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

Deliverable 4.7

PERIODIC PROGRESS REPORTS SUBMITTED TO ERA-NET COMMITTEE

Authors and affiliation:
Barbara Simić[1]
Jasna Šinigoj[1]
Aleksandra Trenchovska[1]
[1 GEOZS]

E-mail of lead author:
Barbara.simic@geo-zs.si

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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 more integrated and efficient management and more responsible and publicly accepted exploitation and use of subsurface resources. The Joint Call resulted in 15 GeoERA funded Projects running from July 2018 until June or October 2021. With the Projects, GeoERA aims to achieve the objectives set in Description of work (DOW). Progress of the Projects will be monitored regularly, since GeoERA's objectives depend upon their success.

The GeoERA Work package 4, "Follow-up and monitoring of projects resulting from the Joint Call", is concerned with the monitoring of the Projects to ensure timely delivery and quality of implemented Project activities, and whether they are in line with the Project's DOW and the strategic objectives, goals and scope of GeoERA (Joint call document no. 9: http://geoera.eu/wp-content/uploads/2016/11/GeoERA-Call-Document-No.-9-SRTs-20171017.pdf). The Projects report on their effectiveness of implementation, overall progress, achieving scientific and professional goals and theme objectives two times during the Project duration. The reporting and monitoring procedures with respective templates are described in two Project implementation documents: Monitoring indicators and procedures (Project Implementation doc. no. 1: https://geoera.eu/wp-content/uploads/2018/09/GeoERA-Call-Document-No-PI-1_revised.pdf) and Reporting templates (Project Implementation document no. 2: https://geoera.eu/wp-content/uploads/2018/09/GeoERA-Call-Document-No-PI-2_revised.pdf).

Project Agreement	The entire Project Agreement, including all its Appendixes.
DOW	Description of work – The Project Plan (Appendix 3 of the Project Agreement)
EB	Executive Board of GeoERA
MRO	Monitoring and Reporting Officer
MPPR	Midterm Project Progress Report
FPPR	Final Project Progress Report
TRR	Technical Review Report
GE	GeoEnergy
RM	Raw Matherials
GW	GroundWater
IP	Information Platform

TABLE OF CONTENTS

1 REPORTING AND MONITORING PROCEDURE OVERVIEW 5
1.1 Deviations in the procedure 5

2 LEVEL 1 – MONITORING OF PROGRESS INDICATORS 7
2.1 Results 7

3 LEVEL 2 – SCIENTIFIC REVIEW 11
3.1 Results 11

4 LEVEL 3 – REVIEW OF THE THEME PROGRESS 13
4.1 Results 13

5 LEVEL 4 - GEOERA PROGRESS EVALUATION 15
5.1 Results 15

6 COMMUNICATION AND DISSEMINATION ACTIVITIES 17
6.1 Results 18

7 CONCLUSIONS 25

8 ANNEX 1: LIST OF EVALUATORS IN THE FINAL EVALUATION 26

9 ANNEXES 28

LIST OF TABLES

Table 1: GeoERA Monitoring and evaluation framework 5
Table 2: Comparison of GeoERA original and amended plan 6
Table 3: Level 1 ranking of the Projects progress 7
Table 4: Achieved assessment on the Level 1 per Theme in the first reporting period (midterm) and second reporting period (final) with comparison 8
Table 5: Budget overview per theme 9
Table 6: Reached spending percentages per Theme 9
Table 7: Finalized deliverables per Theme 10
Table 8: Level 2 ranking of the Projects 11
Table 9: Level 2 ranking overview per Theme 12
Table 10: Level 3 ranking of the Projects progress 13
Table 11: Level 3 ranking overview per Theme 14
Table 12: Level 4 ranking of the Projects progress 15
Table 13: Level 4 ranking overview per Theme 16
Table 14: Communication and dissemination ranking of the Projects progress 17
Table 15: Pre-defined activities for Projects to select from in the FPPR 17
Table 16: Suggested target groups for Projects to select from in the FPPR 18
Table 17: Communication and dissemination activities ranking per Theme 18
Table 18: Number of activities 18
Table 19: Number of Activities per theme 19
Table 20: Number of Activities for Online media per project 20
Table 21: Number of Activities for PUBLICATIONS per project 21
Table 22: Key Performance Indicators and expected results per year (from D5.1: GeoERA Dissemination and Exploitation Plan). 22
Table 23: Number of Activities per projects 23

Table 24: Structure of sheet “Communication, dissemination” in the FPPR 24
Table 25: Overall overview of Projects progress per Theme 25

LIST OF FIGURES

Figure 1: Cumulative number of deliverables per month for all projects: originally planned, modified and submitted 10
Figure 2: Overview of activities 19

1 REPORTING AND MONITORING PROCEDURE OVERVIEW

Each Project was required to submit two Project Progress Reports, the Midterm Project Progress Report [hereinafter referred to as MPPR] for the first reporting period from June 2018 to December 2019 and the Final Project Progress Report [hereinafter referred to as FPPR] for the second reporting period from January 2020 to the end of the project. After the submission of the MPPR and FPPR, the project progress was presented in the online Review meeting, which was attended by the Monitoring and Reporting Officer [hereinafter referred to as MRO], scientific reviewer(s), Theme Coordinator (s), and Stakeholder (s). Each participant represents the monitoring and evaluation level of project progress (see Table 1).

The evaluator completes the appropriate section of the Technical Review Report document [hereinafter referred to as TRR], which is part of Project Implementation Document No. 2: Reporting Templates. The completed TRR is sent to the Project Lead and is attached to this report.

The results of the Midterm review were analysed, described, and submitted to the European Commission in the deliverable D4.4 - Periodic Progress Reports submitted to ERA-NET Committee in April 2020. This report updates the analysis with data from the Final review, focusing on the second period.

Table 1: GeoERA Monitoring and evaluation framework

Level	Aim	Evaluator	Method	Input → Output
1 – Monitoring of progress indicators	Monitoring effectiveness of implementation in respect to finance, time and administration	Monitoring and reporting officer	Desk-based	MPPR → TRR (section 1)
2 – Scientific review	Quality review of deliverables and review of achieved scientific and professional goals	Scientific reviewer	Desk-based	Deliverables; project impact → TRR (section 2)
3 – Review of the theme progress	Review of achieved theme Specific Research Topics	Theme coordinator	Desk-based	MPPR → TRR (section 3)
4 – GeoERA progress evaluation	Overall project progress and general recommendations	Stakeholder	Discussion at Review meeting	TRR (sections 1 – 3) → TRR (section 4)

Source: Project Implementation doc. no. 1: https://geoera.eu/wp-content/uploads/2018/09/GeoERA-Call-Document-No-PI-1_revised.pdf

1.1 Deviations in the procedure

Due to the global epidemic situation, there were some deviations from the original schedule set out in Project Implementation Documents 1 and 2. The closures impacted both the work on GeoERA as a programme and the activities of our 15 projects. In 2020, we revised our programme and project plans, agreed on a new schedule, and submitted the GeoERA

amendment for renewal and approved extensions to the 14 Projects. All of this was done with the intention of achieving the goal set at the beginning of the GeoERA programme to integrate GSO information and knowledge on subsurface energy, water, and natural resources to support the sustainable use of the subsurface in addressing Europe's grand challenges.

At the end of 2020, GeoERA was extended for 2 months, from 31-12-2021 to 28-02-2022; 14 of 15 projects also took the opportunity to extend for 4 months, from 30-06-2021 to 31-10-2021. The extensions also updated monitoring and evaluation procedures.

Table 2: Comparison of GeoERA original and amended plan

Month - ORIGINAL	Month - AMENDED	Activity
		PROJECT ACTIVITIES
30.06.2020	31.10.2021	Project end
31.07.2021	20.11.2021	Project Progress Reporting
30.09.2021	13.12.2021	Review meetings (on-line)
		MONITORING AND EVALUATION ACTIVITIES
30.09.2021	31.12.2021	Providing the completed Technical Review Report
30.09.2021	18-20.01.2022	Impact assessment
30.09.2021	18-20.01.2022	Impact assessment
		GeoERA COORDINATION ACTIVITIES (GeoERA Secretariat)
31.07.2021	30.11.2021	D4.6 Completed monitoring reports based on Project Progress Reports (2) (WP4 - GeoZS)
31.12.2021	31.12.2021	D1.12 Information on cumulative expenditure - Art 20.5 - 2021 (WP1 - TNO)
30.09.2021	18-20.01.2022	Final conference in Brusselss
31.10.2021	31.01.2022	D4.7 Periodic Progress Reports submitted to ERA-NET committee (2) (WP4 - GeoZS)
31.12.2021	28.02.2022	D4.5 Report on Final Impact Assessment (WP4 - GeoZS)
31.12.2021	28.02.2022	D1.8 Final Report (WP1 - TNO)
31.12.2021	28.02.2022	D1.13 Information on selected projects (2) (WP1 - TNO)
31.12.2021	28.02.2022	D5.7 Report on final seminars (WP5 - GEUS)
		BENEFICIARY LEVEL
15.12.2021	15.12.2021	Report on expenditures
31.10.2021	31.01.2022	Reporting on costs after project end
31.12.2021	28.02.2022	GeoERA end
28.02.2022	30.04.2022	Reporting on organisation level

Source: Based on original Grant Agreement, Grant Agreement amendment and 14 Project Plan amendments

2 LEVEL 1 – MONITORING OF PROGRESS INDICATORS

The aim of monitoring was to check the effectiveness of implementation in terms of finances, time, and management using indicators defined in the project descriptions [hereinafter referred to as DOW]. At the beginning of GeoERA, the Geological Survey of Slovenia established the Monitoring team that was in constant communication with the Projects, assisted the Project Leads, and reviewed the submission of deliverables, the consumption of financial resources, and the overall project management procedures.

The Projects were on a scale of 1 to 5. The assessment scale is explained in a table below.

Table 3: Level 1 ranking of the Projects progress

Scale	Rank	Description
5	**Overachiever**	The project has achieved all objectives and goals for the period and has even exceeded expectations
4	**Excellent progress**	The project has fully achieved its objectives and goals for the period
3	**Good progress**	The project has achieved most of its objectives and goals for the period with relatively minor deviations
2	**Acceptable progress**	The project has achieved some of its objectives
1	**Unsatisfactory progress**	The project has failed to achieve critical objectives

Source: Technical Review Reports

2.1 Results

The average assessment of the Projects on level 1 in the second reporting period is 4.13 (3.87 in the first reporting period), which means that the average project achieved a rank of 4 – the project fully met its objectives and goals for the period. Of the 15 Projects, three achieved a Rank 5 - Overachiever (0 in the first reporting period), eleven achieved a Rank 4 - Excellent progress (13 in the first reporting period), and one achieved a Rank 3 - Good Progress (2 in the first reporting period).

The three projects that reached rank 5 are HotLime, HIKE, and GIP -P. The HotLime project is the only one that managed to meet the original project schedule without delay. Despite the delays in other projects, it managed to overcome the difficulties and finish the project on time. The HIKE project achieved more than expected at the beginning and exceeded its original goals. The GIP -P project was the most complex of the projects, as it had to deal with managing and merging all the data from the other 14 projects, which faced their own challenges and schedule delays. The GIP -P project managed to overcome the problems and even add more deliverables to its already extensive list, achieving more than expected at the outset.

On the other hand, the EuroLithos project is the lowest scoring project. The consortium faced challenges and delays, managed to achieve all the set goals, but failed to deliver a final and important deliverable, while others needed to improve quality.

Table 4: Achieved assessment on the Level 1 per Theme in the first reporting period (midterm) and second reporting period (final) with comparison

	Assesment level 1 monitoring - MIDTERM	Assesment level 1 monitoring - FINAL	Increase / Decrease of the level 1 assessment per theme in the second period
GeoEnergy	4,00	4,33	1,08
GroundWater	3,75	4,00	1,07
Raw Materials	4,00	3,75	0,94
Information Platform	3,00	5,00	1,67

Source: Monitoring team's internal tables

The above table shows that the Projects have taken measures to improve their management and have taken into account the recommendations of the Monitoring team during the mid-term reviews, improving the overall implementation of the projects in the second reporting period.

Project budgets were changed at the beginning of the second reporting period. The main reason was to adjust for the epidemic situation, lockdowns, and general travel bans. Most of the changes resulted in a decrease in travel costs as part of the Direct other costs category and an increase in Direct pesonnel costs as workload increased in almost all projects. At the same time, budget transfers were made between some beneficiaries as project activities were transferred between partners. Some partners were so constrained that project outcomes could have been compromised without the transfers. These transfers were reported to the GeoERA Secretariat and explained in the project plan amendments.

In the last year of the projects there were still budgetary changes. The external situation required adaptability from all project partners, which led to changes in the budget and person-months. The amounts reported at the end of the projects differ from the amended plans. The GeoERA Secretariat and Monitoring Team did not restrict transfers between categories, projects, nor Beneficiaries because the budget modifications do not require an official GeoERA amendment. Nevertheless, the Project leads and Beneficiaries were required to report the modifications to the Monitoirng team and the Secretariat, as part of sound project and financial management.

The overall spending goal on GeoERA is reaching EUR 31,303,030.39 on transnational projects, as agreed in the GeoERA Grant Agreement. The Beneficiaries have reported EUR 30,464,364.47 in both reporting periods, including costs after projects end (participation at review meeting, participation on GeoERA concluding conference; publication fees for scientific articles with project results).

Table 5: Budget overview per theme

Theme	Original budget plan	Modified budget plan*	Reported in first reporting period (until 31/12/2019)**	Reported in second reporting period	Total reported
GeoEnergy	11.130.421,27	11.140.404,53	5.344.291,21	6.662.208,66	12.006.499,87
GroundWater	7.696.418,00	7.830.445,99	2.845.246,63	4.722.699,81	7.567.946,44
Raw Materials	7.890.309,80	7.757.752,68	2.893.967,84	4.482.335,59	7.376.303,43
Information Platform	3.860.803,75	3.693.304,59	1.371.882,27	2.141.729,47	3.513.611,74
TOTAL	***30.577.952,82***	***30.421.907,78***	***12.455.387,94***	***18.008.973,53***	***30.464.361,47***

Source: Monitoring team's internal tables

** through amendments; mainly as response to pandemic situation or adaptation to project activities*

*** some partner made recallculations at later stage*

Table 6: Reached spending percentages per Theme

Theme	Budget spending percentage (to the original plan)***	PersonMonths spending percentage (to the original plan)
GeoEnergy	107,87%	114,89%
GroundWater	98,33%	111,80%
Raw Materials	93,49%	109,96%
Information Platform	91,01%	107,86%
TOTAL	***99,63%***	***111,96%***

Source: Monitoring team's internal tables

**** total increase should not exceed 10% per theme*

The epidemic situation required a change in the Project plans, not only in terms of budget and number of person-months, but also in terms of planned deliverables. Most deliverables were combined because it made sense to do so (for example, instead of 6 separate deliverables for one newsletter each → one deliverable containing 6 newsletters). Some deliverables had to be deleted, since the number of public events decreased (for example, promotion of a project at a conference, that did not take place in the project implementation period), and some deliverables were added to cover the additional work done. The Table 7 shows the changes and the number of submissions.

On GroudWater theme 2 deliverables were officially not submitted. The project HOVER has scheduled D2.2b Provision of data for upload and testing of GIP as a deliverable twice, in month 18 and later updated in month 30. The data were actually delivered to the project GIP -P, but in the form of raw data rather than a written deliverable. We believe that the project fully met all of its objectives, but failed to submit this deliverable using the deliverable template. The data and the results were presented at the review meeting.

On RawMaterials theme the EuroLithos project has failed to submit the deliverable D6.2 Evaluation of IP prototypes. The project assessment at Level 1 has been lowered as the result. Not submitting D6.2 will not impact the overall GeoERA objectives.

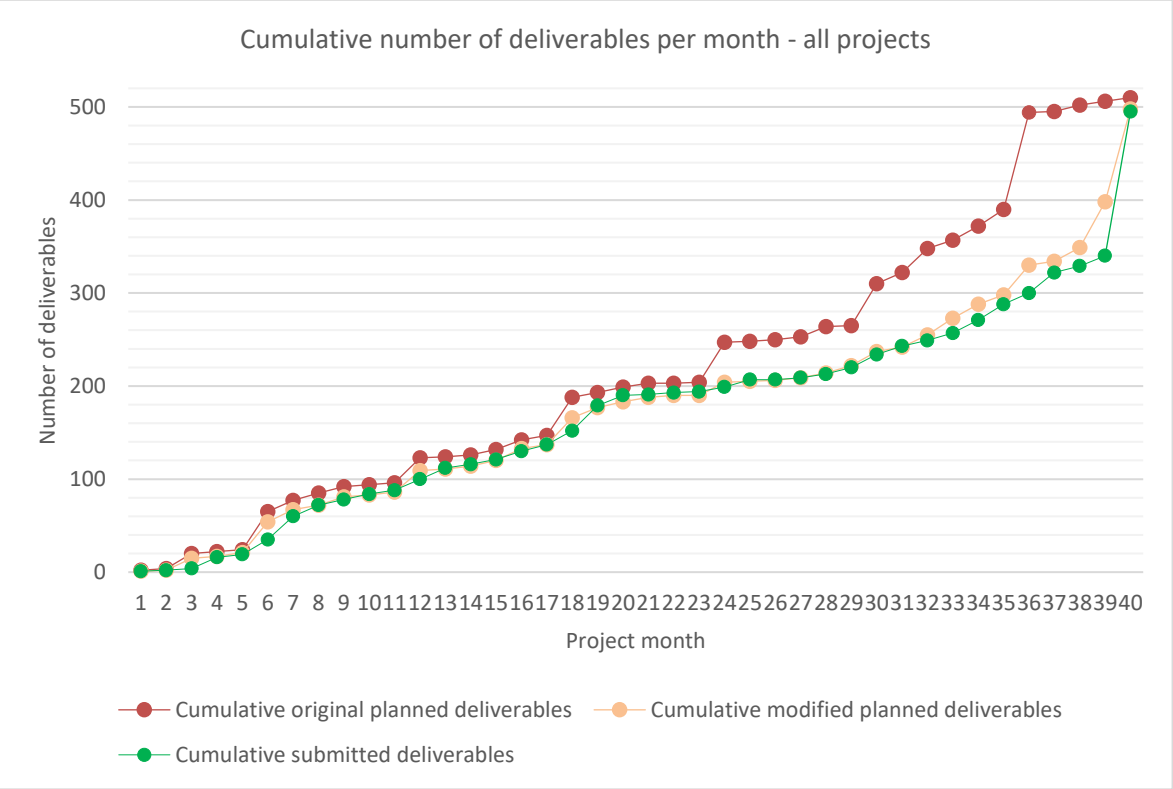
Table 7: Finalized deliverables per Theme

Theme	Original number of planned deliverables	Modified number of deliverables*	Number of deliverables submitted in first reporting period (until 31/12/2019)	Number of deliverables submitted in second reporting period	TOTAL number of submitted deliverables	Deliverable submission percentage	Number of deliverables not submitted
GeoEnergy	171	165	46	119	165	100,00%	0
GroundWater	126	122	41	79	120	98,36%	2
Raw Materials	148	146	48	97	145	99,32%	1
Information Platform	65	65	26	39	65	100,00%	0
	510	***498***	***161***	***334***	***495***	***99,40%***	***3***

Source: Monitoring team's internal tables

** through amendments; mainly as response to pandemic situation or adaptation to project activities*

Figure 1: Cumulative number of deliverables per month for all projects: originally planned, modified and submitted



Source: Monitoring team's internal tables

3 LEVEL 2 – SCIENTIFIC REVIEW

The scientific evaluation aims to evaluate the quality of the submitted deliverables and the scientific and professional objectives achieved based on the expected and reported impact. Each project deliverable was evaluated by one or two Scientific reviewers and two data management reviewers. All deliverables for all Projects were accepted; minor corrections were suggested for some, but no major corrections were required.

Projects were rated on a scale of 1 to 5 in response to the questions: Has the quality as a whole been achieved according to the objectives? Has the project as a whole been making satisfactory progress? The rating scale is shown below.

Table 8: Level 2 ranking of the Projects

Scale	Rank	Description
5	**Overachiever**	The project has achieved all objectives and goals for the period and has even exceeded expectations
4	**Excellent progress**	The project has fully achieved its objectives and goals for the period
3	**Good progress**	The project has achieved most of its objectives and goals for the period with relatively minor deviations
2	**Acceptable progress**	The project has achieved some of its objectives
1	**Unsatisfactory progress**	The project has failed to achieve critical objectives

Source: Technical Review Reports

3.1 Results

The average assessment of the Projects on level 2 in the second reporting period is 4.20 (4.00 in the first reporting period), which means that the average project achieved a rank of 4 – the project fully met its objectives and goals for the period. Of the 15 Projects, three achieved a Rank 5 - Overachiever (0 in the first reporting period), and twelwe achieved a Rank 4 - Excellent progress (15 in the first reporting period).

The three projects that reached rank 5 are GeoConnect3D, Mintell4EU and GIP -P. The GeoConnect3D project reflects a very good findings or starting points for further projects that could be implemented in different EU programmes. The Mintell4EU project achieved to update and upgrade the minerals intelligence database for Europe and united different projects under one comprehensive platform the e-European Minerals Yearbook and mineral resources database including touristic mines. The upgrading of the database is planned within further project towards Geological Service for Europe and harvesting in the period between projects is also assured. The GIP-P project has achieved all objectives and goals and has even exceeded expectations by establishing a free text search system, 3D model viewer, SOLR based repository and the extension for download copies of the uploaded GeoPackages.

Table 9: Level 2 ranking overview per Theme

	Assesment level 2 monitoring - MIDTERM	Assesment level 2 monitoring - FINAL	Increase / Decrease of assessment per theme in the second period
GeoEnergy	4,00	4,17	1,04
GroundWater	4,00	4,00	1,00
Raw Materials	4,00	4,00	1,00
Information Platform	4,00	5,00	1,25

Source: Monitoring team's internal tables

The above table shows that the Projects have taken measures to improve their data management and have taken into account the recommendations of the Scientific reviewers during the mid-term evaluations, thus achieving the set scientific objectives and project results. Good data management by the projects in close collaboration with GIP -P has ensured that the results of all GeoERA projects are accessible on a single, user-friendly platform. The results of the 14 projects are published in the European Geological Data Infrastructure (EGDI) database, which presents the results in maps, systematizes the metadata, provides a document repository, project vocabularies, and multilingual keyword thesauri to ensure the highest level of interoperability and documentation of scientific terms and concepts.

4 LEVEL 3 – REVIEW OF THE THEME PROGRESS

During the implementation of the Projects, Theme Coordinators have proven to be an essential part of the collaboration between the projects and the communication and dissemination activities within each Theme. Theme progress review aims to assess the contribution of the projects to the thematic objectives. All Projects were reviewed by their respective Theme coordinator, with the exception of GIP -P and HIKE. The GIP -P project is the overarching project that combines data from all projects into one comprehensive system. Because of its complexity and linkage to other projects, GIP -P was evaluated by all Theme coordinators. The HIKE project was evaluated by two Theme coordinators, the Geothermal Energy Coordinator and the Information Platform Coordinator, because the Geothermal Energy Coordinator is also the project manager of HIKE.

Projects were assessed on a scale from 1 to 5 as an answer to the question: Has the project as a whole achieved the objectives and expected impact of the Theme? The ranking scale is explained in table below.

Table 10: Level 3 ranking of the Projects progress

Scale	Rank	Description
5	**Overachiever**	The project has achieved greater impact on project theme and/or other themes than expected
4	**Excellent progress**	The project has fully achieved its objectives and goals towards the theme as expected
3	**Good progress**	The project has achieved most of its impact towards the theme for the period with relatively minor deviations
2	**Acceptable progress**	The project has minor impact
1	**Unsatisfactory progress**	The project has failed to achieve critical objectives and/or has no impact on the theme

Source: Technical Review Reports

4.1 Results

The average rating of the Projects' based on theme contribution is 4.40 (3.57 in the first reporting period), which means that on average the projects have made good to excellent progress. Of the 15 projects, eight were rated 5 (two in the first reporting period), six were rated 4 (four in the first reporting period), and one was rated 3 (eight in the first reporting period).

At the mid-term evaluation, each project received recommendations from the respective theme coordinator. Based on the score achieved at the final evaluation, the projects took the recommendations into account and achieved a higher score for their themes. The impact that the projects had on other projects and themes is described in the GeoERA D4.5 Impact assessment.

Table 11: Level 3 ranking overview per Theme

	Assesment level 3 monitoring - MIDTERM	Assesment level 3 monitoring - FINAL	Increase / Decrease of assessment per theme in the second period
GeoEnergy	4,00	4,17	1,04
GroundWater	3,75	5,00	1,33
Raw Materials	3,50	3,75	1,07
Information Platform	3,33	5,00	1,50

Source: Monitoring team's internal tables

The projects that received highes scoring 5 are: GeoConnect3D, HOVER, TACTIC, RESOUCE, VoGera, Mintell4EU, and GIP -P, each making a significant contribution to the progress of the theme and the potential for further development in future projects. On the other hand, the project EuroLithos have reached the lowest rank 3.

5 LEVEL 4 - GEOERA PROGRESS EVALUATION

The goal and purpose of Level 4 is to assess the overall progress of the project based on stakeholder understanding and expectations of the project and the GeoERA project as a whole. Stakeholder views are valuable because they see a broader picture and can influence GeoERA's impact.

Projects were assessed on a scale from 1 to 5, as an answer to the question: Has the Project as a whole been making satisfactory progress according to your understanding and expectations of the GeoERA project? The ranking scale is explained in the table below.

Table 12: Level 4 ranking of the Projects progress

Scale	Rank	Description
5	**Overachiever**	The project has exceeded expectations
4	**Excellent progress**	As expected
3	**Good progress**	Minor recommendations given below
2	**Acceptable progress**	Below expectations
1	**Unsatisfactory progress**	The project did not meet expectations

Source: Technical Review Reports

5.1 Results

As explained in the first chapter, not all Projects were evaluated by two Stakeholders. One project, MUSE, was evaluated by three stakeholders, curtesy of Project lead. All other projects were assigned two stakeholders, majority has been present on-line at the review meting, for those who could not attend, the review meting has been recorded. Three stakeholders have informed the GeERA Secretariat and the Monitoring team after the review meetings, that they will not be able to assess the projects due to unforeseen changes in personal circumstances, the information has been received to late for the Secretariat to act and appoint different stakeholder. Therefore, six projects were evaluated by one stakeholder: GARAH, HotLime, 3DGEO-EU, GeoConnect3D, TACTIC and VoGera.

The average stakeholder rating for the projects is 4.17 (3.9 in the first reporting period), which means that the average project achieved a rank of 4 - Excellent progress. Of the 15 projects, three received a score of 5 (one in the first reporting period), one received a score of 4.5 (one in the first reporting period), nine received a score of 4 (nine in the first reporting period), and one received a score of 3 (two 3.5 and two 3 in the first reporting period).

The ranking of projects per theme improved in the second reporting period, except for the Theme Raw Materials. Here, the EuroLithos project received the lowest rank of 3. The projects that received the highest rank of 5 are: MUSE , HOVER and GIP -P.

Table 13: Level 4 ranking overview per Theme

	Assesment level 4 monitoring - MIDTERM	Assesment level 4 monitoring - FINAL	Increase / Decrease of assessment per theme in the second period
GeoEnergy	4,17	4,25	1,02
GroundWater	3,62	4,25	1,17
Raw Materials	3,87	3,75	0,97
Information Platform	3,50	5,00	1,43

Source: Monitoring team's internal tables

6 COMMUNICATION AND DISSEMINATION ACTIVITIES

Under Level 1, monitoring of communication and dissemination activities were assessed separately. Projects and GeoERA as a whole collaborate with other projects, target groups, stakeholders, and end users through these activities. Projects reported on activities for the whole project period, from 01-07-2018 until the end of the project, in the FPPR, Sheet 6: Communication, Dissemination.

Based on reported activities, projects were rated on a scale of 1 to 5 to answer the question: Are the dissemination activities adequate? The rating scale is explained in the following table.

Table 14: Communication and dissemination ranking of the Projects progress

Scale	Rank	Description
5	**Overachiever**	The projects dissemination activities have exceeded expectations
4	**Excellent progress**	The projects dissemination activities have fully achieved its expectations
3	**Good progress**	The projects dissemination activities are adequate
2	**Acceptable progress**	The projects dissemination activities are acceptable
1	**Unsatisfactory progress**	The project has failed to disseminate.

Source: Technical Review Reports

To facilitate reporting and follow-up, reporting criteria were established in advance. The table below shows the activities with subcategories and target groups from which the Projects selected the activities used for reporting.

Table 15: Pre-defined activities for Projects to select from in the FPPR

Activity	Subcategory
Publications	Abstracts, scientific publication, non-scientific publication, thesis, technical report, leaflet, poster, newsletter, oral presentation, white paper, other
Events	Workshop, webinar, seminar, training, exhibition, pitch event, congress, other
Meetings	Internal project meeting, meeting with other geoera projects meeting with other projects, meeting, other
Media	Radio / tv, newspaper, magazine, other
Online media	Website, facebook, twiter, youtube, linkedin, researchgate, blog, newspaper, pinterest, other

Source: Final Project Progress Reports, sheet 6

The following table shows the predefined target audiences from which the Projects selected the audience to be reached with specific communication and dissemination activities. Projects were asked to report on the number of people reached per target group.

Table 16: Suggested target groups for Projects to select from in the FPPR

	Target audience
Audience	Scientific community; General public; Policymakers; Media; EU institution; Non-EU institution; Other

Source: Final Project Progress Reports, sheet 6

6.1 Results

The average score of the Projects' communication and dissemination activities is 4.40 (3.8 in the first reporting period), which means that the average project achieved a rank of 4 - the Projects dissemination activities fully met expectations. Of the 15 Projects, seven scored 5 (two in the first reporting period), four scored 4 (nine in the first reporting period), four scored 3 (three in the first reporting period), and none scored 2 (one in the first reporting period).

Table 17: Communication and dissemination activities ranking per Theme

	Assesment of communication and dissemination activities - MIDTERM	Assesment of communication and dissemination activities - FINAL	Increase / Decrease of assessment per theme in the second period
GeoEnergy	4,00	3,83	0,96
GroundWater	3,50	3,75	1,07
Raw Materials	3,75	5,00	1,33
Information Platform	4,00	5,00	1,25

Source: Monitoring team's internal tables, Final Project Progress Reports, sheet 6

Based on the reported projects activities in the FPPR, sheet "Communication, dissemination" analysis of communication and dissemination was made. All projects had 4248 activities (Table 18), 74,76% were, due to COVID 19, online media (Website, Facebook, Twitter, YouTube, LinkedIn, Blog), 16,67% were meetings and events and 8,57% publications and media. Not all projects were active on social networks, but MINDeSEA, EuroLithos, MUSE, GeoConnect3d, Mintell4EU, GIP-P and FRAME stands out in terms of activity. As expected, the Information Platform project, according to its cross-thematic role, has organized the largest number of meetings and events. Projects all together had 100 Scientific Publications were FRAME had 17, TACTIC 16, MINDeSEA 15 and EuroLithos 11.

Table 18: Number of activities

Activity	No. of activity
ONLINE_MEDIA	3176
MEETINGS	482
PUBLICATIONS	364
EVENTS	226
MEDIA	11
Total	**4259**

Source: Monitoring team's internal tables, Final Project Progress Reports, sheet 6

Projects within the GE and RM Theme had the highest number of online media events and projects within the RM Theme had the highest number of publications (
Table 19).

Table 19: Number of Activities per theme

Theme	Number of projects		Average per project				
		EVENTS	MEDIA	MEETINGS	PUBLICATIONS	ONLINE MEDIA	Total
Geothermal Energy	6	9,83	0,83	31,67	17,00	264,83	324,17
Ground Water	4	16,25	0,00	20,25	17,00	15,00	68,50
Raw Materials	4	19,25	1,00	24,50	45,25	354,25	444,25
Information Platform	1	25,00	2,00	113,00	13,00	110,00	263,00
Average per project / Total		15,07	0,73	32,13	24,27	211,73	283,93

Source: Monitoring team's internal tables, Final Project Progress Reports, sheet 6

A lot of the activities were carried out through Twitter (1505), Facebook (974) and LinkedIn (382), followed by internal project meetings (249), blogs (191), participation in congresses (109), mitings with other GeoERA projects and meetings in general (107), scientific publications (100), abstracts (83), website (50), 49 newsletters, organisation and participation on 47 webinars and 42 workshops. Members of GeoERA projects had also 46 oral presentations and 33 posters on different congresses.

Figure 2: Overview of activities

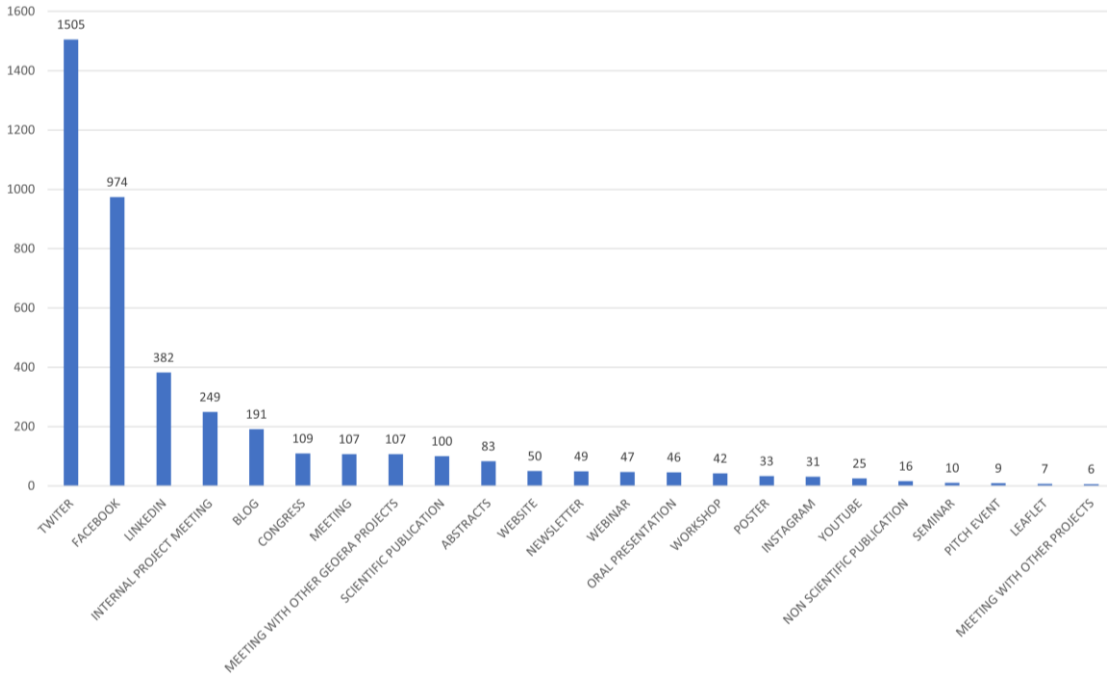


Table 20: Number of Activities for Online media per project

ONLINE MEDIA												
	TWITER	FACEBOOK	LINKEDIN	BLOG	WEBSITE	INSTAGRAM	YOUTUBE	OTHER	PINTEREST	RESEARCHGATE	NEWSPAPER	Total
3DGEO-EU			2									**2**
EuroLithos	158	109			13		1	1				**282**
GARAH										1		**1**
GeoConnect3d	490	450	300	94	1		3			1		**1339**
GIP-P	13	14	53	12	1		14	2	1			**110**
HIKE				1	3							**4**
HotLime		2			1							**3**
HOVER	1	1	1	1	1					1		**6**
MINDeSEA	708	240			2		4					**954**
Mintell4EU	17			17	1							**35**
MUSE	98	40	16	45	1	31	1	8				**240**
VoGERA	2	10	1	5	1					1		**20**
FRAME	14	88	6	14	20		2	1			1	**146**
TACTIC	2	10	1	1	1					1		**16**
RESOURces	2	10	1	1	4							**18**
Total	**1505**	**974**	**381**	**191**	**50**	**31**	**25**	**12**	**1**	**5**	**1**	**3176**

Source: Monitoring team's internal tables, Final Project Progress Reports, sheet 6

Table 21: Number of Activities for PUBLICATIONS per project

PUBLICATIONS											
	SCIENTIFIC PUBLICATION	ABSTRACTS	NEWSLETTER	ORAL PRESENTATION	POSTER	OTHER	NON SCIENTIFIC PUBLICATION	LEAFLET	TECHNICAL REPORT	THESIS	
3DGEO-EU	6	11	5		5						27
EuroLithos	11	1	5		2	1	10				30
GARAH	4		4								8
GeoConnect3d	3	11		10	7	1					32
GIP-P	1		6		2			2	2		13
HIKE	3					1					4
HotLime	7	6					3	1			17
HOVER	7	4	7								18
MINDeSEA	15		6			12				1	34
Mintell4EU	1	16		32	3	1	2	1			56
MUSE	5			4	3			2			14
VoGERA		7			4						11
FRAME	17	16	16			10	1	1			61
TACTIC	16	7			4				1		28
RESOURces	4	4			3						11
Total	**100**	**83**	**49**	**46**	**33**	**26**	**16**	**7**	**3**	**1**	**364**

Source: Monitoring team's internal tables, Final Project Progress Reports, sheet 6

The analysis of communication and dissemination in the MPPR showed that Pre-defined project activities (Table 15) and proposed Target audience (Table 16) needed to be modify. New activity - "Online media" - has been added and subcategories updated. New activities are shown in the Table 15**Error! Reference source not found.**. Structure

of the sheet “Communication, dissemination” in the FPPR was also modify (Table 23: Number of Activities per projects

	ONLINE MEDIA											PUBLICATIONS											MEETINGS						
	TWITER	BLOG	FACEBOOK	LINKEDIN	OTHER	PINTEREST	RESEARCHGATE	WEBSITE	YOUTUBE	NEWSPAPER	INSTAGRAM		SCIENTIFIC PUBLICATION	ABSTRACTS	NEWSLETTER	ORAL PRESENTATION	POSTER	OTHER	NON SCIENTIFIC PUBLICATION	LEAFLET	TECHNICAL REPORT	THESIS		INTERNAL PROJECT MEETING	MEETING	MEETING WITH OTHER GEOERA PROJECTS	MEETING WITH	OTHER		CONGRESS
3DGEO-EU				2								2	6	11	5		5						27	26		6			32	
EuroLithos	158		109		1			13	1			282	11	1	5		2	1	10				30	7	6	6	1	2	22	11
GARAH							1					1	4		4								8	27	3	3			33	9
GeoConnect3d	490	94	450	300			1	1	3			1339	3	11		10	7	1					32	7		3		1	11	
GIP-P	13	12	14	53	2	1		1	14			110	1		6		2			2	2		13	44	11	55		3	113	2
HIKE		1						3				4	3					1					4	2	51	3			56	3
HottLime			2					1				3	7	6					3	1			17	10	4	1			15	8
HOVER	1	1	1	1			1	1				6	7	4	7								18	34	1			1	36	16
MINDeSEA	708		240					2	4			954	15		6			12				1	34	1		4	1		6	22
Mintell4EU	17	17						1				35	1	16		32	3	1	2	1			56	40	9	12	1		62	1
MUSE	98	45	40	16	8			1	1		31	240	5			4	3			2			14	36	2	2		2	42	6
VoGERA	2	5	10	1			1	1				20		7			4						11		1				1	6
FRAME	14	14	88	6	1			20	2	1		146	17	16	16			10	1	1			61	1	1	5			7	5
TACTIC	2	1	10	1			1	1				16	16	7			4				1		28		5		1		6	5
RESOURces	2	1	10	1				4				18	4	4			3						11	14	13	7	2	2	38	15
Total	**1505**	**191**	**974**	**381**	**12**	**1**	**5**	**50**	**25**	**1**	**31**	**3176**	**100**	**83**	**49**	**46**	**33**	**26**	**16**	**7**	**3**	**1**	**364**	**249**	**107**	**107**	**6**	**11**	**480**	**109**

Source: Monitoring team’s internal tables, Final Project Progress Reports, sheet 6

Table 24), since projects could not report, in the MPPR properly, on the number of target audience reached.

For many activities in most of the projects it was difficult to estimate how many Target audience were reached, and the differences in the assessment for the same event were very different from project to project.

A series of key performance indicators (KPI) has been defined in D5.1: GeoERA Dissemination and Exploitation Plan to measure the impact of the dissemination and communication activities carried out by the project consortium from the project start (Table 22). GeoERA achieved all but one of the indicators (Brochures). Number of leaflet distributed is lower as planed but this is because of covid19 situation and lack of face to face events.

Table 22: Key Performance Indicators and expected results per year (from D5.1: GeoERA Dissemination and Exploitation Plan).

Tools	CDE Key Performance indicators	Expected Results / per year	5 years	Actual results
Website	Number of unique visitors	300 Visitors	1500	**73.904**
Social Media (LinkedIn, Facebook & Twitter)	Number of Followers, Number of Tweets	250 followers, 50 tweets	1250 250	Twitter: **5.140** tweets, **2.157** followers LinkedIn: **984** posts, **1.550** followers Facebook: **1.170** posts, **1.220** followers
Brochures	Number of copies distributed	1000	5000	GeoERA 1 leaflet / **1050** distributed, MUSE 2 leaflets / **100** distributed Mintell4EU 1 leaflet / **100** distributed GIP-P 2 leaflet / **100** distributed FRAME 1 leaflet / **2000** distributed
Video	Number of views	100	500	**25** videos / **12.429** views
Conferences / events	Number of Conferences/events attended	4	20	**43** congresses with **109** activities (oral presentations, posters, abstract, article) Webinar **47** Workshop **46** Seminar **10**
E-Newsletters	Number of online readers	300	1500	**16** GeoERA Newsletters with **616** subscribers **9** FRAME Newsletters with **100** subscribers **7** HOVER Newsletters with **98** subscribers **5** EuroLithos Newsletters with **100** subscribers **4** MindeSEA Newsletters with **150** subscribers
Articles	Number of articles published	10	50	Scientific Publications **100 (>50 Peer reviewed)** Non-Scientific Publications **16** Abstracts **83** Posters **33**

Tools	CDE Key Performance indicators	Expected Results / per year	5 years	Actual results
Stakeholder workshops/ info days	Number of participants	100	500	**2530**

Source: Monitoring team's internal tables, Final Project Progress Reports, sheet 6

Table 23: Number of Activities per projects

	ONLINE MEDIA												PUBLICATIONS												MEETINGS												EVENTS												MEDIA						Total
	TWITER	BLOG	FACEBOOK	LINKEDIN	OTHER	PINTEREST	RESEARCHGATE	WEBSITE	YOUTUBE	NEWSPAPER	INSTAGRAM		SCIENTIFIC PUBLICATION	ABSTRACTS	NEWSLETTER	ORAL PRESENTATION	POSTER	OTHER	NON SCIENTIFIC PUBLICATION	LEAFLET	TECHNICAL REPORT	THESIS		INTERNAL PROJECT MEETING	MEETING	MEETING WITH OTHER GEOERA PROJECTS	MEETING WITH	OTHER		CONGRESS	WEBINAR	WORKSHOP	SEMINAR	OTHER	PITCH EVENT	TRAINING	EXHIBITION		LINKEDIN	MAGAZINE	OTHER	RADIO, TV		
3DGEO-EU				2								2	6	11	5		5						27	26		6			32																		61
EuroLithos	158		109		1			13	1			282	11	1	5		2	1	10				30	7	6	6	1	2	22	11	3	2	3					19		1		2	3	356
GARAH							1					1	4		4								8	27	3	3			33	9		2						11						53
GeoConnect3d	490	94	450	300			1	1	3			1339	3	11		10	7	1					32	7		3		1	11		9	2						11						1393
GIP-P	13	12	14	53	2	1		1	14			110	1		6		2			2	2		13	44	11	55		3	113	2	7	8	2	3	3			25			2		2	263
HIKE		1						3				4	3					1					4	2	51	3			56	3		6	1		4			14						78
HotLime			2					1				3	7	6					3	1			17	10	4	1			15	8		1				1		10			2		2	47
HOVER	1	1	1	1			1	1				6	7	4	7								18	34	1			1	36	16	3	1						20						80
MINDeSEA	708		240					2	4			954	15		6			12				1	34	1		4	1		6	22	7	1		3				33						1027
MIntell4EU	17	17						1				35	1	16		32	3	1	2	1			56	40	9	12	1		62	1		2						3						156
MUSE	98	45	40	16	8			1	1		31	240	5			4	3			2			14	36	2	2		2	42	6	3	5						14		3			3	313
VoGERA	2	5	10	1			1	1				20		7			4						11		1				1	6	4	2						12						44
FRAME	14	14	88	6	1			20	2	1		146	17	16	16			10	1	1			61	1	1	5			7	5	4	6	3	3	1		1	23	1				1	238
TACTIC	2	1	10	1			1	1				16	16	7			4				1		28		5		1		6	5	3							8						58
RESOURces	2	1	10	1				4				18	4	4			3						11	14	13	7	2	2	38	15	4	4	1		1			25						92
Total	**1505**	**191**	**974**	**381**	**12**	**1**	**5**	**50**	**25**	**1**	**31**	**3176**	**100**	**83**	**49**	**46**	**33**	**26**	**16**	**7**	**3**	**1**	**364**	**249**	**107**	**107**	**6**	**11**	**480**	**109**	**47**	**42**	**10**	**9**	**9**	**1**	**1**	**228**	**1**	**4**	**4**	**2**	**11**	**4259**

Source: Monitoring team's internal tables, Final Project Progress Reports, sheet 6

Table 24: Structure of sheet “Communication, dissemination” in the FPPR

Activity	Subcategory	Date	SCIENTIFIC COMMUNITY	GENERAL PUBLIC	POLICY MAKERS	EUROPEAN INSTITUTION	NATIONAL INSTITUTION	REGIONAL INSTITUTION	LOCAL INSTITUTION	INTERNATIONAL INSTITUTION	PRIVAT COMPANIES	OTHER	Name of the Activity
			Number of people reached										
PUBLICATIONS	POSTER	12.11.2018	500		200	50							Raw Materials Week 2018 - Mineral Intelligence for Europe - Mintell4EU
PUBLICATIONS	ABSTRACTS	12.11.2018	500		200	50							Raw Materials Week 2018 - Mineral Intelligence for Europe - Mintell4EU
PUBLICATIONS	NON-SCIENTIFIC PUBLICATION	01.10.2019		500									Mineral & Gradnja, strokovna revija za gradbeništvo, stroje in opremo
ONLINE MEDIA	TWITER			10.000									
MEETINGS	INTERNAL PROJECT MEETING	10.02.2020	15										GIP-P PB meeting no. 17
ONLINE MEDIA	FACEBOOK			7.000									
MEETINGS	MEETING WITH OTHER GEOERA PROJECTS	27.-28.11.2018	15		15								Participation on the of MUSE's general meetings,
ONLINE MEDIA	YOUTUBE			1.800									
ONLINE MEDIA	PINTEREST			50									
EVENTS	WORKSHOP	2.-5.07.2018	120			3				3			GeoERA Project Kick-Off
ONLINE MEDIA	WEBSITE	1.10.2018		2.500									MINDeSEA website

Source: Monitoring team’s internal tables, Final Project Progress Reports, sheet 6

7 CONCLUSIONS

Overall, the Projects achieved the plans set forth in the DOW. All deviations were addressed during the Review meetings. Aside from the challenges posed by the COVID -19 pandemic, the Projects have met their stated goals and outcomes, and some have even exceeded their expectations.

Table 25: Overall overview of Projects progress per Theme

	Average ranking in levels 1 - 4	Ranking in communication and dissemination activities	Deliverable submission percentage	Total Person-Month consumption percentage (reported / modified)	Total budget consumption percentage (reported / modified)
GeoEnergy	4,23	3,83	100,00%	113,72%	107,77%
GroundWater	4,31	3,75	98,36%	98,09%	96,65%
Raw Materials	3,81	5,00	99,32%	110,62%	95,08%
Information Platform	5,00	5,00	100,00%	104,45%	95,13%

Source: Monitoring team's internal tables, Technical Review Reports

Based on the monitoring and evaluation process for the first reporting period, some improvements in reporting and procedures were considered and implemented for the second period. The improvements focused on timely and efficient reporting, scheduling of project review meetings, and reporting of communication and dissemination activities.

GeoERA and its Projects have a strong pan-European character, uniting 44 organizations with different backgrounds and different governments behind them. Some projects worked more on EU-wide databases, others focused on a common methodology, and all collaborated at different levels with stakeholders and end users, mainly industry. The level of collaboration between projects and organizations was high and represented an important step in the right direction to achieve good results and the expected impact at all levels - project, theme and GeoERA as a whole.

The more detailed impact analysis is described in the GeoERA deliverable D4.5 Impact assessment.

8 ANNEX 1: LIST OF EVALUATORS IN THE FINAL EVALUATION

Theme	Acronym	Level 1*	Level 2*	Level 3	Level 4
GeoEnergy	GARAH	**Barbara Simić** **Aleksandra Trenchovska**	**Miloš Markič** **Jasna Šinigoj** **Matija Krivic**	**Serge van Gessel**, Netherlands Organisation for Applied Scientific Research	**Christoph Gauert**, State Office for Geology and Mining Saxony-Anhalt **Harikrishnan Tulsidas**, UN Economic Commission for Europe
GeoEnergy	MUSE	**Barbara Simić** **Aleksandra Trenchovska**	**Joerg Prestor** **Jasna Šinigoj** **Matija Krivic**	**Serge van Gessel**, Netherlands Organisation for Applied Scientific Research	**Gerdi Breembroek**, Netherlands Enterprise Agency **Peter Bayer**, Institute of Geosciences and Geography **Peter Huggenberger**, University of Basel
GeoEnergy	HotLime	**Barbara Simić** **Aleksandra Trenchovska**	**Matevž Novak** **Jasna Šinigoj** **Matija Krivic**	**Serge van Gessel**, Netherlands Organisation for Applied Scientific Research	**Gerdi Breembroek**, Netherlands Enterprise Agency **Philipe Dumas**, The European Geothermal energy council
GeoEnergy	HIKE	**Barbara Simić** **Aleksandra Trenchovska** **Maja Ilić**	**Mateja Jemec Auflič** **Jernej Jež** **Jasna Šinigoj** **Matija Krivic**	**Serge van Gessel**, Netherlands Organisation for Applied Scientific Research **Jørgen Tulstrup**, Geological Survey of Denmark and Greenland	**Elizabeth S. Cochran**, US Geological Survey **Massimo Cocco**, National Earthquake Observatory, Italy
GeoEnergy	3DGEO-EU	**Barbara Simić** **Aleksandra Trenchovska**	**Ana Novak** **Jasna Šinigoj** **Matija Krivic**	**Serge van Gessel**, Netherlands Organisation for Applied Scientific Research	**Elizabeth S. Cochran**, US Geological Survey **Harikrishnan Tulsidas**, UN Economic Commission for Europe
GeoEnergy	GeoConnect3d	**Barbara Simić** **Aleksandra Trenchovska**	**Tina Peternel** **Matevž Novak** **Jasna Šinigoj** **Matija Krivic**	**Serge van Gessel**, Netherlands Organisation for Applied Scientific Research	**Glen Burrdige**, European Federation of Geologists **Harikrishnan Tulsidas**, UN Economic Commission for Europe
GroundWater	HOVER	**Barbara Simić** **Aleksandra Trenchovska**	**Luka Serianz** **Jasna Šinigoj** **Matija Krivic**	**Klaus Hinsby**, Geological Survey of Denmark and Greenland	**Marco Petita**, University of Rome **Tibor Stigter**, IHE Delft
GroundWater	TACTIC	**Barbara Simić** **Aleksandra Trenchovska**	**Mateja Jemec Auflič** **Ela Šegina** **Jasna Šinigoj** **Matija Krivic**	**Klaus Hinsby**, Geological Survey of Denmark and Greenland	****Ad de Roo**, JRC-ISPRA **Karen Villholth**, IWMI – South Africa
GroundWater	RESOUR	**Barbara Simić** **Aleksandra Trenchovska**	**Luka Serianz** **Jasna Šinigoj** **Matija Krivic**	**Klaus Hinsby**, Geological Survey of Denmark and Greenland	**Tibor Stigter**, IHE Delft **Karen Villholth**, IWMI – South Africa
GroundWater	VoGERA	**Barbara Simić** **Aleksandra Trenchovska**	**Andrej Lapanje** **Jasna Šinigoj** **Matija Krivic**	**Klaus Hinsby**, Geological Survey of Denmark and Greenland	**Marco Petita**, University of Rome ****Ad de Roo**, JRC-ISPRA

Raw Materials	Mintell4EU	**Barbara Simić** **Aleksandra Trenchovska**	**Meta Dobnikar** **Jasna Šinigoj** **Matija Krivic**	**Antje Wittenberg**, Federal Institute for Geosciences and Natural Resources, Germany	**Harikrishnan Tulsidas**, UN Economic Commission for Europe **Christoph Gauert**, State Office for Geology and Mining Saxony-Anhalt
Raw Materials	EuroLithos	**Barbara Simić** **Aleksandra Trenchovska**	**Gorazd Žibret** **Jasna Šinigoj** **Matija Krivic**	**Antje Wittenberg**, Federal Institute for Geosciences and Natural Resources, Germany	**Björn Schouenborg**, RISE Research institutes of Sweden **Angela Ehling**, Federal Institute for Geosciences and Natural Resources, Germany
Raw Materials	MINDeSEA	**Barbara Simić** **Aleksandra Trenchovska**	**Ana Novak** **Jasna Šinigoj** **Matija Krivic**	**Antje Wittenberg**, Federal Institute for Geosciences and Natural Resources, Germany	**Helena-Maria Cavaco-Viegas**, DG GROW, EC **Christine Meyzen**, Unipd, Italy
Raw Materials	FRAME	**Barbara Simić** **Aleksandra Trenchovska**	**Emil Pučko** **Jasna Šinigoj** **Matija Krivic**	**Antje Wittenberg**, Federal Institute for Geosciences and Natural Resources, Germany	**Christoph Gauert**, State Office for Geology and Mining Saxony-Anhalt **David Ovadia**, Exploration and Mining company
Information Platform	Gip-P	**Barbara Simić** **Aleksandra Trenchovska**	**Jasna Šinigoj** **Matija Krivic**	**Serge van Gessel**, Netherlands Organisation for Applied Scientific Research **Klaus Hinsby**, Geological Survey of Denmark and Greenland **Antje Wittenberg**, Federal Institute for Geosciences and Natural Resources, Germany	**Harvey Thorleifson**, Minnesota Geological Survey **Lesley Wyborn**, Australian National University

* Geological Survey of Slovenia
** Did not submit the evaluation

9 ANNEXES

PI doc. No. 2E Technical Review Report_3DGEO-EU

PI doc. No. 2E Technical Review Report_EuroLithos

PI doc. No. 2E Technical Review Report_FRAME

PI doc. No. 2E Technical Review Report_GARAH

PI doc. No. 2E Technical Review Report_GeoConnect3d

PI doc. No. 2E Technical Review Report_GIP-P

PI doc. No. 2E Technical Review Report_HIKE

PI doc. No. 2E Technical Review Report_HotLime

PI doc. No. 2E Technical Review Report_HOVER

PI doc. No. 2E Technical Review Report_MINDeSEA

PI doc. No. 2E Technical Review Report_Mintell4EU

PI doc. No. 2E Technical Review Report_MUSE

PI doc. No. 2E Technical Review Report_RESOURCE

PI doc. No. 2E Technical Review Report_TACTIC

PI doc. No. 2E Technical Review Report_VoGERA