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

Technical review report for project EuroLithos

This report is part of a project that has received funding by the European Union's Horizon 2020 research and innovation programme under grant agreement number 731166.

INTRODUCTION

Technical review report is part of GeoERA's Monitoring and evaluation process for co-funded projects (*hereinafter: project*). The aim of a technical review is to assess the work carried out under the project over a certain period and provide recommendations. Such technical review evaluates the project reports and deliverables, the proper use of resources, the management of the project and the expected impact.

Technical review report consists of four sections, each representing one level of monitoring and/or evaluation of the project:

Level	Monitor / Reviewer	Input	Aim
1 – Monitoring of progress indicators	Monitoring and reporting officer (GeoZS)	MPPR* FPPR**	Monitoring of the effectiveness of implementation of selected projects with respect to finance, time and administration.
2 – Scientific review	Reviewers (GeoZS)	Submitted deliverables MPPR FPPR	Quality review of the deliverables and review of achieving scientific and professional goals.
3 – Review of the theme progress	Theme coordinators	MPPR FPPR	Review of achieving theme objectives.
4 – GeoERA Progress evaluation	Stakeholder Council member(s)	Sections 1 and 2 of this report Review meetings	Overall project progress and general recommendations.

*MPPR = Midterm Project Progress Report (see PI doc no 2)
**FPPR = Final Project Progress Report (see PI doc no 2)

Monitoring and evaluation process:

M0 = End of reporting period
M1 = Submitted (Final) Project progress Report (MPPR / FPPR)
M2 = 1 – Monitoring & 2 – Evaluation
M3 = 3 – Evaluation of the theme progress
M3 = (Final) Review Meeting & 4 – Progress evaluation

Each project will be reviewed twice: for first project period M1-M18 – Technical review report, and second project period M19-M36 – Final review report.
Technical review report is based on Horizon 2020 templates but adopted to GeoERA needs. Technical reviews of projects shall be carried out on a confidential basis.

GENERAL INFORMATION

ERA-NET Cofund Grant Agreement:	731166
ERA-NET Cofund acronym:	GeoERA
Call identifier:	H2020-LCE-2016-2017/H2020-LCE-2016-ERA
Project full title:	Eruopean Ornamental stone resources
Project acronym:	EuroLithos
Project reference number:	GeoE.171.017
Project topic:	Raw Materials
Project specific topic:	RM2B-Natural stone
Lead partner:	NGU Norges Geologiske undersokelse (Geological Survey of Norway)
Project website:	http://geoera.eu/projects/eurolithos1/

☒ Technical review report

☐ Final review report

Period covered	01/07/2018 – 31/12/2019
Review meeting date	11.02.2020, concise 20.02.2020

Contributor:	Role:	Approved on:
Barbara Simić	Monitoring and reporting officer	27.02.2020
Maja Ilić	Monitoring and reporting officer	28.02.2020
Gorazd Žibret	Scientific reviewer	19.02.2020
Jasna Šinigoj	Scientific reviewer	11.03.2020
Matija Krivic	Scientific reviewer	10.03.2020
Antje Wittenberg	Theme coordinator	16.03.2020
Björn Schouenborg	Stakeholder Council member	27.04.2020
Marco Cosi	Stakeholder Council member	NA

1 LEVEL 1 – MONITORING OF PROGRESS INDICATORS

In this section the project is monitored "remotely" on the basis of the respective reports. This part is filled in by Monitoring and reporting officer with aim to monitor the effectiveness of implementation of the selected projects with respect to finance, time and administration, based on submited MPPR and FPPR.

	Yes	Partially (comment needed)	No
PROJECT MANAGEMENT			
Has the MPPR / FPPR report been submitted on time?	☒		☐
Have there been any changes in project partnership?	☒	See comment no.1	☐
Has the project management been performed as required?	☒		☐
Has the collaboration between partners been effective?	☒		☐
Do you identify evidence of underperforming partners, lack of commitment or change of interest of any partners?	☐ (see comment)		☒
DELIVERABLES and MILESTONES			
Have the planned deliverables for the period been submitted on time according to timeline in Project Agreement?	☐	See comment no.2	☒
Have the planned deliverables for the period been completed (from MPPR / FPPR, sheet 4)	☒		☐
Have any changes to deliverables occurred (type/ dissemination level)? (from MPPR / FPPR, sheet 4 and 5)	☒	See comment no. 3	☐
Have planned milestones been achieved for the reporting period? (from MPPR / FPPR, sheet 4)	☐	See comment no.4	☒
Have the project partnership identify any difficulties achieving any of the deliverables / milestones?	☐		☒
DEVIATIONS (from MPPR / FPPR, sheet 5)			
Has the project partnership identify any deviations that will not affect projects outputs?	☒		☐
Have any deviations occur on the project, with impact on project outputs?	☐		☒
In case of deviations, have the project adopted corrective measures?	☒		☐
DISSEMINATION, COMMUNICATION			

Has the project adopted its dissemination plan?	☐		☒
Have the planned dissemination activities been completed for the reporting period? (from MPPR / FPPR, sheet 6)	☒		☐
Have the partners' disseminated project results and information adequately?	☒		☐
Is the project following dissemination plan?	☒		☐
Is the project interacting in a satisfactory manner with other GeoERA projects?	☒		☐
Is the project interacting in a satisfactory manner with national/international bodies?	☐	NA	☐

FINANCE			
To the best of your estimate, have the resources used been utilised for achieving the project? (according to MPPR / FPPR, sheet 9)	☒		☐
To the best of your estimate, have the resources used been in a manner consisted with the principle of economy, efficiency and effectiveness? *	☒		☐
Are there any major deviations in the budget consumptions from the financial plan? (zero consumption in M18; deviation from plan exceeding 20% in M36)	☐		☒
Are there any major deviations in the Person - Months consumptions from the plan? (zero consumption in M18; deviation from plan exceeding 20% in M36)	☐		☒
Are any budget modifications for the project needed? (from MPPR / FPPR, sheet 5)	☐		☒

***The principles of economy, efficiency and effectiveness**: refers to the standard of "good housekeeping" in spending public money effectively. Economy can be understood as minimizing the costs of resources used for an activity (input), having regard to the appropriate quality and can be linked to efficiency, which is the relationship between the outputs and the resources used to produce them. Effectiveness is concerned with measuring the extent to which the objectives have been achieved and the relationship between the intended impact and the actual impact of an activity. Cost effectiveness means the relationship between project costs and outcomes, expressed as costs per unit of outcome achieved.

Comments (highlighting the project progress) / deviations / recommendations:

Comment no.1: The partner Regione Toscana RT withdrew. The activities and budget was taken over by partner Cyprus Geological Survey Department GSD. The change is implemented in project amendment no.1.
Comment no.2: In the first reporting period 11 deliverables were due:
5 deliverable were submitted in time
3 deliverables were submitted with eligible delay (amendment 2)
1 deliverable is postponed into the second reporting period (amendment 2)
2 deliverables are pending
Comment no.3: Changes to deliverables:

D2.1: postponed from M6 → M9
D2.2: postponed from M6 → M9
D.6.1: postponed from M6 → M9
The changes have no impact on the project outputs.
Comment no.4: Milestone 5: Prototype portalis is in delay, original deadline M18. The milestone is in delay with no effect on the objectives.

EuroLithos is developing a framework of information infrastructure for ornamental stone for spatial and technical data, developing and testing prototypes, at the end also guidelines for partner countries will be implemented.
At the end of the first reporting period the project is well on its way towards achieving its goals. The change in partnership has been well dealt with and had no effect on project implementation.
Project management is excellent, the Lead partner keeps track of the implementation and consumption of project partners. Delays are recognized and communicated with partners and the Monitoring team.
Some deliverables were postponed, some due to an over-ambitious plan. These challenges were detected, and corrective measures taken and communicated with the Monitoring team.
Communication and dissemination plan have not been adopted as a project deliverable, so comparing activities with the plan is not possible. At the review meeting these activities have been discussed and compared to other GeoERA projects implemented dissemination and communication activities are realistic. The recommendation given to the project team at the meeting is to review the communication and dissemination plan set at the beginning of the project and update it with relevant categories and target groups.
Overall financial consumption at the end of first reporting period is 39 %, which is a bit low. According to the project plan, the majority of activities will be done in the second reporting period, consequently the financial consumption will increase.

No challenges in achieving project outcomes are recognized, the project lead provides good support to partners with implementation of project activities.

Recommendations to the project is to:

- pay attention to the work implementation and deviations from the project plan – try to tackle deviations as soon as you can to minimize the consequences on the project plan;
- keep track of the communication and dissemination activities and try to count or estimate the number of people reached with these activities. The same is applicable for the meetings.

Overall assessment of the project:

☐ 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; however corrective action will be required)

☐ 1 - **Unsatisfactory progress** (the project has failed to achieve critical objectives and/or is not at all on schedule)

Summary of dissemination activities (detailed activities are annexed to this report):

Activity	Target audience	Number of people reached
Publication	General public	5.280
Publication	Scientific community	
Event	Scientific community	100
Meeting	Scientific community	
		5.380

Are the dissemination activities adequate? (link to GeoERA WP5)

☐ 5 - **Overachieved** (the projects dissemination activities have exceeded expectations)

☒ 4 - **Excellent** (the projects dissemination activities have fully achieved its expectations)

☐ 3 - **Good** (the projects dissemination activities are adequate; however, some additional activities are needed)

☐ 2 - **Acceptable** (the projects dissemination activities need corrective actions; additional activities are needed)

☐ 1 - **Unsatisfactory** (the project has failed to disseminate)

Cummulative financial statement:

	Person months	Total eligible costs	Reimbursement rate	GeoERA contribution	In-kind contribution
Plan	167,6	1.100.358	29,30 %	326.806	773.551
1st period consumption	73,58	428.347	29,30 %	127.219	301.128
2nd period consumtion					

2 LEVEL 2 – SCIENTIFIC REVIEW

In this section the project is reviewed ”remotely” on the basis of the respective reports. This part is filled in by reviewer with aim to review the quality of the deliverables and review of achieving scientific and professional goals. Scientific review is based on submitted deliverables and reported Impact statement in MPPR/FPPR.

Impact statement (from MPPR / FPPR, sheet 8):

“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.

Expected impact (from Project Agreement):

Impacts described in the RM2 scope: 11 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 as a prerequisite to supplying Europe's construction raw material needs By lifting knowledge from national to European levels, and providing solutions for harmonised and comparable data, the project will improve cross-European knowledge sharing. Accompanied by guidelines the project will also contribute to a common understanding of European natural stone resources, their value and significance, and create a platform for further development. When it comes to European supply, natural stone is not among the critical raw materials, and theoretically, Europe may survive well by using concrete and imported stone for future construction. However, a lot of values will be lost on the way, heritage, crafts and traditions. "Raw material needs" is not just a quantitative measure, regarding stone it is primarily qualitative. For a community, the closure of the last local stone quarry may be critical enough, causing loss of both heritage values and economic development. Contribution to environmentally friendly raw materials production Key factors of importance to the environmental performance of natural stone production are transport and energy consumption. Since the project seeks to provide methods and information that can facilitate the process of including other aspects than price in, for example, tenders, it will be of benefit to regional and local stone industries. This will imply that such SMEs' can strengthen their market position, particularly in the rural areas of Europe. The project will in this respect provide tools for the SME's themselves (i.e. historical importance of their stone, their craft) and to the decision makers (using heritage values and/or geological information more actively in tenders). It is our view that these factors will stimulate a higher awareness of local and regional sources of stone, and consequently, reduce transport distances. The project will not directly target energy consumption in natural stone production, but indirectly, we will claim that the upgrading of values related to local/regional sources and craft, contributes to improving the conditions for SMEs', and in general, small companies use smaller machines and more craft than big ones. 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 The project will make the world easier for those that are in charge of Europe's built heritage, and for those who want to develop business from that. It will not only provide information and guidelines on how to find and employ authentic sources, but also facilitate the search for alternatively "matching" sources in case the former is not available. 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 One of the main focuses of the project is the spatial distribution of geological formations of importance to our built heritage. This alone will provide tools for spatial planning, where the weighing of significance for different land use is crucial. Moreover, a valorisation tool for the intrinsic value of quarries and quarry landscapes we believe is equally useful. 12 Other main impacts the project will create a framework and an information platform that will meet many

of the requirements that a future GI for non-agricultural products will bring. Thus, the project will facilitate the implementation of EC work on this task.

Evaluation of deliverables

Deliverables list status			
No.	Title	Status (Approve/ Reject)	Comments
D1.1	Cumulative expenditures report 1	Approved	/
D1.2	Project Progress Report 1	Approved	/
D1.3	Cumulative expenditures report 2	Approved	/
D2.1	Project web site www.eurolithos.org	Approved	See below
Project web site is running and provides basic information about the project. Download section contains 1 deliverable. The web page is informative enough for the purpose of informing experts and stakeholders about the project. However, in the future I would recommend adding more content to it, i.e. submitted public deliverables, more case studies, summary from the meeting, more information what is happening in the project, etc..			
D2.2	Stakeholder newsletter	Approved – 2 newsletters	See below
Newsletters provide very basic information about the project and case studies. However, there is very little information about the actual work that has been done within the project, so my recommendation is to include this into future newsletters. It would also be very good to show how this newsletter was distributed around.			
D3.1	Summary on the nature and type of available spatial data in each country partner and framework for the Atlas	Approved	See below
This deliverable presents a comprehensive overview of characteristics of the ornamental stones. It also emphasises the inclusion of non-measurable parameters, like marketing names, colour, remarkable use, etc. in the atlas, since such parameters are very important for marketing. Availability of other parameters in the partner's countries was done according to the questionnaire and was summarised in the body text and Annex 2. According to the results of the survey the deliverable highlights requirements and guidelines for the atlas. What I think is missing in the atlas are the guidelines on how to make/include photographs of typical examples of rocks (i.e. polished or cut specimens), and example photograph(s) of its usage in architecture. Also, the description of positive and negative aspects of a specific rock type's use might be included (i.e. weather resistant, hard, non-abrasive, suitable for floors etc.). Sterilisation risk assessment was (in my opinion) also not described properly – I advise to describe or suggest common standards for evaluating sterilisation risks. Typical amount of waste for each deposit can be included. Simple colour names – why not use colour chart?			
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D3.2	Country- and Europeanlevel Atlas templates	Not delivered	In delay
D5.1	Case study collection	Not delivered	In delay
D6.1	Data and information structure for the knowledge platform on European ornamental stone resources	Approved	See below
This deliverable describes data and information structure for the EGDI information platform for ornamental stone. The foundations for set-up of data structure are the Minerals4EU, Inspire and various standards and databases in the field, which were briefly overviewed in the document. In the last chapter, the data structure is set-up, including various basic information, physical and chemical properties, photographs and other information, which will be fed into the database in later stages of the project. However, some more details on the database structure, i.e. relations, one-many or one-one and similar might be needed. Moreover, one lithological unit might contain different varieties of a specific stone, with drastic variations in ornamental, chemical and physical properties, but I was unable to find this aspect to be properly described. Even though the document fits its purpose, I am still missing some concluding chapters. However, it seems that only draft version was available for the review, so this might be the reason.			

Has the quality as a whole been achieved according the objectives? Has the project as a whole been making satisfactory progress?

☐ 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; however corrective action will be required)

☐ 1 - **Unsatisfactory progress** (the project has failed to achieve critical objectives and/or is not at all on schedule)

Comments (highlighting the project progress) / deviations / recommendations:

EuroLithos is one of the very few international projects dealing with ornamental stone in Europe, although the topic is very important for preserving cultural identities of European regions.

EuroLithos' results have a huge potential impact not only on ornamental stone quarrying activities, but also on other branches, such as construction, architecture, minerals and spatial planning, ornamental stone market and other downstream activities. The reviewer acknowledges that the project aims are more focused to act as a pilot study (i.e. atlas trial version, inventory in partner countries, harmonisation etc.), and to provide guidelines, to mention few of them, so the review was done accordingly.

WP4 – I recommend to explain (in future deliverables) why 3 very similar case studies (among 12) deal with the same area in the island of Brač (Pučišča)?

SUMMARY

It looks like the project EuroLithos is heading in right direction, with a potential for high positive impact to the European ornamental stone and downstream industries. However, not all the deliverables, according to the proposal, are ready for evaluation, so my recommendation is to speed-up the work to get back on track.

3 LEVEL 3 – REVIEW OF THE THEME PROGRESS

In this section the project is reviewed ”remotely” on the basis of the respective reports. This part is filled in by Theme coordinator with aim to review the achieved scientific goals in accordance with theme objectives, on the basis of Sheet 3 in MPPR / FPPR – Project contribution to GeoERA project.

Project contribution to GeoERA project (from MPPR / FPPR, sheet 3):

EuroLITHOS is one of the cornerstone projects of GeoERA Raw Materials, which with its online gallery provides beautiful images and interesting information that are linked to our daily life. This information can be used for a number of communication tasks with European society.

Standardized spatial information tailored to natural stone, common terminology, adjustment of the classification and the corresponding standards that lead to a guideline for data description and coherence are a complex topic that takes more time than expected. However, the project has made good progress. Suggestions are made within EuroLITHOS, but the further and necessary communication with a wider stakeholder community is still pending. However, this is planned in the further course of the project (on time).

The main objectives of GeoERA to contribute to “*the sustainable use and responsible management of the subsurface*” are tackled and in particular it has a high potential to add to ensure ”*a more responsible and publicly accepted, exploitation and use of the subsurface, minimising environmental impacts and footprints*”. EuroLITHOS complements the general goal of expanding the scientific knowledge base and has already made good progress to achieve harmonized terminology and inventory that helps smoothly connect with relevant stakeholders and users of natural stone resources (i.e. quarries, qualities , usage) to communicate.

Theme objectives:

Raw Materials Theme objectives are defined by the Grant Societal Challenges identified by the European Union (Commission and Member States), the UNSDG and Member States outlined theme specifically by the Raw Materials Initiative and derived policies. In particular:

- *the security and sustainability of mineral raw materials supply from EU domestic sources and other sources (primary and secondary) and*
- *the management of competing uses of the European surface and subsurface.*

EuroLITHOS places special emphasis on cultural heritage and establishes contact with traditional stonemasons and other structures, architects and organizations for the preservation of culture.

EuroLITHOS scientific work packages (WP3, 4 and 5) contribute to an improved European Raw Materials Knowledge Base through new and harmonised data on stone resources, its occurrences, production, properties and its use at cultural interesting sites underpinned by target group specific publications and communication with most relevant stakeholder communities. The presence at relevant conferences, the newsletters, the eye catching homepage that shows the beauties of (used) ornamental stone help to communicate with relevant stakeholder and add to improve the public acceptance to act.
By adding towards an alignment of relevant European norms with (improved) INSPIRE Code List EuroLITHOS assists the European Union in its intention to cut-back bureaucracy.

The very time consuming data collection and harmonisation process has made good progress and added value to the INSPIRE Code List and is usability.

However, clear instructions on the required parameter to be met for the Atlas (WP3), the Directory of Ornamental Stone Properties (WP4) and the foreseen tools for the process of valorisation (WP5) in particular provide reliable information when the valorise the commodity itself and the impact that resource might have on the society needs to be justified and/or monitored. Due to the durability of that building material it adds to Europe´s circular economy and low CO2-footprint when mined, processed and traded sustainable and when traveling within Europe.

The reporting document Pl doc no2B states on page 4 some pending documents. These document have been in place for the evaluation. Hence no deliverables are pending.

By displaying decorative stones on the European maps and providing reliable information about their properties, EuroLITHOS serves the thematic objectives of GeoERA as well as the general objectives of GeoERA and offers supportive information for small and medium-sized entrepreneurs, cultural professionals and monument conservationists and society in general.

Has the project as a whole achieved the objectives and expected impact of the theme?

☐ 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; corrective action will be required)

☐ 1 - **Unsatisfactory progress** (the project has failed to achieve critical objectives and/or is not at all on schedule and/or has no impact on the theme; corrective actions are required)

Comments / deviations / recommendations:

EuroLITHOS contributes to added value and has an impact on local development in cities and rural areas. Some of the natural stones (type localities) are part of the regional identity of a municipality. The visualization of this identification in connection with the economic effects can help to improve the acceptance and thus the authorization to act, and should be improved.

EuroLITHOS is a very special project that takes care of important and often overlooked raw materials. (NB at European and national level, megatrends and big players are much more visible due to their sales figures.) EuroLITHOS improves understanding of the sector, the value of dimensional stones and its importance for society (economic, social and cultural). With its direct references to the everyday life of citizens and tourists, supported by the attractive pictures of decorative stones (in nature and in use), there is the potential to arouse the interest of society on a large scale and beyond GeoERA. There is therefore great potential for wider recognition of raw materials and for marketing purposes.

This project provides a first approach to provide a comprehensive atlas on dimension stones. Due to the limitation of actors (both in terms of regional coverage first hand and by partners), the long-lasting culture of using ornamental stones and the heterogeneity in accessibility of existing data sources outside GeoERA will be a permanent challenge. Likewise other projects EuroLITHOS can only provide a certain snapshot status but would benefit largely from continues developments. Hence, it is recommended to strengthen the network to sustain that work and to widen the regions been covered.

The very specific task makes it slightly more challenging for EuroLITHOS to connect to other GeoERA projects than GIP-P. The Project very much relies on M4EU data which to some are not correct and which will be corrected within MINTELL4EU. In the course

of the project more detailed (geochemical) information are expected that might be also of interest to FRAME. Hence, it recommended to strengthen the interactions between the GeoERA Raw Materials projects (i.e. FRAME, MINTELL4EU) and beyond (e.g. HIKE, fault atlas).

The long tradition in the use of dimension stones in human history result in numerous variations in describing the similar ornamental stones. Harmonising those information and datasets is a huge challenge. The achievements (and efforts) on the alignment of the EN and the INSPIRE Code List should be highlighted and taken further to the relevant Committees.

Exploring the applicability and interoperability of standard codes among partners for harmonised reporting of resources by UNFC case studies need to be clearly communicated as due to the status of some of the cases and by the expertise ensured within the project the application of the UNFC is limited to G-Axis.

4 LEVEL 4 – GEOERA PROGRESS EVALUATION

In this section the project is reviewed on the Review meetings, where projects present their overall progress and achievements. This section relates to particular project, broader impact of GeoERA as a whole on policies will be covered at the Final Review meeting with questionnaire and interview with Evaluator.

Based on technical review summaries provided by Sections 1 – 3 of this report, and project presentation on the (Final) Review meeting:

Has the project as a whole been making satisfactory progress according to your own understanding and expectations of the GeoERA project?

☐ 5 - **Overachiever** (the project has exceeded expectations)

☐ 4 - **Excellent progress** (as expected)

☒ 3 - **Good progress** (minor recommendations given below)

☐ 2 - **Acceptable progress** (below expectations; minor corrective action will be required)

☐ 1 - **Unsatisfactory progress** (the project has failed; corrective actions are required)

Overall comments for the project (overall recommendations, modifications, corrective actions, or re-tuning the objectives to optimize the impact or keep up with the State of the Art, re-focusing, or a simple praise)

Comments from Björn Schouenborg on Deliverables supplied for the review: D3.1 and D5.1
In addition, an overall presentation of the work progress, prepared 11th February and an Excel file/Progress report

General comment:
The intentions of the project are very good. The consortium does not cover all European countries. It is therefore important to make an extra effort explaining how they will retrieve and integrate information from other major European stone actors e.g. France and Germany. In addition, how they will ensure proper input from these countries. Minerals4EU is mentioned. Is the format and requirements the same as in this project?
When we talk about the combination of stone and heritage, I think it is crucial to highlight the most famous/well known stone types. I'd be happy to provide some useful stakeholder contacts.

D3.1 The important evaluation will only be possible when we have the first complete draft of the atlas and can compare the output.

Requirements to be considered for the Atlas:
Requirement 1 Trade names are in some cases very misleading. It should be one of several identifiers. At least care should be taken when the trade name can be misleading. A similar protection as DOC for wines can be discussed in this context.

Classification of stone types in geological terms or commercial when comparing the public statistics. If there are uncertainties, highlight them. I don't request you to be able to deal with all of them, but you are requested to understand them and have a discussion.
E.g. In several countries limestones are traded as marble
In some countries even granites are called marble. It is merely an expression of hard stones
Denoting diabases and other black stone types, even ultramafic rocks, a "black granite" is also common and should be highlighted.

Requirement 2
The colour is the most important aesthetical characteristic. However, the pattern is also crucial for many stone types and must be included as a criteria. E.g. Carrara marble is primarily classified according to colour and veining.

Page 26 Chapter 6. Questionnaire
This has to be reworked to avoid repeated questions from the data supplier. Alternatively provide a table of explanations of the different expressions. They are not used to work in terms of polygon, centroids etc. Same with Vector or Raster map
Explain the benefit for the data supplier of turning their data into a "compliant" format. They will not run parallel systems.

D5.1
General comment
It is understandable that the cases are chosen among the partners. Still, it is crucial to include some additional examples outside the consortium to get at least examples of the most important stone types through the ages. Please describe how you plan to accomplish this.
It is crucial to highlight and describe in detail the process for defining the different requirements, criteria and how you have ensured their validity for the user target groups

Page 3:
Stone and built heritage: ornamental stone is one of few commodities that has been applied in the same way (for construction) since Antiquity until today.
Differentiate between natural stone and ornamental stone as expressions. Natural stones can be divided into a number of applications, Ornamental stones being one of them. Ornamental stones are not used for construction! Please use the same

terminology as in CEN TC 246 Natural stone and also by EUROROC. This goes through the entire report.

A visit to Wunsiedel in north-east Bavaria is highly recommended. It is the origin of the largest stone database in the world as far as stone specimens and the famous INSK. It is also a centre/school for stone craft education. A collaboration will be beneficial for both the project and the centre!

It is crucial to establish collaboration with the IAEG Commission on Geoheritage and especially sub-commission on Heritage stones which has defined criteria for stone types and resources (quarries and provinces) to be considered heritage stones. We don't want two parallel systems of criteria! This sub-commission is also collaborating with UNESCO about this designation. It should be a win-win collaboration.

4.4 This case raises a very important question, one which is both controversial and discussed right now. Shall a deteriorated stone be replaced with the original stone if we know that it is not durable? If not, which criteria shall be place on the replacement stone?
Figure 4: Terrible photo. Always use photos of good quality!

Question: Is it too far outside the scope of the project to raise the question of traditional crafts and techniques no longer available on the market? Surface finishing techniques. To what extent shall we recommend the replication of these old techniques or the effect/pattern of them?
Modern techniques with 3D-scanning and advanced multi-axes CNC machines can produce near copies only needing a final touch by hand to copy the original. This is true for ornamental stones but not most construction elements and similar.

I miss cases of granite, sandstone and slate. One granitoid (Larvikite, not a granite, but ok.) will be used for studies of sustainability. Granite has been the most important stone type in the Nordic countries, also really important in Portugal and Spain.
Sandstones, like limestones, have also been widely used in historic times. Still is in some countries.
Slate would complement the Norwegian schist very well as an important stone type through the ages.

Stakeholder Mr Marco Cosi participated at the review meeting and provided recommendations for the projects. Due to personal reasons, he wishes not to participate further in the GeoERA monitoring and evaluation process. The "date of approval" of this document is therefore NA.

Annex 1: Review meeting list of participants

Name	Function	Beneficiary
Tessa Witteman	GeoERA coordinator	Netherlands Organisation for Applied Scientific Research
Barbara Simić	Monitoring and Reporting Officer	Geological Survey of Slovenia
Gorazd Žibret	Scientific reviewer	Geological Survey of Slovenia
Antje Wittenberg	Raw Materials Theme coordinator	Federal Institute for Geosciences and Natural Resources, Germany
Björn Schouenborg	Stakeholder council member	RISE Research institutes of Sweden
Tom Heldal	Project manager	Geological Survey of Norway
Anne Liinama Dehls	Project member	Geological Survey of Norway
Cyprien Habimana	Project member	Geological Survey of Norway
Željko Dedić	Project member	Croatian Geological Survey
Concise Review meeting 20.02.2020		
Marco Cosi	Stekaholder council member	Alpistone, Italy

Annex 2: Communication and dissemination activities

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**	

Annex 2: Communication and dissemination activities

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.cope rnicus.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**	