DIGIECOQUARRY
INNOVATIVE DIGITAL SUSTAINABLE AGGREGATES SYSTEMS

Horizon 2020 research and innovation programme (Nº 101003750)

Deliverable D7.1

Context narrative, Social risk matrix and Stakeholder Mapping

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Deliverable report

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List of Abbreviations

ABBREVIATION	DESCRIPTION
CA	Consortium Agreement
CES	Community Engagement Strategy
EC	European Commission
GA	Grant Agreement
IRMA	Initiative for Responsible Mining Assurance
IQS	Intelligent Quarrying System
RM	Raw Materials
SDGs	Sustainable Development Goals
SLO	Social Licence to Operate
TSM	Towards Sustainable Mining
WP	Work Package
VICAT	Granulats Vicat
HANSON	Hanson Hispania
CIMPOR	AGREPOR AGREGADOS - EXTRACÇÃO DE INERTES
HOLCIM	HOLCIM AGGREGATI CALCESTRUZZI
CSI	Cronenberger Steinindustrie Franz Triches GmbH & Co.KG

1 Executive Summary

This document constitutes the Deliverable D7.1. Context narrative, social risk matrix and Stakeholder Mapping of the DIGIECOQUARRY project. This deliverable corresponds to the Task 7.1 (Social Risk Analysis in the 5 pilot sites) of Work Package (WP) 7 Mechanisms for social acceptance & interaction with policymakers.

The Project INNOVATIVE DIGITAL SUSTAINABLE AGGREGATES SYSTEMS (H2020-SC5-2020-2) will exploit the aggregates industry´s great potential through a coordinated approach towards construction materials management with the final goal of reducing EU external supply dependency as well as leading to an efficient use of resources. DIGIECOQUARRY will develop systems, technology and processes for integrated digitization and automation real-time process control, to be piloted in 5 EU quarries with the target of improving health and safety conditions for workers. The pilot campaigns will lead to improved efficiency of processes maximizing quarry resources and sustainable management of water, energy emissions, minimized environmental impact and expanding the EU aggregates and construction business. Coupling Artificial Intelligence approaches with cyber-physical systems and the Internet of Things concept, make Industry 4.0 approach possible and the smart sustainable extractive site a reality. All phases of the process, from extraction to the end user are covered by DIGIECOQUARRY, ensuring communication with policy makers, social acceptance activities and international cooperation with the Colombia and South Africa partners to share knowledge and best practices. The development of an innovative Intelligent Quarrying System (IQS) will increase the sustainable supply of minerals for the construction sector as well as enabling the sustainable extraction of EU´s mineral resources in existing and new quarries.

This Project includes 25 partners and will last for 48 months, starting on 1st June 2021. It is divided into 11 Work Packages. One of them is Work Package 7 (WP7), named Mechanisms for social acceptance & interaction with policymakers, which will cover the complete duration of the Project.

The main objective of WP7 is to establish mechanisms, tools and methodologies to build long-term and mutually benefitting relationships between quarries and local stakeholders, ensuring the **obtention of the Social Licence to Operate (SLO) in the 5 pilot quarries**.

WP7 will work very close to the pilots in WP6 (and in line with WP9) to: (1) Obtain the social license to operate (SLO); (2) Generate community support and deliver positive and effective outcomes for Raw Materials (RM) projects; (3) Integrate the 5 pilot sites involved with the local identity and values; (4) Include community participation in RM projects decision-making and design; (5) Build trust, relationships, feelings of ownership, and a sense of collaboration through the provision of meaningful and ongoing community engagement with local stakeholders and other policy makers; (6) Establish and develop dialogue and participation processes with local communities; (7) Provide transparent and responsiveness access to project information and activities; (8) Define and implement one-way and two-way communication actions with policy makers.

2 Introduction and scope

The D7.1 deliverable is the first output of the task 7.1, Social Risk Analysis in the 5 pilot sites, run in the frame of WP7, Mechanisms for social acceptance & interaction with policy makers, led by ZABALA and involving the following other partners: ANEFA, VICAT, HANSON, HOLCIM, PESCHER, CIMPOR.

The **main objective of task 7.1** is to foster social acceptance of the quarrying sector by introducing novel participatory processes and engagement actions with local communities and policy makers to achieve the **Social License to Operate (SLO)** and improve public acceptance and trust of the new quarrying technologies.

Within this task 7.1, **ZABALA** has built a **context narrative** for each pilot site, including their key attributes and values and key aspects of local demographics, culture and history relevant to every quarry and the European Raw Materials (RM) sector. In parallel, **ZABALA** has identified the main **potential risks in the extractive industry** that could affect the DIGIECOQUARRY project development directly or indirectly. Based on this general risk identification, **ZABALA** will identify and described in deliverable 7.2 the key social risks of each pilot site.

Lastly, **ZABALA** has identified the **relevant stakeholders** of each pilot site, focusing on the local community and those with an interest in or influence on the project or developer (individuals, businesses, civil society, organisations and government).

2.1 Relation to other activities and deliverables

WP7 is devoted to social acceptance and interaction with policy makers to obtain the SLO and promote best quarrying practices. This WP will get the local communities and the general public involved to define the future of the non-energy extractive sector under this new approach.

Thus, WP7 will work very close to **WP8** and **WP9**. WP7 will establish mechanisms, tools and methodologies to obtain the SLO in the 5 pilot quarries. WP8 will establish a powerful, solid network of stakeholders and WP9 will ensure dissemination and communication, including exploitation and business plan definition.

Social acceptance, market uptake and management, will aim at developing and implementing the appropriate mechanisms for social acceptance (WP7) joining forces and finding synergies with related projects and initiatives through tailored networking activities with key stakeholders at EU/world level (WP8), defining and undertaking communication and dissemination actions to maximise the project impact (WP9).

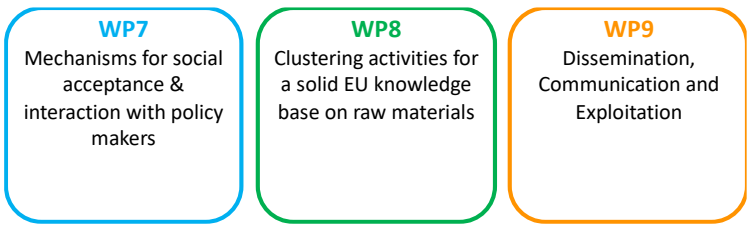


Figure 1 Relationship between WPs 7, 8 and 9

2.2 Structure of the deliverable

With the above in mind, the "Context narrative, social risk matrix and Stakeholder Mapping" is structured as follows:

Section 1 - Executive summary: Contains a brief statement of the project

Section 2 – Introduction and scope: Provides introductory information with respect to the Context narrative, social risk matrix and Stakeholder Mapping and its structure as well as its scope and its relation to other tasks, activities and deliverables.

Section 3 – Mechanisms for social acceptance: Introduces the background and rationale behind the social acceptance activities in the project.

Section 4 – Social Risk Matrix: Outlines the key social risks that could affect the DIGIECOQUARRY project development directly or indirectly.

Section 5 – Context narrative for each pilot site: Provides an overview of the local context of each pilot site.

Section 6 – Stakeholder mapping: Identifies the most relevant stakeholders in each pilot site with an interest in or influence on the project.

Section 7 - Conclusions: Pertains the conclusions of the Context narrative, Social Risk Matrix and Stakeholder Mapping as well as the way forward.

3 Mechanisms for social acceptance

One of the main specific objectives of DIGIECOQUARRY will be to foster social acceptance by introducing novel participatory processes and engagement actions with local communities and policy makers by establishing a **Community Engagement Strategy (CES)** in order to achieve the **Social License to Operate (SLO)** and improve public acceptance and trust of the new quarrying technologies. As a result, the project will generate positive Environmental, Social, H&S and Economic impacts related to quarries, contributing to expand and strengthen the EU aggregates industry.

To achieve so, the first task to conducted in this deliverable has been to understand the European Raw Materials sector and its key social risks as well as the local context of each pilot site. As a second stage, the identification of stakeholders has been carried out for each pilot site, focusing on the local community and those with an interest in or influence on the project.

3.1 Social License to Operate (SLO) and stakeholder engagement

A SLO refers to the level of acceptability or approval of organizations and their operations by local communities and stakeholders. The concept of SLO is based on the premise that businesses require not only governmental approval but also "social approval" in order to operate. SLO does not refer to a legal agreement or document, but rather to an organization's or project's genuine or existing credibility, reliability, and acceptance. The SLO is the major output of an organization's ethics, labour, and sustainability practices, as well as its risk communication and stakeholder engagement efforts.

For accomplishing the SLO, excellent community connections, transparency and information disclosure, good and open communication, public participation, and stakeholder involvement are all considered as critical.

Raw Materials (RM) and aggregates companies should also considerate cultural norms, set realistic expectations, implement fair dispute resolution procedures, maintain consistency and predictability in their ethical behaviour, and endeavour to satisfy community requirements.

Community engagement is thus critical to achieve a SLO. Establishing a **Community Engagement Strategy (CES)** can help to establish an open and meaningful dialogue that can serve to build trust, respect, and legitimacy for the organization's operations, as well as support successful decision-making. Because participation may address community concerns, manage expectations, leverage local expertise, and aid in the negotiation of a mutually desirable future, it is important.

The development of a **CES involves four stages** (Fig. 2). **First of all**, understanding of the local context which involves constructing a 'story' of the local context for each pilot site. This will include key aspects of local demographics, culture and history relevant to every quarry. In addition, understanding of the European RM sector and its key social risks that could affect the DIGIECOQUARRY project development directly or indirectly.

The **second stage** is the identification and mapping of stakeholders. In this stage, the most relevant stakeholders will be identified for each pilot site, focusing on the local community and those with an interest in or influence on the project or developer (individuals, businesses, civil society, organisations and government). Then, each stakeholder will be ranked according to the degree of influence they exert on the company and vice versa. These results will be mapped on a stakeholder mapping matrix, a two axes Influence/Interest graph that will allow to get a visual representation of all the stakeholders who can influence the project and how they are connected. The location of the stakeholder on the map will determine the intensity, frequency and types of engagement required.

The **third stage** will define a general Community Engagement Strategy (CES). This CES will be then adapted to each pilot site on the basis of the stakeholder categorization. This strategy will include: 1) Communications and Social Awareness plan; 2) Complaints management plan, and 3) Local engagement plan.

The **last stage** will include the development of a monitoring plan that will allow for measuring the effectiveness of the CES as well as for modifying communication and engagement activities as appropriate.

This deliverable covers stage one and two. Stages three and four will be covered in the following deliverables.

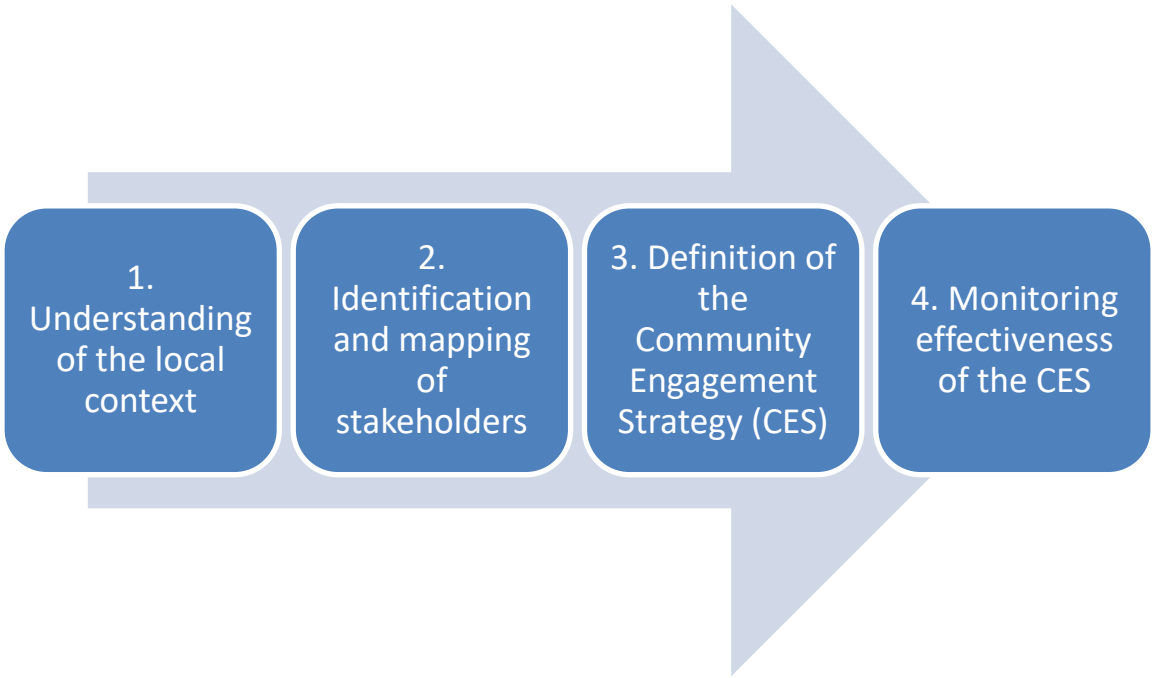


Figure 2 Stages for the definition of the Stakeholder Engagement Strategy (CES)

4 Social Risk Matrix

The Social Risk Matrix outlines the key social risks that could affect the DIGIECOQUARRY project development directly or indirectly. In this deliverable we will focus on the identification of the general factors that create the social risks in the European Raw Materials sector.

To do so, we will first outline the **EU Principles for Sustainable Raw Materials**, the main principles that contribute to an integrated approach to sustainable raw materials extraction and processing in Europe in terms of social, environmental, and economic performance, and which will be sought to ensure throughout the project. Then, we will identify the main risks that threaten these principles.

The application of the **EU Principles for Sustainable Raw Materials** throughout the project will help to mitigate the potential risks identified in the European Raw Materials sector.

Deliverable 7.2 Social Risk Analysis will outline in detail the specific risks pertinent to each pilot site, evaluate them and make recommendations to mitigate them.

4.1 EU principles for sustainable raw materials

The objective of the **EU Principles for Sustainable Raw Materials** is to align the understanding of sustainable raw materials extraction (from exploration to post-closure) and processing operations in the EU amongst Member States and define the general direction towards the SDGs. This will lead to a common European understanding on sustainability principles that can contribute to coherence amongst emerging certification and labelling schemes, and those existing practices, codes and standards are recognised.

These principles should enable to better communicate with the public on the conditions under which sustainable raw materials extraction and processing takes place in Europe and increase public acceptance for this activity.

The principles are built upon existing EU legislation concerning sustainability and refer to internationally agreed sustainable raw materials extraction and processing initiatives including Towards Sustainable Mining (TSM) and the Initiative for Responsible Mining Assurance (IRMA) *(see Annex I)*.

The **EU Principles for Sustainable Raw Materials** are applicable in the EU to the extraction and processing stages of non-energy raw materials and to the entire minerals value chains lifecycle from exploration to post-closure, as well as to the production of secondary raw materials from extractive waste streams such as waste rocks, processing wastes/tailings (Fig. 3).

Figure 3 Stages of RM production covered by the EU Principles for Sustainable Raw Materials

The **EU PRINCIPLES FOR SUSTAINABLE RAW MATERIALS** are founded on the goals and values of the EU as laid down in the EU Treaties (Fig. 4, table 1).

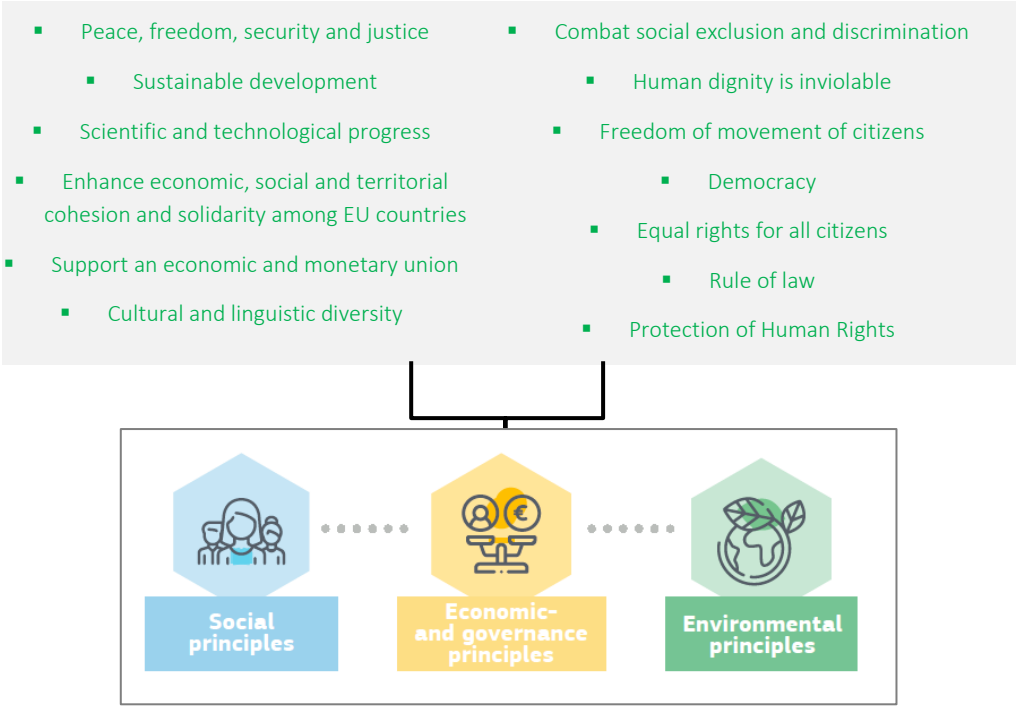


Figure 4 EU principles for sustainable raw materials

1. SOCIAL PRINCIPLES *Human rights, engagement with communities of interest, employment, health and safety*
1 SUPPORT HUMAN RIGHTS, COMMUNITIES AND SOUND GOVERNANCE THROUGH
A. Respect for human rights, cultures, customs and values of people, including **indigenous populations**, affected by extraction and processing activities
B. A constructive and active dialogue with communities and workers concerned, including those of indigenous people, to advance the social, economic and institutional development of those communities. The dialogue shall be effective and transparent and deliver on reporting arrangements with concerned stakeholders.
C. Commitment to ensure safe living conditions in communities concerned, including of indigenous people, are not jeopardised by unsafe extraction and processing operations
2 SUPPORT DECENT WORK FOR THE WORKFORCE THROUGH:
A. Improving the **worker's health and safety** with the commitment of achieving a zero accidents target
B. Continuously **improving the skills** of the workers, creating and maintaining a stable and quality workplace
C. Respect for **worker's rights** in line with the International Labour Organization Fundamental Conventions
2. ECONOMIC AND GOVERNANCE PRINCIPLES *Business integrity, transparency and wider economic contribution*

3 COMPLY WITH ALL LAWS AND REGULATIONS IN THE EU
4 Constitute an essential BUILDING BLOCK FOR SUSTAINABLE VALUE CHAINS that have a strategic importance for ECONOMIC GROWTH and the SUSTAINABILITY OF EUROPE'S ECONOMY AND SOCIETY including the transition to CLIMATE NEUTRALITY and a DIGITAL ECONOMY while complying with the principle of DO NO SIGNIFICANT HARM as stated in the European Green Deal in that they:
A. Contribute to the **economic growth and the socioeconomic advancement of communities**, including indigenous people, associated with or affected by extraction and processing operations
B. Are carried out to **ensure long-term sustainability and economic viability** to develop and meet the needs of modern society for minerals and metals
C. Facilitate innovation and encourage the **uptake of digital technologies for safer, cleaner and cost-effective** production processes
D. Implement **circular economy and resource efficiency** driven mineral-based technology value chains to promote waste recovery, and enable energy transition and electrification
5 APPLY SOUND FINANCIAL MANAGEMENT IN THE FOLLOWING WAYS:
A. By applying a properly **accountable management** with respect to all financial matters and the environmental and social aspects of the operations
B. By integrating **sustainability** in the corporate governance strategies and management systems building on **corporate social responsibility** including risk management and respect for the **rule of law**
C. By applying **robust systems of transparency** including in the non-financial reporting matrix to investors and the public
D. By adhering to **ethical corporate practices** maintaining the highest business integrity in all operations and to sound systems of governance as laid down in EU and national legislation and relevant internationally accepted guidance
3. ENVIRONMENTAL PRINCIPLES *Environmental management and impact mitigation*
6 APPLY SOUND ENVIRONMENTAL MANAGEMENT PRACTICES. IT IS ENSURED BY:
A. Applying **sound science- and knowledge-based environmental management** of technical and economic feasibility, which is in alignment with the current legal framework in place and the European Green Deal; the main **negative impacts** of the operations on the environment (e.g. water, air, soil) as well as resulting **damages** will be adequately **monitored, assessed and minimised**
B. **Environmental protection and mitigation** measures being applied throughout the life of an extraction and processing operation, **from exploration to post closure**
C. Applying the **best available techniques on extractive waste management**, in line with the Extractive Waste Directive and the Reference Document for the Management of Waste from Extractive Industries (MWEI) BREF in place
D. Applying, in line with current EU legislation and the European Green Deal and Biodiversity Strategy, the **conservation of biodiversity**, and any negative impact on biodiversity is minimised and where legally stipulated compensated through implementation of **integrated approaches** as well as **reconciliation** of extractive and processing activities in Natura 2000 sites
7 IMPROVE AND PROMOTE EFFICIENT ENERGY USE, SUPPORT CLIMATE CHANGE MITIGATION AND ADAPTATION MEASURES THROUGH:
A. Improving the **efficiency of energy use** and promoting the use of **renewable energy sources** in order to minimise greenhouse gas emissions. The **CO2 equivalent emissions are measured** and/or estimated and reported in line with accepted reporting standards laid down in EU and national/regional legislation

B. Supporting or alignment with the **objectives of global climate agreements** through science-based targets for the **reduction or mitigation of CO2 equivalent emissions** and promoting the use of available renewable energy sources
C. Assessing the vulnerability of operations to climate change, improving resilience of operations to climate change through suitable adaptation measures and contributing to the resilience of nearby communities, including indigenous people, in the face of climate change effects
8 INCLUDES MATERIALS STEWARDSHIP AND CONTRIBUTES TO THE EU'S CIRCULAR ECONOMY WHERE POSSIBLE AND WITHIN ITS RESPONSIBILITIES THROUGH
A. Facilitating and encouraging the promotion of **safe use, recycling and disposal of products** through an understanding of their material use or material stewardship in thematic areas
B. Promoting material stewardship in mining and processing, including economic extraction of by-products and the recovery of raw materials from mining and processing waste as well as other secondary resources

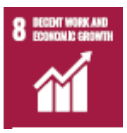
Table 1 Principles for sustainable raw materials

4.2 Potential risks in the European RM sector

This section provides the potential risks identified within the European RM sector which would threaten the application of the EU Principles for Sustainable Raw Materials (Table 2).

Deliverable 7.2 Social Risk Analysis will outline in detail the specific risks pertinent to each pilot site, evaluate them and make recommendations to mitigate them.

SDG	POTENTIAL RISKS	Link to EU Principles for Sustainable Raw Materials
	Avoid taxes, depriving governments of budget contributions that could be invested into basic public goods	Principle 5
	Hinder land-based livelihoods through air and water pollution and footprint of mining operations	Principle 1
	Displace and resettle mining-affected communities without adequate provisions for sustained livelihoods	Principle 1
	Compete for land resources, reducing area available for agricultural production	Principle 6
	Pollute land and water resources required for agricultural production	Principle 6
	Leave post-mining land in an unproductive state, due to inadequate rehabilitation	Principle 6
	Expose workers to risks of fatal accidents, injuries and physical and mental health problems	Principle 2
	Expose mining-affected communities to health and safety risks	Principle 1
	Expose human rights defenders to risk of attack	Principle 1
	Trigger health and safety risks for children and women due to mine-related in-migration of labour	Principle 1

	Exacerbate social conflict and local inequalities by bringing in skilled and unskilled workers from outside	Principles 1, 4
	Resettle mining-affected communities without ensuring access to schools	Principle 1
	Discriminate against women applicants in recruitment processes	Principle 2
	Discriminate against women workers in professional development processes	Principle 2
	Marginalise women in mining-affected communities from discussions, decision-making and benefit-sharing activities	Principle 1
	Fail to address gender-based violence commonly exacerbated by presence of mining	Principle 1
	Fail to prevent acid mine drainage	Principle 6
	Exacerbate water stress by competing for water supply	Principle 6
	Pollute water sources from poor waste management and from tailings storage facilities leakages or failures	Principle 6
	Fail to provide gender-appropriate sanitation facilities for women workers	Principle 2
	Increase competition for grid-based power	Principle 7
	Increase share of non-renewable energy produced and consumed	Principle 7
	Slow down move towards renewable energy sources	Principle 7
	Fail to address risk of over-reliance on mining for economies and employment	Principle 4
	Perpetuate poor labour practices and unsafe working conditions	Principle 2
	Fail to ensure no child labour in operations or supply chain	Principles 2, 3
	Limit local jobs to low-paying positions and fail to pay a living wage	Principle 2
	Increase local frustration due to increased automation decreasing local job creation	Principle 4
	Under-report value/quantity of raw materials extracted/exported to controlling authorities	Principle 5
	Fail to support shared infrastructure, constraining economic development of producing countries	Principle 4
	Fail to engage with in-country institutions for R&D, to increase capacity for innovation	Principle 4
	Exclude local business and SMEs from procurement and sourcing programmes	Principle 4
	Instigate local inflation due to in-migration	Principle 4
	Engage in unequal revenue spending and distribution	Principle 4

	Exacerbate regional inequalities within and between countries	Principle 4
	Maintain wage gap between expat and local workers	Principles 2, 4
	Resettle mining-affected communities without adequate provisions for livelihoods and social cohesion	Principles 1, 4
	Fail to plan for just transition for communities after mine closure	Principles 1, 4
	Destroy or compromise cultural and natural heritage	Principle 6
	Fail to manage settlement growth and urbanisation due to population influx, straining public infrastructure and resources, and resulting in conflict	Principles 1, 4
	Pollute air, land and water	Principle 6
	Externalise the socio-economic and environmental costs of mining	Principle 5
	Disincentivise transition to recycling and a circular economy	Principle 8
	Inadequately address waste management, tailings management and pollution prevention	Principles 6, 7, 8
	Mine very low-grade ores that generate excessive waste material	Principle 8
	Contribute to production and use of coal	Principle 7
	Amplify energy- and emissions-intense economies	Principle 7
	Exacerbate climate change impacts on populations and environments	Principles 1, 6, 7, 8
	Disturb ecosystems and exacerbate deforestation	Principle 6
	Exacerbate adverse impacts due to subsea shallow mining and deep-sea mining	Principle 6
	Discharge waste and tailings into rivers, lakes and marine environments	Principles 6, 8
	Adversely impact marine resources due to port infrastructure	Principle 6
	Fail to prevent acid mine drainage	Principle 6
	Degrade ecosystems and harm biodiversity due to mining operation footprints and pollution	Principle 6
	Increase environmental strain due to in-migration and increased economic activity	Principle 6
	Facilitate access to illegal activities including deforestation and poaching	Principle 6
	Leave long-term environmental problems due to inadequate rehabilitation	Principle 6
	Fail to prevent acid mine drainage	Principle 6
	Fail to eradicate risk of illicit financial flows and poor governance	Principle 5

	Exacerbate risk of bribery and corruption	Principle 5
	Increase conflicts fuelled by certain minerals	Principles 1, 5
	Fail to eliminate child labour from operations and supply chain	Principles 2, 3, 5
	Withhold public access to public interest information	Principle 5
	Contribute to debilitating lobbying against global governance around climate change, circular economy and tax reforms	Principles 5, 6, 7, 8
	Erode domestic revenue collection and undermine public financing	Principle 5
	Persist with the enclave model	Principle 4
	Fail to publicly disclose public interest data on socio-economic, environmental and governance impacts	Principle 5

Table 2 Potential risks in the European RM sector

5 Context narrative for each pilot site

This section provides the **context narrative for the 5 pilot sites**, including their key attributes and values and key aspects of local demographics, culture and history relevant to every quarry.

5.1 Pilot #1. VICAT (Fenouillet, France)

GENERAL INFORMATION:

Company	GRANULATS VICAT
Type	Large company
Quarry	FENOUILLET
City	31150 Fenouillet
Region	Haute-Garonne, Occitanie
Country	France

Table 3 Vicat general information

TYPOLOGY AND PRODUCTION:

Typology	Recycled materials plant
Ores	Alluvial raw materials
Automation	Low level of automation
Production	60 - 170.000 Tn/year
End use of products	RMC, mortar, road subbase
Size	46.000 m2
Workers	4 employees on site for the quarry activity + third parties

Table 4 Vicat typology and production

The VICAT Group is a cement group, based in France with a turnover of 2,6 billion euros. Present in 13 countries, it employs nearly 9.000 people. The VICAT Group has three main businesses: cement, ready-mixed concrete (RMC) and aggregates. GRANULATS VICAT is its subsidiary grouping all quarries and recycling/trading platforms in France. GRANULATS VICAT operates more than 40 quarries in France. Very involved in the circular economy, 60 of its sites participate to the recovery of construction and demolition wastes: recycling platforms or quarry's restoration made with external materials from job sites (earthworks, etc.).

The FENOUILLET site is an urban treatment plant of 46.000 m2 built in 1970 and originally located on the outskirts of the city of Tolouse in the municipality of Fenouillet, in the department of Haute-Garonne, 9 km from Toulouse and 3 km from Castelginest. The municipality is part of the living area of Toulouse which counts with one million inhabitants.

However, due to the exponential growth that the city has undergone, today the site is located in the middle of a commercial area with a civic centre and many restaurants and stores such as Decathlon, McDonalds and Burger King (Fig. 5).

This plant has the particularity of not having any extraction site linked. It only works by recovering raw materials issued from local earthworks. The plant also acts as a recipient of demolition waste, where it is treated and supply as fill material to another concrete plant installed on the same site and to supply customers. These continuous inflows and outflows of aggregates are possible due to its strategic location.

This site is at the forefront of the circular economy in the field of building and public works. It is indeed very rare to find such a large recycling platform in the immediate vicinity of a large urban centre, producing very upgraded products such as aggregates for concrete. This saves on raw materials, transport to evacuate construction and demolition wastes and transport again to bring back aggregates.

It is worth mentioning the great recovery work that FENOUILLET is carrying out to minimize the visual impact produced by the plant. The plant has erected earth walls planted with trees, as well as reconditioned a small lake within the limits of the exploitation site.

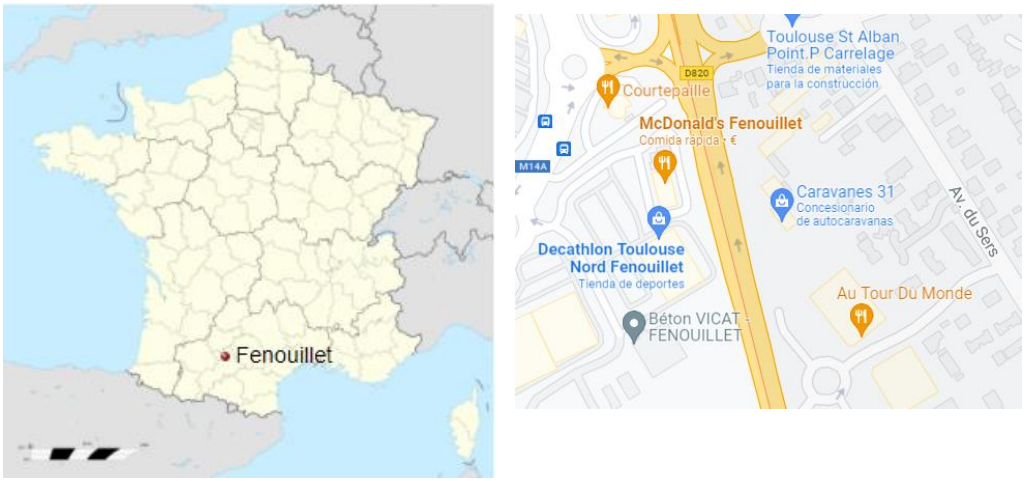


Figure 5 Location of Fenouillet quarry in France

DESCRIPTION OF THE PHYSICAL CONTEXT

The city of Fenouillet is established on the first terrace of the Garonne river on the right bank, in the Toulouse urban area. The area of the municipality is 951 hectares; and its altitude varies from 115 to 129 meters. The town is in the basin of the Garonne, specifically within the hydrographic basin Adour-Garonne. It is drained by the Garonne, a tributary of this rivers, the Maltemps stream and by two small streams, constituting a hydrographic network of 10 km in total length. The climate that characterizes the town is "climate of the South-West Basin" according to the typology of the climates of France which has eight main types of climates in mainland France.

The municipality of Fenouillet counts with **two natural protected areas**: the “Bras mort de Fenouille”, subject to a biotope protection order with an area of 58,4 ha; and the “Cours inférieur de la Garonne”, subject to a biotope protection order with an area of 452.7 ha.

In addition, two **Natura 2000 sites** have been defined in the municipality:

One of them under the Habitats Directive: the "Garonne, Ariège, Hers, Salat, Pique et Neste", with an area of 9.581 ha, a hydrographic network for migratory fish (active and potential spawning grounds important for salmon in particular which is the subject of regular stockings and whose adults have already reached Foix sur l'Ariège.

And the other one under the Birds Directive: the "Valley of the Garonne from Muret to Moissac", with an area of 4.493 ha, hosting a well-represented diversity of avifauna, but with limited numbers of some species (in particular, decline in the populations of several species of herons). Seven species of herons nest there, including the purple heron, as well as the black kite (with significant numbers), the booted eagle, the lesser plover, the melanocephalic gull, the common tern and the kingfisher.

ADditionally, a **natural area of ecological, faunal and floristic interest** has been listed in the municipality: the "Garonne from Montréjeau to Lamagistère" (5.075 ha), covering 92 communes including 63 in Haute-Garonne, three in Lot-et-Garonne and 26 in Tarn-et-Garonne and the "Garonne and riverside environments, downstream of Montréjeau" (6.874 ha), covering 93 municipalities including 64 in Haute-Garonne, three in Lot- et-Garonne and 26 in Tarn-et-Garonne.

The **land use of the municipality** (Fig. 6) is marked by the importance of artificialized territories (46,7% in 2018), decreasing compared to 1990 (50,9%). The detailed distribution in 2018 is as follows: heterogeneous agricultural areas (32,9%), urbanized areas (24,7%), industrial or commercial areas and communication networks (19,4%), inland waters (11,8%), grasslands (5,9%), artificialized green spaces, non-agricultural (2,6%), forests (2,5%), shrub and/or herbaceous vegetation (0,1%).

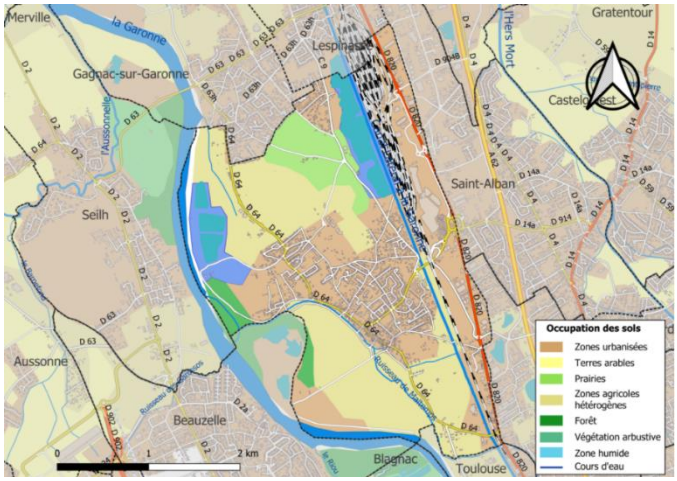


Figure 6 Map of the infrastructure and land use of the municipality of Fenouillet (CLC, 2018)

DESCRIPTION OF THE SOCIOECONOMIC CONTEXT

Fenouillet has a population of 5.307 inhabitants (2019), an increase of 3,79% compared to 2013. The city has a population density of 558 inhabitants / km2. In 2018 the municipality had 2.307 tax households with 5.307 employees. The median disposable income per consumer unit was €22.140 (23.140 € in the department of Haute-Garonne).

	2008	2013	2018
Municipality of Fenouillet	7,30%	7,70%	10,90%
Department of Haute-Garon	7,70%	9,60%	9,30%
France	8,30%	10%	10%

Table 5 Unemployment rate in 2008, 2013 and 2018 (INSEE, 2022)

In 2018, the population aged 15 to 64 amounted to 3.385 people, of whom 79,2% were in the labour force (68,% employed and 10,9% unemployed) and 20,8% were inactive. In 2018, the municipal unemployment rate of 15–64-year-olds was higher than that of the department and France, while in 2008 the situation was the opposite.

The municipality is part of the crown of the Toulouse attraction area, due to the fact that at least 15% of the workforce work in the cluster. It has 2.940 jobs in 2018, compared to 2.734 in 2013 and 3.296 in 2008. The number of employed persons residing in the municipality is 2.332, i.e. an indicator of employment concentration of 126,1% and an activity rate among those aged 15 or over of 63,6%. Of these 2.332 employed persons aged 15 or over, 447 work in the municipality, i.e. 19% of the inhabitants.

5.2 Pilot #2. HANSON (Valdilecha, Spain)

GENERAL INFORMATION:

Company	HANSON HISPANIA
Type	Large company
Quarry	HANSON VALDILECHA
City	Valdilecha
Region	Madrid
Country	Spain

Table 6 Hanson general information

TYPOLOGY AND PRODUCTION:

Typology	Limestone hard rock quarry
Ores	Limestone
Automation	No internal transport. High level of automation
Production	1.200.000 Tn/year
End use of products	Construction (RMC, asphalt, mortar, road base, subbase, etc.), Calcium, Carbonate industries
Size	582.000 m2
Workers	21 workers + third parties

Table 7 Hanson typology and production

Hanson Hispania (HANSON) is a subsidiary of HeidelbergCement, which is the leading aggregates producer in the world with around 55.000 employees at more than 3.000 production sites in more than 50 countries on five continents. The core activities of HeidelbergCement include the production and distribution of cement and aggregates. Its downstream activities include mainly the production of ready-mix concrete, asphalt and other building products. HANSON has the expertise to add value to the team and resources to apply and implement the right technologies to try them out, improve them and validate them.

The Valdilecha quarry is located in the north of the municipality of Valdilecha (Madrid), in the area called Los Cuarteles, next to the intersection of local roads M-221 and M224 (Fig. 7). The exploitation concession was granted by the General Directorate of Industry, Energy and Mines of the Autonomous Community of Madrid on June 21, 1992. Out of the entire area covered, only part of the three grids of the concession area are exploited (Fig. 7), which correspond to the areas authorized for their exploitation by the DIA (Declaración de Impacto Ambiental, Environmental Impact Statement) and from the resolution of the DG of Historical Heritage dated September 17, 2014.

The exploitation of the Valdilecha quarry is dedicated to the extraction of limestones in the form of aggregates, mainly for the production of concrete. The quarry has two exploitation concessions for section C (called Esperanza I and Esperanza III) and for section A (La Insuperable) that overlaps the first one.

The ownership of the land belongs to **Hanson-HeidelbergCement**. HeidelbergCement Hispania is the Spanish subsidiary of the HeidelbergCement Group and represents the sum of two leading Spanish companies in the construction sector: FYM and Hanson, which now have the support of a world-leading Group.

Figure 7 Location of Valdilecha in the the Community of Madrid

Figure 7 Mining grids of Valdilecha quarry

DESCRIPTION OF THE PHYSICAL CONTEXT

The quarry is located at an altitude of about 800 meters above sea level. The quarry borders to the north with the regional highway M-221, to the east is the Arroyo de la Cueva, about 400 meters to the west is the regional highway M-224 and 1.800 meters to the south is the town of Valdilecha.

The activity of the quarry is focused on the limestone extraction, so abundant in this region. The surroundings are characterized by their **lowlands landscapes**, such as hills and ravines that always have presented an antrophogenic pressure, since this region has a great agriculture heritage. The quarry is thus ubicated in an agricultural area, on a large cereal-producing plain with tree crops (almond and olive groves) and holm oak scattered on the margins of the crops.

The whole region has a **typical Mediterranean climate**, mainly characterized by its strong temperature contrast between summer and winter. The summers are very warm, and the winters are long and cold, more or less humid with average annual rainfall of 440 mm and average temperature of 13,2 ºC. This continental Mediterranean climate is also characterized by suffering a strong drought summer period.

The native flora and fauna are adapted to this long hydric stress period, having developed different survival strategies. The area corresponding to the exploitation and its surroundings, includes the optimum climatic vegetation of the Mesomediterranean series of the holm oak. In its mature stage it corresponds to a dense forest of oaks, with a not very dense shrubby undergrowth. The climate is dry-medium, and the soils are rich in clay-sand. The area surrounding the quarry is mainly made up of rainfed agricultural land, vacant lots, arid gypsum and limestone rocky areas with reforested pine forests and scattered patches of kermes oak-esparto grass.

The existing fauna in the surroundings is made up of mammals such as the European rabbit (*Oryctolagus cuniculus*), the Wild Boar (*Sus scrofa*) and the Iberian Hare (*Lepus granatensis*), in addition to the secondary presence of foxes, various mustelids and small rodents. Among birds there are various groups differentiated by the spaces in which they live, take refuge, feed or reproduce. The most characteristic group is that of rocky birds, those that take advantage of rocky cliffs and cracks. Within this group of birds, the Common Kestrel (*Falco tinnunculus*), the Little Owl (*Athene noctua*) or the Barn Owl (*Tyto alba*) are common. The species of amphibians are mostly linked to the bodies of water in streams, ditches and ponds, such as the Common midwife toad (*Alytes obstetrícans*) or the Iberian painted frog (*Discoglossus galganoi*). As for the reptiles found in the area, we can find the Iberian worm lizard (*Blanus cinereus*) or the Iberian wall lizard (*Podarcis hispanica*).

DESCRIPTION OF THE SOCIOECONOMIC CONTEXT

There are no inhabited buildings in the vicinity of the mining concession. The closest population centre is the town of Valdilecha, and it is located about 1.800 meters from the mining quarry. In 2021, the population of Valdilecha is made up of 3.079 inhabitants, 1.581 men (51,34%) and 1.498 women (48,65%) (Table 8), following a positive evolution in the number of inhabitants year after year. The average age of the inhabitants of Valdilecha was 40,16 years, 0,91 years more than five years ago when it was 39,25 years.

Age of population	Total %	Men	Women
Population under 18	599 (19,5%)	306	293
Population between 18 and 65 years	2.061 (66,9%)	1.077	984
Population over 65 years	419 (13,6%)	198	221
Total population	3.079	1.581	1.498

Table 8 Population age by sex in Valdilecha (INE 2021)

The average gross income in the municipality of Valdilecha per declarant was 23.824 euros in 2019, which represents a variation of 1.423 euros (6,35%) compared to the previous year.

In 2020, there were a total of 167 companies in Valdidecha (Table 5) which represent a variation of 11% with respect to the previous year. According to the type of activity, the main activity in the municipality is Commerce, transport and hospitality. The extractive industry represents the 5% of the companies in the municipality.

Type of activity	Number of companies
Commerce, transport and hospitality	75
Services	43
Construction	39
Extractive industries	10
Total	167

Table 9 Number of companies by type of activity (2020)

The total number of unemployed in Valdilecha in 2021 was 254 people, of which 92 are men and 162 women (INE, 2021). People over 45 years of age with 129 unemployed are the age group most affected by unemployment, followed by those between 25 and 44 years of age with 110 unemployed; the least numerous groups is that under 25 years of age with 15 unemployed. By sectors, the services sector is where the largest number of unemployed exists with 171 people, followed by industry with 29 unemployed, construction with 22 unemployed and finally agriculture with 8 unemployed.

5.3 Pilot #3. HOLCIM (Milano, Italy)

GENERAL INFORMATION:

Company	HOLCIM AGGREGATI CALCESTRUZZI
Type	Large company
Quarry	HOLCIM - Pioltello San Bovio
City	20096 Pioltello, Metropolitan City of Milan
Region	Lombardia
Country	Italy

Table 10 Holcim general information

TYPOLOGY AND PRODUCTION:

Typology	Sand and gravel pit with dredge extraction (under water table) site and aggregates treatment plant
Ores	Alluvial Granite, quartzite, metamorphic rocks (gneiss), carbonate
Automation	Low level of automation
Production	400.000 Tn/year of aggregates
End use of products	Construction, RMC, cement, bituminous conglomerates, precast, mortars, and road foundations
Size	420.000 m2
Workers	10 internal employees + third parties + external transport

Table 11 Holcim typology and production

Holcim Aggregati Calcestruzzi s.r.l. (HOLCIM) is a Holcim Group company that produces aggregates for construction and road works and ready-mix in the northern Italy market. The Company has been working in the market of aggregates and ready-mix for more than 40 years. HOLCIM has been one of the main players in the market of Northern Italy for the cement for more than 100 years. It manages 6 quarries and 15 ready-mix plants.

The HOLCIM Pioltello San Bovio quarry is located in the municipality of Pioltello in the Metropolitan City of Milan in the Italian region Lombardy, located about 7 kilometres (4 mi) from Milan. The excavation works at HOLCIM Pioltello San Bovio quarry takes place in the water table by means of a clamshell dredger. The plant provides a wide range of both natural and crushed products, ranging from sifted and crushed sand, to crushed stone and gravel of different grain sizes.

Pioltello has a population of 35.821 (2020) and a population density of 2.736,52 inhabitants / km². Despite the very strong population growth and the birth of low-cost and low-quality residential districts, particularly in the 1960s and 1970s, Pioltello still has large agricultural and green areas, which divide it from Milan and Segrate and bring it closer to the Municipalities of Martesana. Since 1999 Pioltello has acquired the motto with which it currently presents itself as the city of three parks: Parco delle Cascine (defined as Local Park of Supracomunale interest), the Trenzanesio Park (Villa Invernizzi) and the Bosco della Besozza, this latter owned by the municipality and on which one of the urban forests financed by the Lombardy Region is rising.

The economy of the municipality of Pioltello is based on industry, particularly in the industrial machinery, chemical, paper, textile, food, furniture, rubber and plastics sectors. The agriculture industry produces vegetables, cereals and fodder for cattle breeding.

Another municipality influenced by the Pioltello San Bovio quarry is **Peschiera Borromeo**. With a population of 23.485 inhabitants in 2018 and a population density of 1.000 inhabitants/km2, the Peschiera Borromeo is a rich territory in the country, being among the first in Italy for per capita income. The area shares multiple elements as much of the area eastern part of the Milanese province such as:

- a high level of urbanization along the roads, partly linked to the latter decades of the last century and in part still in progress.
- a high rate of active population, mainly employed in production manufacturing and service sector
- widespread entrepreneurship with a good orientation towards exports and good employment levels.

Although largely falling within the southern Milan agricultural park, Peschiera Borromeo has no longer agricultural vocation for some decades. An important residential centre with a strong productive ecosystem has been developed with milk and fresh pasta production plants, computer and chemical factories as well as a flourishing fabric made up of small and medium-sized industries.

From an **environmental** point of view, Peschiera Borromeo features the Carengione Forest, originally a hunting reserve for the Counts of Borromeo, which is now a protected area that forms part of the South Milan Agricultural Park. The area also counts with numerous springs surrounding the city, such as the Gambarone Fontanile in the San Bovio district. The **climate** is very humid in all seasons due to the numerous cultivated fields located nearby. In winter, the temperature rarely reaches peaks of -7ºC, while in summer, rather muggy and poorly ventilated, it even exceeds 35ºC. The following cenotes have been identified in the area: herbaceous vegetation of the meadows, arable land, linear formations of trees and shrubs, and built-up areas and associated green areas.

Finally, the municipality of Rodano is also part of the influenced area of the HOLCIM Pioltello San Bovio quarry. With a population of 4.631 inhabitants in 2017 and a population density of 350 inhabitants / km2, the territory of Rodano, 13 kilometres east of Milan, is part of the Parco Agricolo Sud Milano and has large areas committed to agriculture. The several spring pools that are still active are very important to the city and represent a typical feature of the Pianura Padana. The Muzzetta Springs, a WWF protected area, are an example of beautiful reserve that can be visited upon request. Regarding the economic development of the area, in the northern part of the municipality of Rodano, between the Milan-Venice railway and the "Rivoltana" Provincial Road, from the second half of the 1940s it has been forming, on an area of about 800.000 m^2 the so-called "Chemical Pole of Pioltello-Rodano" with a set of chemical companies of various sizes. Over time, these companies have caused various types of pollution, spills on the ground of harmful materials and the emission of unpleasant odours with a consequent degradation of the area.

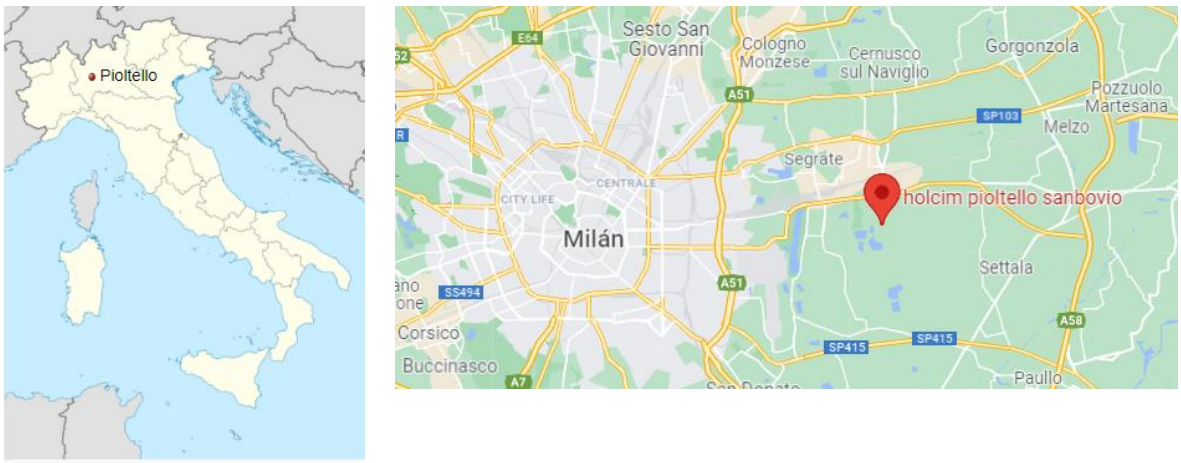


Figure 8 Location of HOLCIM Pioltello San Bovio in the Metropolitan City of Milan

5.4 Pilot #4. CSI (Mammendorf, Germany)

1. GENERAL INFORMATION:

Company	Cronenberger Steinindustrie Franz Triches GmbH & Co.KG (CSI)
Type	SME
Quarry	CSI Mammendorf
City	Thomas-Müntzer-Str. 39167 Hohe Börde OT Mammendorf
Region	Saxony-Anhalt
Country	Germany

Table 12 CSI general information

2. TYPOLOGY AND PRODUCTION:

Typology	Andesite hard rock quarry
Ores	Andesite
Automation	High level of automation
Production	1.200.000 Tn/year
End use of products	Construction road base, asphalt concrete, railroad ballast, armour stones for waterway construction
Size	500.000 m2
Workers	45 workers

Table 13 CSI typology and production

Cronenberger Steinindustrie Franz Triches GmbH & Co.KG (CSI) is a subsidiary of Pescher Beteiligungen GmbH & Co.KG, which is a fifth-generation family business that runs quarries in Germany and Nigeria for 107 years. Main products in all quarries have been aggregates for road construction (asphalt, concrete) with special focus on high quality aggregates used in top layers of roads, railroad ballast, armourstones for waterway construction and materials for production of concrete precast parts such as railway sleepers. Currently the group employs 150 people in three quarries in Germany, one recycling plant, an asphalt mixing plant and a construction company and produces about 3 Mill Tn/p.y of crushed aggregates.

Since 1998, CSI operates the Mammendorf quarry, a family-owned quarry located to the east of Mammendorf, a village belonging to the Irxleben district of the Hohe Börde municipality in Saxony-Anhalt (Fig. 10).

The Mammendorf quarry extracts and processes on average 1.2 Mill Tn/year of a volcanic hard rock material called andesite. For extraction of the rock about 600 Tn/year of gravel and sand material have to be removed which yields in an overall production of on average 1.8 Mill Tn/year. For processing this material is moved by several excavators, quarry trucks, trucks and other mobile machinery. The hard rock is then crushed, screened and processed in a fully automated processing plant. Products are sold in all of northern Germany, where the quarry is a leading market player.

Main energy consumption of CSI is fuel that is used for the earth moving machinery. To find savings potentials and reduce the environmental impact CSI has followed several approaches for years. This has included constant renewal of machinery fleet, ongoing special training for drivers, usage of machinery brand specific software for getting and using data about fuel consumption and idle time, employment of an automated tire pressure monitoring system with sensors on all machines and a GPS-data based fleet management system. A promising project was cooperation in development of a fleet management system that collects and processes all relevant real time data (fuel consumption, idle time, GPS data) of all used machinery (of different brands) on one platform to effectively control and optimise the usage of machines.

Figure 9 Location of the CSI quarry in Mammendorf (Germany)

DESCRIPTION OF THE PHYSICAL AND SOCIOECONOMIC CONTEXT

The village of Mammendorf has about 250 inhabitants and belongs to the cluster village Hohe Börde. It is located north-east of Eichenbarleben in the Magdeburg Börde. The Olbe flows north of the village. A little further north of the village, in seeing distance from the quarry, is the Autobahn 2 (federal highway) – the central traffic connection in Germany that connects Easter Europe to West Europe. Mammendorf is located 15 minutes far from Magdeburg, which is the capitol of Sachsen-Anhalt and a city of 300.000 inhabitants.

The CSI hard rock quarry is situated in a distance of 150 m to the village and is its biggest economic enterprise. The agricultural sector has the biggest weight in the area, since the soil in the “Magdeburger Börde” is one of the best soils in Germany for agriculture. The village has developed nicely after the integration of Eastern Germany in 1989, has now a youth club, a central meeting place in the village, a village pond with a little park area and the “Steinhaus Mammendorf”, which was built as a village community center. In addition, Mammendorf has a volunteer fire department.

The extraction of andesite in Mammendorf represents an intervention in the cultural landscape of the Magdeburger Börde, a vast flat area of agriculture. The arable land above the andesite has to give way to rock quarrying. The quarry depth is 90 m underground and the site is shielded from the village by a wall with a height of 13 m. The plant is erected 5m below ground level and constructed with low heights, so that the plant cannot be seen from outside the quarry area although the surrounding landscape is flat. Noise, dust and blast vibrations are produced during the extraction, transport and further processing of the rock, which adversely affect the environment.

Wildlife

The Mammendorf quarry and its surroundings are habitats for animal species. Birds of prey, for example, use the special thermals above the slightly warming layers of rock and often circle in large numbers above the opencast mine to search for food on the areas in and around the mining operation.

Substitute habitats are created according to the specifications of the environmental authorities and the actual resettlement takes place under expert management, usually followed by monitoring. In Mammendorf, this applies in particular to the sand lizard and European hamster species. The sand lizards were more or less "lured" by the company, as they are only now finding their perfect habitat in the stony steep slopes and the wall build by CSI. The European hamster has always lived in the fertile Börde soil, which also offers optimal conditions for its search for food and for building underground hamster burrows. Various bird species use the agricultural fields as breeding grounds.

Mammendorf - Site of Paleogene marine fossils

Long before the first people settled in Mammendorf and before the glaciers of the Ice Age moved over the area, Mammendorf was part of the primeval North Sea. With the development of the opencast mine, extensive investigations

were carried out and documented by the Natural History Museum in Magdeburg and the University of Leipzig. One of the most spectacular sites of Palaeogene fossils was discovered. Despite the topographically exposed location of the site, sediments with several hundred species of marine fauna have been preserved here.

Cavities and fissures filled with surf pebbles, remains of marine fossils and green-coloured sands and clays are often found on the surface of the bedrock. The green colour indicates that the sediment was deposited in shallow sea water, as indicated by the presence of the green mineral glauconite. In addition, mussel shells, gastropods, brachiopods, sea urchins, corals, shark teeth and fish ear stones are found. They were inhabitants of the primeval North Sea, which flooded northern Germany several times 35 to 30 million years ago, pushed south into the Leipzig area and left its mark on what was then the rocky coast of the Mammendorf region.

Palaeontology in Mammendorf - Traces of the "Korbacher Dachshund"?

Fossil finds from the Mammendorf quarry have even been documented from before the existence of the primeval North Sea. Specifically, these are findings are dated at the “Oberrotliegend” (Late Carboniferous-Middle Permian), ca. 260 million years ago. Since 2016, numerous trace fossils, petrified life traces of large reptiles as well as small worms, larvae and crustaceans have been found in the red and gray sandstones, which are more than 20 meters thick, and which extend over the volcanic rocks in the south to south-west of the quarry. A very special find are rounded, up to 30 centimeters wide scratching and digging marks of small mammal-like reptiles, which are compared to the so-called "Korbacher dachshund" (*Procynosuchus*), whose bones were found less than 250 kilometers away in the Korbacher fissure in Hesse. Rarer are 2 footprints up to 35 centimeters in size, which can be assigned to different Permian dinosaur groups based on their shape.

The oldest plant remains known from Mammendorf are horsetail and scale tree trunks from the Upper Carboniferous with an age of ca. 320 Ma. They are found in greywackes deposited in an inner shelf of a shallow sea and are found at the deepest points of the quarry in the footwall of the andesite.

Archeology

Due to the fertile soil of the Magdeburg Börde, the area northeast of Eichenbarleben has been a region of constant agricultural use and human settlement for thousands of years. The rock extraction of the Cronenberg stone industry offers the opportunity to record, research and document the witnesses and traces of prehistoric settlements.

Numerous sites have been documented on an area of approx. 10 hectares of the quarry. These date from the middle Neolithic period (5,000 BC) to the centuries after the birth of Christ. A burial in the Early Bronze Age (approx. 2,000 BC) deserves special mention. The dead person was laid in a wooden coffin 40 centimeters high buried in the sandy material. The burial ceremony must have dragged on for a long time with the coffin still open, because a wickerwork measuring 50 centimeters high protected against the trickling underground. Later, the burial place was covered with huge millstones typical of the Bornhöck princely grave near Halle (Saale).

As also occurs with the site where the Nebra sky disk was laid, which was dated more or less at the same age, the Brocken can be seen well from the burial site in Mammendorf. Mammendorf therefore seems to belong to an important Early Bronze Age area in central Germany.

A woman's burial, which was carried out almost half a millennium later (Middle Bronze Age, 1,400-1,300 BC), is also of outstanding importance. As a special feature for the local region, the woman wore a so-called eyeglass pin as a clasp for her robe - according to which she probably came from a north Hessian or south Thuringian family and only joined the settler community around Mammendorf in the course of her life.

In the period 800 to 700 BC. a settlement from the Iron Age is located in the area of the quarry. Numerous storage and waste pits and, mainly, buildings dug into the ground give comprehensive testimony.

5.5 Pilot #5. CIMPOR (Alenquer, Portugal)

1. GENERAL INFORMATION:

Company	AGREPOR AGREGADOS - EXTRACÇÃO DE INERTES
Type	SME
Quarry	AGREPOR - Alenquer
City	EM518, Alenquer
Region	Lisboa
Country	Portugal

Table 14 Cimpor general information

2. TYPOLOGY AND PRODUCTION:

Typology	Limestone hard rock quarry
Ores	Limestone
Automation	No internal transport. Low level of automation.
Production	1.300.000 Tn/year
End use of products	Cement, RMC, road base and subbase, mortar, fertilizers, etc.
Size	774.000 m2
Workers	15 workers + third parties

Table 15 Cimpor typology and production

AGREPOR is a Portuguese aggregates producer with 10 active quarries and owned by the major Portuguese cement producer. AGREPOR has a wide variety of quarries (granite, limestone, dolomite and gypsum) and supplies a wide variety of public and private customers that operate for instance in public works, RMC, fertilizers, lime production, cement, ballast, mortar, etc. CIMPOR moves an annual average of 1.300.000 Tn of aggregates from sites to stockpile with dumpers, It is estimated that this operation implies an annual consumption of 25.000 litters of diesel and 2.000 hours of machinery. Annually around 500.000 Tb are loaded directly from truck silos.

The CIMPOR pilot site is located in Alenquer, a Portuguese municipality belonging to the district of Lisbon, integrating the Intermunicipal Community of the West in the Central region of Portugal (Fig. 11).

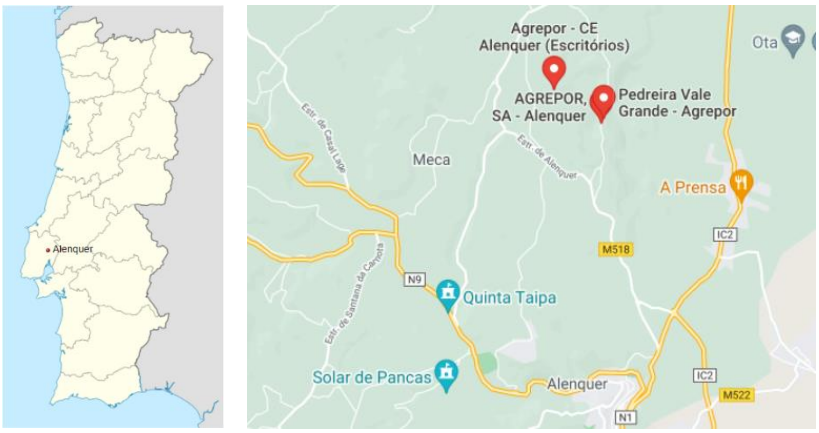


Figure 10 Location of the CIMPOR quarry in Alenquer (Portugal)

DESCRIPTION OF THE PHYSICAL AND SOCIECONOMIC CONTEXT

The Municipality of Alenquer counts with an area of 304,22 km² and 43.267 inhabitants (2011). It is subdivided into 11 parishes. The municipality is limited to the north by the municipality of Cadaval, to the east by Azambuja, to the southeast by Vila Franca de Xira, to the south by Arruda dos Vinhos, to the southwest by Sobral de Monte Agraço and to the west by Torres Vedras. Its main village is the homonymous village of Alenquer, with around 9.000 inhabitants, which is bathed by the river of the same name.

Thanks to its hillside layout, starting from the top of a hill towards the valley, Alenquer has long since won the epithet of "Portugal's Nativity Scene". Cradle of Damião de Goes and favourite of Luís de Camões, it has played a leading role in every era of history. A testament to this is its rich heritage: prehistoric sites, castles, convents, churches, hermitages, farms and stately homes.

The orographic structure of the municipality is dominated, to the north, by the arched and powerful profile of the Serra de Montejunto (666 m) that extends to the west by the Serra Galega and Serra Alta (360 m). Further south, the summits of Monte Redondo (212 m) and Serra de Ota (167 m), as well as the silhouettes of Cabeço de Meca (279 m) and Coteinas (218 m).

The municipality of Alenquer is in the process of expansion, especially urbanistically, where the economic base is strongly marked by agriculture, especially vineyards and wine. This evolution has been conditioned by the territorial positioning of the municipality in relation to the Lisbon Metropolitan Area, the main center of production and consumption in the country.

Agriculture is a very important economic activity in the county, especially its wines. The main production in order of magnitude are vines, temporary meadows, forage crops (livestock, fallow regime), cereals (mainly grain). In addition to agriculture, forestry is also listed as an important activity in the county.

6 Stakeholder Mapping

The stakeholder mapping is the second necessary stage for the definition of the Stakeholder Engagement Strategy (CES). In this section we will provide the background experience in stakeholder engagement of each pilot company and the identification and level of engagement of the most relevant stakeholders in each pilot site (Fig. 12).

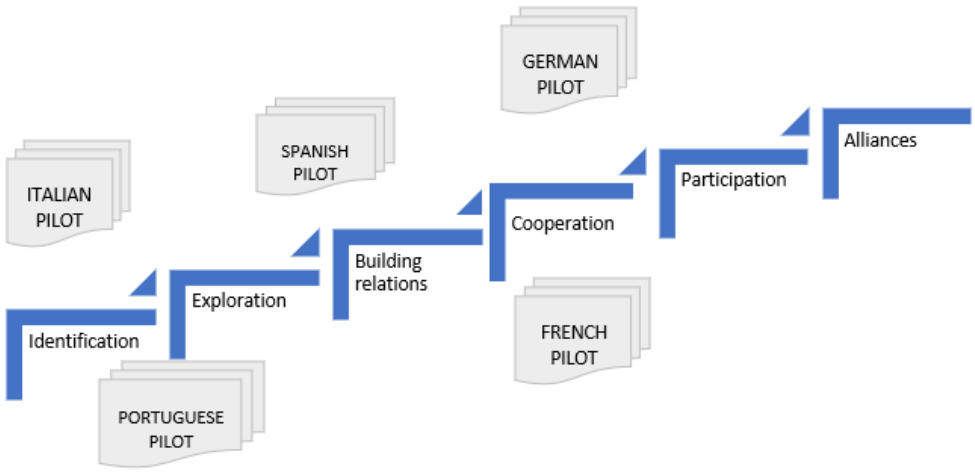


Figure 11 Stakeholder engagement level in each pilot site

6.1 Pilot 1: GRANULATS VICAT - Fenouillet

Stakeholder Engagement at GRANULATS VICAT GROUP

The **GRANULATS VICAT Group's Code of Ethics** is part of its desire to conduct its business with respect for its stakeholders (customers, suppliers, service providers, employees, residents of the regions where it operates, etc.). The Code promotes respect for women and men, society and the environment. In it, the GRANULATS VICAT Group affirms that respect for laws and regulations is an essential and indispensable requirement. It pledges to uphold the ethical principles set forth in the Code and calls on the support of all its teams in this process.

The GRANULATS VICAT Group develops **regular and constructive dialogue** with its stakeholders at the local and national level in each of the countries in which it operates safeguarding jobs, establishing a circular economy and recycling culture, and innovation in support of sustainable construction. Political institutions, central governments, economic players, community groups, researchers, universities, students, local residents, everyone has a role to play.

The Group relies on all **organizational measures** in order to have a dialogue with the local communities of its production units such as organized public meetings throughout operations and site monitoring committees. When not required by law, this type of committee is put into place through voluntary action, as in India where the Group's subsidiaries established an "official complaint resolution system" that brings together employees and members of the village twice a month to discuss and resolve any problems that may have arisen. All matters submitted to this procedure are entered in a register duly signed by all parties in attendance at the meeting. The Group encourages its sites to open their doors to stakeholders to emphasize their links with the local community. In France, the Montalieu-Vercieu cement factory received more than 99 visits during the year.

Stakeholder Engagement at Fenouillet quarry

Based on the **GRANULATS VICAT Group's Code of Ethics** described above, the Fenouillet quarry maintains a **regular and constructive dialogue** with the most relevant stakeholders to discuss and resolve any problems that may arise.

As Fenouillet quarry do not have any extraction locally, they have never had a complaint in the neighbourhood. However, a **potential source of conflicts** has been identified due to the location of the site in the city centre and the growth experienced in recent years. When the company wanted to have a building permit to change the concrete plant, the town hall refused it, expressing their will to use the area for other uses and to allow the establishment of other companies more in line with the neighborhood.

The site therefore undertook a number of initiatives to improve its external appearance and minimize the visual impact by planting trees and creating green spaces. These improvement actions have just been completed but the site still have to renovate the installation. Therefore, as a potential area for improvement within the project, the site can invite the municipal council to visit the site and understand their activity with the neighboring businesses. Then, activities addressed to the local population can be also conducted, such as the organisation of open doors days to residents and schoolchildren to educate the public in quarrying and the contribution that its operation makes to the local community. In addition, cultural activities have also been identified as potential activities to be carried out.

Based on the above, the level of engagement with public authorities (such as regional water agency, …) can be positions in the **Cooperation phase** while the engagement phase with other stakeholders such as local citizens or specific opposition groups is lower (**Identification or Exploration**), since the communication is not that fluid, and as a result, they don't have enough information about their interests and concerns.

Identification of stakeholder at Fenouillet quarry

Based on the above, the identification of the most relevant stakeholders of the Fenouillet quarry is provided in Table 16.

YES	1	NO	0

Stakeholder category	Stakeholder description	Does this stakeholder exert a great influence on the business?			Is this stakeholder greatly affected by the company?		
		ECON	SOCIAL	ENVIRO	ECON	SOCIAL	ENVIRO
Employees	6 employees Granulats Vicat full time on the site + 4 managers part time on the site	1	1	1	1	1	0
Clients	Granulats Vicat clients: 185 counted clients	1	1	0	1	0	0
Investors	The Vicat Group	1	1	1	1	1	1
Suppliers	94 Vicat quarry suppliers	1	0	0	1	0	0
Public Administration	Local Administration: Municipality of Fenouillet and Toulouse metropole	1	1	1	1	1	1
	Regional Administration: UNICEM Occitanie, ADEME	1	1	0	0	0	0
	National Administration: UNICEM, Government of France (VICAT GROUP)	1	1	1	0	0	0
Local communities	Malls and shops	0	0	1	0	0	1
	Houses	1	1	1	0	0	1

Table 16 Most relevant stakeholders of the Fenouillet quarry

INTERNAL STAKEHOLDERS

EXTERNAL STAKEHOLDERS

6.2 Pilot 2: HANSON - VALDILECHA

Stakeholder Engagement at HEIDELBERG CEMENT GROUP

As part of the Group-wide **Corporate Citizenship Policy**, Heidelberg Cement seek to establish and maintain a dialogue based on trust with all such relevant groups at local, national, and international level. Each country organisation is responsible for establishing and maintaining its own relationships with **national and local stakeholders**. The stakeholder dialogue at **international level** is managed by the Group departments for communication and sustainability.

At **local level**, quarries maintain regular contact with the respective community, government agencies, and local organisations, and inform the about the activities and planned projects at the plants. **Plant or location management teams are generally responsible for such stakeholder relationships**. Along with personal discussions, the Group use a variety of other means of communication to keep local stakeholder groups informed and enter into dialogue with them, ranging from traditional newsletter and guidelines to social media and a variety of public participation concepts.

The **main concerns of the local stakeholders** range from simple visit enquiries and appeals to support projects and sports, cultural, and educational institutions all the way through to information requests. Stakeholders also raise reservations regarding imminent modernisation and expansion measures as well as complaints about noise and dust pollutions from the plants and quarries. The Group responds promptly to complaints and provide transparent information wherever possible and practical in order to address uncertainties and misgivings. The Group also involves local stakeholders at an early stage when planning investment projects, such as by setting up contact offices and holding information and discussion events. The Group also develops long-term partnerships with local non-governmental organisations and supports projects, initiatives, and organisations that are active at the different locations or to which the plant have a direct link.

As part of the Sustainability Commitments 2030, HeidelbergCement has set itself **the goal to have Community Engagement Plans (CEP) that include tools and strategies for engaging regularly with local key stakeholders for all sites by 2023**. These CEPs should be used to understand the actual situation, potential risks and opportunities and instruments to maintain a trusting relationship with the communities. The steps described below are part of an internal guidance:

1. **Stakeholder identification**. This requires prioritizing the stakeholders and, depending on who they are and what interests they might have, determining the most appropriate ways to engage with them. Regularly updating the list of key stakeholders will allow the operations to manage relationships according to their needs, degree of influence, level of interest etc.
2. **Method of engagement**. Depending on the objective of engagement, the respective stakeholder group and the issue at hand, different options of engagement are available as outlined in Figure 13.

Objective	Tool	Purpose
Sharing information	▫ Public displays, briefings, information sessions and public meetings ▫ Impromptu discussions and informal conversations ▫ Open days and site visits ▫ Contact points (for example, hotlines, websites, shopfronts) ▫ Websites, direct mail/email/SMS, fact sheets, newsletters and webinars	▫ Identifying affected and interested people, groups, organisations and communities ▫ Helping people to understand the proposal and the social impact assessment ▫ Addressing questions, concerns and complaints ▫ Demonstrating early engagement
Consulting to collect information and insights	▫ Surveys and interviews Community Consultative Committee, or ▫ community liaison and advisory groups ▫ Online forums ▫ Social media	▫ Identifying and predicting social impacts ▫ Collecting data, evidence and insights ▫ Demonstrating early engagement ▫ Confirming data, assumptions and findings ▫ Involving marginalised groups
Collaborating in decision-making	▫ Workshops and focus groups ▫ Deliberative forums/workshops ▫ Citizen panels	▫ Collaborating in the design of project elements ▫ Identifying and predicting social impacts ▫ Collaborating in the development of monitoring, mitigation and management measures and actions ▫ Involving marginalised groups

Figure 12 Hanson methods of engagement

3. **Monitoring & Reporting**. Measuring and evaluating the impacts of community engagement will help us to determine the extent to which the engagement is helping to shape the company's relationship with the communities and the results should be clearly communicated.

Stakeholder Engagement at HANSON Valdilecha quarry

Based on the **HEIDELBERG CEMENT GROUP Corporate Citizenship Policy** described above, the Valdilecha quarry maintains a regular dialogue with the most relevant stakeholders in the community to discuss and resolve any problems that may arise as a consequence of the Valdilecha operations.

The Valdilecha quarry do not cause significant noise, vibrations and visual impact to the population since the **quarry is located far from the closest population** centre (the town of Valdilecha about 1.800 meters from the mining quarry) so there are no trucks passing through the urban core and the noise and vibrations does not reach the population area.

However, there is an issue detected by which the **population of Valdilecha** is affected. This issue is related to the landfill operation of the industrial waste of the quarry. This operation is subcontracted by a third company which can introduce up to 7% organic matter in the landfill. One common complaint from the Valdilecha villagers concerns unpleasant smells emitted from the landfill site, especially during the warmest days of the summer.

In line with the Group's **Corporate Citizenship Policy,** the Valdilecha quarry promotes and participates in different initiatives to contribute to the development of the community, creating links and transparent and fluid communication with surrounding institutions, entities and associations.

As part of its social commitment, the quarry organises the **Quarry Life Award**, a scientific and educational competition proposed by HeidelbergCement to encourage **researchers, students and citizens** to submit biodiversity projects in its quarries around the world, with the aim of raising awareness of the organic value of extraction sites, finding new ways to improve it and share new best practices with the scientific community, NGOs, authorities and our operating units. With the support of the Non-profit Environmental Consulting Fundación Tormes-EB, the EU Business @ Biodiversity Platform and Bird Life International, the quarry organized in 2018 a visit to its facilities where the National Jury and the Spanish participants selected to compete in the European award got to know first-hand the work in the quarry.

Furthermore, the Valdilecha quarry organises the **Tree Day Celebration** and the **Open Doors Day** in collaboration with ANEFA and the Valdilecha City Council with the participation of schoolchildren between 10 and 11 years old who have the opportunity to plant pines in the quarry and to learn how an aggregate exploitation works. This activity is accompanied by workshops on wildlife sighting led by the Tormes Foundation. The Tree Day initiative aims to make minerals available to children, show them their importance in everyday life, and to make them aware of the need to care for and respect the environment.

Regarding relations with Public Authorities, the Valdilecha quarry maintains a fluid communication with the **Valdilecha City Council,** with which it collaborates in the organization of cultural and leisure activities and donation of materials for the municipality. However, this cooperation activities are conducted according to specific requests and not following an action plan under a Strategic Cooperation Plan developed by both entities.

Regarding regional authorities, however, a bottleneck in the licensing processes to allow the continuity of the operations in the quarry has been detected, causing delays in the licensing renewal procedure that seriously harms the daily activity of the quarry. This procedure is managed by the General Directorate of Industry, Energy and Mines of the Community of Madrid.

Based on the above, the level of engagement with stakeholders at Valdilecha quarry can be positioned between EXPLORATION and BULDING RELATIONS.

Identification of stakeholders at Valdilecha quarry

Based on the above, the identification of the most relevant stakeholders of the Valdilecha quarry is provided in Table 17.

YES	1	NO	0

Stakeholder category	Stakeholder description	Does this stakeholder exert a great influence on the business?			Is this stakeholder greatly affected by the company?		
		ECON	SOCIAL	ENVIRO	ECON	SOCIAL	ENVIRO
Employees	Valdilecha quarry employees	1	1		1	1	
Clients	Valdilecha quarry clients	1	0	0	0	0	0
Investors	Hanson-HeidelbergCement investors	1	1	1	1	1	1
Suppliers	Valdilecha quarry suppliers	1	0	0	1	0	0
Public Administration	Local Administration: Municipality of Valdilecha	1	1	0	1	1	1
	Regional Administration: General Directorate of Industry, Energy and Mines – Community of Madrid	1	0	1	0	0	0
	National Administration: Ministry for the Ecological Transition and the Demographic Challenge – Government of Spain	1	0	1	0	0	0

Table 17 Most relevant stakeholders of the Valdilecha quarry

INTERNAL STAKEHOLDERS

EXTERNAL STAKEHOLDERS

6.3 Pilot #3. HOLCIM (Milano, Italy)

Stakeholder Engagement at HOLCIM GROUP

Stakeholder Engagement is an integral part of **HOLCIM's Human Rights Approach** with the aim to build and maintain regular and constructive relationships with stakeholders at HOLCIM's operations. According to the Group directives Holcim Italia which is the Italian Op.Co. of the Holcim Group and consequently Holcim Aggregati Calcestruzzi make a global Human rights assessment and put in place a Human rights action plan for all the most critical sites. According to the Group directives each Op.Co must also design and implement an integrated approach to stakeholder engagement, and communicate fairly and accurately with Stakeholders and the public about efforts made to contribute to educational, cultural, social and economic development of communities.

In this regard, each site must have a **Stakeholder Map and Engagement Plan** in place, which is **managed at local level**. Furthermore, engagement with relevant stakeholders in the planning stage of a new development is mandatory (for example, a new quarry or extension or for the introduction of a new waste fuel or raw material).

Holcim has a wide range of stakeholders who may be consulted as part of its work on human rights. These include, home and host governments, relevant international and national organisations, business partners, employees and contracted workers, migrant workers, employee representatives, community representatives, civil society organisations, trade unions, academics, human rights specialists, members of religious organisations and vulnerable members of society, including women and children, indigenous people, minorities, and human rights defenders.

Stakeholder Engagement at HOLCIM - Pioltello San Bovio quarry

According to the Stakeholder Engagement approach at HOLCIM, the Group conducts a stakeholder and materiality analyses at national level where the main stakeholders identified are the local and regional administrations which are in charge of the authorization of the different HOLCIM quarries in the country.

Regarding the environmental impact of the quarry, the Group conducted an Environmental Impact Assessment in 2008 with positive feedback results and no major impacts detected. In addition, the quarry has maintained a fluid communication with the communities regarding issues related to the heavy traffic from and towards the quarry. After listening to the community's concerns, the company built a secondary road for the circulation of the quarry trucks and vehicles that discharged the small city close to the quarry from all the heavy traffic.

Based on the above, the level of engagement with stakeholders at Pioltello San Bovio quarry can be positioned in the IDENTIFICATION stage.

Identification of stakeholders at HOLCIM - Pioltello San Bovio quarry

Based on the above, the identification of the most relevant stakeholders of the HOLCIM - Pioltello San Bovio quarry is provided in Table 18.

YES	1	NO	0

Stakeholder category	Stakeholder description	Does this stakeholder exert a great influence on the business?			Is this stakeholder greatly affected by the company?		
		ECON	SOCIAL	ENVIRO	ECON	SOCIAL	ENVIRO
Employees	Piolletlo quarry employees	0	1	0	1	1	1
Clients	Piolletlo quarry clients	1	0	0	1	1	0
Investors	Holcim investors	1	0	1	1	1	1
Suppliers	Piolletlo quarry suppliers	1	1	1	1	1	1
Public Administration	Local Administration: Municipality of Piolletlo	0	1	1	0	1	1
	Local Administration: Municipality of Peschiera Borromeo	0	1	1	0	1	1
	Local Administration: Municipality of Rodano	0	1	1	0	1	1
	Provincial Administration: Quarry Office – Metropolitan city of Milan	*0*	*0*	*1*	*0*	*0*	*1*
	Regional Administration: Direzione generale ambiente e clima – Lombardy Region	0	0	1	0	0	1
	Provincial Administration – Parco Agricolo Sud Milano	0	1	1	0	1	1
Local communities	Neighborhood associations – Quei Bovi di San Bovio	0	1	1	0	1	1
	Fondazione Romeo e Enrica Invernizzi	*0*	*1*	*1*	*0*	*1*	*1*
	Neighborhood associations – Centro anziani Millepini	0	1	1	0	1	1
Civil Society Organizations (CSOs)	Environmental organizations (Agenzia regionale protezione ambiente ARPA	0	0	1	0	0	1
	ISTAT (istituto nazionale statistica)	0	1	0	0	1	0
	INAIL (Istituto Nazionale	0	1	1	0	1	1

	Assicurazione contro gli Infortuni sul Lavoro)						
	ATS Milano (agenzia tutela salute)	0	1	0	0	1	0
	Workers Union	1	1	0	1	1	0
Media	Local newspapers (Il Giorno)	0	1	0	0	1	0
	Local newspapers (La Martesana)	0	1	0	0	1	0
	National scientific publications On Site News	0	1	0	0	1	0
	National scientific publications (Quarry & Contruction)	0	1	0	0	1	0
Scientific community	Mining regional universities and education institutions (Politecnico di Milano)	0	1	1	0	1	1
Association	A.N.E.P.L.A.	1	1	0	1	1	0
	UNI (Ente nazionale normazione)	1	0	1	1	0	1
	ICMQ (Organismo di certificazione qualità)	1	0	1	1	0	1

Table 18 Most relevant stakeholders of the HOLCIM – Pioltello San Bovio quarry

INTERNAL STAKEHOLDERS

EXTERNAL STAKEHOLDERS

6.4 Pilot #4. CSI (Mammendorf, Germany)

Stakeholder Engagement at Cronenberger Steinindustrie

As a medium-sized family business in the raw material extraction industry in the Magdeburg Börde, which is essentially characterized by agriculture, Cronenberger Steinindustrie has a special willingness to engage in dialogue with the environment and the community as an expression of modern corporate strategy.

Stakeholder Engagement at CSI Mammendorf

Based on the corporate strategy of the Cronenberger Steinindustrie, the CSI Mammendorf quarry has large experience in engaging with the local community in Mammendorf. As a result of the regular dialogue with the local community to discuss and resolve any problems that may arise, the CSI Mammendorf quarry has conducted a number of initiatives addressed to **minimize the impact** of the quarry traffic by paving part of the road to the mine and with funding of speed control stations. In addition, the quarry has built a wall, erected its plant below ground level with low heights, planted trees and bushes in order to minimize the **visual impact** of the quarry and conducted several external measures to compensate the negative environmental impacts according to the German regulation.

Additionally, CSI Mammendorf conducts numerous initiatives in the most diverse areas of **environmental and social life**, such as the sponsoring of sports teams and events (singing events, society clubs), the organization of Open Days for students and Mammendorf neighbors, in collaboration with local associations such as the local volunteer fire brigades, and other associations and clubs.

Regarding **education activities**, the Mammendorf quarry cooperates with the Martin Luther Universität Halle by providing lectures at the department of applied geosciences, through internships with students to support the archaeological research (up to 10 students) and by regularly employing 4-8 students to write their bachelor thesis on topics provided by the quarry.

ENVIRONMENTAL ACTIVITIES

Restoration activities

The extraction of andesite in Mammendorf represents an intervention in the cultural landscape of the Magdeburg Börde. The arable land above the andesite has to give way to rock quarrying, and noise, dust and blast vibrations are produced during the extraction, transport and further processing of the rock, which adversely affect the environment.

To compensate for this intervention, a comprehensive catalogue of internal and external measures has been developed in cooperation with the responsible authorities, stakeholders and scientific support, which includes both the renaturation of the quarry areas and a large number of accompanying landscape conservation measures that benefit nature and the surrounding communities.

Wildlife protection

The quarry and its surroundings are habitats for many animal species that need specific environmental conditions, such as the Sand Lizard and the European Hamster species. Biologists regularly examine whether animals that need to be relocated. Substitute habitats are created according to the specifications of the environmental authorities and the actual resettlement takes place under expert management, usually followed by monitoring. The company has been practicing these activities for many decades hand in hand with the environmental authorities, recognized biologists and local experts for the resettlement of the respective animal species.

Mammendorf - Site of Paleogene marine fossils

With the development of the opencast mine, extensive investigations were carried out and documented by the Natural History Museum in Magdeburg and the University of Leipzig. One of the most spectacular sites of Palaeogene fossils was discovered. Despite the topographically exposed location of the site, sediments with several hundred species of marine fauna have been preserved here. The research has been supported by CSI.

Mineral finds

For many years, the Magdeburg mineral friends (specialist group mineralogy of the Magdeburg local history association) have been coming to the Mammendorf quarry regularly. Guided open-pit mine inspections take place on fixed dates and in the past numerous mineralogical beauties can be found spontaneously both in the Mammendorfer andesite and in the overlying sedimentary rocks.

Archeology

The rock extraction of the Cronenberg stone industry offers the opportunity to record, research and document the witnesses and traces of prehistoric settlement. The basis is the State Monument Protection Act of Saxony-Anhalt, which obliges those who caused soil changes in areas with potential archaeological importance to document archaeological finds.

In the case of the Mammendorf quarry, this has been done in close and good cooperation with the State Office for the Preservation of Monuments and Archeology in Saxony-Anhalt since it opened in 1998. In the run-up to rock extraction, the thin topsoil layer is carefully removed with an excavator, revealing the yellow clay horizon underneath. Here, the remains of human settlement are usually easy to recognize through dark soil discoloration and can then be professionally uncovered, prepared, lifted and documented. During an excavation, an archaeologist from the state office and up to ten excavation assistants are usually employed for several months at a time. In the meantime, numerous sites have been documented on an area of approx. 10 hectares of the quarry. The archaeological research is partly paid for by CSI which also support in organization such as organization of student workers shat support the state geologists.

Based on the above, the level of engagement with stakeholders at CSI Mammendorf quarry can be positioned in the COOPERATION stage.

Identification of stakeholders at CSI Mammendorf quarry

Based on the above, the identification of the most relevant stakeholders of the CSI Mammendorf quarry is provided in Table 19.

YES	1	NO	0

Stakeholder category	Stakeholder description	Does this stakeholder exert a great influence on the business?			Is this stakeholder greatly affected by the company?		
		ECONO	SOCIAL	ENVIRO	ECONO	SOCIAL	ENVIRO
Employees	CSI quarry employees	1	0	0	1	1	0
Clients	Customers	1	0	0	1	0	0
Investors	100% family owned	1	1	1	1	1	1
Suppliers	CSI quarry suppliers	1	0	0	1	1	0
Public Administration	Local Administration: Gemeinde Hohe Börde	1	1	1	1	1	1
	Regional Administration: Landesamt für Geologie und Bergbau – Sachsen Anhalt and_Landesverwaltungsamt Sachsen Anhalt	1	1	1	0	0	0
	National Administration: Federal Ministry for the environment, of economics, of law etc.	1	1	1	0	0	0
Local communities	Gemeinde Mammendorf (150m from the quarries)	1	1	1	1	1	1
	Gemeinde Irxleben	1	1	1	0	0	1
Civil Society Organizations (CSOs)	Local volunteer fire brigades	1	1	0	1	1	0
	Bürgerinitiative Ortsumgehung Irxleben	1	1	0	1	0	1
	Arbeitsgruppe Steinbruch Gemeinde Mammendorf	1	1	0	1	1	1
	Industry associations	1	1	0	1	1	0
	Magdeburger Mineralienfreunde	0	1	0	1	1	0
	Associations, clubs (15-20 different associations/club for singing, sports, society clubs)	1	1	1	1	1	0
Media	Local/regional/national newspapers	1	1	0	1	0	0
	Volksstimme, Bild-Zeitung						
Scientific community	Mining regional universities and education institutions Martin Luther Universität Halle	1	1	0	1	1	0
	Fachgruppe Paläontologie Magdeburg	0	1	0	1	1	0

Table 19 Most relevant stakeholders of the CSI Mammendorf quarry

INTERNAL STAKEHOLDERS

EXTERNAL STAKEHOLDERS

6.5 Pilot #5. CIMPOR (Alenquer, Portugal)

Stakeholder Engagement at AGREPOR AGREGADOS

According to CIMPOR's Business Strategy, **Stakeholders Management** is an integral part of the Group's management procedures, involving a systematic analysis of their needs and expectations in order to plan and implement activities to adequately address them. To achieve so, CIMPOR has created **communication channels** with its stakeholders as soon as they started reporting their sustainability work in 2003.

As part of **CIMPOR's new international identity**, the Group conducts **materiality matrix and stakeholder engagement processes** that allows them to identify the most critical data relative to their business units, concerning issues that could have a significant impact on the company's ability to generate value in the short, medium and long term, and to consolidate its new approach at the corporate level (Fig 14). This new approach aims to define, in a structured way, what is material to the company's activity, both internally and externally, particularly in the way they are perceived by the stakeholders who communicate with them regularly.

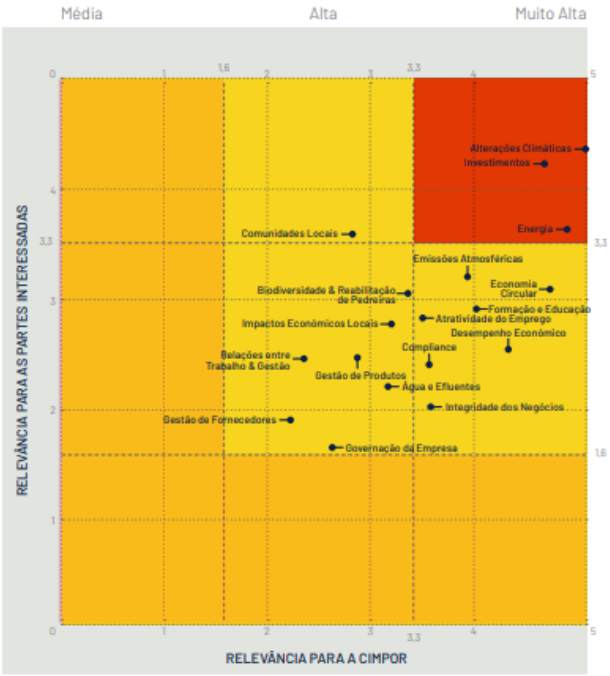


Figure 13 Materiality Matrix at CIMPOR (CIMPOR Annual Report 2020)

Stakeholder Engagement at CIMPOR Alenquer

The Alenquer quarry has experience an evolution in the perception from the local community from the starting of its operations in 1960 to nowadays. Due to the generation of local employment and economic development in the community, the Alenquer quarry earned a good reputation through the years. However, although the quarry continues to produce an important economic impact in the area, in the last 20-30 years, the focus has been placed on the environmental negative impacts of the quarry accompanied by a diversification of the economic ecosystem of the area which has led to diminish the Alenquer quarry reputation.

The main environmental impacts detected are the heavy traffic from and towards the quarry, and the visual impact on the landscape. To address these issues, the CIMPOR Alenquer quarry has made available an email and telephone number where the citizens can transmit their complaints and concerns.

Nevertheless, and as part of the Group's Stakeholders Management commitment, the quarry conducts social initiatives addressed to raise awareness on the importance and value of the quarry operations. Thus, the CIMPOR Alenquer organises Open Doors events and visits for schools as well as for engineer and mines universities of the area (Universidade de Évora) where the visitors can experience how an aggregate exploitation works.

Based on the above, the level of engagement with stakeholders at CIMPOR Alenquer can be positioned between IDENTIFICATION and EXPLORATION.

Identification of stakeholders at CIMPOR Alenquer quarry

Based on the above, the identification of the most relevant stakeholders of the CIMPOR Alenquer quarry is provided in Table 20.

YES	1	NO	0

Stakeholder category	Stakeholder description	Does this stakeholder exert a great influence on the business?			Is this stakeholder greatly affected by the company?		
		ECON	SOCIAL	ENVIRO	ECON	SOCIAL	ENVIRO
Employees	Agrepor (Cimpor) Alenquer quarry employees	1	1	1	1	1	0
Clients	Agrepor (Cimpor) Alenquer quarry clients	1	1	1	1	0	0
Investors	Cimpor investors	1	1	0	1	0	0
Suppliers	Agrepor (Cimpor) Alenquer suppliers	1	1	0	1	0	0
Public Administration	Local Administration: Câmara Municipal de Alenquer	1	1	1	0	0	0
	National Administration: Direção Geral de Energia e Geologia (DGEG)	1	1	1	0	0	0
	Regional Administration: Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo (CCDR-LVT)	1	1	1	0	0	0
	National Administration: Ministry of Economy	1	1	1	0	0	0

	National Administration: Autoridade para as condições de trabalho (ACT)	0	1	0	0	0	0
Local communities	Agrepor (Cimpor) Alenquer Neighborhood	0	0	0	0	1	1
	Agrepor (Cimpor) Alenquer Other companies neighborhood	0	0	0	0	0	1
Civil Society Organizations (CSOs)	Environmental organizations (APA)	0	0	1	0	0	0
	Integrated management certification company (APCER)	0	0	0	0	0	0
	National Association of Extractive and Manufacturing Industry (ANIET)	0	0	0	0	0	0
Safety Organizations	Alenquer volunteer firefighters	0	0	0	0	0	0
	National Emergency and Civil Protection Authority (ANEPC)	0	0	0	0	0	0

Table 20 Most relevant stakeholders of the CIMPOR Alenquer quarry

INTERNAL STAKEHOLDERS

EXTERNAL STAKEHOLDERS

7 Conclusions

This first approach to the context of each pilot site and the identification of potential risks at sector level has led us to detect preliminary areas for improvement that will be develop further in the next deliverables.

After reviewing all companies' approaches towards stakeholder engagement, we can conclude that all large companies have extensive policies and strategies for engaging with local stakeholders, although in practical terms these activities are the responsibility of the local quarries. It seems that there is a lack of monitoring of these engagement strategies at local level and there are not indicators in place to assess the effectiveness of these engagement measures.

All the quarries carry out similar social initiatives in the community: open days, sponsorship of sports and social activities, etc. A need to define and establish annual cooperation agreements with local institutions with identified needs and planned activities that could improve the impact in the communities has been detected in some pilots.

All the quarries have the need to communicate to their communities their activities in a transparent way in order to put in value their positive impact in the socioeconomic development at local, regional and national level.

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9 Annex I. EU principles for sustainable raw materials, links to relevant EU legislation

Social Principles (1-2)
Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC - Statement by the Commission.
Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC.
Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air
Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe
Regulation (EU) No 540/2014 of the European Parliament and of the Council of 16 April 2014 on the sound level of motor vehicles and of replacement silencing systems
Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise
Directive 2000/14/EC of the European Parliament and of the Council of 8 May 2000 on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors. This framework Directive harmonises the 9 existing legal instruments on noise emissions for each type of construction plant and equipment
Commission Directive (EU) 2015/996 of 19 May 2015 establishing common noise assessment methods according to Directive 2002/49/EC of the European Parliament and of the Council
Responsible Minerals Regulation. Regulation (EU) 2017/821
Council Directive 92/104/EEC of 3 December 1992 on the minimum requirements for improving the safety and health protection of workers in surface and underground mineral-extracting industries
Council Directive 92/91/EEC of 3 November 1992 concerning the minimum requirements for improving the safety and health protection of workers in the mineral- extracting industries through drilling
The European Framework Directive on Safety and Health at Work 89/391/EEC. It includes measures to encourage improvements in the safety and health of workers at work. It guarantees minimum safety and health requirements throughout Europe while Member States are allowed to maintain or establish more stringent measures. Items a)-g) below related acts:
a) Directive 2009/104/EC of the European Parliament and of the Council of 16 September 2009 concerning the minimum safety and health requirements for the use of work equipment by workers at work
b) Council Directive 89/656/EEC of 30 November 1989 on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace.
c) Directive 2003/10/EC of the European Parliament and of the Council of 6 February 2003 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise)
d) Directive 2002/44/EC of the European Parliament and of the Council of 25 June 2002 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (vibration)
e) Council Directive 92/58/EEC of 24 June 1992 on the minimum requirements for the provision of safety and/or health signs at work.
f) Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Art. 16(1) of Directive 89/391/EEC)

g) Directive 2004/37/EC of the European Parliament and of the Council of 29 April 2004 on the protection of workers from the risks related to exposure to carcinogens or mutagens at work (Sixth individual Directive within the meaning of Art. 16(1) of Council Directive 89/391/EEC)
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation
Directive 97/23/EC of the European Parliament and of the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment.
Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast).
Directive 90/269/EEC Manual Handling of Loads
Directive 90/270/EEC Display Screen Equipment
Directive 2004/40/EC Electromagnetic Fields
Directive 2006/25/EC Artificial Optical Radiation
Directive 2000/54/EC Biological Agents
Directive 92/57/EEC Temporary or mobile construction sites
Directive 91/383/EEC 42 Temporary workers
Directive 2003/88/EC concerning certain aspects of the organisation of working time
Directive 94/33/EC Young people at work
Voluntary EU Multisectoral Social Dialogue Agreement NEPSI (European Network on Silica), OJ C 279 on 17.11.2006.
Economic - and governance principles – 3-5: Business integrity, transparency and wider economic contribution
Accounting Directive. Directive 2013/34/EU. On the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, amending Directive 2006/43/EC of the European Parliament and of the Council and repealing Council Directives 78/660/EEC and 83/349/EEC Text with EEA relevance
Shareholders rights directive: Directive 2007/36/EC on the exercise of certain rights of shareholders in listed companies; Directive (EU) 2017/828 amending Directive 2007/36/EC
Transparency Directive: Directive 2013/50/EU of the European Parliament and of the Council of 22 October 2013 amending Directive 2004/109/EC of the European Parliament and of the Council on the harmonisation of transparency requirements in relation to information about issuers whose securities are admitted to trading on a regulated market, Directive 2003/71/EC of the European Parliament and of the Council on the prospectus to be published when securities are offered to the public or admitted to trading and Commission Directive 2007/14/EC laying down detailed rules for the implementation of certain provisions of Directive 2004/109/EC Text with EEA relevance
Takeover Bids Directive Directive 2004/25/EC, amended by Regulation (EC) 219/2009 and Directive 2014/59/EU
Non-Financial Reporting Directive. Directive 2014/95/EU. Currently under review
Taxonomy Regulation. Regulation (EU) 2020/852
Environmental principles – 6-8: Environmental management and impact mitigation
Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC. Extractive Waste Directive. Associated legislation below a) - e).
a) 2009/335/EC: Commission Decision of 20 April 2009 on technical guidelines for the establishment of the financial guarantee in accordance with Directive 2006/21/EC.
b) 2009/337/EC: Commission Decision of 20 April 2009 on the definition of the criteria for the classification of waste facilities in accordance with Annex III of Directive 2006/21/EC.
c) 2009/358/EC: Commission Decision of 29 April 2009 on the harmonisation, the regular transmission of the information and the questionnaire referred to in Art. 22(1)(a) and 18 of Directive 2006/21/EC.
d) 2009/359/EC: Commission Decision of 30 April 2009 completing the definition of inert waste in implementation of Art. 22(1)(f) of Directive 2006/21/EC.

e) 2009/360/EC: Commission Decision of 30 April 2009 completing the technical requirements for waste characterisation laid down by Directive 2006/21/EC.
2009/335/EC: Commission Decision of 20 April 2009 on technical guidelines for the establishment of the financial guarantee in accordance with Directive 2006/21/EC of the European Parliament and of the Council concerning the management of waste from extractive industries (notified under document number C(2009) 2798) [Also under Extractive waste management above].
Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (Seveso III Directive, Chapters: 15.10.20.50).
Directive 2014/52/EU on amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. Environmental Impact Assessment Directive.
Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment. Directive for Strategic Environmental Assessment.
Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS), repealing Regulation (EC) No 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC.
Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage. Environmental Liability Directive
Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC
Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) Text with EEA relevance
COM(2020) 80 final. Proposal for a regulation of the European Parliament and of the Council establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law).
Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council Text with EEA relevance
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