone heritage **Duration:** M1-M36

Work package 5 aims at establishing tools to assess the value of dimensional stone resources. This will contribute to better maintenance of stone-built heritage, better conditions for SME's and better protection of stone resources in land-use planning. The work will address three aspects of stone heritage; the intrinsic value of stone quarries and quarry landscapes, the value of stones from their use in stone-built heritage, and the traditional crafts.
Task T5.1 was fulfilled in the period – develop concepts and methodologies for case studies in within three groups: Stone resource value assessment, Stone and built heritage and Stone and intangible heritage. At July meeting, the consortium decided to include a fourth group – Sustainable production of ornamental stone. In total 11 case studies were selected (5 more than in the Project Description) involving one or several partners. Templates for case studies were due M12, start of case studies was M12 and they are to be concluded M24. D5.1 will give a detailed presentation of the case studies and the concepts behind them. It is scheduled for M18, but will be delivered before end of M19.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D5.1	Case study collection	HGI-CSG	Report	General	M18	Pending	M19, January 2020
D5.2	Best practices and guideline: How to assess values of stone types, quarries and quarry landscapes	HGI-CSG	Guideline	General	M36	Pending	
D5.3	Best practices and guideline: How to do inventories of links between stone resources and built heritage	HGI-CSG	Guideline	General	M36	Pending	
D5.4	Best practices and guideline: how to approach crafts for value assessments	HGI-CSG	Guideline	General	M36	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification	
M3	Case studies selected	M3	Completed	Minutes	Several case studies were added until M12
M7	Case studies completed	M24	Pending		

Work package 6: Link to information platform **Duration:** M1-M36

This work package (WP6) will secure the integration of the information structure generated by EuroLithos with the Information Platform (IP). Specifically, WP6 will identify and discuss requirements in close dialogue with the IP team and ensure that the principles and guidelines provided by the IP-project is followed and implemented. Finally, WP6 will assess the use of UNFC geology axis for ornamental stone resource classification.
The main task of the WP in the period was to bring results from WP3 and WP4 into communication with GIP-IP. D6.1 "Data and information structure for the knowledge platform on European ornamental stone resources" was due M6, but delayed to after Athens workshop M9 (amendment 2). D6.1 described input to the IP; however, discussions after that revealed some issues that are problematic; most important, on a short term we have to stick to the existing INSPIRE/Minerals4EU commodity codelists, even if the consortium agree that this is not ideal and deviate from industrial standards. After communication with and advise from GIP-IP, final directory structure was given M18.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D6.1	Definitions and requirements for the IP	NGU	Report	General	M18	Pending	M19
D6.2	Evaluation of IP prototypes	NGU	Report	General	M24	Pending	
D6.3	Application of UNFC for ornamental stone resources	NGU	Report	General	M24	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M3	Requirements for IP	M6	Completed	Deliverable
M5	Prototype portal	M18	In delay	
M8	Results published through GeoEra	M36	Pending	

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
Withdrawal of Partner Regione Toscana RT	Part of budget transferred to GSD	No	Small change to budget corrected and approved in ammendment 1
Delay of deliverables: D2.1 Website from M6-M9	Change of web platform	No	
Delay of deliverables: D2.2 Newsletter from M6-M9	All 6 newsletter will be measured as 1 deliverable M36	No	
Delay of deliverables: D6.1 from M6-M9	The original deadline was not realistic	No	
Milestone M3 reached M12	None, case studies were due to start M12	No	5 more case studies than originally proposed, but no change to workplan

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Name	Link (if applicable)
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	M9	GENERAL PUBLIC	140	NGU		Newsletter 1	https://6c5baa2f-b87b-48b4-8c60-c97b0c093efa.filesusr.com/ugd/2b8de6_d0b8e0384b114f7896ec5e3d360e95c4.pdf
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	M13	GENERAL PUBLIC	140	NGU		Newsletter 2	https://6c5baa2f-b87b-48b4-8c60-c97b0c093efa.filesusr.com/ugd/2b8de6_87fb34460ae648d888af551df544ecbd.pdf
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	M9	GENERAL PUBLIC	Website: Figures will come in March2020	NGU		Web	https://www.eurolithos.org/
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	M13	GENERAL PUBLIC	3000	NGU		Facebook	https://www.facebook.com/europeanstonestories
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	M13	GENERAL PUBLIC	2000	NGU		Twitter	https://twitter.com/Eurolithos
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	M1	SCIENTIFIC COMMUNITY		NGU		Poster	https://www.eurolithos.org/blank-page-2
EVENTS	CONGRESS	M4	SCIENTIFIC COMMUNITY	50	NGU, IGME, IGR		Global heritage stone meeting Salamanca	
EVENTS	SEMINAR	M6	OTHER (customers)	50	NGU		Norwegian Industry Natural stone seminar	
EVENTS	CONGRESS	M9	OTHER (customers)	Not possible	NGU		PDAC 2019, Toronto	
EVENTS	CONGRESS	M10	SCIENTIFIC COMMUNITY	Not possible	IGR	Cetean, V. & Petan, A	EGU 2019	https://meetingorganizer.copernicus.org/EGU2019/EGU2019-4351.pdf
MEETINGS	Meeting with international body	M10	SCIENTIFIC COMMUNITY	N/A	IGR	Cetean, V.	IUGS Heritage Stone Subcommission	
EVENTS	CONFERENCE (tele-conference)	M12	SCIENTIFIC COMMUNITY		IGR	Cetean, V.	MINEX 2019	
EVENTS	CONFERENCE (tele-conference)	M17	POLICY MAKERS		NGU		Raw Material Week 2019	
MEETINGS	Internal project meeting	M1	SCIENTIFIC COMMUNITY		Partners		Kick-off meeting	
MEETINGS	Meeting with other GeoERA projects	M4	SCIENTIFIC COMMUNITY		NGU		GIP-IP workshop	
MEETINGS	Internal project meeting	M9	SCIENTIFIC COMMUNITY		Partners		Workshop Athens	
MEETINGS	Internal project meeting	M13	SCIENTIFIC COMMUNITY		Partners		Project Assembly, Trondheim	
MEETINGS	Meeting with other GeoERA projects	M10	SCIENTIFIC COMMUNITY		NGU		MindeSea Madrid	
MEETINGS	Meeting with other GeoERA projects	M11	SCIENTIFIC COMMUNITY		NGU		Geoera RM Trondheim	
MEETINGS	Meeting with other GeoERA projects	M16	SCIENTIFIC COMMUNITY		NGU		Mintel4EU, Copenhagen	
MEETINGS	Meeting with other GeoERA projects	M17	SCIENTIFIC COMMUNITY		NGU		GeoEra RM, Madrid	

INSTRUCTIONS
Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	INTERNAL PROJECT MEETING
	MEETING WITH OTHER GEOERA PROJECTS
	MEETING WITH NATIONAL BODY
	MEETING WITH INTERNATIONAL BODY
	OTHER
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
	Actual			(0,25*A+B)				
1. NGU Norway / Project Lead	65.247,15	16.963,71	0,00	20.552,72	102.763,58	29,70%	30.520,78	72.242,79
2. LNEP Portugal	39.681,39	5.893,75	0,00	11.393,79	56.968,93	29,70%	16.919,77	40.049,15
3. SGU Sweden	6.921,43	3.357,37	0,00	2.569,70	12.848,50	29,70%	3.816,00	9.032,50
4. IGME Spain	19.352,47	1.477,97	0,00	5.207,61	26.038,05	29,70%	7.733,30	18.304,75
5. HSGME Greece	9.995,20	5.160,30	0,00	3.788,88	18.944,38	29,70%	5.626,48	13.317,90
6.SGSS Italy	12.401,39	0,00	0,00	3.100,35	15.501,74	29,70%	4.604,02	10.897,72
7. GeoZS Slovenia	20.144,90	1.834,35	0,00	5.494,81	27.474,06	29,70%	8.159,80	19.314,27
8. GBA Austria	11.953,00	452,00	0,00	3.101,25	15.506,25	29,70%	4.605,36	10.900,89
9. IGR Romania	5.998,00	3.763,00	0,00	2.440,25	12.201,25	29,70%	3.623,77	8.577,48
10. SRDE-GeoInform Ukraine	15.203,72	0,00	0,00	3.800,93	19.004,65	29,70%	5.644,38	13.360,27
11. GSI Ireland	9.151,20	0,00	0,00	2.287,80	11.439,00	29,70%	3.397,38	8.041,62
12. ISPRA Italy	26.469,11	1.093,33	0,00	6.890,61	34.453,05	29,70%	10.232,56	24.220,49
13. HGI-CGS Croatia	51.153,49	3.831,69	0,00	13.746,29	68.731,47	29,70%	20.413,25	48.318,23
14. GSD Cyprus	2.970,09	1.958,88	0,00	1.232,24	6.161,21	29,70%	1.829,88	4.331,33
15. SGL Luxembourg	248,39	0,00	0,00	62,10	310,49	29,70%	92,21	218,27
	296.890,93	**45.786,35**	**0,00**	**85.669,32**	**428.346,60**		**127.218,94**	**301.127,66**

Date: 16.01.2020
Person responsible: Cyprien Habimana

Cumulative Use of Resources Connected to 8a

Personnel costs Actual	Person months	Associated WP	Amount
	1,05	WP1	8100,88
	3,07	WP2	13.083,71
	27,26	WP3	114.684,62
	16,71	WP4	69.515,36
	21,35	WP5	62.681,76
	4,14	WP6	28.824,59
			296.890,93

Other direct costs	Description	Category	Associated WP	Costs
			WP1	10.498,26
			WP2	3.519,41
			WP3	7.684,12
			WP4	11.872,30
			WP5	7.174,01
			WP6	5.038,25
				45.786,35

Subcontracting	Supplier	Description	Associated WP	Cost
			WP1	0,00
			WP2	
			WP3	
			WP4	
			WP5	
			WP6	
				0,00

PROJECT MANAGEMENT

Meetings: Three meetings in the project have been arranged until M18: Kick-off in Brussels (M1), workshop in Athens (M9) and Project Assembly meeting in Trondheim (M13).

Collaboration between WP3, WP4 and WP 6 became more inter-connected and close than anticipated (more difficult to distinguish activities from each other). However, we see this as a positive aspect.

Collaboration with other GeoERA projects: Clearly, collaboration with Mintel4EU and GIP-IP is essential, and this has been carried out indirectly (through direct personal contact) and directly (through participation in meetings/workshops). Collaboration with MindeSea and Frame is not likewise essential, but there are similar needs between the projects regarding data repository that needs to be harmonised between the projects. This has been addressed in teleconference meetings with the GeoEra Project Lead meetings.

Collaboration with other EU projects: Eurolithos has interacted with other relevant EU project, in particular MinLand and Orama, for taking results from these projects further.

Use of budget: 33% of PM's and 40% of direct costs have so far been used. Considering the remaining work (finishing case studies, the demanding task of delivering national data on a working infrastructure and the writing up of guidelines) our opinion is that we effort-wise are on the right half-way level.

Amendments: Regione Toscana withdrew from the GeoERA consortium. The (small amount of) funding was transferred to GSD, as given in amendment 1. Deliverable 2.1, 2.2 and 6.1 where three months late, and changes/explanations are given in amendment 2.

Challenges: The main challenges in the first period have been the discussion about standards, content of datainfrastructure and liaison with other GeoEra projects became more time-demanding than anticipated, thus delaying direct data deliveries for prototypes. For partners with a small budget in Eurolithos, mainly aimed at delivering data, this delay had consequences for their use of budget. However, we do expect these aspects to be solved now, and that milestones will be on track by M24.

IMPACT STATEMENT

"Improved knowledge-sharing across Europe through a common understanding of Europe's raw material sources and an increased understanding of Europe's construction raw material deposits": Eurolithos' main contribution will be harmonised data infrastructure about European stone resources, not only mines and quarries, but the extent of the geological resources. The project will, in addition to spatial distribution, provide services for key information and data about each stone resources.

"Contribution to environmental friendly raw materials production": by providing the information infrastructure on ornamental stone, Eurolithos will stimulate more use of locally/regionally sourced stone in a European market. The highest CO2 emissions regarding stone is related to transport, and future regulations will necessarily turn more focus towards European sources. Eurolithos will also provide tools in the shape of guidelines for more sustainable production, use and resource planning for ornamental stone.

"Provision of relevant information for the construction sector (including architectural and cultural heritage preservation) facilitating the conservation of Europe's national monuments, protected

structures and the built environment in general": Eurolithos will provide guidelines and data that will facilitate the work of public entities and construction companies in making good choices for preserving, conserving and supplementing European built environment.

"Stimulation of the consolidation of the cooperation and communication between national/regional subsurface organizations and European stakeholders that deal with spatial planning in relation to Energy, Mining and Urban Areas": the spatial distribution of geological formations of importance to our built heritage will in itself provide useful information for land-use planning and securing such resources for future exploitation. Moreover, guidelines containing valorisation tools for such resources (including heritage values) will be equally useful.

The impacts as described above cannot for obvious reasons, be measured before the project is finished and data successfully published. During the first period, the impacts are mainly related to communication with interested audience and stakeholders through web, newsletters, social media, and participation at meetings and events.

FINANCIAL STATEMENT FOR PP 1 - NGU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	65.247,15	16.963,71		20.552,72	102.763,58	29,70%	30.520,78	72.242,79

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,05	WP1	8100,88
	1,73	WP2	7870,93
	1,23	WP3	11210,04
	1,23	WP4	11210,04
	0,8	WP5	7714,16
	2,1	WP6	19141,1
			65.247,15

Other direct costs	Description	Category	Associated WP	Costs
	Travel and other costs	Travel	WP1	10046,26
	Travel and other costs		WP2	1887,41
			WP3	0
			WP4	1273,23
			WP5	0
			WP6	3756,81
				16.963,71

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 2 - LNEG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	39.681,39	5.893,75	0,00	11.393,79	56.968,93	29,70%	16.919,77	40.049,15

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
	0,2	WP2	917,84
	4,54	WP3	21329,07
	1,85	WP4	8719,2
	0,3	WP5	1.376,27
	1,55	WP6	7.339,01
			39.681,39

Other direct costs	Description	Category	Associated WP	Costs
			WP1	0
			WP2	928,45
		Travel	WP3	2976,89
			WP4	353,97
			WP5	353,00
			WP6	1.281,44
				5.893,75

Subcontracting	Description	Associated WP	Cost
			0,00
			0,00

FINANCIAL STATEMENT FOR PP 1 - SGU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	6.921,43	3.357,37		2.569,70	12.848,50	29,70%	3.816,00	9.032,50

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
		WP2	
	0,54	WP3	3460,72
	0,53	WP4	3460,71
		WP5	
		WP6	
			6.921,43

Other direct costs	Description	Category	Associated WP	Costs
			WP1	0
			WP2	
	Athens, BXL, SWE, NOR	Travel	WP3	1678,69
			WP4	1678,68
			WP5	
			WP6	
				3.357,37

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - IGME

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	19.352,47	1.477,97		5.207,61	26.038,05	29,70%	7.733,30	18.304,75

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
		WP2	
	1,1	WP3	5577,91
	1,6	WP4	7465,12
	1,3	WP5	6.309,44
		WP6	
			19.352,47

Other direct costs	Description	Category	Associated WP	Costs
			WP1	0
			WP2	
		Travel	WP3	431,38
		Travel + sample a	WP4	755,66
		Travel	WP5	290,93
			WP6	
				1.477,97

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - HSGME

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	9.995,20	5.160,30	0,00	3.788,88	18.944,38	29,70%	5.626,48	13.317,90

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
		WP2	
		WP3	
	3,64	WP4	9995,2
		WP5	
		WP6	
			9.995,20

Other direct costs	Description	Category	Associated WP	Costs
			WP1	0
			WP2	
			WP3	
	Travel Bru and TRD	Travel	WP4	5160,3
			WP5	
			WP6	
				5.160,30

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - SGSS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	12.401,39	0,00	0,00	3.100,35	15.501,74	29,70%	4.604,02	10.897,72

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	
		WP2	
	3	WP3	12401,39
		WP4	
		WP5	
		WP6	
			12.401,39

Other direct costs	Description	Category	Associated WP	Costs
		Travel	WP1	0,00
			WP2	
			WP3	
			WP4	
			WP5	
			WP6	
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - GeoZS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	20.144,90	1.834,35	0,00	5.494,81	27.474,06	29,70%	8.159,80	19.314,27

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
	0,67	WP2	1999,66
	1,24	WP3	3986,06
	3,4	WP4	8233,13
	1,78	WP5	5.926,05
		WP6	
			20.144,90

Other direct costs	Description	Category	Associated WP	Costs
			WP1	
	Kickoff BXL July 2018	Travel	WP2	703,55
			WP3	
	Project assembly TRD July 2019		WP4	1.130,80
			WP5	
			WP6	
				1.834,35

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - GBA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	11.953,00	452,00	0,00	3.101,25	15.506,25	29,70%	4.605,36	10.900,89

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
		WP2	
	2,6	WP3	11953
		WP4	
		WP5	
		WP6	
			11.953,00

Other direct costs	Description	Category	Associated WP	Costs
	Travel to Trondheim	Travel	WP1	452,00
			WP2	
			WP3	
			WP4	
			WP5	
			WP6	
				452,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - IGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	5.998,00	3.763,00		2.440,25	12.201,25	29,70%	3.623,77	8.577,48

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
		WP2	
	2,55	WP3	2.743,00
	1	WP4	1.075,00
	1,52	WP5	2.180,00
		WP6	
			5.998,00

Other direct costs	Description	Category	Associated WP	Costs
		Travel	WP1	0,00
			WP2	
			WP3	1.400,00
			WP4	1.063,00
			WP5	1.300,00
			WP6	
				3.763,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - SRDE-GeoInform

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	2.344,48	0,00	0,00	586,12	2.930,60	29,70%	870,39	2.060,21

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,00	WP1	0,00
	0,47	WP2	2.295,28
	0,65	WP3	3.134,65
	1,04	WP4	5.002,61
	0,50	WP5	2.426,69
	0,49	WP6	2.344,48
			15.203,72

Other direct costs	Description	Category	Associated WP	Costs
		Travel	WP1	0,00
			WP2	0,00
			WP3	0,00
			WP4	0,00
			WP5	0,00
			WP6	0,00
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - GSI

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	9.151,20	0,00	0,00	2.287,80	11.439,00	29,70%	3.397,38	8.041,62

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
		WP2	
	1,08	WP3	9151,2
		WP4	
		WP5	
		WP6	
			9.151,20

Other direct costs	Description	Category	Associated WP	Costs
		Travel	WP1	0,00
			WP2	
			WP3	
			WP4	
			WP5	
			WP6	
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - ISPRA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	26.469,11	1.093,33	0,00	6.890,61	34.453,05	29,70%	10.232,56	24.220,49

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
		WP2	
	2,21	WP3	13640,38
	2,07	WP4	12828,73
		WP5	
		WP6	
			26.469,11

Other direct costs	Description	Category	Associated WP	Costs
		Travel	WP1	0,00
			WP2	
			WP3	1.093,33
			WP4	
			WP5	
			WP6	
				1.093,33

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - HGI-CGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	51.153,49	3.831,69	0,00	13.746,29	68.731,47	29,70%	20.413,25	48.318,23

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
		WP2	0
	6,3	WP3	15069,76744
		WP4	0
	15	WP5	36.083,72
		WP6	
			51.153,49

Other direct costs	Description	Category	Associated WP	Costs
		Travel	WP1	0,00
			WP2	
			WP3	103,83
			WP4	
			WP5	3.727,86
			WP6	
				3.831,69

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - GSD

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	2.970,09	1.958,88		1.232,24	6.161,21	29,70%	1.829,88	4.331,33

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
		WP2	
	0,18	WP3	779,04
	0,35	WP4	1525,62
	0,15	WP5	665,43
		WP6	
			2.970,09

Other direct costs	Description	Category	Associated WP	Costs
			WP1	0,00
			WP2	
			WP3	
	Athens Greec	Travel	WP4	456,66
	Trondheim	Travel	WP5	1.502,22
			WP6	
				1.958,88

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - SGL

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	248,39	0,00	0,00	62,10	310,49	29,70%	92,21	218,27

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP1	0
		WP2	
	0,04	WP3	248,39
		WP4	
		WP5	
		WP6	
			248,39

802,5 0,04

Other direct costs	Description	Category	Associated WP	Costs
		Travel	WP1	0,00
			WP2	
			WP3	
			WP4	
			WP5	
			WP6	
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Forecasting and Assessing Europe's Strategic Raw Materials needs
Project acromyn:	FRAME
Project reference number:	GeoE.171.010
Project topic:	Raw materials
Project specific recearch topic:	RM4 – FORECASTING AND ASSESSING EUROPE'S STRATEGIC RAW MATERIALS NEEDS
Project website address:	http://geoera.eu/projects/frame/

Period covered from: 1.07.2018 to: 31.12.2019

Report submission date:	31.01.2020
Project coordinator:	Daniel Oliveira

Contact person for the project: Daniel Oliveira
Tel: +351 210 924618
E-mail: daniel.oliveira@lneg.pt

IDENTIFICATION OF PROJECT PARTICIPANTS

[use dropdown menu]

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	Laboratorio Nacional de Energia e Geologia I.P.	The National Laboratory of Energy and Geology	LNEG	Portugal	994187921	Project Lead
2	Bundesanstalt für Geowissenschaften und Rohstoffe	Federal Institute for Geosciences and Natural Resources	BGR	Germany	999429413	Project Partner
3	Bureau de Recherches Géologiques et Minières	The French Geological Survey	BRGM	France	999993662	Project Partner
4	Ceska Geologicka Sluzba	Czech Geological Survey	CGS	Czech Republic	999546783	Project Partner
5	Eesti Geoloogiakeskus (non-funded partner)	Geological Survey of Estonia	EGT	Estonia	996572763	Non-funded partner
6	Sveriges Geologiska Undersökning	Geological Survey of Sweden	SGU	Sweden	995575991	Project Partner
7	Department of Communications, Climate Action and Environment	Geological Survey of Ireland	GSI	Ireland	996559280	Project Partner
8	Geologian Tutkimuskeskus	Geological Survey of Finland	GTK	Finland	999432614	Project Partner
9	Hrvatski geoloski institut	Croatian Geological Survey	HGI-CGS	Croatia	972614345	Project Partner
10	Institouto Geologikon kai Metalleftikon Erevnon	Institute of Geology and Mineral Exploration	IGME-Gr	Greece	925968015	Project Partner
11	Instituto Geológico y Minero de Espana	Geological Survey of Spain	IGME-Sp	Spain	998737803	Project Partner
12	Magyar Bányászati és Földtani Szolgálat	Mining and Geological Survey of Hungary	MBFSZ	Hungary	967592364	Project Partner
13	Norges Geologiske undersokelse	Geological Survey of Norway	NGU	Norway	999466758	Project Partner
14	Państwowy Instytut Geologiczny – Państwowy Instytut Badawczy	Polish Geological Insitute	PIG-PIB	Poland	999492463	Project Partner
15	Institut Royal des Sciences Natueelles de Belgique	Geological Survey of Belgium – Royal Belgian Institute of Natural Sciences	RBINS-GSB	Belgium	998437006	Project Partner
16	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund of Ukraine	Geoinform	Ukraine	947331392	Project Partner
17	Institutul Geologic al României	Geological Institute of Romania	IGR	Romania	998906874	Project Partner
18	Geološki zavod Slovenije	Geological Survey of Slovenia	GeoZS	Slovenia	999466370	Project Partner
19	Istituto Superiore per la Protezione e la Ricerca Ambientale	Italian Institute for Environmental Protection and Research	ISPRA	Italy	997905349	Project Partner
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PUBLISHABLE SUMMARY

Europe shows an inevitably growing and accelerating consumption of mineral commodities. Presently, the question whether supply to meet these demands is adequate or not, cannot be answered with any certainty because secure supply is a matter of knowing the resources and the ability to exploit them with respect to sustainability.

It is well established and broadly accepted by now that non-energy minerals underpin our modern economy. They are essential for manufacturing and renewable "green" energy supply. Most of the environmental technologies and applications (e.g. wind turbines, photovoltaic cells, electric and hybrid vehicles) allowing energy production from renewable resources will use, so called, high-tech metals (e.g. Rare Earth Elements (REE), Platinum Group Elements (PGE), niobium, lithium, cobalt, indium, gallium, vanadium, tellurium, selenium) that were derived or refined from minerals, which Europe is strongly import dependent on. More specific, industrial trends, particularly clean and carbon-reducing technologies, are disrupting traditional metal sectors, with a robust drive in the development of battery-raw material metals. We need to calculate the volumes of critical and potentially strategic metals (e.g. cobalt, niobium, vanadium, antimony, PGE and REE) and minerals that are currently not extracted in Europe. We further need to understand how high-tech elements are mobilised, where they occur and why some are associated with specific major industrial metals.

The high import dependence of strategic (STR) and critical raw materials (CRM) has a serious impact on the sustainability of the EU manufacturing industry. This problem can only be solved by more intense and advanced exploration for new mineral deposits on land and the marine environment. Seafloor mineral resources receive growing European interest with respect to the exploration potential of REE, cobalt, selenium, tellurium and other high-tech metals.

Many critical minerals and metals may be collected through recycling of mining related waste materials. However, even with the important contribution from recycling, to secure resource efficient supply it will still be necessary to extract primary mineral deposits, focusing on applying new technologies for deep exploration and mining, turning low- grade ores to exploitable resources and reducing generation of mining wastes and large tailings by converting them to exploitable resources and solving environmental footprint and land-use challenges.

As well as the dependence on extra-EU supply concerns, the production of many materials is reliant on a few countries. This concentration of supply also poses concern as these few countries dominate supply of individual or several materials: Brazil (niobium), USA (beryllium), South Africa (platinum), DRC (cobalt) and China (REE, antimony, magnesium, and tungsten). Twenty countries are the largest suppliers of the CRM contributing with 90% of supply. All major suppliers of the individual critical raw materials fall within this group of twenty countries (Fig. 1). At the same time all are predicted to experience demand growth, with lithium, niobium, gallium and heavy rare earth element forecast to have the strongest rates of demand growth, exceeding 8% per year for the rest of the decade. In addition, Russia is known to have an active programme on materials stockpiles and export restrictions, China has from time to time tightened the export quotas for REE ostensibly to secure internal supply, and the US has long had a stockpile for strategic defense materials.

There is a need on exploration focus by challenging more effective CRM exploration and better understanding of their metallogenetic setting and mineral potential. Discovery of new STR and CRM resources needs enhanced information on surface and subsurface geology, new concepts of mineral resource potential, particularly in underexplored areas of limited geological knowledge and projects

facilitating the need to span the geosciences and be truly multidisciplinary. The question about "where are undiscovered critical mineral resources likely to exist, and how much undiscovered mineral resource may be present" needs to be answered. All of the processes involved in the formation of a CRM deposit type, a good understanding of why CRM mineral deposits occur where they do (Fig. 2), ore exploration models and resource assessment studies, make significant steps to be taken. Irrespective of the CRM exploration potential level, better understanding of the geology and metallogeny, and delivery of high-quality CRM maps may lead to new or little-known types of CRM ore deposits and ore-forming systems. In addition, future CRM exploration will likely need to focus increasingly on blind deposits. The European Union has recognized these challenges and has reacted since 2008 with its Raw Materials Initiative, following Communications (COM(2008) 699 final; COM(2011) 25 final;) and the List of Critical Raw materials. Many National Geological Surveys have supported the European Commission in identifying potential bottlenecks on CRM as well as providing information how to overcome physical shortages. However, all these activities are punctual, on individual basis and hence, not lasting. The rationale of FRAME can be outlined as follows:

Unlike "more common metals" such as copper, zinc, lead and iron, many CRM do not form the main commodity (-ies) produced from operating mines, but are instead recovered as by-products ('companion metals') of the primary ores at some stage during processing. Europe has a rich and diverse mineral endowment including CRM, and a map showing the distribution of selected CRM deposits of Europe, based on the ProMine database was published by EGS's Mineral Resources Expert Group during 2016 and an updated version base on the new CRM list was delivered in December 2017. Despite these efforts, there is still need for a more comprehensive pan-European identification and compilation of mineral potential and metallogenic areas of CRM. Such metallogenic areas can be defined by the presence of mineral occurrences and deposits, past and active mines, previous and ongoing exploration activities, favorable bedrock geology, geophysical signatures, geochemistry and predictive/prospectivity mapping.

The present project will build on previously and currently developed pan-European and national databases, and expand the strategic and CRM knowledge trough a compilation of mineral potential and metallogenic areas of critical raw materials resources in Europe, focused on related metal associations on land and the marine environment. Secondary resources, in terms of historical mining wastes and potential by-products will also be considered. The mineral resources targeted will have to extend beyond the current EU CRM list and include also minerals and metals (e.g. lithium, copper, and manganese) that are strategic for the European downstream industry in the mid- and long-term perspective.

To develop metallogenic research and models at regional and deposit scales, with special attention to strategic critical minerals for which the EU is highly dependent, in support of more efficient exploration and mining the following specific objectives need to be addressed:

• Identify and define the strategic minerals and metals that will make part of the metallogenetic map and related interpretations, focused on the current list of CRM, but considering also the strategic importance of some of those which were among the original candidates, such as phosphate rock, lithium, graphite, cobalt, niobium, tantalum, and others such as selenium, silver, copper, manganese, lead and iron ore. All minerals and metals collected and selected to be part of the metallogenetic map will simply go under the term CRM.

• Produce a metallogenetic map and increase the knowledge on the CRM endowments and resource potential in Europe and EU seas, based on,

o Mineralisations and deposits on land and the marine environment in which CRM make the main commodities, e.g. REE minerals related to carbonatite, nepheline syenites, pegmatites or paleoplacers, tungsten deposits related to granites, lithium feasible pegmatites, graphite hosted by schists.

o Mineralisations and deposits on land and the marine environment in which CRM make associated commodities, e.g. REE in bauxite deposits and manganese nodules; cobalt in nickel deposits and ferromanganese crusts; vanadium in iron-titanium deposits;, indium and tellurium in VMS and epithermal gold deposits

o Secondary resources, in terms of historical and modern mineral-based mining wastes (waste rocks, processing tailings, metallurgical residues) and by-products, e.g. REE in apatite concentrates related to iron extraction and red mud derived from alumina refining; indium in the waste streams of lead-zinc sulphide mining.

• Better understanding of the ore genetic links between major deposit types and hosted critical mineral and metal associations. Understanding also the mineralizing processes in different environments, including current deep sea, and using this understanding to predict and develop new mineral deposits or deposit types. This research also involves the characterization of ores, rocks, primary and secondary deposits etc. for significant elements and minerals, whose importance has increased and/or which represent cases where the occurrence is poorly understood or constrained. This objective and target will be interlinked and interactive with the tasks undertaken and the achievements resulted from GeoERA RM3 Metallogeny that will address the main deposit types and commodities.

• Be able to identify conditions and processes involved in the formation of the STR and CRM-potential deposits and develop conceptual models for their formation.

• Predictive targeting based on GIS exploration tools, of high potential mineral provinces and mining districts.

• Provide potential CRM resource estimates based on the UNECE classification system in close cooperation with RM 1/WP 5 on UNCF system.

• Display and distribute the map and description on the Information platform.

• Highlight mineral resources criticality to high-tech economy and downstream sectors.

This project will collect and act as a source of mineral information data that will support the continuous work going on in the DG-Grow, Raw Materials Supply Group and the Ad Hoc Working Group on Criticality of the EU Commission.

PROJECT CONTRIBUTION TO GeoERA PROJECT

FRAME is one of the cornerstones of the GeoERA Raw Materials theme. This project handles the Critical Raw Materials in a follow up of the EU Commission's concerns regarding the sustainable sourcing of crucial raw materials to industrialised Europe, the contribution to the Circular Economy (reducing waste and using secondary raw materials), the Battery Alliance and the Decarbonisation of the economy.

FRAME is conceived beyond the scope of the time frame of the project. Hence, it focuses equally On a new law will come into full force across the EU on the 1st of January 2021 – the Conflict Minerals Regulation, which aims to help stem the trade in four minerals – tin, tantalum, tungsten and gold (3TG) - which sometimes finance armed conflict or are mined using forced labour.

This overall philosophy of research in FRAME fulfills the main objective of GeoERA, whcich is to contribute to the optimal use and management of the subsurface. GeoERA that will aim to support 1) a more integrated and efficient management and 2) more responsible and publicly accepted, exploitation and use of the subsurface.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1:	**Coordination/Lead**	**Duration:1-36**
Free text		

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D1.1	Description of work	LNEG	R	CL	M5	Completed	Ammendment 7/08/2019-changed from M3 to M5
D1.2	Ethical requirements(consent procedures, protection of personal data) M	LNEG	R	CL	M5	Completed	Ammendment 7/08/2019-changed from M3 to M5
D1.3	Terms of reference (governance)	LNEG	R	CL	M5	Completed	Ammendment 7/08/2019-changed from M3 to M5
D1.4	Management report (submission of consolidated report to the European Commission)	LNEG	R	CL	M18		
D1.5	Management report (submission of consolidated report to the European Commission)	LNEG	R	CL	M24		
D1.6	Final Report	LNEG	R	CL	M36		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M1	Kick-off meeting	M1	Completed	Event occurrence
M2	dissemination of progress achievements	M6,M12,M18,M24,M30,M36	Completed	Delivery of reports
M3	Final Meeting	M36		Event occurrence

Work package 2:	**Communications, Dissemination and Exploitation**	**Duration: 1-36**

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D2.1	Communication strategy	LNEG	DEC	CL	M1	Completed	
D2.2	Visual identity (Logo, Templates, Project site, etc.)	LNEG	DEC	PU	M1	Completed	
D2.3	Collection of Information materials (Leaflet, Website, Media kits etc.)	LNEG	DEC	PU	M3	Completed	Ammendment 4/10/2018-changed from M36 to M3
D2.4	Workshop	LNEG	DEC	PU	M16	Completed	Ammendment 7/08/2019-changed from M18 to M16
D2.5	Final event	LNEG	DEC	PU	M36		Deleted/cancelled - ammendment 7/08/2019

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M2.1	Report on Communication strategy	M1	Completed	Delivery of report
M2.2	Visual identity, logo design	M2-M5	Completed	Delivery and implementation
M2.3	Digital newsletters delivery to consortium	M4, 8, 6, 12, 16, 20, 24, 30	Completed	Delivery
M2.4	Events documentation	M18, 36		Delivery
M2.5	Final digital newsletter delivery to consortium	M36		Delivery of report

Note: All GeoERA FRAME newsletters are available in www.frame.lneg.pt

Work package 3:	**Critical and Strategic Minerals Map**	**Duration: 1-36**

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D3.1	Producing a report describing the methodology used for the identification and selection process of the CRM to be included in the metallogenetic map	SGU	R	CL	M3	Completed	
D3.2	Providing a data platform, digital version of metallogenic map and related description report highlighting the endowment and exploration potential of CRM in Europe	SGU	DEC	CL	M28		
D3.3	Producing a predictivity map outlining the CRM exploration potential areas and the major prospective minerals belts	SGU	R	PU	M32		
D3.4	Providing CRM data and intelligence to EURMKB (RM1) and the GeoERA information platform	SGU	R	PU	M34		
D3.5	Prospectivity maps of CRM in Europe	SGU	R	PU	M34		Ammendment 7/06/2019-changed from M24 to M34

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M3.1	Methodology for collecting CRM data from primary (land and marine) and secondary sources	M4	Completed	Delivery of report
M3.2	Metallogenetic map of CRM in Europe	M29		Delivery of report
M3.3	CRM and STR predictivity and mineral exploration potential map	M34		Delivery of report

Work package 4:	**Critical Raw Materials associated with phosphate**	**Duration: 1-36**

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D4.1	Overview of the phosphate deposits and occurrences in Europe under the form of a database and map(s)	RBINS-GSB	R	PU	M9	Completed	Ammendment 4/10/2018-changed from M6 to M9
D4.2	New mineralogical and geochemical data on samples from phosphate deposits/occurrences (+ host black shales). These samples should be as numerous and as widely geographically distributed as possible, and coming from different types of deposits	RBINS-GSB	R	CL	M20		
D4.3	Detailed metallogenic studies of key phosphate deposits. The selection of deposits aims to be as representative as possible of the phosphate deposits encountered in Europ	RBINS-GSB	R	PU	M30		
D4.4	Development of a procedure to prepare and analyse phosphate deposits with the objective to provide internally consistent geochemical data at a European level for this type of mineralization	RBINS-GSB		External	M32		
D4.5	Providing Phosphate data and intelligence to EURMKB (RM1) and the GeoERA information platform	RBINS-GSB	R	PU	M34		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M4.1	Partners identify the case studies/regions (key phosphate/black shale deposits) to study			
M4.2	Partners (1) approve the list of samples to investigate in order to provide D4.2, (2) decide where the analyses will be carried out, and analyses to perform			
M4.3	Final report and end of the WP			

Work package 5:	Energy critical elements	Duration: 1-36

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D5.1	Provide mineral potential and prospectivity maps of key mineral provinces in Europe with deposits of, or potential for, energy critical elements (natural graphite, lithium, cobalt) in collaboration with WP 3	NGU	R	PU	M28		
D5.2	Develop and/or review models for the formation of natural graphite, lithium and cobalt in Europe	SGU	R	PU	M30		
D5.3	Report: Energy critical metals and minerals in Europe; occurrence, types, characteristics, formation, and future potential for European production	SGU		PU	M32		
D5.4	Map of Cobalt, Graphite, Lithium deposits (including deposits where cobalt is a significant byproduct)	SGU	R	PU	M32		
D5.5	Relevant Metallogenic maps	SGU	R	PU	M34		
D5.6	Provide INSPIRE-compliant harmonised data on deposits and prospects of natural graphite, lithium and cobalt for the EURMKB (RM1)	SGU	O	CL	M34		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M5.1	Establish an overview of known European prospects and deposits of natural graphite, hard rock lithium and cobalt as a working base for WP5	M4	Completed	Delivery of report
M5.2	Report on occurrence, types, characteristics, formation, and future potential for the production of natural graphite, lithium and cobalt from European sources	M32		Delivery of report
M5.3	Map of Cobalt, Graphite, Lithium deposits (including deposits where cobalt is a significant byproduct)	M32		Delivery of report
M5.4	Relevant Metallogenic maps	M34		Delivery of report

Work package 6:	Conflict Minerals	Duration: 1-36

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D6.1	A report on the distribution and systematics of Nb-Ta mineralisations in Europe, including a case study. This will include new INSPIRE compliant data of selected Nb-Ta deposits that will be available for integration into the EURMKB (RM1) and the GeoERA Information Platform	SGU	R	PU	M24		
D6.2	A report outlining recommendations for future exploration in Europe for Nb-Ta	SGU		external	M30		
D6.3	A discussion and draft outlining the possibilities for relieving European import dependence and improvement of conditions for Nb-Ta production in central Africa	SGU	R	PU	M34		
D6.4	Providing Nb-Ta mineralisations in Europe data and intelligence to EURMKB (RM1) and the GeoERA information platform	SGU	R	PU	M35		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification	
M6.1	Selection of key areas and occurrences/deposits to study	M6		Delivery of report	Milestone added. Ammendment 4/10/2018
M6.2	Regional overview of the distribution and systematics of Nb-Ta in Europe	M24		Delivery of report	
M6.3	Recommendations for future exploration of Nb-Ta in Europe	M30		Delivery of report	

Work package 7:	Historical mining sites revisited	Duration: 1-36

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D7.1	Report 1: Potential target areas identified / Overview concerning potential and criteria	BGR	R	PU	M8	Completed	
D7.2	Template for content of case studies to ensure consistent data collection in line with requirements of the GeoERA Information Platform	BGR	OTHER	PU	M10	Completed	Report completed in time. Uploaded late
D7.3	Report 2: Case studies	BGR	R	CO	M24		
D7.4	Report 3: Final Report	BGR	DEC	CO	M30		
D7.5	Site info in raw materials data bank and GeoERA IP	BGR	R	PU	M34		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M7.1	Partners approve criteria to identify sites/regions for case studies and to identify the set of case studies	M4	Completed	Delivery of report
M7.2	technical data migration test phase	M31		Delivery of report
M7.3	Final report and end of the WP	M35		Delivery of report

Work package 8:	Link to Information Platform	Duration: 1-36

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D8.1	Deliver, in conjunction with the central GeoERA Information Platform a norm for data format and delivery	LNEG	R	CL	M13	Completed	Ammendment 7/08/2019 - changed from M6 to M13
D8.2	Implement IT equipment infrastructure capable of interacting with internal system requirements to ensure delivery and increase the reliability of data and information to the EURMKB	LNEG	OTHER	CL	M24		Ammendment 4/10/2018 - changed from M12 to M24
D8.3	Assist in the data planning for the raw materials under study	LNEG	OTHER	CL	M6-36		
D8.4	Final compilation of data and delivery to central GeoERA IP	LNEG	DEC	CL	M36		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification	
M8.1	Report on the data normative and format requirements	M18		Delivery of report	
M8.2	Report on the data normative and format requirements	M24		Delivery of report	Ammendment 4/10/2018-Added
M8.3	Report of data and intelligence delivery to GeoERA IP	M36		Acceptance by coordinator of IP	

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
Partner number 10: Changed name from Institute of Geology & Mineral Exploration (IGME Gr) to Hellenic Survey of Geology and Mineral Exploration (HSGME)	Changed Project proposal and corrected name of partner	No	No

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)
MEDIA	OTHER	1.07.2018	GENERAL PUBLIC	>1000	WP2	Filipe Barreira/MJ Fereira/Daniel Oliv	www.frame.lneg.pt
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	31.10.2018	GENERAL PUBLIC	>100	WP2	All	http://www.frame.lneg.pt/wp-content/uploads/2018/10/FRAME-Newsletter-Issue-1.pdf
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	28.02.2019	GENERAL PUBLIC	>100	WP2	All	http://www.frame.lneg.pt/wp-content/uploads/2019/02/FRAME-Newsletter-Issue-2.pdf
PUBLICATIONS	**PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)**	30.06.2019	GENERAL PUBLIC	>100	WP2	All	http://www.frame.lneg.pt/wp-content/uploads/2019/06/FRAME-Newsletter-Issue-3.pdf
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	31.10.2019	GENERAL PUBLIC	>100	WP2	All	http://www.frame.lneg.pt/wp-content/uploads/2019/10/GeoERA_FRAME-Newsletter-Issue-4.pdf
PUBLICATIONS	SCIENTIFIC PUBLICATION	28.09.2018	SCIENTIFIC COMMUNITY	Unknown	KT	Klemen Teran	https://www.mineral-revija.si/1875/Geloska-sluzba-za-Evropo-(GeoERA)?cctest&src=XNASLZAD
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)		GENERAL PUBLIC	Unknown	WP5	Håvard Gautneb, Eric Gloaguen and T	http://www.frame.lneg.pt/#News/Events
MEETINGS	**Meeting with international body**	17.10.2018	EU INSTITUTION	50-80	WP1	Daniel de Oliveira	http://www.frame.lneg.pt/#News/Events
EVENTS	PITCH EVENT	12-16/11/2018	POLICY MAKERS	400-600	WP1	Daniel de Oliveira	http://www.frame.lneg.pt/#News/Events
EVENTS	CONFERENCE (tele-conference)	13.11.2018	POLICY MAKERS	100	WP1	Daniel de Oliveira	file:///C:/Users/daniel.oliveira/Downloads/4.%20Responsible%20supply%20of%20Raw%20Materials.pdf
PUBLICATIONS	NON-SCIENTIFIC PUBLICATION	14.12.2018	GENERAL PUBLIC	>1000	HG	Håvard Gautneb	http://www.frame.lneg.pt/#News/Events
EVENTS	**EXHIBITION**	7.03.2019	OTHER (customers)	>25000	DO	Daniel de Oliveira	http://www.frame.lneg.pt/#News/Events
MEDIA	ONLINE MEDIA	13.03.2019	GENERAL PUBLIC	>1000	DO	Daniel de Oliveira	http://www.frame.lneg.pt/#News/Events
MEDIA	ONLINE MEDIA	7.05.2019	GENERAL PUBLIC	>1000	DO	Daniel de Oliveira	http://www.frame.lneg.pt/#News/Events
MEETINGS	Meeting with other GeoERA projects	13.05.2019	SCIENTIFIC COMMUNITY	30-50	WP1	Daniel de Oliveira	http://www.frame.lneg.pt/#News/Events
MEETINGS	Meeting with other GeoERA projects	27.11.2018	SCIENTIFIC COMMUNITY	30-50	WP1	Daniel de Oliveira	
MEDIA	ONLINE MEDIA	10.07.2019	GENERAL PUBLIC	>1000	WP4	Sophie Décree	http://www.frame.lneg.pt/#News/Events
MEDIA	ONLINE MEDIA	15.07.2018	GENERAL PUBLIC	>1000	WP5	Eric Gloaguen, Janja Knežević, Håvard	http://www.frame.lneg.pt/#News/Events
MEDIA	ONLINE MEDIA	19.07.2019	GENERAL PUBLIC	>1000	WP5	Håvard Gautneb	http://www.frame.lneg.pt/#News/Events
MEDIA	ONLINE MEDIA	23.07.2019	GENERAL PUBLIC	>1000	WP4	Daniel de Oliveira	http://www.frame.lneg.pt/#News/Events
EVENTS	WORKSHOP	18.09.2019	SCIENTIFIC COMMUNITY	30-50	WP8	Lídia Quental.Daniel de Oliveira	http://www.frame.lneg.pt/#News/Events
MEDIA	ONLINE MEDIA	1.10.2019	GENERAL PUBLIC	>1000	WP5	Tuomo Törmänen, Håvard Gautneb,	http://www.frame.lneg.pt/#News/Events
MEETINGS	Meeting with other GeoERA projects	5.10.2019	SCIENTIFIC COMMUNITY	20-30	WP1	Daniel de Oliveira	http://www.frame.lneg.pt/#News/Events
EVENTS	**MEETINGS**	22.11.2019	POLICY MAKERS	>1000	WP1	Daniel de Oliveira	https://orama-h2020.eu/event/orama-final-event/
EVENTS	SEMINAR	23.10.2019	SCIENTIFIC COMMUNITY	>200	WP1	Daniel de Oliveira	https://www.fct.unl.pt/sites/default/files/imagens/noticias/2019/10/programa_rmud_1.pdf
EVENTS	MEETINGS	18-22/11/2019	POLICY MAKERS	>500	WP1	Daniel de Oliveira	
PUBLICATIONS	ABSTRACTS	27-30/08/2019	SCIENTIFIC COMMUNITY	Unknown	WP4	Sophie Décree et al	
PUBLICATIONS	ABSTRACTS	22-25/09/2019	SCIENTIFIC COMMUNITY	Unknown	WP7	Henrike Sievers et al	
PUBLICATIONS	ABSTRACTS	22-25/09/2019	SCIENTIFIC COMMUNITY	Unknown	All	Antje Wittenberg et al	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet,	1.07.2018	GENERAL PUBLIC	>2000	WP1	Daniel de Oliveira	
MEDIA	OTHER	1.07.2018	GENERAL PUBLIC	>2000	WP1	Daniel de Oliveira	
MEETINGS	Meeting with international body	3-5/9/2019	EU INSTITUTION	>50	WP1	Daniel de Oliveira	
MEDIA	ONLINE MEDIA	1.07.2018	MEDIA	>100	WP1/WP2	Daniel Oliveira/Teresa Calabaça/MJ Ferreira	https://www.facebook.com/FRAME-Forecasting-and-Assessing-Europes-Strategic-Raw-Materials-Needs-253771581936142
MEDIA	ONLINE MEDIA	9.10.2019	MEDIA	>50	WP1/WP2	Daniel Oliveira/Teresa Calabaça/MJ Ferreira	https://www.linkedin.com/company/frame-project/
PUBLICATIONS	SCIENTIFIC PUBLICATION	29.11.2019	SCIENTIFIC COMMUNITY	unknown	WP5	Gorazd Žibret, Janja Knežević, Håvard Gautneb, Eric Gloaguen, Tuomo Törmänen, Klemen Teran	
MEDIA	ONLINE MEDIA	4.12.2019	EU INSTITUTION	>1000	WP2	Daniel Oliveira/Teresa Calabaça/MJ Ferreira	
EVENTS	SEMINAR	15.10.2019	EU INSTITUTION	20-30	WP6	Susana Mª Timón	
MEDIA	ONLINE MEDIA	4.03.2019	EU INSTITUTION	unknown	WP3	Martiya Sadeghi	https://www.sgu.se/en/about-sgu/news/2019/march/sweden-important-when-the-eu-looks-for-sources-of-critical-raw-materials/
MEDIA	ONLINE MEDIA	?	EU INSTITUTION	unknown	WP7	Henrike Sievers	https://www.bgr.bund.de/DE/Themen/Min_rohstoffe/Projekte/Rohstoffverfuegbarkeit-laufend/GeoERA.html
MEDIA	ONLINE MEDIA	1.07.2018	EU INSTITUTION		WP2	Mj Ferreira/Teresa Calabaça	http://www.lneg.pt/iedt/projectos/613/
PUBLICATIONS	SCIENTIFIC PUBLICATION	10.11.2019	SCIENTIFIC COMMUNITY	unknown	WP2/WP3	Klemen Teran	http://prenit.geo-zs.si/geozs/PDF/PeriodicnePublikacije/bilten_ms_eng/Bilten_2019.pdf
PUBLICATIONS	SCIENTIFIC PUBLICATION	10.11.2019	SCIENTIFIC COMMUNITY	>100	WP2	Klemen Teran	http://www.geo-zs.si/PDF/PeriodicnePublikacije/Bilten_2018.pdf
PUBLICATIONS	ABSTRACTS	29.11.2019	SCIENTIFIC COMMUNITY	>50	WP2/WP3/WP5/WP7	Klemen Teran, Gorazd Žibret, Eric Gloaguen, Janja Knežević, Håvard Gautneb and Tuomo Törmänen	
EVENTS	CONFERENCE (tele-conference)	29.11.2019	SCIENTIFIC COMMUNITY	>50	WP2/WP3/WP5/WP7	Klemen Teran, Gorazd Žibret, Eric Gloaguen, Janja Knežević, Håvard Gautneb and Tuomo Törmänen	

INSTRUCTIONS

PROJECT MANAGEMENT

• Maintaining an open communication channel between project coordinator, WP leaders and consortium members,

• A close quarters, open dialogue stream with the GeoERA Raw Materials Theme coordinator, Antje Wittenberg, and Monitoring Team

• Fomenting the interaction between WP's; essential for the success of FRAME, as well as between FRAME and the other Raw Materials projects namely, MindeSea, Eurolithos, Mintell4EU, GIP-IP and Hike

• Opening a communication highway between FRAME and the Mineral Resources Group (MREG) of EuroGeoSurveys (EGS). This has been particularly useful in getting countries that do not belong to the consortium to deliver data. This close interaction with MREG and EGS is clearly a benefit and has already been instrumental in achieving a complete map of the Energy Critical Elements,

• This interaction with EGS and MREG has resulted in meetings of the MREG group having a B2B meeting with the GeoERA RM projects. The formula has been applied in Rome (Nov. 2018), Trondheim (May 2019) and Madrid (November 2019) and has been successful and is seen as essential to discuss project details

• Maintaining an open dialogue with the EU Commission and its constituent DG's,

• Maintaining an active visual presence of FRAME in social media and the project website as well as pitching FRAME in congresses, public events and workshops,

• Maintaining an up to date Deliverable and Milestone plan.

IMPACT STATEMENT

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
	Actual			(0,25*A+B)				
1. LNEG	154.423,23 €	17.280,28 €	- €	42.925,88 €	214.629,39 €	29,70%	63.744,93 €	150.884,46 €
2. BGR	56.573,53 €	5.275,07 €	- €	15.462,15 €	77.310,75 €	29,70%	22.961,29 €	54.349,46 €
3. BRGM	50.392,19 €	7.094,13 €	- €	14.371,58 €	71.857,90 €	29,70%	21.341,80 €	50.516,10 €
4. CGS	11.153,94 €	2.167,59 €	- €	3.330,38 €	16.651,91 €	29,70%	4.945,62 €	11.706,29 €
5. GSE	- €	- €	- €	- €	- €	0,00%	- €	- €
6. SGU	92.599,48 €	3.995,59 €	- €	24.148,77 €	120.743,84 €	29,70%	35.860,92 €	84.882,92 €
7. GSI	15.000,00 €	- €	- €	3.750,00 €	18.750,00 €	29,70%	5.568,75 €	13.181,25 €
8. GTK	13.959,72 €	4.205,72 €	- €	4.541,36 €	22.706,80 €	29,70%	6.743,92 €	15.962,88 €
9. HGI-CGS	8.824,19 €	207,69 €	- €	2.257,97 €	11.289,85 €	29,70%	3.353,09 €	7.936,76 €
10. IGME-Gr	8.146,52 €	1.727,00 €	- €	2.468,38 €	12.341,90 €	29,70%	3.665,54 €	8.676,36 €
11. IGME-Sp	50.265,17 €	6.889,05 €	- €	14.288,56 €	71.442,78 €	29,70%	21.218,50 €	50.224,27 €
12. MBFSZ	770,30 €	368,33 €	- €	284,66 €	1.423,28 €	29,70%	422,71 €	1.000,57 €
13. NGU	43.099,39 €	6.242,22 €	- €	12.335,40 €	61.677,01 €	29,70%	18.318,07 €	43.358,94 €
14. PIG-PIB	26.522,68 €	6.492,37 €	- €	8.253,76 €	41.268,81 €	29,70%	12.256,84 €	29.011,97 €
15. RBINS-GSB	161.690,91 €	5.053,91 €	- €	41.686,20 €	208.431,02 €	29,70%	61.904,01 €	146.527,01 €
16. Geoinform	12.197,00 €	- €	- €	3.049,25 €	15.246,25 €	29,70%	4.528,14 €	10.718,11 €
17. IGR	78.118,15 €	5.250,11 €	- €	20.842,07 €	104.210,33 €	29,70%	30.950,47 €	73.259,86 €
18. GeoZS	20.572,97 €	779,91 €	- €	5.338,22 €	26.691,10 €	29,70%	7.927,26 €	18.763,84 €
19. ISPRA	15.880,55 €	2.014,82 €	- €	4.473,84 €	22.369,21 €	29,70%	6.643,66 €	15.725,56 €
	820.189,91 €	**75.043,79 €**	**- €**	**223.808,43 €**	**1.119.042,13 €**		**332.355,51 €**	**786.686,62 €**

Date: 31.01.2020

Person responsible: Daniel Oliveira

FINANCIAL STATEMENT FOR PP 1 -LNEG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
1. LNEG	154.423,23	17.280,28	0,00	42.925,88	214.629,39	29,70%	63.544,93	151.084,46

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	7,04	WP1	33.580,89
	11,85	WP2	37.256,55
	2,73	WP3	11.235,79
	4,76	WP4	23.247,55
	2,76	WP5	11.786,25
	2,04	WP6	8.647,16
	1,75	WP7	7.870,70
	5,37	WP8	20.798,36
	38,30		154.423,23

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA and FRAME Kick off meeting, 02-06th July 2018, Brussels-Belgium, Daniel Oliveira	Travel	WP1	1.736,45
	GeoERA and FRAME Kick off meeting, 02-06th July 2018, Brussels-Belgium, M.ª João Ferreira	Travel	WP2	1.366,67
	GeoERA and FRAME Kick off meeting, 02-06th July 2018, Brussels-Belgium, Aurete Pereira	Travel	WP8	1.383,62
	WP2 Interaction Meeting - GeoERA GIP-P, 23-25th October 2018, Brussels-Belgium, Lídia Quental	Travel	WP8	1.340,44
	GeoERA Technical Workshop, 10-12th March 2019, Vienna-Austria, Lídia Quental	Travel	WP8	865,02
	GeoERA Technical Workshop, 10-12th March 2019, Vienna-Austria, Aurete Pereira	Travel	WP8	865,02
	GeoERA Raw Materials Project Meeting, 12-14th May 2019, Trondheim-Norway, Lídia Quental	Travel	WP8	1.356,63
	GeoERA Raw Materials Project Meeting, 12-14th May 2019, Trondheim-Norway, M.ª João Ferreira	Travel	WP2	1.308,08
	ORAMA & JRC RMIS Joint Workshop, 12-14th June 2019, Milan-Italy, Aurete Pereira	Travel	WP8	727,25
	MREG/GeoERA Winter Meeting, 4-5th November 2019, Madrid-Spain, Lídia Quental	Travel	WP8	550,41
	MREG/GeoERA Winter Meeting, 4-5th November 2019, Madrid-Spain, M.ª João Ferreira	Travel	WP2	541,56
	Lanyards with FRAME's Logo	Other	WP2	463,90
	32GB WalletStich FIshh Drive	Other	WP2	2.321,96
	FRAME Workshop, 17-18th September 2019, Lisbon - Portugal (lunches and coffee-breaks)	Other	WP1	1.377,64
	Depreciation cost of Computer monitor and computer mouse for 13 out of 48 months. Date of parchase: 10/12/2018; Purchase cost: 292,99€	Equipment	WP2	79,35
	Depreciation cost of two Laptops for 13 out of 48 months. Date of purchase: 10/12/2018. Purchase cost: 3,045.90€.	Equipment	WP2	824,93
	Depreciation cost of Camera, bag and card for 13 out of 60 months. Date of purchase: 10/12/2018. Purchase cost: 469,16€.	Equipment	WP2	101,65
	Depreciation cost of two Laptops and Docking Station for 1 out of 48 months. Date of parchase: 20/12/2019; Purchase cost: 3,3345,49€	Equipment	WP8	69,70
				17.280,28

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
	Reimbursement for travel and accommodation expenses	Travel reimbursement to ORAMA Workshop	200,00
			200,00

FINANCIAL STATEMENT FOR PP 2 - BGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2. BGR	56.573,53	5.275,07	0,00	15.462,15	77.310,75	29,70%	22.961,29	54.349,46

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,37	WP2	2.756,01
	0,23	WP5	2.144,13
	5,87	WP7	49.575,54
	0,28	WP8	2.097,85
			56.573,53

Other direct costs	Description	Category	Associated WP	Costs
	Kickoff Brüssel	Travel	WP7	350,70
	Rom, 27.11.18	Travel	WP2	617,77
	Trondheim, 10.05.19	Travel	WP7	1.176,25
	Ispra, 11.06.19	Travel	WP8	554,73
	Lissabon, 16.09.19	Travel	WP7	765,14
	Prag, 14.10.19	Travel	WP7	855,86
	Madrid, 04.11.19	Travel	WP2	954,62
				5.275,07

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 3 -BRGM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
3. BRGM	50.392,19	7.094,13	0,00	14.371,58	71.857,90	29,70%	21.341,80	50.516,10

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,18	WP2	1.378,08
	2,38	WP3	17.928,72
	3,55	WP5	26.951,15
	0,37	WP7	2.756,16
	0,18	WP8	1.378,08
			50.392,19

Other direct costs	Description	Category	Associated WP	Costs
	Progress meeting GEOERA FRAME	Travel	WP3	1.291,11
	GeoERA FRAME Kick off meeting	Travel	WP5	5.803,02
				7.094,13

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 4 -CGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
4. CGS	11.153,94	2.167,59	0,00	3.330,38	16.651,91	29,70%	4.945,62	11.706,29

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,57	WP2	1.750,00
	1,14	WP3	3.506,00
	0,67	WP4	1.905,80
	0,52	WP5	1.872,14
	0,43	WP7	1.504,00
	0,29	WP8	616,00
			11.153,94

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA meetings	Travel	WP3	1.652,31
	GeoERA meetings	Travel	WP5	
	Hist. mining sites	Travel	WP7	
	Laboratory Analyse	Other	WP4	515,28
				2.167,59

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 5 - GSE

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
5. EGT	0,00	0,00	0,00	0,00	0,00	29,70%	0,00	0,00

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
			0,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 6 -SGU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
6. SGU	92.599,48	3.995,59	0,00	24.148,77	120.743,84	29,70%	35.860,92	84.882,92

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,12	WP2	717,94
	6,16	WP3	39.956,23
	2,91	WP5	15.885,22
	4,93	WP6	32.286,09
	0,74	WP7	3.676,26
	0,01	WP8	77,74
			92.599,48

Other direct costs	Description	Category	Associated WP	Costs
	Wien 2019-03-10	Travel	WP3	1.109,73
	Norway 2019-05-12	Travel	WP3	841,48
	Norberg SWE 2019-05-29	Travel	WP6	61,00
	Portugal 2019-09-16	Travel	WP6	658,47
	Portugal 2019-09-16	Travel	WP3	1.324,91
				3.995,59

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 7 -GSI

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
7. GSI	15.000,00	0,00	0,00	3.750,00	18.750,00	29,70%	5.568,75	13.181,25

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,5	WP4	7.500,00
	1,5	WP5	7.500,00
			15.000,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 8 -GTK

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
8. GTK	13.959,72	4.205,72	0,00	4.541,36	22.706,80	29,70%	6.743,92	15.962,88

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,2	WP2	1.235,50
	1,85	WP5	12.679,70
	0,01	WP8	44,52
			13.959,72

Other direct costs	Description	Category	Associated WP	Costs
	Törmänen, 19418, 19419; Lissabon 16.-19.9.2019: Daily allowances, Hotels, Flight tickets, Taxies, Service fees, City tax	Travel	WP5	1.297,60
	Törmänen, 12153; Bryssel 3.-5.7.2018: Daily allowances, Hotels, Flight tickets, Train tickets, Service fees	Travel	WP5	1.664,99
	Törmänen, 14463, 14464; MREG-FRAME, Rome 26.30.11.2018: Daily allowances, Hotels, Flight tickets, Taxies, Service fees	Travel	WP5	1.243,13
				4.205,72

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 9 - HGI-CGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
9. HGI-CGS	8.824,19	207,69	0,00	2.257,97	11.289,85	29,70%	3.353,09	7.936,76

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,77	WP2	1.841,86
	2,15	WP3	5.157,21
	0,77	WP8	1.825,12
			8.824,19

Other direct costs	Description	Category	Associated WP	Costs
	GeoEra meeting (Brussels)	Travel	WP2	69,23
			WP3	69,23
			WP8	69,23
				207,69

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 10 - IGME-Gr

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
10. IGME-Gr	8.146,52	1.727,00	0,00	2.468,38	12.341,90	29,70%	3.665,54	8.676,36

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,25	WP7	8.146,52
			8.146,52

Other direct costs	Description	Category	Associated WP	Costs
	Meeting (Brussels-2018)	Travel	WP7	1.499,00
	Sampling old mine Kirki 2019	Travel	WP7	228,00
				1.727,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 11 - IGME-Sp

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
11. IGME-Sp	50.265,17	6.889,05	0,00	14.288,56	71.442,78	29,70%	21.218,50	50.224,27

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,1	WP2	497,35
	1,6	WP3	9.643,02
	1,2	WP5	7.096,33
	6,97	WP6	33.028,47
			50.265,17

Other direct costs	Description	Category	Associated WP	Costs
	Travel do project meeting	Travel	WP3	2.519,53
	Travel do project meeting	Travel	WP6	949,36
	Field work	Travel	WP6	3.420,16
				6.889,05

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 12 - MBFSZ

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
12.MBFSZ	770,30	368,33	0,00	284,66	1.423,28	29,70%	422,71	1.000,57

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,5	WP4	770,30
			770,30

Other direct costs	Description	Category	Associated WP	Costs
	Travel (Brussels, GEOERA 03-05 July 2018, Horváth Z.)	Travel	WP4	368,33
				368,33

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 13 - NGU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
13.NGU	43.099,39	6.242,22	0,00	12.335,40	61.677,01	29,70%	18.318,07	43.358,94

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,1	WP1	42,94
	0,15	WP3	61,71
	0,95	WP4	5940,33
	3,74	WP5	25875,36
	0,22	WP6	1761,53
	0,46	WP7	3347,77
	0,9	WP8	6069,75
			43.099,39

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA MREG meeting	Travel	WP5	626,78
	Kickoff BXL July 2018	Travel	WP5	1441,76
	Meet. Roma Nov 2018	Travel	WP5	1455,64
	Meet. Lisbon Sept 2019	Travel	WP5	1.343,96
	Meet.Lisbon Sept 2019	Travel	WP8	1.374,08
				6.242,22

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 14 - PGI-PBI

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
14.PGI-PBI	26.522,68	6.492,37	0,00	8.253,76	41.268,81	29,70%	12.256,84	29.011,97

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	11,6	WP7	26.522,68
			26.522,68

Other direct costs	Description	Category	Associated WP	Costs
	15-th Bennial Meeting of the SGA, Scotland, 26-30.08.2019, K.Sadłowska , S.Mikulski, R.Małek (travel allowance, accomodation, travel insurance, airplane ticket)	Travel	WP7	1.482,37
	15-th Bennial Meeting of the SGA, Scotland, 26-30.08.2019, K.Sadłowska , S.Mukulski, R.Małek (registration fee)	Other	WP7	1.152,22
	Conference "Petrological and mineralogical research in geology" in Warsaw 28.03.2019	Other	WP7	24,66
	KICK-OF Meeting, Belgium, 03-05.07.2018 S. (travel allowance, accomodation, insurance, airplane ticket)	Travel	WP7	919,57
	Meeting , Italy, 26-30.11.2018 S. Mikulskii (travel allowance, accomodation, insurance, airplane ticket)	Travel	WP7	1.018,10
	Meeting , Norway, 12-16.052019 Stanisław Mikulski (travel allowance, accomodation, insurance, airplane ticket)	Travel	WP7	1.316,90
	Meeting , Praha,14-17.10.2019 Stanisław Mikulski (travel allowance, insurance, train ticket, accomodation)	Travel	WP7	474,11
	Meeting in Świeradów-Zdrój on 14.11,2019 with Czech Geological Survey, S.Mikulski	Travel	WP7	59,43
	Preparation of materials deposits in Upper Silesia, 15.02.2019 B.Radawnek-Bąk	Travel	WP7	45,01
				6.492,37

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 15 - RBINS-GSB

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
15. RBNS-GSB	161.690,91	5.053,91	0,00	41.686,20	208.431,02	29,70%	61.904,01	146.527,01

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,53	WP2	3.392,67
	23,43	WP4	147.651,59
	1,68	WP7	10.646,64
			161.690,91

Other direct costs	Description	Category	Associated WP	Costs
	From 17/09/2018 to 20/09/2018 by Christian Burlet to Lecce (I).	Travel	WP4	440,00
	From 17/09/2018 to 20/09/2018 by Sophie Decrée to Lecce (I).	Travel	WP4	548,92
	From 17/09/2018 to 20/09/2018 by Georgia Stasi to Lecce (I).	Travel	WP4	445,00
	From 19/11/2018 to 20/11/2018 by Sophie Decrée to Berlin (D).	Travel	WP4	287,35
	From 24/01/2019 to 24/01/2019 by Sophie Decrée to Mons.	Travel	WP4	19,80
	From 28/01/2019 to 31/01/2019 by Sophie Decrée to Wûrzburg.	Travel	WP4	659,00
	Exceptional (project related) analytical consumables: standard EC Moroccan phosphates (14/03/2019).	Other	WP4	207,00
	From 25/03/2019 to 28/03/2019 by Sophie Decrée to Nancy: Analyses out-of-house: analyses des apatites du gisement phosphate de Phalaborwa (25/03/2019).	Travel	WP4	532,00
	From 11/05/2019 to 16/05/2019 by Georgia Stasi to Trondheim.	Travel	WP4	1.109,73
	From 14/05/2019 to 14/05/2019 by Sophie Decrée to Paris.	Travel	WP4	180,47
	From 04/11/2019 to 08/11/2019 by Georgia Stasi to Madrid.	Travel	WP4	624,64
				5.053,91

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 16 - Geoinform

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
16.Geoinform	12.197,00	0,00	0,00	3.049,25	15.246,25	29,70%	4.528,14	10.718,11

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,10	WP2	473,01
	0,91	WP3	4.395,99
	0,32	WP4	1.536,72
	0,79	WP5	3.805,33
	0,20	WP7	964,74
	0,21	WP8	1.021,21
			12.197,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 17 - IGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
17.IGR	78.118,15	5.250,11	0,00	20.842,07	104.210,33	29,70%	30.950,47	73.259,86

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	9	WP3	8.774,19
	27	WP5	39.327,48
	9	WP7	30.016,48
			78.118,15

Other direct costs	Description	Category	Associated WP	Costs
	Trip to kick-off meeting, Brussels, 02.07.2018-06.07.2018/MUNTEANU MARIAN	Travel	WP3	1.895,12
	Trip to kick-off meeting, Brussels, 02.06.2018-06.06.2018/MARINCEA STEFAN	Travel	WP3	1.565,00
	Registration fees to the Romanian Mining Forum 24.10.2018, Bucharest	Other	WP5	105,12
	Trip to Geo-ERA meeting in Rome 26.11.2018-30.11.2018	Travel	WP3	1.082,00
	Field trip to Brad, Romania, 05.04.2019-06.04.2019	Travel	WP7	108,99
	Field trip to Brad, Romania, 05.04.2019-06.04.2019	Travel	WP7	58,80
	Field trip to Baia Mare, Romania 08.05.2019-12.05.2019	Travel	WP5	167,43
	Field trip to South Carpathians, Romania, 27.05.2019-01.06.2019	Travel	WP3	267,65
				5.250,11

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 18 - GeoZS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
18. GeoZS	20.572,97	779,91	0,00	5.338,22	26.691,10	29,70%	7.927,26	18.763,84

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,73	WP2	2.975,53
	1,41	WP3	5.793,13
	0,77	WP5	3.114,60
	1,12	WP6	4.568,88
	0,67	WP7	2.765,78
	0,33	WP8	1.355,05
			20.572,97

Other direct costs	Description	Category	Associated WP	Costs
	Brussels kick-off, 3-5 July 2018, 1 Person	Travel	WP2	754,92
	Headphones for teleconferences	Other	WP2	24,99
				779,91

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

FINANCIAL STATEMENT FOR PP 19 - IPSRA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
19.ISPRA	15.880,55	2.014,82	0,00	4.473,84	22.369,21	29,70%	6.643,66	15.725,56

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,27	WP2	1.457,06
	2,085	WP7	12.203,35
	0,38	WP8	2.220,14
			15.880,55

Other direct costs	Description	Category	Associated WP	Costs
	Missions	Travel	WP7	2.014,82
				2.014,82

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Receitps to Project	Source of receipt	Description	Amount
			0,00

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Geological Analysis and Resource Assessment of selected Hydrocarbon systems
Project acromyn:	GARAH
Project reference number:	GeoE.171.002
Project topic:	Geo-energy
Project specific recearch topic:	GE1 - FOSSIL ENERGY, ENERGY SECURITY AND CLIMATE ACTION
Project website address:	http://geoera.eu/projects/garah/

Period covered from: 01.07.2018 to: 31.12.2019

Report submission date:	
Project coordinator:	Peter Britze

Contact person for the project: Peter Britze
Tel: 23383849
E-mail: pbr@geus.dk

IDENTIFICATION OF PROJECT PARTICIPANTS

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	Geological Survey of Denmark and Greenland	Geological Survey of Denmark and Greenland	GEUS	Denmark	999459677	Project Lead
2	Instituto Geológico y Minero de Espana	Geological Survey of Spain	IGME-Sp	Spain	998737803	Project Partner
3	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek	The Netherlands Organisation for applied scientific research	TNO	Netherlands	999988909	Project Partner
4	Bureau de Recherches Géologiques et Minières	The French Geological Survey	BRGM	France	999993662	Project Partner
5	Bundesanstalt für Geowissenschaften und Rohstoffe	Federal Institute for Geosciences and Natural Resources	BGR	Germany	999429413	Project Partner
6	UK Research and Innovation	British Geological Survey	NERC (UKRI)	United Kingdom	906446474	Project Partner
7	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund of Ukraine	GEOINFORM	Ukraine	947331392	Project Partner
8	Norwegian Petroleum Directorate	Norwegian Petroleum Directorate	NPD	Norway	0	Non-funded partner
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PUBLISHABLE SUMMARY

A harmonized, scientific based, geological analysis and assessment conventional and unconventional hydrocarbon resources will help member states to continue the transition to lower Carbon energy sources. This will contribute to climate commitments, and allow the planning for secure sources of affordable energy. The analysis and assessment of hydrocarbons will focus on two areas:

(i) in Europe's major petroleum province – the North Sea a "Geological analysis and resource assessment of North Sea petroleum systems",

This research includes the assessment of conventional and unconventional oil and gas resources in the most important hydrocarbon basin in Europe. This will enable the remaining resource to be better understood and managed, and identify options for multiple and alternative uses of the subsurface as producing fields come off-line.

(ii) with a pan-European view, "Hydrate assessment in the European continental margin and related risks".

The assessment of gas-hydrates resources in the European continental margin represents an information gap of pan-European interest. This will improve the understanding of the potential role that gas-hydrates may play in the future EU energy mix, as it will constitute a base-line for future projects pertaining the improvement of the European model of the GHSZ, related hazards and potential for geological storage of CO2.

A catalogue evaluating the multiple-use of hydrocarbon reservoirs, as integrated or alternative use of the subsurface, together with an appraisal on risks and safety, will be produced. This study will provide and disseminate all the analytical data generated to a common EGDI database.During 2018 and 2019, the main activities and results achieved in the WP3 have been the (i) collection of available data focused on hydrate research in a pan-European scope and (ii) the definition of the data model structure of the pan-European hydrate-related GIS. The main impact of this results has been to extend the existing European Geological Data Infrastructure (EGDI) structure to enable incorporation, maintenance, and dissemination of outcomes.

PROJECT CONTRIBUTION TO GeoERA PROJECT

WP2 (North Sea Petroleum Systems) will define the range of petroleum systems in the North Sea and populate a harmonized database detailing the oil and gas resource present in the UK, Dutch, German, Danish and Norwegian sectors. The work package will give a harmonized assessment of the conventional and unconventional using the methodology developed in the EUOGA project. The WP2 will also demonstrate the advantages of 3D model assessment in a pilot study area. WP3 (Addressing knowledge gaps in the hydrate assessment in the European continental) will develop a harmonized model for a pan-European gas hydrate data infrastructure. A GIS-database will be developed that includes key gas hydrate observations. This will feed into an assessment of hazard associated with effective closure of mature fields, including multiple and alternative use of assets and infrastructure.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: Main Project Coordination **Duration: 1-36**

Coordination of meetings and minutes
Established the Dissemination and Exploitation plan (D1.1)
Established the Project Data Management Plan (D1.2)
Established the Annual progress report 2018 (D1.3)

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D1.1	Dissemination and Exploitation Plan	GEUS	Report	Public	M3	Completed	
D1.2	Project data management plan	GEUS	Report	Public	M6	Completed	
D1.3	Annual progress report 2018	GEUS	Report	Public	M8	Completed	
D1.4	Midterm Project Progress Report	GEUS	Report	Public	M21		
D1.5	Annual progress reports 2020	GEUS	Report	Public	M32		
D1.6	Final Project report	GEUS	Report	Public	M36		
D1.7	Project review with EU stakeholders – Formal presentation	GEUS	Report	Public	M36		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS1	Kick-off meeting/ seminar	M1	Completed	Delivery of D1.1
MS1	Kick-off meeting/ seminar	M1	Completed	Delivery of D1.3
MS2	Data review & Characterization method agreed	M6	Completed	Delivery of D1.2
MS4	Annual project meeting/seminar 2019	M13	Completed	Delivery of D1.4
MS6	Annual project meeting/seminar 2020	M25		Delivery of D1.5
MS13	Annual project meeting/seminar 2021	M35		Delivery of D1.6
MS15	Presentation of the GARAH findings	M36		Delivery of D1.6
MS15	Presentation of the GARAH findings	M36		Delivery of D1.7

Work package 2: North Sea Petroleum Systems **Duration: 1-34**

Based on existing data and knowledge from the WP-partners WP2 will give a harmonized cross-boder overview of the North Sea petroleum systems and assess their resource potential. The main focus for the conventional assessment is on harmonizing the resource assessments published by the individual countries and synchronizing the hydrocarbon play maps across borders. This process allows to identify potential underexplored play systems or define new play concepts which will be included in the assessment. The unconventional assessment aims at identifying potential shale gas/oil plays in the North Sea Basin and will apply the EUOGA assessment method to the identified plays. In 2019 two questionnaires were set up and circulated to the project partners to gather relevant data for both assessments. The requested data was received during the year and is currently evaluated. A Database & harmonization report (D2.1) describes the key assessment parameters from these questionnaires in the evaluation of the North Sea conventional and unconventional hydrocarbon resources. During the project meeting in October 2019 the workplan for the upcoming month was discussed and a list of additional data for the assessment compiled. Data collection is currently ongoing at the project partners. In WP 2D a detailed petroleum systems model for a case study area across Germany, Denmark and the Netherlands is currently built to show the added value of this technique for resource assessments. For the 3D pilot area the integrated 3D model from 3DGEO-EU was received. This model has been imported into a basin modelling tool and additional relevant data from the three participating geological surveys was integrated. The model will be ready to calculate the unconventional resources in the coming year.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D2.1	Data base & harmonization report	GEUS	Report	Public	M9	Completed	Delivered 25.04.2019 (M10)
D2.2	Petroleum system report and GIS maps	BGS/TNO/ GEUS	Report	Public	M32		
D2.3	Resource assessment „EUOGA“	GEUS/TNO	Report	Public	M33		
D2.4	Resource assessment 3D pilot Unconventional	BGR/GEUS	Report	Public	M23		
D2.5	Resource assessment 3D pilot Conventional	BGR/GEUS	Report	Public	M33		
D2.6	Alternatives + risks	BGS/IGME	Report	Public	M36		

Peter Britze

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Peter Britze	Means of verification
MS2	Data review & Characterization method agreed	23383849	Completed	Delivery of D2.1
MS5	Pilot 3D Unconventional assessment	pbr@geus.dk		Delivery of D2.4
MS8	Inventory of the North Sea petroleum systems	M32		Delivery of D2.2
MS9	Pilot 3D Conventional assessment	M33		Delivery of D2.4
MS10	Resource assessment of the North Sea	M33		Delivery of D2.3
MS14	Catalogue of Hazards and alternative usage	M36		Delivery of D2.6

Work package 3: Knowledge gaps Gas Hydrates **Duration: 1-34**

During 2018 and 2019, activities have been focused on Task 3A and Task 3B. Task 3A (Collection of data sources to be implemented in the hydrate related GIS-database) was developed from July to December 2018. Study area involves the EMODnet area. A total of 835 information layers have been collected coming from public and free databases (EMODnet, PERGAMON or MIGRATE) and national scientific organizations. The deliverable D3_1 contains a list of the available hydrate related-data of interest to be incorporated into the GIS of WP3. Source od data, accessibility/use, size, typology and state is specified. The design of the data model structure of the hydrate-related GIS (Task 3B) has been developed from January to December 2019 and will be reported in the deliverable D3_2 (Sep. 2019).
Collaborations: A MoU has been signed with OGS for the collaborations in the field of gas hydrates.
Dissemination and communications: Meetings of Migrate COST action ES1405 (Potsdam Nov. 2018; and Lisbon Jan. 2019). GDR Hydrates meeting, Sep. 2019, Brest. 34th IAS Sep. 2019, Rome.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D3.1	Collection data report on available Hydrates data	BGS/IGME	Report	Public	M9	Completed	
D3.2	Hydrates GISdatabase	IGME-Sp	GIS	Public	M27		
D3.3	Gas Hydrate overview report	IGME-Sp	Report	Public	M33		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS2	Data review & Characterization method agreed	M6	Completed	Delivery of D3.1
MS7	Hydrate GIS data base	M27		Delivery of D3.2
MS11	Gas Hydrate overvie	M33		Delivery of D3.3

Work package 4: Knowledge data base **Duration:1 -36**

The technical specifications for the GARAH database have been established and reported to GIP (D4.1).
A detailed plan has been established and agreed with GIP to coordinate the GARAH Database and Knowledge Share Point development in 2020
Meetings have been held with GIP to discuss requirements and prototype development
The results from the European unconventional oil and gas assessment (EUOGA) project will be loaded into the EGDI platform

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D4.1	Preliminary data selection, IP guidelines, QA procedures	GEUS	Report	Public	M6	Completed	
D4.2	Description of Extensions - EGDI	GEUS	Report	Public	M30		
D4.3	Assist in HC planning	GEUS	Report	Public	M30		
D4.4	Online available results	GEUS	Report	Public	M35		
D4.5	Data input to IP	GEUS	GIS data	Public	M1	Completed	
D4.5	Data input to IP	GEUS	GIS data	Public	M34		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS3	Preliminary data selection, IP guidelines and QA procedures	M6	Completed	Delivery of D4.4
MS12	All data in IP EGDI data base	M1	Pending	Delivery of D4.5
MS12	All data in IP EGDI data base	M34		Delivery of D4.5

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)*

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
WP2: D2.1 “State of the art report”; delivery date 28.2.2019 (M8)	New delivery date **25.04.2019 (M10)**	No	No
WP2: D2.4 “Task 2D - Pilot Study 3D assessment, Unconventional”; delivery date 31.3.2020 (M21)	New delivery date 30.09.2020 (M27)	No	No
WP1: D1.4 “Project Progress and Monitoring Report”; Delivery date 31.12.2019 (M18)	Change title of 1.3 to “Midterm Project Progress Report” New delivery date 31.01.2020 (M19)	No	No

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)	Title
PUBLICATIONS	SCIENTIFIC PUBLICATION	17.06.2019	SCIENTIFIC COMMUNITY		npa	Niels H. Schovsbo and Finn Jakobsen	GEUS Bulletin Vol 43	Review of hydrocarbon potential in East Denmark following 30 years of exploration activities
MEETINGS	Meeting with international body	3.07.2018	EU INSTITUTION	200	many			
MEETINGS	Meeting with other GeoERA projects	1.09.2018	SCIENTIFIC COMMUNITY	15	TNO, BGR,GEUS,PGI			
MEETINGS	Meeting with other GeoERA projects	1.03.2019	SCIENTIFIC COMMUNITY	75	many			
MEETINGS	Meeting with other GeoERA projects	1.09.2019	SCIENTIFIC COMMUNITY	15	TNO, BGR,GEUS,PGI			
MEETINGS	Internal project meeting	oct-2018	SCIENTIFIC COMMUNITY	20	TNO, IGME, BRGM, BGR, BGS, GEOINFORM, GEUS			
MEETINGS	Internal project meeting	oct-2019	SCIENTIFIC COMMUNITY	20	TNO, IGME, BRGM, BGR, BGS, GEOINFORM, GEUS			
MEDIA	ONLINE MEDIA		GENERAL PUBLIC		many			
EVENTS	CONGRESS	sep.19	SCIENTIFIC COMMUNITY	100+	BGR, TNO, GEUS	Arfai, Jashar; Lutz, Rüdiger; den Dulk, Maryke; Jakobsen, Finn-Christian; Nelskamp, Susanne; Ladage, Stefan; Britze, Peter		3D basin and petroleum system modelling in the North Sea Central Graben: a cross-border Dutch, German and Danish pilot stud
MEETINGS	Meeting with international body	nov.18	SCIENTIFIC COMMUNITY	50	MIGRATE COST	R. León		
MEETINGS	Meeting with international body	29.01.2019	SCIENTIFIC COMMUNITY	20	MIGRATE COST	R. León		
EVENTS	WORKSHOP	sep.19	SCIENTIFIC COMMUNITY	50	GDR Hydrates , Brest	A. Burnol		
EVENTS	**CONGRESS**	sep.19	SCIENTIFIC COMMUNITY	100	IAS 2019, Rome	R. León		

INSTRUCTIONS
Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	Internal project meeting
	Meeting with other GeoERA projects
	Meeting with national body
	Meeting with international body
	Other
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

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PROJECT MANAGEMENT

The GARAH project management board has bi-monthly SKYPE or WEBEX meetings, where the progress in the GARAH study is discussed and assessed.
On work package level, several informal SKYPE meetings, together with emails has formed the basis for close communication.
Until now, the group had WP and Board meetings in Madrid (Oct. 2018) and Edinburgh (Oct. 2019).
Close cooperation between 3DGEO-EU and GARAH on a 3D pilot study area in the North Sea.
Several joint workshops with other partners have been convened:

- Tech workshop with 3DGEU-EU, September 2018
- Tech workshop in Vienna, March 2019
- Tech workshop with 3DGEU-EU and HIKE, September 2019

Several meetings and SKYPE meetings with GIP.

IMPACT STATEMENT

The GARAH project idea will result in the identification of new potential areas for hydrocarbon exploration, directly addressing the requirement for identifying secure energy HC sources. This will give further information regarding basin development and evolution, and the HC resources will be systematically assessed. Outcomes will therefore feed into planning and policy (licensing of areas for exploration) by Member States, commercial exploration strategies and highlight remaining knowledge gaps, which may inform about further academic research or programs of exploration sponsored by member states. The generated catalogue of the multiple-use (or sequential-use) potential and impacts of hydrocarbon reservoirs will enable the European community to improve efficient, sustainable, and foster climate friendly use of the subsurface.

A consistent estimation of hydrocarbon resource will be a first step in assessing and quantifying the hydrocarbon reserves in the main hydrocarbon basin in Europe.

Our mission is to generate a catalogue of the multiple-use, enabling synergies between various uses and securing a sustainable development, whilst reducing overall climate impact of fossil fuel use.

The identification of potential hydrate resources in the European margins and provide a unified database and maps detailing potential distribution of gas hydrates (energy source), potential geohazard areas. In addition, we will aim to identify zones could be used to store CO2 as a hydrate (subsurface CO2 storage resource) within the European offshore and onshore areas.

The results will foster the development of new HC technologies in Europe and will feed into planning, policy (licensing of areas for exploration) by Member States, and commercial exploration strategies.

The outcomes of this project idea will inform EU Member States of potential frontier plays in a pan-EU perspective, allowing for the currently poorly understood offshore methane hydrate and shale gas/oil resource to be acknowledged in developing legislation and regulation.

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
	Actual			(0,25*A+B)				
1. GEUS	102.099,35	8.391,45	0,00	27.622,70	138.113,50	21,99%	30.371,16	107.742,34
2. IGME-Sp	70.562,54	10.014,53	0,00	20.144,27	100.721,34	21,99%	22.148,62	78.572,72
3. TNO	31.892,77	2.232,65	0,00	8.531,36	42.656,78	21,99%	9.380,22	33.276,55
4. BRGM	13.465,08	2.335,26	0,00	3.950,09	19.750,43	21,99%	5.865,88	13.884,55
5. BGR	45.772,46	3.540,96	0,00	12.328,36	61.641,78	21,99%	13.555,03	48.086,75
6. NERC (UKRI)	28.579,23	2.373,38	0,00	7.738,15	38.690,76	21,99%	8.508,10	30.182,66
7. GEOINFORM	3.393,03	561,99	0,00	988,75	4.943,77	21,99%	1.087,14	3.856,64
					406.518,35		90.916,14	315.602,21

Date:
Person responsible:

***

Peter Britze

Peter Britze
23383849
pbr@geus.dk

FINANCIAL STATEMENT FOR PP 1 - GEUS

Fill in only blue-colored cells.

	A. Direct personn Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
1.GEUS	102.099,35	8.391,45	0,00	27.622,70	138.113,50	21,99%	30.371,16	107.742,34

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,77	WP1	14.399,67
	6,06	WP2	42.587,76
	1,63	WP3	12.180,03
	4,67	WP4	32.931,89
			102.099,35

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off meeting, Brussels, july 2018. Project Workshop in Madrid, november 2018	Travel	WP1	2.749,69
	Kick-off meeting, Brussels, july 2018. Project Meeting in Madrid, november 2018. Project Meeting in Edinbough, october 2019	Travel	WP2	1.595,25
	Kick-off meeting, Brussels, july 2018. Project Meeting in Madrid, november 2018. Project Meeting in Edinbough, october 2019	Travel	WP3	1.943,31
	Project Meeting in Brussels, october 2018. GIP-P Project Meeting in Brussels, october 2018. Energy Technical Workshop in Wien, march 2019	Travel	WP4	2.103,20
				8.391,45

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

***

Peter Britze

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23383849
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FINANCIAL STATEMENT FOR PP 1 -IGME-Sp

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2. IGME-Sp	70.562,54	10.014,53	0,00	20.144,27	100.721,34	21,99%	22.148,62	78.572,72

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	15	WP3	66.152,38
	1	WP4	4.410,16
			70.562,54

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA kick off meeting	Travel	WP3	1.313,62
	MIA 2018 Congress	Travel	WP3	422,46
	MIA 2018 Congress (inscription)	Other	WP3	225,00
	Marine Facies Meeting	Travel	WP3	527,20
	OGS-Seafloor temperature map	Travel	WP3	1.176,66
	IAS 2019 Rome Inscription	Other	WP3	450,00
	IAS 2019 Rome	Travel	WP3	1.277,08
	geoERA annual Meeting - Edinburg	Travel	WP3	1.446,68
	PC adquisition	Equipment	WP3	674,21
	Workstation updated	Equipment	WP3	2.501,62
				10.014,53

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - TNO

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	31.892,77	2.232,65	0,00	8.531,36	42.656,78	21,99%	9.380,22	33.276,55

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,98	WP1	7.396,47
	4,89	WP2	24.496,30
			31.892,77

Other direct costs	Description	Category	Associated WP	Costs
	Meetings: Hannover, Ljubljana	Travel	WP1	900,50
	Meetings: Kick-off, Madrid, Edinburgh	Travel	WP2	1.332,15
				2.232,65

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - BRGM

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
7. BRGM	13.465,08	2.335,26	0,00	3.950,09	19.750,43	21,99%	5.865,88	13.884,55

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,77	WP3	13.465,08
			13.465,08

7607,389831

Other direct costs	Description	Category	Associated WP	Costs
		Travel	WP3	2.335,26
				2.335,26

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - BGR

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
5. BGR	45.772,46	3.540,96	0,00	12.328,36	61.641,78	21,99%	13.555,03	48.086,75

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,27	WP1	2.682,81
	5,24	WP2	43.089,65
			45.772,46

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off Brüssel	Travel	WP1	627,43
	Madrid, 19.-21.11.18		WP2	724,59
	Münster,22.-25.9.19		WP2	672,85
	2xEdinburgh, 23.-25.10.19		WP2	1.516,09
				3.540,96

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - GEOINFORM

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
7. GEORINFORM	3.393,03	561,99	0,00	988,75	4.943,77	21,99%	1.087,14	3.856,64

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,226002625	WP2	1.092,12
	0,079764332	WP3	385,45
	0,396382945	WP4	1.915,46
			3.393,03

Other direct costs	Description	Category	Associated WP	Costs
	Meeting	Travel	WP2, WP3	561,99
				561,99

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - NERC (UKRI)

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
6. NERC (UKRI)	28.579,23	2.373,38	0,00	7.738,15	38.690,76	21,99%	8.508,10	30.182,66

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,66	WP2	19.713,04
	1,7	WP3	8.866,19
	5,36		28.579,23

Other direct costs	Description	Category	Associated WP	Costs
	Garah Meetings/V	Travel	WP2	720,60
	Garah Meetings/V	Travel	WP3	1.652,78
				2.373,38

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Cross-border, cross-thematic multiscale framework for combining geological models and data for resource appraisal and policy support
Project acromyn:	GeoConnect³d
Project reference number:	GeoE.171.009
Project topic:	Geo-energy
Project specific research topic:	GE6 - ENABLING SUBSURFACE MANAGEMENT AND DECISION SUPPORT
Project website address:	http://geoera.eu/projects/geoconnect3d6/

Period covered from: 01.07.2018 to: 31.12.2019

Report submission date:	27.01.2020
Project coordinator:	Kris Piessens

Contact person for the project: Kris Piessens
Tel: +32 02 788 76 34
E-mail: kpiessens@naturalsciences.be

IDENTIFICATION OF PROJECT PARTICIPANTS

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	Institut Royal des Sciences Natueelles de Belgique	Geological Survey of Belgium – Royal Belgian Institute of Natural Sciences	RBINS-GSB	Belgium	998437006	Project Lead
2	Vlaams Planbureau voor Omgeving	0	VPO	Belgium		Project Partner
3	Vlaamse Instelling voor Technologisch Onderzoek VITO, affiliated or linked to VPO	0	VITO	Belgium	999645238	Third Party
4	Federalni Zavod Za Geologiju Sarajevo	Geological Survey of Federation of Bosnia and Herzegovina	FZZG	Bosnia and Herzegovina	947831524	Project Partner
5	Hrvatski geoloski institut	Croatian Geological Survey	HGI-CGS	Croatia	972614345	Project Partner
6	Ceska Geologicka Sluzba	Czech Geological Survey	CGS	Czech Republic	999546783	Project Partner
7	Bureau de Recherches Géologiques et Minières	The French Geological Survey	BRGM	France	999993662	Project Partner
8	Bundesanstalt für Geowissenschaften und Rohstoffe	Federal Institute for Geosciences and Natural Resources	BGR	Germany	999429413	Project Partner
9	Bayerisches landesamt fur Umwelt	Bavarian Environment Agency - Geological Survey (Associated partner)	LfU	Germany	923455230	Project Partner
10	Magyar Bányászati és Földtani Szolgálat	Mining and Geological Survey of Hungary	MBFSZ	Hungary	967592364	Project Partner
11	Department of Communications, Climate Action and Environment	Geological Survey of Ireland	GSI	Ireland	996559280	Project Partner
12	Administration Des Ponts et Chaussees Direction; Service Géologique du Luxembourg	National geological survey	SGL	Luxemburg	983408408	Project Partner
13	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek	The Netherlands Organisation for applied scientific research	TNO	Netherlands	999988909	Project Partner
14	Państwowy Instytut Geologiczny – Państwowy Instytut Badawczy	Polish Geological Insitute	PIG-PIB	Poland	999492463	Project Partner
15	Institutul Geologic al României	Geological Institute of Romania	IGR	Romania	998906874	Project Partner
16	Geological Survey of Serbia	Geological Survey of Serbia	GSS	Serbia	919767678	Project Partner
17	Statny Geologicky ustav Dionyza Stura	State Geological Institute of Dionyz Stur	SGUDS	Slovakia	995391982	Project Partner
18	Geološki zavod Slovenije	Geological Survey of Slovenia	GeoZS	Slovenia	999466370	Project Partner
19	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund of Ukraine	GEOINFORM	Ukraine	947331392	Project Partner
20	Geologischer Dienst Nordrhein-Westfalen	0	NRW	Germany		
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PUBLISHABLE SUMMARY

The GeoConnect³d project develops and tests a new methodological approach to prepare and disclose geological information for policy support and subsurface management. The improved approach uses two regional case studies – the Roer-to-Rhine region and the Pannonian Basin. These regional, cross-border case studies are chosen to be complementary and sufficiently different in geological setting and degree of implementation of subsurface exploitation and management, in order to maximize their pan-European relevance. A novel bottom-up approach introduces two concepts that increase the geological understanding of an area and are aimed at providing a coherent geological context for evaluating subsurface applications and resolving subsurface management issues. The first new concept is the structural framework as a means of joining existing models of different scale and resolution to clarify the importance of planar structures in a way that makes the geology understandable to stakeholders involved in subsurface management. The second concept is that of geomanifestations. These specific expressions of geological processes are important sources of information for improving geological understanding. The structural framework models annotated with geomanifestations allow the integration and evaluation of complex cross-thematic research. The two bottom-up regional case studies form the study material for a top-down, more generic evaluation of potentially interacting subsurface activities that allows revisiting and refining state-of-the-art methods. Valorisation of regional results at pan-European level is ensured by testing the methodologies in two smaller pilot areas in Germany and Ireland.

Max 3.000 words

PROJECT CONTRIBUTION TO GeoERA PROJECT

GeoERA objectives:
1) A more integrated and efficient management of the subsurface.
2) More responsible and publicly accepted, exploitation and use of the subsurface.

Geo-energy objectives:
1) Establishing state-of-the-art methodologies for harmonized mapping and assessment of potential resources and capacities.
2) Improving the interoperability of geological datasets that underpin such assessments.
3) Implementing scientific intelligence and information into the policy domain considering relevant cross-thematic links to groundwater and mineral resources.

GeoConnect³d mid-term contributions to these objectives
The central methodology developed in GeoConnect³d is fundamentally different from state-of-the-art approaches in bringing together different types of geological information in a way that is transparent for a general public, policy makers and experts. The methodology entails a redefinition of the structural framework and the introduction of geomanifestations. Developing this methodology is not the final goal of the project. The ambition of GeoConnect³d is to support managing the use of the subsurface for geo-energy and other uses, and to demonstrate how awareness of the opportunities and limits of the subsurface is critically important by developing several use cases.

Generic schemes will be developed in WP5, but current activities are, in line with the project planning, focussed on identifying national and regional stakeholders by mapping out subsurface competences and authorities. This is an early preparation for the regional workshops to be organised in 2020.

The structural framework methodology is one of two highly innovative aspects of GeoConnect³d. It was successfully and on schedule developed. Its implementation is more far reaching than originally anticipated but progressing well and has been embraced by all partners. At the highest zoom levels, the first version of the Europe-wide structural framework is ready and is now gradually being presented to groups outside of the project consortium for discussing its scientific soundness and visualisation, with good hopes to have a browser hosted version ready by the mid-term meeting.
The structural framework is a direct answer to the first geo-energy objective. It is already proving successful to beyond the current state-of-the-art, e.g. by being applicable to areas that span contrasting geological units (cf. Roer-to-Rhine case study). It does this by taking an alternative approach to harmonisation by identifying shared limits and units and introducing zoom to allow for different levels of detail, rather than attempting to reach one agreed geological model at one specific scale.

The structural framework is also the frame of reference for other geological datasets. GeoConnect³d focusses on data that tests or complements the geological models and geological understanding that they represent and refers to such data as geomanifestations. Which data will be collected in different parts has been outlined in dedicated research plans. These activities are in the projects original planning delayed compared to setting-up the structural framework but have nevertheless progressed significantly, as is evidenced e.g. of the submission of a first paper to an impact factor journal.
GeoConnect³d also ambitions to be a highly cross-thematic project. Contact has been taken with the raw material project Mintell4EU and FRAME in order to assure access to data relevant for the GeoConnect³d case studies. Similar contacts have been established with VoGERA, a groundwater project looking at interactions in a depth range relevant for the exploitation activities that will be considered in GeoConnect³d, and a workshop of VoGERA has been attended. This is part of the third geo-energy objective.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: Project Management Plan **Duration:1-36**

The Project Management Board (PMB) had meetings every two weeks via WebEx and monitored closely the progress of the project.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D1.1	Minutes of virtual (monthly) and physical (annual) meetings of	RBINS-GSB	Report	Project	M1	Completed	
D1.1	Minutes of virtual (monthly) and physical (annual) meetings of	RBINS-GSB	Report	Project	M36	Pending	Intermediate report submitted
D1.2a	First and final version of the project Data Management Plan	VITO	Report	Project	M6	Completed	
D1.2b	First and final version of the project Data Management Plan	VITO	Report	Project	M36	Pending	First version submitted
D1.3	Dissemination and Exploitation Plan	RBINS-GSB	Report	Project	M6	Completed	
D1.4	Mid-term Project Progress and Monitoring Report	RBINS-GSB	Report	GeoERA	M17	Completed	This report
D1.5	Project Final Report	RBINS-GSB	Report	H2020	M36	Pending	
D1.6 a	Comulative Expenditure Report 2018,2019,2020	VITO	Report	GeoERA	M6	Completed	
D1.6 b	Comulative Expenditure Report 2018,2019,2020	VITO	Report	GeoERA	M18	Completed	
D1.6 c	Comulative Expenditure Report 2018,2019,2020	VITO	Report	GeoERA	M30	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification	
M1 a,b,c,d	Outlook presentation of the project on the kickoff GeoERA meeting Kick-off project workshop Kick-off workshop R2R case study Kick-off workshop Pannonian Basin case study	M1	Completed	Minutes of meeting	Refering to WPs: all
M4 a	First and second technical joint GeoERA-GE workshop	M27	Completed	GeoConnect3d minutes of meeting	Refering to WPs: all
M4 b	First and second technical joint GeoERA-GE workshop	M27	Completed	GeoConnect3d minutes of meeting	Refering to WPs: all
M6 a,b	Presentation of progress, results and highlights of the project on the mid-term GeoERA Review Meeting Mid-term project workshop	M21	Pending	Presentation given, Minutes of meeting	Refering to WPs: all
M10	Presentation of progress, results and highlights of the project on the final GeoERA Review Meeting	M39	Pending	Presentation given	Refering to WPs: all

Work package 2: Interface package & Methodology **Duration: 1-36**

WP2 was responsible for: 1) the development of the structural framework methodology, resulting in the report M3 that was circulated among all partners and launched via a presentation/Q&A WebEx session in June 2019, 2) the first version of the regional structural framework and 3) the overall structure for collection and storage of geomanifestations data. For 2 and 3, short reports were presented to the GeoERA Monitoring Team.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D2.1	Intra- and inter-thematic exchange logbook	TNO	Report	GeoERA	M1	Completed	First version of logbook
D2.1	Intra- and inter-thematic exchange logbook	TNO	Report	GeoERA	M36	Pending	
D2.2	Report (in conjunction with IP) on agreed requirements for data I/O and visualization of results	TNO&RBINS-GSB	Report	H2020 (EGDI)	M6	Completed	
D2.3	Report on fault property requirements (in conjunction with GE4-HIKE)	TNO	Report	H2020 (EGDI)	M6	Completed	
D2.4	Report and publication(s) on the two-step framework-geomanifestation methodology	RBINS-GSB	Report	Project	M24	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification	
M2	Launch of the GeoConnect³d website	M4	Completed	Website online	
M3	Structure and guidelines for annotated structural framework meth	M9	Completed	Guidelines to WP3,4, report	Refering to WPs: 2,3
M5 a,b	First version regional structural framework Structure for a data management system for geomanifestations	M14	Completed	Minutes of PMB meetings, report	Refering to WPs: 2,3

Work package 3: Roer-to-Rhine **Duration:**

WP3 is advancing with the R2R structural framework and geomanifestations inventory. Workshops were organised to ensure internal collaboration between WP3 partners (e.g. Utrecht, April 2019) and one workshop was organised in external collaboration with HIKE (Utrecht, October 2019).

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D3.1	Scientific publication of the annotated R2R model (submitted)	RBINS-GSB	Publication	Open access	M31	Pending	
D3.2	Minutes of the workshop on subsurface management and planning	VPO&VITO	Report	Project	M32	Pending	
D3.3	Report on ways to disclose essential subsurface data and informat	VPO&VITO	Report	Project	M36	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification	
M7 a,b	Inventory of available geomanifestations for the R2R and Pannonian Basin case studies	M23	Pending	Report	Refering to WPs: 3,4
M8 a,b	R2R and Pannonian Basin regional workshops on subsurface management and planning	M25	Pending	Minutes of meeting	

Work package 4: Pannonian Basin **Duration: 1-36**

WP4 has completed the 3D model of the Pannonian Basin and is nearing completion of the stratigraphic harmonisation. The geomanifestations inventory is ongoing.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D4.1	Horizon and voxel 3D model, 3D fault plane surfaces of the main deformation zones in harmonisation with the stratigraphic model horizons	MBFSZ	Geological model	H2020	M24	Pending	
D4.2	A joint report on geomanifestations with their physical, spatial- and temporal (4D) analysis, validation of the 3D structural-geological model of the Pannonian basin based on their identification and evaluation of their relevance for spatial management at pilot areas. Only interpreted data will be included	MBFSZ & GeoZS	Report	H2020	M30	Pending	
D4.3	A scientific article on geomanifestations in the Pannonian Basin (IF paper, submitted)	MBFSZ & PB partners	Publication	Open access	M31	Pending	
D4.4	Report on the workshop results	MBFSZ	Report	GeoERA	M28	Pending	
D4.5a	Report on the benchmark methodology and the results of indicator calculations and evaluations	MBFSZ	Report	H2020	M36	Pending	
D4.5b	Applied (traffic-light) model	MBFSZ			M34	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 5: Sharing the case studies **Duration:1-36**

WP5 collected information about stakeholders in all countries our partners are based in via a questionnaire circulated between April-May 2019, which resulted in a first version of the state-of-the-art report D5.1. WP5 also participated in WP3-WP4 workshops to exchange ideas about structural framework & geomanifestations.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D5.1	State of the art of subsurface planning and management, and avenues for improvement	PGI	Report	H2020	M24	Pending	
D5.2 a,b, c, d	Lessons learnt from Molasse Basin pilot (GeoERA: GE3HotLime WP6/Task 6.3) - feeding into the HotLime Final Report Lessons learnt from Irish case pilot Lessons learnt from R2R case Lessons learnt from Pannonian Basin case	LfU, GSI, VITO, MBFSZ	Report	GeoERA, H2020	M30	Pending	
D5.3	Overall conclusions and recommendations	BRGM	Report	H2020	M36	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M9	Subsurface management workshop with panEuropean outreach	M32	Pending	Presentations and feedback questionnaire

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
Postponement of D1.4 Midterm Project Progress Report	Amendment of project plan according to GeoERA guidelines	No	

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)
MEETINGS	Meeting with international body	3.07.2018	EU INSTITUTION		RBINS-GSB	Kris Piessens	
MEETINGS	Internal project meeting	4.07.2018	SCIENTIFIC COMMUNITY				
MEETINGS	Internal project meeting	30.08.2018	SCIENTIFIC COMMUNITY				
MEETINGS	Internal project meeting	18.10.2018	SCIENTIFIC COMMUNITY				
MEETINGS	Internal project meeting	2.04.2019	SCIENTIFIC COMMUNITY				https://geoera.eu/blog/towards-a-project-vocabulary-geological-concepts-for-humans-and-computers/
MEETINGS	Internal project meeting	5.06.2019	SCIENTIFIC COMMUNITY				
MEETINGS	Meeting with other GeoERA projects	4.07.2019	SCIENTIFIC COMMUNITY		TNO, VITO, RBINS-G	TNO	https://geoera.eu/blog/how-we-deal-with-our-faults/
MEETINGS	Internal project meeting	15.10.2019	SCIENTIFIC COMMUNITY		RBINS-GSB, SGUDS,	RBINS-GSB, SGIDS	
MEETINGS	Other	3.12.2020	SCIENTIFIC COMMU	3	RBINS-GSB	Renata Barros, Kris Piessens	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	3.07.2018	EU INSTITUTION		VPO, RBINS-GSB, VT	Timothy Debacker et al.	https://www.researchgate.net/publication/326991428_GeoConnectd_-_Cross-border_cross-thematic_multiscale_framework_for_combining_geological_models_and_data_for_resource_appraisal_and_policy_support_-_WP3_Roer-to-Rhine
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	3.07.2018	EU INSTITUTION		BRGM, LfU, GSI, PIG	Isaline Gravaud et al.	https://www.researchgate.net/publication/327185873_GeoConnectd_Cross-border_cross-thematic_multiscale_framework_for_combining_geological_models_and_data_for_resource_appraisal_and_policy_support_WP5-SHARING_THE_CASE_STUDIES_Objectives
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	3.07.2018	EU INSTITUTION		MBFSZ, GeoZS	Gyula Maros et al.	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	3.07.2018	EU INSTITUTION		RBINS-GSB	Kris Piessens	https://www.researchgate.net/publication/327185132_GeoConnectd_Cross-border_cross-thematic_multiscale_framework_for_combining_geological_models_and_data_for_resource_appraisal_and_policy_support
PUBLICATIONS	ABSTRACTS	12.09.2018	SCIENTIFIC COMMUNITY		RBINS-GSB, VPO, VT	Kris Piessens et al.	https://www.researchgate.net/publication/327939533_Understanding_the_Earth_for_the_people_that_inhabit_it_Belgian_and_Flemish_institutes_joining_hands_in_the_framework_of_GeoERA
PUBLICATIONS	PAPERS	28.06.2019	SCIENTIFIC COMMUNITY		IGR	Valentina Cetean et al.	https://www.researchgate.net/publication/335099383_A_CHALLENGING_ATTEMPT_-_CROSS-BORDER_HARMONIZATION_OF_GEOLOGICAL_DATA_IN_THE_WESTERN_PART_OF_ROMANIA?channel=doi&linkId=5d4ecdca4585153e594a800f&showFulltext=true
PUBLICATIONS	ABSTRACTS	9.10.2019	SCIENTIFIC COMMUNITY		HGI-CGS	Marko Špelić et al.	https://www.researchgate.net/publication/336687187_SEDIMENTARY_BASIN_FILL_OF_LAKE_PANNON_IN_THE_EASTERN_PART_OF_DRAVA_BASIN
MEDIA	ONLINE MEDIA	5.07.2019	GENERAL PUBLIC	798	GSB	Renata Barros	https://geoera.eu/blog/meet-the-scientist-1/
MEDIA	ONLINE MEDIA	2.08.2019	GENERAL PUBLIC	663	VPO	Renata Barros	https://geoera.eu/blog/meet-the-scientist-2/
MEDIA	ONLINE MEDIA	13.09.2019	GENERAL PUBLIC	577	GeoZS	Renata Barros	https://geoera.eu/blog/meet-the-scientist-3/
MEDIA	ONLINE MEDIA	27.09.2019	GENERAL PUBLIC	515	GeoZS	Renata Barros	https://geoera.eu/blog/meet-the-scientist-4/
MEDIA	ONLINE MEDIA	11.10.2019	GENERAL PUBLIC	417	BRGM	Renata Barros	https://geoera.eu/blog/meet-the-scientist-5/
MEDIA	ONLINE MEDIA	22.11.2019	GENERAL PUBLIC	263	HGI-CGS	Renata Barros	https://geoera.eu/blog/meet-the-scientist-6/
MEDIA	ONLINE MEDIA	19.12.2019	GENERAL PUBLIC	473	GSS	Renata Barros	https://geoera.eu/blog/meet-the-scientist-7/
MEDIA	ONLINE MEDIA	10.01.2020	GENERAL PUBLIC	226	BRGM	Renata Barros	https://geoera.eu/blog/meet-the-scientist-8/
MEDIA	ONLINE MEDIA	25.07.2018	GENERAL PUBLIC	1059	RBINS-GSB	Kris Piessens	https://geoera.eu/blog/ground-to-cover-for-r2r/
MEDIA	ONLINE MEDIA	1.10.2018	GENERAL PUBLIC	1451	VPO, SGL, RBINS-GS	Helga Ferket et al.	https://geoera.eu/blog/geomanifestations/
MEDIA	ONLINE MEDIA	11.10.2018	GENERAL PUBLIC	1063	VPO	Timothy Debacker	https://geoera.eu/blog/updated-aoi-for-the-r2r-area/
MEDIA	ONLINE MEDIA	17.10.2018	GENERAL PUBLIC	1420	GeoZS	Nina Rman	https://geoera.eu/blog/geomanifestations-in-north-east-slovenia/
MEDIA	ONLINE MEDIA	6.11.2018	GENERAL PUBLIC	1620	BRGM, RBINS-GSB	Isaline Gravaud, Kris Piess	https://geoera.eu/blog/subsurface-management/
MEDIA	ONLINE MEDIA	12.11.2018	GENERAL PUBLIC	1072	RBINS-GSB	Kris Piessens	https://geoera.eu/blog/coming-soon-what-kind-of-meeting/
MEDIA	ONLINE MEDIA	14.11.2018	GENERAL PUBLIC	1356	HGI-CGS	Marko Špelić et al.	https://geoera.eu/blog/the-story-of-medical-oil-naphtalan/
MEDIA	ONLINE MEDIA	30.11.2018	GENERAL PUBLIC	1502	GSS	Tanja Petrović Pantić	https://geoera.eu/blog/geomanifestations-in-north-serbia-vojvodina/
MEDIA	ONLINE MEDIA	7.12.2018	GENERAL PUBLIC	1737	FZZG	Natalija SamardŽić et al.	https://geoera.eu/blog/significant-geomanifestations-in-bosnia-and-herzegovina/
MEDIA	ONLINE MEDIA	12.12.2018	GENERAL PUBLIC	1985	RBINS-GSB	Kris Piessens	https://geoera.eu/blog/would-you-fund-geoconnect%c2%b3d/
MEDIA	ONLINE MEDIA	21.12.2018	GENERAL PUBLIC	1735	TNO	Johan ten Veen	https://geoera.eu/blog/geomanifestations-acoustic-bright-spots-and-shallow-gas-in-the-netherlands/
MEDIA	ONLINE MEDIA	28.12.2018	GENERAL PUBLIC	1029	RBINS-GSB	Kris Piessens	https://geoera.eu/blog/season-greetings-with-a-geologists-perspective/
MEDIA	ONLINE MEDIA	4.01.2019	GENERAL PUBLIC	3851	GEOINFORM	Boris Malyuk	https://geoera.eu/blog/far-ne-pannonian-basin-trans-carpathian-trough-of-ukraine/
MEDIA	ONLINE MEDIA	11.01.2019	GENERAL PUBLIC	3439	RBINS-GSB	Kris Welkenhuysen	https://geoera.eu/blog/a-story-of-water-and-bubbles/
MEDIA	ONLINE MEDIA	17.01.2019	GENERAL PUBLIC	1130	SGUDS	Balazs Kronome	https://geoera.eu/blog/history-and-structure-of-the-danube-and-transcarpathian-basins-in-slovakia/
MEDIA	ONLINE MEDIA	24.01.2019	GENERAL PUBLIC	1078	RBINS-GSB	Renata Barros	https://geoera.eu/blog/geomanifestations-how-uncommon-mineral-occurrences-can-help-to-reveal-geological-evolution-processes/
MEDIA	ONLINE MEDIA	1.02.2019	GENERAL PUBLIC	2144	MBFSZ	Gyula Maros, Eva Kun	https://geoera.eu/blog/geomanifestation-or-spa-city-both/
MEDIA	ONLINE MEDIA	8.02.2019	GENERAL PUBLIC	1105	GSI	Brian McConnell	https://geoera.eu/blog/the-irish-border-problem/
MEDIA	ONLINE MEDIA	15.02.2019	GENERAL PUBLIC	1095	LFU	Gerold Diepolder	https://geoera.eu/blog/geothermics-and-geomanifestations-1-a-geothermal-bonanza-bare-of-geomanifestations/
MEDIA	ONLINE MEDIA	22.02.2019	GENERAL PUBLIC	1271	LFU	Gerold Diepolder	https://geoera.eu/blog/geothermics-and-geomanifestations-2-a-geothermal-terrain-of-outstanding-geomanifestations/
MEDIA	ONLINE MEDIA	28.02.2019	GENERAL PUBLIC	942	PIG-PIB	Piotr Lenik et al.	https://geoera.eu/blog/tracking-the-history-for-a-new-prospection-of-subsurface-assets/
MEDIA	ONLINE MEDIA	8.03.2019	GENERAL PUBLIC	3722	VITO	Bernd Rombaut, Jef Decke	https://geoera.eu/blog/can-seismic-amplitude-anomalies-in-the-campine-basin-be-related-to-geomanifestations/
MEDIA	ONLINE MEDIA	15.03.2019	GENERAL PUBLIC	1253	CGS	Vit Hladik	https://geoera.eu/blog/greenhouse-gas-neutral-europe-and-the-role-of-geology/
MEDIA	ONLINE MEDIA	22.03.2019	GENERAL PUBLIC	1011	IGR	Valentina Cetean, Radu Fa	https://geoera.eu/blog/the-slow-cooking-of-the-earth-in-big-pots/
MEDIA	ONLINE MEDIA	5.04.2019	GENERAL PUBLIC	912	RBINS-GSB	Renata Barros, Kris Piesse	https://geoera.eu/blog/towards-a-project-vocabulary-geological-concepts-for-humans-and-computers/
MEDIA	ONLINE MEDIA	19.04.2019	GENERAL PUBLIC	3682	VPO	Timothy Debacker	https://geoera.eu/blog/gravity-doesnt-lie-does-it/
MEDIA	ONLINE MEDIA	3.05.2019	GENERAL PUBLIC	2107	RBINS-GSB	Kris Piessens	https://geoera.eu/blog/sf-part-i-disagreeing-on-a-structural-framework/
MEDIA	ONLINE MEDIA	10.05.2019	GENERAL PUBLIC	758	RBINS-GSB	Kris Piessens, Renata Barr	https://geoera.eu/blog/sf-part-ii-revolution-in-the-air/
MEDIA	ONLINE MEDIA	17.05.2019	GENERAL PUBLIC	864	RBINS-GSB	Kris Piessens, Renata Barr	https://geoera.eu/blog/sf-part-iii/
MEDIA	ONLINE MEDIA	24.05.2019	GENERAL PUBLIC	796	RBINS-GSB	Kris Piessens, Renata Barr	https://geoera.eu/blog/sf-part-iv/
MEDIA	ONLINE MEDIA	31.05.2019	GENERAL PUBLIC	645	HGI-CGS	Marko Špelić et al.	https://geoera.eu/blog/the-blood-from-depths/
MEDIA	ONLINE MEDIA	13.06.2019	GENERAL PUBLIC	554	GeoZS	Miloš Markič	https://geoera.eu/blog/a-survey-of-presumably-hydrocarbons-containing-water-ponds-in-the-kog-hills-pannonian-basin-ne-slovenia/
MEDIA	ONLINE MEDIA	28.06.2019	GENERAL PUBLIC	795	GSS	Petar Stejić et al.	https://geoera.eu/blog/fruska-gora/
MEDIA	ONLINE MEDIA	12.07.2019	GENERAL PUBLIC	644	TNO	Johan ten Veen, Harry Mid	https://geoera.eu/blog/how-we-deal-with-our-faults/
MEDIA	ONLINE MEDIA	26.07.2019	GENERAL PUBLIC	566	RBINS-GSB	Kris Piessens	https://geoera.eu/blog/turning-the-hottest-day-on-record-into-an-experiment/
MEDIA	ONLINE MEDIA	9.08.2019	GENERAL PUBLIC	871	MBFSZ	Gyula Maros	https://geoera.eu/blog/heat-pannonian-basin/
MEDIA	ONLINE MEDIA	23.08.2019	GENERAL PUBLIC	686	GSI	Brian McConnell	https://geoera.eu/blog/the-quaternary-connect3d/
MEDIA	ONLINE MEDIA	6.09.2019	GENERAL PUBLIC	596	SGUDS	Balazs Kronome	https://geoera.eu/blog/podhajske-baths-in-slovakia/
MEDIA	ONLINE MEDIA	19.09.2019	GENERAL PUBLIC	425	PIG-PIB	Olga Lipińska	https://geoera.eu/blog/how-sport-and-geology-go-together/
MEDIA	ONLINE MEDIA	7.10.2019	GENERAL PUBLIC	466	VITO	Katrijn Dirix, Jef Deckers	https://geoera.eu/blog/timing-is-everything/
MEDIA	ONLINE MEDIA	21.10.2019	GENERAL PUBLIC	350	CGS	Aleš Havlín	https://geoera.eu/blog/thermal-water-czech-republic/
MEDIA	ONLINE MEDIA	31.10.2019	GENERAL PUBLIC	863	IGR	Valentina Cetean	https://geoera.eu/blog/movile-cave-romania/
MEDIA	ONLINE MEDIA	15.11.2019	GENERAL PUBLIC	340	LFU, GeoZS	Gerold Diepolder, Nina Rm	https://geoera.eu/blog/sands-have-a-story-to-tell/
MEDIA	ONLINE MEDIA	2.12.2019	GENERAL PUBLIC	325	GeoZS	Nina Rman	https://geoera.eu/blog/mofettes-in-slovenia/
MEDIA	ONLINE MEDIA	12.12.2019	GENERAL PUBLIC	190	GEOINFORM	Igor Melnyk	https://geoera.eu/blog/thermal-waters-trans-carpathian-trough/
MEDIA	ONLINE MEDIA	26.12.2019	GENERAL PUBLIC	234	RBINS-GSB	Kris Piessens	https://geoera.eu/blog/seasons-greetings/
MEDIA	ONLINE MEDIA	24.01.2020	GENERAL PUBLIC	133	RBINS-GSB	Renata Barros, Kris Welke	https://geoera.eu/blog/counting-bubbles/

INSTRUCTIONS
Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	Internal project meeting
	Meeting with other GeoERA projects
	Meeting with national body
	Meeting with international body
	Other
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

PROJECT MANAGEMENT

The Project Management Board (PMB) has a WebEx meeting every two weeks to assess the progress of GeoConnect³d. Communication and cooperation between project partners is being promoted through workshops and meetings (presential or web-based). Cooperation with other projects is mostly beeing promoted by the project coordinator (RBINS-GSB). During the reporting period, GeoConnect³d had one joint workshop with HIKE and two WebEx meetings with GIP-P.

IMPACT STATEMENT

improvement in the way geological knowledge is communicated, which at present impacts its use for decision making. Our methodology envisages to bring together different types of geological information in a harmonised and self-explanatory manner, while making full use of modern visualisation technology.

The results from the first half of the project include the development of a pan-European structural framework. This material has been introduced to project partners and students at MSc level, from whom positive feedback was received concerning the understanding of complex geological settings (e.g. mountain building events in Europe). This feedback reassures us that our methodology is on the right track to present geological information in an understandable way. It also showed us the potential of the structural framework as teaching material, and we plan to introduce the material to graduate students in Belgium before the end of the project.

The structural framework (pan-European and part of R2R) has also been discussed in detail with experts in geotectonics. We successfully demonstrated the robustness of the method by displaying geological information in a clear way but without losing on scientific accuracy.

As mentioned in item 3. Publishable summary, as a strongly cross-thematic project we have already established collaborations with other GeoERA projects (such as Mintell4EU, FRAME and VoGERA) and intend to provide the space to fully incorporate data generated by these and other projects within the resulting structural framework.

The information produced by the project and released through social media channels, following our communication strategy, seems to raise a significant amount of interest (which can be seen in item 6. Communication, dissemination) and is already changing and complementing the content of geology-related information that can be found on the internet. We see this as a preparatory step for communicating actual outcomes of the project to the different target groups.

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
	Actual			(0,25*A+B)				
1. RBINS-GSB	230.261,18	6.230,44	0,00	59.122,90	295.614,52	29,70%	87.797,51	207.817,01
2. VPO	18.326,25	2.229,00	0,00	5.138,81	25.694,06	29,70%	7.631,14	18.062,93
3. VITO	121.198,12	1.263,00	0,00	30.615,28	153.076,40	29,70%	45.463,69	107.612,71
4. FZZG	15.559,43	1.601,84	0,00	4.290,32	21.451,59	29,70%	6.371,12	15.080,47
5. HGI-CGS	28.076,21	2.610,86	0,00	7.671,77	38.358,84	29,70%	11.392,57	26.966,26
6. CGS	2.738,48	329,54	0,00	767,01	3.835,03	29,70%	1.139,00	2.696,03
7. BRGM	19.949,50	2.803,03	0,00	5.688,13	28.440,66	29,70%	8.446,88	19.993,79
8. BGR	4.713,55	690,29	0,00	1.350,96	6.754,80	29,70%	2.006,18	4.748,62
9. LfU	2.544,04	1.086,24	0,00	907,57	4.537,85	29,70%	1.347,74	3.190,11
10. MBFSZ	58.439,61	622,46	0,00	14.765,52	73.827,59	29,70%	21.926,79	51.900,80
11. GSI	1.951,00	1.326,30	0,00	819,33	4.096,63	29,70%	1.216,70	2.879,93
12. SGL	3.180,36	165,97	0,00	836,58	4.182,91	29,70%	1.242,33	2.940,59
13. TNO	34.979,91	2.603,53	0,00	9.395,86	46.979,30	29,70%	13.952,85	33.026,45
14. PIG-PIB	12.270,20	1.553,48	0,00	3.455,92	17.279,60	29,70%	5.132,04	12.147,56
15. IGR	10.402,00	1.260,00	0,00	2.915,50	14.577,50	29,70%	4.329,52	10.247,98
16. GSS	13.569,67	0,00	0,00	3.392,42	16.962,08	29,70%	5.037,74	11.924,35
17. SGUDS	2.439,30	0,00	0,00	609,83	3.049,13	29,70%	905,59	2.143,53
18. GeoZS	33.014,11	2.173,45	0,00	8.796,89	43.984,45	29,70%	13.063,38	30.921,07
19. GEOINFORM	3.844,33	877,71	0,00	1.180,51	5.902,55	29,70%	1.753,06	4.149,50
20. NRW	11.520,71	0,00	0,00	2.880,18	14.400,89	0,00%	0,00	14.400,89
					823.006,38		240.155,83	582.850,55

Date:	27.01.2020
Person responsible:	Renata Barros

FINANCIAL STATEMENT FOR PP 1 - RBINS-GSB

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
1. RBINS-GSB	230.261,18	6.230,44	0,00	59.122,90	295.614,52	29,70%	87.797,51	207.817,01

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	9,26	WP1	43.978,23
	2,80	WP2	18.894,82
	22,48	WP3	145.688,51
	0,21	WP4	1.598,74
	2,67	WP5	20.100,88
			230.261,18

Other direct costs	Description	Category	Associated WP	Costs
	Kris Piessens - R2R meeting, Bertrange - Luxemburg, 30/08/2018	Travel	WP3	168,65
	Kris Piessens - WP4 meeting, Budapest - Hungary, 17-19/10/2018	Travel	WP4	567,72
	Organisation of WP2-WP3 Kickoff meeting hosted by RBINS-GSB, 08/11/2018 (lunch)	Other	WP3	72,70
	Kris Piessens - GeoERA Technical workshop, Vienna - Austria, 11-13/03/2019	Travel	WP1	993,82
	Yves Vanbrabant - Structural framework workshop, Utrecht - Netherlands, 02-03/04/2019	Travel	WP3	235,92
	Kris Piessens - Structural framework workshop, Utrecht - Netherlands, 02-03/04/2019	Travel	WP2	253,33
	Renata Barros - Structural framework workshop, Utrecht - Netherlands, 02-03/04/2019	Travel	WP3	242,92
	Kris Welkenhuysen - Water sampling campaign, Spa - Belgium, 11/04/2019-10/07/2019	Travel	WP3	184,80
	Renata Barros - Geomanifestations workshop, Warsaw - Poland, 05-06/06/2019	Travel	WP2	228,31
	Kris Piessens - Geomanifestations workshop, Warsaw - Poland, 05-06/06/2019	Travel	WP2	322,15
	Renata Barros - GeoConnect³d-HIKE joint workshop, Utrecht - Netherlands, 04/07/2019	Travel	WP2	79,80
	Kris Welkenhuysen - Water sampling campaign, Spa - Belgium, 13/08/2019-04/12/2019	Travel	WP3	314,89
	Renata Barros - Structural framework workshop, Bratislava - Slovakia, 15-17/10/2019	Travel	WP3	572,81
	Kris Piessens - Structural framework workshop, Bratislava - Slovakia, 15-17/10/2019	Travel	WP3	598,01
	Renata Barros - Underground energy storage workshop, Paris - France, 06-08/11/2019	Travel	WP2	588,76
	Kris Piessens - Underground energy storage workshop, Paris - France, 06-08/11/2019	Travel	WP2	588,76
	Exceptional (project related) analytical consumables: spuiten voor CarboQC staalname + filters	Equipment	WP3	217,09
				6.230,44

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 -VPO

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2. VPO	18.326,25	2.229,00	0,00	5.138,81	25.694,06	29,70%	7.631,14	18.062,93

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,14	WP2	672,65
	4,27	WP3	17.286,32
	0,08	WP5	367,28
			18.326,25

Other direct costs	Description	Category	Associated WP	Costs
	Helga Ferket - Structural framework workshop, Utrecht - Netherlands, 02-03/04/2019	Travel	WP3	304,15
	Timothy Debacker - Structural framework workshop, Utrecht - Netherlands, 02-03/04/2019	Travel	WP3	304,15
	Helga Ferket - Geomanifestations workshop, Warsaw - Poland, 05-06/06/2019	Travel	WP3	871,29
	Timothy Debacker - GeoERA GeoEnergy Workshop, Vienna - Austria, 11/03/2019	Travel	WP3	749,41
				2.229,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - VITO

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
3. VITO	121.198,12	1.263,00	0,00	30.615,28	153.076,40	29,70%	45.463,69	107.612,71

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	10,56	WP3	112.672,80
	0,36	WP1	8.525,32
			121.198,12

Other direct costs	Description	Category	Associated WP	Costs
	Ben Laenen, Jef Deckers - GeoEra Kick-off meeting, Brussels - Belgium, 03-05/07/2018	Travel	WP3	94,90
	Ben Laenen, Jef Deckers - R2R meeting, Bertrange - Luxemburg, 30/08/2018	Travel	WP3	254,90
	Jef Deckers - R2R meeting, Brussels - Belgium, 08/11/2018	Travel	WP3	56,00
	Katrijn Dirix - GeoERA Technical workshop, Vienna - Austria, 11-12/03/2019	Travel	WP3	857,20
				1.263,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - FZZG

Fill in only blue-colored cells.

	A. Direct personnel cos	B. Other direct	C. Direct costs of	D. Indirect costs		Reimbursement	GeoERA	Partner in-kind
	Actual	costs	subcontractiong	(0,25*A+B)	TOTAL COSTS	rate	contribution	contribution
4. FZZG	15.559,43	1.601,84	0,00	4.290,32	21.451,59	29,70%	6.371,12	15.080,47

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,15	WP2	1.983,65
	7,41	WP4	11.525,93
	1,22	WP5	2.049,85
			15.559,43

Other direct costs	Description	Category	Associated WP	Costs
	Natalija Samardžić - Geomanifestations workshop, Warsaw - Poland, 05-06/06/2019	Travel	WP4	856,71
	Vedad Demir - Structural Framework workshop, Bratislava - Slovakia, 15-17/10/2019	Travel	WP4	745,13
				1.601,84

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - HGI-CGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
5. HGI-CGS	28.076,21	2.610,86	0,00	7.671,77	38.358,84	29,70%	11.392,57	26.966,26

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,99	WP2	2.441,21
	9,84	WP4	23.261,00
	1	WP5	2.374,00
			28.076,21

Other direct costs	Description	Category	Associated WP	Costs
	Marko Špelić - GeoERA Kickoff meeting, Brussels - Belgium, 02-06/07/2018	Travel	WP2	851,93
	Marko Špelić, Tomislav Kurečić - WP4 meeting, Budapest - Hungary, 17-18/10/2018	Travel	WP4	292,93
	Marko Budić, Ivan Mišur - WP4 workshop, Budapest - Hungary, 01/03/2019	Travel	WP4	297,13
	Marko Budić - GeoERA Technical workshop, Vienna - Austria, 11-13/03/2019	Travel	WP5	378,03
	Marko Špelić, Marko Budić, Ivan Mišur - Structural framework workshop, Bratislava - Slovakia, 15-17/10/2019	Travel	WP2	790,84
				2.610,86

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - CGS

Fill in only blue-colored cells.

	A. Direct personnel cos Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
6. CGS	2.738,48	329,54	0,00	767,01	3.835,03	29,70%	1.139,00	2.696,03

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,27	WP5	2.738,48
			2.738,48

Other direct costs	Description	Category	Associated WP	Costs
	Ales Havlin - GeoERA Technical workshop, Vienna - Austria, 11-12/03/2019	Travel	WP5	107,16
	Ales Havlin - Structural framework workshop, Bratislava - Slovakia, 15-17/10/2019	Travel	WP5	222,38
				329,54

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - BRGM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
7. BRGM	19.949,50	2.803,03	0,00	5.688,13	28.440,66	29,70%	8.446,88	19.993,79

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,32	WP5	19.949,50
			19.949,50

Other direct costs	Description	Category	Associated WP	Costs
	Fernanda Veloso - GeoERA Kick-off meeting, Brussels - Belgium, 03-05/07/2018	Travel	WP5	635,76
	Isaline Gravaud - GeoERA Kick-off meeting, Brussels - Belgium, 03-05/07/2018	Travel	WP5	457,64
	Isaline Gravaud - GeoERA GeoEnergy Workshop / WP5 Kick-off meeting, Vienna - Austria, 11-13/03/2019	Travel	WP5	881,06
	Isaline Gravaud - Structural framework workshop, Bratislava - Slovakia, 15-17/10/2019	Travel	WP5	828,57
				2.803,03

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - BGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
8. BGR	4.713,55	690,29	0,00	1.350,96	6.754,80	29,70%	2.006,18	4.748,62

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,6	WP2	4.713,55
			4.713,55

Other direct costs	Description	Category	Associated WP	Costs
	Fabian Jähne-Klingberg - Kick-off meeting, Brussels - Belgium, 07-09/11/2018	Travel		432,64
	Fabian Jähne-Klingberg - Structural framework workshop, Utrecht - Netherlands, 02-03/04/2019	Travel		257,65
				690,29

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - LfU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
9. LfU	2.544,04	1.086,24	0,00	907,57	4.537,85	29,70%	1.347,74	3.190,11

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,166	WP1	1.156,38
	0,2	WP5	1.387,66
			2.544,04

Other direct costs	Description	Category	Associated WP	Costs
	Gerold Diepolder - Geomanifestations workshop, Warsaw - Poland, 05-06/06/2019	Travel	WP5	476,08
	Gerold Diepolder - Structural Framework workshop, Bratislava - Slovakia, 15-17/10/2019	Travel	WP5	610,16
				1.086,24

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - MBFSZ

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
10. MBFSZ	58.439,61	622,46	0,00	14.765,52	73.827,59	29,70%	21.926,79	51.900,80

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	34,62	WP4	58.439,61
			58.439,61

Other direct costs	Description	Category	Associated WP	Costs
	Gyula Maros - GeoERA Kick-off Meeting, Brussels - Belgium, 03-05/07/2018	Travel	WP4	454,88
	Gyula Maros - GeoERA Technical workshop, Vienna - Austria, 11-12/03/2019	Travel	WP4	167,58
				622,46

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - GSI

Fill in only blue-colored cells.

	A. Direct personnel Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
11. GSI	1.951,00	1.326,30	0,00	819,33	4.096,63	29,70%	1.216,70	2.879,93

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,41	WP5	1.951,00
			1.951,00

Other direct costs	Description	Category	Associated WP	Costs
	Brian McConnell - WP5 kick-off meeting, Vienna - Austria, 11-13/03/2019	Travel	WP5	554,47
	Brian McConnell - Geomanifestations workshop, Warsaw - Poland, 05-06/06/2019	Travel	WP5	771,83
				1.326,30

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - SGL

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
12. SGL	3.180,36	165,97	0,00	836,58	4.182,91	29,70%	1.242,33	2.940,59

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,48	WP3	3.180,36
			3.180,36

Other direct costs	Description	Category	Associated WP	Costs
	Organisation of R2R Kick-off meeting, Bertrange - Luxembourg	Other	WP3	165,97
				165,97

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 -TNO

Fill in only blue-colored cells.

	A. Direct personnel co Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
12. TNO	34.979,91	2.603,53	0,00	9.395,86	46.979,30	29,70%	13.952,85	33.026,45

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,95	WP1	7.122,18
	1,14	WP2	7.761,73
	2,46	WP3	15.738,24
	0,9	WP5	4.357,76
			34.979,91

Other direct costs	Description	Category	Associated WP	Costs
	Meetings: Strassen-Luxemburg (30-8-2019, ten Veen), Brussels, Dusseldorf, Vienna-Bratislava (15-17 oct-2019; ten Veen)	Travel	WP1	1.849,61
	Kick-off meeting Brussels (3-7-2018, ten Veen)	Travel	WP2	482,98
	Car rent (ten Veen)	Travel	WP3	178,94
	Organisation of meetings in Utrecht: structural framework workshop, GeoConnect^{3}d-HIKE joint workshop (lunch)	Other	WP2	92,00
				2.603,53

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - PIG PIB

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
14. PIG PIB	12.270,20	1.553,48	0,00	3.455,92	17.279,60	29,70%	5.132,04	12.147,56

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,13	WP2	305,83
	5,78	WP5	11.964,37
			12.270,20

Other direct costs	Description	Category	Associated WP	Costs
	Monika Konieczyńska - GeoERA technical workshop, Vienna - Austria, 11-13/03/2019	Travel	WP5	579,25
	Joanna Fajfer - Geomanifestations workshop, Warsaw - Poland, 05-06/06/2019	Travel	WP5	69,69
	Olga Lipińska - Structural Framework workshop, Bratislava - Slovakia, 15-17/10/2019	Travel	WP5	400,53
	Organisation of Warsaw spring meeting geomanifestations (coffee, tea, sandwiches)	Other	WP5	504,01
				1.553,48

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - IGR

Fill in only blue-colored cells.

	A. Direct personn Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
15. IGR	10.402,00	1.260,00	0,00	2.915,50	14.577,50	29,70%	4.329,52	10.247,98

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	10,3	WP4	10.402,00
			10.402,00

Other direct costs	Description	Category	Associated WP	Costs
	Radu Farnoaga - Workshop, consultation meeting WP4, Belgrade - Serbia, 28/03/2019	Travel	WP4	490,00
	Radu Farnoaga, Valentina Cetean - WP4 meeting, Budapest - Hungary, 18/10/2018	Travel	WP4	770,00
				1.260,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - GSS

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
16. GSS	13.569,67	0,00	0,00	3.392,42	16.962,08	29,70%	5.037,74	11.924,35

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1	WP2	1.292,35
	7,5	WP4	9.692,62
	2	WP5	2.584,70
			13.569,67

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - SGUDS

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
17. SGUDS	2.439,30	0,00	0,00	609,83	3.049,13	29,70%	905,59	2.143,53

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,57	WP4	2.439,30
			2.439,30

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - GeoZS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
18. GeoZS	33.014,11	2.173,45	0,00	8.796,89	43.984,45	29,70%	13.063,38	30.921,07

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	10,66	WP4	32.622,27
	0,11	WP5	391,84
			33.014,11

Other direct costs	Description	Category	Associated WP	Costs
	1 person - GeoERA kick-off, 03-05/07/2018	Travel	WP4	590,78
	2 persons - WP4 meeting, Budapest - Hungary, 18/10/2018	Travel	WP4	115,76
	1 person: GeoERA technical workshop, Vienna - Austria, 10/03/2019	Travel	WP4	412,50
	1 person - WP4 workshop, Budapest - Hungary, 01/03/2019	Travel	WP4	155,52
	1 Person - Geomanifestations workshop, Warsaw - Poland, 04-06/06/2019	Travel	WP4	568,49
	1 Person - Radenci water sampling, 14/05/2019	Travel	WP4	16,00
	1 person - Structural framework workshop, Bratislava - Slovakia, 16-17/10/2019	Travel	WP4	314,40
				2.173,45

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - Geoinform

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
19. Geoinform	3.844,33	877,71	0,00	1.180,51	5.902,55	29,70%	1.753,06	4.149,50

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,10	WP2	479,60
	0,59	WP4	2.874,14
	0,10	WP5	490,58
			3.844,33

Other direct costs	Description	Category	Associated WP	Costs
	Igor Melnyk, Larysa Ovdiienko - WP4 meeting, Budapest - Hungary, 17-18/10/2018	Travel	WP4	877,71
				877,71

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - NRW

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
20. NRW	11.520,71	0,00	0,00	2.880,18	14.400,89	0,00%	0,00	14.400,89

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	#DIV/0!	WP3	11.520,71
			11.520,71

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	GeoERA Information Project
Project acronym:	GIP-P
Project reference number:	GeoE.171.014
Project topic:	Information platform
Project specific research topic:	IP1 - DEVELOPMENT OF AN INFORMATION PLATFORM TO SUPPORT MANAGEMENT AND PROVISION OF DATA FOR THE THREE OTHER THEMES
Project website address:	https://geoera.eu/projects/gip-p/

Period covered from: 1.07.2018 to: 31.12.2019

Report submission date: 24.01.2020
Project coordinator: Jørgen Tulstrup

Contact person for the project: Jørgen Tulstrup
Tel: 4550926411
E-mail: jtu@geus.dk

IDENTIFICATION OF PROJECT PARTICIPANTS

[use dropdown menu]

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	De nationale geologiske undersøgelser for Danmark og Grønland	Geological Survey of Denmark and Greenland	GEUS	Denmark	999459677	Project Lead
2	Bundesanstalt Für Geowissenschaften und Rohstoffe	Federal Institute for Geosciences and Natural Resources	BGR	Germany	999429413	Project Partner
3	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek	The Netherlands Organisation for applied scientific research	TNO	Netherlands	999988909	Project Partner
4	Sveriges Geologiska Undersökning	Geological Survey of Sweden	SGU	Sweden	995575991	Project Partner
5	Geološki zavod Slovenije	Geological Survey of Slovenia	GeoZS	Slovenia	999466370	Project Partner
6	Ceska Geologicka Sluzba	Czech Geological Survey	CGS	Czech Republic	999546783	Project Partner
7	Bureau de Recherches Géologiques et Minières	The French Geological Survey	BRGM	France	999993662	Project Partner
8	UK Research and Innovation	British Geological Survey	NERC (UKRI)	United Kingdom	906446474	Project Partner
9	Istituto Superiore per la Protezione e la Ricerca Ambientale	Italian Institute for Environmental Protection and Research	ISPRA	Italy	997905349	Project Partner
10	Geologian Tutkimuskeskus	Geological Survey of Finland	GTK	Finland	999432614	Project Partner
11	Norges Geologiske undersokelse	Geological Survey of Norway	NGU	Norway	999466758	Project Partner
12	Institut Royal des Sciences Natueelles de Belgique	Geological Survey of Belgium – Royal Belgian Institute of Natural Sciences	RBINS-GSB	Belgium	998437006	Project Partner
13	Department of Communications, Climate Action and Environment	Geological Survey of Ireland	GSI	Ireland	996559280	Project Partner
14	Instituto Geológico y Minero de Espana	Geological Survey of Spain	IGME-Sp	Spain	998737803	Project Partner
15	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund of Ukraine	GEOINFORM	Ukraine	947331392	Project Partner
16	Institutul Geologic al României	Geological Institute of Romania	IGR	Romania	998906874	Project Partner
17	Geologische Bundesanstalt	Geological Survey of Austria	GBA	Austria	998164145	Project Partner
18	Regione Emilia Romagna (Servizio Geologico, Sismico e dei Suoli della Regione Emilia Romagna)	Geological, seismic and soil survey, Emilia Romagna Region	SGSS	Italy	999482375	Project Partner
19	Magyar Bányászati és Földtani Szolgálat	Mining and Geological Survey of Hungary	MBFSZ	Hungary	967592364	Project Partner
20	Bayerisches landesamt fur Umwelt	Bavarian Environment Agency - Geological Survey (Associated partner)	LfU	Germany	923455230	Project Partner
21	Laboratorio Nacional de Energia e Geologia I.P.	The National Laboratory of Energy and Geology	LNEG	Portugal	994187921	Project Partner
22	Państwowy Instytut Geologiczny – Państwowy Instytut Badawczy	Polish Geological Insitute	PIG-PIB	Poland	999492463	Project Partner
23	Hrvatski geoloski institut	Croatian Geological Survey	HGI-CGS	Croatia	972614345	Project Partner
24	Islenskar Orkurannsoknir	Iceland GeoSurvey	ISOR	Iceland	993296006	Project Partner
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PUBLISHABLE SUMMARY

The GIP-P (GeoERA Information Platform Project) was established with the aim of setting up an information system to support all the other 14 GeoERA scientific projects (GSPs) in organising, standardising, disseminating and safeguarding their results in terms of background data, digital maps, geological models, reports, etc.

Instead of each GeoERA project setting up their systems to display maps using web-GIS, creating databases for background and interpreted data, etc., the GIP-P will do this in a standardised way thereby delivering achievements and results from GeoERA in a much more cost effective, standardised and sustainable way. Overall the GIP-P has three purposes: 1) Supporting the GSPs in reaching their specific goals, 2) Ensuring that the results from the whole GeoERA programme will be more accessible and standardised across GSPs and GeoERA themes (GeoEnergy, Groundwater and Raw Materials) and thereby supporting the overall aim of GeoERA to deliver solutions to cross-thematic issues and 3) Ensuring sustainability and accessibility of the digital results from GeoERA after then end of the programme.

The technical platform for the GIP-P has been chosen to be the already existing European Geological Data Infrastructure (EGDI, www.europe-geology.eu) developed and operated by members of EuroGeoSureys. During the GIP-P this platform is being further developed in three main areas: 1) Including data, in particular maps and web services containing the results from the GSPs, 2) Extending the capabilities of the EGDI to store and visualise 3D geological models and to store and make documents and background data searchable and 3) Extending the general functionality of the web-GIS and other elements of the EGDI.

The GIP-P has from the beginning had strong focus on mapping the requirements of the GSPs in order to ensure that all these were fully described and understood by the developers who are extending the EGDI. This is a big job as the 14 GSPs are dealing with a very broad range of data types and different thematics. It has therefore been an iterative process where feedback from the developers have been used to adjust the requested capabilities from the GSPs. A specific Work Package (WP) 2 is dedicated to this and also to define which more technical extensions are needed to the EGDI.

To ensure as high as possible standardisation across the GSPs with regard to scientific classifications and other semantic topics WP 3 is dedicated to this. A specific WP 4 is dealing with supporting the GSP in establishing Project Vocabularies and Multilingual Keyword Thesauri for ensuring the highest possible interoperability and documentation of the scientific terms and concepts. Two WPs are dealing with the concrete extensions to the EGDI (WP 6 and WP 7) and they are building on a WP 5 describing possible architectures for the system. To further support the GSPs WP 8 is dedicated to helping them make their data standardised and interoperable. The access to the results is furthermore supported by WP10 which deals with IPR issues and restrictions on the free access to the outcomes of the GSPs. WP9 works on finding solutions for the long-term sustainability of the EGDI platform and its content. Finally, W11 is disseminating the results of the GIP-P.

PROJECT CONTRIBUTION TO GeoERA PROJECT

The overall aim of GeoERA – to integrate European GSOs' information and knowledge on subsurface energy, water and raw material resources to contribute to sustainable use and management of the subsurface – is to a high degree being supported by the GIP-P. Not only is the information and knowledge being made useful for all relevant stakeholders like national and regional policy makers, industry, science, SMEs and consultants by making it standardised and interoperable at a pan-European level. It is also made easily accessible through a single point of access – the user friendly EGDI platform – and through the fact that for instance all maps data will also be accessible through web map services (INSPIRE compliant if possible).

The scope described for projects under the GeoERA Programme Specific Research Topic "IP1 - DEVELOPMENT OF AN INFORMATION PLATFORM TO SUPPORT MANAGEMENT AND PROVISION OF DATA FOR THE THREE OTHER THEMES" is to a high degree being fulfilled in the GIP-P. The platform contains a central database, a web-portal and a digital archive. The content and functionality is to a very high degree based on the requirements from the other GeoERA projects. The principles and structures for the exchange of information and collaboration between the GIP-P and the GSPs is well defined and efficient. The project to a high degree supports cross-domain integration through the standardisation tasks and data and information is made easily findable via a metadata system and a free text searching system connected to the geospatial as well as other kinds of data like reports, spreadsheets, local database, etc.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: Coordination **Duration: M1-36**

The WP1 about Coordination has two Tasks: 1.1) Project Management and 1.2) QA, methods, guidelines, etc.
Task 1.1 has been dealing with the organisation and conduct of the Project Assembly and Project Board meetings as well as the follow-up of those. It is also Task 1.1 which has been responsible for the reporting to the GeoERA Executive Board. It was foreseen that a specific Project Implementation Plan would have been established at a very early stage of the project, but it turned out that this was not possible as the GSPs at that time had not been able to define their requirements towards the GIP-P with a level of detail to be useful for the planning of the GIP-P activities. Instead the planning of the GIP-P activities have had a very strong focus on the Project Board meetings.
Task 1.2 has written the report "D1.1, Project guidelines including procedure for QA, reporting and risk management". This report describes how the development processes will be carried out including guidelines for Configuration Management (handling different version of code, versioning of software, the role of a GIP-P Configuration Manager), environments for development, test and production as well as guidelines and procedures for documentation, QA, testing and reporting.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
1.1	Project guidelines including procedures for QA, reporting and risk	GEUS	Report	Confidential	M5	Completed	
1.2	Internal progress report (1)	GEUS	Report	Confidential	M7	Completed	
1.2	Internal progess report (2)	GEUS	Report	Confidential	M13	Completed	
1.3	Project progress meeting minutes (1)	GEUS	Report	Confidential	M2	Completed	
1.3	Project progress meeting minutes (2)	GEUS	Report	Confidential	M8	Completed	
1.3	Project progress meeting minutes (3)	GEUS	Report	Confidential	M14	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
1	Preparatory activities finished	Month 6	Completed	Final Project Implementation Plan
1	Preparatory activities finished	Month 6	Completed	Project guidelines finalised;

Work package 2: User Requirements **Duration: M1-36**

WP2 coordinates the interactions between the GeoERA geoscientific projects (GSPs) and the GIP-P. WP2 has 3 tasks: 2.1) liaison with other projects; 2.2) extract and homogenise requirements from the GSPs; and 2.3) describe extensions to EGDI.
Task 2.1 has appointed liaison officers for each GeoERA research theme to assure the flow of information between the GSPs and the GIP-P. This working group is continuously assessing and sharing the specific information the different GIP-P WPs need from the GSPs to carry out their tasks and vice versa.
Task 2.2 is systematically identifying and compiling the specific requirements the GSPs have in terms of data archiving, delivery and visualization. This work package has already identified the main formats into which each GSP will deliver their products, as well as the functionalities EGDI should have to properly archive, visualize and share their data. We also work closely with GIP-P WP3, WP4 and WP8, making sure that the various GSPs get all the support they need to describe, harmonise and standardise their data and metadata.
Task 2.3 provides information to GIP-P WP6 and WP7 on the specific requirements the GSPs have in terms of data archiving and visualization, following up (and reporting back to the GSPs) the extension of EGDI these work packages are undertaking based on the specific needs of the GeoERA projects.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
2.1.1	Potential synergies and overlaps between the projects	RBINS-GSB	Report	Public	M12	Completed	
2.2.1	Requirements to the Information Platform by the GeoEnergy, Groundwater and Raw Materials themes.	RBINS-GSB	Report	Public	M6	Completed	
2.2.2.	Refinements of the requirements after feedback exchanges related to the prototypes of the EGDI database and the display interface	RBINS-GSB	Report	Public	M18	Completed	
2.3.1	Extentions to EGDI	GEUS	Report	Public	M9	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
1	Preparatory activities finished	Month 6	Completed	Requirements from GSPs described;
2	Prototyping finalised	Month 18	Completed	Requirements from GSPs refined through prototype;

Work package 3: Standards and interoperability issues **Duration: M1-18**

The WP3 has the scope to analyze the data product and service in order to define a guideline and recommendations on the data model to use for harmonizing the database and identifying the gaps to be covered to be able to provide all the information required. It has three tasks: 3.1 Standardization and interoperability analysis, 3.2 Data model gap analysis and technical requirements and 3.3 Standards validation procedures.
Task 3.1 analyse the data products defined by other GeoERA projects and reported as user requirement in the D. 2.2.1 and D.2.2.2; based on the information provided by the project has prepared the first version of data models to share with the project and after that an update has been done when other information was provided.
Task 3.2 Starting from the D3.1 that has designed the data model useful for other GSPs has defined in more detail the attributes usable in the GSPs and has produced a first analysis of gaps or overlapping between data products and target data models. To support technically the deployment of data ware defined the technical requirements to support WP5 and WP7.
Task 3.3 has identified the methodology and procedure to validate data harmonization and services deployment against the standard schema validation, a set of API for Validating the network services has been designed and some general schematron rules have been identify for the data models identified by task 3.1.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
3.1	Data models, Standard Guidelines and Toolkits	NERC (UKRI)	Report	Public	M11	Completed	Delivery data was delayed from M9, amendment accepted
3.2.1	Gap Analysis and Path Extension	BRGM	Report	Public	M14	Completed	Delivery data was delayed from M12, amendment accepted
3.2.2	Technical requirements and guidance to expose the data	BRGM	Report	Public	M18	Pending	Expected to be finalised January 2020 (M19)
3.3	Validation service specification and requirements	ISPRA	Report	Public	M18	Pending	Expected to be finalised in January 2020 (M19)

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
2	Prototyping finalised	Month 18	Completed	Data models and validation services specified

Work package 4: Semantic harmonisation issues **Duration: M1-36**

Two reports were delivered in 2019, mainly to prepare and explain the basics and theory of Linked Data and Thesaurus to the GeoERA projects. A final report is planned for 2021 to summarize the topic "Semantic Harmonization Issues" and describe individual semantic web implementations related to the GeoERA projects. The keyword thesaurus was created in an initial version 1.0 and already released. Testing and rectification, improvement work is currently planned for 2020 in order to ensure full functionality in the GeoERA (EGDI) search system and for keyword tagging the EGDI data catalog. Regarding the second part of WP4, templates and documents for creating project vocabularies were created and made available to the applied GeoERA projects. Soon, the first project vocabularies for Linked Data and SKOS / RDF publications will be modeled and transformed the proper formats. Towards the end of the year, most of the vocabularies should be made available online and suitable for web applications.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
4.1	Keyword Thesaurus	GBA	RDF file	Public	M14	Completed	
4.2	Keyword Thesaurus	GBA	Report	Public	M16	Completed	
4.3	GeoERA project vocabulary	GBA	Report	Public	M16	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
-				

Work package 5: Architecture **Duration: M1-30**

The WP5 about Architecture aims at defining the IT guidelines to be applied for the GeoERA Information Platform. It has two Tasks: 5.1) Overall system and 5.2) Central system.
Task 5.1 prepared a first version of a blue print dedicated to the data and service architecture of the overall system in terms of required functionalities. As an extension of the existing EGDI platform, it builds on semantic and technical interoperabilityW3C/OGC/INSPIRE best practices. It is aligned with EPOS (European Plate Observing System) and EOSC (European Open Science Cloud). It also includes several state-of-the-art drivers, i.e. scalability, European Geoscience Registers of code lists, automation of data integration and capitalisation as well FAIR-T principles.
Task 5.2 dealt with a first version of a second blue print focussed on the central system, describing more precisely the required components and the reference implementations. It also produced an analysis of selected EU and international projects in which some IT components have been tried/matured in order to identify which pre-existing brick/experience could be reused for the GeoERA Information Platform.
Subsequently, an innovative architecture has been designed including six components. These are to be developed as Proof of Concept by the concerned partners as part of the second term GIP project implementation.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
5.1	GIP-project blueprint: data and services architecture (1)	BRGM	Report	Public	M16	Completed	Delivery date has been amended from M18 to M16
5.2	GeoERA Central System specification (1)	BRGM	Report	Public	M18	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
1	Preparatory activities finished	Month 6	Completed	Architecture blueprint finalised

Work package 6: Developments (user oriented) **Duration: M3-36**

The WP6 about User oriented development. The objective of the WP is to extend the EGDI platform according to the user requirements (the ones that has been found within the scope of the GIP-P project) collected under WP2. Many of the features required by the users involves both front-end development (WP6) and some backend database / tools (WP7). Therefore, WP6 and WP7 must be strongly coordinated and the WP meeting are being hold as combined WP meetings.
To share information between the different partners a GitLab server has been set up with currently 35 users. On this server, the group maintain the source code, documentations, task lists with check boxes for completion of task, issues etc.
The current production version of the platform can be seen in the GIS viewer for the different projects at www.geoera.eu.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
6.1	Portal version 1	GEUS	DEC (website)	Public	M3	Completed	
6.2	Portal version 1.1	GEUS	DEC (website)	Public	M7	Completed	
6.2	Portal version 1.2	GEUS	Report	Public	M7	Completed	
6.3	Demonstrator portals, Version 1	GEUS	DEC (websites)	Public	M16	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
1	Preparatory activities finished	Month 6	Completed	Portal version 1 in place;
2	Prototyping finalised	Month 18	Completed	Demonstrator portals version 1 in place;

Work package 7: Developments (central) **Duration: M1-36**

The WP7 objective is to develop (upgrade / improve / optimize) various operational data management systems for the GSPs including harvesting systems, central databases, digital archive/repository, metadata system, system management tools, validation services, search system, etc. The platform will be based on and will extend results obtained during the development of the EGDI and results from WP2 and WP5.

During project prototype phase we established regular weekly technical meetings with WP6 members because our work is very interconnected. Meetings are approximately each week (Wednesday at 9 AM - except on holidays). This meeting practice will continue during full development phase too. Each meeting all WP6 and WP7 team members are invited, as are other WP members on request. The main talking point is the overview, discussion and harmonization of current activities. The meeting length is planned at an hour and a half, but the actual length varies. We use our own gitlab platform for documentation and for code development. Our current result is programming code, which will be used to create a new platform. The overall result of our background development will be seen after the full development phase finishes up and WP6 completes their work on the foreground, and described in our deliverables.

We perform our work as

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
7.1	Working version Metadatabase	CGS	DEM	Public	M18	Completed	Available at https://egdi.geology.cz/
7.1	Working version Metadatabase	CGS	Report	Public	M18	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
2	Prototyping finalised	Month 18	Completed	Working version of Metadatabase in place

Work package 8: Data provider support **Duration: M7-36**

WP8 (Data Provider Support) have provided a functioning support network for science project data providers driven by GitHub. The support network allows users to access help content regarding provision of data to the GeoERA Information Platform. It also allows users to ask questions and raise issues. It facilities a discussion and buddying/mentoring network between data providers and members of the Data Support work package team. The WP also has analysed information coming out of other work packages to understand the types of data users will produce, data standards that should be used to represent that data and methods for providing data to align with the architecture of the Information Platform. This has resulted in a data flow diagram that will be used to identify priority requirements in terms of advice and tools to enable data providers to provide their data outputs in the most suitable form for integration into the Information Platform. The WP has also gathered existing resources produced by other related projects (such as OneGeology, Orama, Minerals4EU) that can be adapted and reused to provide advice to science users submitting data to the GeoERA Information Platform. Finally, the WP has produced a short video to demonstrate the work being undertaken which is available at https://youtu.be/Bmf0efZ1rSE.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
8.3.1	A functioning support network (1)	NERC (UKRI)	Other	Public	M12	Completed	https://github.com/GeoEra-GIP/Project-Support-WP8

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
2	Prototyping finalised	Month 18	Completed	A functioning support network in place

Work package 9: Sustainability issues **Duration: M1-36**

The work in this Work Package has been centred around the formulation of a proposal for a Horizon Europe Partnership on a Geological Service for Europe. Such a Partnership is meant to be a kind of successor of GeoERA but with a much broader scope, a broader group of Partners, a longer duration and a larger budget. It shall – however – like GeoERA produce a very large amount of geoscientific data and knowledge all of which will need a platform like EGDI to organise, standardise, disseminate and safeguard it. It is therefore the intention that EGDI shall play a central role and that the further extensions of the platform as well as the operations of it shall be funded through the Partnership.
In case the Partnership is not established other funding sources for the maintenance and operations of the EGDI and thereby a sustainable solution for the results of GeoERA will have to be identified. These will probably have to be a combination of contributions from geoscientific Horizon Europe projects that will benefit from EGDI, specific infrastructure projects under Horizon Europe or other European programmes and/or contributions from the EuroGeoSurveys members.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
9.1	Financial aspects of sustaining the IP	GEUS	Report	Public	M18	Pending	Expected to be delivered in Janaury 2020 (M19)

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
2	Prototyping finalised	Month 18	Completed	Analysis of possible funding sources done

Work package 10: IPR and data policy issues **Duration: M1-36**

The objective of this work package is to ensure that GeoERA establishes a common platform for organising, disseminating and sustaining the digital results concerning large amounts of data and product produced by scientific teams. The WP will look at any constraints on data and data products being accessible to a broad range of stakeholders for verification, re-use and download which will require an emphasis on standardised conditions for access, interoperability, and sustainability where possible. Efforts will be made to look and adhere to European and international standards in order for the GeoERA results to be useful to external users. The WP will gather current issues surrounding open access data and existing blockages within the geodata geoscience marketplace in Europe and beyond, examine user and supplier requirements and work on standard supplier licences to simplify and synchronise licensing for geodata. Finally it will looks at FAIR release of data, embargos and issues around archiving and storage, legal risk and liability.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
10.1	Report on questionnaire and interviews (1)	NERC (UKRI)	Report	Public	M7	Completed	Delivery data was delayed from M4, amendment accepted
10.1	Report on questionnaire and interviews (2)	NERC (UKRI)	Report	Public	M11	Completed	
10.2	Limitations on free movements of geodata	NERC (UKRI)	Report	Public	M17	In delay	Expected to be finalised in February 2019 (M20)
10.5	Data Management Plan	NERC (UKRI)	Report	Public	M9	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
2	Prototyping finalised	Month 18	Completed	Data Management Plan in place

Work package 11: Communication and dissemination **Duration: M1-36**

OBJECTIVE: The objective of this work package is to ensure that the results of the GIP are transparent and that many organisations can use them directly or built upon them. The tasks of the WP are designed to plan and carry out effective communication and dissemination activities that reach targeted audiences and aim to facilitate communication and a transparent interaction with the consortium members, the clustered projects and all relevant platforms and stakeholders, during and beyond the GeoERA. **Its specific objectives are**: 1.- To carry out its own communication and dissemination plan on the basis of the dissemination part of the GeoERA Dissemination and Exploitation Master Plan (both during the Project Implementation Phase and during the Project Exploitation Phase) (GeoERA WP5, Communication, Exploitation and Dissemination of the results) in order to promote the GIP and the results of the GSPs in line with the GIP-P objectives; 2.- To collaborate with EuroGeoSurveys and its members in creating a multi-platform approach to communicating GeoERA's outputs and benefits to stakeholders (including tools, awareness activities, collaboration with stakeholder organisations); 3.- To identify and engage in new possible IP dissemination activities; 4.- To maximise the use of and transparent flow of information from the whole GeoERA; 5.- To measure the results of communication and dissemination activities, based on the established baseline targets set out in the GeoERA Dissemination and Exploitation Plan, and according to stakeholder groups and topics. **ACTIVITIES CARRIED OUT**: 1.- Communication Strategy developed. 2.- Communication manual produced. 3.- Website content established. **OTHER ACHIEVEMENTS**: Production of a video explaining the activities of GIP-P (https://www.youtube.com/watch?v=QYyXTNCDLWA)

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
11.1	Communication manual	IGME	Report	Public	M6	Completed	
11.2	Website content determination	IGME	Report	Public	M7	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
1	Preparatory activities finished	Month 6	Completed	Communication manual in place

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
Deliverable 3.1 was delayed from month 9 to 11 due to delayed information from the Geoscientific GeoERA projects on the nature of data produced in each project to be published in the EGDI Infrastructure. Such information is strongly required to identify possible standard data models to be use.	Amendment to work plan (proposal/project description) obtained from GeoERA Executive Board in December 2019	No	
Deliverable 3.2.1 was delayed from month 12 to 14 due to problems similar to the previous one. The identification of the gaps is only possible when appropriate attribution to the data model and the primary attributes are identified, which were only partially provided by the projects in month 12.	Amendment to work plan (proposal/project description) obtained from GeoERA Executive Board in December 2019	No	
Deliverable 3.2.2. was delayed from month 15 to month 18 due to the delay of the previous deliverables. It was only possible to describe the technical require¬ments for the correct implementation in the GIP architecture once the data models and any gaps were define	Amendment to work plan (proposal/project description) obtained from GeoERA Executive Board in December 2019	No	
Deliverable10.1 was delayed from month 4 to 7 due to lateness in the GSPs in reporting on evidence of use of the questionnaire. It was important that proper feedback was received to enable the questionnaire to be modified.	Amendment to work plan (proposal/project description) obtained from GeoERA Executive Board in December 2019	No	

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)
MEDIA	ONLINE MEDIA		GENERAL PUBLIC	>10,000	IGME		https://twitter.com/IGME1849
MEDIA	ONLINE MEDIA		GENERAL PUBLIC	>1,800	IGME		https://www.youtube.com/channel/UCBXTmq9ryRBL3NhJwRGJ3jg
MEDIA	ONLINE MEDIA		GENERAL PUBLIC	>50	IGME		https://www.pinterest.es/IGME1849/geoera/
MEDIA	ONLINE MEDIA		GENERAL PUBLIC	>7,000	IGME		https://www.facebook.com/Instituto-Geol%C3%B3gico-y-Minero-de-Espa%C3%B1a-224837040875505/

INSTRUCTIONS

Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, …)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	INTERNAL PROJECT MEETING
	MEETING WITH OTHER GEOERA PROJECTS
	MEETING WITH NATIONAL BODY
	MEETING WITH INTERNATIONAL BODY
	OTHER
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

PROJECT MANAGEMENT

The Project Board (PB) of the GIP-P has regular teleconference meetings approximately once per month. These are joined by the WP leaders as well as a number of other Partners. At each PB meeting the work is being evaluated by going through the latest work and status of each WP and corrective action is initiated if the work does not progress as needed. The Project Assembly (PA) has had two meetings, both of them face-to-face. The first was in connection with the kick-off of GeoERA, and the second in Month 13. The PA has been asked to decide on two specific issues: 1) A change of the name of the information platform underlying the project from GeoERA Information Platform (GIP) to EGDI and 2) Amendments to the Project Agreement.

The WPs have had a large number of specific meetings either individually or together with other WPs where the issues are overlapping. In particular, the WP2 are organising teleconferences at which most of the other WPs are represented, WP6 and 7 are conducting regular common meetings and cross-WP meetings have been held on 3D databases and visualisation, on the free text searching facility, on metadata, on project vocabularies and on a number of other topics.

The coordination with the GSPs has been very comprehensive and carried out by WP2. This has taken place through questionnaires as well as through bilateral teleconferences between the GIP-P WP2 and specifically appointed GIP-P liaison partners in the GSPs.

IMPACT STATEMENT

According to the GeoERA Programme Specific Research Topic “IP1 - DEVELOPMENT OF AN INFORMATION PLATFORM TO SUPPORT MANAGEMENT AND PROVISION OF DATA FOR THE THREE OTHER THEMES” the GIP-P should “first of all add value by supporting the GSPs in structuring and disseminating their results in an up-to-date, user-friendly and harmonised form thereby strengthening the scientific and societal impact of those”. This is exactly what has had the highest priority of the GIP-P so far through the strong focus on mapping and harmonising the requirements of the GSPs and by the selection and extension of the EGDI for the user access. Currently – however – the GSPs are only beginning to produce results so the real societal and scientific impact has not been achieved yet.

In the longer perspective it is a requirement that the GIP-P shall “pave the way for the establishment of a single access point to the combined European geological knowledge base that links the harmonised national information systems at Europe’s GSOs”. The strong focus on standards is also expected to ensure this, using EGDI as this single access point, although this too cannot be documented yet.

The extension of the EGDI “is in itself expected to have huge scientific and societal impacts in that it must enable scientists, public and private decision makers as well as industries to get a vastly improved access to the geological information to better solve their needs regarding geological issues but also in combining the geology with information from other domains like land use, physical infrastructure, transportation, environment, biology, etc.” This again is being ensured by the emphasis on standard, FAIR data principles and the easy and user friendly access via the EGDI.

Finally, it is required that the GIP-P “must contribute to the general Spatial Data Infrastructure of Europe by establishing or extending standards for data exchange of 3D/4D geology, etc. This is expected to enable stakeholders, like SMEs or consultants, to be able to develop services based on the GeoERA data and information results to thereby creating economic growth for Europe”. The GIP-P is

not only promoting and using the established standards it also works on extending those where the GSPs' needs require that. The Partners of the GIP-P include individuals and institutions who are familiar with and strongly involved in standardisation initiatives and bodies like INSPIRE, CGI and OGC, and suggestions for enhancing the standards will be forwarded to them.

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
	Actual			(0,25*A+B)				
1.	195.435,50	9.056,53	0,00	51.123,01	255.615,04	29,70%	75.917,67	179.697,37
2.	52.176,54	3.634,46	0,00	13.952,75	69.763,75	29,70%	20.719,83	49.043,92
3.	30.086,26	5.808,02	0,00	8.973,57	44.867,85	29,70%	13.325,75	31.542,10
4.	21.844,09	2.404,32	0,00	6.062,10	30.310,51	29,70%	9.002,22	21.308,29
5.	92.254,55	4.434,44	0,00	24.172,25	120.861,24	29,70%	35.895,79	84.965,45
6.	30.027,26	879,80	0,00	7.726,77	38.633,83	29,70%	11.474,25	27.159,58
7.	102.049,54	6.018,13	0,00	27.016,92	135.084,59	29,70%	40.120,12	94.964,47
8.	38.055,58	5.545,45	0,00	10.900,26	54.501,29	29,70%	16.186,88	38.314,41
9.	68.784,66	4.030,20	0,00	18.203,71	91.018,57	29,70%	27.032,52	63.986,06
10.	0,00	0,00	0,00	0,00	0,00	29,70%	0,00	0,00
11.	8.250,73	1.320,48	0,00	2.392,80	11.964,01	29,70%	3.553,31	8.410,70
12.	138.986,39	619,63	0,00	34.901,51	174.507,53	29,70%	51.828,74	122.678,79
13.	9.873,82	4.215,55	0,00	3.522,34	17.611,71	29,70%	5.230,68	12.381,03
14.	134.773,74	15.920,21	0,00	37.673,49	188.367,44	29,70%	55.945,13	132.422,31
15.	5.895,46	1.381,87	0,00	1.819,33	9.096,66	29,70%	2.701,71	6.394,95
16.	2.014,00	786,00	0,00	700,00	3.500,00	29,70%	1.039,50	2.460,50
17.	46.926,00	2.029,05	0,00	12.238,76	61.193,81	29,70%	18.174,56	43.019,25
18.	7.151,86	791,06	0,00	1.985,73	9.928,65	29,70%	2.948,81	6.979,84
19.	8.634,43	0,00	0,00	2.158,61	10.793,04	29,70%	3.205,53	7.587,51
20.	1.850,22	2.330,20	0,00	1.045,11	5.225,53	29,70%	1.551,98	3.673,54
21.	5.361,42	1.531,96	0,00	1.723,35	8.616,73	29,70%	2.559,17	6.057,56
22.	1.500,55	783,36	0,00	570,98	2.854,89	29,70%	847,90	2.006,99
23.	3.812,00	0,00	0,00	953,00	4.765,00	29,70%	1.415,21	3.349,80
24.	8.653,90	1.731,18	0,00	2.596,27	12.981,35	29,70%	3.855,46	9.125,89
					1.362.063,00		404.532,71	957.530,29

Date:
Person responsible:

Cumulative Use of Resources Connected to 8a

Personnel costs Actual	Person months	Associated WP	Amount
	#REF!	#REF!	#REF!
	#REF!	#REF!	#REF!
			#REF!

Other direct costs	Description	Category	Associated WP	Costs
				1.131,12
				1.131,12

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - GEUS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	195.435,50	9.056,53	0,00	51.123,01	255.615,04	29,70%	75.917,67	179.697,37

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	8,20	WP1	68.047,96
	0,04	WP4	269,60
	0,37	WP5	2.464,51
	17,99	WP6	124.572,55
	0,01	WP8	80,88
			195.435,50

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off meeting, Brussels, ju	Travel	WP6	1.131,12
	Project meeting in Brussels, (	Travel	WP6	859,99
	GeoEnergy Workshop in Wie	Travel	WP1	292,90
	Project Assembly and Board	Travel	WP1	1.468,69
	Project meeting in Prag, july	Travel	WP6	211,34
	Hydrology day in Odense, oc	Travel	WP1	82,14
	Project Meeting in Prag, july	Travel	WP6	499,13
	Project Board Meeting in Bru	Travel	WP6	657,71
	Technical Workshop in Wien	Travel	WP6	618,47
	Project meeting in Copenhag	Other	WP1	306,45
	EGU abstract submission, mr	Other	WP1	60,06
	Project Board Workshop in C	Other	WP1	814,7
	Freight, documents	Other	WP1	30,96
	TNO invoice for meeting arra	Other	WP1	1.981,82
	Needtomeet licens	Other	WP1	17,18
	Project Workshop in Copenh	Other	WP6	23,87
				9.056,53

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 2 - BGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	52.176,54	3.634,46	0,00	13.952,75	69.763,75	29,70%	20.719,83	49.043,92

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,79	WP1	6.834,38
	2,05	WP2	16.451,37
	0,28	WP3	2.247,39
	2,85	WP4	18.135,23
	1,6	WP6	8.508,17
			52.176,54

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off Brüssel	Travel	WP1	571,10
	2xWien, 9.-11.10.18		WP4	1.590,96
	Brüssel, 23.-25.10.18		WP2	706,05
	Brüssel, 1.-4.7.19		WP2	766,35
				3.634,46

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 3 - TNO

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
3.	30.086,26	5.808,02	0,00	8.973,57	44.867,85	29,70%	13.325,75	31.542,10

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,67	WP1	10.567,96
	1,78	WP2	8.994,70
	0,1	WP3	545,34
	1,08	WP4	5.445,44
	0,59	WP6	3.949,38
	0,12	WP8	583,44
			30.086,26

Other direct costs	Description	Category	Associated WP	Costs
	Meetings: Vienna (2 meetings, 1 person), Brussels (1 meetings, 1 person), Brussels (1 meetings, 2 persons), Copenhagen (1 meeting, 2 persons in total)	Travel	WP1	5.808,02
				5.808,02

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 4 - SGU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
4.	21.844,09	2.404,32	0,00	6.062,10	30.310,51	29,70%	9.002,22	21.308,29

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,2	2	158,16
	1,13	3	9.455,05
	1,28	4	8.194,32
	0,52	6	4.036,56
			21.844,09

Other direct costs	Description	Category	Associated WP	Costs
	Brussel 2019-07-02	Travel	1	947,59
	Wien 2018-10-09	Travel	4	1.456,73
				2.404,32

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 5 - GeoZS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
5.	92.254,55	4.434,44	0,00	24.172,25	120.861,24	29,70%	35.895,79	84.965,45

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,29	WP 1	819,31
	5,27	WP 2	12.904,68
	2,83	WP 3	10.586,82
	4,50	WP 4	12.998,47
	4,21	WP 5	9.955,52
	2,41	WP 6	5.352,21
	14,01	WP 7	31.749,00
	4,06	WP 8	7.654,44
	0,05	WP 9	136,55
	0,00	WP 10	0,00
	0,03	WP 11	97,54
			92.254,55

Other direct costs	Description	Category	Associated WP	Costs
	Brussels kick-off, 2 - 6 July 2018, 1 Person	Travel	WP 1	671,90
	Brussels coordination meeting, 22 - 26 October 2018, 1 Person	Travel	WP 2	991,41
	GiP-P Workshop Wien, 9 - 11 October 2018, 2 Persons	Travel	WP 4	590,48
	Gip-P Workshop Copenhagen, 8 - 10 April 2019, 1 Person	Travel	WP 7	560,74
	Technical workshop Wien, 10 - 13 March 2019, 1 Person	Travel	WP 2	397,99
	Gip-P Face to face meeting Brussels, 1 - 3 July 2019, 2 Persons	Travel	WP 1,2,3,4,5,6,7,8,9,11	1.221,92
				4.434,44

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 6 - CGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
6.	30.027,26	879,80	0,00	7.726,77	38.633,83	29,70%	11.474,25	27.159,58

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,59	WP1	2246,27
	0,34	WP2	715
	1,1	WP3	2767,84
	1,96	WP4	4716,93
	1,92	WP5	4156,73
	1,72	WP6	4274,3
	2,79	WP7	7452,43
	1,5	WP8	3697,76
			30.027,26

Other direct costs	Description	Category	Associated WP	Costs
		travel	WP4	280,62
		travel	WP7	599,18
				879,80

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 7 - BRGM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
7.	102.049,54	6.018,13	0,00	27.016,92	135.084,59	29,70%	40.120,12	94.964,47

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,14	WP1	10.941,36
	1,91	WP2	15.040,08
	1,6	WP3	12.099,24
	0,52	WP4	3.125,96
	5,77	WP5	42.148,60
	2,19	WP6	15.929,94
	0,03	WP7	183,88
	0,15	WP9	1.634,40
	0,12	WP11	946,08
	13,43		102.049,54

Other direct costs	Description	Category	Associated WP	Costs
		Travel costs	WP1	3562,29
		Travel costs	WP6	2455,84
				6.018,13

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 8 - NERC(UKRI)

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
8.	38.055,58	5.545,45	0,00	10.900,26	54.501,29	29,70%	16.186,88	38.314,41

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,38	WP1	2.720,82
	1,98	WP3	9.475,77
	0,66	WP5	3.015,51
	2,18	WP8	10.808,84
	1,45	WP10	12.034,64
			38.055,58

Other direct costs	Description	Category	Associated WP	Costs
	Project meetings	Travel	WP1	5.377,03
	Project meetings	Travel	WP5	168,42
				5.545,45

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 9 - ISPRA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
9.	68.784,66	4.030,20	0,00	18.203,71	91.018,57	29,70%	27.032,52	63.986,06

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,8	1	4.391,32
	1,2	2	7.496,45
	4,9	3	27.780,14
	2,5	4	17.491,23
	0,4	5	2.290,25
	0,05	6	263,65
	0,3	7	1.845,58
	0,3	8	1.705,67
	0,1	10	395,48
	1	11	5.124,89
			68.784,66

Other direct costs	Description	Category	Associated WP	Costs
	Kickoff meeting in Bruxelles	travel	1	429,89
	Kickoff meeting in Bruxelles	travel	1	559,05
	Workshop in Vienna 1 perso	travel	4	720,65
	Workshop in Vienna 1 perso	travel	3	633,86
	Workshop in Praga 1 person	travel	3	611,90
	Project meeting in Bruxelles	travel	3	1.074,85
				4.030,20

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 10 - GTK

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
10.	0,00	0,00	0,00	0,00	0,00	29,70%	0,00	0,00

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
			0,00
			0,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 11 - NGU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
11.	8.250,73	1.320,48	0,00	2.392,80	11.964,01	29,70%	3.553,31	8.410,70

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,45	WP1	3171,48
	0,34	WP2	2319,37
	0,17	WP3	1204,87
	0,27	WP8	1555,01
			8.250,73

Other direct costs	Description	Category	Associated WP	Costs
	Meeting BXL July 2019	Travel	WP1	1.320,48
				1.320,48

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 12 - RBINS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
12.	138.986,39	619,63	0,00	34.901,51	174.507,53	29,70%	51.828,74	122.678,79

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,10	WP1	483,58
	21,73	WP2	138.242,79
	0,04	WP8	260,03
			138.986,39

Other direct costs	Description	Category	Associated WP	Costs
	Meeting hosted by RBINS-GS	Other	WP2	245,92
	Meeting hosted by RBINS-GS	Other	WP2	175,28
	Meeting hosted by RBINS-GS	Other	WP2	198,43
				619,63

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 13 - GSI

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
13.	9.873,82	4.215,55	0,00	3.522,34	17.611,71	29,70%	5.230,68	12.381,03

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,33	WP10	2.627,60
	0,69	WP1	5.494,47
	0,22	WP2	1.751,75
			9.873,82

Other direct costs	Description	Category	Associated WP	Costs
	Opening meeting	Travel	WP1	3.298,82
	GIP-P meeting	Travel	WP10	916,73
				4.215,55

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 14 - IGME

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
14.	134.773,74	15.920,21	0,00	37.673,49	188.367,44	29,70%	55.945,13	132.422,31

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,78	1	9156,30449
	6,96	2	32264,71728
	7,72	4	38148,961
	0,03	5	154,4808372
	0,00	6	0,00
	8,48	7	35.912,10
	5,59	11	19.137,18
			134.773,74

Other direct costs	Description	Category	Associated WP	Costs
	Attendance to Project Board/Project Assembly meetings (3 persones) -KO Jul 2018 -PA/PB Jul2019	Travel	1	5.972,15
	Attendance to WP2 meetings and GW Project Board/Project Assembly meetings (5 meetings/1 personne): -WP2 meeting Oct 2018 -GE Workshop March 2019 -HOVER PB March 2019 -TACTIC PB/PA Oct 2019 -RESOURCE PB/PA Nov 2019	Travel	2	3.571,85
	Attendance to WP4 meeting Oct 2018 (1 meetings/2 personne)	Travel	4	1.441,93
	Attendance to Copenhagen meeting April 2019 (1 meeting/2 personne)	Travel	7	1.942,26
	Alicia González attendance to Project Board/Project Assembly meetings (2 meeting Jul 2018 and 2019) 1 Travel of Manuel Regueiro to promote GIP-P project in a local radio	Travel	11	2.117,45
	Recording of the promotional video of the GIP-P project	Other	11	874,57
				15.920,21

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 15 - GeoInform

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
15.	5.895,46	1.381,87	0,00	1.819,33	9.096,66	29,70%	2.701,71	6.394,95

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,216666961	WP1	1.047,01
	0,201867374	WP3	975,49
	0,208727185	WP4	1.008,64
	0,191176741	WP6	923,83
	0,401563184	WP8	1.940,49
			5.895,46

Other direct costs	Description	Category	Associated WP	Costs
	Meeting	Travel	WP4	1.381,87
				1.381,87

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 16 - GIR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
16.	2.014,00	786,00	0,00	700,00	3.500,00	29,70%	1.039,50	2.460,50

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,19	1	354,00
	1,34	2	1.546,00
	0,1	6	114,00
			2.014,00

Other direct costs	Description	Category	Associated WP	Costs
	PA/PB meeting in Copenhag	Travel	1	786,00
				786,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 17 - GBA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
17.	46.926,00	2.029,05	0,00	12.238,76	61.193,81	29,70%	18.174,56	43.019,25

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5	4	26.070,00
	4	6	20.856,00
			46.926,00

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off and PB-meeting	Travel	1	1.509,69
	GEUS WP6	Travel	6	519,36
				2.029,05

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 18 - SGSS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
18.	7.151,86	791,06	0,00	1.985,73	9.928,65	29,70%	2.948,81	6.979,84

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,21	WP1	670,44
	0,94	WP2	2.846,20
	1,23	WP3	3.635,22
			7.151,86

Other direct costs	Description	Category	Associated WP	Costs
	Bruxelless (01-31/07/2019)	Travel	WP1	395,53
	Bruxelless (01-31/07/2019)	Travel	WP2	395,53
				791,06

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 19 - MBFSZ

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
19.	8.634,43	0,00	0,00	2.158,61	10.793,04	29,70%	3.205,53	7.587,51

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,40	WP2	3101,86
	1,06	WP3	2374,03
	1,17	WP4	2251,50
	0,11	WP6	263,69
	0,28	WP7	643,34
			8634,43

Other direct costs	Description	Category	Associated WP	Costs
				0,00
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 20 - LfU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
20.	1.850,22	2.330,20	0,00	1.045,11	5.225,53	29,70%	1.551,98	3.673,54

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,1	WP1	693,83
	0,166	WP4	1.156,39
			1.850,22

Other direct costs	Description	Category	Associated WP	Costs
	1 person: WP4 workshop Vie	Travel	WP4	430,11
	2 people: Liaison Brussels 24	Travel	WP2	1.132,40
	1 person: Project Board and	Travel	WP1	767,69
				2.330,20

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 21 - LNEG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
21.	5.361,42	1.531,96	0,00	1.723,35	8.616,73	29,70%	2.559,17	6.057,56

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,12	1	573,30
	0,85	2	3.467,53
	0,09	3	339,48
	0,37	4	981,11
			5.361,42

Other direct costs	Description	Category	Associated WP	Costs
	WP4 Semantic Harmonization Issues Workshop - GeoERA GIP-P, 09-11th October 2018, Vienna-Austria, Aurete Pereira	Travel	4	795,24
	GeoERA GIP-P Project Assembly and WP leaders meeting - July 2nd and 3rd, Brussels - Belgium, Lídia Quental	Travel	1	736,72
				1.531,96

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 22 - PGI

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
22.	1.500,55	783,36	0,00	570,98	2.854,89	29,70%	847,90	2.006,99

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,41	WP2	971,27
	0,22	WP3	529,28
			1.500,55

Other direct costs	Description	Category	Associated WP	Costs
	Travel cost of Paweł Lewandowski to Belgium 01-03.07.2019 (travel insurance, accomondation, travel allowance, airplane ticket)	Travel	WP1	783,36
				783,36

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 23 - HGI-CGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
23.	3.812,00	0,00	0,00	953,00	4.765,00	29,70%	1.415,21	3.349,80

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,44	3	825,00
	0,691	4	1.296,00
	0,549	7	1.029,00
	0,353	8	662,00
			3.812,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 24 - ISOR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
24.	8.653,90	1.731,18	0,00	2.596,27	12.981,35	29,70%	3.855,46	9.125,89

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,243	WP1	1.518,12
	1,182	WP2	7.135,78
			8.653,90

Other direct costs	Description	Category	Associated WP	Costs
	Meeting in Brussel, June 2019	Travel	WP2	1.731,18
				1.731,18

Subcontracting	Description	Associated WP	Cost
			0,00

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Hazard and Impact Knowledge for Europe
Project acronym:	HIKE
Project reference number:	GeoE.171.011
Project topic:	Geo-energy
Project specific recearch topic:	GE4 – INDUCED IMPACTS AND HAZARDS
Project website address:	http://geoera.eu/projects/hike/

Period covered from: 1.07.2018 to: 31.12.2019

Report submission date:	24.01.2020
Project coordinator:	TNO

Contact person for the project: Hans Doornenbal
Tel: 31612749686
E-mail: hans.doornenbal@tno.nl

IDENTIFICATION OF PROJECT PARTICIPANTS

[use dropdown menu]

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO	The Netherlands Organisation for applied scientific research	TNO	Netherlands	999988909	Project Lead
2	Albanian Geological Survey	Albanian Geological Survey	AGS	Albania	951811337	Project Partner
3	Geologische Bundesanstalt	Geological Survey of Austria	GBA	Austria	998164145	Project Partner
4	Royal Belgian Institute of Natural Sciences – Geological Survey of Belgium	Geological Survey of Belgium – Royal Belgian Institute of Natural Sciences	RBINS-GSB	Belgium	998437006	Project Partner
5	Geological Survey of Denmark and Greenland	Geological Survey of Denmark and Greenland	GEUS	Denmark	999459677	Project Partner
6	Bureau de Recherches Géologiques et Minières	The French Geological Survey	BRGM	France	999993662	Project Partner
7	Bundesanstalt für Geowissenschaften und Rohstoffe	Federal Institute for Geosciences and Natural Resources	BGR	Germany	999429413	Project Partner
8	Landesamt für Bergbau, Geologie und Rohstoffe Brandenburg	State Office for Mining, Geology and Raw Materials Brandenburg	LBGR BRB	Germany	923483942	Project Partner
9	Landesamt für Geologie und Bergwesen Sachsen-Anhalt	State Office for Geology and Mining Saxony-Anhalt	LAGB	Germany	921579444	Project Partner
10	Bayerisches Landesamt für Umwelt	Bavarian Environment Agency - Geological Survey (Associated partner)	LfU	Germany	923455230	Project Partner
11	Islenskar orkurannsoknir - Iceland GeoSurvey	Iceland GeoSurvey	ISOR	Iceland	993296006	Project Partner
12	Istituto Superiore per la Protezione e la Ricerca Ambientale	Italian Institute for Environmental Protection and Research	ISPRA	Italy	997905349	Project Partner
13	Servizio Geologico, Sismico e dei Suoli della Regione Emilia-Romagna	Geological, seismic and soil survey, Emilia Romagna Region	SGSS	Italy	999482375	Project Partner
14	Agenzia Regionale per la Protezione Ambientale del Piemonte	Regional Agency for the Protection of the Environment	ARPAP	Italy	999468892	Project Partner
15	Lietuvos Geologijos Tarnyba prie Aplinkos Ministerijos	Lithuanian Geological Survey	LGT	Lithuania	991988058	Project Partner
16	Państwowy Instytut Geologiczny – Państwowy Instytut Badawczy	Polish Geological Insitute	PIG-PIB	Poland	999492463	Project Partner
17	Laboratório Nacional de Energia e Geologia	The National Laboratory of Energy and Geology	LNEG	Portugal	994187921	Project Partner
18	Geološki zavod Slovenije	Geological Survey of Slovenia	GeoZS	Slovenia	999466370	Project Partner
19	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund of Ukraine	GEOINFORM	Ukraine	947331392	Project Partner
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PUBLISHABLE SUMMARY

Project scope and rationale

Energy, mineral resources and groundwater are intrinsically related to the UN Sustainable Development Goals. Exploitation of these resources is not without risk to citizens and the environment. The HIKE project aims to support the latest state of art in hazard and risk management through the development, demonstration and implementation of essential subsurface data sets, assessment methodologies and setting up a knowledge share point in which research institutes and stakeholders are guided towards the information they need.

Project structure and progress

Besides project coordination (WP1), HIKE consists of three research work packages focusing on the development of a European database of geological faults (WP2), the joint development and demonstration of hazard assessment methods in six case study areas (WP3) and the development of a knowledge share point for reports, tools and datasets related to hazards and risks (WP4). The implementation of these products in EGDI - the joint GeoERA Information Platform - is coordinated in WP5.

The project activities are on schedule to meet the expected results in month 36. The first 18 months predominantly focused on establishing the specifications for the Fault Database and the Knowledge Share Point. These specifications are now used to shape the collaboration with the GIP project. Prototypes are currently under development while partners are progressing with the modelling, analysis and compilation of the national data sources that will define the end result. In WP3 the case studies are elaborated and exchanged among the partners. Various technical meetings have been organized workshops on cross-cutting aspects together with other projects

A total of ## deliverables has been submitted, all of which are still project confidential. Some minor delays are reported which did not have an impact on the overall progress of the project.

WP2: Fault Database

Faults are omnipresent in the subsurface. At a larger scale they define tectonic boundaries between different geological domains. At smaller scale faults determine the characteristics and kinematic behaviour of rock formations themselves (e.g. fluid flow, tendency to generate earthquakes). Faults are often linked to the occurrence of natural earthquakes in tectonically active regions. Yet certain subsurface activities (e.g. production and injection) may also trigger earthquakes in regions that are otherwise tectonically stable. Furthermore faults may also related to other types of hazards such as migration of fluids from deep formations towards shallower groundwater aquifers or the surface environment.

Existing European databases (e.g. SHARE project) only focus on major seismogenic faults which are prone to generate natural earthquakes. The Fault Database HIKE is intended to incorporate all types of faults and aims for a broad range of end-user applications. To that end WP2 has established a general concept and specification for the compilation, maintenance and dissemination of fault geometries and attributes. This concept is enriched by a tested semantics concept which places faults in a common structural framework an allows for pan-European correlation, Project partners and other

GeoERA projects have provided a first overview of the fault information and modelling activities in their regions. These data represent a prototype for the final product.

WP3: Methods and case studies

HIKE WP3 develops and tests novel methodologies building on top of results from previous hazard studies and research at the national geological surveys. The work will advance current state-of-the-art knowledge across different energy exploitation scenarios and various geological settings. The final goal is to improve hazard and impact assessments and provide the basis for better standardization of these evaluations across Europe. With the joint development of methods, workflows and datasets an intensified research collaboration and improved transfer of knowledge will be established.

Different types of energy exploitation of the subsurface give rise to different challenges. These include, but are not limited to: induced seismicity, subsidence, reservoir sealing and leakage. The processes are to a varying degree relevant for both energy extraction and subsurface storage. A common theme for these hazards is the importance of faults. Faults can guide subsurface motion as well as provide pathways for leakage. Furthermore, faults can be activated due to changes in external conditions such as pressure changes and lubrication by liquids.

Based on the participating partners' expertise the following four case studies have been formulated:

- Advanced localization of seismicity

- Methodologies for induced surface displacement

- Reservoir sealing assessments

- Seismicity and safety in storage

In all case studies the relevance of the fault database being established in WP2 will be explored. Furthermore, cross-cutting relations between individual case studies will be identified. An intermediate WP3 progress report presents the research proceedings of the four case studies in 2018 and 2019.

WP4: Knowledge share point

The knowledge share point represents a central repository and online access point for reports, analytical tools and data sources related to hazard and impact research. The share point will be developed on the basis of a novel semantic framework for hazards and impacts including definition of cross-cutting relations between different typologies (e.g. subsurface activity <> hazard mechanisms <> geological setting). The framework will enable smart exploration of distributed information sources and can be tailored to different end-user profiles.

In 2019 the basic specifications and functionalities for the knowledge share point have been determined. Currently the semantic framework is being established from a synthesis of case studies (including WP3) and various European studies and research projects. A prototype dataset will be used to develop the share point components in EGDI. The knowledge base is intended to further evolve and grow as new information is added after the project lifetime.

Outlook

In 2020 the HIKE and GIP projects will work together on realizing the resulting systems should be evaluated and demonstrated in actual Fault Database and Knowledge Share Point. Beginning of 2021 the case studies. The HIKE project will engage and involve national and local stakeholders to test the platform functionalities and to evaluate the opportunities to implementation the systems in future studies.

PROJECT CONTRIBUTION TO GeoERA PROJECT

General Objective: Interoperable, pan-European data and information services on the distribution of geo-energy, groundwater and raw material resources

The Fault Database (WP2) and Knowledge Share Point (WP4) will result in novel pan-European data and information services inside EGDI that will help to better manage and reduce anthropogenic risks related to exploration and exploitation of subsurface capacities and resources (e.g. by developing and disseminating public data and knowledge needed for identifying and analysing geological features that pose a hazard during subsurface exploitation). WP5 (information platform interface) supports the integration of the Fault Database and Knowledge Share Point in the larger European Geological Data Infrastructure (EGDI).

Concrete contributions 2018/2019

• Development of a standardized model for collecting, analysing and disseminating fault data (D5.1a)

• Development of a fault semantic concept approach to correlate faults across Europe and establish tectonic relationships between different faults and fault systems (D2.1a). A clear example is available from the Austrian Geological Survey (https://www.geologie.ac.at/services/webapplikationen/multithematische-geologische-karte/)

• Collection of country fault data (D2.2a)

• Collaboration with other projects to establish a joint fault model, among others GeoConnect3d (Structural Framework concepts), 3DGEO-EU (fault modelling and characterization, HotLime (semantic concepts) (a.o. MS-4)

• Development of a common knowledge share point concept for hazard and impact documents, data and tools based on a dedicated semantic concept model (smart searching, integrating and relating information sources) (D5.1b, D4.2a).

General Objective: Common assessment frameworks and methodologies supporting better understanding and management of the water-energy-raw materials nexus and potential impacts and risks of subsurface use

WP3 (methods and use cases) focuses on the joint development of novel methodologies to apply this information in different geological and anthropogenic settings across Europe. Hazard and impact research is at the centre of the water-energy-raw materials nexus. It explores the risks of exploitation activities from one domain (e.g. energy, raw materials) on other domains (e.g. ground water, surface environment, atmosphere). Results are incorporated in the Knowledge Share Point (WP4)

Concrete contributions 2018/2019

• Definition and first results of 4 method topics (seismicity localization, surface deformation, storage and leakage, storage and seismicity), carried out in 7 case study areas across Europe (D3.1a)

• Development of a common knowledge share point concept for hazard and impact documents, data and tools (D5.1b, D4.2a)

General Objective: knowledge and services aimed at European, national and regional policy makers, industry and other stakeholders to support a more integrated and efficient management and more responsible and publicly accepted exploitation and use of the subsurface

Hazard and impact research is the foundation for risk management and responsible and publicly accepted exploitation. With the Knowledge Share Point (WP4), HIKE develops a service that is specifically aimed to support stakeholders at all levels in developing policies and regulating subsurface activities. The fault database is a key element for planning subsurface activities taking into account regions that are potentially sensitive to generating induced hazards (e.g. induced seismicity, fluid migration)

Through WP5 (Information platform interface) HIKE introduces novel components to the EGDI platform that are based on open and transparent information.

Concrete contributions 2018/2019

• Specifications for the Fault Database Architecture development by GIP (D5.1a Technical specifications and D2.1 pilot fault databases)

• Specifications for the Knowledge Share Point Architecture development by GIP (D5.1a Technical specifications)

• Elaboration of different end-user profiles for the knowledge share point (D5.1b, D4.2a)

• WP3 research activities are based on real induced-hazard cases (D3.1a)

GeoEnergy SRT objective: Potential subsurface contributions with regards to energy resources and storage capacities

HIKE does not particularly investigate the distribution of subsurface resources and capacities. The established information and methods are however input to whether and where resources and capacities can be exploited in a safe and responsible manner.

GeoEnergy SRT objective: Potential risks and environmental impacts associated with subsurface use for energy applications:

The HIKE project contributes directly through the development of relevant pan-EU data (WP2: Fault Database), assessment methods (WP3 methods and use cases) and a research tool (WP4: knowledge share point)

GeoEnergy SRT objective: Risks of competition and interference between different uses of subsurface space, including interactions with surface infrastructures, and rewards of synergies.

HIKE regards the interaction between subsurface energy activities and regions prone to seismic activity (D2.2a, D3.1a). The potential connections to groundwater are one element of the Knowledge Share Point (D4.2a, D5.1b, D3.1a). “Interferences between exploiting activities” is considered a specific hazard category in the Knowledge Share Point (D4.2a)

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: Project Management and Coordination **Duration:** **M1-M39**

Coordination of meetings and minutes (D1.2)
Established the Project Implementation Plan (D1.1)
Established the draft Project Data Management Plan (D1.6)
Established the draft Communication, dissemination and Exploitation plan (D1.5)
Organized a broad (cross-thematic) workshop around the Fault Database and Knowledge Share Point in Vienna, March 2019
Established the Cumulative expenditues reports (D1.4a/b)
Established the mid-term project progress report (D1.3a)
Established an additional public mid term report (extra deliverable, related to D1.3a)
Incorporated project plan amendments
Support the organization of the mid-term event

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D1.1	Project Implementation Plan	TNO	R	CO	M2	Completed	Delivered on 17Oct2018, amended to M4 in the project plan
D1.2	Minutes of Meetings	TNO	R	CO	M1-36	Pending	Ongoing through project life time
D1.3a	Project Progress Report	TNO	R	CO	M18	Completed	Title changed to "Midterm Project Progress Report" in Project Plan. In draft submitted in dec 2019, financial statements
D1.3b	Final Project Progress Report	TNO	R	CO	M38	Pending	
D1.4a	Cumulative Expenditure Report 2018	TNO	R	CO	M6	Completed	Delivered on 1Feb2019, amended to M7 in the project plan
D1.4b	Cumulative Expenditure Report 2019	TNO	R	CO	M18	Completed	will be delivered in jan 2020
D1.4c	Cumulative Expenditure Report 2020	TNO	R	CO	M30	Pending	
D1.5	Project Data Management Plan	TNO	R	CO	M6	Completed	Delivered on 1Feb2019, amended to M7 in the project plan
D1.6	Project Communication, Dissemination and Exploitation Plan	TNO	R	CO	M6	Completed	Delivered on 1Feb2019, amended to M7 in the project plan

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS-1	Kick-Off Seminar (obligatory GeoERA event)	M1	Completed	Brussels event
MS-2	Mid-Term Project Review (obligatory GeoERA event)	M21	Pending	Ljubljana event
MS-3	Final Project Review (obligatory GeoERA event)	M39	Pending	
MS-4	technical workshop 1, planned together with other GeoERA projects	(Indicative M9/M10)	Completed	Vienna workshop convened March2019
MS-5	technical workshop 2, planned together with other GeoERA	(Indicative M27/M28)	Pending	

Work package 2: Fault Database Development **Duration:** **M1-M36**

In 2018 and 2019 the activities of HIKE resulted in a generic model for pan-European compilation, dissemination and analysis of fault data collected from different countries and origins (D2.1a, D5.1a). The specifications includes a standardized data model for fault information (geometrical definitions, physical attributes, meta-data) and concrete prototypes for the overall database framework. This data model can be combined with existing European databases for seismogenic faults. The database is equipped with a semantic concepts scheme according to common agreed principles developed by the GeoERA community. The concepts scheme provides a model to define genetic links between different faults systems (e.g. how are naturally inactive faults connected to seismogenic fault systems?, how are attributes and behaviour correlated within fault sets?) and to correlate faults across borders (e.g. defining how individual faults define major fault systems across Europe). The established fault data framework will is key to achieve harmonization and maintenance of fault data across Europe and to assists countries with the mapping and characterization of faults. The scheme is developed together with the HotLime and GeoConnect3d projects (a.o. the Structural Framework). An elaborated example is presented by the Austrian Fault Database. In 2019 HIKE has collected the first overview of faults in Europe (D2.2a) which are now being elaborated for the database. There is close collaboration with 3DGeo-EU to establish new 3D fault data. A prototype dataset has been established in a cross-border region in collaboration with the GeoConnect3d project. Other In Task 2.4 first results are booked on novel fault characterization techniques. Various workshops have been organized or participated in(Brussels, Augsburg, Vienna, Utrecht, Hannover)

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D2.1a	Draft Fault Data Characterization Catalogue	TNO	R	CO	M15	In delay	Amended to new delivery date 31.01.2020 (M19) in Project Plan.
D2.1b	Final Fault Data Characterization Catalogue	TNO	R	PU	M36	Pending	
D2.2a	Mid-term fault data collection report	TNO	R	CO	M17	In delay	Amended to new delivery date 31.01.2020 (M19) in Project Plan.
D2.2b	Final fault data collection report and database	TNO	R/data	PU	M36	Pending	
D2.3	Final report on fault characterization and data	TNO	R/data	PU	M36	Pending	
D2.4	Final report on FDB application and evaluation	GBA	R	PU	M36	Pending	
D2.5	Fault data collected by partners embedded in the Fault database, as developed by the GIP	TNO	R/data	PU	M33	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS-9	End of fault data collection, start for final processing and reporting	M31	Pending	

Work package 3: Hazard and Impacts Method Development **Duration:** **M1-M36**

In HIKE novel hazard assessment methodologies are being developed in WP3 (methods and use cases) based on a variety of national uses cases. Besides the realizing the concrete research results, the partners involved also contribute to a better collaboration in this field of science by investigating how their expertise may be implemented in similar use cases elsewhere. The first outcomes of these efforts have been reported in the mid-term WP3 progress report (D3.1a). The following research topics and case studies are being worked on:
- Advanced localization of seismicity (3 case study areas in Denmark, Iceland and The Netherlands
- Methodologies for induced surface displacement (2 case study areas in Italy)
- Reservoir sealing assessments (1 case study area in Poland)
- Seismicity and safety in storage (1 case study area in France)
The WP3 partners have organized 2 workshops (1 at project start and 1 in november 2019).

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D3.1	Mid-term report on definition of integrated case scenarios in WP3	GEUS	R	CO	M17	Completed	
D3.2	Final case study report on improved localization of seismic events, Denmark, Netherlands, Iceland	GEUS	R	PU	M36	Pending	
D3.3	Final case study report on subsidence assessment techniques, Po Basin area, Italy	ISPRA	R	PU	M36	Pending	
D3.4	Final case study report on improved assessment of reservoir seals, Poland	PIG-PIB	R	PU	M36	Pending	
D3.5	Final case study report on seismicity and safety of subsurface injection, Rousse, France	BRGM	R	PU	M36	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 4: Hazards and Impacts Knowledge **Duration:** **M1-M36**

In 2019 the basic specifications and functionalities for the knowledge share point have been established and reported (D5.1a). Currently the semantic framework is being established from a synthesis of case studies (including WP3) and various European studies and research projects (D4.2a). A prototype dataset is being elaborated to develop the share point components in EGDI. The knowledge base is intended to further evolve and grow as new information is added after the project lifetime.The specifications and core concepts are discussed with partners and other GeoERA projects in various project-to-project workshops and a major technical workshop in Vienna (March 2019)
Prototype datasets are being established on the basis of WP3 results and repositories of partner GSOs. HIKE is preparing engagements with EPOS to establish the link with the Thematic Core Services on Anthropogenic Hazards (two-way exchange of documents and knowledge)
A draft scientific justification and explanation for the Knowledge share Point has been established as a guideline for partners. The final report will address the stakeholders and end-users

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D4.1	Final project synthesis, recommendations and best practices report	BRGM	R	PU	M36	Pending	
D4.2a	Draft scientific specifications and requirements for the hazards	BRGM	R	CO	M17	In delay	Change of delivery nr into D4.2a, Change of dissemination level from PU into CO, Change of title into " Draft Scientific
D4.2b	Final scientific specifications and requirements for the hazards	BRGM	R	PU	M36	Pending	New deliverable (see D4.2 above)
D4.3	Final data and knowledge share point implementation and report	BRGM	R/data	PU	M36	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 5: Information Platform Interface	**Duration:**	**M1-M36**

The technical specifications for the fault database have been established and reported to GIP (D5.1a).
The technical specifications for the knowledge share point have been established and reported to GIP (D5.2a).
A detailed plan has been established and agreed with GIP to coordinate the Fault Database and Knowledge Share Point development in 2020
Meetings have been held with GIP to discuss requirements and prototype development

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D5.1a	Technical IP requirements of the Fault Database (in EGDI)	GBA/ TNO	R	CO	M12	Completed	Delivered on 31Jul2019
D5.1b	Technical IP requirements of the knowledge share point (in EGDI)	GBA/ BRGM	R	CO	M12	Completed	Delivered on 31Jul2019
D5.2a	Draft user manual for the Fault Database and the knowledge share point	GBA/ TNO	R	CO	M24	Pending	
D5.2b	Final user manual for the Fault Database and the knowledge share point	GBA/ BRGM	R	PU	M36	Pending	
D5.3	Final Project Data Management Implementation report	GBA	R	PU	M36	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS-6	Start of the Fault Database architecture development in the GeoERA Information Platform (by the GeoERA IP project team)	M7	Completed	D5.1a, Project schedule GIP-HIKE, Prototype data
MS-7	Start of the Knowledge/data share point architecture development in the GeoERA Information Platform (by the GeoERA IP project team)	M13	Completed	D5.2a, Project schedule GIP-HIKE
MS-8	Functional implementation of the final FDB and Knowledge Share Point data architecture in the GeoERA Information Platform	M25	Pending	

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* No

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
WP1: D1.1 " Project Implementation Plan", Delivery date 31.08.2018 (M2)	New delivery date 31.10.2018 (M4)	No	No
WP1: D1.4a "Cumulative Expenditure Report 2018" delivery date 31.12.2018 (M6)	New delivery date 31.01.2019 (M7)	No	No
WP1: D1.5 "Project Data Management Plan" delivery date 31.12.2018 (M6)	New delivery date 31.01.2019 (M7)	No	No
WP1: D1.6 "Project Communication, Dissemination and Exploitation Plan" delivery date 31.12.2018 (M6)	New delivery date 31.01.2019 (M7)	No	No
WP1: D1.3a ""Project Progress Report"; Delivery date 31.12.2019 (M18)	Change title of D1.3a to "Midterm Project Progress Report"	No	No
WP2: D2.1a "Draft Fault Data Characterization Catalogue" delivery date 30.09.2019 (M15)	New delivery date 31.01.2020 (M19)	No	No
WP2: D2.2a " Mid-term fault data collection report " delivery date 30.11.2019 (M17)	New delivery date 31.01.2020 (M19)	No	No
WP4: D4.2 " Scientific specifications and requirements for the hazards and impacts data share point and definitions for the Semantics Web service " delivery date 30.11.2019 (M17)	Change of delivery nr into D4.2a, Change of dissemination level from PU int	No	No
WP4: D4.2b " Final scientific specifications and requirements for the hazards and impacts data share point and definitions for the Semantics Web service " delivery date 30.11.2019 (M36)	New deliverable (see D4.2 above)	No	No
LNEG: Table 3.1a: LNEG is removed because it is not a participant in Task 3.1 (error in document, other tables are correct)	LNEG is removed as participant in Task 3.1.	No	No
LNEG: Table 3.3b: for LNEG the direct costs on other goods/services is wrong placed	For LNEG the direct costs for ''other goods/services'' has been moved to ''T	No	No

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)
EVENTS	PITCH EVENT	2-5 July 2018	EU INSTITUTION	100-120	All partners	Serge van Gessel	GeoERA Kickoff Event Brussels
EVENTS	WORKSHOP	4-5 July 2018	SCIENTIFIC COMMUNITY	15	All partners	Project Lead & Work Pack	GeoERA Kickoff Event Brussels
MEDIA	ONLINE MEDIA	2018/2019	GENERAL PUBLIC	tbd		Project Lead & Work Pack	GeoERA website https://geoera.eu/projects/hike10/
MEETINGS	Meeting with other GeoERA projects	24-25 sep 2018	SCIENTIFIC COMMUNITY	20	TNO, GBA	Serge van Gessel, Esther H	GeoERA IP Workshop Brussels
MEETINGS	Meeting with international body	3-4 Dec 2018	SCIENTIFIC COMMUNITY	20	TNO + others	Serge van Gessel	GeoEnergy Expert Group Meeting
EVENTS	WORKSHOP	4-5 Feb 2019	SCIENTIFIC COMMUNITY	6	TNO, LfU, GBA	Serge van Gessel, Harry M	Fault DB workshop Augsburg
EVENTS	PITCH EVENT	43508	SCIENTIFIC COMMUNITY	35	TNO	Serge van Gessel	National Delegates Forum EGS
EVENTS	WORKSHOP	11-13 Mar 2019	SCIENTIFIC COMMUNITY	80	Most partners	Project Lead & Work Pack	Vienna, Faults workshop, Meeting with HIKE, 3DGEO-EU, GeoConnect3D, GIP ...
EVENTS	PITCH EVENT	15 Mar 2019	NON-EU INSTITUTION (nation	40	GBA	Hintersberger	National Kickoff meeting of all Austrian GeoERA participants
MEDIA	ONLINE MEDIA	43547	GENERAL PUBLIC	tbd		Project Lead & Work Pack	https://geoera.eu/wp-content/uploads/2019/03/Project-HIKE-newsletter_20190325.pdf
EVENTS	CONFERENCE (tele-conference)	14-16 May 2019	SCIENTIFIC COMMUNITY	50	LfU, GBA	Hintersberger	https://www.lfu.bayern.de/geologie/aktionstage/euregeo/index.htm
MEETINGS	Meeting with other GeoERA projects	43650	SCIENTIFIC COMMUNITY	10	TNO, VITO, RBINS-G	Harry Middelburg, Serge v	Utrecht, Structural Framework workshop with GeoConnect
MEDIA	ONLINE MEDIA	43658	GENERAL PUBLIC	508		Johan ten Veen, Harry Mi	https://geoera.eu/blog/how-we-deal-with-our-faults/
EVENTS	PITCH EVENT	43745	OTHER (customers)	30	TNO	Serge van Gessel	General Assembly Event Prague
EVENTS	WORKSHOP	7-9 Oct 2019	SCIENTIFIC COMMUNITY	6	GEUS, TNO, ISOR	Tine Larsen	WP3 workshop Copenhagen
EVENTS	WORKSHOP	43761	SCIENTIFIC COMMUNITY	20	TNO, BGR, GEUS, IG	Hans Doornenbal, Harry N	Hannover, Workshop with 3DGEO-EU and HIKE
MEETINGS	Meeting with other GeoERA projects	18-19 Nov 2019	SCIENTIFIC COMMUNITY	10	TNO, GEUS, GBA, BR	Serge van Gessel, Esther H	Copenhagen, Meeting HIKE and GIP
EVENTS	SEMINAR	43789	NON-EU INSTITUTION (nation	25	GEUS	Karen Anthonsen, Tine La	CCUS2020 event Denmark
PUBLICATIONS	SCIENTIFIC PUBLICATION	43838	SCIENTIFIC COMMUNITY	tbd		J. VIDOVIC1, Y. SCHAVEM/	https://sp.lyellcollection.org/content/specpubgsl/early/2020/01/06/SP499-2019-47.full.pdf?ijkey=TrwYVqe8DPskizg&keytype=finite
MEETINGS	Internal project meeting	Monthly	SCIENTIFIC COMMUNITY	5-15	All partners	Serge van Gessel	Monthly project meetings
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	in prep	OTHER (customers)	tbd		Project Lead & Work Pack	Public Summary and Outlook
EVENTS	CONGRESS	submitted	SCIENTIFIC COMMUNITY	tbd	TNO + other partner	Serge F. van Gessel, Harry	Submitted abstract for EGU2020 in Vienna (4-8 mai 2020)

INSTRUCTIONS

Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	INTERNAL PROJECT MEETING
	MEETING WITH OTHER GEOERA PROJECTS
	MEETING WITH NATIONAL BODY
	MEETING WITH INTERNATIONAL BODY
	OTHER
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

PROJECT MANAGEMENT

Project management activities

HIKE is coordinated by TNO with an “Administrative coordinator” and a “Technical coordinator”. The administrative coordinator manages the progress on the overarching workplan, project finance and amendments to the proposal workplan. The technical coordinator manages the overall progress on the deliverables, the organization of technical meetings and science events/publications. HIKE has a Project Management Board consisting of the Project Lead coordinators and the Work Package Leads. The PMB members are responsible for coordinating the specific tasks and deliverables in their work packages. Within each Work package Task Leads are defined.

The management structure is published in the Project Implementation Plan (D1.1). A digital project book maintains the detailed planning of activities and identification of contact persons. Data is shared via the “Data Share Point” under GeoERA or via emails.

Communication between partners

Project Management Board (PMB) has a WebEx meeting every month to assess the progress of HIKE. All primary contacts or assembly members are invited to attend these meetings. Work Package leads organize specific partner workshops for their tasks. These are either organized on location or via web-ex.

Cooperation with other projects

Cooperation with other projects is mostly being promoted by the project coordinator (TNO). During the reporting period, several joint workshops with other partners and projects have been convened 1) Fault database workshop with HotLime, February 2019, Augsburg, 2) technical workshop together with other GeoERA projects, March 2019, Vienna 3) with GeoConnect3D in Utrecht, 4) with 3DGEO-EU in Hannover, 5) with GIP in Copenhagen (Nov 2019) and several WebEx meetings with GIP-P.

IMPACT STATEMENT

In the first 18 months the HIKE project has not produced public deliverables that can be implemented by end-users and stakeholders. There is however a separate Public Summary and Outlook (in prep) which will provide a complete overview of the project activities and preview of results. This is an additional deliverable not formally defined in the project plan.

Below we are discussing the expected impacts as reported in the proposal:

Overall GeoERA Grand Challenges

Economy and strategic value: Hazards and impacts may significantly raise the cost of economic activities. These costs must be evaluated in the total cost and benefit equation when assessing the net economic value of resource exploitation. All activities in HIKE are aimed at improving the assessment and disclosure of essential underpinning information and knowledge

- Fault Database: assess hazard of seismicity and fluid migration
- Methods and use cases: improve quality of hazard assessment
- Knowledge Share Point: disclose information, data and tools to stakeholders

Welfare and health: Subsurface resources (energy, groundwater, minerals) provide benefits to society. These benefits should be in balance with the potential hazards and impacts resulting from their exploitation (see “economy and strategic value). The results in HIKE (Fault database, Methodology development, Knowledge Share Point) deliver information and tools to better assess these hazards and support preventive measures.

Climate: Escape of greenhouse gases (e.g. methane emissions) and safety of CO2 storage are typical topics in hazard research. Two out of the four case studies in WP3 specifically address the safety of subsurface storage, taking into account the influence of faults

Safety and environment: This is the main scope of HIKE. The results in HIKE (Fault database, Methodology development, Knowledge Share Point) deliver information and tools to better assess these hazards and support preventive measures.

Specific HIKE impacts

1) Foundation and platform for the (future) alignment of national research on geo-energy related (induced) impact and hazard assessments across Europe.

Current activities in WP2, WP3 and WP4 already lead to concrete collaboration and knowledge-sharing among partners and partner projects. With the available developed concepts the HIKE project needs to engage external stakeholders (applicability for use cases, align with relevant projects and science platforms). We are currently linking with national case studies, regulators as well as the EU research infrastructure EPOS.

2) Means and support to develop and improve methods to predict, prevent and mitigate hazardous and polluting effects induced by subsurface exploitation

This is concretely done in WP3 in actual use cases. WP4 works on making these results available to the broader science community. We engage EPOS to enhance the integration outside GeoERA

3) Contribution to the reduction of economic and societal costs resulting from such effects by minimizing the risks.

The Fault database is connected to clear hazard cases. In partner countries the application of the fault databse is evaluated in the context of national induced seismic hazard asessements. With a succesfull implementation we can better avoid such seismic risks (reduce societal costs) and make assessment more efficicient (reduce assessment costs).

4) Translate the achievements and results to the policy and societal domains.

With the specification of the Knowledge Share Point HIKE identifies specific user groups. The semantics concept framework is developed to assist non-technical end-users to information that is relevant for them (assisted search).

5) Help countries to improve their own assessment and determination of induced hazards and impacts.

These impacts are reached with the common specifications and structures of the fault database and knowledge share point. These products are aligned with other external platforms (interfaces). The knowledge on fault characterization is shared between countries in various workshops (including links to other projects)

6) Allow stakeholders and end-users to benefit from the established results and thereby avoid unnecessary data acquisition and research costs.

HIKE has delivered the technical and scientific specifications. The joint development of the platform infrastructure is programmed between the projects and will be realized towards end of 2020 (prototyping, elaborating the final platform). We engage EPOS to align with other relevant repositories and to reduce costs

7) The transparency and open access to information are considered first principles and requisites for public awareness creation.

One of the challenges for HIKE is to bring the achievements and results under the attention of external stakeholders and the public. For this reason we are developing an extra deliverable "public summary and outlook report" to create awareness and exposure. All results are open and publicly accessible through EGDI.

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
	Actual			(0,25*A+B)				
1. TNO	126.957,89	7.965,98	0,00	33.730,97	168.654,84	29,70%	50.090,49	118.564,35
2. AGS	10.439,00	3.500,00	0,00	3.484,75	17.423,75	29,70%	5.174,85	12.248,90
3. GBA	73.331,28	3.357,28	0,00	19.172,14	95.860,70	29,70%	28.470,63	67.390,07
4. RBINS-GSB	7.986,82	0,00	0,00	1.996,70	9.983,52	29,70%	2.965,11	7.018,42
5. GEUS	36.928,22	2.328,62	0,00	9.814,21	49.071,05	29,70%	14.574,10	34.496,95
6. BRGM	38.834,74	2.520,91	0,00	10.338,91	51.694,56	29,70%	15.353,29	36.341,28
7. BGR	6.063,73	0,00	0,00	1.515,93	7.579,66	29,70%	2.251,16	5.328,50
8. LBGR BRB	8.646,61	0,00	0,00	2.161,65	10.808,26	29,70%	3.210,05	7.598,21
9. LAGB	4.828,00	0,00	0,00	1.207,00	6.035,00	29,70%	1.792,40	4.242,61
10. LfU	35.325,37	509,04	0,00	8.958,60	44.793,01	29,70%	13.303,52	31.489,49
11. ISOR	9.612,67	1.781,95	0,00	2.848,65	14.243,27	29,70%	4.230,25	10.013,02
12. ISPRA	41.207,97	2.447,29	0,00	10.913,82	54.569,08	29,70%	16.207,02	38.362,06
13. SGSS	3.940,85	602,38	0,00	1.135,81	5.679,03	29,70%	1.686,67	3.992,36
14. ARPAP	12.211,28	798,07	0,00	3.252,34	16.261,69	29,70%	4.829,72	11.431,97
15. LGT	12.338,34	0,00	0,00	3.084,59	15.422,93	29,70%	4.580,61	10.842,32
16. PIG-PIB	18.818,68	1.856,02	0,00	5.168,68	25.843,38	29,70%	7.675,48	18.167,89
17. LNEG	23.445,39	900,02	0,00	6.086,35	30.431,76	29,70%	9.038,23	21.393,53
18. GeoZS	8.383,96	1.147,84	0,00	2.382,95	11.914,75	29,70%	3.538,68	8.376,07
19. GEOINFORM	656,55	0,00	0,00	164,14	820,69	29,70%	243,74	576,94
	479.957,34	29.715,40	0,00		637.090,93		189.216,00	447.874,92

TNO
AGS
GBA
RBINS-GSB
GEUS
BRGM
BGR
LBGR BRB
LAGB
LfU
ISOR
ISPRA
SGSS
ARPAP
LGT
PIG-PIB
LNEG
GeoZS
GEOINFORM

Date: 17.01.2019
Person responsible: J.C. Doornenbal

Cumulative Use of Resources Connected to 8a

Personnel costs Actual	Person months	Associated WP	Amount	
	3,02	WP1	21.286,16	1
	12,42	WP2	73.301,10	2
	2,38	WP3	12.226,93	3
	1,43	WP4	8.160,87	4
	2,00	WP5	11.982,83	5
	15,00	WP3	10.500,00	6
	7,00	WP1, WP2, WP5	36.174,31	7
	7,00	WP2	32.386,97	8
	0,25	WP2	1.345,00	9
	0,25	WP2	1.090,00	10
	0,50	WP2	2.335,00	11
	1,20	WP2	7.986,82	12
	0,32	WP1	2.374,77	13
	3,99	WP2	29.671,67	14
	0,68	WP3	4.881,78	15
	0,36	WP1	2.625,06	16
	0,21	WP2	1.607,76	17
	1,25	WP3	9.461,34	18
	3,98	WP4	24.451,54	19
	0,09	WP5	689,04	20
	0,91	WP2	6.063,73	21
	1,45	WP2	8.646,61	22
	0,60	WP2	4.828,00	23
	5,53	WP2	35.325,37	24
	1,73	WP3	9.612,67	25
	5,31	WP2	30.292,76	26
	2,38	WP3	10.915,21	27
	1,50	WP2	3.940,85	28
	0,26	WP2	1.221,13	29
	2,06	WP3	9.769,02	30
	0,26	WP4	1.221,13	31
	4,80	WP2	9.870,67	32
	1,20	WP3	2.467,67	33
	0,66	WP2	1.400,23	34
	5,42	WP3	10.705,51	35
	3,19	WP4	6.712,94	36
	5,47	WP2	23.445,39	37
	2,60	WP2	8.383,96	38
	0,07	WP2	342,33	39
	0,07	WP3	314,22	40
			480.018,34	

Other direct costs	Description	Category	Associated WP	Costs
	Meetings: Augsburg (4-5Feb, 1 person), Vienna(11-13 mar-2019, 1person), Hannover (23oct-2019, 1 person), Copenhagen (18+19-nov-2019, 1 person)	Travel	WP1	3.549,30
	Meetings: Augsburg (4-5Feb, 1 person), Vienna (11-13 mar-2019, 1person)	Travel	WP2	1.343,35
	Meetings: Vienna (11-13 mar-2019, 1person), Copenhagen (18+19-nov-2019, 1 person)	Travel	WP3	2.071,90
	Meetings	Travel	WP5	1.001,43
		Travel	WP3	3.500,00
	Kickoff Meeting 2.-5.7.2018	Travel	WP1, WP2, WP5	1.395,58
	Field Work 15.-18.10.2018	Travel	WP2	426,95
	Field Work 15.-18.10.2018	Other	WP2	383,99
	Meeting Brussels 23.-25.10.2018	Travel	WP5	516,40
	Meeting Augsburg 1.-6.2.2019	Travel	WP2	174,50
	Meeting Copenhagen 18.-19.11.2019	Travel	WP5	459,86
	Kick off Meeting in Brussels, July 2018. Technical Workshop in Brussels, March 2019.	Travel	WP3	2.328,62
	Geo ERA Workshop Vienna	Travel	WP3	790,25
	Geo ERA Workshop Vienna and HIKE-GIP meeting Denmark	Travel	WP4	1.730,66
	1 person: On-site prep field campaign Vilshofen 01-02/10/2018	Travel	WP2, T2.3	83,70
	2 people: Geo-electric field campaign Vilshofen 15-18/10/2018	Travel	WP2, T2.3	322,04
	1 person: FDB workshop @ LfU Augsburg 04-05/02/2019	Travel	WP2, T2.1	103,30
	Meeting in Danmark, October 2019	Travel	WP3	1.781,95
	Project meeting	Travel	WP2	1.548,52
	Project activity	Travel	WP2	845,17
	Project activity	Travel	WP3	53,60
	Task meeting	Travel	WP2	602,38
	project meeting	Travel	WP2	84,20
	project meeting	Travel	WP3	105,20
	project meeting	Travel	WP3	608,67
	Travel costs: 1. M. Konieczyńska, Bruxelles, kick-off meeting; 2. O. Lipińska, Vienna, GeoERA technical workshop; 3. A. Głuszyński, Vienna, GeoERA technical Workshop	Travel	WP3	1.856,02
	GeoERA Technical Workshop GeoEnergy and others, 10-12th March 2019, Vienna-Austria, João Carvalho	Travel	2	900,02 €
	Brussels kick-off, 3-5 July 2018, 1 Person	Travel	WP 2	884,48
	Wien technical workshop, 11 - 13 March 2019, 1 Person	Travel	WP 2	263,36
				29.715,40

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - TNO

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	126.957,89	7.965,98	0,00	33.730,97	168.654,84	29,70%	50.090,49	118.564,35

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,02	WP1	21.286,16
	12,42	WP2	73.301,10
	2,38	WP3	12.226,93
	1,43	WP4	8.160,87
	2	WP5	11.982,83
			126.957,89

Other direct costs	Description	Category	Associated WP	Costs
	Meetings: Augsburg (4-5Feb, 1 person), Vienna(11-13 mar-2019, 1person), Hannover (23oct-2019, 1 person), Copenhagen (18+19-nov-2019, 1 person)	Travel	WP1	3.549,30
	Meetings: Augsburg (4-5Feb, 1 person), Vienna (11-13 mar-2019, 1person)	Travel	WP2	1.343,35
	Meetings: Vienna (11-13 mar-2019, 1person), Copenhagen (18+19-nov-2019, 1 person)	Travel	WP3	2.071,90
	Meetings	Travel	WP5	1.001,43
				7.965,98

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 2 - AGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
1.	10.439,00	3.500,00	0,00	3.484,75	17.423,75	29,70%	5.174,85	12.248,90

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	13,26	3	10.439,00
			10.439,00

Other direct costs	Description	Category	Associated WP	Costs
		Equipment	3	3.500,00
				3.500,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 3 - GBA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
3. GBA	73.331,28	3.357,28	0,00	19.172,14	95.860,70	29,70%	28.470,63	67.390,07

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
Hintersberger	7	WP1, WP2, WP5	36.174,31
Schattauer	7	WP2	32.386,97
Ostermann	0,25	WP2	1.345,00
Guardiani	0,25	WP2	1.090,00
Ottowitz	0,5	WP2	2.335,00
			73.331,28

Other direct costs	Description	Category	Associated WP	Costs
	Kickoff Meeting 2.-5.7.2018	Travel	WP1, WP2, WP5	1.395,58
	Field Work 15.-18.10.2018	Travel	WP2	426,95
	Field Work 15.-18.10.2018	Other	WP2	383,99
	Meeting Brussels 23.-25.10.2	Travel	WP5	516,40
	Meeting Augsburg 1.-6.2.20	Travel	WP2	174,50
	Meeting Copenhagen 18.-19	Travel	WP5	459,86
				3.357,28

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 4 - RBINS-GSB

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
4. RBINS-GSB	7.986,82	0,00	0,00	1.996,70	9.983,52	29,70%	2.965,11	7.018,42

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,2	WP2	7.986,82
			7.986,82

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 5 - GEUS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
5. GEUS	36.928,22	2.328,62	0,00	9.814,21	49.071,05	29,70%	14.574,10	34.496,95

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,32	WP1	2.374,77
	3,99	WP2	29.671,67
	0,68	WP3	4.881,78
			36.928,22

Other direct costs	Description	Category	Associated WP	Costs
	Kick off Meeting in Brussels, July 2018. Technical Workshop in Brussels, March 2019.	Travel	WP3	2.328,62
				2.328,62

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 6 - BRGM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
6. BRGM	38.834,74	2.520,91	0,00	10.338,91	51.694,56	29,70%	15.353,29	36.341,28

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,36	WP1	2.625,06
	0,21	WP2	1.607,76
	1,25	WP3	9.461,34
	3,98	WP4	24.451,54
	0,09	WP5	689,04
			38.834,74

Other direct costs	Description	Category	Associated WP	Costs
	Geo ERA Workshop Vienna	Travel	WP3	790,25
	Geo ERA Workshop Vienna and HIKE-GIP meeting Denmark	Travel	WP4	1.730,66
				2.520,91

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 7 - BGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
7. BGR	6.063,73	0,00	0,00	1.515,93	7.579,66	29,70%	2.251,16	5.328,50

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,91	WP2	6.063,73
			6.063,73

Other direct costs	Description	Category	Associated WP	Costs
				0,00
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00
			0,00

FINANCIAL STATEMENT FOR PP8 - LBGR BRB

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
8. LBGR BRB	8.646,61	0,00	0,00	2.161,65	10.808,26	29,70%	3.210,05	7.598,21

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,45	WP2	8.646,61
			8.646,61

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP9 - LAGB

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
9. LAGB	4.828,00	0,00	0,00	1.207,00	6.035,00	29,70%	1.792,40	4.242,61

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,6	2	4.828,00
			4.828,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP10 - LfU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
10. LfU	35.325,37	509,04	0,00	8.958,60	44.793,01	29,70%	13.303,52	31.489,49

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5,533	WP2	35.325,37
			35.325,37

Other direct costs	Description	Category	Associated WP	Costs
	1 person: On-site prep field c	Travel	WP2, T2.3	83,70
	2 people: Geo-electric field c	Travel	WP2, T2.3	322,04
	1 person: FDB workshop @ L	Travel	WP2, T2.1	103,30
				509,04

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP11 - ISOR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
11. ISOR	9.612,67	1.781,95	0,00	2.848,65	14.243,27	29,70%	4.230,25	10.013,02

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,7286	WP3	9.612,67
			9.612,67

Other direct costs	Description	Category	Associated WP	Costs
	Meeting in Danmark, October 2019	Travel	WP3	1.781,95
				1.781,95

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP12 - ISPRA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
12. ISPRA	41.207,97	2.447,29	0,00	10.913,82	54.569,08	29,70%	16.207,02	38.362,06

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5,31	WP2	30.292,76
	2,38	WP3	10.915,21
			41.207,97

Other direct costs	Description	Category	Associated WP	Costs
	Project meeting	Travel	WP2	1.548,52
	Project activity	Travel	WP2	845,17
	Project activity	Travel	WP3	53,60
				2.447,29

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP13 - SGSS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
13. SGSS	3.940,85	602,38	0,00	1.135,81	5.679,03	29,70%	1.686,67	3.992,36

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,5	WP2	3.940,85
			3.940,85

Other direct costs	Description	Category	Associated WP	Costs
	Task meeting	Travel	WP2	602,38
				602,38

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP33 - Agenzia Regionale per la Protezione Ambientale del Piemonte - ARPAP

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
14. ARPAP	12.211,28	798,07	0,00	3.252,34	16.261,69	29,70%	4.829,72	11.431,97

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,26	WP2	1.221,13
	2,06	WP3	9.769,02
	0,26	WP4	1.221,13
			12.211,28

Other direct costs	Description	Category	Associated WP	Costs
	project meeting	Travel	WP2	84,20
	project meeting	Travel	WP3	105,20
	project meeting	Travel	WP3	608,67
				798,07

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP15 - LGT

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
15. LGT	12.338,34	0,00	0,00	3.084,59	15.422,93	29,70%	4.580,61	10.842,32

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	4,8	WP2	9.870,67
	1,2	WP3	2.467,67
			12.338,34

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP16 - PIG-PIB

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
16. PIG-PIB	18.818,68	1.856,02	0,00	5.168,68	25.843,38	29,70%	7.675,48	18.167,89

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,66	WP2	1.400,23
	5,42	WP3	10.705,51
	3,19	WP4	6.712,94
			18.818,68

Other direct costs	Description	Category	Associated WP	Costs
	Travel costs: 1. M. Konieczyńska, Bruxelles, kick-off meeting; 2. O. Lipińska, Vienna, GeoERA technical workshop; 3. A. Głuszyński, Vienna, GeoERA technical Workshop	Travel	WP3	1.856,02
				1.856,02

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP17 - LNEG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
17. LNEG	23.445,39 €	900,02 €	- €	6.086,35 €	30.431,76 €	29,70%	9.038,23 €	21.393,53 €

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5,47	2	23.445,39
			23.445,39

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA Technical Workshop GeoEnergy and others, 10-12th March 2019, Vienna-Austria, João Carvalho	Travel	2	900,02 €
				900,02

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP18 - GeoZS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
18. GeoZS	8.383,96	1.147,84	0,00	2.382,95	11.914,75	29,70%	3.538,68	8.376,07

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,6	WP 2	8.383,96
			8.383,96

Other direct costs	Description	Category	Associated WP	Costs
	Brussels kick-off, 3-5 July 2018, 1 Person	Travel	WP 2	884,48
	Wien technical workshop, 11 - 13 March 2019, 1 Person	Travel	WP 2	263,36
				1.147,84

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP19 - GEOINFORM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
19. GEOINFORM	656,55	0,00	0,00	164,14	820,69	29,70%	243,74	576,94

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,070841811	WP2	342,33
	0,065024172	WP3	314,22
			656,55

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Mapping and Assessment of Geothermal Plays in Deep Carbonate Rocks – Cross-domain Implications and Impacts
Project acromyn:	HotLime
Project reference number:	GeoE.171.007
Project topic:	Geo-energy
Project specific recearch topic:	GE2 - Geothermal Energy
Project website address:	http://geoera.eu/projects/hotlime6/

Period covered from: 01.07.2018 to: 31.12.2019

Report submission date: 24.01.2020
Project coordinator: Dr. Gerold Diepolder

Contact person for the project: Dr. Gerold Diepolder
Tel: +49 821 09711336
E-mail: gerold.diepolder@lfu.bayern.de

IDENTIFICATION OF PROJECT PARTICIPANTS

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	Bayerisches Landesamt für Umwelt	Bavarian Environment Agency	LfU	Germany	923455230	Project Lead
2	Department of Communications, Climate Action and Environment	Geological Survey of Ireland	GSI	Ireland	996559280	Project Partner
3	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek	The Netherlands Organisation for Applied Scientific Research	TNO	Netherlands	999988909	Project Partner
4	Vlaams Gewest (Planbureau voor Omgeving) [represented by third party VITO]	Flemish region (Bureau for Environment and Spatial Development)	VLO	Belgium	999575107	Non-funded partner
5	Geologische Bundesanstalt	Geological Survey of Austria	GBA	Austria	998164145	Project Partner
6	Regierungspräsidium Freiburg	Regional Council Freiburg	LGRB	Germany	942768124	Project Partner
7	Istituto Superiore per la Protezione e la Ricerca Ambientale	Italian Institute for Environmental Protection and Research	ISPRA	Italy	997905349	Project Partner
8	Geološki zavod Slovenije	Geological Survey of Slovenia	GeoZS	Slovenia	999466370	Project Partner
9	Servizio Geologico, Sismico e dei Suoli della Regione Emilia Romagna	Geological, seismic and soil survey of Emilia Romagna Region	SGSS	Italy	999482375	Project Partner
10	Hrvatski geoloski institut	Croatian Geological Survey	HGI-CGS	Croatia	972614345	Project Partner
11	Office of Prime Minister [formerly: Ministry for Transport and Infrastructure]	Office of Prime Minister	OPM	Malta	953280111	Project Partner
12	Agenzia Regionale per la Protezione Ambientale del Piemonte	Regional Agency for the Protection of the Environment	ARPAP	Italy	999468892	Project Partner
13	State Informational Geological Fund of Ukraine	State Informational Geological Fund of Ukraine	GEOINFORM	Ukraine	947331392	Project Partner
14	Česka geologická služba	Czech Geological Survey	CGS	Czech Republic	999546783	Project Partner
15	Regione Umbria - Sevizio geologico	Umbria Region - Geological Survey	RU	Italy	997980233	Project Partner
16	Institut Cartogràfic i Geològic de Catalunya	Institut Cartogràfic i Geològic de Catalunya	ICGC	Spain	935977542	Project Partner
4a	Vlaamse Instelling voor Technologisch Onderzoek [third party to VLO]	Flemish Institute for Technological Research	VITO	Belgium	999645238	Third Party
20						
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PUBLISHABLE SUMMARY

Hydrothermal systems in deep carbonate bedrock are among the most promising low-enthalpy geothermal plays across Europe. Apart from a few areas where viability of hydrothermal heat and power generation has been proved, most deep carbonate bedrock has received relatively little attention, because such rocks are perceived as 'tight'. Exploration and development of the deep subsurface is an acknowledged high-risk investment, particularly in low-enthalpy systems, where tapping suitable temperatures for geothermal energy commonly requires drilling to depths of more than 3 km. In order to de-risk these challenging geothermal plays, it is crucial to improve our understanding of geological conditions that determine the distribution and technical recoverability of their potential resources.

The objective of HotLime is the mapping, characterization, estimation, comparison and prospect ranking of hydrothermal plays in deep carbonate rocks from different target areas across Europe in order to identify their structural control/s for de-risking these challenging geothermal plays.

HotLime's investigations are geared towards outcomes serving planners and decision-makers to focus further research for site selection on the most promising areas. HotLime's case studies in mapping and characterization of the key national/regional carbonate basins, and the evaluation of their geothermal capacity, result in a variety of multidimensional spatial information, the associated feature data and methodological approaches (knowledge base, reports) that are foreseen to be disseminated via GeoERA's central information repository and dissemination portal, the European Geological Data Infrastructure (EGDI). In addition, based on the Simple Knowledge Organization System the Linked Open Data Semantic Web, the HotLime Knowledge Base will provide controlled vocabularies, glossaries, reports and underpinning information hyperlinked to HotLime's spatial information, following the 'FAIR Guiding Principles for scientific data management and stewardship'.

Max 3.000 words

PROJECT CONTRIBUTION TO GeoERA PROJECT

HotLime substantially contributes to GeoERA's objective to integrate the GSO's information and knowledge on clean (low-carbon) and efficient subsurface energy, at the heart of the H2020's Societal Challenge 3, and with this more specifically underpins the aim of Geo-Energy theme to develop transparent, harmonized and science-based pan-European information and knowledge on the subsurface potential to deliver energy resources. The joint approach of HotLime's partners in characterizing and assessing the geothermal potential in deep carbonate reservoirs, based on state-of art methodologies for harmonized mapping and common assessment methods, will result in interoperable, pan-European data and information services on the distribution of geo-energy. Such information will enable policy decisions to support a safe and responsible exploitation of subsurface resources and capacities. Implementing scientific intelligence and information into the policy domain considering relevant cross-thematic links to groundwater and mineral resources will help to evaluate competition, interference and synergies between different uses of subsurface space.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: Project Coordination **Duration: 1-36**

WP1 was/is responsible to perform daily management of the project (monitoring of progress, communication between partners/work packages and with the TC and GeoERA Executive Board, financial management, reporting, decision making, contingency and conflict management)

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D1.1.1	Project Implementation Plan	LfU	Report	GeoERA internal	M3	Completed	submitted 2018-10-22
D1.1.2	Minutes of Meetings	LfU	Minutes	GeoERA internal	M1-36	Pending	for M1-18: completed
D1.1.3	Project Progress and Monitoring Report	LfU	Report	GeoERA internal	M18	Completed	submitted 2020-01-27
D1.1.4	Final Project Progress Report	LfU	Report	public via GeoERA	M36	Pending	
D1.1.5	Annual Expenditure Reports	LfU	Report	GeoERA internal	M12	Completed	Revised delivery date: M6
D1.1.5	Annual Expenditure Reports	LfU	Report	GeoERA internal	M24	Completed	Revised delivery date: M18
D1.1.5	Annual Expenditure Reports	LfU	Report	GeoERA internal	M36	Pending	Revised delivery date: M30
D1.2	Project Communication and Exploration Plan	LfU	Report	public via GeoERA	M6	Completed	submitted 2018-12-18
D1.3	Project Data Management Plan	LfU	Report	GeoERA internal	M6	Completed	submitted 2018-12-18

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS7	Final reports finalized, all data in EGDI	M36		Reports available

Work package 2: Characterization & Mapping **Duration: 1-18**

WP2 was responisble for the general characterization of the key national/regional carbonate basins identified in terms of potential geothermal targets and pan-European comparisons/analogues of study areas within HotLime partners, knowledge and best practice exchange incl. hands-on workshops regional/basin specific and overarching, in order to lay the foundation for further parameterization and subsequent play and prosect evaluation in WP3

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D2.0	Summary report of resources mapping and characterization, catalogue of methods and required parameters, best practice and guidelines	LGRB	Report	public via IP	M18	Completed	All in one summary report inluding descriptions of D2.1 - D2.10 results and a publishable summary of WP2 results. Submitted 2020-01-24
D2.1-D2.10	Geology of prospective geothermal reservoirs parameterized / categorized	LGRB	10 Map series 3D models	public via IP	M18	Completed	Part of D2.0 summary report and tasks (D2.1-2.10) described therein
D2.1	3D geological model of the central Molasse Basin (DE, AT)	LfU	Map series / 3D model	public via IP	M18	Completed	Maps / models available, further finetuned within WP3 in 2020
D2.2	3D geological model of the Jurassic limestone reservoir of the Molasse Basin Carpathian -Foredeep transition zone	GBA	Map series / 3D model	public via IP	M18	Completed	Maps / models available, further finetuned within WP3 in 2020
D2.3	3D geological models of the Lough Allen Basin and Dublin Basin	GSI	Map series / 3D model	public via IP	M18	Completed	Maps / models available, further finetuned within WP3 in 2020
D2.4	Base & top maps of Dinantian carbonates of the London-Brabant Massif franls (NL, BE)	TNO	Map series / 3D model	public via IP	M18	Completed	Maps / models available, further finetuned within WP3 in 2020
D2.5	An improved 3D model of Po Basin from Piemonte region to the Adriatic coastline	ISPRA	Map series / 3D model	public via IP	M18	Completed	Maps / models available, further parameterized within WP3 in 2020
D2.6	3D structural and geological model of geothermal reservoir of Krško-Brežice sub-basin	GeoZS	Map series / 3D model	public via IP	M18	Completed	Maps / models available, further finetuned within WP3 in 2020
D2.7	Constructed model of the Zagreb geothermal field	HGI-CGS	Map series / 3D model	public via IP	M18	Completed	Maps / models available, further finetuned within WP3 in 2020
D2.8	A2D structural and geological model of the geothermal reservoir close to the Pantelleria-Linosa Malta rift	OPM	Map series / 3D model	public via IP	M18	Completed	Maps / models available, further finetuned within WP3 in 2020
D2.9	2D maps and 3D geological model of the Empordà Basin	ICGC	Map series / 3D model	public via IP	M18	Completed	Maps / models available, further finetuned within WP3 in 2020
D2.10	2D structural and geological model of the geothermal reservoir in the Tuscan-Umbria-Marche units	RU	Map series / 3D model	public via IP	M18	Completed	Maps / models available

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS1	Concepts of 3D-modelling are coordinated	M6	Completed	Concept available
MS2	3D-models and map series available	M18	Completed	3D models & maps

Work package 3: Play/Prospect Evaluation **Duration: 6-24**

Further parameterization of maps and models produced in WP2 in order to provide means to quantitatively and qualitatively assess the expected amount of geothermal energy stored (Heat-in-Place) and to rank the assessed carbonate plays and classify them where meaningful. WP3 will also test the plausibility of geometries and parameters defined in WP2 and, in case, provide feedback for improvement.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D3.1.1	Best practice manual for resource assessment	TNO	Report	public via IP	M30	Pending	
D3.1.2	Spatial resource assessment in areas in focus	TNO	Map series 3D models	public via IP	M24	Pending	
D3.1.3	Classification system for plays and prospects	TNO	Webbased tool	public via IP	M24	Pending	
D3.1.4	Quantitative assessment tool for carbonate rocks	TNO	Webbased tool	public via IP	M24	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS3	Report and classification system are set	M24	Completed	Report available

Work package 4: Deep Carbonate Play Development **Duration: 12-36**

Objective of WP4 is to learn from case studies of deep carbonate play development experiences in partner and third countries to improve future development strategies, to identify and mitigate risks and support policy-making. This will include "generic lessons learnt" which apply to deep carbonate resservoirs in general as well as more specific findings which can be assigned to certain geological settings and situations.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D4.1	Report on deep carbonate play development strategies and impac	GSI	Report	public via IP	M36	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS6	Play development report finished	36	Pending	Report available

Work package 5: Knowledge transfer **Duration: 6-36**

Lessons learnt from implementing WPs 2-4 and the outcomes of internal knowledge exchange will be converted and formalized into a more generic approach for pan-European recommendations. This shall integrate not only HotLimes External Expert and Advisory Board (EEAB) but also stakeholders from other domains for an effective knowledge transfer beyond the territorial reach of HotLime. WP5 will also contribute substantially to the conceptualization and population of the knowledge base.

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D5.1.1	Licensing regulations report	HGI-CGS	Report	public via IP	M36	Pending	
D5.1.2	Geothermal planning recommendations	HGI-CGS	Report	public via IP	M36	Pending	
D5.1.3	Joint information event	HGI-CGS	Report	public	M30	Pending	
D5.2.1	Specifications/technical requirements for data repository/semanti	LfU	Report	IP	M18	Completed	submitted 2019-12-31
D5.2.2	Glossary of technical terms (feature data code lists)	LfU	dbase	public via IP	M30	Pending	
D5.2.3	Knowledge database	LfU	dbase	public via IP	M36	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS4	Knowledge base prepared for upload	30	Pending	IP approval

Work package 6: Project-Project Interface **Duration: 3-30**

By its nature, HotLime features cross-topic intersections with various GE projects. Exploiting the synergies among these projects will further add value either-way and to the GE theme in general.
The Project-Project Interface is geared towards knowledge transfer for preparing the takeover and uptake of data and information from/to other projects for further valorisation. This data transfer has to be defined jointly in line with the requirements of the recipient project. Striking example is the uptake of HotLimes fault information into the Fault Database prepared in HIKE, and providing test areas for "transposing the case" in GeoConnet3d.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D6.1.1	Fault property requirements and exchange logbook	LfU	Report	GE4-HIKE	M18	Completed	submitted 2020-01-24
D6.1.2	Implementation of fault network in FaultDB	LfU	dbase population	public	M36	Pending	
D6.2	Geo4Sure application experiences and comparison	LfU	Report	Open	M24	Pending	to be cancelled, Geo4Sure not funded
D6.3	Geomanifestation methodology evaluation log	LfU	Report	GE6-GeoConn	M30	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 7: IP Interface **Duration: 1-36**

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Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D7.1	Specifications/technical requirements for EGDI spatial data reposit	LfU/LGRB	Report	IP	M6	Completed	submitted 2018-12-18 as part of D1.3
D7.1	Specifications/technical requirements for EGDI spatial data reposit	LfU/LGRB	Report	IP	M12	Completed	submitted 2019-08-05 as D7.1.1
D7.2	Requirements catalogue for the common knowledge base	LfU	Report	IP	M18	Completed	submitted 2019-12-19
D7.3	Final data/project results implementation report	LfU	dbase population	public	M36	Pending	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
MS5	Data and product transfer to IP finalized	30	Pending	IP approval

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
Table 3.3b, ISPRA: transfer of the budget for Equipment to Travel due to a modification in the need for equipments and a need for additional travels	shift of 2825 Euro from the category "Equipment" to "Travel"	No	Cost-neutral changes of the budget are requested as indicated in the column B
Table 3.3b, RER-SGSS: transfer of the budget designated for Equipment to Travel. Due to regional administrative procedures SGSS will not be able to use this amount for equipment and travel expenses turned out higher than expected.	shift of 1900 Euro from the category "Equipment" to "Travel"	No	Assuming further travel cost for the project's remaining runtime, cost-neutral changes of the budget are requested as indicated in column B

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)
MEETINGS	Meeting with international body	03/07/2018	EU INSTITUTION		LfU, GSI, GBA, LGRB, ISPRA, GeoZS, HGI-CGS, ICGC	All HotLime partners present	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue,	03-05/07/2018	EU INSTITUTION		LfU & HotLime Team	Gerold Diepolder	
PUBLICATIONS	NON-SCIENTIFIC PUBLICATION	23/08/2018	GENERAL PUBLIC	> 500	LfU	Gerold Diepolder	http://www.comet.bayern.de/webservice/pressesystem_stmuv/pressemitteilung/pm_dokument/223/1091917/Geo-Newsletter-Bayern-2018-39.pdf
MEETINGS	Meeting with international body	17-19/09/2018	SCIENTIFIC COMMUNITY	26	13 HotLime partners + EEAB	All HotLime partners present	
EVENTS	TRAINING	23-24/01/2019	SCIENTIFIC COMMUNITY	24	HGI-CGS, LfU, GBA,	Staša Borović, Gerold Diepolder, Gregor Goetzl, Cornelia Steiner	https://geoera.eu/blog/knowledge-exchange-workshop-of-muse-and-hotlime-projects-held-in-zagreb/
PUBLICATIONS	ABSTRACTS	30/01/2019	SCIENTIFIC COMMUNITY	> 1000	LfU, HGI-CGS	Gerold Diepolder, Staša Borović	https://pangea.stanford.edu/ERE/db/WGC/Abstract.php?PaperID=5384
MEETINGS	Meeting with other GeoERA projects	11-13/03/2019	SCIENTIFIC COMMUNITY	20	LfU	Gerold Diepolder	
MEETINGS	Internal project meeting	19-21/03/2019	SCIENTIFIC COMMUNITY	20	13 HotLime partners	All HotLime partners present	
PUBLICATIONS	PAPERS	26/07/2019	SCIENTIFIC COMMUNITY	> 2000	LfU, HGI-CGS, ICGC	Gerold Diepolder, Staša Borović, Ignasi Herms & HotLime Team	https://www.researchgate.net/publication/335871009_HotLime_-_Mapping_and_Assessment_of_Geothermal_Plays_in_Deep_Carbonate_Rocks
MEETINGS	Meeting with international body	17-19/09/2019	SCIENTIFIC COMMUNITY	14	8 HotLime partners + EEAB	All HotLime partners present	
EVENTS	CONGRESS	02-04/10/2019	SCIENTIFIC COMMUNITY	70	HGI-CGS	Staša Borović	
EVENTS	CONGRESS	09-12/10/2019	SCIENTIFIC COMMUNITY	30	HGI-CGS	Staša Borović	
EVENTS	CONGRESS	23-27/10/2019	SCIENTIFIC COMMUNITY	200	HGI-CGS	Staša Borović	
EVENTS	CONFERENCE (tele-conference)	13/11/2019	GENERAL PUBLIC	> 400	RU	Andrea Motti	non-scientific report in panel discussion and tele-conference (GISday 2019)
MEETINGS	Meeting with national body	22.11.2019	SCIENTIFIC COMMUNITY	16	LfU	Gerold Diepolder	presentation for Geothermieallianz Bayern @ TU Munich

INSTRUCTIONS

Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	Internal project meeting
	Meeting with other GeoERA projects
	Meeting with national body
	Meeting with international body
	Other
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

PROJECT MANAGEMENT

The Project Management, LfU (Project Coordinator) and the WP leads (GSI, TNO, LGRB, HGI-CGS), acted as a steering group with responsibilities to monitor the project progress in line with all relevant regulations and proceedings and to inform the GeoERA Executive Board, in particular the GeoERA Monitoring Team, and with respect to the scientific research issues, the obligations mentioned in the GeoERA Project Plan and Grant Agreement. To this end, HotLime had biannual face2face project meeting, a hands-on seminar and 4 ad-hoc bi-/multilateral status meetings, as well as an intensive e-mail exchange among all partners to perform daily management of the project. LfU as project lead also acted as a multiplier hub for relevant information provided in numerous WebEx telcos of the Secretariat, Monitoring Team and Theme Coordinator/GEEG. Aside from the HotLime joint workshop with MUSE, cooperation with other projects mostly was executed by the project coordinator (also WP6 Project-Project Interface and WP7 IP interface lead): During the M1-18 reporting period, LfU attended the GeoEnergy Theme technical workshop and several WebEx meetings with GIP-P liaison, and had close e-mail and phone contact specifically with GIP-P WP4 setting up the Semantic Web as the basis for HotLime's knowledge base.

IMPACT STATEMENT

At present, at the end of WP2, the mapping and characterization of different hydrothermal plays across Europe, the status quo can be summarized as follows. The development of a common procedure for assessing the viability of geothermal reservoirs and its application to different pilot areas yields a common high level of understanding of hydrothermal systems in carbonate rocks and substantially contributes to an improved and better harmonized European overview of prospective and identified geothermal energy resources. Specifically the feedback from the geothermal base assessment in ongoing WP3 may help to further improve the approach and to increase the confidence in the prospectivity and potential contribution of the geothermal resources to provide low carbon and dispatchable energy. As deep carbonate rocks are more widespread in Europe than the project's scope, the approach of HotLime is applicable to promoting geothermal exploration in many regions of the EU, thus is deemed appropriate to further stimulate green thermal energy uptake.

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind	
	Actual			(0,25*A+B)					
1. LfU	167.002,73	5.008,19	0,00	43.002,73	215.013,65	29,70%	63.859,05	151.154,60	
2. GSI	87.529,50	5.938,96	0,00	23.367,12	116.835,58	29,70%	34.700,17	82.135,41	
3. TNO	44.594,53	7.611,49	0,00	13.051,51	65.257,53	29,70%	19.381,48	45.876,04	
4. VLO	31.302,71	0,00	0,00	7.825,68	39.128,39	0,00%	0,00	39.128,39	
5. GBA	11.388,60	857,10	0,00	3.061,43	15.307,13	29,70%	4.546,22	10.760,91	
6. LGRB	99.150,00	4.110,00	0,00	25.815,00	129.075,00	29,70%	38.335,28	90.739,73	
7. ISPRA	107.779,58	8.807,62	0,00	29.146,80	145.734,00	29,70%	43.283,00	102.451,00	
8. GeoZS	12.934,58	1.742,73	0,00	3.669,33	18.346,64	29,70%	5.448,95	12.897,69	
9. SGSS	19.704,23	1.594,31	0,00	5.324,64	26.623,18	29,70%	7.907,08	18.716,09	
10. HGI-CGS	28.560,00	2.950,20	0,00	7.877,55	39.387,75	29,70%	11.698,16	27.689,59	
11. OPM	7.225,42	1.954,54	0,00	2.294,99	11.474,95	29,70%	3.408,06	8.066,89	
12. ARPAP	44.054,49	557,73	0,00	11.153,06	55.765,28	29,70%	16.562,29	39.202,99	
13. GEOINFORM	1.152,88	720,22	0,00	468,28	2.341,38	29,70%	695,39	1.645,99	
14. CGS	5.370,00	781,00	0,00	1.537,75	7.688,75	29,70%	2.283,56	5.405,19	*no carryover of sum C6, see tab of partner 14 CGS*
15. RU	14.280,00	2.431,35	0,00	4.177,84	20.889,19	29,70%	3.964,95	16.924,24	
16. ICGC	38.686,65	4.796,12	0,00	10.870,69	54.353,46	29,70%	16.142,98	38.210,48	
					963.221,83		272.216,61	691.005,21	

Date: 24.01.2020

Person responsible: Gerold Diepolder reponsible for figures of LfU and proper compiling of figures provided by the partners

FINANCIAL STATEMENT FOR PP 1 - LfU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
1. LfU	167.002,73	5.008,19	0,00	43.002,73	215.013,65	29,70%	63.859,05	151.154,60

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	16,1	WP2	121.980,86
	4	WP3	31.988,84
	1,8	WP5	13.033,03
			167.002,73

Other direct costs	Description	Category	Associated WP	Costs
	1 person @ GeoERA Projects Kick-off Brussels 03-05/07/2018	Travel	WP1	600,58
	2 people @ WP1 / WP2 progress & techn. meeting ISPRA, Rome, 09-10/01/2019	Travel	WP1	699,85
	1 person @ Zagreb WP2 workshops 22-24/01/2019	Travel	WP2	528,33
	1 person @ GeoERA GE techn. workshop & GEEG GBA, Vienna, 11-13/03/2019	Travel	WP1	657,12
	1 person @ WP2 progress & WP3 kick-off meeting, TNO, Utrecht, 19-21/03/2019	Travel	WP3	751,55
	1 person @ T2.8 progress meeting ICGC, Barcelona, 08-09/07/2019	Travel	WP1	380,59
	1 person @ WP2/3 status & WP4 kick-off meeting GSI, Dublin, 17-19/09/2019	Travel	WP4	878,07
	1 person @ T2.5 progress meeting SGSS, Bologna, 11-12/11/2019	Travel	WP1	512,10
				5.008,19

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 2 - GSI

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2. GSI	87.529,50	5.938,96	0,00	23.367,12	116.835,58	29,70%	34.700,17	82.135,41

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1	WP1	4.770,00
	15,95	WP2	76.081,50
	1	WP3	4.770,00
	0,4	WP4	1.908,00
			87.529,50

Other direct costs	Description	Category	Associated WP	Costs
	Brussels kick-off, 3-5 July 2018, 1 person	Travel	WP1	781,71
	Augsburg WP2 meeting, 17-19 Sept 2018, 3 people	Travel	WP2	1.974,58
	Zagreb meeting, 21-24th Jan 2019, 3 people	Travel	WP2	2.575,32
	Utrecht meeting, March 19-20 2019	Travel	WP2	607,35
				5.938,96

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 3 - TNO

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
3. TNO	44.594,53	7.611,49	0,00	13.051,51	65.257,53	29,70%	19.381,48	45.876,04

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,08	WP1	7.753,79
	4,51	WP2	29.228,13
	1,2	WP3	7.612,61
			44.594,53

Other direct costs	Description	Category	Associated WP	Costs
	Augsburg project & WP2 kick-off 17-19/09/2018, 2 persons	Travel	WP1	4.817,63
	Zagreb workshops 22-24/01/2019, 1 person	Travel	WP2	1.539,48
	WP2/3 progress meeting GSI, Dublin, 17-18/09/2019, 1 person	Travel	WP3	351,69
	GeoERA GE & GEEG techn. work-shop GBA, Vienna, 11-13/03/2019, 1 person	Travel	WP4	902,69
				7.611,49

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 4 - VLO

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
4. VLO	31.302,71	0,00	0,00	7.825,68	39.128,39	0,00%	0,00	39.128,39

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,25	WP1	3.216,53
	3,15	WP2	14.501,18
	2,5	WP3	13.585,00
			31.302,71

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 5 - GBA

Fill in only blue-colored cells.

	A. Direct personnel cost Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
5. GBA	11.388,60	857,10	0,00	3.061,43	15.307,13	29,70%	4.546,22	10.760,91

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,55	WP2	11.388,60
			11.388,60

Other direct costs	Description	Category	Associated WP	Costs
	Augsburg project & WP2 kick-off 17-19/09/2018, 1 person	Travel	WP2	380,20
	WP2 progress & WP3 kick-off meeting, Utrecht, 19-21/03/2019, 1 person	Travel	WP2	476,90
				857,10

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 6 - LGRB

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
6. LGRB	99.150,00	4.110,00	0,00	25.815,00	129.075,00	29,70%	38.335,28	90.739,73

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,5	WP1	2.650,00
	18	WP2	94.950,00
	0,3	WP3	1.550,00
			99.150,00

Other direct costs	Description	Category	Associated WP	Costs
	1 person @ GeoERA Projects Kick-off Brussels 03-05/07/2018, 1 person	Travel	WP1	483,00
	Augsburg project & WP2 kick-off 17-19/09/2018, 2 persons	Travel	WP2	566,00
	Zagreb WP2 workshops 22-24/01/2019, 1 person	Travel	WP2	1.380,00
	WP2 progress & WP3 kick-off meeting, Utrecht, 19-21/03/2019, 2 persons	Travel	WP3	804,00
	WP2/3 status & WP4 kick-off meeting GSI, Dublin, 17-19/09/2019, 1 person	Travel	WP3	577,00
	3D modelling workshop Uni Freiberg, 30/09/-02/10/2019 (A. de Witt, 3D modelling training for HotLime WP2)	Travel	WP2	300,00
				4.110,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 7 - ISPRA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
7. ISPRA	107.779,58	8.807,62	0,00	29.146,80	145.734,00	29,70%	43.283,00	102.451,00

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	16	WP2	96.448,30
	0,4	WP5	2.470,80
	1	WP6	5.460,94
	0,7	WP7	3.399,54
			107.779,58

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off event Brussels, 03-05/07/2018, 1 person	Travel	WP2	487,69
	WP2 kick-off meeting Augsburg, 17-19/09/2018, 2 people	Travel	WP2	775,45
	T2.5 meeting Bologna (ER), 02/10/2018, 2 people	Travel	WP2	217,40
	T2.5 seismic interpretation workshop San Donato (MI), 19-23/11/2018, 2 people	Travel	WP2	1.479,33
	WP2 workshops Zagreb, 21-23/01/2019, 2 people	Travel	WP2	800,91
	WP2 status & WP3 kick-off Utrecht, 19-21/03/2019, 2 people	Travel	WP2	836,22
	T2.5 seismic interpretation workshop San Donato (MI), 01-05/04/2019, 2 people	Travel	WP2	1.331,30
	T2.5 seismic interpretation workshop San Donato (MI), 15-19/04/2019, 2 people	Travel	WP2	1.318,40
	T2.5 meeting Bologna (ER), 03-04/07/2019, 2 people	Travel	WP2	365,90
	T2.5 seismic interpretation workshop San Donato (MI), 08-11/10/2019, 2 people	Travel	WP2	1.109,62
	T2.5 meeting Bologna (ER), 03-04/07/2019, 1 person	Travel	WP2	85,40
				8.807,62

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 8 - GeoZS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
8. GeoZS	12.934,58	1.742,73	0,00	3.669,33	18.346,64	29,70%	5.448,95	12.897,69

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	4,47	WP2	11.538,42
	0,11	WP3	1.396,16
			12.934,58

Other direct costs	Description	Category	Associated WP	Costs
	1 person @ Brussels kick-off 03-05/07/2018	Travel	WP2	667,65
	1 person @ Augsburg project & WP2 kick-off 17-19/09/2018	Travel	WP2	534,21
	1 person @ Zagreb workshops 23-24/01/2019	Travel	WP2	118,80
	1 person for Dublin WP2/3 progress 16/09/2019	Travel	WP2	406,07
	1 person water sampling in Slovenia 16/05/2019	Travel	WP2	16,00
				1.742,73

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 9 - SGSS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
9. SGSS	19.704,23	1.594,31	0,00	5.324,64	26.623,18	29,70%	7.907,08	18.716,09

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5,5	WP2	14.449,77
	2	WP3	5.254,46
			19.704,23

Other direct costs	Description	Category	Associated WP	Costs
	T2.5 meetings San Donato (MI), (1) 19-23/11/2018, 1 person (2) 04+06/02/2019, 1 person (3) 19/04/2019, 1 person (4) 29-30/07/2019, 1 person (5) 10-11/10/2019, 1 person	Travel	WP2	526,66
	Dublin WP2/3 meeting, 17-18/09/2019, 1 person	Travel	WP2	636,25
	T2.5 meetings Torino, 28/01/, 15/01/ & 02/10/2019, 1 person	Travel	WP3	431,40
				1.594,31

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 10 - HGI-CGS

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
10. HGI-CGS	28.560,00	2.950,20	0,00	7.877,55	39.387,75	29,70%	11.698,16	27.689,59

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,5	WP1	1.200,00
	5	WP2	12.000,00
	2	WP3	4.800,00
	1	WP4	2.400,00
	1,2	WP5	2.880,00
	1,7	WP6	4.080,00
	0,5	WP7	1.200,00
			28.560,00

Other direct costs	Description	Category	Associated WP	Costs
	S. Borović @ project and WP2 kick-off Augsburg 17-19/09/2019	Travel	WP2	871,00
	S. Borović @ WP2 progress & WP3 kick-off Utrecht 19-21/03/2019	Travel	WP3	786,20
	S. Borović @ WP2+3 progress and WP4 kick-off Dublin 17-18/09/2019	Travel	WP4	1.293,00
				2.950,20

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 11 -OPM

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
11. OPM	7.225,42	1.954,54	0,00	2.294,99	11.474,95	29,70%	3.408,06	8.066,89

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,4	WP2	6.754,20
	0,2	WP3	471,22
			7.225,42

Other direct costs	Description	Category	Associated WP	Costs
	1 person @ project Kick-off Augsburg 17-19/09/2018	Travel	WP2	1.145,50
	1 peron @ WP2 progress & WP3 kick-off Utrecht 19-21/03/2019	Travel	WP3	809,04
				1.954,54

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 12 -ARPAP

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
12. ARPAP	44.054,49	557,73	0,00	11.153,06	55.765,28	29,70%	16.562,29	39.202,99

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	9	WP2	42.745,50
	0,28	WP6	1.308,99
			44.054,49

Other direct costs	Description	Category	Associated WP	Costs
	T2.5 internal meeting San Donata (MI), 16/04/2019, 2 people	Travel	WP2	45,20
	T2.5 internal meeting San Donata (MI), 09-11/10/2019, 2 people			45,65
	T2.5 internal meeting Rome, 14-15/10/2019, 1			322,93
	T2.5 internal meeting Rome, 21/10/2019, 1 person			143,95
				557,73

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 13 -GEOINFORM

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
13. GEOINFORM	1.152,88	720,22	0,00	468,28	2.341,38	29,70%	695,39	1.645,99

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,120005282	WP3	580,14
	0,118522306	WP5	572,74
			1.152,88

Other direct costs	Description	Category	Associated WP	Costs
	1 person Project Kick-off @ Augsburg 17-19/07/2018	Travel	WP3	720,22
				720,22

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 14 -CGS

Fill in only blue-colored cells.

	A. Direct personnel c Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
14. CGS	5.370,00	781,00	0,00	1.537,75	7.688,75	29,70%	2.283,56	5.405,19

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,61	WP2	3.294,00
	1,01	WP3	2.076,00
			5.370,00

Other direct costs	Description	Category	Associated WP	Costs
	Augsburg WP2 kick-off, 17-19/09/2019, Juraj Francu	Travel	WP2	405,00
	T2.2 meeting GBA Vienna, 11-12/03/2012, Juraj Francu	Travel	WP2	376,00
				781,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 15 -RU

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
15. RU	14.280,00	2.431,35	0,00	4.177,84	20.889,19	29,70%	3.964,95	16.924,24
							Max contribution	3.964,95

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	4,2	WP2	14.280,00
			14.280,00

Other direct costs	Description	Category	Associated WP	Costs
	2 persons @ Augsburg 17-19/09/2018 WP2 Kick-off and @ Dublin 10-11/03/2019 WP2 status meeting		WP2	2.431,35
				2.431,35

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 16- ICGC

Fill in only blue-colored cells.

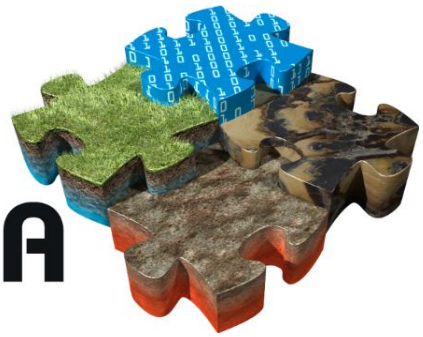
	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
16. ICGC	38.686,65	4.796,12	0,00	10.870,69	54.353,46	29,70%	16.142,98	38.210,48

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	6,54	WP2	33.876,56
	0,63	WP3	4.153,99
	0,1		656,10
			38.686,65

Other direct costs	Description	Category	Associated WP	Costs
	Brussels Kick-off, 03-05/07/2018, 1 person	Travel	WP2	818,43
	Augsburg pro-ject kick-off & WP2 meeting, 17-19/09/2018, 2 persons	Travel	WP2	2.014,49
	Field work, Empordà basin	Travel	WP2	162,09
	Utrecht WP2/3 meeting, 19-20/03/2019, 1 person	Travel	WP3	654,61
	Dublin WP2/3/4 meeting, 17-19/09/2019, 1 person	Travel	WP2	1.146,50
				4.796,12

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00



Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Hydrogeological processes and Geological settings over Europe controlling dissolved geogenic and anthropogenic elements in
Project acronym:	HOVER
Project reference number:	731.166
Project topic:	Groundwater
Project specific recearch topic:	GW4 - CONTRIBUTE TO GROUNDWATER MANAGEMENT WHEN INTERACTING WITH ENERGY AND MINING
Project website address:	

Period covered from: July 2018 to: December 2019

Report submission date:	
Project coordinator:	Laurence Gourcy

Contact person for the project: Laurence Gourcy
Tel: 33+238644859
E-mail: l.gourcy@brgm.fr

IDENTIFICATION OF PROJECT PARTICIPANTS

	Participant Legal name	Participant (eng)	Short name	Country	Role in the project
1	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK TNO	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK TNO	TNO	Netherlands	Project Partner
2	STICHTING DELTARES	DELTARES	DLT	Netherlands	Third Party
3	GEOLOGISCHE BUNDESANSTALT	GEOLOGISCHE BUNDESANSTALT	GBA	Austria	Project Partner
4	VLAAMSE MILIEUMAATSCHAPPIJ	Flanders Environment Agency (VMM)	VMM	Belgium	Project Partner
5	FEDERALNI ZAVOD ZA GEOLOGIJU SARAJEVO	Geological Survey of Federation of Bosnia and Herzegovina	FZZG	Bosnia-Herzegovina	Project Partner
6	HRVATSKI GEOLOSKI INSTITUT	Hrvatski Geološki Institut (HGI-CGS)	HGI-CGS	Croatia	Project Partner
7	MINISTRY OF AGRICULTURE, NATURAL RESOURCES AND ENVIRONMENT OF CYPRUS	MINISTRY OF AGRICULTURE, NATURAL RESOURCES AND ENVIRONMENT OF CYPRUS	GSD (GSD Cyprus)	Cyprus	Project Partner
8	CESKA GEOLOGICKA SLUZBA	Czech Geological Survey	CGS	Czech Republic	Project Partner
9	Geological Survey of Denmark and Greenland	Geological Survey of Denmark and Greenland	GEUS	Denmark	Project Partner
10	GEOLOGIAN TUTKIMUSKESKUS	Geologian Tutkimuskeskus	GTK	Finland	Project Partner
11	Bureau de Recherches Géologiques et Minières	Bureau de Recherches Géologiques et Minières	BRGM	France	Project Lead
12	BUNDESANSTALT FUER GEOWISSENSCHAFTEN UND ROHSTOFFE	Bundesanstalt für Geowissenschaften und Rohstoffe (BGR)	BGR	Germany	Project Partner
13	Landesamt für Bergbau, Energie und Geologie Niedersachsen	Landesamt für Bergbau, Energie und Geologie Niedersachsen	LBEG	Germany	Project Partner
14	MAGYAR FOLDTANI ES GEOFIZIKAI INTEZET	Mining and Geological Survey of Hungary	MFGI (MBFSZ)	Hungary	Project Partner
15	ISLENSKAR ORKURANNSOKNIR	Iceland GeoSurvey	ISOR	Iceland	Project Partner
16	Department of Communications, Energy and Natural resources	Department of Communications, Energy and Natural resources	GSI	Ireland	Project Partner
17	Istituto Superiore per la Protezione e la Ricerca Ambientale	Istituto Superiore per la Protezione e la Ricerca Ambientale	ISPRA	Italy	Project Partner
18	LATVIJAS VIDES, GEOLOGIJAS UN METEOROLOGIJAS CENTRS SIA	Latvian Centre of Geology, Environment and Meteorology	LEGMC	Latvia	Project Partner
19	Lietuvos Geologijos Tarnyba prie Aplinkos Ministerijos	Lietuvos Geologijos Tarnyba prie Aplinkos Ministerijos	LGT	Lithuania	Project Partner
20	MINISTRY FOR TRANSPORT AND INFRASTRUCTURE	Ministry for Transport and Infrastructure	MTI	Malta	Project Partner
21	PANSTWOWY INSTYTUT GEOLOGICZNY - PANSTWOWY INSTYTUT BADAWCZY	Państwowy Instytut Geologiczny – Państwowy Instytut Badawczy	PIG-PIB	Poland	Project Partner
22	Laboratorio Nacional de Energia e Geologia I.P.	Laboratório Nacional de Energia e Geologia (LNEG)	LNEG	Portugal	Project Partner
23	INSTITUTUL GEOLOGIC AL ROMANIEI	Institutul Geologic al României	IGR	Romania	Project Partner
24	Geological Survey of Serbia	Geological Survey of Serbia	GSS	Serbia	Project Partner
25	GEOLOSKI ZAVOD SLOVENIJE	Geološki zavod Slovenije	GeoZS	Slovenia	Project Partner
26	INSTITUTO GEOLÓGICO Y MINERO DE ESPAÑA	Instituto Geológico y Minero de España	IGME-Spain	Spain	Project Partner
27	Institut Cartogràfic i Geològic de Catalunya	Institut Cartogràfic i Geològic de Catalunya	ICGC	Spain	Project Partner
28	SVERIGES GEOLOGISKA UNDERSOKNING	Sveriges Geologiska Undersökning	SGU	Sweden	Project Partner
29	STATE RESEARCH AND DEVELOPMENT ENTERPRISE STATE INFORMATION GEOLOGICAL FUND OF UKRAINE	State Research and Development Enterprise State Information Geological Fund of Ukraine	GEOINFORM	Ukraine	Project Partner
30	NATURAL ENVIRONMENT RESEARCH COUNCIL	Natural Environment Research Council	NERC	United Kingdom	Project Partner
31	Eesti Geoloogiakeskus OÜ	Eesti Geoloogiateenistus	EGK (EGT)	Estonia	Non-funded partner
32	INSTITUT ROYAL DES SCIENCES NATURELLES DE Belgique	Institut Royal des Sciences Naturelles de Belgique	RBINS-GSB	Belgium	Non-funded partner
33	Landesamt für Bergbau, Geologie und Rohstoffe Brandenburg (LBGR)	Landesamt für Bergbau, Geologie und Rohstoffe Brandenburg	LBGR	Germany	Non-funded partner
34	INSTITOUTO GEOLOGIKON KAI METALLEFTIKON EREVNON	Hellenic Survey of Geology & Mineral Exploration	HSGME	Greece	Non-funded partner

PUBLISHABLE SUMMARY

The challenge is to gain understanding of the controls on groundwater quality across Europe using the combined expertise and data held by member states. The project will address groundwater management issues related to drinking water, human and ecosystem health across Europe in relation to both geogenic elements and anthropogenic pollutants by data sharing, technical and scientific exchange between European GSOs . We will link our knowledge of geological settings and understanding of hydrogeological processes to the natural variability of groundwater quality and to the risk of transfer of anthropogenic dissolved compounds to aquifers. For natural water quality this will include evaluating health risks and spatial variability of concentrations of geogenic elements and using a common approach to assessing thermal and mineral water. For diffuse pollutant behaviour we will increase understanding of ecology and microbial diversity controls on transforming pollutants at groundwater-surface water transition zones, quantify groundwater age distributions and nitrate and pesticide travel times in the subsurface and their attenuation patterns for evaluating the efficiency of programme of measures, the design and assessment of monitoring programmes, pollution trends, and create EU-wide aquifer vulnerability maps by comparing assessment methods across Europe. New compounds will be addressed by developing a consistent approach to groundwater monitoring for organic emerging contaminants. Common standards, databases and maps will be developed and project outputs will include thematic maps and web service tools at pan-European scale and databases available through the Information Platform to increase political and public awareness and improve groundwater management at the EU scale

Max 3.000 words

PROJECT CONTRIBUTION TO GeoERA PROJECT

The technical and scientific fundamentals of the HOVER project are the geological knowledge and comprehensive understanding of the hydrogeological processes involved in the transfer of organic and inorganic elements of natural and anthropogenic origin. Project findings are designed to increase political and public awareness and improve groundwater management at the EU scale. Thus, information and communication technologies involved will allow producing databases, maps and web service tools at pan-European scale that will be made available for a large public through the Information Platform. As specified in the Groundwater Specific Research Topics of the GW1 (GEOERA joint call document N°9), the HOVER project addresses groundwater management issues, drinking water, human and environmental health, linked to the presence and spatial variability of high concentrations of geogenic elements and the vulnerability to anthropogenic impacts for nutrients (mainly nitrate), pesticides and emerging contaminants.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: BRGM **Duration: 1-39**

The main objective of WP 1 is administrative, and scientific management of the consortium including communication to the GeoERA Executive Board, Internal and external administrative management, project internal communication and management, financial and management reporting, legal aspects for consortium management, risk management within the project, overall coordination of the scientific programme and activities, coordination of day-to-day technical - Since the beginning of the project coordination consisted in looking deliverable dates and content, organise trimestrial WPL meetings, initiating and coordinating the editing of a project newsletter, organising the mid term meeting and corresponding with the GEOERA secretariat for regular meetings, preparation of project amendments, presentations and geoera newsletter. It consist also in making the links between the WPL and the Geoera secretariat and discuss with the leaders of the other GEOERA Groundwater projects. A cloud was opened at GBA in order for the WPleaders to exchange information and build deliverables togetehr and for the participants to have access to all deliverables and outputs of the project. Some presentation/publication were alos initiated in order to make the project known as well as looking for other international projects that may be linked to HOVER (IAEA projects, UNEP, AIH,...)

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D1.3.a	Cumulative expenditure report 2018	BRGM	Excel speadsheet	internal	M7	Completed	

Milestones (for

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
1	Kick off meeting	M1	Completed	Minutes
2	WP and PB meeting	M8	Completed	PL contribution
3	Seminar with IP	M18	Completed	Minutes of Paris

Work package 2: GEUS **Duration: 1-36**

Objectives of WP2 are: 1.) To define and coordinate data and information handling from all HOVER WPs and develop a Data Management Plan (DMP) in collaboration with the GIP team in order to make HOVER data findable, accessible, interoperable and reusable according to GeoERA D1.3 and the “FAIR” principles of H2020. and 2.) To develop a project communication, dissemination and exploitation plan including social media, the project web site and scientific journals. Where required in collaboration with the other themes and the GeoERA secretariat and following the dissemination and exploitation plan (D5.1) of GeoERA. The interaction between HOVER and GIP-P project aims to define HOVER products in terms of information systems and the necessary functionalities to make these products accessible to a wide range of end users through EGDI platform.
The collaboration started in October 2018 with a first meeting attended by all the project "liasons" . As a result of this meeting, a series of functionalities requested by GeoERA projects as a whole were extracted. With the idea of outlining the products and functionalities required by HOVER, the GIP-P attended the project board meeting held in Paris in March 2019. At this meeting, a template for D2.2 and a delivery schedule were established. Since then, this document has been refined as the WPs have outlined the desired products and requirements. The latest version was produced in December 2019 and is a key source of information for WP6, 7 and 3 of GIP-P project.
Pending on GIP-P D 2.3.2 in M21, which will provide feedback on whether the requested functionality can be fully developed, no problems are expected in the flow and delivery of data between HOVER and EGDI.
There are still some delivery formats (WP6) and some functionalities related to the visualization of 3D products and statistical diagrams (WP6 and WP8) needs to be clarified. It is expected to be solved through the iterative process implemented by GIP-P WP6 that allows testing of prototypes and their subsequent feedback by HOVER.
In short, the interaction between the HOVER project and the GIP-P is excellent thanks to the participation of both "liasons" in meetings involving both projects, such as the PB and PA meetings.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D.2.1.	Data management plan	GEUS	internal report	internal	M6	Completed	
D.2.2.a	Definition of data requirements for GIP based on GIP recommendations	GEUS	internal technical note	internal	M8	Completed	
D.2.2.a	Definition of data requirements for GIP based on GIP recommendations	GEUS	internal technical note - update	internal	M16	Completed	
D.2.3.a	Communication, dissemination and exploitation plan	GEUS	internal report	internal	M8	Completed	
D.2.2.b	Provision of data for upload and testing of GIP second version	GEUS	technical note	internal	M18	Pending	to be completed by end of January 2020

Work package 3: GBA **Duration: 1-36**

Objectives of WP3 are 1.) To propose a common methodology to identify the main geological factors and hydrogeological processes regulating the distribution of natural concentrations (Natural background Level) of selected dissolved elements including Potentially Toxic Geogenic Trace Elements (PTGTE) possibly affecting human heath 2.) To harmonize terminologies and criteria for classification of special water (mineral, thermal water) and for aquifer areas with naturally high concentration of some specific elements 3.) To propose and calculate indicators comparable over Europe and its wide geological diversity applicable for groundwater management purposes 4.) To produce pan European information layers of special waters (thermal an natural mineral waters) and indicators of chemical anomalies of natural origin.
The focus for the completed D3.1 was 1) to access the data availability in participating countries and 2) create a database for concentrations of dissolved elements and associated parameters and harmonized terminology to define thermal and mineral water. The deliverable is completed, but we decided to release an update which will be completed in Q1/2020.
Furthermore, a litho-geological classification system based on the capacities of rocks to release elements to GW was developed in D3.2 focusing on available methods and defining new HOVER geological/lithological water families by extending the BRIDGE approach with additional variables. Data collection in pilot countries was essential for the development of a proposed workflow.
The current focus is giving to T3.3 and T3.4 and we accomplished data collection for arsenic data from participating countries in January 2020.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D.3.1.	Database for concentrations of dissolved elements and associated parameters and harmonized terminology to define thermal and mineral water	GBA	Database and associated technical report	internal	M12	Completed	
D.3.2.	A litho-geological classification system based on the capacities of rocks to release elements to GW including development of the methods in some EU countries	GEUS	Report	internal	M12	Completed	

Work package 4: GEUS **Duration: 1-36**

WP 4 addresses links between aquifer microbial ecology and contaminant transforming processes at European groundwater-surface water transition zones. WP 4 addresses links between aquifer microbial ecology and contaminant transforming processes at European groundwater-surface water transition zones. Initial work within WP4 has been devoted to the collection of already existing data on selected groundwater-surface (GW-SW) field sites in France, Latvia, and Denmark. This data was compiled and presented in Deliverable 4.1. The French site was sampled November 2019. The Danish sites will be sampled in the beginning of 2020 and include two gaining streams impacted by respectively landfill runoff and agriculture. In Latvia, the Iecava-Memele river system will be sampled during summer 2020.
In southern France two sampling points in the Crieu River were identified. The first, Villeneuve du Paréage is characterized by the infiltration of river water into the aquifer below, whereas the downstream site, Saverdun is characterized by a resurgence of groundwater towards the river. Sediment and groundwater samples were taken and are currently being tested for inorganic parameters including EC, pH, Eh, dissolved O2, iron, ammonium, nitrate, sulfate and degradation of selected pollutants (MCPA, metolachlor, propiconazole, sulfadiazine and 1,2,4-triazol). These data will be linked to microbial community structures based on 16S amplicon sequencing. GEUS has assigned a master student to the project, whose focus will be to investigate the degradation of pollutants from the French and the Danish sites.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D.4.1.	Characterization of field sites based on existing and measured data as input to task 4.3	GEUS	Report	internal	M16	Completed	

Work package 5: NERC **Duration: 1-36**

WP5 addresses nitrate and pesticide transport from soil to groundwater receptors. The purpose of this WP is to compare methods for characterisation of nitrate and pesticide transport across different partner settings, and to develop harmonised assessments of nitrate and pesticide transport and attenuation processes across pilot areas. The WP covers 12 partners and is being led by NERC (BGS). To date this WP has focussed on developing a common understanding of conceptual models and datasets used to characterise nitrate and pesticide transport. Led by NERC (BGS), the WP5 partners co-produced an atlas of evidence-based conceptual models of nitrate transport in the unsaturated zone, which we reported in M12 as D5.1. For each contributing partner the atlas identifies where aquifers may have significant unsaturated zone lag times, as well as principal characteristics of flow and transport and key representative "type sites". These conceptual models provide a common basis for the evaluation of models of nitrate transport across different pilot areas which will be undertaken in D5.3. In D5.2 (led by TNO and reporting in M18) we evaluate and review groundwater monitoring networks across the different pilot areas, identifying commonalities and dissimilarities in approaches and proposed approaches for harmonised assessments. A range of different approaches to characterisation of nitrate and pesticide transport and attenuation processes have been reported by the WP5 partners, reflecting the diverse range of hydrogeological settings and water quality pressures experienced in the different pilot areas. The conceptual models (D5.1) and monitoring data evaluation (D5.2) undertaken to date has provided a strong basis for future deliverables in WP5 related to modelling nitrate and pesticide transport (D5.3, led by NERC (BGS)) and mapping denitrification potential (D5.5, led by BRGM) and the production of overview maps (D5.6, led by NERC (BGS)). In D5.3 and D5.4, we will compare and evaluate different methods for nitrate transport modelling and denitrification potential mapping respectively across the pilot areas, and test harmonised approaches to assessing these processes across multiple pilot areas, with a view to developing large scale overview maps in D5.6.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D.5.1.	Atlas of geological/hydrogeological settings found across Europe with selected type sites	NERC	Report	internal	M12	Completed	
D.5.2.	Datasets with characterization of these settings relevant for agrochemical transport	TNO	Dataset - to be replaced by a report	internal	M18	Pending	Expected by 31 January 2020

Work package 6: GEUS **Duration: 1-36**

Work package 6 develops groundwater age classification system in age intervals defined by tracers and flow models and appliation of groundwater dating techniques. The first deliverable D6.1.b was delivered in October with a short delay. Field work was conducted in summer (June-August) as part of activity 6.4 where more than 30 water supply wells were sampled in Denmark in collaboration between GEUS and TNO and three globally leading groundwater dating labs from Univ. Bremen and Univ. Heidelberg in Germany and Univ. Bern in Switzerland. This work was completed well ahead of the planned deadline due to busy schedules and long lab. turnover times at the dating laboratories. The activities of task 6.1 and 6.2, however, are delayed partly because of the focus on D6.4 and partly because the database development of task 6.1 showed new opportunities as it turned out that the USGS is currently making the same efforts. Hence, we agreed with the USGS to collaborate on this important topic in order not to develop separate standards for Europe and USA and collaborate on developing a common standard that may later be adopted as a global standard for groundwater dating tracers in collaboration with the IAEA (see also comments in descriptions of deliverables below). Task 6.2 reporting use cases also experience some delay. This is, however, also a positive delay as more partners have announced that they will deliver groundwater dating use cases, but need a bit more time. We therefore expect to end up with significantly more than 10 use cases instead of the 5-10 cases expected in the proposal (see also comment in table below)

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D6.1.b	A classification system based on groundwater age distributions defining shallow and deep aquifer vulnerability classes indicating the risk of pollution and elevated concentrations of geogenic elements	GEUS	Report	Scientific community	M12	Completed	
D.6.1.a	Database for concentrations of groundwater age indicators, estimated mean ages and age distributions, vulnerability classes and associated guidance	GEUS	Database and associated technical guidance	Policy Makers Scientific community	M18	Pending	expected by M32
D.6.2.	Collection of use cases including good practice guidance and age indicator sampling guide	MFGI (MBFSZ)	Report	Scientific community	M18	Pending	expected by M24

Work package 7: BGR **Duration: 1-36**

The WP kick-off meeting in Berlin was followed by two face-two-face meetings in Dublin and Barcelona, three videoconferences of the karst sub-working group (consisting of BGR, GBA, GeoZS, GSI, IGR, ICGC, IGME) and two face-to-face meetings of the transboundary pilot partners LBGR, PGI and BGR (in Warsaw).
The WP members have evaluated the currently available index methods for the evaluation of aquifer vulnerability to pollution and decided to apply DRASTIC at the pan-EU and pilot area scale. This decision is based on the wide-range applicability and popularity of DRASTIC, as well as the fact that in it is being applied by some of the WP partners in their respective countries already. A report summarizing and comparing the common index methods was prepared and submitted, including a DRASTIC review and factsheets on the pilot areas (D7.1). The class ranges and ratings of the DRASTIC parameters were discussed and an agreement found to accommodate the hydrogeological particularities of the respective pilot sites. The homogenization of DRASTIC class ranges and ratings will allow comparisons between pilots (and in-between them) and the PAN-EU map.
Furthermore, it was agreed to apply the COP method in karst regions. Comparisons between the applied methods are currently carried out at the pilot area scale, partially also compared to specific national vulnerability methods. For validation purposes, information about available nitrate data were collected. Altogether, eleven pilot sites in nine countries (Austria, Denmark, Greece, Ireland, Poland/Germany, Romania, Slovenia, Spain) were submitted, accompanied by data collection and harmonization. Also, it was decided to apply at at least two pilot sites a method to summarize in a harmonized way the affected aquifer volumes per DRASTIC class by using 2D representative conceptual cross sections.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D.7.1.	Comparison of international commonly applied index methodologies for assessing the vulnerability of the upper aquifer to pollution	BGR	Report	Scientific community	M6	Completed	

Work package 8: BRGM **Duration: 1-36**

"HOVER - WP8 "Effective monitoring of emerging contaminants: development and validation of new assessment methods" put together 7 active participants (SGU, TNO, BGS, IGME, GEO-SZ, PGI and BRGM) stimulated by developing a consistent approach to groundwater monitoring for Organic Emerging Contaminants (OECs) in term of sampling, site selection, monitoring strategy and methodology including analytical technics. The global aim of the WP8 is to ensure monitoring of OECs is effective and data are comparable across the range of European geological and environmental settings.
The first activity of the WP8 was to draw the status of groundwater monitoring for organic emerging contaminants (ECs) across Europe delivering a critical review report of European monitoring results for organic emerging contaminants. This report, based on published data, shows discrepancy between Member States concerning the publication of data on organic emerging compounds in groundwater. The report highlights the need for homogenizing categories used for grouping compounds of emerging concerns and provides recommendations for future works. This scientific review is complemented by a questionnaire that aims to report "non-published" data on emerging compounds in groundwater across Europe.
WP8 is currently developing recommendations for statistical analysis of monitoring data and evaluate existing results in terms of geological setting and land use/anthropogenic activities. We aim at selecting statistical methods that can help to identify key parameters, with reference to environmental context, geological setting and risk assessment, which are involved in the potential leaching of organic emerging contaminants toward groundwater.
In parallel, a groundwater emerging compound sampling workshop is being organised. These three working days scheduled in summer 2020 aim at accessing influence of external factors (including sampling materials and methods) on groundwater sample and at testing five chosen laboratories for emerging compounds analysis. A polish sampling site has been selected regarding is accessibility, the knowledge of the emerging compounds present in groundwater and the possibility to organise a parallel technical meeting on groundwater quality sampling methods. The sampling scenarios are currently discussed within the WP8 team at the monthly Visio conference meetings that are organised to drive and to animate this work package."

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D.8.1.	Critical review report of European monitoring results for organic emerging contaminants	NERC	Report	Scientific community	M12	Completed	

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
WP6 – deliverable D6.1b. – A classification system based on groundwater age distributions defining shallow and deep aquifer vulnerability classes indicating the risk of pollution and elevated concentrations of geogenic elements Reason – work overload for the coordinator the last 6 months and discussions on the data properties – difficulties in exchanging on the proposal between partners in summer(holidays) period July and August Delay -3 months requested -> M15 (30 September)	see column A	No	Amendment of the project proposed in order to fit with proposed changes
WP8 – deliverable D8.1. – Review of GW occurrence data, sampling and analytical methods for EC across Europe Reason – work overload for the coordination and coordinator is in shared parental leave for few months (back mid-July) - difficulties in exchanging on the proposal between partners in summer(holidays) period July and August Delay -4 months requested -> M16 (31 October)	see column A	No	Amendment of the project proposed in order to fit with proposed changes
WP5 – Two deliverables instead of one will be proposed for D5.3 Assessments of N travel times and attenuation patterns for a number of relevant European settings (report) outputs of task 5.3 and 5.4 Reason – The first discussions between task leaders are indicating that the works will be quite different and mixing the output in a same document seems not appropriate. Two deliverables are proposed D.5.3 Assessments of N travel times for a number of relevant European settings (report) and D5.4 Assessments of attenuation patterns for a number of relevant European settings (report) – Deadlines remain M28	see column A	No	Amendment of the project proposed in order to fit with proposed changes

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience
EVENTS	CONGRESS	sep.19	SCIENTIFIC COMMUNITY
EVENTS	CONGRESS	2.maj	POLICY MAKERS
EVENTS	MEETINGS	20-24 May 2019	SCIENTIFIC COMMUNITY
EVENTS	CONFERENCE (tele-conference)	7-12 April 2019	SCIENTIFIC COMMUNITY
EVENTS	CONGRESS	8-10-January 2020	SCIENTIFIC COMMUNITY
EVENTS	CONGRESS	9-12 Sept 2019	SCIENTIFIC COMMUNITY
MEDIA	ONLINE MEDIA	Facebook blogs (GeoERA groundwater group)	virtual
MEDIA	ONLINE MEDIA	HOVER webpage	virtual
MEDIA	ONLINE MEDIA	LinkedIn posts (personal profile)	virtual
MEDIA	ONLINE MEDIA	Researchgate	virtual
MEDIA	ONLINE MEDIA	Twitter posts (personal profile)	virtual
MEDIA	ONLINE MEDIA	Wordpress blog	virtual
MEETINGS	Workshop	10.10.2018	Policy makers and scientific
MEETINGS	Internal project meeting	6.03.2019	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting (videoconference)	4.07.2019	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting (videoconference)	25.09.2019	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting (videoconference)	5.11.2019	SCIENTIFIC COMMUNITY
MEETINGS	Meeting with national body	4.12.2019	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting	03.-04.04.2019	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting	17.-18.10.2018	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting	20/6/19, 20/9/19, 26/11/2019	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting	22.-23.10.2019	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting	26.-27.11.2019	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting	7-8 March 2019	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting	29 August 2018	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting	21-22 February 2019	SCIENTIFIC COMMUNITY
MEETINGS	Internal project meeting	15-16 avril 2019	SCIENTIFIC COMMUNITY
PUBLICATIONS	TECHNICAL REPORT	30.01.2019	SCIENTIFIC COMMUNITY
PUBLICATIONS	TECHNICAL REPORT	1.08.2019	SCIENTIFIC COMMUNITY
PUBLICATIONS	TECHNICAL REPORT	30.01.2020	SCIENTIFIC COMMUNITY
PUBLICATIONS	ABSTRACTS	Oral Presentation at "Hydrologidagen"	Odense, dk
PUBLICATIONS	ABSTRACTS	Oral presentation at "the Groundwater days"	Lund, se
PUBLICATIONS	ABSTRACTS	Oral presentation at NGWM2020	Oslo, no
PUBLICATIONS	ABSTRACTS	Poster at EGU2019	Vienna

INSTRUCTIONS
Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, …)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	Internal project meeting
	Meeting with other GeoERA projects
	Meeting with national body
	Meeting with international body
	Other
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.
AUDIENCE

Number of people reached	Short name of project participant	Author(s)	Link (if applicable)
500	GEUS	K. Hinsby	IAH Malaga
> 300	GEUS,	K. Hinsby et al.	https://www.unece.org/index.php?id=50179
10	GEUS, TNO	K. Hinsby	IAEA 2019
100	GEUS	K. Hinsby et al	EGU 2019
	GEUS	K. Hinsby	NGWM Oslo
100	BRGM	L. Gourcy	GQ2019
continuous	GENERAL PUBLIC	> 3000	https://www.facebook.com/Geoera-Groundwater-486223845208811/
continuous	GENERAL PUBLIC	>1000??	https://geoera.eu/projects/hover8/
continuous	GENERAL PUBLIC	> 5000	https://www.linkedin.com/in/klaus-hinsby-0883688/detail/recent-activity/
continuous	SCIENTIFIC COMMUNITY	>100	https://www.researchgate.net/project/HOVER-a-GeoERA-Groundwater-project
continuous	GENERAL PUBLIC	> 5000	https://twitter.com/khi1960
continuous	GENERAL PUBLIC	>10000 (with the associated posts on the other media)	https://geoera-groundwater.com
50	BRGM, GEUS, and more EGS	L. Gourcy	CIRCA
	PGI, LBGR, BGR		
	WP7 Karst Working group		
	WP7 Karst Working group		
	WP7 Karst Working group		
	NERC	M. Ascott et al	Internal NERC stakeholder meeting
	All WP7 Participants		
	All WP7 Participants		
	All WP5 Participants	M. Ascott et al	
	PGI, LBGR, BGR		
	All WP7 Participants		
	all WP leaders	10	
	WP3 leader and task leaders	6	
	WP3 leader and task leaders	6	
	WP8 leader and task leaders		
	All WP7 Participants	S. Broda et al	D7.1 Report
	All WP5 Participants	M. Stuart et al	D5.1 Report
	All WP5 Participants	H.P. Broers et al	D5.2 Report
22.10	NON-EU INSTITUTION (national, regional, local)	> 100	http://hydrologidag.dk/media/21533/joergen-tulstrup-geus-introduktion-til-faelles-europaeisk-geologisk-informationsplatform.pdf
24.10.2019	NON-EU INSTITUTION (national, regional, local)	> 200	https://www.slideshare.net/SGU_Sverige/klaus-hinsbythegeo-eraprogramfocusingongroundwaterprojects
08.01.2020	SCIENTIFIC COMMUNITY	> 100	https://www.geologi.no/images/NGWM20/Abstractvolume_NGWM20.pdf
7.04.2019	SCIENTIFIC COMMUNITY	>100	https://meetingorganizer.copernicus.org/EGU2019/EGU2019-18215.pdf

SCIENTIFIC COMMUNITY
GENERAL PUBLIC
POLICY MAKERS
MEDIA
EU INSTITUTION
NON-EU INSTITUTION (national, regional, local)
OTHER (customers)

PROJECT MANAGEMENT

The coordination activities consisted in quarterly meetings by videoconf with all wP leaders and one physical meeting held in Paris in June 2019 with a special session with GIP coordinator. The project coordination consisted also in preparing and sending to all participants a Newsletter. Already 3 Newsletters were sent to partners. In each work packages various meetings were also proposed by videoconf or in various countries for WP7 (Germany, Spain, Ireland) and WP8 (France) - Regular meeting (every two months about) were also proposed by the GEOERA Groundwater coordinator in order to exchange information between HOVER, RESOURCE, TACTIC and VOGERA - In September 2019 the project coordinator participated to a seminar organised in parrelel to the Groundwater Quality Conference in Liege (Belgium). The seminar on the Alliance on, Water Quality brought together the IAH, UNEP, IGRAC and was an opportunity to initiate links with HOVER activities - We are starting discussions with the IAEA for a possible international database on groundwater age dating - The project was also presented to the CIS GWWG meeting held in 2018 in Vienna

IMPACT STATEMENT

Increase public and political awareness regarding groundwater vulnerability issues; improve groundwater management at EU scale; harmonization of data and methods at EU scale; provide support for the implementation of the water framework and groundwater directive; provide full access to results and data for further exploitation - The project was presented in various international conferences (see 6.) for scientific community - These presentation had lead up to now to iudentify possible links with an international initiative on groundwater quality proposed by UNEP (global water quality alliance) and links with the new IAH groundwater quality commission - One of the impact was alos to bring people together to share their experinece in mapping at large scale GW quality aspects

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind		Cumulative expenditure report 2019
	Actual			(0,25*A+B)						
1	77.411,60	7.715,82	0,00	21.281,86	106.409,28	29,70%	31.603,55	74.805,72	TNO	129401
1a	40.146,82	934,02	0,00	10.270,21	51.351,05	29,70%	15.251,26	36.099,79	Deltares	including deltares
2	18.217,06	450,90	0,00	4.666,99	23.334,95	29,70%	6.930,48	16.404,47	GBA	39148
3	13.793,10	0,00	0,00	3.448,28	17.241,38	29,70%	5.120,69	12.120,69	VMM	6000
4	7.278,00	0,00	0,00	1.819,50	9.097,50	29,70%	2.701,96	6.395,54	FZZG	6054
5	17.769,66	1.593,88	0,00	4.840,89	24.204,43	29,70%	7.188,71	17.015,71	HGI-CGS	23982
6	5.467,92	167,91	0,00	1.408,96	7.044,79	29,70%	2.092,30	4.952,49	GSD Cyprus	29761
7	0,00	0,00	0,00	0,00	0,00	29,70%	0,00	0,00	CGS	no work undertaken
8	76.336,17	13.625,32	0,00	22.490,37	112.451,86	29,70%	33.398,20	79.053,66	GEUS	114211
9	10.477,20	691,16	0,00	2.792,09	13.960,45	29,70%	4.146,25	9.814,20	GTK	14850
10	63.073,91	11.077,25	0,00	18.537,79	92.688,95	29,70%	27.528,62	65.160,33	BRGM	62635
11	65.906,79	6.137,22	0,00	18.011,00	90.055,01	29,70%	26.746,34	63.308,67	BGR	119891
12	11.016,96	0,00	0,00	2.754,24	13.771,20	29,70%	4.090,05	9.681,15	LBEG	22027
13	14.251,39	1.125,79	0,00	3.844,29	19.221,47	29,70%	5.708,78	13.512,69	MBFSZ	16920
14	2.977,46	0,00	0,00	744,37	3.721,83	29,70%	1.105,38	2.616,44	ISOR	3643
15	14.151,32	2.755,02	0,00	4.226,58	21.132,92	29,70%	6.276,48	14.856,44	GSI	14742
16	17.391,24	0,00	0,00	4.347,81	21.739,05	29,70%	6.456,50	15.282,55	ISPRA	20187
17	3.055,00	0,00	0,00	763,75	3.818,75	29,70%	1.134,17	2.684,58	LEGMC	2721
18	6.300,00	0,00	0,00	1.575,00	7.875,00	29,70%	2.338,88	5.536,13	LGT	9975
19	7.500,29	2.973,50	0,00	2.618,45	13.092,24	29,70%	3.888,39	9.203,84	MTI	16760
20	9.392,81	3.369,60	0,00	3.190,60	15.953,01	29,70%	4.738,04	11.214,97	PIG PIB	19401
21	1.969,76	0,00	0,00	492,44	2.462,20	29,70%	731,27	1.730,93	LNEG	2143
22	36.173,18	4.032,50	0,00	10.051,42	50.257,10	29,70%	14.926,36	35.330,74	IGR	45368
23	3.630,01	0,00	0,00	907,50	4.537,52	29,70%	1.347,64	3.189,87	GSS	7917
24	56.344,05	6.619,50	0,00	15.740,89	78.704,44	29,70%	23.375,22	55.329,22	GeoZS	66630
25	40.202,77	6.814,92	0,00	11.754,42	58.772,12	29,70%	17.455,32	41.316,80	IGME	89552
26	35.285,85	3.709,56	0,00	9.748,85	48.744,26	29,70%	14.477,05	34.267,22	ICGE	32490
27	7.841,28	1.117,24	0,00	2.239,63	11.198,15	29,70%	3.325,85	7.872,30	SGU	12255
28	7.991,26	543,95	0,00	2.133,80	10.669,02	29,70%	3.168,70	7.500,32	GEOINFORM	10669
29	22.337,54	1.383,30	0,00	5.930,21	29.651,05	29,70%	8.806,36	20.844,69	NERC	27880
30	0,00	0,00	0,00	0,00	0,00	29,70%	0,00	0,00	IGME Greece	
31	769,03	0,00	0,00	192,26	961,29	29,70%	285,50	675,79	RBINS-GSB	313
					964.122,25		286.344,31	677.777,94		

Date:

Person responsible:

Cumulative Use of Resources Connected to 8a

Personn	Person months	Associated WP	Amount
			0,00

Other di	Description	Category	Associated WP	Costs
				0,00

Subcont	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - TNO

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
1.	77.411,60	7.715,82	0,00	21.281,86	106.409,28	29,70%	31.603,55	74.805,72

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,58	WP1	10.541,82
	4,72	WP5	25.329,82
	5,28	WP6	24.906,80
	3,1	WP8	16.633,16
			77.411,60

Other direct costs	Description	Category	Associated WP	Costs
	Meetings: Fieldw	Travel	WP6	4.236,43
	Meetings: Brussel	Travel	WP8	1.578,96
	Consumables	Equipment/Cons	WP5	114,50
	Consumables	Equipment/Cons	WP6	1.785,93
				7.715,82

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1a- DELTARES (subcontractor of TNO)

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
1.	40.146,82	934,02	0,00	10.270,21	51.351,05	29,70%	15.251,26	36.099,79

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5,6	WP5	20.073,41
	2,8	WP6	20.073,41
			40.146,82

Other direct costs	Description	Category	Associated WP	Costs
	G. Jansen Austria	Travel	WP5	934,02
				934,02

Subcontracting	Description	Associated WP	Cost	
			0,00	
				0,00

FINANCIAL STATEMENT FOR PP 2 - GBA

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	18.217,06	450,90	0,00	4.666,99	23.334,95	29,70%	6.930,48	16.404,47

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,25	WP1	1.200,00
	0,25	WP2	1.200,00
	1,5	WP3	7.200,00
	0,6	WP6	3.817,06
	1	WP7	4.800,00
			18.217,06

Other direct costs	Description	Category	Associated WP	Costs
	HOVER Budapest	Travel	WP7	119,80
	HOVER Paris	Travel	WP1,2,3	166,80
	HOVER Ireland	Travel	WP7	164,30
				450,90

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 3 - VMM

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	13.793,10	0,00	0,00	3.448,28	17.241,38	29,70%	5.120,69	12.120,69

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2	WP3	13.793,10
			13.793,10

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 4 - FZZG

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	7.278,00	0,00	0,00	1.819,50	9.097,50	29,70%	2.701,96	6.395,54

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5,5	WP5	7.278,00
			7.278,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 5 - HGI-CGS

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	17.769,66	1.593,88	0,00	4.840,89	24.204,43	29,70%	7.188,71	17.015,71

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,63	WP5	8.752,01
	3,7	WP6	9.017,65
			17.769,66

Other direct costs	Description	Category	Associated WP	Costs
	Meetings: KO Brussels;	Travel	WP5	1.143,46
	Vienna meeting, C	Travel	WP6	450,42
				1.593,88

Subcontracting	Description	Associated WP	Cost

FINANCIAL STATEMENT FOR PP 6 - GSD CYPRUS

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	5.467,92	167,91	0,00	1.408,96	7.044,79	29,70%	2.092,30	4.952,49

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,089755	WP5	4.924,53
	0,120245	WP6	543,40
			5.467,92

Other direct costs	Description	Category	Associated WP	Costs
	consommable	Other	WP5	167,91
				167,91

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 7 - CGS

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	0,00	0,00	0,00	0,00	0,00	29,70%	0,00	0,00

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
			0,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

declared no activity for HOVER for this period

FINANCIAL STATEMENT FOR PP 8 - GEUS

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	76.336,17	13.625,32	0,00	22.490,37	112.451,86	29,70%	33.398,20	79.053,66

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,40	WP1	3.077,84
	1,74	WP2	13.220,09
	1,24	WP3	7.968,60
	3,56	WP4	22.599,02
	0,46	WP5	3.558,44
	0,85	WP6	6.473,12
	3,53	WP7	19.439,06
			76.336,17

Other direct costs	Description	Category	Associated WP	Costs
	Softwarelicens, pc	Other	WP1	256,54
	Project Meeting ir	Travel	WP2	1.317,09
	Softwarelicense, b	Other	WP2	181,97
	Kick-off meeting, I	Travel	WP3	1.990,22
	Catering at Works	Other	WP3	322,48
	Kick-off meeting, I	Travel	WP4	2.330,38
	Materials for the I	Other	WP4	3.357,35
	CIS-groundwater v	Travel	WP5	207,96
	Project Meeting ir	Travel	WP6	1.022,34
	Project Meetings:	Travel	WP7	2.638,99
				13.625,32

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 9 - GTK

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	10.477,20	691,16	0,00	2.792,09	13.960,45	29,70%	4.146,25	9.814,20

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,91	WP7	10.477,20
			10.477,20

Other direct costs	Description	Category	Associated WP	Costs
	Ikonen, 21054; Sp	Travel	WP7	691,16
				691,16

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 10 - BRGM

Fill in only blue-colored cells.

	A. Direct personn Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	63.073,91	11.077,25	0,00	18.537,79	92.688,95	29,70%	27.528,62	65.160,33

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,66	WP1	20.237,94
	0,70	WP2	5.323,68
	1,06	WP3	6.634,20
	0,96	WP4	6.307,94
	0,83	WP5	5.102,33
	0,06	WP6	367,76
	0,30	WP7	2.228,10
	2,24	WP8	16.871,96
			63.073,91

Other direct costs	Description	Category	Associated WP	Costs
	Paris, Vienna, Lieg	Travel	WP1	2.582,07
	Paris, Aarhus	Travel	WP3	1.193,05
	Field survey Arieg	Travel	WP4	839,04
	Paris meetings	Travel	WP8	212,22
	Consumables	Other	WP1	28,07
	Consumables	Other	WP3	20,39
	Consumables	Other	WP4	62,33
	Temporary work	Other	WP5	6.110,68
	Catering	Other	WP8	29,40
				11.077,25

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 11 - BGR

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	65.906,79	6.137,22	0,00	18.011,00	90.055,01	29,70%	26.746,34	63.308,67

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	8,55	WP7	65.906,79
			65.906,79

Other direct costs	Description	Category	Associated WP	Costs
	WP/Working grou	Travel	WP7	6.137,22
				6.137,22

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 12 - LBEG

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	11.016,96	0,00	0,00	2.754,24	13.771,20	29,70%	4.090,05	9.681,15

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,65	WP7	11.016,96
			11.016,96

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 13 - MBFSZ

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	14.251,39	1.125,79	0,00	3.844,29	19.221,47	29,70%	5.708,78	13.512,69

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,06	WP3	5.415,53
	3,38	WP6	5.985,58
	1,61	WP7	2.850,28
			14.251,39

Other direct costs	Description	Category	Associated WP	Costs
	Meeting: Brussels July 2018	Travel	WP3	209,19
	Meetings: Brussels July 2018, Vienna October 2018	Travel	WP6	393,67
	Meeting: Barcelona November 2019	Travel	WP7	522,93
				1.125,79

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 14 - ISOR

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	2.977,46	0,00	0,00	744,37	3.721,83	29,70%	1.105,38	2.616,44

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,371	WP3	2.977,46
			2.977,46

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 15 - GSI

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	14.151,32	2.755,02	0,00	4.226,58	21.132,92	29,70%	6.276,48	14.856,44

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,5	WP3	2.066,91
	0,0	WP4	0,00
	0,5	WP5	2.340,16
	2,2	WP7	9.744,25
			14.151,32

Other direct costs	Description	Category	Associated WP	Costs
	kick off meeting 9	Travel	WP5	671,02
	kick off meeting 1	Travel	WP7	641,00
	Meeting 2 - 26-27	Travel	WP7	1.443,00
				2.755,02

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 16 - ISPRA

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	17.391,24	0,00	0,00	4.347,81	21.739,05	29,70%	6.456,50	15.282,55

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3	WP3	17.391,24
			17.391,24

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 17 - LEGMC

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	3.055,00	0,00	0,00	763,75	3.818,75	29,70%	1.134,17	2.684,58

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,37	WP3	916,50
	0,49	WP4	1.222,00
	0,37	WP5	916,50
			3.055,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 18 - LGT

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	6.300,00	0,00	0,00	1.575,00	7.875,00	29,70%	2.338,88	5.536,13

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,5	WP3	3.150,00
	1	WP7	2.100,00
	0,5	WP8	1.050,00
			6.300,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 19 - OPM

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	7.500,29	2.973,50	0,00	2.618,45	13.092,24	29,70%	3.888,39	9.203,84

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1	WP3	2.112,67
	0,5	WP5	1.056,35
	1,3	WP6	2.746,77
	0,75	WP8	1.584,50
			7.500,29

Other direct costs	Description	Category	Associated WP	Costs
	Vienna Meeting (WP 5 and WP 6)	Travel	WP6	2.973,50
				2.973,50

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 20 - PIG-PIB

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	9.392,81	3.369,60	0,00	3.190,60	15.953,01	29,70%	4.738,04	11.214,97

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,81	WP3	3.635,66
	1,67	WP7	3.180,10
	0,98	WP8	2.577,05
			9.392,81

Other direct costs	Description	Category	Associated WP	Costs
	meetings/Brussels	Travel	WP7	1.942,73
	meetings/Brussels	Travel	WP8	1.426,87
				3.369,60

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 21 - LNEG

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	1.969,76	0,00	0,00	492,44	2.462,20	29,70%	731,27	1.730,93

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,72	WP3	1.969,76
			1.969,76

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 22 - IGR

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	36.173,18	4.032,50	0,00	10.051,42	50.257,10	29,70%	14.926,36	35.330,74

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	12,6	WP3	18.086,59
	12,6	WP7	18.086,59
			36.173,18

1435,443651

Other direct costs	Description	Category	Associated WP	Costs
	Belgium 2-6.07.20	Travel	WP7	908,96
	Berlin 15-19.2018	Travel	WP7	2.733,00
	Dublin 2-5.04.201	Travel	WP7	390,54
				4.032,50

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 23 - GSS

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	3.630,01	0,00	0,00	907,50	4.537,52	29,70%	1.347,64	3.189,87

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	4	WP3	3.630,01
			3.630,01

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 24 - GeoZS

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	56.344,05	6.619,50	0,00	15.740,89	78.704,44	29,70%	23.375,22	55.329,22

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,92	WP 3	8.852,97
	5,08	WP 5	15.922,26
	2,07	WP 6	6.330,81
	3,13	WP 7	9.788,14
	4,74	WP 8	15.449,87
			56.344,05

Other direct costs	Description	Category	Associated WP	Costs
	Sampling and Vier	Travel	WP 3	223,67
	Sampling and Vier	Travel	WP 5	629,6
	Sampling	Travel	WP6	7,94
	Berlin and Barcelo	Travel	WP 7	1.062,96
	sampling material	Other	WP 8	389,02
	Monitoring and m	Travel	WP 8	4.306,31
				6.619,50

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 25 - IGME

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	40.202,77	6.814,92	0,00	11.754,42	58.772,12	29,70%	17.455,32	41.316,80

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,28	WP3	24.917,88
	1,2	WP7	9.127,20
	0,81	WP8	6.157,69
			40.202,77

Other direct costs	Description	Category	Associated WP	Costs
	Various meetings	Travel	WP3, WP7, WP	6814,92
				6.814,92

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 26 - ICGC

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	35.285,85	3.709,56	0,00	9.748,85	48.744,26	29,70%	14.477,05	34.267,22

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,34	WP3	12.981,16
	3,4	WP7	22.304,69
			35.285,85

Other direct costs	Description	Category	Associated WP	Costs
	Project meeting (E	Travel	WP3	446,24
	Project meetings (	Travel	WP7	964,06
	Project meeting (D	Travel	WP7	1.018,07
	Project meeting (E	Other	WP7	1.281,19
				3.709,56

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 27 - SGU

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	7.841,28	1.117,24	0,00	2.239,63	11.198,15	29,70%	3.325,85	7.872,30

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,28	WP3	1.938,31
	0,46	WP6	2.664,87
	0,53	WP8	3.238,10
			7.841,28

Other direct costs	Description	Category	Associated WP	Costs
	France 2019-04-15	Travel	WP8	1.117,24
				1.117,24

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 28 - GEOINFORM

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	7.991,26	543,95	0,00	2.133,80	10.669,02	29,70%	3.168,70	7.500,32

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,70	WP3	3.377,40
	0,15	WP4	709,43
	0,18	WP5	875,24
	0,21	WP6	1.016,04
	0,21	WP7	1.020,82
	0,21	WP8	992,34
			7.991,26

Other direct costs	Description	Category	Associated WP	Costs
	Meeting	Travel	WP7	543,95
				543,95

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 29 - NERC

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	22.337,54	1.383,30	0,00	5.930,21	29.651,05	29,70%	8.806,36	20.844,69

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,36	WP1	1.418,78
	0,15	WP2	581,69
	2,14	WP5	9.597,44
	2,80	WP8	10.739,63
			22.337,54

Other direct costs	Description	Category	Associated WP	Costs
	Brussels, Vienna,;	Travel	WP1	1.383,30
				1.383,30

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 30- IGME GREECE

Fill in only blue-colored cells.

	A. Direct personne Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	0,00	0,00	0,00	0,00	0,00	29,70%	0,00	0,00

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
			0,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 31- RBINS-GSB

Fill in only blue-colored cells.

	A. Direct pers Actual	C. Other direct costs	B. Direct costs of	D. Indirect cos (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
2.	769,03	0,00	0,00	192,26	961,29	29,70%	285,50	675,79

Explanations

Personnel cos	Person month	Associated W	Amount
	0.1	WP3	769,03
			769,03

Other direct c	Description	Category	Associated W	Costs
				0,00

Subcontractir	Description	Associated W	Cost
			0,00

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Seabed Mineral Deposits in European Seas: Metallogeny and Geological Potential for Strategic and Critical Raw Materials
Project acronym:	MINDeSEA
Project reference number:	GeoE.171.001
Project topic:	Raw materials
Project specific recearch topic:	RM3 – METALLOGENY – GEOLOGICAL POTENTIAL
Project website address:	http://geoera.eu/projects/mindesea2/

Period covered from: 01.07.2018 to: 31.12.2019

Report submission date: 31.01.2020
Project coordinator: Francisco Javier González Sanz

Contact person for the project: Francisco Javier González Sanz
Tel: 34913495864
E-mail: fj.gonzalez@igme.es

IDENTIFICATION OF PROJECT PARTICIPANTS

[use dropdown menu]

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	Instituto Geológico y Minero de Espana	Geological Survey of Spain	IGME-Sp	Spain	998737803	Project Lead
2	Bundesanstalt für Geowissenschaften und Rohstoffe	Federal Institute for Geosciences and Natural Resources	BGR	Germany	999429413	Project Partner
3	Institouto Geologikon kai Metalleftikon Erevnon	Institute of Geology and Mineral Exploration	IGME-Gr	Greece	925968015	Project Partner
4	Department of Communications, Climate Action and Environment	Geological Survey of Ireland	GSI	Ireland	996559280	Project Partner
5	Norges Geologiske undersokelse	Geological Survey of Norway	NGU	Norway	999466758	Project Partner
6	Laboratorio Nacional de Energia e Geologia I.P.	The National Laboratory of Energy and Geology	LNEG	Portugal	994187921	Project Partner
7	Sveriges Geologiska Undersökning	Geological Survey of Sweden	SGU	Sweden	995575991	Project Partner
8	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund	Geoinform	Ukraine	947331392	Project Partner
9	Instituto Português do Mar e da Atmosfera	Sea and Atmosphere Portuguese Institute	IPMA	Portugal		Non-funded partner
10	Instituto de Geociencias	Geosciences Institute	IGEO	Spain		Non-funded partner
11	United States Geological Survey	United States Geological Survey	USGS	United States of Ame	994374064	Non-funded partner
12	Russian Ministry of Natural Resources	Institute for Geology and Mineral Resources of the Ocean	VNIIOkeangeologia	Russia		Non-funded partner

PUBLISHABLE SUMMARY

Covering more than 70% of the planet, seas and oceans represent a potentially promising new frontier for the exploration of mineral resources. Security of mineral supply has been identified by the European Commission as a priority challenge facing the raw materials sector. The 2017 list of Critical Raw Materials (CRM) reflected societies growing demand for an ever-increasing number and quantity of elements and minerals required to address global climate change and the high- and green-technologies required for a transition from a carbon-based to green-energy-based world. Sustainable access to resources is a strategic security question for Europe's ambition to deliver the "Green Deal", and the global ocean is at the core of these issues. The global demand for cobalt, tellurium, nickel, lithium, rare earth elements, copper, and other strategic and critical metals, concurrent with the rapidly diminishing quality and quantity of land-based mined deposits, has highlighted the seafloor as a promising new frontier for the exploration of mineral resources. Spanning a large diversity of environments and resource types, including high and low temperature hydrothermal deposits (SMS, SEDEX), phosphorites, cobalt-rich ferromanganese crusts, and manganese nodules, deep-sea deposits are particularly attractive for their polymetallic nature with high contents of rare and critical metals. Moreover, shallow-water resources, like marine placer deposits, represent another source for many industrial materials, critical metals, and gems. The seabed mineral resources host the largest reserves on Earth for some critical metals like cobalt, tellurium, manganese, and the rare earth elements, critical for Industry. The EC's Blue Growth strategy estimated that "By 2030, 10% of the world's minerals, including cobalt, copper and zinc could come from the ocean floors. Global annual turnover of marine mineral mining can be expected to grow from virtually nothing to €10 billion by 2030". The materials coming from recycling, including seabed mining related wastes, will contribute to the circular economy.

Extracting minerals from the deep sea represents an enormous scientific and technological challenge for humankind. The global ocean can play a key role in mitigation of climate change, but also in improving the sustainable use of mineral resources. These issues include judicious consideration among the fisheries and minerals industries, offshore wind production, and the preservation of aquatic environments and ecosystems. Considerable improvement in our knowledge of the oceans and seas is necessary to develop a sustainable "Blue Economy", and in obtaining social license. But seabed geology and ecosystems are widely unexplored, and new geological and environmental studies are required to address the impacts of potential mining activities. New developments focusing on applying new technologies for deep-sea exploration and mining will be required. In addition, a regulatory framework for minerals extraction and marine spatial planning are necessary for seabed mining sector development. The International Seabed Authority (ISA) is finishing the normative regulations that will permit the states, organizations or companies to extract minerals in areas beyond national jurisdictions. Thirty contractors have entered into 15-year contracts with ISA for exploration for manganese nodules, polymetallic sulphides, and cobalt-rich ferromanganese crusts in and on the seabed of the deep Atlantic, Pacific, and Indian oceans. Several projects have been promoted by the European Union, with the Raw Materials Initiative, in order to find and evaluate the sustainable production of strategic and critical minerals, which Europe is strongly dependent on imports. Recently, the EU research programmes are funding projects to increase knowledge about seabed minerals, marine minerals exploration, extraction technologies, and environmental issues. The European, National, and International programs related to the research, exploration, and exploitation of marine minerals, and environmental impact studies of marine mining activities, will play pivotal roles in the emerging "Blue Economy" and sustainable industrial growth.

The project GeoERA-MINDeSEA aims to map and to establish the metallogenic context for different seabed mineral deposits with economic potential in the pan-European setting. It is a joint contribution of 12 national Geological Survey Organisations and Marine Institutes from 8 European countries, USA, and Russia. The project is part of GeoERA, an ERA-NET action under Horizon 2020 “Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe (GeoERA)”. This project addresses an integrative metallogenetic study of principal types of seabed mineral resources (hydrothermal sulphides, ferromanganese crusts, phosphorites, marine placers and polymetallic nodules) in the European Seas. This study will publish marine resource information, cases studies and maps; identify areas for responsible resource exploration and extraction; inform management and Marine Spatial Planning.

The MINDeSEA project is compiling data and genetic models for all these deposit types based on extensive studies carried out previously, which include geophysical surveys, dredging stations, underwater photography and ROV surveys, and mineralogical, geochemical, and isotopic studies. The project will build on previously and currently developed pan-European and national databases, and expand the strategic and CRM knowledge trough a compilation of mineral potential and metallogenic studies of critical raw materials resources in pan-European seas. The project will provide recommendations for future target areas, studies and standards to be used across Europe as part of this project.

The objectives include:

1) Characterise deposit types in European seas including volcanogenic massive sulphides and hydrothermal mineralisation; ferromanganese crusts, phosphorites; marine placer deposits and polymetallic nodules.

2) Characterise the trace element content of the deposit types including strategic and CRM, for which the EU is highly dependent. The project aims to emphasise the importance of varied marine deposits and evaluate their potential to provide succeeding generations with a supply of base metals and CRM. The project will identify and define the critical minerals and metals focused on the current list of CRM, but considering also the strategic importance of some of those very enriched in the marine deposits, such as manganese, cobalt, rare earth elements, niobium, phosphate rock, lithium, tellurium, and others such as silver, copper, lead and iron ore.

3) Identify the principal metallogenic provinces, improving the information on the regional geological processes involved in mineral formation and accurate geographical distribution of concentrated mineralisation. Identified strategic and critical metals will be included on the metallogenetic map. Modern metallogenic studies are necessary for developing new exploration methods where off-shore mineral deposits are proven and speculated, and for the development of new genetic models.

4) Develop harmonized mineral maps and datasets of seabed deposits incorporating Geological Survey Organization datasets, along with mineral potential and prospectivity maps. This project will compile and standardise fragmented marine data and data products, then make these available through the GeoERA Information Platform project (GIP-P) and the European Geological Database Infrastructure (EGDI) portal (following INSPIRE guidelines and Open Geospatial Consortium (OGC) standards).

5) Demonstrate how the case-study results can be used in off-shore mineral exploration, using this understanding to predict and develop new mineral deposits or deposit types. An innovation potential

of this project will be the proposals of pilot zones with high mineral-potential areas for future exploration.

6) Analyse present-day exploration and exploitation status in terms of regulation, legislation, environmental impacts, exploitation and future directions; promoting the development of robust environmental policy for exploitation of seabed mineral resources in Europe.

7) Demonstrate the efficiency of a pan-European research approach for understanding seabed minerals and modes of exploration, extending state of the art knowledge and information relating to submarine minerals, metallogenic studies, standards and technologies across the European community. The project is producing informative products that will better educate the EC and Society regarding the CRM potential in European Seas.

The pan-European seas cover about 15 millions square kilometres in the Arctic and Atlantic oceans and the Mediterranean, Baltic, and Black seas, from shallow waters up to 6000 m water depth. The preliminary MINDeSEA results show the potential of the pan-European seas for critical metals, and the enormous gaps of information covering vast marine sectors. More than 600 mineral occurrences are reported in the MINDeSEA database including: hydrothermal mineralisation, cobalt-rich ferromanganese crusts, phosphorites, manganese nodules and marine placer deposits. Seamounts, submarine volcanoes and banks in the Macaronesia sector (Portugal and Spain) and the Arctic ridges (Norway, Denmark, Iceland) show a high potential for Fe-Mn crusts, rich in energy-critical elements like cobalt but also tellurium, rare earth elements, and manganese. Fe-Mn crusts are accompanied by phosphorites on the seafloor of continental shelves and slopes along the western continental margins of Portugal and Spain. These marine phosphorites concentrate rare earth elements and yttrium in addition to phosphate. Seafloor polymetallic sulphides and metalliferous sediments precipitating from hot hydrothermal solutions and plumes are forming today in the Azores Islands (Portugal), the Arctic (Norway, Denmark) and, the Mediterranean volcanic arcs (Italy and Greece). They are among the most important marine resources for copper, zinc, silver, and gold. In addition, hydrothermal deposits may contain economic grades of cobalt, tin, barium, indium, bismuth, tellurium, gallium, and germanium. Placer deposits of chemically resistant, physically durable minerals have been discovered on shallow-water settings (<50 m water depth on estuaries, deltas, beaches) linked to the weathering of onshore rocks and ore deposits from the Variscan Belt in UK, France, Portugal and Spain, Eastern Mediterranean (Albania, Greece and Cyprus), Black Sea (Ukraine, Rumania, Bulgaria), the Arctic Ocean (Russia, Norway, Denmark) and the Baltic Sea (Poland, Latvia). Accumulations of heavy minerals include monazite, ilmenite, rutile, zircon, garnet, gold, diamonds, cassiterite and magnetite. Finally, shallow-water concretions and nodules from the Arctic (Norway, Russia), Baltic (Sweden, Poland, Finland, Russia, Estonia, Germany), and Black Sea (Ukraine, Romania) represent potential targets for metals exploration and environmental studies.

In December 2018, MINDeSEA produced the first pan-European compilation map of “energy- critical elements” based on ferromanganese deposits. The map reports occurrences and deposits for cobalt and lithium and can be downloaded at: https://geoera.eu/projects/mindesea2/

The project is co-operating with the GeoERA Secretariat in its efforts to disseminate the results to stakeholders including policy makers, industry and academia. Widespread dissemination of the Project activities and products is ensured by: participation and communication in international forums, workshops, educational activities, knowledge exchange, scientific and promotional publications, reports, newsletters, press release and media news, internships, dissertation of Doctoral Theses (PhD) and Master Theses, and work-training experiences for last year students from national and international Universities; as well as the creation, management and continuous update of the GeoERA-

MINDeSEA website (https://geoera.eu/projects/mindesea2/), a dedicated website (https://geoeramindesea.wixsite.com/mindesea) and Social Media (https://twitter.com/MINDeSEA and https://www.facebook.com/mindesea.mindesea.9) are contributing to display all these referred issues.

PROJECT CONTRIBUTION TO GeoERA PROJECT

MINDeSEA is the flagship project of GeoERA on seabed mineral deposits in the European Seas, and one of the cornerstones of the GeoERA Raw Materials theme. The Earth provides mineral resources that are vital for human life. As global demand grows, especially for strategic metals and critical raw materials (CRM) crucial for low-carbon energy production and new technologies, there is a proportionate risk of increasing supply shortage for resources that are identified as critical to Europe's economy. This project handles the Critical Raw Materials in a follow up of the EU Commission's concerns regarding the sustainable sourcing of strategic and critical raw materials to Europe's industry, the contribution to the Blue Growth strategy, the Battery Alliance and the transition from a carbon-based to green-energy-based world.

MINDeSEA aims to assess the quantity and quality of marine CRM's, and a more comprehensive pan-European identification and compilation of mineral potential and classification of metallogenic seafloor mineral deposits. MINDeSEA also aims to provide guidance for the management of impacts resulting from deep sea resource exploitation, minimising environmental impacts and footprints. Marine spatial planning to ensure conservation of oceans as well as prevent conflict with other ocean users is in its core action.

This overall philosophy of research within MINDeSEA fulfills the main objective of GeoERA, which is to contribute to the sustainable use and responsible management of the subsurface. GeoERA will aim to support: 1) a more integrated and efficient management, maximising its added value and 2) a more responsible and publicly accepted, exploitation and use of the subsurface, minimising environmental impacts and footprints.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: Project Management and Coordination **Duration: 36 months (M1-36)**

The coordinator in collaboration with the WP leaders has carried out reporting to the GeoERA during period evaluated. Regular WebEx teleconferences on coordination have been celebrated with all the Raw Materials projects and our RM Coordinator, Antje Wittenberg. The cumulative expenditure documents for each Partner Organization have been delivered by December 2018 and December 2019. Internal Project Progress Reports were delivered as planned by December 2018, June 2019 and December 2019. The Amendment document to the Project Plan changing the deliverable D2.3 dates, with the agreement for each MINDeSEA Partner Organization, was delivered by 7 of December 2019, and approved by the GeoERA Assembly on 19 December 2019. MINDeSEA consortium has celebrated three internal meetings in Brussels (3-5 July 2018), at IGME-Sp in Madrid (6-7 May 2019) and at NGU in Trondheim (26-27 November 2019) with the participation of all the project partners. A preliminary pan-European compilation map of "energy-critical elements" based on marine mineral deposits has been produced by December 2018 (D1-1 Annex) and reported to GeoERA and the EC (DG GROW and DG MARE). A cooperative action was succesfully developed with the participation of EXPLOSEA, EMODnet and MINDeSEA projects members, in the EXPLOSEA 2 cruise (10 June-25 July 2019), to explore the mid-Atlantic Ridge (hydrothermal geo-bio systems and mineralizations). The coordinator of MINDeSEA and partner members (BGR, USGS, VNIIOkeangeologia) have supported with letters different proposals in competitive calls for the acquisition of new equipment in Research Labs at IGME-Sp and the Complutense University of Madrid. The milestones M1.1 and M1.2 have been reached.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D1.1	Internal Progress Report	IGME-Sp	Report	Theme Coordinator	M6, M12, M18,	Completed	
D1.2	Project Progress Report	IGME-Sp	Report	GeoERA Stakeholder	M18	Completed	
D1.3	Final Project Progress Report	IGME-Sp	Report	GeoERA Stakeholder	M36		
D1.4	Cumulative Expenditure Reports	IGME-Sp	Report	GeoERA	M6, M18	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M1.1	Kick-off Meeting	M1	Completed	Event ocurrence
M1.2	Project Progress Report	M18	Completed	Delivery of report
M1.3	Final Project Progress Report	M36		Delivery of report
M1.4	Final Meeting	M36		Event ocurrence

Work package 2: Communication, Dissemination and Exploitation **Duration: 36 months (M1-36)**

Deliverable D2.1: Communications, Dissemination & Exploitation Plan was delivered by September 2018.
The MINDeSEA Consortium has attended different International Conferences and Meetings on Marine Geology and Mineral Resources presenting oral and poster communications (see spreadsheet 6. Communication, dissemination).
The MINDeSEA website (http://geoera.eu/projects/mindesea2/) was integrated in the GeoERA site (www.geoera.eu) in July 2018. In July 2018, dedicated Twitter account (https://twitter.com/MINDeSEA) and Facebook profile (https://www.facebook.com/mindesea.mindesea.9) were created. A dedicated website: https://geoeramindesea.wixsite.com/mindesea was created in October 2018. Website links have been created (from July 2018) in the partners organization websites in order to increase the visibility of MINDeSEA and GeoERA (eg., http://www.igme.es/divulgacion/actualidad/MINDeSEA.htm; http://www.lneg.pt/iedt/projectos/614/; http://geoinf.kiev.ua/mizhnarodne-spivrobitnytstvo-1/projekt-geoera/rm3-proekt-mindesea/; http://srv-v-fm.ngu.no/pls/oradb/!pbs2.vis.prosj_beskr?projnr=380900; https://www.gsi.ie/en-ie/programmes-and-projects/marine-and-coastal-unit/research/Pages/default.aspx), thus increasing the number of potential visitors. For internal communication between consortium members a FTP site is available (ftp.igme.es) in addition to the GeoERA intranet.
MINDeSEA consortium has created a visual identity including logos, colors, fonts, templates, photos, etc, with the aim to make the project identifiable to its target audiences. Four e-newsletters (Augusts and December 2018, August and November 2019) have been published with the aim to keep all stakeholders interested in MINDeSEA informed (https://geoeramindesea.wixsite.com/mindesea/deliverables).
MINDeSEA consortium in cooperation with GeoERA Raw materials projects has presented 5 press releases by August, October, November, December 2018 and July 2019 and continuous communication of activities in several Spanish Media.
Five scientific papers have been published by consortium partners (BGR, IGME-Sp, IGEO) on SCI international journals (Marine Geology and Minerals) covering topics on exploration and cartography, mineralogy, geochemistry and processing of submarine mineral deposits (see spreadsheet 6. Communication, dissemination). MINDeSEA consortium has contributed to "The EU Blue Economy Report 2019" attending the petition of the DG MARE for comments and contribution in the section 4.3 Marine Minerals (DOI: 10.2771/21854).
Educational and outreach activities during period include: the elaboration of a Doctoral Thesis on critical metals and ferromanganese crusts (Egidio Marino PhD Student); two Master Thesis on polymetallic nodules from the Atlantic and Baltic (Janine Wegner and Iñigo Zalba); seminars in research and education institutions (eg., Portuguese secondary School, Univ. Las Palmas; Univ. Complutense Madrid); and working-training experiences for last year students from national and international Universities. Egidio Marino, PhD Student at IGME-Spain and IGEO has been awared with the second prize in the PhDay 2018, organised by the Complutense University of Madrid. Different talks on the activities and progresses of MINDeSEA project to the Mineral Resources Expert Group- (MREG) and the Marine Geology Expert Group (MGEG) Eurogeosurveys (see spreadsheet 6. Communication, dissemination).
MINDeSEA consortium has organized two workshops dedicated to the main themes of the work packages and celebrated in Madrid 7 May 2019 and Trondheim on 27 November 0219 (see spreadsheet 6. Communication, dissemination).
IGME-Sp (Luis Somoza and Javier González) is coordinating the edition of a Special Issue in Minerals entitled "Marine Geology and Minerals" focused on the investigation, exploration and potential future exploitation of submarine mineral resources. Deadline for manuscripts submission is 31 August 2020. For further information see: https://www.mdpi.com/journal/minerals/special_issues/marine_geology_minerals
The milestone M2.1: Creation-management and digital dissemination on the website and apps has been reached.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D2.1	WP2 Task guide	IGME-Sp	Task guide	GeoERA and Partners	M3	Completed	
D2.2	Dissemination products	IGME-Sp	Digital products	Public	M1-36	Completed	
D2.3	Workshops	IGME-Sp	Workshop	GeoERA and Public	M11, M17, M21,	Completed	
D2.4	Report WP2	IGME-Sp	Report	Public	M36		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M2.1	Dissemination on the website and apps	M6-36	Completed	Digital platforms
M2.2	Report on Communication strategy	M34		Delivery of report

Work package 3: Seafloor Massive Sulphide Deposits **Duration: 36 months (M1-36)**

Deliverable D3.1: WP3 Seafloor Massive Sulphide Deposits Task Guide was delivered by September 2018.
The MINDeSEA consortium is working now on the compilation and creation of databases of existing data on SMS deposits and mineralisation in European waters. The MINDeSEA consortium has discussed and approved the inclusion in this WP of "Hydrothermal Deposits" as more presentative of this group of mineralization instead of "Seafloor Massive Sulphide Deposits". Many of these mineralizations are represented by other than sulphides like in the case of hydrothermal oxides, silica caps or sulfate/carbonate chinmeys being more indicated the use of the generic term "hydrothermal deposit".
A first INSPIRE-compliant harmonised datasets and maps were presented at NGU during the MINDeSEA internal meeting (26 November 2019).
The dataset and GIS cartography contains data on 85 occurrences (275 samples).
Case studies will be selected in during the Midterm review meeting based on the first review of compiled and harmonized data. Case studies identified for now include from high- to low-temperature hydrothermal deposits of sulphides, oxides and sulfates in different geotectonic settings: mid-ocean ridges, hot-spot volcanoes, back-arc volcanoes.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D3.1	WP3 Task guide	NGU	Task guide	GeoERA and Partners	M3	Completed	
D3.2	Database and maps on SMS	NGU	Dataset	Public	M1-36	Completed	In progress continuous updates
D3.3	SMS metallogenic models	NGU	Report (modelization)	Public	M28		
D3.4	SMS potential assessment	NGU	Report	Public (decision maker:	M36		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M3.1	Database and metallogenic map on SMS	M30		Delivery of database and maps
M3.2	Metallogenic settings and CRM potential on SMS	M30		Delivery of report
M3.3	Predictive and mineral exploration potential map	M34		Delivery of maps

Work package 4: Ferro-manganese Crusts, Phosphorites and Critical Raw Material: Duration: 36 months (M1-36)

Deliverable D4.1: WP4 Ferromanganese crusts, phosphorites and critical raw materials Task Guide was delivered by September 2018.
The MINDeSEA consortium is working now on the compilation and creation of databases of existing data on ferromanganese crusts and phosphorites in European waters.
A first INSPIRE-compliant harmonised datasets and maps were presented at NGU during the MINDeSEA internal meeting (26 November 2019). The dataset and GIS cartography contains data on 118 crust occurrences (156 samples) and 13 phosphorite occurrences (54 samples).
New analyses on critical metals like cobalt, lithium, tellurium, and rare earth elements are being developed in specific representative samples (Canary Islands, Norwegian seas and Iberian margins). Innovative technics (FTIR, LA-ICP-MS, Raman) were used for these studies.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D4.1	WP4 Task guide	IGME-Sp	Task guide	GeoERA and Partners	M3	Completed	
D4.2	Database and maps on Fe-Mn crusts and phosporites	IGME-Sp	Dataset	Public	M1-36	Completed	In progress continuous updates
D4.3	Mineral-potential and prospectivity maps	IGME-Sp	Maps	Public	M36		
D4.4	Fe-Mn crusts and phosphorites metallogenic models	IGME-Sp	Report (modelization)	Public	M28		
D4.5	Exploration potential of CRM	IGME-Sp	Report	Public (decision maker:	M30		
D4.6	Status of regulation, legislation and exploitation	IGME-Sp	Report	Public	M36		
D4.7	Case study	IGME-Sp	Report (modelization)	Public (decision maker:	M36		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M4.1	Database and metallogenic map on Fe-Mn crusts and phosphorite	M30		Delivery of database and maps
M4.2	Metallogenic settings and CRM potential on Fe-Mn crusts and pho	M30		Delivery of report
M4.3	Predictive and mineral exploration potential map	M34		Delivery of maps
M4.4	Case study	M30		Delivery of maps

Work package 5: Marine Placer Deposits Duration: 36 months (M1-36)

Deliverable D5.1: WP5 Marine Placer Deposits Task Guide was delivered by September 2018.
A first INSPIRE-compliant harmonised datasets and maps were presented at NGU during the MINDeSEA internal meeting (26 November 2019).
The dataset and GIS cartography contains data on 90 occurrences.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D5.1	WP5 Task guide	IGME-Gr/ HSGME	Task guide	GeoERA and Partners	M3	Completed	
D5.2	Database and maps on marine placers	IGME-Gr/ HSGME	Dataset	Public	M1-36	Completed	In progress continuous updates
D5.3	Mineral-potential and prospectivity maps	IGME-Gr/ HSGME	Maps	Public	M36		
D5.4	Placers metallogenic models	IGME-Gr/ HSGME	Report (modelization)	Public	M28		
D5.5	Status of regulation, legislation and exploitation	IGME-Gr/ HSGME	Report	Public (decision maker:	M36		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M5.1	Database and metallogenic map on marine placers	M30		Delivery of database and maps
M5.2	Metallogenic settings for marine placer deposits	M30		Delivery of report
M5.3	Predictive and mineral exploration potential map	M34		Delivery of maps

Work package 6: Polymetallic Nodules Duration: 36 months (M1-36)

Deliverable D6.1: WP6 Polymetallic Nodules Task Guide was delivered by September 2018.
A first INSPIRE-compliant harmonised datasets and maps were presented at NGU during the MINDeSEA internal meeting (26 November 2019).
The dataset and GIS cartography contains data on 304 occurrences (479 samples).
Cooperative Master thesis (IGME, SGU) on ferromanganese concretions from the Baltic Sea has been presented by Iñigo Zalba on 16 of December 2016 at the University of Cadiz (Spain), obtaining a very notable score (8).
Analysis on strategic and critical metals (like manganese, vanadium, copper, nickel or lithium) are being performed in nodules from the Baltic Sea, Galicia Margin and Canary Islands.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D6.1	WP6 Task guide	LNEG	Task guide	GeoERA and Partners	M3	Completed	
D6.2	Polymetallic nodules prospect evaluation parameters	LNEG	Report	Public	M24		
D6.3	Database and maps on polymetallic nodules	LNEG	Dataset	Public	M1-36	Completed	In progress continuous updates
D6.4	Mineral-potential and prospectivity maps	LNEG	Maps	Public	M36		
D6.5	Polymetallic nodules prospect evaluation	LNEG	Report	Public	M36		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M6.1	Database and metallogenic map on polymetallic nodules	M30		Delivery of database and maps
M6.2	Metallogenic settings for polymetallic nodules	M30		Delivery of report
M6.3	Predictive and mineral exploration potential map	M34		Delivery of maps

Work package 7: Exploration in the Atlantic, Mediterranean, Baltic and Black Sea Duration: 36 months (M1-36)

Deliverable D7.1: WP7 Exploration in the Atlantic, Mediterranean, Baltic and Black Sea Task Guide was delivered by September 2018.
The MINDeSEA consortium is working on the compilation of existing data on seafloor minerals exploration in European waters. There are important datasets to obtain inofrmation (EMODnet-Geology, cruise reports and references from the other MINDeSEA WPs).
IGME presented first examples of compilation maps and tables in the Canary Islands, the Iberian margins and the Mid-Atlantic Ridge (EXPLOSEA 2 Expedition) at the Trondheim internal meeting in November 2019.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D7.1	WP7 Task guide	IGME-Sp	Task guide	GeoERA and Partners	M3	Completed	
D7.2	Database and maps on Exploration	IGME-Sp	Dataset and Maps	Public	M1-36	Completed	In progress continuous updates
D7.3	Mineral-potential and prospectivity maps	IGME-Sp	Maps	Public	M36		
D7.4	Present-day status of exploration	IGME-Sp	Report	Public (decision maker:	M36		

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M7.1	Database and maps of marine minerals explored in Europe	M30		Delivery of database and maps
M7.2	Present-day status of exploration	M30		Delivery of report
M7.3	New prospectivity areas	M34		Delivery of report and maps

Work package 8: Link to Information Platform **Duration: 36 months (M1-36)**

Deliverable D8.1: WP8 Link to Information Platform Guidance document v1 was delivered by September 2018.
GSI attended a dedicated workshop celebrated in Brussels (24-25 October 2018) on the Interaction in the Geoinformation Platform Project (GIP-P, WP2).
WP8 lead and MINDeSEA consortium have prepared a specific glossary of search categories and terms extracted to define contents for each work package. All these terms will be integrate in the GeoERA Thesaurus/Project Vocabularies (GIP-P, WP4) to Provide a common group of terms by topic in order to perform a selective search in the GeoERA product catalogue.; and to Facilitate the labelling of products in the GeoERA metadata catalogue.
A first version of portal with basic CMS and Web-GIS was created by October 2018.
A preliminary list of web products and functionalities has been created.
The MINDeSEA Data Management Plan was created and delivered by December 2018.
A bilateral meeting between GIP-P and MINDeSEA was celebrated (Sept 20th, 2019) to a better understanding of each other needs and requirements (definition of the list of web products, vocabularies, datasets and functionalities, others).
Deliverable D8.3: WP8 Best practice manual with practical guidelines and workflows for data document v1 was delivered by December 2019.
The Milestone M8.1 Data normative and format requirements has been reached: The establishment contact with the GeoERA Information Platform team, learn planned approaches to: website set; principals and guidelines; standards and methodologies; prototyping; testing and implementation of fully functional data services; communication. (This will be ongoing throughout the project lifespan).
GSI and MINDeSEA consortium are working in cooperation with GIP-P on the website, EGDI platform design, formats of products and new project vocabulary.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D8.1	WP8 Task guide	GSI	Task guide	GeoERA and Partners	M3	Completed	
D8.2	Project metrics	GSI	Report	Public	M1-36	Completed	
D8.3	Best practice manual with practical guidelines and workflows for d	GSI	Manual	Public	M18	Completed	
D8.4	Completion of project databases & fully functional portal	GSI	Dataset	Public	M1-36	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M8.1	Data normative and format requirements	M18	Completed	Delivery of report
M8.2	Publication and fully functional web layers of products	M24, 36		Acceptance by IP coordinator
M8.3	Recommendations on resource, research and exploration practice	M36		Delivery of report

PUBLISHABLE SUMMARY

Covering more than 70% of the planet, seas and oceans represent a potentially promising new frontier for the exploration of mineral resources. Security of mineral supply has been identified by the European Commission as a priority challenge facing the raw materials sector. The 2017 list of Critical Raw Materials (CRM) reflected societies growing demand for an ever-increasing number and quantity of elements and minerals required to address global climate change and the high- and green-technologies required for a transition from a carbon-based to green-energy-based world. Sustainable access to resources is a strategic security question for Europe's ambition to deliver the "Green Deal", and the global ocean is at the core of these issues. The global demand for cobalt, tellurium, nickel, lithium, rare earth elements, copper, and other strategic and critical metals, concurrent with the rapidly diminishing quality and quantity of land-based mined deposits, has highlighted the seafloor as a promising new frontier for the exploration of mineral resources. Spanning a large diversity of environments and resource types, including high and low temperature hydrothermal deposits (SMS, SEDEX), phosphorites, cobalt-rich ferromanganese crusts, and manganese nodules, deep-sea deposits are particularly attractive for their polymetallic nature with high contents of rare and critical metals. Moreover, shallow-water resources, like marine placer deposits, represent another source for many industrial materials, critical metals, and gems. The seabed mineral resources host the largest reserves on Earth for some critical metals like cobalt, tellurium, manganese, and the rare earth elements, critical for Industry. The EC's Blue Growth strategy estimated that "By 2030, 10% of the world's minerals, including cobalt, copper and zinc could come from the ocean floors. Global annual turnover of marine mineral mining can be expected to grow from virtually nothing to €10 billion by 2030". The materials coming from recycling, including seabed mining related wastes, will contribute to the circular economy.

Extracting minerals from the deep sea represents an enormous scientific and technological challenge for humankind. The global ocean can play a key role in mitigation of climate change, but also in improving the sustainable use of mineral resources. These issues include judicious consideration among the fisheries and minerals industries, offshore wind production, and the preservation of aquatic environments and ecosystems. Considerable improvement in our knowledge of the oceans and seas is necessary to develop a sustainable "Blue Economy", and in obtaining social license. But seabed geology and ecosystems are widely unexplored, and new geological and environmental studies are required to address the impacts of potential mining activities. New developments focusing on applying new technologies for deep-sea exploration and mining will be required. In addition, a regulatory framework for minerals extraction and marine spatial planning are necessary for seabed mining sector development. The International Seabed Authority (ISA) is finishing the normative regulations that will permit the states, organizations or companies to extract minerals in areas beyond national jurisdictions. Thirty contractors have entered into 15-year contracts with ISA for exploration for manganese nodules, polymetallic sulphides, and cobalt-rich ferromanganese crusts in and on the seabed of the deep Atlantic, Pacific, and Indian oceans. Several projects have been promoted by the European Union, with the Raw Materials Initiative, in order to find and evaluate the sustainable production of strategic and critical minerals, which Europe is strongly dependent on imports. Recently, the EU research programmes are funding projects to increase knowledge about seabed minerals, marine minerals exploration, extraction technologies, and environmental issues. The European, National, and International programs related to the research, exploration, and exploitation of marine minerals, and environmental impact studies of marine mining activities, will play pivotal roles in the emerging "Blue Economy" and sustainable industrial growth.

The project GeoERA-MINDeSEA aims to map and to establish the metallogenic context for different seabed mineral deposits with economic potential in the pan-European setting. It is a joint contribution of 12 national Geological Survey Organisations and Marine Institutes from 8 European countries, USA, and Russia. The project is part of GeoERA, an ERA-NET action under Horizon 2020 “Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe (GeoERA)”. This project addresses an integrative metallogenetic study of principal types of seabed mineral resources (hydrothermal sulphides, ferromanganese crusts, phosphorites, marine placers and polymetallic nodules) in the European Seas. This study will publish marine resource information, cases studies and maps; identify areas for responsible resource exploration and extraction; inform management and Marine Spatial Planning.

The MINDeSEA project is compiling data and genetic models for all these deposit types based on extensive studies carried out previously, which include geophysical surveys, dredging stations, underwater photography and ROV surveys, and mineralogical, geochemical, and isotopic studies. The project will build on previously and currently developed pan-European and national databases, and expand the strategic and CRM knowledge trough a compilation of mineral potential and metallogenic studies of critical raw materials resources in pan-European seas. The project will provide recommendations for future target areas, studies and standards to be used across Europe as part of this project.

The objectives include:

1) Characterise deposit types in European seas including volcanogenic massive sulphides and hydrothermal mineralisation; ferromanganese crusts, phosphorites; marine placer deposits and polymetallic nodules.

2) Characterise the trace element content of the deposit types including strategic and CRM, for which the EU is highly dependent. The project aims to emphasise the importance of varied marine deposits and evaluate their potential to provide succeeding generations with a supply of base metals and CRM. The project will identify and define the critical minerals and metals focused on the current list of CRM, but considering also the strategic importance of some of those very enriched in the marine deposits, such as manganese, cobalt, rare earth elements, niobium, phosphate rock, lithium, tellurium, and others such as silver, copper, lead and iron ore.

3) Identify the principal metallogenic provinces, improving the information on the regional geological processes involved in mineral formation and accurate geographical distribution of concentrated mineralisation. Identified strategic and critical metals will be included on the metallogenetic map. Modern metallogenic studies are necessary for developing new exploration methods where off-shore mineral deposits are proven and speculated, and for the development of new genetic models.

4) Develop harmonized mineral maps and datasets of seabed deposits incorporating Geological Survey Organization datasets, along with mineral potential and prospectivity maps. This project will compile and standardise fragmented marine data and data products, then make these available through the GeoERA Information Platform project (GIP-P) and the European Geological Database Infrastructure (EGDI) portal (following INSPIRE guidelines and Open Geospatial Consortium (OGC) standards).

5) Demonstrate how the case-study results can be used in off-shore mineral exploration, using this understanding to predict and develop new mineral deposits or deposit types. An innovation potential

of this project will be the proposals of pilot zones with high mineral-potential areas for future exploration.

6) Analyse present-day exploration and exploitation status in terms of regulation, legislation, environmental impacts, exploitation and future directions; promoting the development of robust environmental policy for exploitation of seabed mineral resources in Europe.

7) Demonstrate the efficiency of a pan-European research approach for understanding seabed minerals and modes of exploration, extending state of the art knowledge and information relating to submarine minerals, metallogenic studies, standards and technologies across the European community. The project is producing informative products that will better educate the EC and Society regarding the CRM potential in European Seas.

The pan-European seas cover about 15 millions square kilometres in the Arctic and Atlantic oceans and the Mediterranean, Baltic, and Black seas, from shallow waters up to 6000 m water depth. The preliminary MINDeSEA results show the potential of the pan-European seas for critical metals, and the enormous gaps of information covering vast marine sectors. More than 600 mineral occurrences are reported in the MINDeSEA database including: hydrothermal mineralisation, cobalt-rich ferromanganese crusts, phosphorites, manganese nodules and marine placer deposits. Seamounts, submarine volcanoes and banks in the Macaronesia sector (Portugal and Spain) and the Arctic ridges (Norway, Denmark, Iceland) show a high potential for Fe-Mn crusts, rich in energy-critical elements like cobalt but also tellurium, rare earth elements, and manganese. Fe-Mn crusts are accompanied by phosphorites on the seafloor of continental shelves and slopes along the western continental margins of Portugal and Spain. These marine phosphorites concentrate rare earth elements and yttrium in addition to phosphate. Seafloor polymetallic sulphides and metalliferous sediments precipitating from hot hydrothermal solutions and plumes are forming today in the Azores Islands (Portugal), the Arctic (Norway, Denmark) and, the Mediterranean volcanic arcs (Italy and Greece). They are among the most important marine resources for copper, zinc, silver, and gold. In addition, hydrothermal deposits may contain economic grades of cobalt, tin, barium, indium, bismuth, tellurium, gallium, and germanium. Placer deposits of chemically resistant, physically durable minerals have been discovered on shallow-water settings (<50 m water depth on estuaries, deltas, beaches) linked to the weathering of onshore rocks and ore deposits from the Variscan Belt in UK, France, Portugal and Spain, Eastern Mediterranean (Albania, Greece and Cyprus), Black Sea (Ukraine, Rumania, Bulgaria), the Arctic Ocean (Russia, Norway, Denmark) and the Baltic Sea (Poland, Latvia). Accumulations of heavy minerals include monazite, ilmenite, rutile, zircon, garnet, gold, diamonds, cassiterite and magnetite. Finally, shallow-water concretions and nodules from the Arctic (Norway, Russia), Baltic (Sweden, Poland, Finland, Russia, Estonia, Germany), and Black Sea (Ukraine, Romania) represent potential targets for metals exploration and environmental studies.

In December 2018, MINDeSEA produced the first pan-European compilation map of “energy- critical elements” based on ferromanganese deposits. The map reports occurrences and deposits for cobalt and lithium and can be downloaded at: https://geoera.eu/projects/mindesea2/

The project is co-operating with the GeoERA Secretariat in its efforts to disseminate the results to stakeholders including policy makers, industry and academia. Widespread dissemination of the Project activities and products is ensured by: participation and communication in international forums, workshops, educational activities, knowledge exchange, scientific and promotional publications, reports, newsletters, press release and media news, internships, dissertation of Doctoral Theses (PhD) and Master Theses, and work-training experiences for last year students from national and international Universities; as well as the creation, management and continuous update of the GeoERA-

MINDeSEA website (https://geoera.eu/projects/mindesea2/), a dedicated website (https://geoeramindesea.wixsite.com/mindesea) and Social Media (https://twitter.com/MINDeSEA and https://www.facebook.com/mindesea.mindesea.9) are contributing to display all these referred issues.

PROJECT CONTRIBUTION TO GeoERA PROJECT

MINDeSEA is the flagship project of GeoERA on seabed mineral deposits in the European Seas, and one of the cornerstones of the GeoERA Raw Materials theme. The Earth provides mineral resources that are vital for human life. As global demand grows, especially for strategic metals and critical raw materials (CRM) crucial for low-carbon energy production and new technologies, there is a proportionate risk of increasing supply shortage for resources that are identified as critical to Europe's economy. This project handles the Critical Raw Materials in a follow up of the EU Commission's concerns regarding the sustainable sourcing of strategic and critical raw materials to Europe's industry, the contribution to the Blue Growth strategy, the Battery Alliance and the transition from a carbon-based to green-energy-based world.

MINDeSEA aims to assess the quantity and quality of marine CRM's, and a more comprehensive pan-European identification and compilation of mineral potential and classification of metallogenic seafloor mineral deposits. MINDeSEA also aims to provide guidance for the management of impacts resulting from deep sea resource exploitation, minimising environmental impacts and footprints. Marine spatial planning to ensure conservation of oceans as well as prevent conflict with other ocean users is in its core action.

This overall philosophy of research within MINDeSEA fulfills the main objective of GeoERA, which is to contribute to the sustainable use and responsible management of the subsurface. GeoERA will aim to support: 1) a more integrated and efficient management, maximising its added value and 2) a more responsible and publicly accepted, exploitation and use of the subsurface, minimising environmental impacts and footprints.

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
Partner number 3: Changed name from Institute of Geology & Mineral Exploration (IGME Gr) to Hellenic Survey of Geology and Mineral Exploration (HSGME)	Changed Project proposal and corrected name of partner. Required amendment carried out through the EU participant portal. IGME-Gr termination report in	No	No
Changed due date of Deliverable for WP2 – D2.3-1 and D2.3-2 (Workshops)	Changed Project proposal and corrected dates of deliverables	No	Yes, workplan (deliver dates changed from M8 and M15 to M11 and M17 respectively) Approbed by GeoERA Assembly on 19 December 2019

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)	
MEETINGS	Meeting with other GeoERA projects	3-5 July 2018	GENERAL PUBLIC	500 (Kick-off meeting of GeoERA, Brussels)	IGME-Sp, BGR, IGME	MINDeSEA team	https://geoera.eu/blog/event/project-kick-off-meetings/	
PUBLICATIONS	PAPERS	July 2018	SCIENTIFIC COMM	Open Access (MDPI Publication)	IGME-Sp, IGEO	Marino, E.; González, F.J.;	https://www.mdpi.com/2075-163X/8/7/285	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	July 2018	GENERAL PUBLIC	Unknown visitors (GeoERA-MINDeSEA website audiences)	IGME-Sp, BGR, IGME	MINDeSEA team, GIP-team	https://geoera.eu/projects/mindesea2/	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	July 2018	GENERAL PUBLIC	320 followers, 902 tweets, 5100 likes and >250.000 interactions	IGME-Sp	MINDeSEA team	https://twitter.com/MINDeSEA	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	July 2018	GENERAL PUBLIC	>125 Friends (MINDeSEA Facebook account)	IGME-Sp	MINDeSEA team	https://www.facebook.com/mindesea.mindesea.9	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	August 2018	GENERAL PUBLIC	300 (MINDeSEA Newsletter, issue 1)	IGME-Sp, BGR, IGME	MINDeSEA team	https://geoeramindesea.wixsite.com/mindesea/Newsletter1_	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	July 2018	GENERAL PUBLIC	Unknown (GeoERA-MINDeSEA promotional poster)	IGME-Sp, BGR, IGME	MINDeSEA team	https://MINDeSEA poster.pdf	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	July 2018	GENERAL PUBLIC	Unknown (GeoERA promotional poster)	EGS	Antje Wittenberg, GeoERA	https://GeoERA RM poster.pdf	
PUBLICATIONS	SCIENTIFIC PUBLICATION	10-14 Septembe	SCIENTIFIC COMM	300 (Academia, Mining industry, Marine research-technological ce	IGME-Sp, BGR, IGME	Javier González, Luis Sono	https://LIMC18_MINDeSEA.pdf	
EVENTS	EXHIBITION	8-16 September	GENERAL PUBLIC	>2000 (TIF, 83rd Thessaloniki Fair)	IGME-Gr	Irene Zananiri, MINDeSEA	https://Thessaloniki_InterFair18.pdf	
EVENTS	SEMINAR	28-30 Septembe	GENERAL PUBLIC	>100 (Naval Week, Madrid)	IGME-Sp	Luis Somoza, MINDeSEA te	https://SemanaNaval18.pdf	
EVENTS	TRAINING	Autumn 2018	GENERAL PUBLIC	200 (Secondary school and University students; Lisbon, Las Palma	LNEG, IGME-Sp	Pedro Ferreira, Javier González		
MEETINGS	Meeting with international body	24-28 Septembe	SCIENTIFIC COMM	40 (MGEG-EuroGeoSurveys and EMODnet-Geology consortium, Al	IGME-Sp	Teresa Medialdea		
MEDIA	RADIO, TV,	September 201	GENERAL PUBLIC	Unknown (Radio)	IGME-Sp	Javier González	https://www.cope.es/emisoras/canarias/la-manana-canarias/audios/manana-canarias-con-mayer-trujillo-20180917_544950	
EVENTS	CONGRESS	25 October 201	GENERAL PUBLIC	200 (ESRI España Community, Madrid)	IGME-Sp	Iker del Barrio, Lorena Bla	https://ESRI18.pdf	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	October 2018	GENERAL PUBLIC	>2500 visitors (MINDeSEA dedicated website audiences)	IGME-Sp, BGR, IGME	MINDeSEA team	https://geoeramindesea.wixsite.com/mindesea	
MEETINGS	Meeting with international body	16-17 October	EU INSTITUTION	50-80 (EuroGeoSurveys Directors' Workshop, Bratislava)	IGME-Sp, BGR, IGME	Daniel Oliveira, MINDeSEA team		
PUBLICATIONS	SCIENTIFIC PUBLICATION	30 October 201	SCIENTIFIC COMM	150 (Academia, Mining industry, Marine research-technological ce	IGME-Sp, IPMA, LNE	Francisco Javier González,	https://GeolSoc_London18.pdf	
PUBLICATIONS	SCIENTIFIC PUBLICATION	1 November 20	SCIENTIFIC COMM	150 (Academia, Mining industry, Marine research-technological ce	IGME-Sp, IGEO, BGR	Egidio Marino, Francisco J.	https://GeolSoc_London18.pdf	
MEDIA	RADIO, TV,	November 2018	GENERAL PUBLIC	Unknown (Radio)	IGME-Sp	Javier González	http://cadenaser.com/emisora/2018/11/20/ser_las_palmas/1542713064_543044.html	
PUBLICATIONS	SCIENTIFIC PUBLICATION	November 2018	SCIENTIFIC COMM	Unknown (Ocas y Minerales journal nº 558, p 54)	IGME-Sp		https://issuu.com/fuenyeditores0/docs/rocas558/54	
EVENTS	PITCH EVENT	12-16 Novembe	POLICY MAKERS	400-600 (European Raw materials Week 2018, Brussels)	IGME-Sp, BGR, IGME	MINDeSEA team		
EVENTS	MEETINGS	26 November 2	SCIENTIFIC COMM	400 (PhDay, Madrid Complutense Univ. Faculty members and Geo	IGME-Sp, IGEO	Egidio Marino	https://edoctorado.ucm.es/2-jornada-phday-complutense	
MEETINGS	Meeting with other GeoERA projects	27-29 Nobembe	SCIENTIFIC COMM	40 (MREG-EuroGeoSurveys, Rome)	IGME-Sp, BGR, IGME	Javier González		
MEETINGS	Meeting with national body	6 December 20	POLICY MAKERS	50 (InfoDay at the Greek Ministry of Environment and Energy, Ath	IGME-Gr	Irene Zananiri		
PUBLICATIONS	TECHNICAL REPORT	December 2018	GENERAL PUBLIC	Unknown	IGME-Sp, LNEG, IPM	Javier González, Iker Blasc	https://Energy Critical Elements.pdf	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	December 2018	GENERAL PUBLIC	300 (MINDeSEA Newsletter, issue 2)	IGME-Sp, BGR, IGME	MINDeSEA team	https://geoeramindesea.wixsite.com/mindesea/Newsletter2_	
MEDIA	ONLINE MEDIA	Autumn 2018	GENERAL PUBLIC	Unknown (>10 News in media: newspapers)	IGME-Sp	MINDeSEA team	https://geoeramindesea.wixsite.com/mindesea/news	
PUBLICATIONS	TECHNICAL REPORT	28.12.2018	POLICY MAKERS	20-30 (Internal Progress Report on the MINDeSEA Consortium Acti	IGME-Sp, BGR, IGME	Javier González, MINDeSEA team		
PUBLICATIONS	PAPERS	January 2019	SCIENTIFIC COMM	Unknown (Marine Geology journal)	IGME-Sp	Luis Somoza	https://doi.org/10.1016/j.margeo.2018.11.011	
PUBLICATIONS	SCIENTIFIC PUBLICATION	December 2018	SCIENTIFIC COMM	1000 (Spanish Cartography Society Bulletin 21, p 11)	IGME-Sp	Leticia Vega	https://geoeramindesea.wixsite.com/mindesea/publications	
EVENTS	EXHIBITION	7 March 2019	OTHER (customers)	>2500 (PDAC, Toronto)	IGME-Sp, BGR, IGME	Javier González		
EVENTS	TRAINING	April 2019	SCIENTIFIC COMM	25 (Madrid Complutense Univ. Master students, Seminar on deep	IGME-Sp	Javier González		
PUBLICATIONS	PAPERS	April 2019	SCIENTIFIC COMM	Unknown (Marine Geology journal)	IGME-Sp		https://doi.org/10.1016/j.margeo.2018.12.006	
PUBLICATIONS	TECHNICAL REPORT	1.05.2019	GENERAL PUBLIC	>1000 (The EU Blue Economy Report 2019, section 4.3 Marine Mi	IGME-Sp, BGR, IGME	Javier González	https://op.europa.eu/en/publication-detail/-/publication/676bbd4a-7dd9-11e9-9f05-01aa75ed71a1/language-en/	
MEETINGS	Internal project meeting	6.05.2019	SCIENTIFIC COMM	20 (MINDeSEA meeting, Madrid)	IGME-Sp, BGR, IGME	MINDeSEA team		
EVENTS	WORKSHOP	7.05.2019	SCIENTIFIC COMM	30-50 (First MINDeSEA Workshop, Madrid)	IGME-Sp, BGR, IGME	MINDeSEA team	https://MINDeSEA Workshop1.pdf	
MEETINGS	Meeting with other GeoERA projects	13.05.2019	SCIENTIFIC COMM	30-50 (GeoERA B2B MREG Meeting in Trondheim)	IGME-Sp, BGR, IGME	Javier González		
EVENTS	TRAINING	January-June 20	SCIENTIFIC COMM	1 (Internship Master student, Hannover)	BGR	Janine Wegner		
PUBLICATIONS	PAPERS	June 2019	SCIENTIFIC COMM	Open Access (MDPI Publication)	IGME-Sp, IGEO, BGR	Marino, E.; González, F.J.;	https://doi.org/10.3390/min9070439	
PUBLICATIONS	THESIS	June 2019	SCIENTIFIC COMM	20-30 (Master Thesis, Univ. Hannover)	BGR	Janine Wegner		
PUBLICATIONS	TECHNICAL REPORT	28.06.2019	POLICY MAKERS	20-30 (Internal Progress Report on the MINDeSEA Consortium Acti	IGME-Sp, BGR, IGME	Javier González, MINDeSEA team		
MEDIA	ONLINE MEDIA	28.06.2019	GENERAL PUBLIC	Unknown Youtube (MINDeSEA Project CRM in the European miner	IGME-Sp	Javier González	https://www.youtube.com/watch?v=-RZMEd0Hngk	
EVENTS	CONGRESS	18-23 August 2	SCIENTIFIC COMM	>2500 (Goldschmidt Conference 2019, Barcelona)	IGME-Sp, BGR, IGME	MINDeSEA team	https://goldschmidtabstracts.info/2019/1174.pdf	
EVENTS	CONGRESS	18-23 August 2	SCIENTIFIC COMM	>2500 (Goldschmidt Conference 2019, Barcelona)	IGME-Sp, BGR, IGME	MINDeSEA team	https://goldschmidtabstracts.info/2019/2153.pdf	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	August 2019	GENERAL PUBLIC	300 (MINDeSEA Newsletter, issue 3)	IGME-Sp, BGR, IGME	MINDeSEA team	https://geoeramindesea.wixsite.com/mindesea/Newsletter3_	
PUBLICATIONS	TECHNICAL REPORT	September 201	SCIENTIFIC COMM	1000 (INTERRIDGE Community)	IGME-Sp, IGEO, BGR	Egidio Marino	https://www.interridge.org/files/Interridge/Report_E_Marino.pdf	
EVENTS	CONGRESS	22-25 Septembe	SCIENTIFIC COMM	300 (GeoMünster 2019)	BGR	Antje Wittenberg, GeoERA	http://www.geomuenster2019.de/index.html	
MEETINGS	Meeting with other GeoERA projects	5.10.2019	SCIENTIFIC COMM	20-30 (GeoERA B2B MREG Meeting in Madrid)	IGME-Sp, BGR, IGME	Javier González		
MEETINGS	Meeting with international body	8 October 2019	EU INSTITUTION	50-80 (46 EuroGeoSurveys Directors' Workshop, Prague)	IGME-Sp, BGR, IGME	Antje Wittenberg, MINDeSEA team		
EVENTS	WORKSHOP	16-18 October 2	POLICY MAKERS	40-60 (MarSP workshop, marine spatial planning in the Canary Isl	IGME-Sp	Javier González	http://www.marsp.eu/news/18 http://www.marsp.eu/#	
MEDIA	RADIO, TV,	October 2019	GENERAL PUBLIC	Unknown (Radio)	IGME-Sp	Javier González	https://geoeramindesea.wixsite.com/mindesea/news	
MEDIA	ONLINE MEDIA	November 2019	GENERAL PUBLIC	Unknown Youtube (MarSP Project from the Stakeholders Perspecti	IGME-Sp	Javier González	https://www.youtube.com/watch?v=JRGz_VcHWTY&feature=youtu.be	
EVENTS	MEETINGS	5 November 20	SCIENTIFIC COMM	400 (PhDay, Madrid Complutense Univ. Faculty members and Geo	IGME-Sp, IGEO, BGR	Egidio Marino	https://edoctorado.ucm.es/3-jornada-phday-complutense https://69ef338c-adbf-4a98-94a6-1e32d03179fa.filesusr.com/ugd/e60895_d520f221423b478c9846f887ad142b1b.pdf	
MEETINGS	Internal project meeting	26.11.2019	SCIENTIFIC COMM	15 (MINDeSEA meeting, Trondheim)	IGME-Sp, BGR, IGME	MINDeSEA team		
EVENTS	WORKSHOP	27.11.2019	SCIENTIFIC COMM	30-50 (Second MINDeSEA Workshop, Trondheim)	IGME-Sp, BGR, IGME	MINDeSEA team	https://MINDeSEA_Workshop2.pdf	
EVENTS	MEETINGS	18-22/11/2019	POLICY MAKERS	>1000 (European Raw Materials Week 2019, Brussels)	IGME-Sp, BGR, IGME	MINDeSEA team		
EVENTS	WORKSHOP	22-25 Novembe	SCIENTIFIC COMM	30-50 (Marine E-Tech workshop, Ubatuba-Brazil)	IGME-Sp, IGEO, USG	Egidio Marino, MINDeSEA	https://www.facebook.com/groups/798310387294422/	
EVENTS	WORKSHOP	25-29 Novembe	POLICY MAKERS	100-150 (ISA workshop, Hydrothermal mineralization and environm	Okean Geologia	Georgy Cherkashov	https://ran-s3.s3.amazonaws.com/isa.org.jm/s3fs-public/files/documents/datareport-19nov-lowres.pdf https://ran-s3.s3.amazonaws.com/isa.org.jm/s3fs-public/files/documents/readraft.pdf	
EVENTS	TRAINING	July 2018-Nove	SCIENTIFIC COMM	1 (PhD student formation)	IGME-Sp, IGEO	Egidio Marino		
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	November 2019	GENERAL PUBLIC	>1000 (GeoERA Raw Materials Projects flyer)	IGME-Sp, BGR, IGME	MINDeSEA team; GeoERA	https://geoeramindesea.wixsite.com/mindesea/promotional-material	
EVENTS	MEETINGS	22.11.2019	POLICY MAKERS	>100 (ORAMA final Meeting, Brussels)	IGME-Sp, BGR, IGME	MINDeSEA team	https://orama-h2020.eu/event/orama-final-event/	
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	25.11.2019	GENERAL PUBLIC	>1000 (GeoERA Raw Materials Special Newsletter)	IGME-Sp, BGR, IGME	Antje Wittenberg, GeoERA	https://geoera.eu/wp-content/uploads/2019/11/Raw-Materials-Week-Special-Newsletter-4.pdf	
EVENTS	TRAINING	September-Dec	SCIENTIFIC COMM	1 (Internship Master student, Madrid)	IGME-Sp	Iñigo Zalba		
EVENTS	CONGRESS	6.12.2019	POLICY MAKERS	>2000 (COP 25, International Climate Conference, Madrid)	IGME-Sp	Iker Blasco, MINDeSEA te	https://www.cop25.cl/#/	
PUBLICATIONS	THESIS	16.12.2019	SCIENTIFIC COMM	20-30 (Master Thesis, Univ. Cadiz)	IGME-Sp, SGU	Iñigo Zalba		
PUBLICATIONS	TECHNICAL REPORT	28.12.2019	POLICY MAKERS	20-30 (Internal Progress Report on the MINDeSEA Consortium Acti	IGME-Sp, BGR, IGME	Javier González, MINDeSEA team		
MEDIA	ONLINE MEDIA	Summer-Autum	GENERAL PUBLIC	Unknown (>20 News in media: newspapers)	IGME-Sp	MINDeSEA team	https://geoeramindesea.wixsite.com/mindesea/news	

INSTRUCTIONS
Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	INTERNAL PROJECT MEETING
	MEETING WITH OTHER GEOERA PROJECTS
	MEETING WITH NATIONAL BODY
	MEETING WITH INTERNATIONAL BODY
	OTHER
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

PROJECT MANAGEMENT

• Maintaining an open communication channel between project coordinator, WP leaders and consortium members • A close quarters, open dialogue stream with the GeoERA Secretariat, the GeoERA Raw Materials Theme coordinator, Antje Wittenberg, and Monitoring Team • Fomenting the interaction between WP's; essential for the success of MINDeSEA, as well as between MINDeSEA and the other Raw Materials projects namely, FRAME, Eurolithos, Mintell4EU and GIP-IP • Maintaining an open cooperation framework with other projects and research groups for the study of submarine mineral deposits at national and international scale (EMODnet-Geology, EXPLOSEA, Marine E-tech) • Opening a communication highway between MINDeSEA and the Marine Geology Group (MGEG) and Mineral Resources Group (MREG) of EuroGeoSurveys (EGS). This has been particularly useful in getting countries that do not belong to the consortium to deliver data or stablishing dialogue for future cooperation. This close interaction with MGEG and MREG and EGS is clearly a benefit and has already been instrumental in achieving a complete map of submarine mineral deposits in Europe and a first version on the map of the Energy Critical Elements Co and Li in pan-European seas • This interaction with EGS and MREG has resulted in meetings of the MREG group having a B2B meeting with the GeoERA RM projects. The formula has been applied in Rome (November 2018), Trondheim (May 2019) and Madrid (November 2019) and has been successful and is seen as essential to discuss project details • The interaction with EGS and MGEG has resulted in a meeting of the MGEG group having a B2B meeting

IMPACT STATEMENT

At this stage it is too early to evaluate impact, comments will be provided at the review meeting.

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
	Actual			(0,25*A+B)				
1. IGME-Sp	152.642,00	15.567,00	24.041,00	42.052,25	234.302,25	29,70%	69.587,77	164.714,48
2. BGR	35.590,63	2.888,74	0,00	9.619,84	48.099,21	29,70%	14.285,47	33.813,75
3. IGME-Gr (until 8/3/19)	1.860,00	1.214,96	0,00	768,74	3.843,70	29,70%	1.141,58	2.702,12
3. HSGME (from 9/3/19)	3.720,00	0,00	0,00	930,00	4.650,00	29,70%	1.381,05	3.268,95
4. GSI	18.725,42	1.721,78	0,00	5.111,80	25.559,00	29,70%	7.591,02	17.967,98
5. NGU	11.301,52	4.250,28	0,00	3.887,95	19.439,75	29,70%	5.773,61	13.666,14
6. LNEG	21.698,43	2.215,83	0,00	5.978,57	29.892,83	29,70%	8.878,17	21.014,66
7. SGU	5.367,98	0,00	5.200,43	1.342,00	11.910,41	29,70%	3.537,39	8.373,01
8. Geoinform	2.774,52	0,00	0,00	693,63	3.468,15	29,70%	1.030,04	2.438,11
					381.165,29		113.206,09	267.959,20

Date:	22.01.2020
Person responsible:	Javier Gonzalez

FINANCIAL STATEMENT FOR PP 1 - IGME-Sp

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1. IGME-Sp	152.642,00	15.567,00	24.041,00	42.052,25	234.302,25	29,70%	69.587,77	164.714,48

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	27,25	WP1, 2, 3, 4, 5, 6,	152.642,00
			152.642,00

3,40625

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA Kick-off meeting and	Travel	WP1-8	5.712,00
	MINDeSEA Madrid meeting,	Travel	WP1-8	9.855,00
				15.567,00

Subcontracting	Supplier	Description	Associated WP	Cost
	Iker Blasco del Barrio	GIS and database	WP2-7	3.600,00
	Fundación General Universid	High-resolution n	WP4	2.001,00
	Lorena Blanco Muñoz	Website and apps	WP2-7	3.600,00
	Iker Blasco del Barrio	GIS and database	WP2-7	9.840,00
	Lorena Blanco Muñoz	Website update;	WP2-7	5.000,00
				24.041,00

FINANCIAL STATEMENT FOR PP 2 - BGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2. BGR	35.590,63	2.888,74	0,00	9.619,84	48.099,21	29,70%	14.285,47	33.813,75

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,43	WP6	35.590,63
			35.590,63

Other direct costs	Description	Category	Associated WP	Costs
	Travel Brussels	Travel	WP2	938,85
	Travel Trondheim	Travel	WP6	1.272,94
	Travel Madrid	Travel	WP4	676,95
				2.888,74

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 3 -IGME-Gr

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
3. IGME-Gr	1.860,00	1.214,96	0,00	768,74	3.843,70	29,70%	1.141,58	2.702,12

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,1	WP2	310,00
	0,5	WP5	1.550,00
			1.860,00

Other direct costs	Description	Category	Associated WP	Costs
	Participation of 1 person (I.Z	Travel	WP5	1.214,96
				1.214,96

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 3 -HSGME

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
3. HSGME	3.720,00	0,00	0,00	930,00	4.650,00	29,70%	1.381,05	3.268,95

Explanations

Personnel costs Actual	Person months	Associated W	Amount
	1,2	WP5	3.720,00
			3.720,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 4 -GSI

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
4. GSI	18.725,42	1.721,78	0,00	5.111,80	25.559,00	29,70%	7.591,02	17.967,98

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,75	WP8	18.725,42
			18.725,42

Other direct costs	Description	Category	Associated WP	Costs
	Travel to MINDeS	Travel	WP8	550,82
	Travel to MINDeS	Travel	WP8	436,98
	Travel to MINDeS	Travel	WP8	733,98
				1.721,78

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 5 -NGU

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
5.NGU	11.301,52	4.250,28	0,00	3.887,95	19.439,75	29,70%	5.773,61	13.666,14

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,39	WP3	11.301,52
			11.301,52

Other direct costs	Description	Category	Associated WP	Costs
	Meeting	Meeting	WP3	423,65
	AUR-Lab	Meeting	WP3	178,84
	Kickoff BXL July 20	Travel	WP3	782,64
	Meet. Roma Nov 2018		WP3	1.095,01
	Meet. Madrid Ma	Travel	WP3	1.770,14
				4.250,28

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 6 -LNEG

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
6. LNEG	21.698,43	2.215,83	0,00	5.978,57	29.892,83	29,70%	8.878,17	21.014,66

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,24	WP2	1.098,05
	0,47	WP3	2.212,49
	0,48	WP4	2.245,27
	0,26	WP5	1.180,00
	2,71	WP6	12.717,35
	0,48	WP7	2.245,27
			21.698,43

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA MINDeSE	Travel	WP2, 3, 4, 5, 6, 7	1.083,60
	GeoERA-MINDeSE	Travel	WP2, 3, 4, 6	187,62
	GeoERA-MINDeSE	Travel	WP2, 3, 4, 7	944,61
				2.215,83

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 7 -SGU

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
7. SGU	5.367,98	0,00	5.200,43	1.342,00	11.910,41	29,70%	3.537,39	8.373,01

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,81	WP6	5.367,98
			5.367,98

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
	Analyses	Other cost	WP6	5.200,43
				5.200,43

FINANCIAL STATEMENT FOR PP 8 -Geoinform

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
8.Geoinform	2.774,52	0,00	0,00	693,63	3.468,15	29,70%	1.030,04	2.438,11

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,151773318	WP2	733,42
	0,107634194	WP4	520,13
	0,116444628	WP5	562,70
	0,108637295	WP6	524,97
	0,089666426	WP7	433,30
			2.774,52

Other direct costs	Description	Category	Associated WP	Costs

0

Subcontracting	Supplier	Description	Associated WP	Cost

0

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Mineral Intelligence for Europe
Project acronym:	Mintell4EU
Project reference number:	GeoE.171.016
Project topic:	Raw Materials
Project specific research topic:	RM1 – IMPROVING AND SUSTAINING THE RAW MATERIALS KNOWLEDGE BASE BY PERIODICALLY DELIVERING A MINERALS YEARBOOK AND INVENTORY INFORMATION SYSTEM
Project website address:	https://geoera.eu/projects/mintell4eu7/

Period covered from: 1.07.2018 to: 31.12.2019

Report submission date:
Project coordinator: David Whitehead

Contact person for the project: David Whitehead
Tel:
E-mail: dw@geus.dk

IDENTIFICATION OF PROJECT PARTICIPANTS

[use dropdown menu]

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	De nationale geologiske undersøgelser for Danmark og Grønland	Geological Survey of Denmark and Greenland	GEUS	Denmark	999459677	Project Lead
2	Bundesanstalt Für Geowissenschaften und Rohstoffe	The French Geological Survey	BRGM	France	999993662	Project Partner
3	Instituto Geológico y Minero de Espana	Geological Survey of Spain	IGME-Sp	Spain	998737803	Project Partner
4	Ministry of Agriculture, Natural Resources and Environment of Cyprus	Cyprus Geological Survey Department	GSD	Cyprus	999434845	Project Partner
5	Istituto Superiore per la Protezione e la Ricerca Ambientale	Italian Institute for Environmental Protection and Research	ISPRA	Italy	997905349	Project Partner
6	Norges Geologiske undersokelse	Geological Survey of Norway	NGU	Norway	999466758	Project Partner
7	Geološki zavod Slovenije	Geological Survey of Slovenia	GeoZS	Slovenia	999466370	Project Partner
8	Sveriges Geologiska Undersökning	Geological Survey of Sweden	SGU	Sweden	995575991	Project Partner
9	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund of Ukraine	GEOINFORM	Ukraine	947331392	Project Partner
10	Statny Geologicky ustav Dionyza Stura	State Geological Institute of Dionyz Stur	SGUDS	Slovakia	995391982	Project Partner
11	Laboratorio Nacional de Energia e Geologia I.P.	The National Laboratory of Energy and Geology	LNEG	Portugal	994187921	Project Partner
12	Institouto Geologikon kai Metalleftikon Erevnon	Institute of Geology and Mineral Exploration	IGME-Gr	Greece	925968015	Project Partner
13	Hrvatski geoloski institut	Croatian Geological Survey	HGI-CGS	Croatia	972614345	Project Partner
14	Geologian Tutkimuskeskus	Geological Survey of Finland	GTK	Finland	999432614	Project Partner
15	UK Research and Innovation	British Geological Survey	NERC (UKRI)	United Kingdom	906446474	Project Partner
16	Regierungspräsidium Freiburg	Regional Council Freiburg	LGRB	Germany	942768124	Project Partner
17	Bundesanstalt für Geowissenschaften und Rohstoffe	Federal Institute for Geosciences and Natural Resources	BGR	Germany	999429413	Project Partner
18	Department of Communications, Climate Action and Environment	Geological Survey of Ireland	GSI	Ireland	996559280	Project Partner
19	Institut Royal des Sciences Natueelles de Belgique	Geological Survey of Belgium – Royal Belgian Institute of Natural Sciences	RBINS-GSB	Belgium	998437006	Project Partner
20	Magyar Bányászati és Földtani Szolgálat	Mining and Geological Survey of Hungary	MBFSZ	Hungary	967592364	Project Partner
21	Administration Des Ponts et Chaussees Direction; Service Géologique du Luxembourg	National geological survey	SGL	Luxemburg	983408408	Project Partner
22	Geological Survey of Serbia	Geological Survey of Serbia	GSS	Serbia	919767678	Project Partner
23	Per Sherbimin Gjeologjik Shqiptar	Albanian Geological Survey	AGS	Albania	951811337	Project Partner
24	Ceska Geologicka Sluzba	Czech Geological Survey	CGS	Czech Republic	999546783	Project Partner
25	Federalni Zavod Za Geologiju Sarajevo	Geological Survey of Federation of Bosnia and Herzegovina	FZZG	Bosnia and Herzegov	947831524	Project Partner
26	Regione Umbria	Servizio Geologico	RU	Italy	997980233	Project Partner
27	Geologische Bundesanstalt	Geological Survey of Austria	GBA	Austria	998164145	Project Partner
28						
29						
30						
31						
32						
33						

PUBLISHABLE SUMMARY

The European Union has identified security of supply, improvement in environmental management and resource efficiency as key challenges for the raw materials sector. Spatial and statistical data regarding the distribution of primary and secondary raw materials, with respect to exploration, exploitation/production and trade activities, underpin decision making by governments and industry. Given the dynamic character of such data, regular updates of comprehensive, reliable and harmonized information across borders are required. The overall aim of Mintell4EU is to improve the European knowledge base on raw materials by updating the electronic Minerals Yearbook, by extending the spatial coverage and quality of data currently in the Minerals Inventory and by increasing the degree of harmonisation, communication and interaction between existing data platforms.

Activities to update the electronic minerals yearbook produced by the Minerals4EU project are ongoing. So far, production data for 2014 to 2017 and trade date for 2014 to 2016 have been added and can be found online. Time series for these two data types will be extended by a further two years each over the next few months. Resources, reserves and exploration data with a reference year of 2019 will also be collected, and the electronic minerals yearbook will be integrated into the Minerals4EU database.

Another important task is to improve spatial coverage and data quality of the European minerals inventory. To achieve this, the project is cooperating with the ORAMA and the REESERVE projects. Data coverage has been extended with the addition of data from the Balkan countries and one German state. In addition, a quality control application was developed to enable data provides to appraise their latest uploaded data.

Furthermore, Mintell4EU aims to increase the degree of harmonization, communication and interaction between existing data platforms. The ambition is to create a fully operational and reliable data knowledge management system, fulfilling the European needs and considering the existing Raw Materials Information System (RMIS) of the European Union. For this, a number of API applications aimed at the RMIS are under development. As for all GeoERA projects, results from Mintell4EU will be integrated into EGDI.

Finally, the applicability of the UNFC classification system for obtaining more accurate Pan-European mineral inventories is being tested through a large number of pilot studies on different commodity types. This is built on the back of ORAMA recommendations and in cooperation with the FRAME, EuroLithos, MINDeSEA projects and other UNFC activities initiated by the EC.

The GeoERA Raw Material projects are closely connected to the Mineral Resources Expert Group (MREG) under the auspice of EuroGeoSurvey. Meetings are held at several occasions each year discussing challenges and possible roads forward. This interaction enhances a successful outcome of Mintell4EU as well as the other raw material projects.

PROJECT CONTRIBUTION TO GeoERA PROJECT

The Mintell4EU project supports the overall aim of GeoERA – to integrate European GSOs' information and knowledge on subsurface energy, water and raw material resources to contribute to sustainable use and management of the subsurface. Mintell4EU works to improve the European Union Raw Materials Knowledge Base (EURMKB) by updating the electronic minerals yearbook and by extending

the spatial coverage and improving data quality in the Mineral4EU database. Therefore, the scope described for projects under the GeoERA Programme Specific Research Topic “RM1 - IMPROVING AND SUSTAINING THE RAW MATERIALS KNOWLEDGE BASE BY PERIODICALLY DELIVERING A MINERALS YEARBOOK AND INVENTORY INFORMATION SYSTEM” is to a high degree being fulfilled by Mintell4EU.

Not only will the electronic minerals yearbook be updated, the data will also be transferred to the Minerals4EU database to allow automation and sustainability. This will enable appropriate and streamlined interfaces towards end users e.g. through EGDI and RMIS. Besides, the geographical coverage of raw materials data in the minerals inventory is extended with the addition of Balkan countries and a German state. The data quality and harmonization are addressed via education, workshops and the development of quality assurance tools. Harvesting systems to ensure correct data acquisition is already in place. Finally, Mintell4EU will implement recommendations from the ORAMA project including testing the use of UNFC on European mineral resource data. This will assess the potential of how this classification system can provide better harmonization of data and eventually help in providing more accurate Pan-European mineral inventories.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: Management, communication, dissemination, and sustainability Duration: M1-36

Task 1.1 - Management and reporting (M1-36):
The project was initiated at the GeoERA kick-off event in July 2018 with a kick-off meeting/project assembly. Due to parallel kick-off meetings for all 15 GeoERA projects, only 13 of 27 partners were present at this event, where the project content and expectations for outputs and impact were presented as described in the project proposal.
In October 2019, the second project assembly was held in Copenhagen, with the presence and participation of 24 partners. At this event, the progress and outputs of the project so far were presented, and the involvement of partners were discussed and secured.
In total, 15 project board meetings have been conducted (most per webex), almost one every months during the first 1½ year of the project. At these meetings, WP leads present the latest projects and issues of concern or challenges are discussed. All partners are invited to participate in these meetings and a few partners usually takes advantage of this opportunity.
As the proposal phase was hectic and the project lead was only agreed to be GEUS a few days before submission, it was decided to prepare a Inception Report/Project Management Plan in the first months of the project. For this, WP-leads (WP1, 3, 4 and 5) met in Ljubljana for discussion and decisions on progress, and outlining this report (D1.2, M6).
Besides, a Data Management Plan (D1.1, M6) describing how to ensure that outputs of Mintell4EU will be findable, accesible, interoperable and reusable (FAIR).
Task1.2: Communication Plan (M1-36):
A Communication and Dissemination Plan describing (D1.4, M6) how the results of the project will be disseminated to audience and target groups have also been prepared.
Task 1.3: Dissemination and communication of project results (M1-36):
The project and the expected outputs and impacts have been presented at more events, e.g. at Raw Materials Week (incl. Copernicus event) in Brussels in November 2018 and 2019 and at more ORAMA events. Besides, Mintell4EU has been invited and participated in three MREG meetings where common data issues have been presented and discussed. An agreement has been reached that MREG members support Mintell4EU in their role as raw material experts and will contribute with e.g. quality check of data.
Task 1.4: Sustainability (M1-30):
The Minerals4EU database and other RM related databases and systems have been created through a number of EU co-funded projects but so far no sustainable solution has been established to ensure maintenance and further development of all this. Mintell4EU has a goal of contribute to the sustainability by building on the results of ORAMA but also by including as much as possible content in the EGDI which will have to be sustained in some form after GeoERA supporting not only Mintell4EU but all GeoERA projects. Much effort is currently being put into proposing a Horizon Europe Partnership on a Geological Service for Europe which will be an obvious frame for the sustainability of the Raw Materials data and systems.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
1.1	Data Management Plan	GEUS	Report	Public	M6	Completed	
1.2	Project Management Plan, Inception Report	GEUS	Report	Public	M6	Completed	
1.3	Management reports (1)	GEUS	Report	Confidential	M18	Pending	
1.4	Communication and Dissemination Plan	GeoZS	Report	Public	M6	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
1.1	Kick-off meeting	M1	Completed	Project started

Work package 2: Update to Electronic European Minerals Yearbook Duration: M1-36

Task 2.1 - Production data updates for 2014 to 2017 and trade data updates for 2014 to 2016 (M1-12)
During months 1 to 8 of the project, the production data for 2017 was finalised, checked through BGS's internal quality control procedures and made ready for the electronic transfer together with updates to the data for 2004 to 2013 that already existed in the electronic Yearbook and data for 2014 to 2016, which were previously finalised by BGS in the years between the completion of the Minerals4EU project and Mintell4EU. Trade data for 2014 was similarly compiled by BGS before the Mintell4EU project commenced and these data were made available for the electronic transfer to the Yearbook. Between months 1 and 11, import and export data for 2015 and 2016 were purchased and manipulated, data gaps were filled where possible, then the data were quality checked and prepared for the electronic transfer. The electronic transfer itself required considerable 'mapping' of terms used by the BGS World Mineral Statistics database and those used by the electronic Yearbook's database (hosted by BRGM) in order to make the data interoperable with minimal manual intervention and without the use of Excel spreadsheets. After much correspondence between BGS, BRGM and GEUS, the electronic transfer of data happened in month 14. This was followed by some additional work internally by BRGM which allowed the new and revised data to be visible in the Yearbook early in month 16. A considerable number of lessons were learned during this process which will lead to improvements in the process for the next time.
Task 2.2 - Production data updates for 2018 and 2019 together with trade data updates for 2017 and 2018 (M13-36)
During months 13 to 18 production data for 2018 was compiled from the usual wide range of data sources into the BGS World Mineral Statistics database. These will be quality checked from month 19 onwards ready for electronic transfer around month 24. Also during months 13 to 18, the trade data for 2017 and 2018 were purchased and work has begun to assess and manipulate these data into the structure we need. As part of this process, data gaps are being identified and additional data sourced to fill them where possible. This work is on schedule and the data should be ready for the electronic transfer around month 24.
Production data for 2019 will begin to be collected around month 24.
Task 2.3 - Resources, reserves and exploration data updates with a reference year of 2019 (M25-36)
Although this task is not scheduled to start until month 25, some preliminary work has already begun to prepare for the new survey which will be conducted using a digital platform rather than the excel spreadsheets used for the earlier survey under Minerals4EU.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
-							

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
2.1	Updated pages of the electronic European Minerals Yearbook with production data for 2014 to 2017 and trade data for 2014 to 2016	M16	Completed	Data visible through the eMY

Work package 3: Minerals Inventory Duration: M1-36

Task 3.1 Minerals Inventory Improvements
The spatial coverage of the Minerals Inventory is extended with data from Western Balkan countries in cooperation with the RESEERVE project, and with data from one German State (Freiburg). Besides, new or modified data from existing data providers are available. The subsequent task on data control and harmonization is to make more new data providers able to deliver data in a harmonized way. A Mintell4EU Quality Control Application (QCA) was developed enabling data providers to visually check their latest reported data.
Task 3.2 Quality control of harvesting
Related to the tasks mentioned above, a harvesting system for collecting and validating mineral resources data is being created and improved access to raw materials data technical routines intervening during the harvesting phase are being implemented to ensure a rigorous control of the data quality.
A status report (D3.1 Minerals Inventory report) describes the developments in Task 3.1 and 3.2 while D3.2 Technical guidelines is a summary of existing technical guidelines or documentation, that is necessary for Minerals Inventory and e-MYB improvements to be carried out within Mintell4EU.
Task 3.3 Training workshops
Besides from a number of RESEERVE workshop, a Mintell4EU workshop will be held in Ljubljana in May 2020, drawing on experiences from REESERVE and from guidelines developed by the ORAMA project.
Task 3.4 Historical mine sites.
This task focuses on historical mine sites with a touristic component. An excel database for input has been created and is under elaboration regarding parameters for input. The possibilities for presenting some of the mines in a 'Coffee table book' is being investigated.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
3.1	Minerals Inventory Report (1)	GeoZS	Report	Public	M15	Completed	Delivery data was delayed from M12, amendment accepted
3.2	Technical Guidelines	GeoZS	Report	Public	M16	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
3.1	Workshop in connection to ORAMA	M18-26	Pending	(Planned for May 2020)
3.2	Workshop in connection to REESERVE	M18-26	Completed	Nine workshops so far, 4-25 participants per workshop, more data from the Balkan area is now available in Minerals4EU database.

Work package 4: UNFC pilot **Duration: M1-36**

Task 4.1 Selection of relevant cases for application of UNFC to European resources
Partners have selected commodities for their planned case studies on UNFC. This will be performed on metals, industrial minerals, on- and offshore aggregates, natural stone, energy minerals and secondary resources.
There has been a close cooperation with the ORAMA project. Mintell4EU WP4 will use documents from this project as a basis and continue the work to make good templates and guidelines for application of UNFC.
Task 4.2 Case study pilots
Partners have started the work with the case study pilots, this work in ongoing and will be finalized in M28. A guideline on how to perform UNFC has been prepared and will be distributed together with examples of relevant UNFC cases and templates and guidelines from the finalized ORAMA project. A workshop where partners meet to discuss their case studies and challenges is planned in September 2020.
Task 4.3 Review of harmonization issues, data gaps and challenges
Not started.
Task 4.4 Pan-European aggregation pilot
Not started.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
-							

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
4.1	Cases for pilot study	M4	Completed	Cases representing resources of metals, industrial minerals, aggregates and natural stones are idenfitified and

Work package 5: Improvement of KDPs' applications and interaction with the RMIS and the GeoERA Information Platform **Duration: M1-36**

Task 5.1 Comparative analysis of KDPs resources versus RMIS 2.0 needs
D5.1 (with the same title as the task) was finalised in M6. The report describes how KDPs can and should deliver information to the RMIS, and include an examination of how data on primary and secondary raw materials can be utilised by the RMIS. Secondly, the needs of the RMIS are considered in terms of the pre-computed views for the electronic mineral yearbook (e-MYB) and ProSUM e-stat module. The final component of the report describes how the RMIS could carry out thematic searches within non-structured knowledge. The report recommends that dedicated APIs are developed to provide a link between the different platforms and the RMIS.
Task 5.2 Identification of architectural requirements and user needs
D5.2 Recommendations for integration of result into the GeoERA Information Platform was completed in M6. This report highly recommends that the project works closely with the developers of the GeoERA GIP-P project to ensure consistent handling of the various interfaces and that the same data search on one platforms delivers the same results on the other.
Task 5.3 Integration of e-Minerals Yearbook in Minerals4EU database
D5.3.1 Specification of steps needed for the integration of the e-Minerals Yearbook in the Minerals4EU database was finalised in M6. It outlines a pathway for integration of the e-MYB into the Minerals4EU database through the creation of a new data model. Work on the data model is ongoing in collaboration with WP2 and a final report on the integration of the e-MYB data into the new model is expected to be completed in M26 as deliverable 5.3.2.
Task 5.4 Data exchange with RM
This task has just started and a planning meeting is scheduled for early February.
Task 5.5 KDP's applications delivery RMIS
Not started.
Task 5.6 Dedicated search in KDPs from RMS
Not started.
Task 5.7 Integration of data, search and other functionalities in GeoERA Information Platform
Work on deliverable D5.7.1 Description of how data and information from the project are integrated into the Information Platform and guidelines for future maintenance is ongoing and is expected to be finished soon. The deliverable will put the minerals inventory and e-Minerals Yearbook into the context of the GeoERA Information Platform (EGDI) and outline steps required for future maintenance of the system. The deliverable will also describe how the different dissemination interfaces are implemented, including portal solutions for end users and the various API's that are designed for integration with the RMIS. In this task the possibility of implementing UNFC codes into Minerals4EU is also being explored.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
5.1	Comparative analysis of KDPs resources versus RMIS 2.0 needs	BRGM	Report	Public	M12	Completed	
5.2	Recommendations for integration of result into the GeoERA Information Platform	BRGM	Report	Public	M6	Completed	
5.3.1	Specification of steps need for the integration of the e-Minerals Yearbook in the Minerals4EU database	GeoZS	Report	Public	M6	Completed	
5.7.1	Description of how data and information from the project are integrated into the Information Platform and guidelines for future maintenance	GEUS	Report	Public	M18	Pending	Work on the deliverable is ongoing and is expected to be completed soon.

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
5.1	Technical solutions outlined	M6	Completed	The integration of project results in the GeoERA Information Platform, the merge between the e-Minerals Yearbook and the Minerals4EU database specified and reported.
5.2	Prototype integration of results in the GeoERA Information Platform finished	M18	Completed	A prototype portal with existing data from Minerals4EU established

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
Two extra partners were added in May 2018, before project start	Budget was allocated to these two partners. Amendment accepted in May 2018.	No	
Errors in the budget were discovered in May 2018: a too high monthly wage rate was used for NERC-UKRI, and too low rates were used for BRGM and SGL.	Wage rates were corrected for NERC-UKRI, BRGM and SGL, and excess budget gave room for added two extra partners (RU and GBA, see above). The remaining excess budget was taken over by GEUS to keep for later adjustments of the budget. The total number of MM input to the project was raised from 456 to 470. These amendments were accepted in May 2018.	No	
In October 2019, another budget error was discovered as a too low wage rate was used for CGS.	Wage rate was corrected and budget allocated from GEUS to CGS. GEUS MM input in WP1 was reduced by appr. 1 MM and the total MM of the project reduced from 470 to 469. Amendments accepted in December 2019.	No	
Deliverable 3.1 was delayed from M12 to M15 due to challenges at GeoZS (responsible organisation for this deliverable) with staff and upgrading of a surver key to the activities and results described in the deliverables.	GeoZS solved this internally. Amendment accepted in December 2019	No	

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	What	Where	Link (if applicable)
EVENTS	CONFERENCE (tele-conference)	2-4 July 2018	GENERAL PUBLIC	>150	All project partners	Špela Kumelj, Lisbeth Flinc	Poster	GeoERA Kick-off Meeting	
EVENTS	MEETINGS	7-8 Nov. 2018	SCIENTIFIC COMMUNITY	>30	GeoZS	Špela Kumelj	Presentation	ORAMA 2nd Project Progress Meeting	
EVENTS	CONFERENCE (tele-conference)	16 Nov. 2018	POLICY MAKERS		NGU	Kari Aslaksen Aasly	Presentation	Raw Materials Week 2018	
EVENTS	CONFERENCE (tele-conference)	12 Nov. 2018	POLICY MAKERS		GeoZS	Jasna Sinigoj	Poster	Raw Materials Week 2018	
EVENTS	WORKSHOP	19 Feb. 2019	EU INSTITUTION	>25	GeoZS	Špela Kumelj	Presentation	RESERVE workshop	
EVENTS	WORKSHOP	13 June 2019	SCIENTIFIC COMMUNITY		NGU	Henrik Schiellerup	Presentation	ORAMA & JRC RMIS Joint Workshop	
EVENTS	CONFERENCE (tele-conference)	23-25 Sept. 2019	SCIENTIFIC COMMUNITY	>100	BGR	Antje Wittemberg	Poster	GeoMünster conference	
EVENTS	SEMINAR	15 Nov. 2019	SCIENTIFIC COMMUNITY	>90	GeoZS	Špela Kumelj	Presentation	5th Slovenian INSPIRE day	
EVENTS	CONFERENCE (tele-conference)	22 Nov. 2019	POLICY MAKERS		BGR	Antje Wittemberg	Presentation	Raw Materials Week 2019	
EVENTS	CONFERENCE (tele-conference)	22 Nov. 2019	SCIENTIFIC COMMUNITY	>50	GEUS	Jørgen Tulstrup	Presentation	ORAMA event at Raw Materials Week 2019	
PUBLICATIONS	NON-SCIENTIFIC PUBLICATION	28 Sept. 2018	GENERAL PUBLIC	>500	GeoZS	Špela Kumelj, Jasna Sinigoj	Article (in Slovenian only)	Revija MINERAL	https://www.mineral-revija.si/1875/Geoloska-sluzba-za-Evropo-%28GeoERA%29
PUBLICATIONS	NON-SCIENTIFIC PUBLICATION	Oct. 2018	GENERAL PUBLIC	>500	GeoZS	Špela Kumelj, Jasna Sinigoj	Article (in Slovenian only)	Mineral Resources in Slovenia	https://www.mineral-revija.si/1875/Geoloska-sluzba-za-Evropo-%28GeoERA%30
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	Nov. 2019	GENERAL PUBLIC	All project partners	GEUS		Flyer	Raw Materals Week 2019	https://geoera.eu/projects/mintell4eu/7/
MEETINGS	Internal project meeting	4 July 2018	SCIENTIFIC COMMUNITY	>30	All project partners	GEUS	Kick-off meeting/Project Assembly no. 1	GeoERA Kick-off Meeting	https://intranet2.geoera.eu/
MEETINGS	Internal project meeting	6-7 Nov. 2018	SCIENTIFIC COMMUNITY	10	All project partners	GEUS, GeoZS, NGU, BRGM	Inception workshop	GeoZS, Ljubljana, Slovenia	https://intranet2.geoera.eu/
MEETINGS	Meeting with international body	27-28 Nov. 2018	SCIENTIFIC COMMUNITY	>30	GEUS	Lisbeth Flindt Jørgensen	Presentation, discussions	MREG biannual meeting	
MEETINGS	Meeting with international body	27-28 Nov. 2018	SCIENTIFIC COMMUNITY	>30	NGU	Henrik Schiellerup	Presentation, discussions	MREG biannual meeting	
MEETINGS	Meeting with international body	14-15 May 2019	SCIENTIFIC COMMUNITY	>30	GEUS	Lisbeth Flindt Jørgensen	Presentation, discussions	MREG biannual meeting	
MEETINGS	Meeting with international body	4-5 Nov. 2019	SCIENTIFIC COMMUNITY	>30	GEUS	Jørgen Tulstrup	Presentation, discussions	MREG biannual meeting	
MEETINGS	Meeting with other GeoERA projects	17-18 Sep. 2019	SCIENTIFIC COMMUNITY	>30	GEUS & GeoZS	Lisbeth Flindt Jørgensen, F	Presentation, discussions	FRAME Workshop	
MEETINGS	Internal project meeting	16 Oct. 2019	SCIENTIFIC COMMUNITY	35	All project partners	GEUS	Project Assembly no. 2	GEUS, Copenhagen, Denmark	https://intranet2.geoera.eu/
MEETINGS	Internal project meeting	Every month	SCIENTIFIC COMMUNITY	>30	All project partners	GEUS	15 Project Board meetings	Webex meetings	https://intranet2.geoera.eu/

INSTRUCTIONS
Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	INTERNAL PROJECT MEETING
	MEETING WITH OTHER GEOERA PROJECTS
	MEETING WITH NATIONAL BODY
	MEETING WITH INTERNATIONAL BODY
	OTHER
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE
SCIENTIFIC COMMUNITY
GENERAL PUBLIC
POLICY MAKERS
MEDIA
EU INSTITUTION
NON-EU INSTITUTION (national, regional, local)
OTHER (customers)

PROJECT MANAGEMENT

The Project Board (PB) of Mintell4EU has regular teleconference meetings, approximately once per month. These are attended by the WP leaders, and all partners are invited; usually a few attend.

At each PB meeting the work is being evaluated by going through the latest work and status of each WP. There are only a few crosscutting issues in this project and these are elaborated at each PB meeting as appropriate.

The Project Assembly (PA) has had two meetings, both of them face-to-face. The first was in connection with the kick-off of GeoERA in Brussel and the second in Month 16 in Copenhagen.

A few amendments were agreed before kick-off: adding two partners and shifting budgets between partners due to calculation errors - the total sum remained the same. Besides, the PA has been asked to decide on further budget adjustments due to calculation errors, and on amendments related to smaller delays in deliverables.

WP5 (BRGM) changed lead in December 2019 from Daniel Cassard to Ulrich Clain, and as from the beginning of 2020 the Project Lead (GEUS) changed from Jørgen Tulstrup to David Whitehead. These changes might cause minor delays in tasks but it is foreseen that this quickly be caught up.

Mintell4EU cooperates with the other GeoERA Raw Materials projects FRAME, EuroLithos and MINDeSEA as well as with the EIT Raw Materials project RESEERVE on harmonising classification of commodities and other code lists. Mintell4EU also to a high degree collaborated with ORAMA and build on the results from this project. In addition there is also a close cooperation with the GIP-project.

IMPACT STATEMENT

The overall expected impact of Mintell4EU is that it will provide a comprehensive mineral resource data platform for European pripary and secondary mineral resources, including a user friendly portal. This will provide easy assessible and vital information for stakeholders and policy makers, for planning, investments etc.

At this stage, more (and further harmonized) data is already added to the database and being available across Europe (e.g. new data Balkan countries and a German State) enabling better estimates of raw materials potential in Europe and this will be further extended during the remaining part of the project. At the end of the project there will also be a better integration of the e-Minerals Yearbook in the EGDI platform making it easier and more user-friendly to access the data. Information about mineral resources will also be available for the RMIS-system thereby enabling users to find this information and combine it with other topics in RMIS. Finally, the pilots testing UNFC as a classification principle for a broad range of materials will in the longer run provide stakeholders with a more standardised and homogenised data set.

Mintell4EU seeks to extend the impacts through cooperation with other projects to achieve higher interoperability and data coherence.

All these enhancements are still under development and the real impact will be visible (measurable) only towards the end of the project.

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
	Actual			(0,25*A+B)				
1.	118.514,64	10.261,38	0,00	32.194,01	160.970,03	29,70%	47.808,10	113.161,93
2.	32.642,04	2.603,43	0,00	8.811,37	44.056,84	29,70%	13.084,88	30.971,96
3.	15.478,52	2.570,11	0,00	4.512,16	22.560,79	29,70%	6.700,55	15.860,23
4.	1.931,37	1.049,14	0,00	745,13	3.725,64	29,70%	1.106,51	2.619,12
5.	40.254,26	2.009,57	0,00	10.565,96	52.829,79	29,70%	15.690,45	37.139,34
6.	15.293,56	3.228,12	0,00	4.630,42	23.152,10	29,70%	6.876,17	16.275,93
7.	106.615,15	7.189,35	0,00	28.451,13	142.255,63	29,70%	42.249,92	100.005,71
8.	10.444,86	544,95	0,00	2.747,45	13.737,26	29,70%	4.079,97	9.657,30
9.	12.702,41	0,00	0,00	3.175,60	15.878,02	29,70%	4.715,77	11.162,25
10.	5.425,75	0,00	0,00	1.356,44	6.782,19	29,70%	2.014,31	4.767,88
11.	6.116,54	1.002,11	0,00	1.779,66	8.898,31	29,70%	2.642,80	6.255,51
12.	4.040,00	1.350,00	0,00	1.347,50	6.737,50	29,70%	2.001,04	4.736,46
13.	24.865,11	207,69	0,00	6.268,20	31.341,00	29,70%	9.308,28	22.032,72
14.	3.541,84	571,56	0,00	1.028,35	5.141,75	29,70%	1.527,10	3.614,65
15.	86.855,95	6.190,70	0,00	23.261,66	116.308,31	29,70%	34.543,57	81.764,74
16.	42.500,00	1.954,00	0,00	11.113,50	55.567,50	29,70%	16.503,55	39.063,95
17.	9.625,45	1.749,42	0,00	2.843,72	14.218,59	29,70%	4.222,92	9.995,67
18.	17.753,00	931,11	0,00	4.671,03	23.355,14	29,70%	6.936,48	16.418,66
19.	105.302,02	1.740,11	0,00	26.760,53	133.802,66	29,70%	39.739,39	94.063,27
20.	9.816,20	0,00	0,00	2.454,05	12.270,25	29,70%	3.644,26	8.625,98
21.	464,29	435,93	0,00	225,05	1.125,27	29,70%	334,21	791,06
22.	23.078,96	1.277,23	0,00	6.089,05	30.445,24	29,70%	9.042,24	21.403,00
23.	18.512,30	1.658,00	0,00	5.042,58	25.212,88	29,70%	7.488,22	17.724,65
24.	7.428,60	268,41	0,00	1.924,25	9.621,26	29,70%	2.857,51	6.763,74
25.	16.616,31	0,00	0,00	4.154,08	20.770,39	29,70%	6.168,81	14.601,58
26.	17.000,00	1.017,93	0,00	4.504,48	22.522,41	29,70%	6.689,16	15.833,26
27.	7.141,00	2.877,00	0,00	2.504,50	12.522,50	29,70%	3.719,18	8.803,32
	759.960,13	52.687,25	0,00	203.161,84	1.015.809,22		301.695,34	714.113,88

Date:
Person responsible:

Cumulative Use of Resources Connected to 8a

Personnel costs Actual	Person months	Associated WP	Amount
	Project Meeting in Ljubljana	Travel	WP1
	Mineral Resources Expert G	Travel	WP1
			0,00

Other direct costs	Description	Category	Associated WP	Costs
				543,73
				543,73

Subcontracting	Supplier	Description	Associated WP	Cost
				#REF!
				#REF!

FINANCIAL STATEMENT FOR PP 1 - GEUS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	118.514,64	10.261,38	0,00	32.194,01	160.970,03	29,70%	47.808,10	113.161,93

Personnel costs Actual	Person months	Associated WP	Amount
	8,70	WP1	62.889,06
	1,26	WP2	8.064,11
	1,69	WP3	8.569,37
	1,96	WP4	15.717,59
	3,05	WP5	23.274,51
			118.514,64

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off meeting, Brussels, july 2018	Travel	WP5	862,81
	Project Meeting in Ljubljana (x 4), november 2018	Travel	WP1	2.073,57
	Mineral Resources Expert Group Meeting in Rome, november 2018	Travel	WP1	584,91
	GeoERA Technical Workshop in Wien, march 2019	Travel	WP5	556,05
	Project Meeting in Trondheim, may 2019	Travel	WP1	784,34
	Project Meeting in Lissabon (x 2), september 2019	Travel	WP1	1.806,94
	Project Meeting in Madrid, november 2019	Travel	WP1	543,73
	Project Meeting in Brussels, november 2019	Travel	WP1	638,54
	Project Meeting in Copenhagen, october 2019, catering	Other	WP1	2.410,49
				10.261,38

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 2 - BRGM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	32.642,04	2.603,43	0,00	8.811,37	44.056,84	29,70%	13.084,88	30.971,96

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,3	WP2	1.999,02
	3,52	WP5	30.643,02
	3,82		32.642,04

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off meeting Mintell4EU	Travel	WP5	2.603,43
				2.603,43

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 3 - IGME

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
3.	15.478,52	2.570,11	0,00	4.512,16	22.560,79	29,70%	6.700,55	15.860,23

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2	WP2	6.478,85
	2	WP3	8.999,67
	4		15.478,52

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off Brusssels	Travel	WP2	875,10
	PA/PB Copenhagen	Travel	WP3	1.695,01
				2.570,11

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 4 - GSD

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
4.	1.931,37	1.049,14	0,00	745,13	3.725,64	29,70%	1.106,51	2.619,12

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,1	2	421,98
	0,35	3	1.509,39
	0,45		1.931,37

Other direct costs	Description	Category	Associated WP	Costs
	Participation in the Genaral Assemly and progress meeting in Copenhagen 16 and 17 October 2019	Travel	3	1.049,14
				1.049,14

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 5 - ISPRA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
5.	40.254,26	2.009,57	0,00	10.565,96	52.829,79	29,70%	15.690,45	37.139,34

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,84	2	11.164,71
	3,08	3	19.119,46
	1,64	5	9.970,09
	6,56		40.254,26

Other direct costs	Description	Category	Associated WP	Costs
	SGI Congress-Geoera ppt	Travel	2	479,94
	Mintell4Eu Copenhagen	Travel	3	1.529,63
				2.009,57

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 6 - NGU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
6.	15.293,56	3.228,12	0,00	4.630,42	23.152,10	29,70%	6.876,17	16.275,93

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,94	4	15.293,56
			15.293,56

Other direct costs	Description	Category	Associated WP	Costs
	Kickoff BXL July 2018	Travel	WP4	1.279,84
	Meet. BXL Nov. 2018	Travel	WP4	906,40
	Meet. KopenhagenOct. 2019	Travel	WP4	1.041,88
				3.228,12

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 7 - GeoZS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
7.	106.615,15	7.189,35	0,00	28.451,13	142.255,63	29,70%	42.249,92	100.005,71

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	7,30	WP 1	18.019,42
	6,84	WP 2	15.817,12
	17,27	WP 3	44.277,31
	2,18	WP 4	9.147,36
	8,04	WP 5	19.353,93
	41,63		106.615,15

Other direct costs	Description	Category	Associated WP	Costs	
	Brussels kick-off meeting, 2 - 6 July 2018, 2 Persons	Travel	WP 1	1.518,55	
	Ljubljana Inception Workshop, 6 November 2018, 3 Persons	Travel	WP 1	95,00	
	Food for catering Inception workshop, 5 November 2018	Other	WP 1	31,19	
	Mintell4EU eGeologija portal, E Tutor s.p., november, december 2019	Other		3.085,08	
	Ispra Data Optimisation, 12 - 14 June 2019, 1 Person	Travel	WP 3	263,40	
	Midterm review meeting Lisbon, 16 September 2019, 1 Person	Travel	WP 3	162,00	
	Copenhagen consortium meeting, 15 - 17 October 2019, 1 Person	Travel	WP 5	444,10	1.674,46
	Copenhagen consortium meeting, 15 - 18 October 2019, 2 Persons	Travel	WP 3	1.249,06	4.073,08
	5. INSPIRE day Ljubljana, 19 November 2019, 1 Person	Travel	WP 1	3,97	1.954,52
	Flight ticket Brussels, 1 Person	Travel	WP 1	337,00	
				7.189,35	

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 8 - SGU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
8.	10.444,86	544,95	0,00	2.747,45	13.737,26	29,70%	4.079,97	9.657,30

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,14	2	684,95
	0,66	3	3.220,12
	0,84	4	6.539,79
	1,64		10.444,86

Other direct costs	Description	Category	Associated WP	Costs
	Denmark 2019-10-16	Travel	4	544,95
				544,95

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 9 - GeoInform

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
9.	12.702,41	0,00	0,00	3.175,60	15.878,02	29,70%	4.715,77	11.162,25

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,47	WP2	2.295,28
	0,65	WP3	3.134,65
	0,52	WP4	2.501,31
	0,50	WP5	2.426,69
	0,49	WP6	2.344,48
	2,63		12.702,41

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 10 - SGUDS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
10.	5.425,75	0,00	0,00	1.356,44	6.782,19	29,70%	2.014,31	4.767,88

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,35	WP2	5.425,75
			5.425,75

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 11 - LNEG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
11.	6.116,54	1.002,11	0,00	1.779,66	8.898,31	29,70%	2.642,80	6.255,51

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,65	3	3.434,01
	0,50	5	2.682,53
	1,15		6.116,54

Other direct costs	Description	Category	Associated WP	Costs
	Mintell4EU Project Assembly combined with Project Board Meeting, 15-18th October 2019, Copenhagen - Denmark, Daniel Oliveira	Travel	3	250,53
	Mintell4EU Project Assembly combined with Project Board Meeting, 15-18th October 2019, Copenhagen - Denmark, Daniel Oliveira	Travel	5	751,58
				1.002,11

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 12 - HSGME

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
12.	4.040,00	1.350,00	0,00	1.347,50	6.737,50	29,70%	2.001,04	4.736,46

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1	WP2	2.190,00
	0,8	WP3	1.850,00
	1,8		4.040,00

Other direct costs	Description	Category	Associated WP	Costs
	Project meeting	Travel	WP1	1.350,00
				1.350,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 13 - HGI-CGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
13.	24.865,11	207,69	0,00	6.268,20	31.341,00	29,70%	9.308,28	22.032,72

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5,85	WP3	14.048,37
	2,25	WP4	5.408,37
	2,25	WP5	5.408,37
	10,35		24.865,11

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA kick-off meeting (Br	Travel	WP3	69,23
	GeoERA kick-off meeting (Br	Travel	WP4	69,23
	GeoERA kick-off meeting (Br	Travel	WP5	69,23
				207,69

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 14 - GTK

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
14.	3.541,84	571,56	0,00	1.028,35	5.141,75	29,70%	1.527,10	3.614,65

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,27	4	3.541,84
			3.541,84

Other direct costs	Description	Category	Associated WP	Costs
	Project Assembly Copenhage	Travel	4	571,56
				571,56

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 15 - NERC(UKRI)

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
15.	86.855,95	6.190,70	0,00	23.261,66	116.308,31	29,70%	34.543,57	81.764,74

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	23,32	2	84.795,03
	0,45	5	2.060,92
	23,77		86.855,95

Other direct costs	Description	Category	Associated WP	Costs
	Purchase of raw Trade data	Other	2	4.443,77
	WP2, GeoERA Mintell4EU Project Meeting, Copenhagen, Denmark, 11 to 19 Sept 2019, T Brown	Travel	2	567,97
	WP2, Annual meeting of the International Consultative Group on Metal Statistics, Paris, France, 01 to 06 Sept 2019, T Brown.	Travel	2	1.178,96
				6.190,70

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 16 - LGRB

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
16.	42.500,00	1.954,00	0,00	11.113,50	55.567,50	29,70%	16.503,55	39.063,95

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	7	3	36.920,00
	1,3	3	5.580,00
	8,3		42.500,00

Other direct costs	Description	Category	Associated WP	Costs
	Project meetings	Travel	3	1.954,00
				1.954,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 17 - BGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
4.	9.625,45	1.749,42	0,00	2.843,72	14.218,59	29,70%	4.222,92	9.995,67

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,31	WP3	9.625,45
			9.625,45

Other direct costs	Description	Category	Associated WP	Costs
	4 project meetings (Rome, Trondheim, Ispra, Copenhagen)	Travel	WP3	1.749,42
				1.749,42

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 18 - GSI

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
18.	17.753,00	931,11	0,00	4.671,03	23.355,14	29,70%	6.936,48	16.418,66

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2	3	13.940,00
	0,45	3	3.813,00
	2,45		17.753,00

Other direct costs	Description	Category	Associated WP	Costs
	Copenhagen meeting	Travel	3	931,11
				931,11

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 19 - RBINS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
19.	105.302,02	1.740,11	0,00	26.760,53	133.802,66	29,70%	39.739,39	94.063,27

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,80	WP1	11.756,02
	3,04	WP2	20.282,00
	7,96	WP3	59.287,32
	1,02	WP4	6.916,37
	0,93	WP5	7.060,31
	14,75		105.302,02

Other direct costs	Description	Category	Associated WP	Costs
	From 28/04/2019 to 02/05/2	Travel	WP4 UNFC Pilot	859,32
	From 15/10/2019 to 17/10/2	Travel	WP1 Management, C	496,70
	From 15/10/2019 to 16/10/2	Travel	WP1 Management, C	384,09
				1.740,11

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 20 - MBFSZ

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
20.	9.816,20	0,00	0,00	2.454,05	12.270,25	29,70%	3.644,26	8.625,98

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,01	WP4	3.255,52
	3,91	WP3	6.560,68
	5,92		9.816,20

Other direct costs	Description	Category	Associated WP	Costs
				0,00
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 21 - SGL

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
21.	464,29	435,93	0,00	225,05	1.125,27	29,70%	334,21	791,06

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,07	WP2	464,29
			464,29

Other direct costs	Description	Category	Associated WP	Costs
	Copenhagen Meeting	Travel	WP2	435,93
				435,93

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 22 - GSS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
22.	23.078,96	1.277,23	0,00	6.089,05	30.445,24	29,70%	9.042,24	21.403,00

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	12	3	23.078,96
			23.078,96

Other direct costs	Description	Category	Associated WP	Costs
	Meeting	Travel	3	1.277,23
				1.277,23

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 23 - AGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
23.	18.512,30	1.658,00	0,00	5.042,58	25.212,88	29,70%	7.488,22	17.724,65

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	22,42	3	18.512,30
			18.512,30

Other direct costs	Description	Category	Associated WP	Costs
	PA/PB meeting Copenhagen	Travel	3	1.658,00
				1.658,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 24 - CGS 1 July 2018 until 31 December 2019

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
24.	7.428,60	268,41	0,00	1.924,25	9.621,26	29,70%	2.857,51	6.763,74

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,19	1	280,29
	1,10	2	3.016,72
	1,62	3	3.784,69
	0,19	5	346,90
	3,10		7.428,60

Other direct costs	Description	Category	Associated WP	Costs
	Travel to Copenhagen 15.-16	Travel	2	268,41
				268,41

Subcontracting	Description	Associated WP	Cost
	-	-	-
			0,00

FINANCIAL STATEMENT FOR PP 25 - FZZG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
25.	16.616,31	0,00	0,00	4.154,08	20.770,39	29,70%	6.168,81	14.601,58

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	11,08	3	16.616,31
			16.616,31

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 26 - RU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
26.	17.000,00	1.017,93	0,00	4.504,48	22.522,41	29,70%	6.689,16	15.833,26

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5	WP3	17.000,00
			17.000,00

Other direct costs	Description	Category	Associated WP	Costs
	Copenhagen 2019 meeting	Travel	WP3	1.017,93
				1.017,93

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 27 - GBA

Fill in only blue-colored cells.

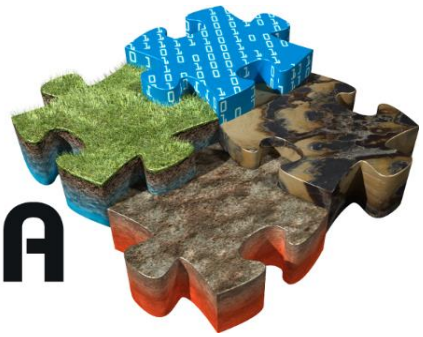
	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
27.	7.141,00	2.877,00	0,00	2.504,50	12.522,50	29,70%	3.719,18	8.803,32

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,62	4	3.496,00
	0,3	4	1.718,00
	0,1	4	469,00
	0,3	4	1.458,00
	1,32		7.141,00

Other direct costs	Description	Category	Associated WP	Costs
	MREG/GeoERA Meeting Trondheim (20	Travel	4	391,00
	MREG/GeoERA Meeting Trondheim (20	Travel	4	293,00
	UNFC workshop (2018)	Travel	4	1.157,00
	UNFC workshop (2018)	Travel	4	1.036,00
				2.877,00

Subcontracting	Description	Associated WP	Cost
			0,00



Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No:	731166
ERA-NET Cofund acronym:	GeoERA
Call identifier:	H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Managing Urban Shallow geothermal energy
Project acromyn:	MUSE
Project reference number:	GeoE.171.006
Project topic:	Geo-energy
Project specific recearch topic:	GE2 - GEOTHERMAL ENERGY
Project website address:	https://geoera.eu/projects/muse3/

Period covered from: 01.07.2018 to: 31.12.2019

Report submission date:	29.01.2020
Project coordinator:	Gregor Goetzl

Contact person for the project: Gregor Goetzl

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IDENTIFICATION OF PROJECT PARTICIPANTS

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	Geologische Bundesanstalt	Geological Survey of Austria	GBA	Austria	998164145	Project Lead
2	UK Research and Innovation	British Geological Survey	NERC (UKRI)	United Kingdom	906446474	Project Partner
3	Institut Cartogràfic i Geològic de Catalunya	Institut Cartogràfic i Geològic de Catalunya	ICGC	Spain	935977542	Project Partner
4	Hrvatski geoloski institut	Croatian Geological Survey	HGI-CGS	Croatia	972614345	Project Partner
5	Ceska Geologicka Sluzba	Czech Geological Survey	CGS	Czech Republic	999546783	Project Partner
6	Bureau de Recherches Géologiques et Minières	The French Geological Survey	BRGM	France	999993662	Project Partner
7	Department of Communications, Climate Action and Environment	Geological Survey of Ireland	GSI	Ireland	996559280	Project Partner
8	Institut Royal des Sciences Natueelles de Belgique	Geological Survey of Belgium – Royal Belgian Institute of Natural Sciences	RBINS-GSB	Belgium	998437006	Project Partner
9	Geološki zavod Slovenije	Geological Survey of Slovenia	GeoZS	Slovenia	999466370	Project Partner
10	Instituto Geológico y Minero de Espana	Geological Survey of Spain	IGME-Sp	Spain	998737803	Project Partner
11	Sveriges Geologiska Undersökning	Geological Survey of Sweden	SGU	Sweden	995575991	Project Partner
12	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek	The Netherlands Organisation for applied scientific research	TNO	Netherlands	999988909	Project Partner
13	Państwowy Instytut Geologiczny – Państwowy Instytut Badawczy	Polish Geological Insitute	PIG-PIB	Poland	999492463	Project Partner
14	Statny Geologicky ustav Dionyza Stura	State Geological Institute of Dionyz Stur	SGUDS	Slovakia	995391982	Project Partner
15	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund of Ukraine	GEOINFORM	Ukraine	947331392	Project Partner
16	Geological Survey of Denmark and Greenland	Geological Survey of Denmark and Greenland	GEUS	Denmark	999459677	Project Partner
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PUBLISHABLE SUMMARY

GeoERA MUSE - Managing Urban Shallow Geothermal Energy is focusing on services provided by Geological Survey Organizations on supporting a sustainable and efficient use of geothermal energy in urban areas ofr heating, cooling and underground heat storage. In contrast to many other GeoERA projects, MUSE does not aim at producing large-scale pan-European datasets. In turn, 14 local scale urban pilot areas have been selected to test and evaluate methods and approaches for managing the use of shallow geothermal energy. MUSE intends to promote integrative, cycle based management concepts instead of the conventional first come first served approach often used by authorities. Integrative management approaches require an interlinking of digital resource and limitation datasets, displayed in modern web interfaces, to licensing procedures and monitoring of use.

The first half of MUSE focused on pooling and harmonizing of knowledge available inside the consortium of 16 Geological Survey Organizations with regard to assessing and compiling geoscientific data at local scale and for the shallow subsurface at depths up to 300 meters (WP2). In a second step, MUSE harvested and harmonized workflows for transferring geoscientific datasets into data models for evaluating resources and limitations of use. For this purpose, MUSE was organizing 3 internal workshops and contributed to 3 knowledge exchange workshops with other research projects inside and outside GeoERA (WP6). The project team also linked the method and concepts developed in WP2 to the set-up of modern web interfaces realized in EGDI (WP5). In a first step, the MUSE team developed a White Book concept for tailored web information systems at local scale on the use of shallow geothermal in urban areas.

In WP2, the MUSE team assessed technological concepts for the use of shallow geothermal, which are already proven (collection of good practices and which might emerge in the near future.

During the first half of MUSE, the team also assessed the legal framework for the use of shallow geothermal in the participating countries and performed an evaluation of management strategies linked to shallow geothermal energy (WP3).

In 2019, all MUSE partners, who selected a pilot area, start to assess field data and perform field investigations for setting up the harmonized contents for our contribution to EGDI (WP4). The partners could select from a joint list which parameters they would like to assess and which methodologies they would like to apply. The activities performed cover the whole range from geophysical field measurements for investigating shallow geological structures in cities (e.g. a passive seismic campaign in Brussels) towards thermal response tests on recently built borehole heat exchangers (e.g. Girona) and monitoring of the thermal conditions in urban groundwater bodies (e.g. Vienna). All activities performed are published in terms of blogs at the GeoERA-MUSE website. Apart of the field measurements and data assessments, the MUSE team prepared a joint characterization of the geological, climatological and socio-economic boundary conditions for the use of shallow geothermal energy in the 14 pilot areas. This information was published in a compilation of fact sheets, which are published on the GeoERA-MUSE website.

In the first half of MUSE, the team also started to interact with local stakeholders by inviting them to partner meetings and organizing joint field trips (e.g. Cardiff). Currently, a joint targeted communication strategy is developed in WP5 to support a strong interaction with local stakeholders in the pilot areas. This strategy aims at assessing inputs on ideas, expectations and requirements on the main outputs of MUSE, above all the proposed management strategies for shallow geothermal in urban areas. Another important aspect of stakeholder interaction is evaluating the current role and receiving inputs for the required future role of Geological Survey Organizations supporting the management of shallow geothermal energy in urban areas. In addition, MUSE put a strong emphasis

on dissemination to raise awareness on the opportunities of using shallow geothermal energy and the transfer of concepts and quality standards in managing shallow geothermal energy between countries of well developed and emerging markets. Concerning exploitation, MUSE already successfully connected itself to other European research groups dealing with shallow geothermal like IEA, RHC and IAH. It is part of our external communication strategy to establish a strong network of competences and interest on shallow geothermal energy inside EuroGeoSurveys after the end of GeoERA.

PROJECT CONTRIBUTION TO GeoERA PROJECT

eoERA-MUSE contributes to the topic GE2 - GEOTHERMAL ENERGY according to the doc no 9 of the joint call by the sub topic "Geothermal energy and groundwater in urban areas". It supports the expected impact of doc no 9 in the following way:

1) Improved and better harmonized European overview of prospective and identified geothermal energy resources: MUSE creates local scale resource maps for up to 14 individual urban pilot areas, which will be published at a later stage at EGDI. MUSE is furthermore promoting concepts for user-firendly data display (e.g. location specific data reports). Please note that MUSE does not produce large scale pan-European maps as questions related to the use of shallow geothermal are alwys related to small-scal local hydrogeological settings;

2) Provision of a consistent and data-driven knowledge base to aid in the formulation of policy tools and strategies aiming for large-scale geothermal energy developments across Europe: MUSE is developing a methodological catalogue on mapping resources and limitations of use, which will be published at the end of the project. Harmonization includes technical language (joint glossary of terms), which is linked to joint workflows and joint contents to be presented at the EGDI web interface.

3) A further stimulus for green thermal energy uptake in European urban regions: MUSE is currently developing a stakeholder interaction strategy to raise awareness towards an efficient and sustainable use of shallow geothermal in urban areas. The collection of good practices, executed in all pilot areas and participating countries moreover aims at promoting state of the art technological concepts and an exchange of technological experiences between well developed and emerging markets in Europe.

4) Increased confidence in the prospectivity and potential contribution of geothermal resources across Europe: This topic will be addressed via stakeholder interviews including SWOT analyses on the use of shallow geothermal in the second half of MUSE.

5) More effective and extended information support of the public-private-policy dialogue on geothermal energy resources in relation to the license to operate and the European Union’s energy and climate targets: MUSE developed an catalogue of different management strategies for the use shallow geothermal energy, which will feed into tailored local strategies in the MUSE pilot areas. The management strategies will be strongly linked to stakeholder interaction for raising awareness and transfer of knowledge (input by the MUSE team) and in turn assessing requirements, expectations and objections (input by stakeholders).

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: Project management, internal communication and general dissemination Duration:1-36

Internal coordination and communication
The inital version of the project implementation plan was submitted to GeoERA as planned in the first period. It describes organizational structures of the project and project management tools, which are regularly updated. An own-cloud server was established for document exchange between the project partners and to facilitate internal communication we set-up e-mail lists. To keep the project consortium updated about on-going and upcoming activities in MUSE, we have web conferences on a regular basis. The WebEx account of GeoERA proved a very efficient and reliable tool for these monthly or bimonthly online meetings. In the first period we had a total of 9 web-conferences of the project consortium in the first half of MUSE.

Project control and reporting to the programme management
The project office has established a financial management tool to supervise the budget of MUSE. All project partners reported their spendings to the project office twice a year in the first reporting period.

External quality control
We invited external experts in the field of shallow geothermal energy to become members of the External Evaluatio and Advisory Board (EEAB) for external quality control of the project. The EEAB will meet in Ljubljana during the GeoERA midterm events. Organisation of this first EEAB meeting started in the first reporting period.

General dissemination
MUSE Communication-Dissemination-Exploitation (C-D-E) activities are proceeding according to plan. All dissemination activities are collected in an online C-D-E plan, which proved to be a useful tool to monitor the progress of the activities. It is regularly updated by the project partners and discussed during the assembly web conferences.
In the initial stages project logo, poster and corporate identity templates have been produced, and the general access e-mail address MUSE@geologie.ac.at was established.
A general project leaflet has been produced as foreseen. Project consortium decided it can be translated to national languages on a voluntary basis, and three partners achieved that as well.
The MUSE Web site (https://geoera.eu/projects/muse3/) is updated with posts describing project events, pilot areas (factsheets about each area published) and blogs describing pilot area activities (5 in the first reporting period). Half of the project consortium put the project description and link to MUSE web site on their institutional web-sites and the others are expected to do so soon.
Dissemination to scientific and expert communities is also progressing according to C-D-E plan: one cumulative research paper and five congress presentations were foreseen. So far one scientific article has been submitted and is in peer review process of an eminent journal (Energy Policy, 5-year IF 5.5): joint paper about shallow geothermal energy management), and another one is in preparation (about underground temperatures in MUSE pilot areas). Project results have been presented at three international conferences, two national conferences with international participation and two national conferences. This has resulted in four abstracts, three papers, three poster and four oral presentations. It is justified to expect that in the upcoming project implementation period, as more results become available, the target values will be achieved and exceeded.
In two partner countries national meetings with stakeholders were organized (UK and Austria).
Three knowledge exchange workshops were organized: (1) “Monitoring of shallow geothermal energy use” in collaboration with EU Interreg projects GeoPLASMA-CE and GRETA in November 2018 in Essen (Germany), and (2) “Temperature modelling” in collaboration with GeoERA Geo-energy HotLime project in January 2019 in Zagreb (Croatia). MUSE also supported a workshop on mapping shallow geothermal resources, which was held during the "Shallow Geothermal Energy Days" in Brussels on September 25, 2019. Further KEW will be held in Offenburg (March 2020) and Ljubljana (March 2020) in the framework of the GeoERA mid-term meeting in collaboration with GeoERA Groundwater projects on crossover topics.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D 1.1	Initial and updated Project Implementation Plans (3 reports	GBA	Report	CO	M2	Completed	The inital version of the project implementation plan was submitted as planned and it is now updated regularly. Aside the organizational structures of MUSE, it contains communication and quality control tools.
D 1.2	Summary reports on the outcomes of the External Evaluation and Advisory Board meetings (3 reports)	GBA	Report	CO	M36	Pending	The first EEAB meeting takes place during the GeoERA midterm week in Ljubljana. Organization of the meeting is ongoing, as planned.
D 1.3	Project leaflet	HGI-CGS	Leaflet	PU	M6	Completed	The project leaflet was submitted as planned. It is available in English, Catalán, Spanish and German on the MUSE webpage. Additional translations will be prepared for stakeholder activities in the next period.
D 1.4	Project presentations at scientific and targeted events (>5 oral or poster presentations)	HGI-CGS	Presentations,	PU	M36	Pending	In the first period the project partners already presented MUSE at 9 events (3 poster and 4 oral presentations). This deliverable will summarize all activities at the end of the project.
D 1.5	Cumulative research article published in a special journal issue on “shallow geothermal application in European urban areas” (1 cumulative research paper	HGI-CGS	Article	PU	M30	Pending	Two scientific articles are planned for 2020. One about groundwater temperatures in selected pilot areas and the second about management strategies for shallow geothermal energy in the MUSE countries. Work for both papers has already started in 2019. The planned cumulative research article in a special journal issue is still in the planning phase.

Milestones

Milestone no.	Milestone name	Delivery date from	Progress	Means of verification	
M1	Project kick-off	1	Completed	WP leaders participate at joint GeoERA kick-off seminar	Refers to WPs: all
M3	Project website online and general dissemination instruments available (e.g. joint layouts, project and	6	Completed	Initial version of project website including general information on	
M4	Joint project workshop #1: delivery of methods, workflows and guidelines for application in the pilot areas	9	Completed	Project team members working in the addressed work packages attend the joint workshop	Refers to WPs: all
M6	Project midterm	18	Pending	WP leaders participate at joint GeoERA midterm review seminar	Refers to WPs: all
M7	Joint project workshop #2: Data delivery and feedback loop on methods and workflows	27	Pending	Project team members working in the addressed work packages attend the joint workshop	Refers to WPs: all
M9	Cumulative research paper submitted	30	Pending	All short articles by the partners to the joint special issue have been delivered to the journal	
M12	Operational project closure	36	Pending	All project related operational	Refers to WPs: all
M13	Project closure (administration)	39	Pending	WP leaders participate at joint GeoERA closure seminar and final	Refers to WPs: all

Work package 2: Technical aspects of shallow geothermal energy use ir Duration: 1-30

On-site exploration, assessment and mapping of resources and possible conflicts of use
In an internal survey, the partners listed the topics and output parameters they are interested in preparing for their pilot areas. This provided the basis for further activities. The project partners assessed existing methods from previous projects for field measurements, resource mapping and mapping the limitation of shallow geothermal energy use based on a harmonized template. A joint literature collection for the existing methods was established. We evaluated the methods based on their applicability in our urban pilot areas of MUSE. Especially the INTERREG project GeoPLASMA-CE provided numerous suitable methods. Based on the partner survey and the methods assessment, we set up a draft list of output parameters. The WP2 workshop during the partner meeting in Cardiff in March 2019 focused on the content and structure of the catalogue. In July 2019 a WP2 workshop took place in Utrecht. Main topic of this workshop was to finalize the output parameters and to assign methods to them. A catalogue to describe these methods is currently under preparation. It will include workflows for data-processing, mapping and geoscientific modelling of resources and possible limitations of open-loop and closed-loop systems. The catalogue will also provide different methods for the same output parameter, for a comparison of the methods in the MUSE pilot areas. After the implementation of the first version in the pilot areas, the methods will be reviewed and lessons-learned will be included in the final version of the catalogue.

Identification and charaterisation of proven and prospective technical solutions for SGE based heating and cooling supply
In order to gather information on technical solutions in shallow geothermal systems, the WP2 team created a series of templates for the collection of detailed information on existing facilities, cataloging them into 7 different types of schemes. In the first stage, up to 6 existing or under construction facilities in the pilot areas have been identified by filling in a preliminary questionnaire to compile a brief general description. Subsequently, of these, the WP2 team selected between 1 to 3 facilities per partner to proceed to compile a second questionnaire with more detailed information. The selected facilities provide a good balance between borehole heat exchangers (close loop systems) and open-loop ground source heat pumps, which are the predominant schemes for shallow geothermal energy uses in the urban areas in EU. Underground thermal energy storage systems were also included as categories. The partners collected and answered the questionnaires with the available information, as planned. The WP2 team also distributed the data sheet templates to external organizations to complement the information, and to date, some contributions have been received, and other external responses are still pending. In parallel, more information is being collected through the web of international projects, professional organizations and repositories of scientific articles. All information collected will provide the basis for developing D 2.2, which will be prepared after all information sheets are available.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D 2.1	Catalogue of evaluated methods and guidelines on exploration, assessment and technical monitoring of shallow geothermal energy use in urban regions (1	GBA	Report	PU	M30	Pending	Preliminary work for the catalogue of methods was accomplished in the first period. A method's assessment, a partner survey and two workshops provide the content for the first version, which is currently under preparation and will be sent to the partners in spring 2020 to start the test phase in the pilot areas.
D 2.2	Catalogue of factsheets of evaluated and characterised SGE concepts of use in urban areas (1 report)	ICGC	Report	PU	M28	Pending	Extensive partner questionnaires describe the characteristics of selected existing shallow geothermal installations, mainly groundwater heat pump and borehole heat exchanger systems, but also underground thermal energy storage systems. The resulting factsheets are currently analysed. They provide the content for the catalogue of factsheets.

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 3: Management strategies and action plans for a sustain Duration: 1-32

Current legal status, procedures and policies dealing with shallow geothermal energy use
Based on input from the accomplished project GeoPLASMA-CE the WP3 team elaborated a partner survey about the legal framework for shallow geothermal energy referring to each country or region prepresented in the project. The questionnaire included open and closed questions on the entire life-cycle of a shallow geothermal installation. Aside from general regulations, it covers permitting and licensing procedures, requirements for installation, operation, monitoring and decommissioning. Majority of the partners answered the questionnaire. The WP3 team is currently analysin the outcomes of the survey, which will lead to the accomplishment of deliverable D 3.1. Finalization of activities for D 3.1 required more time than anticipated and therefore, the deadline for this deliverable has been postponed to end of March 2020.

Joint criteria for managing efficient and low impact shallow geothermal energy use in urban areas
The WP3 team prepared an extensive questionnaire about existing management measures in the MUSE countries. The questionnaire also included the opinion of the partners on different management concepts for shallow geothermal energy. All partners answered the questionnaire. The WP3 team finished this task in April 2019 with the draft of the deliverable D 3.2. This deliverable includes a compendium of environmental management issues related to shallow geothermal energy and integrates all information from the partner survey. After this draft was completed, task 3.4 started.

Proof of concept and finalisation of guidelines for the integration of shallow geothermal energy
Indicators and indices for management of shallow geothermal energy resources were established. Task 3.4 includes the establishment of the indicators and indices for decision making in SGE resources management to be applied in pilot areas of MUSE and prepare a guide draft for pilot areas in order to facilitate SGE management concepts implementation phase. All this will be discussed during the planned WP3 workshop at IGME, Madrid. Finally, Task 3.3 related to the integration of shallow geothermal energy into European urban heating and cooling strategies and action plans has been postponed to prevent work overload in this stage of the project, since WP3 has already release two different questionnaires.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D 3.1	Report on the current legal framework, procedures and policies on SGE use in selected European cities (1 report)	PIG-PIB	Report	PU	M18	Pending	Majority of the partners answered a detailed questionnaire about the current framework for shallow geothermal energy in their countries. This provides the basis for the summary report D 3.1., which is currently under preparation. Deadline for this deliverable was postponed to the end of March 2020.
D 3.2	Guideline for integrating and managing the use of SGE in urban areas (1 report)	IGME	Report	PU	M32	Pending	A complete first draft of this deliverable is now accomplished. Feedback from pilot areas and workshops are required to integrate the experience gained in the project to include it in the final report (deadline February 2021).

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 4: Testing and implementation of developed methods an Duration: 1-34

The overall objective of WP4 is to implement and test the methods defined in WP2 for assessing and mapping shallow geothermal energy resources and possible limitations and in WP3 for the implementation of management guidelines for shallow geothermal energy. Input data for these methods are partly already available and to some extent they have to be collected through field measurements in the pilot areas. For the realization of the field work, two periods of 10 months have been defined: 1st Period: March 2019 - December 2019) (10 months) and a 2nd Period: January 2020 - October 2020) (10 months): At the moment, the first period has been achieved and the work continues as planned.

Field work is diverse and differs in each of the 14 MUSE pilot areas depending on their particular objectives (e.g. the study of conflicts between SGE facilities or between uses of groundwater resource; the assessment of the geothermal potential in a certain urban area; collection of data for the definition of management strategies, etc). Field works consist of the implementation of instrumentation, monitoring observation wells or piezometers and collection of field data from testing wells and borehole heat exchangers, geophysical prospecting (wire-logging and ground measurements), sampling outcrops and laboratory analysis for petrophysical characterization of thermal parameters, interaction with local users and stakeholders, among other aspects.

In order to produce the expected products and deliverables after the end of the 2nd period of field work, a necessary task in the office will be to interpret and analyze collected data. A summary report will cover the activities undertaken in all pilot areas as well as the results achieved. It will also contain comparative conclusions and lessons learned on the testing and implementation of methods and workflows developed in work packages WP2 and WP3. Individual reports on the pilot areas addressed in MUSE, will be prepared by each task leader and they will be included as annexes to the summary report D 4.2.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D 4.1	Fact sheets on the pilot areas including the main findings of MUSE (13 fact sheets)	NERC	Fact sheet	PU	M30	Pending	During the first months of the project, a fact sheet template was designed and information was collected to publish the 1st version. In total, 14 FS corresponding to 14 cities have been prepared. They incorporate varied geological, hydrogeological, climatological information, state of the geothermal market, and a list of the planned works, among other aspects. In July 2019, they were published on the GeoERA MUSE website: (https://geoera.eu/projects/muse3/pilot-urban-areas-in-the-muse-project/). The fact sheets can be downloaded in PDF format. It is expected to edit a 2nd version of the fact sheets in the coming months, with the first results of the field work.
D 4.2	Summary report about the outcomes in the pilot areas (1 report	ICGC	Report	PU	M34	Pending	Work in the pilot areas began around March 2019. They are expected to extend until the end of October 2020. To date, the first 10 month period has been exceeded and beginning with the 2nd period of 10 months, the work continues as planned. At the end of the fieldwork, the results will be prepared (data sets, etc.) and a final report will be prepared that will include an assessment of the results in each of the pilot areas.
D.4.3	D.4.3 Documented thematic output datasets for web presentation of selected pilot area	GBA	Dataset	PU	M32	Pending	In the first reporting period, the partners harmonized the parameters to be shown at EGDI. The preparation of contents started in all pilot areas. In 2019, the MUSE team decided to also harmonize the time plan for delivery of contents to EGDI. This will be summarized in a "data delivery plan", which will be part of the deliverable D 5.3. In 2019, test datasets were created in some of the pilot areas and sent to the IP team for setting up the web GIS infrastructure.

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification	
M2	Kick-off with Information Platform team	2	Completed	Joint workshop of WP5 and WP4 core working teams with GIP tea	Refers to WPs: 4, 5
M8	Accomplishment of field measurements and elaboration of output datasets	29	Pending	All output datasets created in the pilot areas are ready for delivery to GIP	
M10	Transfer of data form the pilot areas to the information platform	32	Pending	Data delivery (WP4) and conformity check (WP5) successfully accomplished for all output datasets of the pilot areas	Refers to WPs: 4, 5
M11	Stakeholder workshops and trainings in the urban pilot areas	35	Pending	All targeted communication activities in the pilot areas have been accomplished	Refers to WPs: 4, 5

Work package 5: Information systems, targeted communication and stakeholder interaction Duration: 1-36

WP 5 deals with the design and testing of an Information systsm of shallow geothermal energy use on the EGDI platform as well as targeted communication to stakeholders on shallow geothermal use in urban areas. The work is carried out in close collaboration the GIP team. It is the role of MUSE to produce input and set requirements for data strcuture and displaymode, as well as specifying special GIS tools releated to SGE data. As preliminary work for the deliverables, the WP5 team carried out a survey about the parameters, that each partner wants to elaborate and display on the MUSE web platform. Based on the outcomes of a survey in WP2, the WP5 team asked the partners about the parameters they want to include and which functionalities and data formats they should have. It is planned to update the outcomes of this survey in the next reporting period and to elaborate a data delivery plan, based on this update. This survey and WP5 webconferences and workshops during the partner meeting in Cardiff provided input for the elaboration of the first versions for D 5.2 "White book" and D 5.2 "Data mannagement plan". The WP5 team has also started to work on the remaining deliverables, except for D 5.4, which will be prepared after the finalization of D 5.3.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D 5.1	D 5.1 White Book of the web platform related to MUSE (1 report)	GEUS	Report	PU	M7	Completed	The initial version of the White Book was accomplished in the first reporting period. The White Book contains a list of harmonized parameters shown in EGDI as well as the needed main functionalities of the web GIS interface in context of planning and managing shallow geothermal energy in urban areas. The White Book also contains requirements for knowledge management and dissemination inside MUSE as well as a general roadmap for creating the web interface. It is a living document and will be updated during the further progress of MUSE.
D 5.2	D 5.2 Data Management Plan for MUSE (1 report)	RBINS-GSB	Report	PU	M6	Completed	The data management plan organizes the use of geodata inside MUSE and describes the background, type and accessibility of background data. It also contains a joint approach how to deal with geodata (FAIR) and addresses data security aspects. The Data Management Plan will be updated during the further progress of MUSE on demand.
D 5.3	D 5.3 Guideline on the delivery of geodata and knowledge related to SGE to the GeoERA Information Platform (1 report)	RBINS-GSB	Report	PU	M9	Pending	The guideline about delivery of geodata and knowledge to EGDI contains instructions for the partners how to prepare and deliver datasets to EGDI (formats and delivery workflows). Please note that the preparation of contents in terms of harmonized workflows is managed in WP2. The guideline on data delivery also contains a delivery schedule to ensure a harmonized timeframe for preparing contents shown at EGDI. The guidelines will also address how to use knowledge sharing infrastructure provided at EGDI (e.g. knowledge repository, joint glossary of terms). Due to delays in preparing the EGDI infrastructure by the IP team and due to shortage of staff resources at the responsible core team inside MUSE, the preparation of the guideline was postponed to the second reporting period and will be accomplished in PM19.
D 5.4.	D 5.4. Guideline on the use of the SGE web platform tools at the Information Platform (1 report)	GEUS	Report	PU	M27	Pending	The guideline on the use of the SGE web platform will be prepared after finalization of deliverable D 5.3
D 5.5	D 5.5 Publically-accessible web platform inside the GIP on SGE use (1 web platform)	RBINS-GSB	Web tool	PU	M32	Pending	The IP team in collaboration with the WP5 team of MUSE set up the EGDI web infrastructure in the first reporting period. The joint team already accomplished first test runs based on test datasets (e.g. outline of MUSE pilot areas). However, the emphasis of setting up the web interfase for MUSE will be realized between PM 18 and PM 30.
D 5.6	D 5.6 Contributions to the joint GeoERA knowledge infrastructure (1 tool)	RBINS-GSB	Web tool	PU	M32	Pending	This tool serves as link between the methods and concepts developed in WP2 and WP3. In this reporting period the WP5 team has set-up a draft version of a MUSE project glossary, based on the output parameter list from WP2 and WP5. The project glossary will be implemented into the joint GeoERA knolwedge infrastructure.
D 5.7	D 5.7 Guideline on targeted communication to stakeholders on shallow geothermal use in urban areas (1 report)	GBA	Report	PU	M8	Pending	The joint guidelines will address targeted stakeholder communication inside MUSE concerning how to manage shallow geothermal energy in urban areas and which input might be required by Geological Survey Organization. The guideline summarizes tools and communication channels and offers harmonized approaches how to interact with local- as well as international stakeholders in MUSE. A first draft of the guideline will be accomplished in PM 19 and afterwards tested in the MUSE pilot areas. The reviewed final version of the guideline will be published around PM 33.

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M5	Beta-version of the web platform ready to use	18	In delay	Beta version of web platform containing all aimed functionalities has been successfully tested

Work package 6: Cross-cutting issues and capitalising on knowledge inside GeoERA Duration: 1-33

Identification of relevant cross-cutting research topics and projects

In the initial period cross-cutting issues with other GeoERA projects were identified and inquiries were sent to LPs of the GeoERA projects dealing with identified common topics of interest: Groundwater theme - VOGERA, ReSOURCE, HOVER; Geo-energy theme - GeoConnect3d and HotLime.
Aside from GeoERA collaborations were established with Interreg projects GeoPLASMA-CE (https://portal.geoplasma-ce.eu/) and GRETA (https://www.alpine-space.eu/projects/greta/en/home), Horizon2020 Twinning project GeoTwinn (http://projects.hgi-cgs.hr/geotwinn/) and COST Action Geothermal-DHC (https://www.cost.eu/actions/CA18219) in the research of cross-cutting topics.

Knowledge exchange and cross-project capitalisation activities

Two knowledge exchange workshops (KEWs) were organized so far: (1) “Monitoring of shallow geothermal energy use” in collaboration with GeoPLASMA-CE and GRETA projects in November 2018 in Essen (Germany), and (2) “Temperature modelling” in collaboration with GeoERA Geo-energy HotLime project in January 2019 in Zagreb (Croatia). Third KEW will be held in Ljubljana during March 2020 GeoERA mid-term meeting (invitations sent) in collaboration with GeoERA Groundwater projects on crossover topics including management of the shallow subsurface in urban areas for energy and groundwater use to ensure sustainable and self-sufficient cities as well as the impact of changing groundwater temperatures on ecology and chemistry of the groundwater and its implication for the subsurface management. Another KEW on subsurface spatial planning in foreseen with GeoConnect3d project and preparatory meeting on the topic was already held in Vienna.
Planned activities in WP6 are proceeding as planned and no problems are expected in achieving foreseen target values of D.6.1. All activities are being documented for future preparation of D.6.2.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D.6.1	Knowledge exchange workshops on cross cutting topics relevant for MUSE (at least 3 workshops)	BRGM	Workshop	PU	M32	Pending	In the first reporting period, MUSE contributed to 4 knowledge exchange workshops (KEW) involving other GeoERA projects (Hotlime, Geoconnect3D) and international research projects outside GeoERA (e.g. GeoPLASMA-CE, GRETA, Geocond). In 2020, 3 KEW (Offenburg, Ljubljana, Barcelona) are planned. in 2021, MUSE plans to co-host the European "Shallow Geothermal Energy Days" event, which probably will take place in Warsaw in spring 2021.
D.6.2	Activity report on capitalising activities with other project teams inside GeoERA (1 report)	HGI-CGS	Report	PU	M33	Pending	A WP6 core team developed an assessment sheet for documenting capitalising activities with other GeoERA projects. Until now, MUSE established links to Hotlime and Geoconnect3D. Until now, no cooperation was achieved with topics from the Groundwater theme. In March 2020, a joint Knowledge Exchange Workshop is planned togehter with the GeoERA groundwater projects in the framework of the midterm meetings in Ljubljanan. Moreover, contacts have been established to the EGS Urban Geology Expert Group for addressing cross-cutting issues related to MUSE (e.g. the use of the subsurface in urban areas).

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
WP3, deliverable D 3.1: Shift of the deadline for accomplishing the deliverable.	Shift of the deadline from PM 18 to PM 21	No	The changes of the work plan have been approved by GeoERA
WP5, deliverable D 5.3: Shift of the deadline for accomplishing the deliverable.	Shift of the deadline from PM 9 to PM 19	No	The changes of the work plan have been approved by GeoERA
WP5, deliverable D 5.4: Shift of the deadline for accomplishing the deliverable.	Shift of the deadline from PM 27 to PM 30	No	The changes of the work plan still need to be approeved by GeoERA
WP5, deliverable D 5.7: Shift of the deadline for accomplishing the deliverable.	Shift of the deadline from PM 8 to PM 19	No	The changes of the work plan have been approved by GeoERA
Financial adaptations of the partner budgets within a framework of +-20% of each partners budget.	Update of the MUSE Financial Management Tool	No	The updated budgets still need to be approved by GeoERA

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION - Project logo	30.06.2018	GENERAL PUBLIC		GBA	Gregor Goetzl	https://geoera.eu/projects/muse3/
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION - Project poster	30.06.2018	GENERAL PUBLIC		GBA, ICGC, HGI-CGS	Gregor Goetzl, Ignasi Herms, Staša Borović	https://projects-gba.geologie.ac.at/index.php/s/DBivtGJ8P5H3CLi
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION - Leaflet	31.01.2019.	GENERAL PUBLIC	1000	HGI-CGS, GBA, NERC-BGS	Staša Borović, Marina Filipović, Cornelia Steiner, David Boon	https://geoera.eu/blog/muse-leaflet-available-now/
EVENTS	WORKSHOP - Knowledge exchange workshop on "Monitoring of shallow geothermal energy use" in Essen	27-28/11/2018	SCIENTIFIC COMMUNITY	>40	GBA, GeoPLASMA-CE and GRETA projects	Gregor Goetzl, Cornelia Steiner	https://geoera.eu/blog/the-muse-team-met-in-essen-germany/
EVENTS	CONGRESS - Poster at European Geothermal Congress 2019 in The Hague	11-14/6/2019	SCIENTIFIC COMMUNITY	20	ICGS, GBA	Ignasi Herms, Gregor Goetzl	https://projects-gba.geologie.ac.at/index.php/s/088X2OsTrzKrTHx
EVENTS	CONGRESS - Poster and abstract at Polish Geothermal Congress in Zakopane	23-25/10/2018	SCIENTIFIC COMMUNITY	30	PIG-PIB	Maciej Klonowski	https://projects-gba.geologie.ac.at/index.php/s/wKHk58j2M5Df6aF
MEETINGS	Meeting with international body - Oral presentation at IEA Annex 52 meeting (UK) in London	25.09.2018	EU INSTITUTION	220	NERC-BGS	David Boon	
EVENTS	WORKSHOP - Knowledge exchange workshop on "Temperature modelling" in Zagreb	23-24/1/2019	SCIENTIFIC COMMUNITY	24	HGI-CGS, GBA, LfU (HotLime)	Gregor Goetzl, Gerold Diepolder, Staša Borović, Cornelia Steiner	https://geoera.eu/blog/knowledge-exchange-workshop-of-muse-and-hotlime-projects-held-in-zagreb/
MEDIA	OTHER - Article in Annual Science Review of BGS	43496	GENERAL PUBLIC	500	NERC-BGS	David Boon	https://www.bgs.ac.uk/annualreport/home.html
EVENTS	CONGRESS - Extended abstract and oral presentation at 2nd congress of geologists of Bosnia and Herzegovina	2-4/10/2019	SCIENTIFIC COMMUNITY	70	HGI-CGS	Staša Borović	
EVENTS	CONGRESS - Abstract and oral presentation at the 6th Croatian geological congress	9-12/10/2019	SCIENTIFIC COMMUNITY	30	HGI-CGS	Staša Borović	
EVENTS	CONGRESS - Paper and oral presentation at Conference "Actual problematics in water supply and sewerage"	23-27/10/2019	SCIENTIFIC COMMUNITY	200	HGI-CGS	Staša Borović	
MEETINGS	Meeting with national body - Oral presentation at GeoERA Kick-off meeting in Austria	14.03.2019	NON-EU INSTITUTION (national, regional, local)	70	GBA	Gregor Goetzl, Cornelia Steiner	
MEDIA	Other - Article in EnergyHQ on Minewater geothermal Winter 2019	1.11.2019	NON-EU INSTITUTION (national, regional, local)	500	NERC-BGS	David Boon	https://projects-gba.geologie.ac.at/index.php/s/lA3V7NEHj6ai8oS#pdfviewer

INSTRUCTIONS

Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	Internal project meeting
	Meeting with other GeoERA projects
	Meeting with national body
	Meeting with international body
	Other
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

PROJECT MANAGEMENT

Progress on coordination activites

In the beginning of MUSE, P1 GBA initialized a "Project Office", which consists of the project coordinator, the deputy coordinator and the finance manager. The Project Office is responsible for internal communication, communication towards GeoERA and controlling and monitoring of the implementation of MUSE. The PO also services and maintains the MUSE work plan, the Own Cloud based document exchange platform and the MUSE contact lists. It furthermore organizes all partner web conferences and partner meetings. The PO is supported by a Project Board consisting of WP leaders (permanent members) and task leaders (ad-hoc members).

All management aspects inside MUSE are summarized in the Project Implementation Plan (D 1.1), which is regularly updated during the progress of MUSE.

Communication between the partners

The PO organized 2 physical meetings of the Project Assembly in November 2018 (Essen) and 2019 (Cardiff) and 1 physicial meeting of the Project Board (in the framework of the GeoERA kick-off event in Brussels in July 2018). In addition, 9 web based meetings of the Project Assembly took place in the first reporting period.

The PO coordinated the communication towards the Project Assembly and supported the Project Board in organizing communication between the different work packages. Communication was also supported by an Own Cloud document exchange platform and joint E-mail contact lists.

Cooperation with other projects

In the first reporting period, MUSE contributed to 4 knowledge exchange workshops (KEW) involving other GeoERA projects (Hotlime, Geoconnect3D) and international research projects outside GeoERA (e.g. GeoPLASMA-CE, GRETA, Geocond). In 2020, 3 KEW (Offenburg, Ljubljana, Barcelona) are planned. in 2021, MUSE plans to co-host the European "Shallow Geothermal Energy Days" event, which probably will take place in Warsaw in spring 2021.

IMPACT STATEMENT

MUSE addresses measures to enhance and manage sustainable and efficient use of shallow geothermal energy in European urban areas for prompoting green energy uptakes.

According to the MUSE project application, the following activities have been planned to maximize the impact of the project:

C-D-E plan: The preliminary C-D-E plan submitted at the project application, was further developed during the initial phase of MUSE and is updated on a regular basis. The C-D-E plan plans and monitors all activities related to external communication.

Web platform on the use of shallow geothermal energy: a dedicated web interface addressing shallow geothermal energy inside EGDI is currently developed. The general concept of it was communicated to the IP team via the MUSE White Book (D 5.1). The web interface will be ready for external use by the end of 2020.

Developing of joint quality standards and approaches for managing shallow geothermal energy use: In the first reporting period, the different approaches and methodologies for mapping resources and limitations of use have been assessed inside the MUSE team and are currently harmonized to a joint catalogue of methods. Furthermore, different management approaches and management requirements associated to the use of shallow geothermal energy have been assessed and compiled to a catalogue of management approaches, which will be finalized in the second reporting period. The MUSE team also assessed and is currently evaluating the legal framework for the use of shallow geothermal energy. A joint evaluation will be published in the second reporting period.

Identifying and promoting promising concepts and approaches how to use shallow geothermal: In the first reporting period, fast sheets on the gesocientific and market related conditions for the use of shallow geothermal have been created for all 14 MUSE pilot areas. The fact sheets are published at the MUSE website. in 2019, the MUSE team started to collect good practice examples on the use of shallow geothermal energy in all pilot areas. The good practice examples will be published on the MUSE EGDI web interface as well as on the MUSE website.

Targeted stakeholder communication: Currently joint guidelines on targeted stakeholder communication are developed. Targeted communication intends to raise awareness towards the use of shallow geothermal, management aspects to ensure sustainability and efficiency and role Geological Survey Organizations should play in managing urban shallow geothermal use. Targeted stakeholder communication will include interviews, focus group workshops and trainings / events for targeted audiences on a regional to national level (under the responsibility of each MUSE partner) and on an international level (joint coordination of the MUSE team). The focus on stakeholder communication will be put in 2020.

Knowledge exchange and capitalization: In the first reporting period, MUSE contributed to 4 knowledge exchange activities and already initialized one follow-up initiative in terms of the COST Action CA18219 Geothermal - DHC, which addresses the inclusion of geothermal energy (deep and shallow geothermal) in heating and cooling grids. Furthermore, strategic cooperation was initialized with other European networks like JPI, EGEC, RHC and IAH. In 2021, MUSe aims to co-host the European Shallow Geothermal Energy event, which will likely take place in Warsaw in spring 2021.

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
	Actual			(0,25*A+B)				
1. GBA	49.918,32	3.879,10	0,00	13.449,35	67.246,77	29,70%	19.972,29	47.274,48
2. NERC (UKRI)	37.924,92	9.136,54	0,00	11.765,37	58.826,83	29,70%	17.471,57	41.355,26
3. ICGC	36.866,79	6.324,06	0,00	10.797,71	53.988,56	29,70%	16.034,60	37.953,96
4. HGI-CGS	23.152,21	1.834,00	0,00	6.246,55	31.232,76	29,70%	9.276,13	21.956,63
5. CGS	2.414,07	707,90	0,00	780,49	3.902,47	29,70%	1.159,03	2.743,43
6. BRGM	4.318,82	750,80	0,00	1.267,41	6.337,03	29,70%	1.882,10	4.454,93
7. GSI	13.673,71	2.436,89	0,00	4.027,65	20.138,25	29,70%	5.981,06	14.157,19
8. RBINS-GSB	56.669,10	2.562,88	0,00	14.807,99	74.039,97	29,70%	21.989,87	52.050,10
9. GeoZS	8.727,25	2.258,99	0,00	2.746,56	13.732,80	29,70%	4.078,64	9.654,16
10. IGME-Sp	43.811,37	13.286,89	0,00	14.274,57	71.372,83	29,70%	21.197,73	50.175,10
11. SGU	28.549,41	5.454,36	0,00	8.500,94	42.504,71	29,70%	12.623,90	29.880,81
12. TNO	15.731,00	6.527,41	0,00	5.564,60	27.823,01	29,70%	8.263,43	19.559,58
13. PIG-PIB	14.316,96	4.542,13	0,00	4.714,77	23.573,87	29,70%	7.001,44	16.572,43
14. SGIDS	1.466,26	0,00	0,00	366,57	1.832,83	29,70%	544,35	1.288,48
15. GEOINFORM	2.000,37	0,00	0,00	500,09	2.500,46	29,70%	742,64	1.757,82
16. GEUS	51.288,13	3.523,26	0,00	13.702,85	68.514,24	29,70%	20.348,73	48.165,51
					567.567,38		168.567,51	398.999,87

Date: 29.01.2020

Person responsible: Cornelia Steiner, P01 GBA

FINANCIAL STATEMENT FOR PP 1 - GBA **Final version**

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
1. GBA	49.918,32	3.879,10	0,00	13.449,35	67.246,77	29,70%	19.972,29	47.274,48

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	4,73	WP1	19.686,49
	2,49	WP2	12.547,37
	0,15	WP3	936,12
	1,63	WP4	8.275,37
	0,98	WP5	5.838,96
	0,47	WP6	2.634,00
			49.918,32

Other direct costs	Description	Category	Associated WP	Costs
	Travel expenses Cornelia Steiner - Temperature modelling workshop 23.01.-24.01.2019, Zagreb	Travel	WP6	92,22
	Travel expenses Cornelia Steiner Partner meeting 25.03.-29.03.2019, Cardiff	Travel	WP1	707,79
	Cornelia Steiner train ticket for WP2 workshop Utrecht 03.07.-04.07.2019	Travel	WP2	18,40
	Travel expenses Cornelia Steiner WP2 workshop Utrecht 03.07.-04.07.2019	Travel	WP2	408,51
	Travel Costs of Cornelia Steiner - 1st Partner Meeting - 27-29.11.2018, Essen	Travel	WP1	336,20
	Catering and Rental Room (1st Partner Meeting - 27-29.11.2018, Essen) -Impact Hub Ruhrgebiet GmbH; Invoice number 512	Other	WP1	2.315,98
				3.879,10

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - NERC (UKRI) **Final version**

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2. NERC (UKRI)	37.924,92	9.136,54	0,00	11.765,37	58.826,83	29,70%	17.471,57	41.355,26

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,56	WP1	6.853,77
	2,44	WP2	10.080,95
	5,21	WP4	20.163,50
	0,26	WP6	826,70
			37.924,92

Other direct costs	Description	Category	Associated WP	Costs
	MUSE 1st partner meeting, Essen, Germany, D Boon, J Busby & G Farr 26-30/11/18	Travel	WP1	2.554,78
	MUSE Meeting, Cardiff, D Boon, G Farr, K Shorter, A Patton. A Holden, 25-28 Mar 2019	Travel	WP1	4.530,17
	WP 2 & 4 Technical Workshop, Utrecht, D Boon 2-4 July 19	Travel	WP1	437,08
	WP 2&4 Technical Workshop, Utrecht, D Boon 2-4 July 19	Travel	WP4	359,14
	MUSE Meeting, Cardiff, K Shorter, 25-28 Mar 2019	Travel	WP4	588,62
	MUSE Fieldwork, Cardiff, G Farr, 28 Oct 2019	Travel	WP4	43,83
	Well Screening	Other	WP4	622,92
				9.136,54

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - ICGC **Final version**

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
3. ICGC	36.866,79	6.324,06	0,00	10.797,71	53.988,56	29,70%	16.034,60	37.953,96

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,19	WP1	1.124,54
	1,93	WP2	9.912,32
	0	WP3	0,00
	5,87	WP4	25.306,51
	0,05	WP5	304,82
	0,03	WP6	218,60
			36.866,79

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA projects Kick-off meeting. Brussels.	Travel	WP1	1.006,62
	MUSE - Partner Meeting 2018, Essen (Germany).	Travel	WP4	1.057,59
	Field work. Girona Pilot site. Task 4.7 (WP4 MUSE)	Travel	WP4	358,01
	MUSE – Joint project workshop #1. Cardiff (UK).	Travel	WP2	358,59
	MUSE – Joint project workshop #1. Cardiff (UK)	Travel	WP4	836,70
	The Hague EGC 2019.	Travel	WP4	1.806,15
	MUSE – WPT2 workshop.	Travel	WP2	900,40
				6.324,06

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - HGI-CGS **Final version**

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
4. HGI-CGS	23.152,21	1.834,00	0,00	6.246,55	31.232,76	29,70%	9.276,13	21.956,63

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,5	WP1	3.858,47
	1,7	WP2	4.105,02
	1,03	WP3	2.407,26
	1,81	WP4	4.363,22
	2,13	WP5	5.018,64
	1,48	WP6	3.399,60
			23.152,21

Other direct costs	Description	Category	Associated WP	Costs
	Travel Costs of Mrs. Staša Borović - GeoERA Kick Off Meeting - 2-6/7/2018, Brussels	Travel	WP1	1.002,00
	Travel Costs of Mrs. Staša Borović - 1st Joint Workshop - 26.-28./3/2019, Cardiff	Travel	WP1	832,00
				1.834,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - CGS **Final version**

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
5. CGS	2.414,07	707,90	0,00	780,49	3.902,47	29,70%	1.159,03	2.743,43

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,24	WP1	451,68
	0,45	WP3	790,32
	0,54	WP4	1.119,38
	0,03	WP5	52,69
			2.414,07

Other direct costs	Description	Category	Associated WP	Costs
	Travel Costs of Jar	Travel	WP1	707,90
				707,90

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - BRGM Final version

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
6. BRGM	4.318,82	750,80	0,00	1.267,41	6.337,03	29,70%	1.882,10	4.454,93

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,11	WP1	713,46
	0,56	WP6	3.605,36
			4.318,82

Other direct costs	Description	Category	Associated WP	Costs
	Travel costs of Miss MAUREL - Workshop WP2, 03.07. - 04.07.2019, Utrecht	Travel	WP6	696,40
	Travel costs of Miss MAUREL - Workshop project, 14.10. - 15.10.2019, Brussels	Travel	WP6	54,40
				750,80

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - GSI Final version

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
7. GSI	13.673,71	2.436,89	0,00	4.027,65	20.138,25	29,70%	5.981,06	14.157,19

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,2	WP1	1.067,73
	0,1	WP3	584,94
	2,15	WP4	11.937,48
	0,01	WP5	83,56
			13.673,71

Other direct costs	Description	Category	Associated WP	Costs
	1st Partner Meeting - 27-29.11.2018, Essen x 2 staff	Travel	WP4	1.014,74
	2nd Partner Meeting - 25.03.-29.03.2019, Cardiff x 2 staff	Travel	WP4	435,39
	fieldwork 1 (temperature measurements) - 2 x staff	Travel	WP4	493,38
	fieldwork 2 (temperature measurements) - 2 x staff	Travel	WP4	493,38
				2.436,89

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - RBINS-GSB **Final version**

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
8. RBINS-GSB	56.669,10	2.562,88	0,00	14.807,99	74.039,97	29,70%	21.989,87	52.050,10

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,19	WP1	6.371,61
	0,82	WP2	5.740,44
	1,24	WP3	8.760,04
	3,77	WP4	27.595,24
	1,22	WP5	8.201,76
			56.669,10

Other direct costs	Description	Category	Associated WP	Costs
	From 27/11/2018 to 28/11/2018 by Pierre-Yves Declercq to Essen (D).	Travel	WP4	321,00
	From 27/11/2018 to 29/11/2018 by Estelle Petitclerc to Essen (D).	Travel	WP4	283,50
	From 25/03/2019 to 29/03/2019 by Estelle Petitclerc to Cardiff.	Travel	WP2	957,13
	Exceptional (project related) analytical costs: travaux de terrassement	Other	WP4	786,50
	Exceptional (project related) analytical consumables: boxes for monitoring	Equipment	WP4	214,75
				2.562,88

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - GEOZS **Final version**

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
9. GEOZS	8.727,25	2.258,99	0,00	2.746,56	13.732,80	29,70%	4.078,64	9.654,16

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,22	WP1	893,06
	0,33	WP2	1.339,59
	0,28	WP3	1.116,33
	1,71	WP4	4.176,55
	0,28	WP5	531,91
	0,17	WP6	669,80
			8.727,25

Other direct costs	Description	Category	Associated WP	Costs
	Cardiff Project meeting MUSE, 25 - 30 March 2019, 1 Person	Travel	WP1	1.437,09
	Essen workshop, 27 - 29 November 2018, 1 Person	Travel	WP1	821,90
				2.258,99

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - IGME-Sp **Final version**

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
10. IGME-Sp	43.811,37	13.286,89	0,00	14.274,57	71.372,83	29,70%	21.197,73	50.175,10

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,87	WP1	3.792,21
	2,16	WP2	9.229,67
	4,44	WP3	19.078,52
	2	WP4	8.942,15
	0,59	WP5	2.478,80
	0,07	WP6	290,02
			43.811,37

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off Meeting, Brussels	Travel	WP3	1.237,03
	Kick-off Meeting, Brussels	Travel	WP3	1.235,68
	1st Partner Meeting, Essen	Travel	WP3	920,13
	1st Partner Meeting, Essen	Travel	WP3	945,73
	Software license FEFLOW	Equipment	WP2	7.588,00
	Cardiff meeting	Travel	WP3	1.256,95
	Zaraogza team staff meeting in Madrid	Travel	WP3	103,37
				13.286,89

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - SGU **Final version**

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
11. SGU	28.549,41	5.454,36	0,00	8.500,94	42.504,71	29,70%	12.623,90	29.880,81

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,44	WP1	3.382,45
	1,11	WP2	8.505,30
	0,06	WP3	431,99
	1,82	WP4	12.137,63
	0,35	WP5	2.753,95
	0,25	WP6	1.338,09
			28.549,41

Other direct costs	Description	Category	Associated WP	Costs
	Linköping 2018-10-15	Travel	WP4	934,45
	Essen 2018-11-27	Travel	WP1	919,62
	Linköping 2019-05-07	Travel	WP4	1.298,55
	Linköping 2019-06-10	Travel	WP4	144,75
	Utrecht 2019-07-03	Travel	WP2	761,81
	Linköping 2019-09-11	Travel	WP4	574,85
	Brussels	Travel	WP2	820,33
				5.454,36

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - TNO **Final version**

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
12. TNO	15.731,00	6.527,41	0,00	5.564,60	27.823,01	29,70%	8.263,43	19.559,58

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,25	WP1	1.473,00
	0,5	WP2	2.946,00
	1,92	WP4	11.312,00
			15.731,00

Other direct costs	Description	Category	Associated WP	Costs
	Meetings: kick-off, Essen, Cardiff, Brussels, Anderlecht	Travel	WP4	5.018,37
	Grondsfreesmachine rental	Equipment	WP4	1.509,04
				6.527,41

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 -PIG-PIB **Final version**

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
13.PIG-PIB	14.316,96	4.542,13	0,00	4.714,77	23.573,87	29,70%	7.001,44	16.572,43

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,2	WP1	1.978,22
	1,03	WP2	1.792,81
	2,91	WP3	5.365,68
	1,76	WP4	3.140,10
	0,65	WP5	1.092,57
	0,5	WP6	947,58
			14.316,96

Other direct costs	Description	Category	Associated WP	Costs
	Travel Costs of Mr. Maciej Kłonowski - Kick-off meeting - 03-05.07.2018, Brussels: daily allowances, travel allowances, accommodation, public city transportation lump sum	Travel	WP1	893,43
	Travel Costs of Mr. Maciej Kłonowski - 1st Partner Meeting - 26-28.11.2018, Essen: daily allowances, travel allowances, accommodation, railway ticket, public city transportation lump sum	Travel	WP1	407,96
	Travel Costs of Mrs. Monika Konieczynska - field study visit at the drilling site - 09.10.2018, Płock: daily allowances	Travel	WP3	6,98
	Travel Costs of Mrs. Olga Lipińska - field study visit at the drilling site - 09.10.2018, Płock: daily allowances	Travel	WP3	6,98
	Travel cost of Maciej Kłonowski, project workshop, 22-24.01.2019, Zagreb: travel insurance, air ticket, daily allowances, accommodation	Travel	WP6	829,94
	Travel cost of Mateusz Żeruń, project workshop, 22-24.01.2019 Zagreb: travel insurance, air ticket, daily allowances, accommodation	Travel	WP6	757,56
	Travel cost of Monika Konieczyńska, project workshop, 22-24.01.2019 Zagreb: travel insurance, air ticket, daily allowances, accommodation	Travel	WP6	755,22
	Travel cost of Maciej Kłonowski, project meeting and workshop, 25-31.03.2019, Cardiff: travel insurance, air ticket, daily allowances, accommodation	Travel	WP3	802,14
	Travel cost of Maciej Kłonowski, project meeting at PIG-PIB, 30.05.2019, Warsaw: daily allowances, travel allowances	Travel	WP3	49,27
	Travel cost of Maciej Kłonowski, project meeting at PIG-PIB, 10.12.2019, Warsaw: daily allowances, accommodation, travel allowances	Travel	WP3	32,66
				4.542,13

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - SGIDS **Final version**

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
14. SGUDS	1.466,26	0,00	0,00	366,57	1.832,83	29,70%	544,35	1.288,48

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,2	WP1	513,12
	0,5	WP4	953,14
			1.466,26

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - GEOINFORM **Final version**

Fill in only blue-colored cells.

	A. Direct personne Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
15. GEONFORM	2.000,37	0,00	0,00	500,09	2.500,46	29,70%	742,64	1.757,82

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,05	WP1	236,92
	0,07	WP2	337,42
	0,09	WP3	427,20
	0,13	WP5	635,10
	0,08	WP6	363,73
			2.000,37

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - GEUS **Final version**

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
16. GEUS	51.288,13	3.523,26	0,00	13.702,85	68.514,24	29,70%	20.348,73	48.165,51

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,44	WP1	3.594,22
	1,16	WP2	10.698,93
	1,60	WP4	14.453,93
	2,67	WP5	22.541,05
			51.288,13

Other direct costs	Description	Category	Associated WP	Costs
	Travel Costs of Mr. Claus Ditlefsen - Kick-off Meeting - 03-05.07.2018, Bruxelles	Travel	WP1	1.082,21
	Travel Costs of Mr. Claus Ditlefsen - Project Meeting - 24.-25.10.2018, Bruxelles	Travel	WP5	950,59
	Travel Costs of Mr. Thomas Vangkilde-Pedersen - Meeting at the ATV (the Danish Academy of Technical Sciences) - 22.01.2019, Copenhagen, Denmark	Travel	WP5	76,59
	Travel Costs of Mr. Claus Becher Ditlefsen - Partner Workshop - 25.-29.03.2019, Cardiff, Wales	Travel	WP1	1.102,91
	Travel Costs of Mr. Claus Becher Ditlefsen - Planning meeting in Copenhagen - 19.11.2019-21.11.2019	Travel	WP1	114,82
	Travel Costs of Mr. Claus Becher Ditlefsen - Planning meeting in Copenhagen - 24.09.2019-25.09.2019	Travel	WP4	196,14
				3.523,26

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No:	731166
ERA-NET Cofund acronym:	GeoERA
Call identifier:	H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Resources of groundwater, harmonized at Cross-Border and pan-European Scale
Project acronym:	RESOURCE
Project reference number:	
Project topic:	Groundwater
Project specific recearch topic:	GW3 - HARMONIZATION OF GROUNDWATER RESOURCES INFORMATION AT CROSS-BORDER TO PAN- EUROPEAN SCALE
Project website address:	https://geoera.eu/projects/resource9/

Period covered from: 1.01.2018 to: 31.12.2019

Report submission date:	20.01.2020
Project coordinator:	H.P. Broers

Contact person for the project: H.P. Broers
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IDENTIFICATION OF PROJECT PARTICIPANTS

[use dropdown menu]

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek	The Netherlands Organisation for applied scientific research	TNO	Netherlands	999988909	Project Lead
2	Stichting Deltares, affilitated or linked to TNO	Deltares	DLT	Netherlands	999520302	Third Party
3	Per Sherbimin Gjeologjik Shqiptar	Albanian Geological Survey	AGS	Albania	951811337	Project Partner
4	Geologische Bundesanstalt	Geological Survey of Austria	GBA	Austria	998164145	Project Partner
5	Vlaamse Milieumaatschappij	Flanders Environment Agency	VMM	Belgium	953383125	Project Partner
6	Studiecentrum voor Kernenergie/Centre d'Etude de l'Energie Nucléaire (affiliated or linked to VMM)	Belgian Nuclear Research Centre SCK•CEN (Third party of VMM)	SCK/CEN	Belgium	999986775	Third Party
7	Federalni Zavod Za Geologiju Sarajevo	Geological Survey of Federation of Bosnia and Herzegovina	FZZG	Bosnia and Herzegov	947831524	Project Partner
8	Hrvatski geoloski institut	Croatian Geological Survey	HGI-CGS	Croatia	972614345	Project Partner
9	Ministry of Agriculture, Natural Resources and Environment of Cyprus	Cyprus Geological Survey Department	GSD	Cyprus	999434845	Project Partner
10	Ceska Geologicka Sluzba	Czech Geological Survey	CGS	Czech Republic	999546783	Project Partner
11	Geological Survey of Denmark and Greenland	Geological Survey of Denmark and Greenland	GEUS	Denmark	999459677	Project Partner
12	Geologian Tutkimuskeskus	Geological Survey of Finland	GTK	Finland	999432614	Project Partner
13	Bureau de Recherches Géologiques et Minières	The French Geological Survey	BRGM	France	999993662	Project Partner
14	Magyar Bányászati és Földtani Szolgálat	Mining and Geological Survey of Hungary	MBFSZ	Hungary	967592364	Project Partner
15	Islenskar Orkurannsoknir	Iceland GeoSurvey	ISOR	Iceland	993296006	Project Partner
16	Department of Communications, Climate Action and Environment	Geological Survey of Ireland	GSI	Ireland	996559280	Project Partner
17	Agenzia Regionale per la Protezione Ambientale del Piemonte	Regional Agency for the Protection of the Environment	ARPAP	Italy	999468892	Project Partner
18	Regione Umbria	Servizio Geologico	RU	Italy	997980233	Project Partner
19	Latvijas Vides, Geologijas Un Meteorologijas Centrs Sia	Latvian Environment, Geology and Meteorology Center	LEGMC	Latvia	986071446	Project Partner
20	Lietuvos geologijos tarnyba prie Aplinkos ministerijos	Lithuanian Geological Survey	LGT	Lithuania	991988058	Project Partner
21	Administration Des Ponts et Chaussees Direction; Service Géologique du Luxembourg	National geological survey	SGL	Luxemburg	983408408	Project Partner
22	Office of Prime Minister / Ministry for Transport and Infrastructure	Office of Prime Minister	OPM	Malta	953280111	Project Partner
23	Państwowy Instytut Geologiczny – Państwowy Instytut Badawczy	Polish Geological Insitute	PIG-PIB	Poland	999492463	Project Partner
24	Laboratorio Nacional de Energia e Geologia I.P.	The National Laboratory of Energy and Geology	LNEG	Portugal	994187921	Project Partner
25	Institutul Geologic al României	Geological Institute of Romania	IGR	Romania	998906874	Project Partner
26	Geological Survey of Serbia	Geological Survey of Serbia	GSS	Serbia	919767678	Project Partner
27	Geološki zavod Slovenije	Geological Survey of Slovenia	GeoZS	Slovenia	999466370	Project Partner
28	Instituto Geológico y Minero de Espana	Geological Survey of Spain	IGME-Sp	Spain	998737803	Project Partner
29	Institut Cartogràfic i Geològic de Catalunya	Institut Cartogràfic i Geològic de Catalunya	ICGC	Spain	935977542	Project Partner
30	Sveriges Geologiska Undersökning	Geological Survey of Sweden	SGU	Sweden	995575991	Project Partner
31	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund of Ukraine	GEOINFORM	Ukraine	947331392	Project Partner
32	UK Research and Innovation	British Geological Survey	NERC (UKRI)	United Kingdom	906446474	Project Partner
33	Eesti Geoloogiakeskus (non-funded partner)	Geological Survey of Estonia	EGT	Estonia	996572763	Project Partner
34	Regione Toscana	Regional geological survey	RT	Italy	998823842	Project Partner
35	Geologischer Dienst Nordrhein-Westfalen	0	NRW	Germany	0	Project Partner

PUBLISHABLE SUMMARY

Although EU member states generally have a comprehensive overview of the groundwater resources in their own homeland and have delineated groundwater bodies for the EU Water Framework Directive, a coherent overview of all fresh groundwater over Europe is not available for policy development and evaluation. The RESOURCE project aims at demonstrating the potentials of the harmonization of information about Europe's groundwater resources through cross-border demonstrations projects, through harmonized characterization approaches for Karst and Chalk aquifers and through a first information product at Pan-European scale where available data is compiled and integrated to produce a map of the fresh groundwater resources of Europe. The set of deliverables of the RESOURCE project will provide good practices in providing harmonized data and information across borders for assessments of the 3D structure of aquifers, the water volumes available, and the water fluxes and water quality of the resource. Harmonization of such hydrogeological information is a prerequisite for any transboundary groundwater management. A range of regional and national stakeholders will be involved in the work in order to ensure both interaction with authorities that manage and protect groundwater resources and with end-users, thus maximizing dissemination of the results and providing them with easy-access tools through the cooperation with the GeoERA Information Platform Project, jointly prioritizing the information products that are most beneficial for society. The information products to be delivered will serve as a first prototype example of information to be accessible within a Geological Service for Europe.

WP2 provides the link of the RESOURCE project with the Information Platform project and is responsible for dissemination activities. The main impact derived from the project will be that the general public and stakeholders will have access to information of groundwater resources at Pan-EU by means of the EGDI webservice. Impact is further enhanced by a dissemination strategy that is actively making use of social media, national and international conferences and reaching out to the scientific community, policy makers and regional and national stakeholder and the general public.

WP3 builds on the established 3D transboundary geological structure that was inherited of previous Flemish-Dutch-German projects, but extending those with harmonized information on hydraulic properties, groundwater heads, groundwater quality and age, in strong cooperation with regional stakeholders that play an active role and provide guidance to the work process and will have access to a cross-border visualization tool. The stakeholders hope to use the provided information new transboundary groundwater management and the project provides independent information that forms the basis for such groundwater planning.

WP4 establishes the first- Polish-Lithuanian hydrogeological transboundary harmonization in order to assess cross-border flow and flux patterns. The work performed includes the harmonization of available geological information and schematization, but also assess field data on cross-border surface water flow for calibration purposes.

WP5 works towards a common tool for the interpretation of data time series from karst aquifers. The tool shall allow sharing a common, harmonized and up to date way of classifying karst aquifers regarding several management issues such as (i) water reserves evaluation, (ii) flow regulation and (iii) vulnerability assessment.

WP6: The project is progressing towards a first harmonized pan-European assessment of the 3D structure of aquifers and the volumes of water involved. The surveys that participate in RESOURCE found a common language and developed a common tool to collect the data on the fresh groundwater resources and data collection is now underway. The result of this work will be distributed through EGDI

and the general public will be able to assess volumes and depths of groundwater resources using map, virtual borehole and cross-section views. This will help to appreciate the possible role of groundwater in water supply, while making the public community aware of the protection measures necessary for sustainable use of the resource.

PROJECT CONTRIBUTION TO GeoERA PROJECT

The RESOURCE project addresses the Specific Research Topics of the call, such as addressed under GW3 (GeoERA 2017). The set of deliverables will provide good practices in providing harmonized data and information across borders for proper assessments of water volumes, fluxes and water quality at a cross-border scale, which up to now are nearly absent but are needed for successful water planning and management in Europe, especially in a transboundary setting. The Pan-EU mapping approach and the cross-border demonstration projects under RESOURCE will lead to example products of a harmonized pan-European assessment of the 3D structure of aquifers and the volumes of water involved. Harmonization of hydrogeological information and harmonized 3D characterization of aquitards and aquifers is a prerequisite for any transboundary groundwater management. The RESOURCE proposal includes the following elements of research and development that address the scope of the call:

- Two cross-border demonstration projects that set a new standard for harmonization across borders, not only for 3D geological structures but also for hydrological characteristics such as groundwater heads, fluxes and water quality; these demonstration projects should be considered as a first step towards harmonization at European scale.

- Involvement of stakeholders in the cross-border demonstration projects in order to show and evaluate how synchronized cross-border information adds value to cross-border aquifer management and promotes sustainably prioritizing of different uses of shallow and deep groundwater resources.

- A truly pan-European effort to create a consistent pan-European information product that yields a spatial overview of the volume and depth of Europe's fresh groundwater resources, including a first estimate of total abstraction rates from the resource and the identification of deep paleo waters that may function as strategic reserves

- Creation of a common methodological framework for characterization of karst aquifers and their vulnerability, with a guidance for managing and protecting various karst aquifer types.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: WP name **Duration:**

This WP comprises the day-to-day coordination of the RESOURCE project. WP1 has organized the Project Board meetings (Budapest) and Project Assembly (Zagreb) and followed up on these meetings by controlling the timely realisation of project results. All deliverables have been delivered without any delays and milestones have been met. The interaction with the GIP project was included in the RESOURCE PA meeting and led to a sound D2.2 that describes the interaction (see under WP 2). A small number of minor adaptations to the DOW have been addressed and approved by the GeoERA Executive Board. A contingency plan is in place to deal wih delayed or no-response by a small nnumbers of partners, which was described in the minutes of the meeting of the PA. WP1 kept GeoERA Executive Board updated on the project progress, and is currently perfroming the midterm reporting.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
1,2	Summary reports of RESOURCE after year 1	TNO	R	PU	31.07.2019	Completed	timely delivered

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M1	Project Assembly (Kick-off)	31.07.2018	Completed	Summary report verified by Project Board and Advisory Board
M2	Workshop of all WP's and Project Board Meeting	31.12.2018	Completed	Progress verified by Project Board
M3	Project Assmebly (PA), Project Board meeting and Workshops	31.08.2019	Completed	Summary report verified by Project Board and Advisory Board

Work package 2: WP name **Duration:**

WP2 combines the data management of RESOURCE and the dissemination and communication of the project. WP2 succesfully developed the data management plan (DMP) and further elaborated towards the important D2.2 deliverable that describes and fines the prioritized information products for RESOURCE. In the project the choice has been made to prioritize for the development of the Pan-EU groundwater resources map of WP6 as the main harmonized product of RESOURCE. Strong cooperation was achieved through the GIP project liaison of IGME, which guarantees feasibilty of the eventual product. WP2 further developed a project communication, dissemination and exploitation plan including social media, the project web site and scientific journals. The communication strategy has been aligned with that of the other GeoERA groundwater projects, as the WP coordinator is active in this role in all these projects. The WP2 has achived a strong social media and web output, through groundwater blogs, news feeds on the webpage and social media posts under the GeoERA Groundwater blog in Wordpress (www.geoera-groundwater.com), which posts simultaneously on facebook, twitter and linkedin. Typically the posts on the social media receive more than 1000 views on each platform. The WP has organized workshops for stakeholders in the cross-border and methodological demonstration projects, and has achieved dissemination by establishing organizing meetings in conjunction with stakeholder groups at European level, including the CIS Working Group C on Groundwater. As yet, production of peer-reviewed papers has not been achieved, but presentations were given at important conferences including EGU, AGU, IAH and UNECE. The WP coordinator assures alignement with the other GeoERA groundwater projects, in order to maximize the output of the project and stimulating the cross-cooperation.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
2,1	First draft of data management plan	GEUS	R	CO	31.12.2018	Completed	timely delivered
2,2	Definition and prioritized Information Products for the GeoERA Information Platform as input for the GIP meeting on Groundwater	GEUS	N	CO	30.11.2019	Completed	timely delivered

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M4	Combined workshop with the GeoERA Information Platform to discuss templates and data delivery	31-11-2019	Completed	

Work package 3: WP name **Duration:**

H3O-PLUS: Harmonizes information for subsurface spatial planning and management in a transboundary lowland aquifer system. The objective of the cross-border demonstration project H3O+ is to create harmonized information over te Dutch, Flemish and Germand area of the Roer Valley Graben - a heavily used cross-border asuifer system, where many subsurface activities strive for prioritization- for the following aspects: - hydraulic properties of cross-border aquifers and aquitards, - stratification of groundwater composition (such as fresh-salt interface and base line quality), - groundwater age distribution within the moest important aquifers used for drinking water supply and water balances of these individual, cross border aquifers including quantification of recharge fluxes, recharge patterns and discharge routes, - common cross-border analysis of depletion patterns due to abstractions and mining activiteis based on harmonizes methods, - a harmonized cross-border overview of groudnwater protection and utilization strategies on different sides of common borders.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
3,1	Report describing the criteria set for cross-border harmonisation of groundwater data	VMM	R	PU	31.07.2018	Completed	timely delivered

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 4: WP name *TRANSFLUX* **Duration: July 2018 - June 2021**

WP4 *TRANSFLUX: Harmonization of data, monitoring and modelling in a transboundary setting.* WP4 aims to develop a numerical hydrodynamic model for the Lithuanian-Polish cross-border area that will cover the Quaternary multi-aquifer system for the transboundary river basins. The project has two fundamental research aims: the determination of the transboundary groundwater flow directions in the cross-border area and the estimation of the volume of groundwater, which flows through the state border between Poland and Lithuania. This research is directed on the identification and harmonisation of the hydrogeological system, integrating the information through a numerical model in order to examine the groundwater regime in the area covering the eastern border area of Poland and the western boundary zone of Lithuania. The project organized a transboundary workshops in Sidorówka in Warsaw in 2019, focusing oon the comparison of data and the development of a comparative table template, which was filled afterwards by the contributing partners. From the common findings, best practices and solutions for defined for the groundwater modelling in Poland and in Lithuania. Groundwater RESOURCE GeoERA workshop, March 20-21th 2019, Hungarian Geological Survey in Budapest (Hungary). The second workshop focused on the collection and preperation of geological, hydrogeological and other data useful for groundwater modelling purposes, adjustinng them to the GIS requirements following a common geometric projection. The study area was then discretized, model boundaries were defined, and the BC were determined and layer geometry and extents have been elaborated. In a specific survey, hydrometric measurements of surface water discharge in rivers were made within the cross-border Polish-Lithuanian area (July-August 2019).

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
4,1	Comparison and unification of methods applied in groundwater modelling in Poland and in Lithuania. Choosing and development of best methodology	PIG	R	CO	31.12.2018	Completed	timely delivered
4,2	Integration of data in a common dataset	PIG	D	PU	31.03.2019	Completed	timely delivered

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 5: WP name **Duration:**

Work package 5 of GeoERA RESOURCE project focuses on typologies for karst and chalk areas. Deliverable 5.1 was recently submitted and describes the state of the art of Karst Typology characterisation. It reports on the tasks 5.1 and partly on task 5.2 and reports on the work done in the last 18 months. In order to achieve the aims of the proposal, we will introduce a new deliverable that reports on the rest of task 5.2 and the tasks 5.3 and 5.4 which makes reporting on the project results more efficient: D5.3 on karst aquifer typology tool. Within Task 5.3, each Eurogeosurvey has selected one karst aquifer in his country. An excel file describing the available metadata has been created. For each case study, a one-slide presentation has been prepared by each partner for external communication. GIS shapefiles (with the karst aquifer basin and main spring location) have been gathered in a common projection system. A report describing each case study is under preparation: it is Deliverable 5.2. A database of the available data time series (Deliverable 5.5) is under construction. The development of a common interpretation tool for data time series analysis has started. A common (data and documentation) sharing platform has been implemented for projet communication on Teams.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
5,1	Karst typology in Europe: state of the art	BRGM	R	PU	31.01.2019	Completed	timely delivered

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 6: WP name **Duration:**

WP6 aims to deliver the concept and realisation of the Pan-EU map of the volume and depth of Europe's groundwater resources. The process towards this product include three dedicated 1-2 days workshops in Vienna, Budpaest and Zagreb mutually developing the concepts and fine tuning the template that will be uaed to collect the data. The first veriosn on the template was published as Deliverable 6.1. A new version is available now, which is draft Deliverable 6.2, that takes into accoount all discussions and decision made in the 3 workshops. In between the workshops, countiires have been testing the template using there own country grid. This led to considerable improvements in the conceptualisation. The new template is just ready and will now be used to collect the data by the individual surveys under task 6.2. In taks 6.3 the resulting excel sheets will be compiled into an overall file. 2020 is meant for collecting the data and for testing the bringing the results into the EGDI web service. A special deliverable was made describing the use cases and requirememnts, aggregating the ideas for visualisation of the data in the EGDI environment (Deliverable 2.2). This includes ideas for map plane view, virtual borehole view of Chronostratigraphic Groundwater Resource Columns (CGRC's) and virtual cross-sections view of CRGC's.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
6,1	Template that can be used by all participating surveys to collect the required data	TNO	R	CO	31.07.2019	Completed	delivered timely
6,2	Final template that will be used by all participating surveys to collect the required data	TNO	R	CO	31.07.2020	Pending	Update of D6.1 ready as draft, final deliverable due for Month 24

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
Table 3.1b: the sum of person months of all partners was updated in order to be consistent with the numbers in the work package descriptions (Table 3.1a), which were already consistent with the financial table of Table 3.3c. Please note that there was no change in any of the person months allocated to individual partners	see left	No	
Table 3.3a: the sum of person months of all partners was updated in order to be consistent with the numbers in the work package descriptions (Table 3.1a), which were already consistent with the financial table of Table 3.3c. Please note that there was no change in any of the person months allocated to individual partners	see left	No	
The timing of 2 out of 3 deliverables 1.1 is out of line with the other funded GeoERA projects. It is proposed to keep the “Annual activity reports and financial and management report” to be delivered in M19 as mid-term report and skip the reports originally scheduled for M7, and M31as they are redundant and not in line with the GeoERA work flow.	see left	No	
The funding that was reserved for Regione Toscana will be transferred to Regione Umbria , effectively changing the status of Regione Toscana to become “non-funded” and Regione Umbria to become funded. The plan is accordingly adapted	see left	No	
The title of deliverable 5.1 was changed into Karst Typology in Europe: state of the art. The delivery date is unchanged. This deliverable is now reporting on Tasks 5.1 and partly on 5.2 of the WP description	see left	No	
A new deliverable 5.3 was added that reports on the tasks 5.2, 5.3 and 5.4. The delivery date is month 30. This way the ordering of deliverables and reporting is better inn line with the tasks that were defined. The contents of the work will not change due to this change, but we feel that the work is reported more efficiently now.	see left	No	
The title of deliverable 5.1 was changed into Karst Typology in Europe: state of the art. The delivery date is unchanged. This deliverable is now reporting on Tasks 5.1 and partly on 5.2 of the WP description	see left	No	

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Type of activity	Location	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)
MEETINGS	Meeting with other GeoERA projects	GeoERA Kick-off	Brussels	3.07.2018	EU INSTITUTION	200	TNO	H.P. Broers	
EVENTS	WORKSHOP	WP3 workshop	Utrecht	27.09.2018	SCIENTIFIC COMMUNITY	15	VMM	G. Heuvelmans	
EVENTS	WORKSHOP	WP6 workshop	Vienna	11.10.2018	SCIENTIFIC COMMUNITY	35	TNO	T. Kivits	
EVENTS	WORKSHOP	WP5 kick off	Madrid	21.11.2018	SCIENTIFIC COMMUNITY	20	BRGM	J.C. Marechal	
EVENTS	WORKSHOP	WP3 scientific progress meeting	Antwerp	15.02.2019	SCIENTIFIC COMMUNITY	12	VMM	G. Heuvelmans	
MEETINGS	Internal project meeting	Project Board meeting	Budapest	20.02.2019	SCIENTIFIC COMMUNITY	10	TNO	H.P. Broers	
EVENTS	WORKSHOP	WP6 workshop	Budapest	21.02.2019	SCIENTIFIC COMMUNITY	25	TNO	T. Kivits	
EVENTS	WORKSHOP	WP3technical meeting	Mol	16.05.2018	SCIENTIFIC COMMUNITY	10	VMM	C. Slenters	
MEETINGS	Meeting with international body	WP3 stakeholder workshop	Maastricht	17.06.2019	NON-EU INSTITUTION (national, regional, local)	18	VMM	G. Heuvelmans	
MEETINGS	Internal project meeting	RESOURCE Project Assembly	Zagreb	19.11.2019	SCIENTIFIC COMMUNITY	40	TNO	H.P. Broers	
EVENTS	WORKSHOP	WP5 progress workshop	Zagreb	20.11.2019	SCIENTIFIC COMMUNITY	20	BRGM	J.C. Marechal	
EVENTS	WORKSHOP	WP6 progress meeting	Zagreb	21.11.2019	SCIENTIFIC COMMUNITY	35	TNO	T. Kivits	
EVENTS	WORKSHOP	WP3 progess meeting	Utrecht	8.11.2019	SCIENTIFIC COMMUNITY	15	VMM	C. Slenters	
MEETINGS	Meeting with other GeoERA projects	Groundwater PB meeting	virtual	2.12.2019	SCIENTIFIC COMMUNITY	7	GEUS	K. Hinsby	
MEETINGS	Meeting with other GeoERA projects	Groundwater PB meeting	virtual	12.12.2019	SCIENTIFIC COMMUNITY	7	GEUS	K. Hinsby	
MEETINGS	Meeting with other GeoERA projects	GIP - RESOURCE meeting	virtual	8.10.2019	SCIENTIFIC COMMUNITY	7	GEUS	K. Hinsby	
MEETINGS	Internal project meeting	WP4 progress meeting	Sidorowska	16.10.2018	SCIENTIFIC COMMUNITY	8	PIG	T. Gidzinski	
MEETINGS	Internal project meeting	WP4 progress meeting	Warsaw	30.05.2019	SCIENTIFIC COMMUNITY	6	PIG	T. Gidzinski	
MEDIA	ONLINE MEDIA	LinkedIn posts (personal profile)	virtual	continuous	GENERAL PUBLIC	>5000	GEUS	K. Hinsby	
MEDIA	ONLINE MEDIA	Twitter posts (personal profile)	virtual	continuous	GENERAL PUBLIC	> 5000	GEUS	K. Hinsby	
MEDIA	ONLINE MEDIA	Facebook blogs (GeoERA Groundwater group)	virtual	continuous	GENERAL PUBLIC	> 3000	GEUS	K. Hinsby	https://www.facebook.com/Geoera-Groundwater-486223845208811/
EVENTS	CONGRESS	Poster International Karst School	Postojna	17.06.2019	OTHER (customers)	30	HGI	#	
EVENTS	CONGRESS	IAH Conference	Malaga	22.09.2019	SCIENTIFIC COMMUNITY	>100	IGME	#	
MEDIA	ONLINE MEDIA	Research gate	virtual	continuous	SCIENTIFIC COMMUNITY	>100	GEUS	K. Hinsby	https://www.researchgate.net/project/CHAKA-Project-Typology-of-karst-and-chalk-aquifers-and-recommendations-for-their-management
MEDIA	ONLINE MEDIA	Research gate	virtual	continuous	SCIENTIFIC COMMUNITY	>100	TNO	H.P. Broers	https://www.researchgate.net/project/GeoERA-RESOURCE-RESOURces-of-groundwater-harmonized-at-Cross-Border-and-Pan-European-Scale
MEETINGS	Meeting with international body	EU CIS Working Group	Helsinki	14.10.2019	EU INSTITUTION	80	GEUS	K. Hinsby	
MEDIA	ONLINE MEDIA	RESOURCE webpage	virtual	continuous	GENERAL PUBLIC	>100	GEUS	K. Hinsby	https://geoera.eu/projects/resource9/
MEETINGS	Meeting with international body	Poster at Stakeholder meeting	Maastricht	17.06.2019	POLICY MAKERS	20	TNO	R. Vernes	
MEDIA	ONLINE MEDIA	Wordpress blog	virtual	continuous	GENERAL PUBLIC	>10.000	GEUS	K. Hinsby	https://geoera-groundwater.com
PUBLICATIONS	ABSTRACTS	Poster at EGU	Vienna	7.04.2019	SCIENTIFIC COMMUNITY	>100	GEUS	K. Hinsby	https://meetingorganizer.copernicus.org/EGU2019/EGU2019-18215.pdf
EVENTS	CONGRESS	Oral presentation	Geneva	29.04.2019	POLICY MAKERS	>300	GEUS	K. Hinsby	https://www.unece.org/fileadmin/DAM/energy/se/pp/unfc_ egrm/egrm.10_apr2019/egrm_02.05.2019/21_Hinsby_EGS_WREG.pdf
PUBLICATIONS	ABSTRACTS	Oral presentation AGU Fall meeting	Washington	10.12.2018	SCIENTIFIC COMMUNITY	200	TNO	H.P. Broers	https://ui.adsabs.harvard.edu/abs/2018AGUFM.H11G..08B/abstract
EVENTS	CONGRESS	Oral presentation LUWQ'2019	Aarhus	3.06.2019	SCIENTIFIC COMMUNITY	250	TNO	M. vaan Vliet	Land Use and Water Quality 2019 Aarhus,https://www.luwq2019.dk/
EVENTS	CONGRESS	Oral presentation LUWQ'2019	Aarhus	3.06.2019	SCIENTIFIC COMMUNITY	250	TNO	T. Kivits	Land Use and Water Quality 2019 Aarhus,https://www.luwq2019.dk/
MEETINGS	Internal project meeting	Water balance meeting	Duisburg	8.12.2019	SCIENTIFIC COMMUNITY	10	TNO	J. Buma	
PUBLICATIONS	ABSTRACTS	Oral presentation at NGWM2020	Oslo, no	08.01.2020	SCIENTIFIC COMMUNITY	> 100	GEUS	K. Hinsby et al	https://www.geologi.no/images/NGWM20/Abstractvolume_NGWM20.pdf
PUBLICATIONS	ABSTRACTS	Oral Presentation at "Hydrologidagen"	Odense, dk	22.10.2019	NON-EU INSTITUTION (national, regional, local)	> 100	GEUS	K. Hinsby	http://hydrologidag.dk/media/21533/joergen-tulstrup-geus-introduktion-til-faelles-europaeisk-geologisk-informationsplatform.pdf
PUBLICATIONS	ABSTRACTS	Oral presentation at "the Groundwater days"	Lund, se	24.10.2019	NON-EU INSTITUTION (national, regional, local)	> 200	GEUS	K. Hinsby et al	https://www.slideshare.net/SGU_Sverige/klaus-hinsbythegeo-eraprogramfocusingongroundwaterprojects
MEETINGS	CONGRESS	Poster at EU meeting on 3D Geological Modelling	Bern	22.05.2019	SCIENTIFIC COMMUNITY	100	TNO	R. Vernes	https://www.swisstopo.admin.ch › events › 228_1557323535243.download
MEETINGS	Internal project meeting	Field tests cross-border region	Poland-Lithuania	1.08.2019	SCIENTIFIC COMMUNITY	5	PIG	T.Gidzinski	

INSTRUCTIONS

Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	INTERNAL PROJECT MEETING
	MEETING WITH OTHER GEOERA PROJECTS
	MEETING WITH NATIONAL BODY
	MEETING WITH INTERNATIONAL BODY
	OTHER
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

PROJECT MANAGEMENT

Project management is part of WP1 . WP1 comprises the day-to-day coordination of the RESOURCE project. WP1 has organized the Project Board meetings (Budapest) and Project Assembly (Zagreb) and followed up on these meetings by controlling the timely realisation of project results. All deliverables have been delivered without any delays and milestones have been met. The interaction with the GIP project was included in the RESOURCE PA meeting and led to a sound D2.2 that describes the interaction (see under WP 2). A small number of minor adaptations to the DOW have been addressed and approved by the GeoERA Executive Board. A contingency plan is in place to deal wih delayed or no-response by a small numbers of partners, which was described in the minutes of the meeting of the PA. The overall expenditures over the first 18 months add up to 38% of the total project budget, which is in line with expectations, as starting up the work took a bit more time than foreseen, and the largest part of the work is foreseen in the year 2020 now the work is at speed. WP1 kept GeoERA Executive Board updated on the project progress, and is currently perfroming the midterm reporting. Links to the 3 other GeoERA groundwater projects were continuously established through monthrly GeoERA Groundwater Board video conference meetings, and through mutual attendance of workshops between the groundwater projects and the Information Platform project.

IMPACT STATEMENT

The RESOURCE project aims at demonstrating the potentials of the harmonization of information about Europe's groundwater resources through cross-border demonstrations projects, through harmonized characterization approaches for Karst and Chalk aquifers and through a first information product at Pan-European scale where available data is compiled and integrated to produce a map of the fresh groundwater resources of Europe. WP2 provides the link of the RESOURCE project with the Information Platform project and is responsible for dissemination activities. The main impact derived from the project will be that the general public and stakeholders will have access to information of groundwater resources at Pan-EU by means of the EGDI webservice. Impact is further enhanced by a dissemination strategy that is actively making use of social media, national and international conferences and reaching out to the scientific community, policy makers and regional and national stakeholder and the general public. WP3 builds on the established 3D transboundary geological structure that was inherited of previous Flemish-Dutch-German projects, but extending those with harmonized information on hydraulic properties, groundwater heads, groundwater quality and age, in strong cooperation with regional stakeholders that play an active role and provide guidance to the work process and will have access to a cross-border visualization tool. The stakeholders hope to use the provided information new transboundary groundwater management and the project provides independent information that forms the basis for such groundwater planning. WP4 establishes the first- Polish-Lithuanian hydrogeological transboundary harmonization in order to assess cross-border flow and flux patterns. The work performed includes the harmonization of available geological information and schematization, but also assess field data on cross-border surface water flow for calibration purposes.

WP5 works towards a common tool for the interpretation of data time series from karst aquifers. The tool shall allow sharing a common, harmonized and up to date way of classifying karst aquifers regarding several management issues such as (i) water reserves evaluation, (ii) flow regulation and (iii) vulnerability assessment. WP6: The project is progressing towards a first harmonized pan-European assessment of the 3D structure of aquifers and the volumes of water involved. The surveys that participate in RESOURCE found a common language and developed a common tool to collect the data on the fresh groundwater resources and data collection is now underway. The result of this work will be distributed through EGDI and the general public will be able to assess volumes and depths of groundwater resources using map, virtual borehole and cross-section views. This will help to appreciate the possible role of groundwater in water supply, while making the public community aware of the protection measures necessary for sustainable use of the resource.

CUMULATIVE FINANCIAL STATEMENT

		A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
		Actual			(0,25*A+B)				
1	TNO	184.558,54	21.300,11	0,00	51.464,66	257.323,31	29,7%	76.425,02	180.898,29
2	DLT	67.675,88	703,50	0,00	17.094,85	85.474,23	29,7%	25.385,84	60.088,38
3	AGS	7.485,00	2.350,00	0,00	2.458,75	12.293,75	29,7%	3.651,24	8.642,51
4	GBA	11.355,24	519,80	0,00	2.968,76	14.843,81	29,7%	4.408,61	10.435,20
5	VMM	8.717,49	191,88	0,00	2.227,34	11.136,71	29,7%	3.307,60	7.829,11
6	SCK/CEN	24.131,41	950,69	0,00	6.270,53	31.352,63	29,7%	9.311,73	22.040,90
7	FZZG	2.382,51	845,53	0,00	807,01	4.035,05	29,7%	1.198,41	2.836,64
8	HGI-CGS	17.280,00	1.678,00	0,00	4.739,50	23.697,50	29,7%	7.038,16	16.659,34
9	GSD	7.335,84	1.048,03	0,00	2.095,97	10.479,84	29,7%	3.112,51	7.367,33
10	CGS	7.913,00	333,21	0,00	2.061,55	10.307,76	29,7%	3.061,41	7.246,36
11	GEUS	44.177,85	5.887,98	0,00	12.516,46	62.582,29	29,7%	18.586,94	43.995,35
12	GTK	4.383,03	1.803,48	0,00	1.546,63	7.733,14	29,7%	2.296,74	5.436,40
13	BRGM	36.616,51	6.506,18	0,00	10.780,67	53.903,36	29,7%	16.009,30	37.894,06
14	MBFSZ	7.362,42	845,05	0,00	2.051,87	10.259,34	29,7%	3.047,02	7.212,31
15	ISOR	17.787,12	2.487,31	0,00	5.068,61	25.343,04	29,7%	7.526,88	17.816,16
16	GSI	11.597,11	3.308,61	0,00	3.726,43	18.632,15	29,7%	5.533,75	13.098,40
17	ARPAP	9.291,15	0,00	0,00	2.322,79	11.613,94	29,7%	3.449,34	8.164,60
18	RU	10.880,00	1.422,42	0,00	3.075,61	15.378,03	29,7%	4.567,27	10.810,75
19	LEGMC	212,00	0,00	0,00	53,00	265,00	29,7%	78,71	186,30
20	LGT	6.300,00	300,00	0,00	1.650,00	8.250,00	29,7%	2.450,25	5.799,75
21	SGL	3.900,00	0,00	0,00	975,00	4.875,00	29,7%	1.447,88	3.427,13
22	OPM	1.500,00	1.307,18	0,00	701,80	3.508,98	29,7%	1.042,17	2.466,81
23	PIG-PIB	18.163,41	5.722,65	0,00	5.971,51	29.857,57	29,7%	8.867,70	20.989,87
24	LNEG	1.616,36	0,00	0,00	404,09	2.020,45	29,7%	600,07	1.420,38
25	IGR	21.937,02	2.209,80	0,00	6.036,71	30.183,53	29,7%	8.964,51	21.219,02
26	GSS	380,10	543,34	0,00	230,86	1.154,30	29,7%	342,83	811,47
27	GeoZS	23.274,01	2.283,39	0,00	6.389,35	31.946,75	29,7%	9.488,18	22.458,56
28	IGME-Sp	54.999,49	5.499,92	0,00	15.124,85	75.624,26	29,7%	22.460,41	53.163,86
29	ICGC	30.312,38	2.603,51	0,00	8.228,97	41.144,86	29,7%	12.220,02	28.924,84
30	SGU	1.618,43	0,00	0,00	404,61	2.023,04	29,7%	600,84	1.422,20
31	GEOINFORM	2.078,04	459,12	0,00	634,29	3.171,45	29,7%	941,92	2.229,53
32	NERC (UKRI)	15.175,17	2.872,65	0,00	4.511,96	22.559,78	29,7%	6.700,25	15.859,52
33	EGT	0	0	0	0	0	29,7%	0	0
34	RT	0	0	0	0	0	29,7%	0	0
35	NRW	0	0	0	0	0	29,7%	0	0
						922.974,81		274.123,52	648.851,29

FINANCIAL STATEMENT FOR PP 1 - TNO

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	184.558,54	21.300,11	0,00	51.464,66	257.323,31	29,70%	76.425,02	180.898,29

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	4,68	WP1	25.838,15
	0,82	WP2	5.395,08
	14,97	WP3	84.662,47
	6,47	WP5	38.394,59
	8,11	WP6	30.268,25
			184.558,54

So, these numbers need to be subdivided per WP!
And the right category needs to be mentioned

Other direct costs	Description	Category	Associated WP	Costs
	Meetings RESOURCE coordination WP1 Brussel, Vienna, Budapest, Zagreb	Travel	WP1	6.015,96
	Meetings/ Antwerp (3x), Maastricht, Stakeholder meeting July 2019, Duisburg	Travel	WP3	1.187,27
	Meetings WP5 Madrid (2x), , Delft (2x), Aarhus, Zagreb, AGU Fall meeting presentation Washington	Travel	WP5	7.899,50
	Meetings WP6 Vienna, WML, Budapest, Zagreb, AGU Fall meeting presentation Washington	Travel	WP6	5.723,45
	Consumables	Equipment/consu	WP1	10,10
	Consumables	Equipment/consu	WP3	5,25
	AGU, Fall meeting Dec 2018 registration	Equipment/consu	WP5	446,17
	Esta receipt travel US	Equipment/consu	WP6	12,41
				21.300,11

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 2 - Deltares

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	67.675,88	703,50	0,00	17.094,85	85.474,23	29,70%	25.385,84	60.088,38

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	9,64	WP6	67.675,88
			67.675,88

Other direct costs	Description	Category	Associated WP	Costs
	G. Oude Essink Austria 9-11	Travel	WP6	703,50
				703,50

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - name AGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
3	7.485,00	2.350,00	0,00	2.458,75	12.293,75	29,70%	3.651,24	8.642,51

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	22,42	6	7.485,00
			7.485,00

Other direct costs	Description	Category	Associated WP	Costs
	Zagreb meeting	Travel	WP6	1.500,00
		Equipment	WP6	850,00
				2.350,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - GBA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
4	11.355,24	519,80	0,00	2.968,76	14.843,81	29,70%	4.408,61	10.435,20

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1	WP5	4.800,00
	1,3	WP6	6.555,24
			11.355,24

Other direct costs	Description	Category	Associated WP	Costs
	RESOURCE Budapest	Travel	WP6	119,80
	RESOURCE Zagreb	Travel	WP5, WP6	400,00
				519,80

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -VMM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
5	8.717,49	191,88	0,00	2.227,34	11.136,71	29,70%	3.307,60	7.829,11

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,2	WP 1	
	0,2	WP 2	
	2,1	WP 3	
	0,2	WP 6	
	calculation (to total amount) *		8.717,49
			8.717,49

Other direct costs	Description	Category	Associated WP	Costs
	Meetings/workshops Utrecht, Antwerp, Brussels, Mol, Maastricht**	Travel	WP3	191,88
	costs meetings organised by VMM: on budget VMM			
				191,88

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - SCK

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
6	24.131,41	950,69	0,00	6.270,53	31.352,63	29,70%	9.311,73	22.040,90

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,31	WP3	24.131,41
			24.131,41

Other direct costs	Description	Category	Associated WP	Costs
	Workshops Utrecht, Antwer	Travel	WP3	349,20
	Project Assembly Zagreb**	Travel	WP3	363,00
	Costs meeting organisation I	Other	WP3	238,49
				950,69

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - FZZG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
7	2.382,51	845,53	0,00	807,01	4.035,05	29,70%	1.198,41	2.836,64

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,8	WP5	2.382,51
			2.382,51

Other direct costs	Description	Category	Associated WP	Costs
	Meeting CHAKA	Travel	WP5	845,53
				845,53

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - HGI

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
8	17.280,00	1.678,00	0,00	4.739,50	23.697,50	29,70%	7.038,16	16.659,34

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	4,4	WP5	10.560,00
	2,8	WP6	6.720,00
			17.280,00

Other direct costs	Description	Category	Associated WP	Costs
	Meeting WP5 Madrid	Travel	WP5	803,00
	Meetings WP6 Vienna, Buda	Travel	WP6	875,00
				1.678,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - GSD

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
9	7.335,84	1.048,03	0,00	2.095,97	10.479,84	29,70%	3.112,51	7.367,33

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,63	WP67	7.335,84
			7.335,84

Other direct costs	Description	Category	Associated WP	Costs
	WP6 workshop	Travel		1.048,03
				1.048,03

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - CGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
10	7.913,00	333,21	0,00	2.061,55	10.307,76	29,70%	3.061,41	7.246,36

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,32	WP5	2.373,90
	2,26	WP6	5.539,10
			7.913,00

Other direct costs	Description	Category	Associated WP	Costs
	Meeting WP6 Vienna	Travel	WP6	333,21
				333,21

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - GEUS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
11	44.177,85	5.887,98	0,00	12.516,46	62.582,29	29,70%	18.586,94	43.995,35

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,86	WP1	8.746,68
	1,71	WP2	13.366,13
	3,07	WP6	22.065,04
			44.177,85

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off Meeting in Bruxelles, july 2018	Travel	WP1	1.050,97
	Projectmeetings in Bruxelles, october 2018, in Budapest, february 2019 and in Zagreb, november 2019	Travel	WP2	1.203,82
	Projectmeetings in Wien, october 2018, in Copenhagen, january 2019 in Budapest, february 2019, in Zagreb, november 2019 and in Copenhagen, november 2019		WP6	3.633,19
				5.887,98

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - GTK

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
12	4.383,03	1.803,48	0,00	1.546,63	7.733,14	29,70%	2.296,74	5.436,40

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
		WP6	4.383,03
			4.383,03

Other direct costs	Description	Category	Associated WP	Costs
	Budapest meeting	Travel	WP6	1.022,80
	Zagreb meeting	Travel	WP6	780,68
				1.803,48

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - BRGM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
13	36.616,51	6.506,18	0,00	10.780,67	53.903,36	29,70%	16.009,30	37.894,06

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,57	WP1	6.087,38
	3,41	WP5	24.098,09
	0,85	WP6	6.431,04
			36.616,51

Other direct costs	Description	Category	Associated WP	Costs
	RESOURCE Project Board Meeting - Jean-Chr	Travel	WP1	1.042,88
	RESOURCE General Assembly + Workshop - J	Travel	WP1	820,52
	RESOURCE WP5 Meeting - Jean-Christophe N	Travel	WP5	833,06
	RESOURCE WP5 Meeting - Jean-Baptiste Cha	Travel	WP5	735,90
	RESOURCE G-EAU - Jean-Baptiste Charlier - C	Travel	WP5	23,00
	RESOURCE General Assembly + Workshop - V	Travel	WP5	991,58
	RESOURCE Project Board Meeting - Alexandr	Travel	WP6	1.455,26
	RESOURCE General Assembly + Workshop - A	Travel	WP6	603,98
				6.506,18

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - MBFSZ

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
14	7.362,42	845,05	0,00	2.051,87	10.259,34	29,70%	3.047,02	7.212,31

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,11	WP5	2.210,44
	2,89	WP6	5.151,98
			7.362,42

Other direct costs	Description	Category	Associated WP	Costs
	Meeting WP5 1x, Madrid 2018.11.20-11.21	Travel	WP5	344,78
	Vienna WP6 1x, 2018.10.10-10.11	Travel	WP6	184,47
	Zagreb WP6 1x, 2019.11.19-11.21	Travel	WP6	315,80
				845,05

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - ISOR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
15	17.787,12	2.487,31	0,00	5.068,61	25.343,04	29,70%	7.526,88	17.816,16

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,046	WP6	17.787,12
			17.787,12

Other direct costs	Description	Category	Associated WP	Costs
	Kick off meeting in Brussel, July 2018	Travel	WP6	1.104,93
	Meeting in Budapest, January 2019	Travel	WP6	1.382,38
				2.487,31

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -GSI

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
16	11.597,11	3.308,61	0,00	3.726,43	18.632,15	29,70%	5.533,75	13.098,40

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1	WP5	4.369,45
	1,6	WP6	7.227,66
			11.597,11

Other direct costs	Description	Category	Associated WP	Costs
	Meeting, Madrid 2018.11.20	Travel	WP5	886,05
	Meeting, Vienna 2018.10.10	Travel	WP6	671,02
	Meeting, Zagreb, 2019.11.19	Travel	WP5	1.077,00
	Meeting, Zagreb, 2019.11.19	Travel	WP6	674,54
				3.308,61

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - ARPA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
17	9.291,15	0,00	0,00	2.322,79	11.613,94	29,70%	3.449,34	8.164,60

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,05	WP6	9.291,15
			9.291,15

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - RU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
18	10.880,00	1.422,42	0,00	3.075,61	15.378,03	29,70%	4.567,27	10.810,75

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,2	WP6	10.880,00
			10.880,00

Other direct costs	Description	Category	Associated WP	Costs
	Zagreb	Travel	WP3	1.422,42
				1.422,42

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - LEGMC

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
19	212,00	0,00	0,00	53,00	265,00	29,70%	78,71	186,30

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,18	WP6	212,00
			212,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - LGT

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
20	6.300,00	300,00	0,00	1.650,00	8.250,00	29,70%	2.450,25	5.799,75

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,5	WP4	5.250,00
	0,5	WP6	1.050,00
			6.300,00

Other direct costs	Description	Category	Associated WP	Costs
	Meeting and field works wit	Travel	WP4	300,00
				300,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -SGL

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
21	3.900,00	0,00	0,00	975,00	4.875,00	29,70%	1.447,88	3.427,13

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,6	WP6	3.900,00
			3.900,00

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -OPM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
22	1.500,00	1.307,18	0,00	701,80	3.508,98	29,70%	1.042,17	2.466,81

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,75	WP6	1.500,00
			1.500,00

Other direct costs	Description	Category	Associated WP	Costs
	Budapest Meeting	Travel	WP6	1.307,18
				1.307,18

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -PIG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
23	18.163,41	5.722,65	0,00	5.971,51	29.857,57	29,70%	8.867,70	20.989,87

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	7,91	WP4	16.054,38
	1,36	WP6	2.109,03
			18.163,41

Other direct costs	Description	Category	Associated WP	Costs
	Travel cost of GIDZIŃSKI TOMASZ (18-21.11.2019) to Zagreb (airplane ticket, travel allowance, insurance, accomodation)	Travel	WP4	676,19
	Travel cost of Mr GIDZIŃSKI TOMASZ 03-05.07.2018 to Belgium (travel allowance, airplane ticket,travel insurance, accomodation)	Travel	WP4	919,57
	Travel cost of Mr GIDZIŃSKI TOMASZ , 19-21.02.2019 to Hungary (travel allowance, insurance, airplane ticket,accomodation)	Travel	WP4	560,40
	Travel cost of Mr GIDZIŃSKI TOMASZ , MICHAŁ GALCZAK 2.08.2018 to PODLASIE (travel allowance , transport)	Travel	WP4	93,52
	Travel cost of Mr GIDZIŃSKI TOMASZ , MICHAŁ GALCZAK, RAFAŁ JANICA 29.07-01.08.2019) to Lithuania (travel allowance, travel insurance, transport,accomodation)	Travel	WP4	830,79
	Travel cost of Mr GIDZIŃSKI TOMASZ 15-17.10.2018 to PODLASIE (travel allowance)	Travel	WP4	8,72
	Travel cost of Ms PIASECKA AGNIESZKA to Zagreb 18-22.11.2019, (travel insurance, airplane ticket, travel allowance, accomodation)	Travel	WP4	736,84
	Travel cost of Agnieszka Piasecka 9-11.10.2018 to Vienna (travel allowance , aitplane ticket, travel insurance, accomodation)	Travel	WP6	581,54
	Travel cost of Ms PIASECKA AGNIESZKA , 19-21.02.2019 to Hungary (travel allowance, insurance, airplane ticket,accomodation)	Travel	WP6	560,74
	Travel cost of Ms PIASECKA AGNIESZKA 4-5.07.2018 to Belgium (travel allowance, airplane ticket,travel insurance, accomodation)	Travel	WP6	754,34
				5.722,65

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -LNEG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
24	1.616,36	0,00	0,00	404,09	2.020,45	29,70%	600,07	1.420,38

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,55	WP6	1.616,36
			1.616,36

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -IGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
25	21.937,02	2.209,80	0,00	6.036,71	30.183,53	29,70%	8.964,51	21.219,02

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5,66	WP5	4.387,40
	22,62	WP6	17.549,62
			21.937,02

Other direct costs	Description	Category	Associated WP	Costs
	Vienna 09.10.2018 - 12.10.2018	Travel	WP5	2.209,80
				2.209,80

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -GSS

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	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
26	380,10	543,34	0,00	230,86	1.154,30	29,70%	342,83	811,47

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,4	WP6	380,10
			380,10

Other direct costs	Description	Category	Associated WP	Costs
	Zagreb Meeting	Travel	WP6	543,34
				543,34

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -GeoZS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
27	23.274,01	2.283,39	0,00	6.389,35	31.946,75	29,70%	9.488,18	22.458,56

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,07	WP 5	10.765,81
	3,85	WP 6	12.508,19
			23.274,01

Other direct costs	Description	Category	Associated WP	Costs
	Brestovica water sampling, 19 June 2019, 1 Person	Travel	WP 5	3,81
	Ptuj sampling, 3 October 2019, 1 Person	Travel	WP 5	3,97
	Štorje HG measurments, sampling, 4 October 2019, 1 Person	Travel	WP 5	3,97
	Brussels kick-off, 3 - 5 July 2018, 1 Person	Travel	WP 5	740,94
	Project meeting Madrid, 20 - 23 November 2018, 1 Person	Travel	WP 5	737,49
	Meeting Trieste, 12 - 17 September 2018, 1 Person	Travel	WP 5	62,39
	Brestovica Gradišča, 14 September 2018, 1 Person	Travel	WP 5	16,00
	Project group WP 6 meeting Wien, 9 - 11 October 2018, 1 Person	Travel	WP 6	348,88
	Coordination meeting Trieste, 18 January 2019, 1 Person	Travel	WP 5	3,81
	Project group meeting Budapest, 20 - 21 February 2019, 1 Person	Travel	WP 6	201,32
	Project meeting Zagreb, 20 - 21 November 2019, 1 Person	Travel	WP 6	127,87
	Project assembly Zagreb, 19 November 2019, 1 Person	Travel	WP 5	32,94
				2.283,39

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -IGME

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
28	54.999,49	5.499,92	0,00	15.124,85	75.624,26	29,70%	22.460,41	53.163,86

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	5,27	5	29.360,05
	5,06	6	25.639,44
			54.999,49

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off meeting Brussels	Travel	WP6	871,75
	Dissemination IAH2018 conf	Travel	WP5	890,61
	Registration fee IAH2018 co	Other	WP5	480,00
	Meeting RESOURCE Budape	Travel	WP6	738,65
	Organization meeting CHAK	Other	WP5	478,40
	Meeting RESOURCE Vienna	Travel	WP6	868,68
	Meeting RESOURCE Zagreb	Travel	WP6	1.171,83
				5.499,92

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -ICGC

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
29	30.312,38	2.603,51	0,00	8.228,97	41.144,86	29,70%	12.220,02	28.924,84

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,98	WP5	16.651,71
	2,81	WP6	13.660,67
			30.312,38

Other direct costs	Description	Category	Associated WP	Costs
	GeoEra Meeting (Brussels)	Travel	WP5	446,24
	GeoEra Meeting (Madrid)	Travel	WP6	434,19
	GeoEra Meeting (Hungary)	Travel	WP6	631,24
	GeoEra Meeting (Zagreb)	Travel	WP5	1.091,84
				2.603,51

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -SGU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
29	1.618,43	0,00	0,00	404,61	2.023,04	29,70%	600,84	1.422,20

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,22	6	1.618,43
			1.618,43

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 -GIU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
29	2.078,04	459,12	0,00	634,29	3.171,45	29,70%	941,92	2.229,53

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,43	WP6	2.078,04
			2.078,04

Other direct costs	Description	Category	Associated WP	Costs
	Vienna meeting	Travel	WP6	459,12
				459,12

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 2 - NERC

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
32	15.175,17	2.872,65	0,00	4.511,96	22.559,78	29,70%	6.700,25	15.859,52

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,23	WP5	4.954,78
	1,61	WP6	10.220,39
			15.175,17

Other direct costs	Description	Category	Associated WP	Costs
	WP5, GeoERA RESOURCE Kick Off meeting, John Bloomfield, Brussels 2-5 July 2018	Travel	WP5	366,90
	WP6, GeoERA RESOURCE meeting, Budapest, Hungary, Melinda Lewis, Budapest 19-22 February 2019	Travel	WP6	666,12
	WP6, GeoERA RESOURCE meeting, Vienna, Austria, Melinda Lewis, 9-11 October 2018	Travel	WP6	970,08
	WP5, GeoERA RESOURCE Project start up meeting, Madrid, Spain. Louise Maurice, 20-25 November 2018	Travel	WP5	577,29
	WP5, GeoERA RESOURCE project assembly and meeting, Zegreb, Croatia, Sarah Bunting, 18-22 Nov 19	Travel	WP5	15,09
	WP6, GeoERA RESOURCE project assembly and meeting, Zegreb, Croatia, Melinda Lewis, 18-22 Nov 19	Travel	WP5	277,17
		Travel		
				2.872,65

Subcontracting	Description	Associated WP	Cost
			0,00

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Tools for Assessment of ClimaTe change ImpacT on Groundwater and Adaptation Strategies
Project acronym:	TACTIC
Project reference number:	GeoE.171.008
Project topic:	Groundwater
Project specific recearch topic:	GW2 - TOOLS FOR CLIMATE CHANGE IMPACT ASSESSMENT AND ADAPTATION
Project website address:	https://geoera.eu/projects/tactic9/

Period covered from: 1.07.2018 to: 31.12.2019

Report submission date:	
Project coordinator:	
Contact person for the project:	
Tel:	
E-mail:	

IDENTIFICATION OF PROJECT PARTICIPANTS

[use dropdown menu]

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	Geological Survey of Denmark and Greenland	Geological Survey of Denmark and Greenland	GEUS	Denmark	999459677	
2	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek	The Netherlands Organisation for applied scientific research	TNO	Netherlands	999988909	
3	Stichting Deltares, affilitated or linked to TNO	Deltares	DLT	Netherlands	999520302	
4	Hrvatski geoloski institut	Croatian Geological Survey	HGI-CGS	Croatia	972614345	
5	Geologian Tutkimuskeskus	Geological Survey of Finland	GTK	Finland	999432614	
6	Bureau de Recherches Géologiques et Minières	The French Geological Survey	BRGM	France	999993662	
7	Bundesanstalt für Geowissenschaften und Rohstoffe	Federal Institute for Geosciences and Natural Resources	BGR	Germany	999429413	
8	Magyar Bányászati és Földtani Szolgálat	Mining and Geological Survey of Hungary	MBFSZ	Hungary	967592364	
9	Department of Communications, Climate Action and Environment	Geological Survey of Ireland	GSI	Ireland	996559280	
10	Istituto Superiore per la Protezione e la Ricerca Ambientale	Italian Institute for Environmental Protection and Research	ISPRA	Italy	997905349	
11	Regione Emilia Romagna (Servizio Geologico, Sismico e dei Suoli della Regione Emilia Romagna)	Geological, seismic and soil survey, Emilia Romagna Region	SGSS	Italy	999482375	
12	Latvijas Vides, Geologijas Un Meteorologijas Centrs Sia	Latvian Environment, Geology and Meteorology Center	LEGMC	Latvia	986071446	
13	Office of Prime Minister / Ministry for Transport and Infrastructure	Office of Prime Minister	OPM	Malta	953280111	
14	Laboratorio Nacional de Energia e Geologia I.P.	The National Laboratory of Energy and Geology	LNEG	Portugal	994187921	
15	Geological Survey of Serbia	Geological Survey of Serbia	GSS	Serbia	919767678	
16	Instituto Geológico y Minero de Espana	Geological Survey of Spain	IGME-Sp	Spain	998737803	
17	Institut Cartogràfic i Geològic de Catalunya	Institut Cartogràfic i Geològic de Catalunya	ICGC	Spain	935977542	
18	Sveriges Geologiska Undersökning	Geological Survey of Sweden	SGU	Sweden	995575991	
19	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund of Ukraine	GEOINFORM	Ukraine	947331392	
20	UK Research and Innovation	British Geological Survey	NERC (UKRI)	United Kingdom	906446474	
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PUBLISHABLE SUMMARY

Climate change (CC) already have widespread and significant impacts in Europe, which is expected to increase in the future. To reduce the damage, detailed assessments, based on a thorough understanding of the hydrological system, are required for the planning of optimal adaptation strategies. Groundwater plays a vital role for the land phase of the freshwater cycle and has the capability of buffering or enhancing the impact from extreme climate events causing droughts or floods, depending on the subsurface properties and the status of the system (dry/wet) prior to the climate event. Understanding and taking the hydrogeology into account is therefore essential in the assessment of climate change impacts.

The Geological Survey Organisations (GSOs) in Europe compile the necessary data and knowledge of the groundwater systems. With this, the overall vision of TACTIC is to enhance the utilisation of these data and knowledge of the subsurface system in CC impact assessments, and the identification and analyses of potential adaptation strategies. To reach this vision, the objective of TACTIC is to contribute to the development of coherent and transparent assessments of CC impacts on groundwater and surface water, supporting improved EU policy making, and providing decision support for stakeholders and decision makers. To accomplish this, an infra-structure among European Geological Survey Organisations are developed in TACTIC for collaboration to advance and harmonise CC assessments within the GSOs. The infra-structure consists of:

1. The TACTIC Toolbox, consisting of relevant tools and methods for CC impact assessments
2. TACTIC guidelines that will guide in the selection of appropriate tools and their use for producing comparable results
3. The Geo-ERA information platform to which data and results are up- and downloaded

The future potential impacts of climate changes on the freshwater hydrological cycle may manifest themselves in many different ways, and TACTIC addresses several of the most critical geohazards that may have profound costs both economically, environmentally and socially. These include groundwater-dependent floods and droughts, groundwater- surface water interactions including groundwater dependent eco-systems and sea/saltwater intrusion problems, changes in groundwater recharge and groundwater depletion caused by overexploitation. TACTIC also intends to advance in the identification and assessment of potential adaptation strategies and their impacts on groundwater resources.

The project is centred around pilot studies covering the variety of CC challenges as well as the different hydrogeological settings and different management systems found in Europe. The pilot activities are coordinated to ensure that assessments, to the extent possible, are harmonized and can be compared across pilots. Further, central coordination also has the aim of synthesizing experiences and results from the pilots to develop a guideline and a future roadmap to encourage and assist more GSOs to undertake CC impact assessments using the methods applied in TACTIC to produce comparable results.

TACTIC Toolbox

The purpose of the TACTIC Toolbox is to provide a structured overview of available tools and models to undertake CC impact or adaptation assessments. The Toolbox allows the selection of tools/models that are adequate to the specific challenge taking into consideration data availability . It includes tools and models both for undertaking the CC impact assessments and auxiliary tools for processing and using climate change projections and bias correction. It also includes supporting pre- and post-processing tools. The toolbox has been developed by surveying all TACTIC partners on the type of tools currently used complemented by a literature review and internet search on previous projects. The information of the tools has been organised in the Toolbox by an overview table categorising the tool accompanied by a short fact sheet for each tool including links or references for more information and possible download of the tools. Currently, the TACTIC Toolbox includes 33 tools, but is subject to further development throughout the project both from additional information from GeoERA partners, and further reviews.

To improve the uptake of new tools by GSOs, several online meetings have been organised as webinars where partners have explained and demonstrated the usages of different tools. Most webinars have been recorded and made available for all TACTIC partners and will potentially be made available for all GeoERA partners in the end of the project.
A crucial impact from climate change is a potential change in recharge to groundwater aquifers. Recharge is thus in focus among several partners and can be assessed in numerous tools and models. However, the term recharge may refer to different processes, e.g. infiltration out of the root zone or to a deep aquifer system and is thus not uniquely defined. A note has been developed, which proposes a terminology that is used in TACTIC. Following this terminology, all tools and models in the TACTIC toolbox has been classified with respect to the type of recharge estimated.
Different data are required to utilise the different tools, which may often restrict the choice of tools. Hence, concurrent with the survey of tools, the data requirements for each tool has been identified. To identify the data accessible to all GeoERA partners, and thus the possibilities for the GSOs to conduct CC impact assessments by different tools in the future, a questionnaire on data owned or accessible to the GSOs has been developed and send to all GeoERA partners. A survey on groundwater related data has been/are similarly carried out in two of the other GeoERA groundwater projects; RESOURCE and HOVER. Given that all three projects are related to groundwater issues, a significant overlap in data requested from the partners has been identified. In RESOURCE groundwater related data, such as aquifer dimensions and hydrogeological properties (hydraulic conductivities and porosity), are collected in a 3D grid. In TACTIC it has thus been decided to put less effort in motivating partners to upload data, unless this is readily done by WMS/WMF, and instead focus on establishing information on the accessibility of other data types that are needed to undertake the assessments, but not necessarily owned by the GSOs. This survey will provide an overview for future projects, especially relevant in defining future collaboration and projects. The questionnaire additionally addresses to what extent the GSOs are or has been involved in groundwater assessments, including CC impact assessments.

Pilots
TACTIC consists of 20 partners from 17 countries. Together the partners have established 41 pilots in which CC impact assessments are currently carried out by the TACTIC partners. The pilots cover most of Europe and thereby the variability in European hydrogeological conditions, CC challenges and management particularities. A major activity during the first eighteen months has been centred on the pilot study sites. In the project proposal phase, TACTIC partners identified suitable and possible pilot sites, which has been revisited for a final selection. Part of this exercise has been to identify, collect and pre-process available data in the area, as well as identify the major CC impact challenges. This information has been reported for each pilot in individual reports by the partners and constitutes the first part of the “Pilots description and assessment” reports. The reports are uploaded to the TACTIC file share on the GeoERA site and will be extended during the project to include a description of the tool usage and the results of the assessments.

Adequate tool(s) has been selected for the assessments in each pilot based on the challenges faced in the specific sites and the locally available data. TACTIC partners are currently engaged in setting up and applying the selected tools to historical data, e.g. running the tools for a reference period. Once the tools are able to describe the current conditions, they will be applied to assess future potential conditions under different climate scenarios.
Several global and regional climate models exist, which can provide estimates of a future climate. The various models are, however, based on different assumptions and will thus not provide identical projections for a future climate. To assess this uncertainty, the model ensemble approach is often applied, where combinations of 1) projected CO2 release to the atmosphere, 2) global and 3) regional climate models are used. In order to produce results on climate change impact that are comparable between the different pilots across Europe, a protocol for selecting climate scenarios have been developed in TACTIC.

Instead of choosing a predefined time-slice in the future, e.g. turn of the next century, the selection of climate data will be based on a predefined change in global temperature, which may occur for different time-slices in different climate models. All TACTIC partners will analyse CC impacts for a situation with a temperature increase of +3 degree compared to pre-industrial conditions, i.e. a +2 degree increase compared to current conditions. Partners are further encouraged to include a scenario with a +1 degree increase from current conditions.
Climate data from ISIMIP (The Inter-Sectoral Impact Model Intercomparison Project) are utilized. Using an ensemble of 15 climate models, the time-slices corresponding to a 1 and 3 degrees increase in global temperature are identified for each model. The climate within these time slices are then analysed for each country participating in TACTIC, and the two models having the 2nd highest and the 2nd lowest change in precipitation are chosen to represent the CC impact and the associated uncertainty within the country. The 2nd lowest/highest model predictions are used to avoid the inclusion of model outliers.
To apply the climate change to local conditions a simple delta change approach is used. Based on the selected climate models, monthly delta change factors are calculated and local climate data for the refence period (1980-2010) is adjusted. Using local data from each partner/country as a reference, the natural day-to-day weather dynamics in these data are preserved for future conditions. Another advantage is that the local reference data are already used in present-day implementations of the groundwater modelling tools. The delta change correction factors have been calculated centrally and made available to all TACTIC partners. Hence, the effort in applying future climates has been significantly reduced for the partners, and the factors will further be made available to other GeoERA partners at the end of the project.
The use of different tools/models in pilots (selected based on CC challenges, data availability and previous experiences) challenges the comparison and harmonization of results across the pilots. To analyse how these results can be compared, 11 partners are using multiple tools in their pilots – a total of 23 different tools. In addition to the use of multiple tools, data from multiple pilots are currently used in two statistical time series analysis tools. The results from this will be analysed in terms of the tools ability to provide information on aquifer vulnerability. Depending on the outcome, the tools may be applied to all TACTIC pilots.
In addition to the climate projections used by all partners, TACTIC includes the development of new approaches for developing and choosing future climate scenarios, with focus on both the technical aspects in down-scaling and bias corrections and in the selection of climate scenarios to apply in assessing impacts. The new down-scaling/ bias-correction approach is developed with focus on preserving not only the lower statistical moments (mean and standard deviations) but also higher order statistics in order to improve the representation of extreme event in the future climate. Selection of climate scenarios is commonly made from strict scientific reasonings, as is the case for the selection of common climate data in TACTIC. However, from a stakeholder point of view, such scenarios may not necessarily be the most interesting scenario to analyse. Stakeholder perceptions are not necessarily scientifically driven, and the most relevant scenarios may thus be scenarios that reflect their beliefs or concerns. Building and assessing bottom-up adaptation scenarios are studied by involving stakeholders in the Spanish pilot “Upper Guadiana Basin”.

Pan-European recharge map

The groundwater resource, in terms of quantity and spatial distribution, may be estimated by various approaches ranging from statistical tools to hydrological modelling. For many approaches, groundwater recharge must be estimated externally and estimates of recharge is thus essential for assessing the groundwater resource. To support EU policies, it is further essential that a recharge estimate is established at the pan-EU scale. Such estimates have previously been obtained using large-scale hydrological modelling for Europe. However, these model studies focus on surface water and rely on data available at EU-scale, which are generally coarse and do not include the geological data and knowledge obtained by the GSOs. TACTIC will therefore develop a recharge map at the EU-scale, which will combine the results from the assessments carried out in the pilots and existing results from EU-

scale hydrological modelling. An important first step is to identify the type of recharge estimated by the various tools and models used in the pilots, which is currently in progress, while the final recharge map will be developed when results from the pilots are ready.
Since the pan-European map is mainly driven by satellite information, this allows a flexibility to select the spatial resolution of the map later during the project lifetime. However, map values will be updated or corrected based on values calculated by the partners on a spatial scale ranging from point to national scale using their selected tools. Where the pan-European map is informed by values calculated by tools from TACTIC Toolbox, information related to uncertainty in the recharge calculations as well as future recharge values will be displayed.

PROJECT CONTRIBUTION TO GeoERA PROJECT

TACTIC contributes to GeoERA by considering most (in bold) of the following deliverables requested by the original LCE-2016 call in Horizon 2020 for an ERA-NET on Applied Geoscience and it makes the results from the assessments in the pilots available at the GeoERA Information Platform using the FAIR data principles - FROM the original call:Deliverables shall include:

Improved tools and models for subsurface characterisation, risk assessment and assessment of the impact of climate change, human activities and other uses of the subsurface on groundwater resources and dependent terrestrial ecosystems;

3D maps of groundwater resources;

Temporal and spatial groundwater pollution trends including diffuse pollution of especially nutrients (N, P) and pesticides from agriculture, trends in nutrient loadings to ecosystems, and fate, behaviour and degradation of emerging pollutants from industry, households and agriculture, and the resulting impact on dependent terrestrial ecosystems;

Groundwater and surface water flooding risks;

Saltwater / seawater intrusion and the resulting impact on dependent terrestrial ecosystems;

Groundwater abstraction needs for water supply and irrigation and the resulting impact on dependent terrestrial ecosystems (including soils), surface waters, and groundwater associated aquatic ecosystems, the groundwater ecosystem itself, and the built environment (e.g. damage of infrastructure due to land subsidence

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: Project coordination **Duration:** **Month 1 - 36**

The objective of WP1 is to ensure an effective management of the project with respect to the administrative, financial, organisational and scientific aspects. This have been achieved by monthly online Project Board meetings, with specific focus on monitoring project progress and cross-WP activities. WP1 activities have further included the organization of the kick-off meeting in Copenhagen and the second Project Assembly meeting at the Joint Research Centre of the European Commission in ISPRA, Italy. WP1 also ensures contact to the advisory board and development of project summary reports for the advisory board prior to the PA meetings. Finally, all contact to the GeoERA secretariat is coordinated in WP1, which includes meetings among PLs for all GeoERA projects, coordination of the midterm meeting and development of the project amendments.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D1.1	Summary report for the second TACTIC Advisory Board meeting	GEUS	Report	Confidential	11	Completed	
D1.3	Project progress report	GEUS	Report	Public	20	Pending	Present report
D1.5	Cumulative expenditure report 2018	GEUS	Report	Confidential	7	Completed	Cumulative expenditure report for 2018, 2019 and 2020 included in project proposal as D1.5, D1.6, D1.7, but are handled by GeoERA secretariat
D1.7	Cumulative expenditure report 2018	GEUS	Report	Confidential	19	Completed	Cumulative expenditure report for 2018, 2019 and 2020 included in project proposal as D1.5, D1.6, D1.7, but are handled by GeoERA secretariat

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
M1	Kick-off meeting; project running	1	Completed	Minutes from kick-off
M2	Draft version of requirements to GIP	4	Completed	Input provided to the
M3	Draft pilot studies descriptions	8	Completed	Draft pilot
M4	Draft version of best practise	8	Completed	Draft version

Work package 2: Cross coordination, data management, interaction with GeoERA I Duration: **Month 1 - 36**

Work package 2 has a coordinating role internally in the project and to other GeoERA projects, especially to the GIP project (GIP-P) developing the GeoERA Information Platform (GIP). Part of WP2 is coordinated by the GeoERA groundwater theme coordinator in all GeoERA groundwater projects ensuring coordination between the groundwater projects, GIP-P and the projects of the other GeoERA themes. The WP participants are the theme coordinator and the project lead together with the WP-leaders in TACTIC. External responsibilities in the WP includes the development of a data management plan and a communication, dissemination and exploitation plan. Internally, the WP is coordinating several tasks to streamline the activities by the partners in the pilots, which is crucial for the ability of cross-comparing and synthesizing the results at the end of the project. This coordination has involved the development of several templates including templates for the TACTIC Toolbox and the the "Pilot description and assessment reports".
WP2 activities during the first 18 months include:
- Development of a data management (D2.1)
- Development of a protocol/template, for collecting information on tools and models to the TACTIC Toolbox from the TACTIC partners. The protocol categorises the different tools into several categories: Functionality, Tool type (e.g. physical based, lumped, analytical, etc.), Intended users/user friendliness, Scale, User rights and access, Extent of documentation, Relevance for TACTIC and whether it is a generic or site-specific tool. TACTIC partners have populated the Toolbox with tools used at their institution. A draft version of the TACTIC Toolbox was ready in month 8 (milestone M4), which provided the basis for partners to select a tool appropriate for their pilot given the climate change challenges and data availability. The Toolbox will be further developed throughout the project.
- A questionnaire, to survey data in the GSOs has been developed, based on the data required to setup and execute the tools in the TACTIC Toolbox. A survey on groundwater related data has been/are similarly carried out in two of the other GeoERA groundwater projects; RESOURCE and HOVER. Given that all three projects are related to groundwater issues, a significant overlap in data requested from the partners has been identified. In RESOURCE groundwater related data, such as aquifer dimensions and hydrological properties (hydraulic conductivities and porosity), are collected in a 3D grid. In TACTIC it has thus been decided to put less effort in motivating partners to upload data, unless this is readily done by WMS/WMF, and instead focus on establishing information on the accessibility of other data types that are needed to undertake the assessments, but not necessarily owned by the GSOs. This survey will provide an overview for future projects, especially relevant in defining future collaboration and projects. The questionnaire additionally addresses to what extent the GSOs are or have been involved in groundwater assessments, including CC impact assessments. The questionnaire has been sent to all GeoERA partners.
- Collaboration with the GIP project on defining type and formats for the GIP platform. TACTIC partners have identified the type and formats of data collected in the project as well as results produced by the assessments, which are to be uploaded to GIP. Furthermore, functionalities for the visualisation and data up-/and download have been specified. Formats for data and results has been discussed internally and several meetings have been organised with the GIP project. The task is finalised with deliverable D2.2.
- Cross-comparison of tools. In selected pilot areas, more than one tools is applied in the assessment of climate change impact. This work is coordinated in WP2 to ensure that the results obtained from the different tools can be compared and analysed across the pilot sites covering a wide variety of the hydro- and climatic conditions in Europe.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D2.1	Data management plan	GEUS	Report	Public	6	Completed	
D2.2	Definition of requirements to GIP following recommendations from the GIP project	GEUS	Report	Public	16	Completed	
D2.3	Questionnaire to survey GSOs on data and tools	BRGM	Other	Public	10	Completed	
D2.4	Protocol for best practice descriptions of tools	GEUS	Other	Confidential	6	Completed	
D2.6	Communication, dissemination and exploitation plan	GEUS	Report	Public	6	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 3: Integrated groundwater - surface water assessment of climate ch Duration: **Month 1 - 36**

The aim of WP3 is to investigate different aspects of the interaction between groundwater and surface waters related to a changing climate. This is done in three tasks with focus on the interaction affecting the shallow groundwater, groundwater dependent ecosystems, and groundwater flooding and droughts. The work package also has three generic tasks analysing how groundwater – surface interaction under changing climate conditions can be assessed by the use of integrated models to propagate estimates of future climate. Ten partners are involved in WP3 (Denmark [lead], the Netherlands, Ireland, France, Spain, Hungary, Ukraine, Croatia, Hungary and Ireland). Pilots from Ireland was not included in the proposal, but has been added to the portfolio on the initiative from the Irish Geological Survey and has its main focus on flooding. The partners in WP3 covers together eleven pilots, covering from Denmark in north to Spain in south and Hungary in east to Ireland in west. The pilots similarly span the entire spatial range from local (e.g. Sunds in Denmark), regional (e.g. France, Spain, Ireland, Croatia) and national studies (in Denmark, the Netherlands and Hungary). WP3 activities during the first 18 months include:
- Contributed to the common task of reviewing existing tools and methods.
- Following this, the main activities in WP3 have been associated to the work and assessments in the different pilots with focus on the three topics included in the work packages, i.e. shallow groundwater, groundwater dependent ecosystems, and groundwater flooding and droughts. These tasks are presently ongoing, see below. For each pilot, the first part of D3.2 "Pilot description and assessment report" has been finalised and include a general pilot description, assessment of data availability and evaluation of specific climate change challenge.
- Task 3.5 focus on propagation of climate scenarios in integrated models, and identifying standardised climatic scenarios that can be used across all pilots. D3.4 "Technical note on propagation of climate change projections in integrated models", are partly done. A memorandum of the selection of climate change scenarios in a harmonised way and with a methodology enabling pilot inter-comparison on a pan-European scale has been developed. The proposed methodology has been presented and agreed upon at the second project meeting in ISPRA. The methodology should be used by all pilots in TACTIC across different work packages and assessment tools.

Specific activities in pilots for WP3 partners include:
- Drava, Croatia: A numerical groundwater flow model is developed and data to construct and run the models have been collected in addition to data for calibration.
- Denmark: the Danish water resources model used for the Denmark Pilot has been calibrated and the model has been applied for current and future conditions using climate scenarios developed at GEUS. The model is ready to run climate scenarios developed in TACTIC.
- Storåen and Sunds, Denmark: The Storåen and Sunds models were setup and calibrated during the spring of 2019. Hereafter selected climate change scenarios were run and the model output results analyzed. During summer 2019, 3 scenarios for climate change adaptation were tested using the model: 1) Installing the so-called third drainage string below the city of Sunds, where issues of high shallow groundwater threatens the city infrastructure and housing. 2) Using existing wells to lower the groundwater level. 3) Manage the lake level to a constant low level in order to affect the hydraulic connected shallow groundwater level in Sunds City.

Work package 3: Integrated groundwater - surface water assessment of climate ch Duration: Month 1 - 36

- Hungary: The hydrological model for the entire Hungary has been setup and calibrated (prior to TACTIC) and assessments of CC has now been performed based on local climate change scenario. The pilot awaits the TACTIC WP3 standard scenarios.
- Avre, France: The integrated hydrogeological model of this basin developed in 2012 has been updated with recent data (precipitation, water abstraction …) and its calibration has been improved. This model is now ready for application of climate change forcing data. The next step will be to perform a historical simulation (1958-2019) and analyze the droughts occurrence.
- Gort lowlands, Ireland: Based on historical flooding images (mainly the 2015 event), a map of a 1000 yr flooding has been generated.
- Segura River Basin, and Upper Guadiana Basin, Spain: The two Spanish pilots, used in assessments of CC groundwater droughts and groundwater dependent ecosystems, have worked on designing and calibrating a modeling framework defined by a chain of auxiliary models. The approaches have been already calibrated with the historical data and some future scenarios have been already simulated. The model is also ready to run climate scenarios developed in TACTIC. In combination with WP6 work has been done to define details of the adaptation scenarios.
- Nederland and De Raam: The Hydrological National Instrument used for assessments in the Nederland's is currently undergoing updates. These updates affect both two Dutch pilots. The update will commence until 2020 where CC scenarios will be applied, and the new TACTIC assessments done.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D3.1	Inventory on data and results for groundwater-surface water	GEUS	Note	Public	7	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 4: Assessing groundwater recharge and vulnerability to climate cha Duration: Month 1 - 36

Work package 4 addresses the groundwater recharge and vulnerability to climate change. The aim is to identify principal aquifers in the involved countries and using numerical and analytical tools to quantify the amount of infiltrating recharge over these aquifers. These tools will also be used to assess the vulnerability of groundwater recharge by estimating future recharge volumes using projected weather information. Combining results from the pilot studies and background information, a pan-European map of recharge will be developed and made accessible via GIP. Finally, satellite data will be used to assess the subsidence linked with groundwater pumping. Thirteen partners are involved in WP4 (France [shared lead], United Kingdom [shared lead], Denmark, Netherlands, Finland, Germany, Ireland, Italy, Serbia, Spain, Sweden, Ukraine, and Hungary). The partners run 16 pilots in WP4, which varies greatly in their spatial coverage. In some pilots, the assessments are based on time series from a single well, selected as representative for an aquifer. Other studies include time series from several wells in the same aquifer and thus provide some information on variability. At the other end of the scale is the pan-European scale, for which a recharge map is to be developed, and in between, national estimates are carried out for some countries. The tools applied similarly varies, from time-series analysis to lumped modelling approaches and index approaches.

WP4 activities during the first 18 months include:
- Review of relevant tools and methods for the assessments carried out in WP4 together with a survey on required data to apply the tools.
- Following this, the main activities in WP4 have been associated to the work and assessments in the different pilots with focus on the topics included in the work packages. These tasks are presently ongoing, see below. For each pilot, the first part of D3.2 "Pilot description and assessment report" has been finalised and include a general pilot description, assessment of data availability and evaluation of specific climate change challenge.
- Knowledge exchange. While all work packages have focus on knowledge exchange, this is in particularly true for WP4 that includes the largest number of partners that have not previously been involved in groundwater assessments focussing on climate change impacts. WP4 has organised several videoconference calls, and task leaders and contributing partners have provided detailed descriptions of their tools to partners over two video conference sessions. These sessions were recorded and saved and have been made available to all TACTIC partners.
- Building on the results from the pilots combined with existing satellite and model results from Europe, WP4 will construct a pan-European recharge map. The approaches employed to develop the map has been discussed on online and face2face meetings. As the recharge map should rely on pilot results were possible, an important aspect has been to agree on the terms used to describe recharge/infiltration, as this differs among partners as well as tools. To clarify this, a small note has been developed and circulated to all partners, and the tools identified in the TACTIC toolbox has similarly been categories according to the type of recharge/infiltration estimated by the tools.

Specific activities in pilots for WP4 partners include:
- BGS are working with AquiMod to calculate recharge at a number of boreholes where they already have calibrated models. The models are rerun and calibrated when necessary, and model parameter sensitivities are investigated. BGS has also demonstrated the tools on videoconferences and supported other partners on the use of the tool
- Both ISPRA in Italy and GSS in Serbia entered TACTIC with no previous experience in using tools for CC impact assessments. They have both chosen the AquiMod tool and have spent time learning the tool. Input data has also been collected and the model calibration is in progress
- IGME in Spain is contributing to WP4 by both estimates of recharge using different lumped models, and in the estimation of land subsidence. Several pilots are used and historical results have been already obtained for all of them. A method has been proposed to assess future impacts of climate change on subsidence.

Work package 4: Assessing groundwater recharge and vulnerability to climate ch Duration: Month 1 - 36

- In Denmark, GEUS are using the national water resources model to estimate recharge for the entire country. Four additional tools are currently being applied using long time-series for principal aquifers to compare results from these models and the national model.
- BRGM applied statistical tools to calculate trends (hypize) and other scripts to characterize the time series of groundwater levels over the French territory. An attempt of classification of homogeneous zones, i.e. with similar behavior according to hydrogeology, to evaluate climate vulnerability was done but was not conclusive at national scale. The difficulties result in the fact that there is a few number of non-influenced piezometers with long chronicles on the same period of observation. Therefore, BRGM proposes to contribute to the pan-European recharge map working on a national map of potential recharge and using climate change scenario to estimate future potential recharge and estimate vulnerability.
- GTK are applying the method used by GSI (Ireland) to calculate the recharge map of Finland. They have collected the required data and are currently working on the identification of an appropriate approach to validate the resulting map
- GSI focus on updating the Irish national scale groundwater recharge map and groundwater levels database. Updated input datasets for national scale recharge map and currently working on the application of projections of future climate data. Also established structured GWL database for use in TACTIC and other projects.
- SGU apply HYPE, a tool that has been developed by SMHI (Swedish met office) but modified for groundwater levels, to produce a 1-D precipitation-runoff hydrological model at catchment-scale. Model has been calibrated to historic weather/GW data at the two Swedish pilot sites
- TNO applies statistical tools to analyse groundwater level time series for long-term trends and for system identification, in the latter all piezometers in the Netherlands are used.

Besides the activities mentioned above, which are all described and planned in the proposal, additional funding from Innovation Fund Denmark also promoted the development of new web services that allows for initiation of a Pan European network of on-line near real-time sensors measuring groundwater tables. The work has been initiated primarily in TACTIC WP4 in collaboration with the GIP-P project in GeoERA and the Swedish Geological Survey, SGU. SGU has developed a national network of near real-time sensors, which has been in operation for more than five years. Such networks are important for assessment of climate change and exploitation impacts on groundwater tables e.g. decreasing and increasing water tables due to droughts and cloud bursts, respectively.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D4.1	Inventory on data and results for recharge and groundwater vulnerability	BRGM	Note	Public	7	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 5: Assessment of salt-/sea water intrusion status and vulnerability Duration: Month 1 - 36

Work Package 5 is focused on a quantitative assessment of salt/sea water intrusion (SWI). The intention is to advance in the assessments by developing harmonised approaches to summarise results on status and vulnerability with respect Sea Water Intrusion (SWI) at groundwater body scale, which will allow the comparison between assessments by different European countries. Ten partners are involved in WP5 (Spain-IGME [lead], Denmark, Croatia, Italy-SGSS, Latvia, Malta, Portugal, Spain-ICGC, and Ukraine), which all together have 10 pilots, covering most of the EU countries with coastal areas. A Pilot from Netherland has been added on the initiative of DELTARES-TNO, although it was not in the original proposal. All the pilots correspond to regional studies covering different aquifer typologies (detrital and karstic aquifers, island and not island aquifers, etc).

WP5 activities during the first 18 months include:

- Review on relevant tools, information and approaches to assess salt/sea water intrusion status and vulnerability together with a survey on required data to apply the tools/approaches.
- Following this, the main activities in WP4 have been associated to the work and assessments in the different pilots with focus on the topics included in the work packages. These tasks are presently ongoing, see below. For each pilot, the first part of D3.2 “Pilot description and assessment report” has been finalised and include a general pilot description, assessment of data availability and evaluation of specific climate change challenge.
- Development of a method to summarize in a harmonized way SWI status and vulnerability at groundwater body scale by using different visual approaches. The global dynamic of the problems is analysed by time series plots of lumped indices, complimented by quantifying the percentage of affected area using steady pictures, including maps and 2D conceptual cross sections.

Specific activities in pilots for WP5 partners include:

- In Spain IGME demonstrated the proposed methodology on the videoconferences organized about tools within the project. The method for harmonised assessment has been applied to the Plana de Oropesa-Torreblanca aquifer. The distributed information required to apply the method has been obtained by applying both, simple interpolation approaches and density dependent flow models. We assessed historical scenarios but also future potential impacts.
- In Portugal (NLEG) data have been collected to update a detailed 3D geological used in the flow model. Fieldwork are carried out also to get an up-to-date overview on seawater intrusion status. Calibration of a density dependent flow model is ongoing.

Work package 5: Assessment of salt-/sea water intrusion status and vulnerability Duration: Month 1 - 36

- Time series analyses and conceptual approaches are used in Croatia (HCI-CGS) to assess the dynamic of seawater intrusion (salinity of the lakes included within their case study, flow in some springs). Additional data are collected (monitoring of brackish springs, started in March 2019).
- ICGC in Spain have applied the proposed method for a specific date. They intend to extend it to the assessment of a longer period and study the sensitivity of their results with respect to the threshold used to define see water intrusion problems. A statistical data analyse is planned to establish the NBL for the Cl- concentration in the pilot area, in order to use it as a new threshold value for the identification of the affected area.
- BGS in UK are collecting data, expected to be ready for the assessment at the beginning of the second year.
- SGSS in Italy have developed a detailed 3D geological model and are working in on assessment of the maps (inputs) required to apply the method.
- The Netherlands (DELTARES) are working on a density dependent flow model at country scale. They will work on the National fresh-salt water model this coming year, compiling different salinity and geologic databases. They already have regional and local variable-density models for local knowledge questions.
- MTI on Malta have collected all data and performing the needed calculation to apply the adapted version of the method for the analyses of the island's aquifers. A research paper on the topics is planned in the coming months.
- GEUS, Denmark has installed near real-time sensors for monitoring of water tables, temperature, electrical conductivity and chloride at the pilot study site on Falster in and close to a water supply well affected by salt water intrusion. This work was made possible by additional funding for TACTIC and the GeoERA groundwater projects from Innovation Fund Denmark. GEUS receives data from these sensors directly to GEUS databases, and the data will be visualised on the TACTIC website and in the GeoERA Information platform during 2020.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D5.1	Inventory on data and results for sea/salt water intrusion	IGME-Sp	Note	Public	7	Completed	
D5.2	Harmonised method for assessing status and vulnerability	IGME-Sp	Other	Public	15	Completed	Journal paper

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

Work package 6: Groundwater adaptation strategies Duration: Month 1 - 36

Work Package 6 is focused on the assessment of adaptation strategies. An inventory of general potential adaptation strategies and methods/data employed to select and assess them are developed. The WP further seeks to advance the definition of local scenarios, downscaling global climatic and socio-economic scenarios. WP6 includes nine partners (Spain-IGME [lead], Croatia, Denmark, France, Hungary, Italy-SGSS, Malta, Serbia, and Ukraine) operating nine pilots (Figure 2). The pilots in WP6 are all pilots in which CC impact assessments are carried out as well in WP3-5. The topics of the pilot site covers the various CC challenges addressed in the project and represent varies types of tools. Spatially, the pilots cover most of Europe, and a wide range of aquifer typologies with different management particularities and data and information available.

WP6 activities during the first 18 months include:
As the assessments in WP6 are based on tools that are developed in WP3-5 and these are currently under development, the assessments in WP6 has not started, but overarching tasks have been completed.

- Base on a literature review, a list of specific measures has been produced together with a repository of papers/reports related with this issue. TACTIC partners have contributed with measures to a draft version of the list, which is subject to further extension during the project. The list does not only included measures that are directly related with groundwater management, but also measures that can have an indirect impact on groundwater status.
- Classification of adaptation strategies: measures on 1) demands, i.e. measures that seeks to reduce the water demand, 2) the offer, which is measures to manage the resource, and 3) mixed measures, which is a combination of the two. A detailed list of specific measures ranked in accordance with that classification has been developed.
- A classification of data/methods to assess adaptation strategies (Top-down, bottom-up and mixed approaches) and to identify potential strategies to be assessed (a selection of measures) and strategic GW bodies.
- Definition of local climatic and socio-economic scenarios by downscaling global scenarios. In this task, emphasis is given to the social assessment and in the definition of socio-economic scenarios, which is studied in the pilot "Upper Guadiana Basin" with input from stakeholder workshops. The method further intends to improve the definition of local climate scenarios from the RCM simulation considering not only basics but also drought statistics. A SCI journal paper has been published on the topic.
- Initiation of new real-time monitoring approaches required for optimisation of adaptation strategies for controlling and managing saltwater intrusion in coastal and inland aquifers e.g. by managed aquifer recharge and the use of SCADA (supervisory control and data acquisition) systems.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D6.1	Inventory on data and results for adaptation	IGME-Sp	Note	Public	7	Completed	
D6.2	Scenarios development	IGME-Sp	Other	Public	15	Completed	Scenarios and journal paper

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
WP1: "D1.1 Summary report for the second TACTIC Advisory Board meeting" postponed from M11 to M16. The summary report is developed to provide an overview of the TACTIC activities up to the project meetings, where this is discussed with the advisory board members. It was not possible to find a suitable date for the project meeting before the summer holiday and the project meeting was thus moved from June to October 2019. For the summary report to reflect the most recent activities, it should be developed close to the project meetings, and the report has thus been postponed. Partner: GEUS		No	Included in amendment improved by GeoERA secretariat 6-12-2019
WP2: Deliverabel "D2.3 Questionnaire to survey GSOs on data and tools", was delayed. Partner: BRGM	Postpostment of deadline	No	Included in amendment improved by GeoERA secretariat 6-12-2019

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)	Comments
PUBLICATIONS	PAPERS		SCIENTIFIC COMMUNITY		IGME	Collados-Lara AJ, Pulido-Velazquez D, Pardo-Igúzquiza E	doi:10.3390/w10091224	
PUBLICATIONS	PAPERS		SCIENTIFIC COMMUNITY		IGME	Antonio-Juan Collados-Lara, David Pulido-Velazquez, Rosa María Mateos, Pablo Ezquerro	Accepted, not published	
PUBLICATIONS	PAPERS		SCIENTIFIC COMMUNITY		IGME	Pardo-Iguzquiza, Eulogio & Collados-Lara, Antonio-Juan & Pulido-velazquez, David	doi:10.1007/s12665-019-8594-4	
PUBLICATIONS	ABSTRACTS	12.4.2019	SCIENTIFIC COMMUNITY	>1000	GEUS	Hinsby K, Gourcy L, Broers HP, Højberg AL, Loveless S	https://meetingorganizer.copernicus.org/EGU2019/EGU2019-18215.pdf	
PUBLICATIONS	ABSTRACTS	Dec 2019	SCIENTIFIC COMMUNITY		IGME	David Pulido Velázquez		
PUBLICATIONS	ABSTRACTS	22-27/9 2019	SCIENTIFIC COMMUNITY		TNO	Zaadnoordijk, W. J., Booltink, W., Oudega, M., Gunnink, J. L., & Bierkens, M. F. P.		
PUBLICATIONS	ABSTRACTS	22-27/9 2019	SCIENTIFIC COMMUNITY		TNO	Zaadnoordijk, W. J., & Lourens, A		
PUBLICATIONS	ABSTRACTS	9-13/12-2018	SCIENTIFIC COMMUNITY		TNO	Zaadnoordijk, W. J.		
PUBLICATIONS	ABSTRACTS	30.09.2019	SCIENTIFIC COMMUNITY		SGSS	Paolo Severi		
PUBLICATIONS	NON-SCIENTIFIC PUBLICATION	Nov-2018	GENERAL PUBLIC		IGME, GEUS	África de la Hera, David Pulido and Anker L. Højberg		
PUBLICATIONS	THESIS	March 2019	SCIENTIFIC COMMUNITY		IGME	Collados Lara, Antonio Juan		
PUBLICATIONS	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)	Sep 2018	NON-EU INSTITUTION (national, regional, local)		GEUS	Karlsson IB, Højberg AL		
MEDIA	ONLINE MEDIA	12.4.2019	GENERAL PUBLIC	> 3000	GEUS	Hinsby K	https://geoera-groundwater.com/	Blogs published also on LinkedIn, Twitter and Facebook
MEDIA	ONLINE MEDIA	2.5.2019	GENERAL PUBLIC	> 3000	GEUS	Hinsby K	https://geoera-groundwater.com/	Blogs published also on LinkedIn, Twitter and Facebook
MEDIA	ONLINE MEDIA	3.10.2019	GENERAL PUBLIC	> 3000	GEUS	Hinsby K	https://geoera-groundwater.com/	Blogs published also on LinkedIn, Twitter and Facebook
MEDIA	ONLINE MEDIA	11.19	GENERAL PUBLIC	?	GEUS	Hinsby K	https://geoera.eu/projects/tactic9/	
MEDIA	ONLINE MEDIA	10.19	GENERAL PUBLIC	?	GEUS	Karlsson IB	https://geoera.eu/projects/tactic9/	
MEDIA	ONLINE MEDIA	2018-2019	SCIENTIFIC COMMUNITY	> 100	GEUS	Karlsson IB, Højberg AL, Hinsby K	https://www.researchgate.net/prc	Five posts on project progress on Researchgate
MEETINGS	CONFERENCE	22.10.2019	NON-EU INSTITUTION (national, regional, local)	>100 (National Hydrology Conference, DK)	GEUS	Tulstrup, J. and Hinsby, K.	http://hydrologidag.dk/media/215	Conference for scientific community, policy makers and consultants
PUBLICATIONS	ABSTRACTS	8-10/1-2019	SCIENTIFIC COMMUNITY		GEUS, BRGM, TNO, BGS	Hinsby K, Gourcy L, Broers HP, Højberg AL, Loveless S		Ved ikke lige hvad det er for en?
MEETINGS	Meeting with international body	2-4/4-2019	EU INSTITUTION	>100	GEUS	Højberg, AL and Hinsby, K	Acccessible on CIRCABC CIS WG Gr	CIS Working Group Groundwater
EVENTS	CONGRESS	2.5.2019	POLICY MAKERS	> 300	GEUS	Hinsby K	https://www.unece.org/index.php	UNECE Resource Management Week 2019
EVENTS	CONGRESS	24.10.2019	NON-EU INSTITUTION (national, regional, local)	>300 (National Groundwater Conference, SE)	GEUS, BRGM, TNO, BGS, B	Hinsby, K., Gourcy, L., Broers, HP, Højberg AL, Bianchi M, Wittenberg, A, van der Gessel, S. and Tulstru	https://www.slideshare.net/SGU_1	Conference for scientific community, policy makers and consultants
EVENTS	CONGRESS	3.07.2018	GENERAL PUBLIC	> 100 (GeoERA kick-off)	GEUS, BRGM, BGS, IGME	Karlsson IB, Hinsby K, Kidmose J, Majdl M, Bessiere H, Pulido-Velazquez D and Højberg AL		
MEETINGS	Internal project meeting	every other month			GEUS, BRGM, BGS, IGME			
MEETINGS	Internal project meeting	24-26/9-2018			All TACTIC partners			
MEETINGS	Internal project meeting	2-3/10-2019			All TACTIC partners			
MEETINGS	Other	every month			GeoERA Groundwater TC	Hinsby K, Højberg AL, Gourcy L, Broers HP, Bianchi M, Sanabria M.		

BESIDES the above we've submitted two abstracts on TACTIC and GeoERA groundwater for EGU 2020 and one abstract for the Nordic Geologic Winter Meeting in Oslo, January 2020

INSTRUCTIONS

Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	INTERNAL PROJECT MEETING
	MEETING WITH OTHER GEOERA PROJECTS
	MEETING WITH NATIONAL BODY
	MEETING WITH INTERNATIONAL BODY
	OTHER
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

PROJECT MANAGEMENT

'Close communication between partners within the projects has successfully been achieved through:

1. Monthly online meetings in the Project Board, with fixed agenda topics on a) experience sharing on WP activities, b) coordination of cross-cutting topics and c) status on progress according to the Gantt diagram, and d) overview and follow-up on deliverables

2. Online WP-meetings arranged by WP-leaders to monitor progress and discuss possible challenges or shortcomings. The meeting frequency is organised in accordance with the needs in the individual WPs

3. Organisation of webinars to demonstration tools

4. Establishing on ad-hoc theme workgroups for coordination and development of cross-wp activities, such as definition of climate change scenario and assessment approach, definition of recharge types, and coordination of multiple tools in selected Pilots.

5. Organisation of Project Assembly meetings with participation of all TACTIC partners

For coordination with the other GeoERA groundwater projects, the PL of TACTIC has joined coordination meetings with the groundwater theme coordinator and the PLs of the other groundwater projects.

Cooperation with other projects:

'- Collaboration with other project: Online monthly meetings with GW projects

- There has been a coordination with HOVER and RESOURCE on the content of the TACTIC questionnaire with questionnaires/surveys to limit possible overlap on the data/information requested from the GeoERA partners

- Collaboration between TACTIC WP5 and HOVER WP7, where the method developed in TACTIC has been adapted for assessments in HOVER.

- There has been significant synergies with the project Monitoring and assessing impacts of global change in water resource systems depending on natural storage from groundwater and/or snowpacks (MASS-IGLOO or SIGLO-AN in the Spanish version of the tittle), funded by the Spanish National Research Program. For example, the activity to define adaptation strategies with a bottom-up approach is included in both of them. Although they were planned in different case studies (Upper Gudiana Basin in TACTIC and Segura Basin in MASS-IGLOO) they have similarities from a methodological pint of view.

- Collaboration has been established between TACTIC and the Interreg – North Sea Region project TOPSOIL. Collaboration includes the development of complementary climate scenarios and common climate change adaptation strategies.

IMPACT STATEMENT

The expected impact of TACTIC is first and foremost to provide: “Improved support to EU decision and policy making by contributing to the development of coherent and transparent assessments of climate

change impacts on groundwater and surface water using common and integrated approaches, methodologies and tools consistent across the different European countries".

To achieve this, TACTIC contributes to the population of the common GeoERA Information Platform (GIP), whereby data and results from the project are made findable, accessible, interoperable and reusable data according to the "FAIR" principles. Results will include standard results from assessments e.g. in the form of tables of hydraulic parameters, maps, cross sections and model results. In addition to this, results include a TACTIC toolbox with tools relevant for climate change impact assessments and evaluate effect of adaptation strategies as well as a guideline for undertaking the assessments. Through GIP data and results from the project are made easily accessible primarily for stakeholders involved in the development of sustainable management of Europe's water resources and climate change adaptation. Hence, it will provide data for the development of on-top services by e.g. private consulting companies contracted by authorities to develop services at local to Pan-European scale, and it will promote the development of new monitoring instruments and networks required for cost-efficient monitoring and assessment of the chemical and quantitative status of the water resources according to the Water Framework and Groundwater directives and the Blueprint to Safeguard Europe's Water Resources.

In addition to the impact to the external stakeholders and future users, an important impact for TACTIC is to advance the climate change impact assessments and adaptations in the individual GSOs and harmonise the assessments among the GSOs. This is achieved through the development of a TACTIC Toolbox, common protocols and guidelines, as well as direct contacts through physical project and online meetings, with experience sharing, discussion of progress and demonstration of tools and approaches.

The impacts to the external community can only be realised at the end of the project, were project products have been finalised and made accessible in the information platform. The impact among the TACTIC partners are, on the contrary, experienced during the project. Through online webinars various tools have been demonstrated and taken up by TACTIC partners with no previous experience in climate change impact assessments, and 11 partners are working with multiple tools in their pilots. Common climate change scenarios have further been developed making it possible for all TACTIC partners to estimate effect of future climate changes. The project has thus already had a significant impact in advancing and harmonising the assessments among the partners.

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
	Actual			(0,25*A+B)				
1.	122.687,63	11.782,61	0,00	33.617,56	168.087,80	29,70%	49.922,08	118.165,72
2.	19.790,91	1.589,43	0,00	5.345,09	26.725,43	29,70%	7.937,45	18.787,97
3.	64.824,36	1.077,87	0,00	16.475,56	82.377,79	29,70%	24.466,20	57.911,58
4.	20.332,72	2.030,00	0,00	5.590,68	27.953,40	29,70%	8.302,16	19.651,24
5.	8.214,44	1.541,13	0,00	2.438,89	12.194,46	29,70%	3.621,76	8.572,71
6.	32.891,55	22.792,47	0,00	13.921,01	69.605,03	29,70%	20.672,69	48.932,33
7.	9.550,46	589,92	0,00	2.535,10	12.675,48	29,70%	3.764,62	8.910,86
8.	3.265,00	776,74	0,00	1.010,44	5.052,18	29,70%	1.500,50	3.551,68
9.	23.380,35	2.596,72	0,00	6.494,27	32.471,34	29,70%	9.643,99	22.827,35
10.	16.690,86	2.165,41	0,00	4.714,07	23.570,34	29,70%	7.000,39	16.569,95
11.	6.543,10	791,20	0,00	1.833,58	9.167,88	29,70%	2.722,86	6.445,02
12.	1.391,00	643,00	0,00	508,50	2.542,50	29,70%	755,12	1.787,38
13.	7.499,99	1.433,85	0,00	2.233,46	11.167,30	29,70%	3.316,69	7.850,61
14.	22.916,39	0,00	0,00	5.729,10	28.645,49	29,70%	8.507,71	20.137,78
15.	7.074,62	1.842,13	0,00	2.229,19	11.145,94	29,70%	3.310,34	7.835,59
16.	93.472,69	4.357,54	0,00	24.457,56	122.287,79	29,70%	36.319,47	85.968,31
17.	18.495,00	1.548,31	0,00	5.010,83	25.054,14	29,70%	7.441,08	17.613,06
18.	3.247,87	1.295,07	0,00	1.135,74	5.678,68	29,70%	1.686,57	3.992,11
19.	3.898,46	1.341,65	0,00	1.310,03	6.550,14	29,70%	1.945,39	4.604,75
20.	22.023,08	1.600,83	0,00	5.905,98	29.529,89	29,70%	8.770,38	20.759,51
					712.482,95		211.607,44	500.875,51

Date:
Person responsible:

Cumulative Use of Resources Connected to 8a

Personnel costs Actual	Person months	Associated WP	Amount
	#REF!	#REF!	#REF!
	#REF!	#REF!	#REF!
			#REF!

Other direct costs	Description	Category	Associated WP	Costs
				#REF!
				#REF!

Subcontracting	Supplier	Description	Associated WP	Cost
				#REF!
				#REF!

FINANCIAL STATEMENT FOR PP 1 - GEUS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	122.687,63	11.782,61	0,00	33.617,56	168.087,80	29,70%	49.922,08	118.165,72

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,45	WP1	26.702,48
	4,50	WP2	29.727,16
	7,70	WP3	48.446,46
	1,83	WP4	13.733,82
	0,57	WP5	4.077,71
			122.687,63

Other direct costs	Description	Category	Associated WP	Costs
	Kick off meeting in Brussels, july 2018	Travel	WP1	2.208,53
	Project Meeting in Brussels, october 2018	Travel	WP2	181,00
	Working Group Groundwater Meeting in Bukarest, april 2019	Travel	WP2	799,78
	Project Meeting in Ispra, october 2019. Mrs. Ida Karlsson and mr. Anker Lajer Højberg.	Travel	WP1	1.628,08
	Project Meeting in Ispra, october 2019. Mr. Klaus Hinsby	Travel	WP2	623,03
	Project Meeting in Ispra, october 2019. Mr. Jakob Kidsmose.	Travel	WP3	431,60
	Project Meeting in Ispra, october 2018. Mr. Simon Stisen	Travel	WP4	184,06
	Fieldwork in Denmark, Sunds, november 2019	Travel	WP3	292,07
	Expenses for Project Kick off Meeting held in Copenhagen, september 2018. Catering, reimbursement for members of Advisory Board (Mr. Roland Bathel and Mr. Marco Petitta) travel expenses	Other	WP1	4.342,35
	Softwarelicens	Other	WP2	66,76
	Renting a bus in Ispra, project meeting, october 2019	Other	WP1	360,50
	Reimbursement for 1 member of Advisory Board (Mr. Roland Bathel), travel expenses. Project Meeting in Copenhagen, october 2019	Other	WP1	611,99
	IT hardware for Skype Meetings	Other	WP1	52,86
				11.782,61

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 1 - name

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	19.790,91	1.589,43	0,00	5.345,09	26.725,43	29,70%	7.937,45	18.787,97

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,75	WP3	17.480,29
	0,34	WP4	2.310,62
			19.790,91

Other direct costs	Description	Category	Associated WP	Costs
	Meeting Copenhagen	Travel	WP3	1.020,93
	Meeting Ispra	Travel	WP4	568,50
				1.589,43

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - Deltares

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	64.824,36	1.077,87	0,00	16.475,56	82.377,79	29,70%	24.466,20	57.911,58

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	8,36	3	64.824,36
			64.824,36

Other direct costs	Description	Category	Associated WP	Costs
	T. Kroon Denmark 23-26 sept 2018	Travel	3	1.077,87
				1.077,87

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 4 - HGI-CGS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	20.332,72	2.030,00	0,00	5.590,68	27.953,40	29,70%	8.302,16	19.651,24

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,8	WP3	12.361,73
	3	WP5	6.587,51
	0,6	WP6	1.383,48
			20.332,72

Other direct costs	Description	Category	Associated WP	Costs
	Copenhagen KO meeting	Travel	WP3	1.420,00
	Varese meeting	Travel	WP5	610,00
				2.030,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 5 GTK

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	8.214,44	1.541,13	0,00	2.438,89	12.194,46	29,70%	3.621,76	8.572,71

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,11	4	8.214,44
			8.214,44

Other direct costs	Description	Category	Associated WP	Costs
	Hendriksson, 19718; ISPRA, Italy 2.-3.10.2019: Daily allowances, Hotel, Flight tickets, Taxies, Service fees	Travel	4	1.028,94
	Sallasmaa, 13194; Denmark 24.-26.9.2018: Daily allowances, Hotel, Flight tickets, Train tickets, Parking, Service fees	Travel	4	512,19
				1.541,13

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 6 BRGM

Fill in only blue-colored cells.

	A. Direct personnel costs Unit Costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	32.891,55	22.792,47	0,00	13.921,01	69.605,03	29,70%	20.672,69	48.932,33

Explanations

Personnel costs Unit	Person months	Associated WP	Amount
	1,31	WP1	9.201,36
	0,61	WP2	4.502,40
	0,94	WP3	6.648,12
	1,6	WP4	11.120,55
	0,18	WP6	1.419,12
			32.891,55

Other direct costs	Description	Category	Associated WP	Costs
	Meeting GeoEra - Helene Bes	Travel	WP1	608,64
	Meeting GeoEra - Nolwenn C	Travel	WP1	390,78
	Kick Off Meeting Tactic - Nad	Travel	WP1	1.014,82
	kick Off Meeting Tactic - Hele	Travel	WP1	1.229,61
	Annual Meeting Tactic - Hele	Travel	WP1	808,98
	Annual Meeting Tactic - Nadi	Travel	WP1	1.131,32
	Temporary work 4 months	Other	WP4	17.579,84
	Consumables	Other	WP1	28,48
				22.792,47

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 7 BGR

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	9.550,46	589,92	0,00	2.535,10	12.675,48	29,70%	3.764,62	8.910,86

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,37	WP4	9.550,46
			9.550,46

Other direct costs	Description	Category	Associated WP	Costs
	Kopenhagen,23.-26.9.18	Travel	WP4	589,92
				589,92

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 8 MBFSZ

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	3.265,00	776,74	0,00	1.010,44	5.052,18	29,70%	1.500,50	3.551,68

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,83	3	3.265,00
			3.265,00

Other direct costs	Description	Category	Associated WP	Costs
	Kick-off meeting	Travel	3	776,74
				776,74

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 9 GSI

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	23.380,35	2.596,72	0,00	6.494,27	32.471,34	29,70%	9.643,99	22.827,35

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2.5 person months	WP4	12.479,38
	2.2 person months	WP4	10.900,97
			23.380,35

Other direct costs	Description	Category	Associated WP	Costs
	Project meeting (Denmark) Oct 18	Travel	WP4	1.079,88
	Project meeting (Italy) Oct 19	Travel	WP4	1.516,84
				2.596,72

Subcontracting	Supplier	Description	Associated WP	Cost
	N/A			
	N/A			
				0,00

FINANCIAL STATEMENT FOR PP 10 ISPRA

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	16.690,86	2.165,41	0,00	4.714,07	23.570,34	29,70%	7.000,39	16.569,95

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3	4	16.690,86
			16.690,86

Other direct costs	Description	Category	Associated WP	Costs
	Travel expenditures	Travel	4	2.165,41
				2.165,41

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 11 SGSS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	6.543,10	791,20	0,00	1.833,58	9.167,88	29,70%	2.722,86	6.445,02

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	less than one (138 hours)	wp5	3.266,86
	less than one (138 hours)	wp6	3.276,24
			6.543,10

Other direct costs	Description	Category	Associated WP	Costs
	Copenaghen, Ispra (Varese)	Travel	wp5	395,60
	Copenaghen, Ispra (Varese)	Travel	wp6	395,60
				791,20

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 12 LEGMC

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	1.391,00	643,00	0,00	508,50	2.542,50	29,70%	755,12	1.787,38

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,81	WP5	1.391,00
			1.391,00

Other direct costs	Description	Category	Associated WP	Costs
	Meeting TACTIC Copenhagen 24-26 September 2018	Travel	WP5	643,00
				643,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 13 OPM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	7.499,99	1.433,85	0,00	2.233,46	11.167,30	29,70%	3.316,69	7.850,61

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2PM	WP5	4.285,71
	1.5PM	WP6	3.214,28
			7.499,99

Other direct costs	Description	Category	Associated WP	Costs
	KO Meeting (WP5)	Travel		1.433,85
				1.433,85

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 14 LNEG

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
14. LNEG	22.916,39	0,00	0,00	5.729,10	28.645,49	29,70%	8.507,71	20.137,78

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	9,66	5	22.916,39
			22.916,39

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 15 GSS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	7.074,62	1.842,13	0,00	2.229,19	11.145,94	29,70%	3.310,34	7.835,59

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	3,25	4	3.833,46
	2,75	6	3.241,16
			7.074,62

Other direct costs	Description	Category	Associated WP	Costs
	Meeting	Travel	4	1.228,09
	Meeting	Travel	6	614,04
				1.842,13

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 16 IGME-Sp

Fill in only blue-colored cells.

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
	Actual							
1.	93.472,69	4.357,54	0,00	24.457,56	122.287,79	29,70%	36.319,47	85.968,31

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,0	WP1	4314,124371
	0,6	WP2	2876,082914
	2,9	WP3	12942,37311
	2,9	WP4	12942,37311
	6,7	WP5	30198,87059
	6,7	WP6	30198,87059
			93.472,69

Other direct costs	Description	Category	Associated WP	Costs
	Stakeholder meeting	Travel	WP6	925,58
	Project Meeting (Ispra) with all the partners	Travel	WP5	1.098,80
	Other work meetings + diffusion	Travel	WP4	1.228,05
	Meeting organization (food, room reservation, etc)	Other	WP6	837,50
	Course registration	Other	WP3	190,00
	Consumables: Markers and post-it needed for the stakeholder meeting	Equipment	WP6	77,61
				4.357,54

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 17 ICGC

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	18.495,00	1.548,31	0,00	5.010,83	25.054,14	29,70%	7.441,08	17.613,06

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	2,86	WP5	18.495,00
			18.495,00

Other direct costs	Description	Category	Associated WP	Costs
	Projet meeting Denmark	Travel	WP5	1.062,19
	Project Meeting Italy	Travel	WP5	486,12
				1.548,31

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 18 SGU

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	3.247,87	1.295,07	0,00	1.135,74	5.678,68	29,70%	1.686,57	3.992,11

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,59	4	3.247,87
			3.247,87

Other direct costs	Description	Category	Associated WP	Costs
	Italy 2019-10-02	Travel	4	1.295,07
				1.295,07

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 19 GEOINFORM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	3.898,46	1.341,65	0,00	1.310,03	6.550,14	29,70%	1.945,39	4.604,75

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,224215472	WP3	1.083,49
	0,197874409	WP4	956,20
	0,191757612	WP5	926,64
	0,192897034	WP6	932,14
			3.898,46

Other direct costs	Description	Category	Associated WP	Costs
	Meeting	Travel	WP3-6	1.341,65
				1.341,65

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

FINANCIAL STATEMENT FOR PP 20 NERC (UKRI)

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	22.023,08	1.600,83	0,00	5.905,98	29.529,89	29,70%	8.770,38	20.759,51

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,76	WP 1	3.947,78
	1,01	WP 2	5.250,71
	2,25	WP 3	10.926,78
	0,37	WP 4	1.897,81
			22.023,08

Other direct costs	Description	Category	Associated WP	Costs
	TACTIC Meeting	Travel	WP 1	1.149,78
	TACTIC Meeting	Travel	WP 2	213,04
	TACTIC Meeting	Travel	WP 4	238,01
				1.600,83

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe

ERA-NET Cofund Grant Agreement No: 731166
ERA-NET Cofund acronym: GeoERA
Call identifier: H2020-LCE-2016-2017/H2020-LCE-2016-ERA

PROJECT PROGRESS REPORT

Project full title:	Vulnerability of Shallow Groundwater Resources to Deep Sub-surface Energy-Related Activities
Project acronym:	VOGERA
Project reference number:	EC 2018 04 006
Project topic:	Groundwater
Project specific recearch topic:	GW4 - CONTRIBUTE TO GROUNDWATER MANAGEMENT WHEN INTERACTING WITH ENERGY AND MINING
Project website address:	https://geoera.eu/projects/vogera1/

Period covered from: 1.06.2018 to: 31.01.2020

Report submission date:
Project coordinator:

Contact person for the project:
Tel:
E-mail:

IDENTIFICATION OF PROJECT PARTICIPANTS

[use dropdown menu]

	Participant Legal name	Participant (eng)	Short name	Country	PIC	Role in the project
1	UK Research and Innovation	British Geological Survey	NERC (UKRI)	United Kingdom	906446474	Project Lead
2	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek	The Netherlands Organisation for applied scientific research	TNO	Netherlands	999988909	Project Partner
3	Vlaamse Milieumaatschappij	Flanders Environment Agency	VMM	Belgium	953383125	Project Partner
4	Studiecentrum voor Kernenergie/Centre d'Etude de l'Energie Nucléaire (affiliated or linked to VMM)	Belgian Nuclear Research Centre SCK•CEN (Third party of VMM)	SCK/CEN	Belgium	999986775	Project Partner
5	Magyar Bányászati és Földtani Szolgálat	Mining and Geological Survey of Hungary	MBFSZ	Hungary	967592364	Project Partner
6	Geological Survey of Denmark and Greenland	Geological Survey of Denmark and Greenland	GEUS	Denmark	999459677	Project Partner
7	State Research and Development Enterprise State Information Geological Fund of Ukraine	State Research and Development Enterprise State Information Geological Fund of Ukraine	GEOINFORM	Ukraine	947331392	Project Partner
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PUBLISHABLE SUMMARY

Human activities in the subsurface pose a risk of introducing or releasing pollutants into shallow groundwater resources. The VoGERA Project is aimed at improving scientific understanding of the vulnerability of shallow groundwater from deep sub-surface industrial energy-related activities including geothermal energy production, unconventional oil and gas exploitation, sub-surface storage, and disposal of wastes. For energy related activities, pollutants may include the resource itself, such as oil or gas, or brine in the case of geothermal energy, or could be from chemicals used in the extraction processes, such as acids or drilling muds, or even contaminants released from deep rocks. The location from which these pollutants are released is the source. There must be a pathway from the source to the receptor (groundwater) in order to cause contamination. Conceptual models of shallow groundwater vulnerability to deep sub-surface energy activities have been developed using existing data and information and experience of GeoERA partners and from previous projects. These conceptual models identify for each type of activity potential pathways from sources to the groundwater receptor. On-going and future research activities will use the knowledge from these conceptual models to develop an approach for the assessment of groundwater vulnerability from sub-surface activities. This approach, which will be tested and validated at four pilot sites, will aid better sub-surface spatial planning and policy development for deep sub-surface energy-related activities in relation to groundwater, thus allowing for the simultaneous protection of groundwater for future generations whilst recognizing the need for economic development.

At the end of November 2018, the first planned stakeholder workshop was held in Brussels. The workshop was attended by 12 participants representing a wide range of backgrounds, including; environment and energy regulators, water and drilling companies and academics, from project partner countries (Belgium, the Netherlands and the UK) and further afield (Luxembourg and Canada). Stakeholders were asked to consider their definitions of “vulnerability” and “risk” in the context of the VoGERA project, and approaches and tools that are currently available to assess the vulnerability of shallow groundwater were discussed. The main outcome of these discussions was a common perception of the need to develop a simple tool to use while at the same time accounting for, and acknowledging uncertainties.

The project team held a face-to-face project team meeting in May 2019. This was in Budapest and was hosted by MBFSZ. During the project team meeting the risk register was reviewed and updated to reflect the changing partners, WP leads and other identified risks. All work packages were discussed and, in particular, the content and structure of the Year 1 deliverables and the development/agreement of glossary of technical terms. A major outcome was the development of the conceptual models for different subsurface activities. MBFSZ also hosted an informative field trip of the Pannonian Basin field study area, which included site visits to two major energy/industrial activities in the region (HSA geothermal, CO2 mining), along with an overview of the nationwide monitoring infrastructure in place.

Two major milestones/technical deliverables have been completed and submitted. The Work Package 3 of the VoGERA project produced a technical report (D.3.1: “Scope – Terms and definitions – Literature review on pathways – Pilot areas and data collection plans”) detailing the processes and pathways that

may be associated with impacts on groundwater resources from energy-related activities in the subsurface. The report describes the pilot areas that will be used to evaluate possible pathways in detail for several geological settings across Europe, identifies information gaps and presents a data collection plan for the following phase of the work package. Each pilot site, including the Pannonian Basin (Hungary), the Vale of Pickering (UK), the Peel Boundary fault, Veghel (the Netherlands), and the Rauw Fault (Belgium) is described with an overview of the geology and hydrogeology, existing infrastructure and available information, and the data collection plan for future research activities. Based on this review, further data collection and hydrogeological and geophysical investigations have been planned. The results will be combined with the existing data in an analysis of the processes and pathways. Following this, groundwater vulnerability assessments illustrated with maps/geological models to show shallow groundwater vulnerability at the pilot study sites, will be produced.

Work Package 4 produced a technical report (D4.1: "Expanded diagrams of conceptual models identifying potential pathways for industrial activity in the deep sub-surface and shallow groundwater vulnerability") presenting conceptual models for a range of sub-surface energy activities, and a range of geological and hydrogeological settings across Europe. This is the first time potential groundwater contamination pathways for sub-surface energy activities have been compared in this context. Conceptual models for the different energy related activities indicate many similarities between contamination pathways, such as borehole integrity or the presence of permeable fault zones, which may act as preferential pathways for moving contaminants from deep geological formations to shallow aquifers. However, some key differences were identified in terms of processes, many of which relate to the pressure changes introduced as a result of injection/and abstraction throughout the life of the energy activities that may impact the overall vulnerability of groundwater. In addition, there may be some differences in terms of the typical locations an activity may be expected to be found, such as in the shallow versus deep sub-surface, or close to or far away from known aquifers. The conceptual models also highlight the importance of understanding the structure of the sub-surface as it is now, taking into account historical infrastructure.

Results of the research activities conducted in the first moths of the project were presented at the 46th IAH Congress in September 2019 and will be presented at the 2020 EGU General Assembly.

PROJECT CONTRIBUTION TO GeoERA PROJECT

The VoGERA Project Proposal addresses a component of the GW4 SRT – Contribute to Groundwater Management and Interactions with Energy and Mining in Rural and Urban areas. The proposal intentionally does not cover all topics under the GW 4 call, but has selected topics to yield a compact, well-focused research project.

In recent years there has been increasing interest in the use of the deep sub-surface for energy related activities in Europe, due to concerns for energy security and a demand to meet international targets to cut greenhouse gas emissions and increase the supply of energy from renewables (as defined in the European Commission's '2020 climate and energy package'). Sub-surface energy-related industries include conventional and unconventional oil and gas exploitation, geothermal energy and sub-surface storage. These industries may impact the sub-surface by introducing new chemicals (potential

pollutants), disturbing/mobilizing existing natural contaminants within rocks, or by changing the permeability structure of the rock (introducing new pathways). These represent additional hazards which may impact groundwater and subsequently ecosystems and human health. However, the vulnerability of groundwater to these hazards is not uniform, and varies depending on the geological and hydrogeological setting in addition to the industrial processes and risk management measures being applied.

It is necessary to understand and manage the hazards and risks associated with potentially harmful activities in order to meet the environmental objectives of the EU Water Framework Directive (2000/60/EC) and Groundwater Directive (2006/118/EC) i.e. protect groundwater for future generations. Groundwater protection has traditionally focused on safeguarding water resources from hazards at (or near) the surface. As a result, the risks from near-surface activities are relatively well understood and managed. The controversy surrounding the shale gas industry development in Europe has highlighted the lack of information and systematic practices across the EU for managing a range of hazards to groundwater from energy related activities in the deep sub-surface. This has led to significant public concern about the possible impacts of some of these activities. In response, a number of European Member States have announced bans on the extraction process of hydraulic fracturing (e.g. France and Ireland) and more countries have moratoria on the industry until more is known about the potential hazards and risks. Only a handful of Member States, including Poland and parts of the UK (England) are already in the incipient stages of development. On the other hand, other energy related activities in the deep sub-surface (e.g. geothermal, nuclear waste disposal, conventional hydrocarbons and Carbon Capture and Storage) are either well-established or being actively encouraged across more states, since it is recognized that use of these technologies can both boost national economies and/or directly help to achieve international climate change goals – fewer concerns have been voiced about the impact of these sub-surface industries on groundwater. Since considerations for practitioners assessing groundwater vulnerability are likely to be comparable across these sub-surface industries there is a clear requirement for a consistent, unbiased, approach based upon the best possible knowledge available. The VoGERA project would thus be timely in its undertaking responding to these rapidly developing industries and subsequent public pressure currently confronting many European Member States. A European wide approach to assessing groundwater vulnerability to these activities will allow for a consistent advancement of these industries.

The scientific outputs from VoGERA will be designed to support evidence-based decision making and an integrated approach to management of groundwater vulnerability and associated hazards across Europe in relation to deep sub-surface activities. The information and knowledge gained as part of the project will also be made readily accessible to all stakeholders, including the public, to increase awareness of where groundwater is vulnerable, the reasons for this and how it the ways in which vulnerable groundwater can be protected whilst at the same time allowing responsible use of the sub-surface for the benefit of European citizens and the economy.

Opportunities for collaboration have been identified with the following GeoERA projects:

• RESOURCES: VoGERA will provide additional data for Belgian and Dutch pilot areas on hydraulic properties and groundwater quality.

• HOVER: Methodological guidance is being developed, for example on groundwater age assessment.

• GeoConnect3D: Map of thermal anomalies and geomanifestations could be indicative for vertical flowpaths in Belgian and Dutch pilot site. Results from VoGERA pilot sites may feed back into GeoConnect3d to be included in the database.

• HIKE: Links with the EU fault database, to understand fault locations and behaviours and share data generated within VoGERA.

WORK PROGRESS AND ACHIEVEMENTS DURING PERIOD

Work package 1: Co-ordination and management **Duration: month 1-36**

WP1 comprises the management and co-ordination of the proposed project. It is the role of this work package to facilitate coordination and communication between the other work packages, and ensure delivery of milestones, deliverables and impact. This WP includes Day-to-day coordination (Task 1.1), Budgeting and expenditure (Task 1.2), Coordination of deliverables (Task 1.3) for the whole project, Facilitation of communication between WPs (Task 1.4), Organization of project-wide meetings (Task 1.5) and Tracking risks and innovation potential (Task 1.6) and reporting these back to GeoERA.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D1.1	Kick-off meeting summary	NERC	Report	Confidential	Month 3	Completed	
D1.2	Project review report	NERC	Report	Confidential	Month 20	Completed	
D1.4	Cumulative expenditure report	NERC	Report	Confidential	Month 7, 19	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
1	Kick-off meeting	Month 1-3	Completed	Meeting held
2	Review meeting	Month 20	Pending	

Work package 2: Crosse thematic coordination, data management, interaction w Duration: month 1 - 36

The work package has the following objectives:
1. To define and coordinate information for databases and the GIP from VoGERA with other GeoERA projects, and develop a Data Management Plan (DMP) in collaboration with the GIP team in order to make data findable, accessible, interoperable and reusable according to GeoERA D1.3 and the H2020 “FAIR” principles.
2. To develop a project communication, dissemination and exploitation plan through social media, the project web site and scientific journals. Where required this will be in collaboration with the other themes and the GeoERA secretariat.

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Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
2,1	Data management plan	GEUS	Report	Confidential	Month 6	Completed	
2,2	List of prioritized Information Products for the GIP	VMM	List of prioritised data	Public	Month 16	Completed	
2,4	Communication, Dissemination and Exploitation Plan	GEUS	Report	Confidential	Month 12	Completed	
2.5-1	Workshops for European and regional stakeholders	TNO	Report	Public	Month 1	Completed	This is a short report on the first stakeholder meeting for the VoGERA project, held on 30th of November 2018, in Brussels. Initially this stakeholder meeting was planned to coincide with the GeoERA Kick-off on the 5th of July 2018, but due to time constraints permission was sought from, and granted by, the Executive Board to postpone it.
2,6	Open access scientific publicatios and presentations at national and international conferences (continuous)	TNO	Abstract/ presentation/ publication	Public	Continuous	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
4	Data management plan (DMP)	Month 6	Completed	DMP report completed

Work package 3: Process understanding **Duration: month 1 - 36**

WP3 is focused on demonstrating and understanding particular processes and pathways between deep energy activities and shallow groundwater through information and data review and pilot studies. WP3 will begin with a data review of processes and pathways from deep sub-surface energy activities to shallow groundwater, including assessing the infrastructure and data available at the pilot areas, Data review, Task 3.1 (Month 1 to 6). Based on the Data review, further data collection and hydrogeological and geophysical investigations will be planned for the pilot sites, ensuring a harmonized data collection phase between the sites in Task 3.2, Planning data collection, (Month 6 to Month 12). The hydrogeological investigations at the pilot sites Task 3.3, Pilot investigations, will take place from Months 13 to 24 and the results will be combined with the existing data (Task 3.1). Months 25 to 32 will be used for analysis and testing of the preliminary methodology developed in Task 3 from WP4 (Task 4.2) and to produce groundwater vulnerability assessments illustrated with maps/geological models to show shallow groundwater vulnerability at the pilot study sites, Task 3.4, Vulnerability assessments at the pilot study sites. Documentation and reporting will be carried out during execution of the tasks and combined into reports in Task 3.5, Documentation and reporting.

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
3,1	Technical report on evidence for potential pathways for groundwater contamination from subsurface energy activities and investigation/ data collection plan technical report	TNO	Report	Public	Month 12	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
6	Data review	Month 12	Completed	presentations at project meeting
7	Investigation/data collection plan	Month 12	Completed	presentations at project meeting

Work package 4: WP name **Duration:**

WP4 began with the development of conceptual models for a range of deep sub-surface energy activities and their processes and hazards for shallow groundwater based on literature review and experience of the participants (Conceptual models of pathways, Task 4.1, Month 1 to 12). A preliminary approach is under development for assessing the risks and vulnerability to groundwater (Developing vulnerability methodology, Task 4.2, Month 12 to 21). The conceptual models from Task 4.1 and the preliminary methodology of Task 4.2 will also evaluated with stakeholder input and results from the pilot studies in WP3 (Methodology evaluation, Task 4.3, Month 24 to 32;). The methodology will be revisited and modified according to feedback as part of the evaluation process. Documentation will be carried out during execution of the tasks and combined into reports (Documentation and reporting, Task 4.4).

Deliverables

Deliverable no.	Deliverable name	Short name of lead participant	Type	Dissemination level	Delivery date from Contract	Progress	Comments
D4.1	Expanded diagrams of conceptual models identifying potential pathways for energy activity in the deep sub-surface and shallow groundwater vulnerability	NERC	Report	Public	Month 12	Completed	

Milestones

Milestone no.	Milestone name	Delivery date from Contract	Progress	Means of verification
10	Conceptual models	Month 12	Completed	Presentation at project meeting (May 2019)

DEVIATIONS FROM PROPOSAL / WORK PLAN

Has the project partnership identify any deviations from proposal / work plan? *(select:)* Yes

If yes, please fill out the table below:

Description of the deviation (indicate also WP and/or Project partner where the deviation occured)	Description of **corrective measures** adopted:	Does the deviation have an **impact on project outputs**?	Are changes to workplan / budget / … needed? If yes, please specify:
Change in project lead	Dr Sian Loveless (NERC), the project lead in the proposal, stepped down in July 2019. Dr Marco Bianchi (NERC) has taken over the role since then	No	No
Deliverable 2.5-1	This is a short report on the first stakeholder meeting for the VoGERA project, held on 30th of November 2018, in Brussels. Initially this stakeholder meeting was planned to coincide with the GeoERA Kick-off on the 5th of July 2018, but due to time constraints permission was sought from, and granted by, the Executive Board to postpone it.	No	No

PROJECT COMMUNICATION and DISSEMINATION ACTIVITIES
Communicate about project and results, disseminate the project results.

Please select activity	Subcategory	Date	Target audience	Number of people reached	Short name of project participant	Author(s)	Link (if applicable)
MEETINGS	Meeting with international body	sep.18	EU INSTITUTION		Griet Heuvelmans	Griet Heuvelmans	pesentation at CIS werkgroep C (groundwater). To reach EU stakeholders
EVENTS	WORKSHOP	nov.18	GENERAL PUBLIC	27	all	Cis Slenter	
EVENTS	CONGRESS	sep.19	SCIENTIFIC COMMUNITY	500	all	BIANCHI Marco, ZAADNOORDIJK Willem, LOVELESS Sian, BEERTEN Koen, SLENTER Cis; ROTÁR-SZALKAI Ágnes, HINSBY Klaus; MALLIN-MARTIN Daniel, WARD Robert	IAH poster
MEDIA	ONLINE MEDIA	planned ever	GENERAL PUBLIC		all	Cis Slenter	

INSTRUCTIONS
Please select the main activity. Based on selected activity, subcategory will adapt.

PUBLICATIONS	PAPERS
	ABSTRACTS
	SCIENTIFIC PUBLICATION
	NON-SCIENTIFIC PUBLICATION
	THESIS
	TECHNICAL REPORT
	OTHER (please specify: internships, consultation,...)
	PROJECT SPECIFIC PUBLICATION (please specify: leaflet, poster, catalogue, ...)
EVENTS	WORKSHOP
	SEMINAR
	CONFERENCE (tele-conference)
	TRAINING
	EXHIBITION
	PITCH EVENT
	CONGRESS
	OTHER (please specify: internships, consultation, presentations,...)
MEETINGS	INTERNAL PROJECT MEETING
	MEETING WITH OTHER GEOERA PROJECTS
	MEETING WITH NATIONAL BODY
	MEETING WITH INTERNATIONAL BODY
	OTHER
MEDIA	RADIO, TV
	ONLINE MEDIA
	OTHER

Please select and count your target audience. If more that one target aubience was reached, fill in one line per audience.

AUDIENCE	SCIENTIFIC COMMUNITY
	GENERAL PUBLIC
	POLICY MAKERS
	MEDIA
	EU INSTITUTION
	NON-EU INSTITUTION (national, regional, local)
	OTHER (customers)

PROJECT MANAGEMENT

VoGERA employs robust management structures and procedures in order to successfully complete the project. To ensure effective management and coordination of the WP's the following governance bodies have been established:

- Project Assembly: The Project Assembly is the ultimate decision-making body of the consortium where all participants have one vote. They provide top-level strategic decision making and experience to ensure successful project delivery having decision making powers to modify the project plan and consortium.

- Project Board: The Project Board is chaired by Prof. Rob Ward (NERC) and comprise a representative from each participation organization. Their responsibilities include overseeing outputs, quality assurance, dissemination, exploitation, data management, innovation management, conflict resolution and risk review for VoGERA as a whole. They have been meeting via Skype and a briefing note has been distributed for disseminating information and asking for feedback.

- Project Lead: The Project Lead is responsible for the day-to-day management of the project and act as the contact for communication between the overall consortium, Project Board and overarching GeoERA management. Dr. Marco Bianchi took over the role of Project Lead from Dr. Sian Loveless in August 2019.

- Work Package Lead: Each WP have a leading organisation and staff member who oversees the work from their organisation and other participants towards achieving the outlined deliverables. They ensure completion of the outline tasks and deliverables; liaise with and provide report contents to the Project Lead; ensure effective communication throughout WP staff; solve technical issues where possible and monitor and maintain high quality outputs.

- Theme Coordinator: The Project Lead and other relevant staff liaise with the appointed GeoERA groundwater theme coordinator (Mr. Klaus Hinsby), providing detail and updates to facilitate exploitation of synergies between all projects in the theme.

Periodic consortium meetings have been held for the duration of the project. After an initial kick-off meeting arranged within the first three months of the project, the project consortium met in in person in May 2019. Another meeting is planned for February/March 2020. Monthly Skype meeting have been held since the beginning of the project with the aim of discussing project work, technical outputs, dissemination/exploitation/communication outputs, risks, innovation management, interaction with the GIP and other relevant issues.

VoGERA will be working with experienced researchers and established organizations and so overall the project is considered to be low risk. Risks have been assessed and continued assessment as part of the Project Board meetings ensure that any risks are identified and mitigated prior to any effect on the project delivery. The pilot study sites are sites known to the partners involved and generally where they themselves have existing data and infrastructure. Therefore the risks that may be associated with getting data in WP3 and 4 will be minimized. Sites will also be re-assessed for their appropriateness during WP3 Task 2.

IMPACT STATEMENT

Due to the nature of the VoGERA project there are planned and expected to be multiple beneficiaries of the project resulting in the expected impacts. So far, the outcomes of the project have generated the following impact:

- Research activities also improved the cooperation and communication between national/regional sub-surface research institutes and European stakeholders that deal with groundwater resource management.

- The deliverable 3.1 “Technical report on evidence for potential pathways for groundwater contamination from subsurface energy activities and investigation/ data collection plan technical report” improved knowledge-sharing across Europe, in particular in relation to intercalibration procedures and standards for geophysical and monitoring equipment used for sub-surface characterization and designing investigations to assess groundwater vulnerability to deep sub-surface industrial activities. The beneficiaries of this knowledge are sub-surface research institutes and other research communities, but also regional and local authorities and stakeholders such as drinking water supply companies can benefit from the increased understanding of the geology at the pilot sites.

- The deliverable 4.1 “ Expanded diagrams of conceptual models identifying potential pathways for energy activity in the deep sub-surface and shallow groundwater vulnerability” presents conceptual models of groundwater vulnerability to deep sub-surface energy activities and possible contamination pathways. These models harmonized understanding and management of the groundwater vulnerability. The beneficiaries are Sub-surface research institutes and groundwater resource managers in relation to energy, Groundwater Directive and EU Energy Policy. Institutes may also benefit from a common understanding of groundwater vulnerability from deep sub-surface activities and will be able to use these in communication with the public.

The VoGERA WP2 coordinates dissemination, communication and the relationship with the GeoERA Information Platform (GIP). VoGERA adheres to the overall dissemination, communication and exploitation plan of the GeoERA project. Results have been disseminated via the wider GeoERA network . Results of the project were presented to the groundwater scientific and consultancy community at European and International conferences (2019 IAH Congress in Malaga, Spain and 2020 EGU General Assembly in Vienna).

CUMULATIVE FINANCIAL STATEMENT

	A. Direct personnel costs	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
	Actual			(0,25*A+B)				
1. NERC	15.159,02	4.399,61	0,00	4.889,66	24.448,29	29,70%	7.261,14	17.187,15
2. TNO	46.676,06	1.989,41	0,00	12.166,37	60.831,84	29,70%	18.067,06	42.764,78
3. VMM	8.196,43	852,00	0,00	2.262,11	11.310,54	29,70%	3.359,23	7.951,31
4. SCK•CEN	10.415,00	1.178,41	0,00	2.898,35	14.491,76	29,70%	4.304,05	10.187,71
5. MBFSZ	4.277,96	208,37	0,00	1.121,58	5.607,92	29,70%	1.665,55	3.942,37
6. GEUS	2.580,70	0,00	0,00	645,18	3.225,88	29,70%	958,08	2.267,79
7. GEOINFORM	1.075,69	0,00	0,00	268,92	1.344,61	29,70%	399,35	945,26
					121.260,83		36.014,47	85.246,36

Date:
Person responsible:

Cumulative Use of Resources Connected to 8a

Personnel costs Actual	Person months	Associated WP	Amount
	0,785930233	WP3	2814,74
	1,003953488	WP4	3616,49
			6.431,23

Other direct costs	Description	Category	Associated WP	Costs
				#REF!
				#REF!

Subcontracting	Supplier	Description	Associated WP	Cost
				0,00
				0,00

FINANCIAL STATEMENT FOR PP 1 - British Geological Survey (NERC)

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	B. Other direct costs	C. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind
1.	15.159,02	4.399,61	0,00	4.889,66	24.448,29	29,70%	7.261,14	17.187,15

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,07	WP1	6087,48
	0,63	WP2	2640,31
	0,79	WP3	2814,74
	1,00	WP4	3616,49
			15.159,02

Other direct costs	Description	Category	Associated WP	Costs
	GeoERA VoGERA meeting, Budapest, Hungary, Sian Loveless, Rob Ward and Daniel Mallinmartin,	Travel	WP1	1.125,56
	GeoERA VoGERA meeting, Vienna, Austria. Rob Ward, 9-11 October 2018	Travel	WP1	307,55
	GeoERA VoGERA Project meeting, Brussels, Belguim. Rob Ward, Sian Loveless and Daniel Mallinmartin,	Travel	WP1	2.665,92
	GeoERA VoGERA project meeting, Nottingham. Sian Loveless, 23rd October 2018	Travel	WP1	300,58
				4.399,61

Subcontracting	Supplier	Description	Associated WP	
				0,00

FINANCIAL STATEMENT FOR PP 2 - TNO

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	46.676,06	1.989,41	0,00	12.166,37	60.831,84	29,70%	18.067,06	42.764,78

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	1,13	WP1	7.833,86
	5,42	WP3	32.404,23
	0,95	WP4	6.437,97
			46.676,06

Other direct costs	Description	Category	Associated WP	Costs
	Meeting Budapest	Travel	WP1	995,72
	Meeting Brussels	Travel	WP3	161,95
	Groundwater sampling materials	Equipment/consumabl	WP3	831,74
				1.989,41

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 3 - VMM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	8.196,43	852,00	0,00	2.262,11	11.310,54	29,70%	3.359,23	7.951,31

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,2	WP1	964,29
	1	WP2	4.821,43
	0,5	WP3	2.410,72
			8.196,43

Other direct costs	Description	Category	Associated WP	Costs
	project meeting Budapest	Travel	WP3	852,00
				852,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 4 - SCK•CEN

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	10.415,00	1.178,41	0,00	2.898,35	14.491,76	29,70%	4.304,05	10.187,71

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,3798	WP1	3.844,82
	0,6356	WP3	6.570,18
			10.415,00

Other direct costs	Description	Category	Associated WP	Costs
	Partner meeting Budapest 201	Travel	WP3	856,45
	Other meetings	Travel	WP3	321,96
				1.178,41

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 5- MBFSZ

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	4.277,96	208,37	0,00	1.121,58	5.607,92	29,70%	1.665,55	3.942,37

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,28	WP2	370,45
	1,40	WP3	2.648,49
	0,61	WP4	1.259,02
			4.277,96

Other direct costs	Description	Category	Associated WP	Costs
	Brussels Stakeholder Meeting	travel	WP2	208,37
				208,37

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 6 - GEUS

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	2.580,70	0,00	0,00	645,18	3.225,88	29,70%	958,08	2.267,79

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,34	WP2	2.580,70
			2.580,70

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00

FINANCIAL STATEMENT FOR PP 7 - GEOINFORM

Fill in only blue-colored cells.

	A. Direct personnel costs Actual	C. Other direct costs	B. Direct costs of subcontractiong	D. Indirect costs (0,25*A+B)	TOTAL COSTS	Reimbursement rate	GeoERA contribution	Partner in-kind contribution
2.	1.075,69	0,00	0,00	268,92	1.344,61	29,70%	399,35	945,26

Explanations

Personnel costs Actual	Person months	Associated WP	Amount
	0,05	WP1	250,28
	0,06	WP2	273,97
	0,06	WP3	288,45
	0,05	WP4	262,98
			1.075,69

Other direct costs	Description	Category	Associated WP	Costs
				0,00

Subcontracting	Description	Associated WP	Cost
			0,00