WP2-A5. Field research in each project country on level of human and technological resource capacity for teaching RockChain in mining-related training centres and universities.

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Contents

1. INTRODUCTION

This document presents the results of activity WP2 titled "Field research in each project country on the level of human and technological resource capacity for teaching RockChain in VET centres and universities related to mining and natural stone industries".

The purpose of this research is to identify and assess the current capacity of educational institutions in Germany, Spain, Croatia, and Romania concerning teaching skills and available technological resources specifically related to blockchain technology and waste management practices in the ornamental rock sector. This assessment aims to adapt the RockChain curriculum effectively to the educational needs of the teaching staff, who are also professionals in the industry, thereby fostering digital transformation, sustainable practices, and circular economy principles in the ornamental rock sector.

2. QUESTIONNAIRE

This questionnaire is part of the Erasmus+ RockChain project: "Transversal technological skills for the ornamental rock industry focusing on the applicability of Blockchain in a Circular Economy." It is conducted simultaneously in Germany, Spain, Croatia, and Romania.

Your honest responses will greatly help us to adapt and refine our curriculum and training materials according to the identified needs and capacities. The questionnaire specifically targets educators involved in teaching subjects related to the mining, natural stone industry, and sustainability practices. We aim to understand better the level of human and technological resources available at your institutions, to develop relevant and practical educational materials.

E-mail address:

_____

Name of the organisation where you teach:

_____

What is your gender?

- ☐ Male
- ☐ Female

- ☐ Other: _____

What is your age range?

- ☐ Between 21 and 30 years old
- ☐ Between 31 and 40 years old
- ☐ Between 41 and 50 years old
- ☐ Between 51 and 60 years old
- ☐ Over 60 years old

In which of the following areas would you place your teaching activity?

- ☐ Mining
- ☐ Geology
- ☐ Construction
- ☐ Environmental management
- ☐ Engineering
- ☐ Blockchain
- ☐ Other: _____

What is your educational background?

- ☐ Degree
- ☐ Master's degree
- ☐ Doctorate
- ☐ Specialised course
- ☐ Other: _____

Do you have professional experience in the natural stone or mining sector?

- ☐ Yes
- ☐ No

Do you have classroom teaching experience?

- ☐ Yes
- ☐ No

Do you have teaching experience in online training?

- ☐ Yes

- ☐ No

At what level of education do you teach?

- ☐ Degree
- ☐ Master's degree
- ☐ Doctorate
- ☐ Specialised course
- ☐ Other: _____

Do you know or have you worked with Blockchain technologies?

- ☐ Yes
- ☐ No

Do you have knowledge of Waste Management in the natural stone sector?

- ☐ Yes
- ☐ No

Have you received previous training related to circular economy or environmental sustainability?

- ☐ Yes
- ☐ No

Does your educational institution have specific tools or software related to Blockchain?

- ☐ Yes
- ☐ No
- ☐ Don’t know

Does your educational institution have specific tools or software related waste management?

- ☐ Yes
- ☐ No
- ☐ Don’t know

Do you consider it useful to include training in Blockchain applied to waste management in the natural stone and mining sector?

- ☐ Yes
- ☐ No

The following shows how this form looks like using the Microsoft Office Forms tool. The link and QR to the questionnaire in English are as follows: https://forms.gle/SroFEhwd7X8T37PY9

Research on the level of human and technological resource capacity for teaching RockChain

This questionnaire is part of the Erasmus+ RockChain project: "Transversal technological skills for the ornamental rock industry focusing on the applicability of Blockchain in a Circular Economy." It is conducted simultaneously in Germany, Spain, Croatia, and Romania.

Your honest responses will greatly help us to adapt and refine our curriculum and training materials according to the identified needs and capacities. The questionnaire specifically targets educators involved in teaching subjects related to the mining, natural stone industry, and sustainability practices. We aim to understand better the level of human and technological resources available at your institutions, to develop relevant and practical educational materials.

mcarlitos.146@gmail.com Cambiar de cuenta

No compartido

* Indica que la pregunta es obligatoria

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E-mail address *

Tu respuesta

Name of the organisation where you teach *

Tu respuesta

What is your gender? *

- ○ Male
- ○ Female
- ○ Otro: _____

What is your age range? *

- ○ Between 21 and 30 years old
- ○ Between 31 and 40 years old
- ○ Between 41 and 50 years old
- ○ Between 51 and 60 years old
- ○ Over 60 years old

In which of the following areas would you place your teaching activity? *

- ○ Mining
- ○ Geology
- ○ Construction
- ○ Environmental management
- ○ Engineering
- ○ Otro: _____

What is your educational background? *

- ○ Degree
- ○ Master's degree
- ○ Doctorate
- ○ Specialised course
- ○ Otro: _____

Do you have professional experience in the natural stone or mining sector? *

- ○ Yes
- ○ No

Do you have classroom teaching experience?

- ◯ Yes
- ◯ No

Do you have teaching experience in online training? *

- ◯ Yes
- ◯ No

At what level of education do you teach? *

- ◯ Degree
- ◯ Master's degree
- ◯ Doctorate
- ◯ Specialised course
- ◯ Otro: _____

Do you know or have you worked with Blockchain technologies? *

- ◯ Yes
- ◯ No

Do you have knowledge of Waste Management in the natural stone sector? *

- ◯ Yes
- ◯ No

Have you received previous training related to circular economy or environmental sustainability? *

- ◯ Yes
- ◯ No

Does your educational institution have specific tools or software related to Blockchain? *

- ◯ Yes
- ◯ No
- ◯ Don't know

Does your educational institution have specific tools or software related waste management? *

- ◯ Yes
- ◯ No
- ◯ Don't know

Do you consider it useful to include training in Blockchain applied to waste management in the natural stone and mining sector? *

- ◯ Yes
- ◯ No

In compliance with the provisions of the LOPD (Organic Law on the Protection of Personal Data), RockChain consortium informs you that your personal data reflected in our commercial documentation will be incorporated into an automated file with the purpose of being used for the development of the commercial activity itself and to inform you of those products, services and events offered by the entity and that could be of interest to you. You can select "no" in the question or, subsequently, exercise your rights of access, rectification, cancellation and opposition by sending a request to the following e-mail address: info@ctmarmol.es

- ◯ Yes
- ◯ No

3. RESULTS

The field research for WP2.A5 was conducted using a structured online questionnaire targeting higher education institutions, training centres and professionals in the natural stone and mining sectors in Germany, Spain, Croatia and Romania.

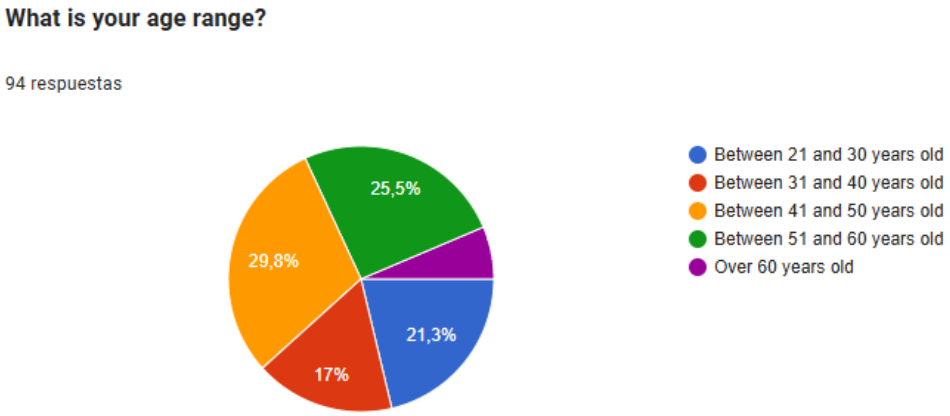
A total of 94 responses were collected. The analysis presented below summarises the main findings and offers an interpretation of their implications for the development of the RockChain project.

3.1 Respondent Profile

Most of the respondents were teachers with classroom experience, supplemented by a smaller proportion of professionals from the industrial sector. In terms of demographic profile, the 31-50 age group predominated, reflecting a mature and established cohort in teaching.

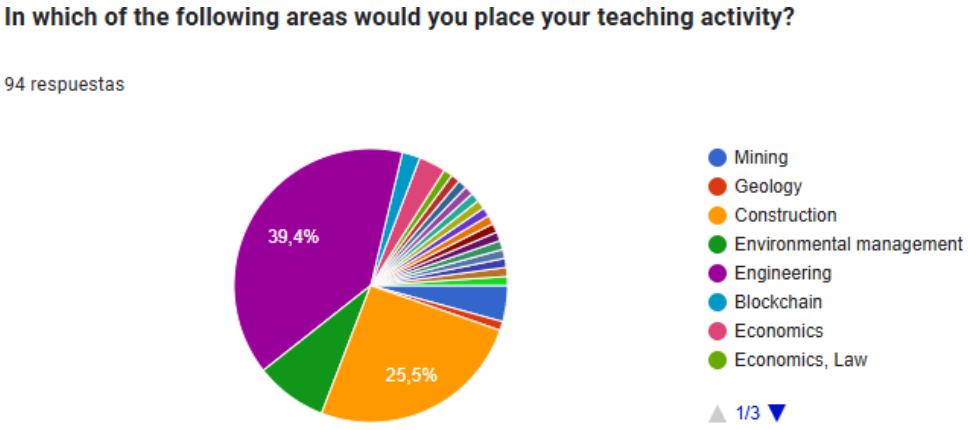
Educational levels were diverse, although there was a clear representation of people with postgraduate studies: a significant proportion had Master's or Doctorate degrees, ensuring a high level of academic specialisation.

In terms of teaching areas, respondents were mainly active in engineering, geology, construction and environmental management. However, fewer were directly linked to mining or blockchain technology, which points to a solid disciplinary relevance, but also highlights the need to strengthen digital skills and specific knowledge about blockchain.



3.2 Professional and Sectoral Experience

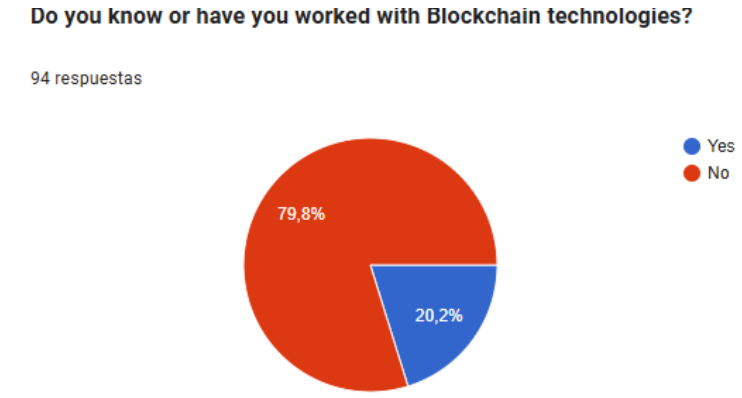
More than half of the respondents reported having previous professional experience in the natural stone or mining sector, which brings a valuable practical and applied approach to their teaching. However, there were also cases of participants with no direct contact with the industry, suggesting a possible gap between theory and practice in certain training contexts.

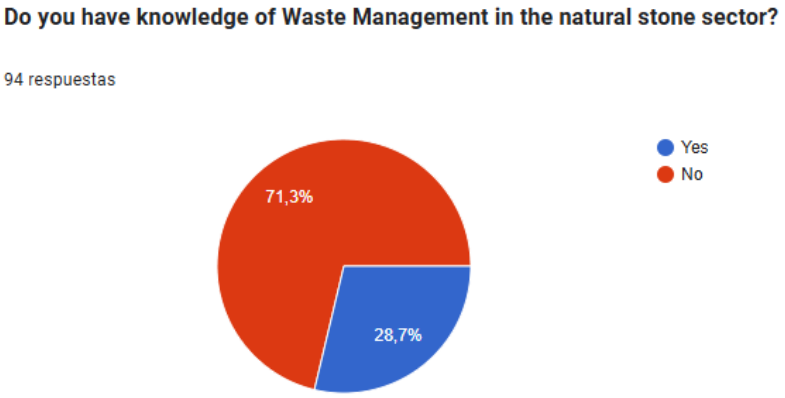


3.3 Digital and Technological Knowledge

The level of knowledge about blockchain technology among respondents was uneven: although a significant proportion claimed to have some familiarity or previous experience with this technology, others expressed little or no knowledge of it. Similarly, while knowledge of waste management in the natural stone sector was generally solid, it was not uniform in all cases.

This disparity highlights the relevance of the RockChain project as an educational tool, as it has the potential to connect digital skills—such as blockchain—with sustainable practices, particularly in relation to waste management in the stone sector.

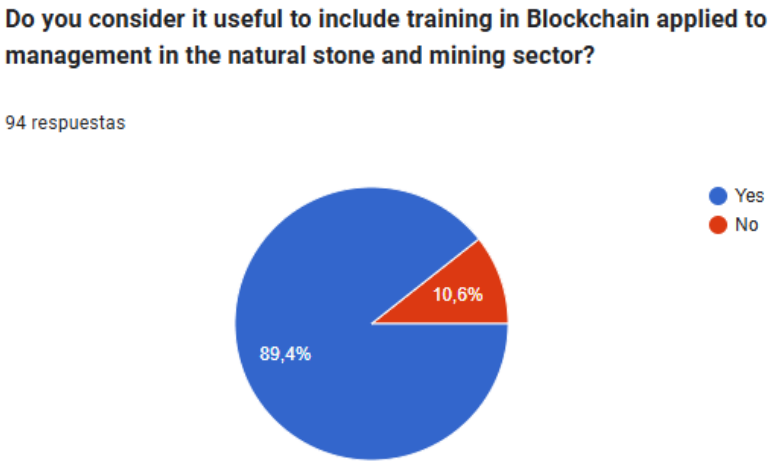




3.4 Training Needs and Opportunities

Most participants considered it useful to incorporate training in blockchain applied to waste management into educational programmes related to mining and natural stone. However, when asked about the use of institutional tools or specialised software, many pointed to the absence of specific platforms linked to blockchain or waste management, highlighting a significant technological gap.

This context highlights the potential of RockChain not only as an educational game, but also as a first practical approach to digital tools linked to the circular economy in this sector.



4. CONCLUSIONS

The results of this field research provide several key insights for the design and implementation of the RockChain curriculum:

1. **Solid academic foundation, but uneven digital literacy:** Respondents demonstrate a high level of training and experience in key areas such as geology, construction, and environmental management. However, knowledge of blockchain technologies remains limited and fragmented. This confirms the need to integrate cross-cutting digital skills into vocational training and higher education programmes in the natural stone sector.
2. **Relevant sector experience, but with room to strengthen links with industry:** Many teachers have professional experience in mining or ornamental stone, which adds great value in contextualising RockChain's content. However, limited direct experience with blockchain and partial knowledge of waste management strategies highlight the importance of closer collaboration between academia and industry to ensure the project's applicability.
3. **Curriculum gap and opportunity for RockChain:** The limited availability of institutional tools and specialised training suggests that RockChain can fill a gap in the curriculum by offering an innovative, gamified methodology. The project can act as a gateway to understanding blockchain, while promoting the principles of sustainability in the ornamental stone industry.
4. **Consensus on educational value:** There is broad agreement among respondents on the usefulness of training in blockchain applied to waste management, which validates the project's objectives. There is a clear demand for practical,

accessible and innovative tools, especially in the context of the circular economy and digital transformation.

In summary, the survey results show that the RockChain project responds both to an educational need (developing blockchain skills) and to a demand from the sector (improving waste management and sustainability skills). The next steps should focus on capacity building, the integration of digital tools and active dissemination in vocational training and higher education centres.