



SIRIMA

SINKHOLE HAZARD AND RISK MANAGEMENT IN POST MINING AREAS
RFCS PROJECT NO 101157400



Co-funded by
the European Union

Deliverable D.1.2

Dissemination, Evaluation and Communication Plan (DECP) of the SIRIMA Project

WP.1. Project management and coordination

Responsible Partner: Główny Instytut Górnictwa – Państwowy Instytut Badawczy, Poland

Contributing Partners:

1. Główny Instytut Górnictwa Państwowy Instytut Badawczy, Poland
2. Institut National de L'Environnement Industriel et des Risques - INERIS, France
3. Bureau de recherches géologiques et minières - BRGM, France
4. DMT - Technische Hochschule Georg Agricola, Germany
5. Instytut Mechaniki Górotworu Polskiej Akademii Nauk – IMG PAN, Poland
6. Systra Subterra Ingenieria SL, Spain
7. Université de Lorraine, France

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December, 2024

Table of contents

1. Summary..... 4

2. Briefly about the SIRIMA 5

3. The Dissemination Plan for the SIRIMA project 6

3.1. Subject of dissemination 7

3.2. Target groups..... 8

3.3. Methods and tools..... 8

3.3.1. Logo of SIRIMA Project 9

3.3.2. Project website 10

3.3.3. Social Media..... 20

3.3.4. Press releases 20

3.3.5. Official project documents 20

3.4. Dissemination management 20

3.5. Dissemination activities timing 21

4. The Communication Plan for the SIRIMA project 22

4. The Exploitation Plan for the SIRIMA project..... 23

List of figures

Figure 1 Graphical presentation of Partners in the SIRIMA project..... 5

Figure 2 Graphical presentation of SIRIMA logo. a) The basic color scheme, b) second color scheme. 9

Figure 3 Graphical presentation of SIRIMA logo in black&white scheme..... 9

Figure 4 Graphical presentation of SIRIMA logo in black&white scheme. Modified to linear system. 10

Figure 5 Website navigation bar..... 11

Figure 6 “Home page” of SIRIMA website. 12

Figure 7 “About project” – Page Tab on SIRIMA website. 13

Figure 8 “Digital Database” – Page Tab on SIRIMA website..... 14

Figure 9 “Field sites” – part of the tab on SIRIMA website. 15

Figure 10 “Disseminations” –Page Tab on SIRIMA website..... 16

Figure 11 “Disseminations” –Page Tab on SIRIMA website..... 18

Figure 13 “Partners Area” on SIRIMA website. 18

Figure 14 Example of data acquisition in “Partners Area” on SIRIMA website..... 18

Figure 15 Contact tab with GIG-PIB data as the project coordinator on the SIRIMA website..... 19

1. Summary

This document summarizes the consortium's strategy for the implementation of the SIRIMA project, covering Dissemination, Communication, Exploitation (DEC) and protection of data ownership. The information contained in this document will serve as guideline for the Partners implementing the project.

This report is an introduction to the planned dissemination activities for the project. Elements of this report will be updated when the project's mid-term and final reports will be prepared.

This document describes the basic elements of the SIRIMA Dissemination, Communication, Exploitation Plan (SIRIMA DECP). The Dissemination Plan describes the dissemination measures and activities that are going to be performed. The aim of this plan is to present the activities carried out within the SIRIMA project, which will make the project recognizable at the level of the project Partner countries, the entire European Union and worldwide. Especially since the results of the project, due to the scope of work and the test sites selected for the project implementation, will impact a very wide group of recipients living in post-mining areas. Therefore, various sources of communication, in subsequent stages of project implementation will be used for its dissemination. The Communication Plan outlines the communication activities to be performed. The approach is based on the identification of specific communication needs of different user groups, addressing how to maximise awareness of project results among users in each of those groups. Due to limited financial resources, the activities are directed towards the maximum dissemination of information about the project and its results using generally available information techniques. Finally, the Exploitation Plan focuses on accelerating and streamlining both the implementation of individual SIRIMA results and their commercialization. The Exploitation Plan describes the paths for exploiting the results generated by the project and will evolve significantly during the project, depending on the results obtained. For this reason, this document presents only a generalized version of the Exploitation Plan strategy.

Document 1.2 is divided into seven chapters: Chapter 1 provides a short summary and explanation of the purpose of preparing this deliverable. Chapter 2 is a simplified presentation of the SIRIMA project. Chapter 3 is focused on the dissemination strategy, where different paragraphs illustrate the objectives of the dissemination, the target audience, the timing of the activities, the dissemination management policy and methodology and the dissemination tools. Chapter 4 contains the Communication Plan, outlining the dissemination activities to be performed during the following project periods. Chapter 5 describes a preliminary Exploitation Plan, which will be developed along with the SIRIMA project. Chapter 6 describes strategy for knowledge management and intellectual property rights.

2. Briefly about the SIRIMA

The SIRIMA: *Sinkhole Hazard and Risk Management in Post-Mining Areas* project is carried out co-financed by the Research Fund for Coal and Steel of the European Union under the action RFCS-2023-01-RPJ Coal Research Projects.

The SIRIMA Project Consortium consists of seven Partners and one Associated Partner:

- Główny Instytut Górnictwa - Państwowy Instytut Badawczy (GIG-PIB), Poland – the Project Coordinator
- Institut National De L' Environnement Industriel Et Des Risques (INERIS), France
- Bureau de recherches géologiques et minières (BRGM), France
- DMT-Gesellschaft für Lehre und Bildung GmbH – Technische Hochschule Georg Agricola (DMT-THGA), Germany
- Instytut Mechaniki Górotworu - Polskiej Akademii Nauk (IMG PAN), Poland
- Subterra Ingenieria SL (SUBTERRA), Spain
- Université De Lorraine (UL), France
- GEODERIS, France, – the Associated Partner”.



Figure 1 Graphical presentation of Partners in the SIRIMA project.

The SIRIMA project focuses on increasing knowledge and experience related to the deformation threats of post-mining areas in EU Member States. The main objective of the

project is to reduce the occurrence of uncontrolled and unexpected movements of the Earth's surface in the areas of shallow abandoned coal mines. These movements, apart from subsidence related to the conducted mining or movements resulting from the impact of mining tremors, can also take the form of uplifts caused by the lifting of the groundwater table in the rock mass and sudden, discontinuous deformations of the ground surface, i.e. sinkholes. The sinkhole hazard, is affecting coal regions in transition, due to shallow mining works and the resulting risk of damage to buildings, infrastructure or threat to people in post-mining areas.

As part of the SIRIMA project, a number of works are planned, to be carried out at local levels (for selected test sites) and on an European scale. The local work involves the performance of a number of studies, research works including model studies (e.g. soil-structure interaction), field studies (e.g. terrestrial and satellite geodesy, gravimetry), modelling (also with DL/ML) and the design of a monitoring system for the area threatened by the occurrence of sinkholes. The European work is to promote information on shallow mining operations in closed hard coal and/or ore mines and the scale of observed sinkholes to a wide range of potential recipients through the construction of an internet services.

The SIRIMA project is consistent with the following RFCS Research Objectives:

Article 5. Improving health and safety. Point 2. Research projects shall focus on diseases related to mining activities with the aim of improving the health of people living in coal regions in transition. Research project shall also ensure protective measures during the closure of mines and in formerly operating mines.

Article 6. Minimising the environmental impacts of coal mines in transition. Point 2e. Protecting water tables and purifying mine drainage water; Point 2g. Protecting surface infrastructure against the effects of subsidence and ground movements in the short and long term.

3. The Dissemination Plan for the SIRIMA project

The objectives of the dissemination are:

- to deliver the results of the SIRIMA project to specific professional groups and institutions that, due to the nature of their activities, may be interested in the project results and have the possibility to use them effectively,
- to exchange experience and knowledge between project Partners during the implementation of the individual tasks,
- to exchange experiences and knowledge with other groups, especially in the form of scientific and educational studies, participation in thematic conferences,
- to present information from the project in an easy and understandable way for the communities living in the test sites that are affected by post-mining hazards, in particular the threat of sinkholes,
- to show knowledge about sinkhole hazards in Europe to a wide audience.

The dissemination strategy and activities will follow principles and best practices successfully tested by the Partners in other projects and in line with the EC Guidelines for successful dissemination:

- All research results/reports will be duly reviewed and a copy will be sent to relevant Partners involved in the project before these are published or disseminated. When appropriate, the reports will refer to other research projects and build on the existing results and literature.
- The research will be conducted following sound analysis and scientific practice principles, taking into account as much as possible policy requirements and needs.
- All Partners who will contribute to the project activities will be duly informed about the outcomes and the implications stemming from project results by the use of the Collaborative Platform.
- All public results will be accessible from the project website and usable by all parties who may benefit from them.

Dissemination is based on conducting activities within the project in such a way that at each stage it is possible to provide answers to the following questions: what will be disseminated (subject of dissemination); who should receive the dissemination items created during the project; who may be interested in this material (target groups); what are the planned paths and ways to effectively reach the target groups (methods and tools); who is responsible for dissemination activities in the project and what are the rules for mutual information between Partners regarding the content of the dissemination (dissemination management), as well as how activities related to the dissemination of the project are distributed during its duration and in the period after its completion (dissemination time). The description of the implementation of these activities is presented in the following subchapters.

3.1. Subject of dissemination

The following dissemination subjects are planned to be used within the SIRIMA project dissemination:

- SIRIMA project – dissemination of information on the scope, objectives, implementation methods and achievements
- results of work and measurements – provision of information on project activities based on the project’s publishable results
- methodologies and guides -
- databases – provision of data generated within the project in a simplified form for the recipient.

The measurable effects of SIRIMA DECP implementation can be listed as Key Impact Pathways (KIPs):

- Number of visits to the project website - approximately 1,000 views in the last year of the project,
- Number of prepared press releases – 3,
- Participation in conferences/workshops – 3,
- Publications – 3,
- Database created as part of the project, with public access – 1
- Database in form of map with public access – 1

3.2. Target groups

Due to the nature of the SIRIMA project, the recipients of the data and analyses generated can be divided into 4 Target Groups:

- TG1 - scientists and employees of the institutions implementing the project as well as other research units implementing or dealing with similar research problems,
- TG2 - state administration bodies, especially local governments of cities and communes within which hard coal mines operated or still operate and where, due to shallow mining in the past, the risk of cave-ins may significantly increase in the future.
- TG3 - mining plants and other enterprises that, due to their activities, are responsible for areas where the threats studied in the project occur.
- TG4 - citizens living in the studied in the project test sites.

A different method of communication is planned for each of these groups (see Chapter 4).

Additionally, ensuring effective internal distribution of work results among the consortium Partners implementing the next WPs and Tasks is an important key element for the success of the SIRIMA project. Project Partners have already participated and are currently participating in EU projects that are related to SIRIMA (e.g. Postminquake, POMHAZ). Through these activities, there are already channels for mutual cooperation between Partners, also in EU-funded projects. This will certainly strengthen the cooperation within the SIRIMA project, which is required for the successful completion of the project.

3.3. Methods and tools

The project will be disseminated through many channels. To ensure the project's recognition, it was necessary to develop a project logo in graphic and text form, a document template and for presentations respectively. These materials will be widely used in publications, conference presentations, press and advertising materials, leaflets, on project documents and manufactured equipment. A very important element of the project and its dissemination is the website.

3.3.1. Logo of SIRIMA Project

A graphic logo of the project was developed in various shapes and colours. The basic logo of the project contains the acronym and the full title of the project and information about the project number in the Research Fund for Coal and Steel. It was developed in such a way that through graphics it is associated with a depression, a certain form of a funnel, how one can present a sinkhole forming on the surface of the terrain.

The basic color scheme adopted for the project promotion is shown in Figure 2. Alternatively, it is possible to use the color scheme in the variant shown in Figure 2b.



Figure 2 Graphical presentation of SIRIMA logo. a) The basic color scheme, b) second color scheme.

If it is necessary to use the logo in black and white mode, the project logo is in the following form (fig. 3).



Figure 3 Graphical presentation of SIRIMA logo in black&white scheme.

The logo may be modified by removing the outer circle and moving the Acronym arbitrarily. Depending on the content of the graphic material being developed (map, illustration, poster) or text, it is possible to modify the accompanying content.



Figure 4 Graphical presentation of SIRIMA logo in black&white scheme. Modified to linear system.

The developed logo combined with the EU emblem "fund/co-funded by the European Union", the template of which can be found in Article 17, point 2 of the Grant Agreement, are the basic symbols used in the graphic presentation of the SIRIMA project.

3.3.2. Project website

The SIRIMA project website is one of the most important tools for disseminating the project. The website is intended to present the reports, studies, databases, etc. produced in cooperation with all Partners. The website was registered and launched on October 7, 2024 (Milestone 1) in the "eu" domain with an intuitive URL address, which corresponds in a simple way to the project acronym and allows to find the website intuitively on the Internet. The website can be found in the following URL:

<https://sirima.gig.eu>

The design of the website builds upon the following criteria and considers suggestions given in the EU Project Websites – Best Practice Guidelines (EC, 2010):

- **Visual communication:** use of colors and/or photos, web pages are easy to browse, information is kept short and links are included to websites, publications, and so on.
- **Verbal communication:** the website uses simple phrasing, no jargon is used to attract the widest possible audience, e-devices are user friendly.
- **Visibility:** maximum use of free or affordable methods to increase page ranking on search engines, Webmaster Tools provided by search engines to check indexing status, good crosslinking between the different pages of your site and other sites, adding keywords to the web page metadata; use of frequently used keyword search phrases both in the metadata and in the contents' pages.
- **Regular update of contents:** the website is maintained by BEWARRANT and updates will be regularly made by the webmaster based on information from the project coordinator and WPs Leaders.

- **Monitoring and feedback tools:** the website includes a counter of visitors or other statistical tools that will be used to measure the number of visits.

The created website sirima.gig.eu includes 2 levels of information availability. The basic level includes information available to all stakeholders of the SIRIMA project and the topic of sinkhole hazard. This includes:

- a brief overview of the project, indicating its objectives, content and structure.
- the composition of the project consortium - logos with direct links to websites
- access to publicly available data generated during the project
- up-to-date information on important events and activities carried out by the project Partners resulting from the SIRIMA project,

Advanced access to the website is intended for the project Partners. The created platform enables the collection and storage of data and documents related to the implementation of the project, the transfer of currently developed reports and especially large files.

In each section, at the bottom of the pages, one can find the acknowledgement of the EU co-funding in form of logos: ‘co-funded by European Union’, ‘European Commission’ and ‘Research Fund for Coal and Steel’

Website structure.

The project website has been divided into 6 main sections, located on the 1st level at the top of the page – this is the so-called navigation panel. These are the “home page” symbolized by the SIRIMA project logo, “About Project”, “Digital Database”, “Field sites”, “Disseminations” and “Partners”. In the upper right corner, there are two additional fields: “Partners Area” and “Contact”. One can access these elements of the service at any time while navigating the website.



Figure 5 Website navigation bar.

The site has been prepared in full responsiveness, its operation is possible on both stationary devices (PC) and mobile devices (smartphones, tablets). It is supported by all popular web browsers. The website was prepared using current trends and graphic elements. The text font used and its adaptation to the device on which it is displayed makes the content legible and easily digestible by the stakeholder.

Project Page Tabs Description

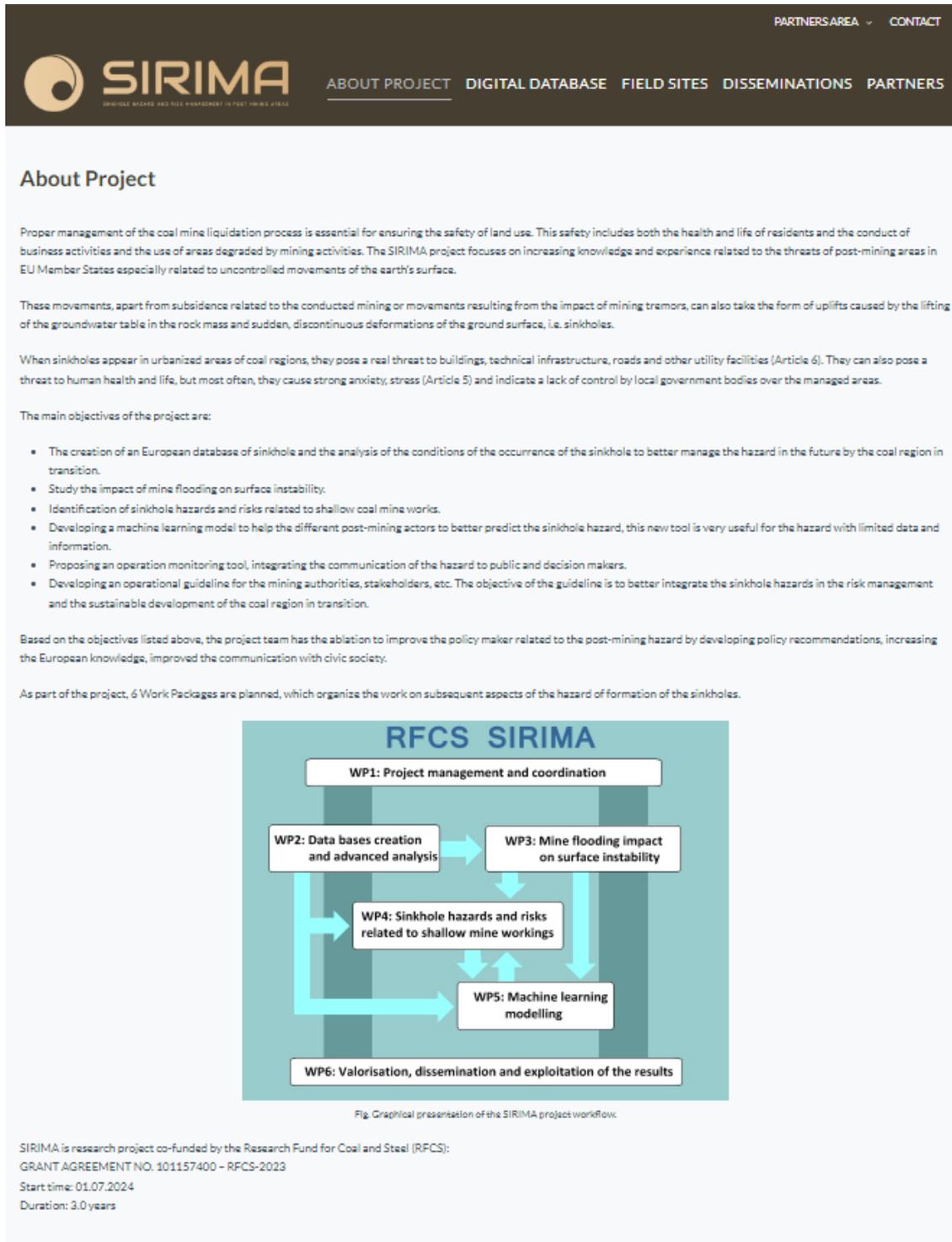
Entering <https://sirima.gig.eu/> in the address field of an internet search engine directs the stakeholder to the project’s “home page”.



Figure 6 "Home page" of SIRIMA website.

This page has been designed to provide a concise overview of the project. The first thing the user sees is a navigation bar with the project logo, below which he can find an AI-generated graphic relating to the project's subject matter. Using this trick easily specifies the direction in which the stakeholder will navigate the page. The graphic includes the full title of the SIRIMA project and a reference to the RFCS funding. Below, under the eye-catching title, one can find a short paragraph describing what the project is about in a clear and concise manner. Then one sees data on funding from the RFCS, logos of the project Partners, and the latest news from the "disseminations" section.

The next Tab “About project” again provides an introduction to the “world” of the project, presenting the project’s goals and ambitions. It also includes a graphical presentation of the SIRIMA project’s workflow and the interconnections between the Work Packages.



About Project

Proper management of the coal mine liquidation process is essential for ensuring the safety of land use. This safety includes both the health and life of residents and the conduct of business activities and the use of areas degraded by mining activities. The SIRIMA project focuses on increasing knowledge and experience related to the threats of post-mining areas in EU Member States especially related to uncontrolled movements of the earth's surface.

These movements, apart from subsidence related to the conducted mining or movements resulting from the impact of mining tremors, can also take the form of uplifts caused by the lifting of the groundwater table in the rock mass and sudden, discontinuous deformations of the ground surface, i.e. sinkholes.

When sinkholes appear in urbanized areas of coal regions, they pose a real threat to buildings, technical infrastructure, roads and other utility facilities (Article 6). They can also pose a threat to human health and life, but most often, they cause strong anxiety, stress (Article 5) and indicate a lack of control by local government bodies over the managed areas.

The main objectives of the project are:

- The creation of an European database of sinkhole and the analysis of the conditions of the occurrence of the sinkhole to better manage the hazard in the future by the coal region in transition.
- Study the impact of mine flooding on surface instability.
- Identification of sinkhole hazards and risks related to shallow coal mine works.
- Developing a machine learning model to help the different post-mining actors to better predict the sinkhole hazard, this new tool is very useful for the hazard with limited data and information.
- Proposing an operation monitoring tool, integrating the communication of the hazard to public and decision makers.
- Developing an operational guideline for the mining authorities, stakeholders, etc. The objective of the guideline is to better integrate the sinkhole hazards in the risk management and the sustainable development of the coal region in transition.

Based on the objectives listed above, the project team has the ablation to improve the policy maker related to the post-mining hazard by developing policy recommendations, increasing the European knowledge, improved the communication with civic society.

As part of the project, 6 Work Packages are planned, which organize the work on subsequent aspects of the hazard of formation of the sinkholes.

RFCS SIRIMA

WP1: Project management and coordination

WP2: Data bases creation and advanced analysis

WP3: Mine flooding impact on surface instability

WP4: Sinkhole hazards and risks related to shallow mine workings

WP5: Machine learning modelling

WP6: Valorisation, dissemination and exploitation of the results

Fig. Graphical presentation of the SIRIMA project workflow.

SIRIMA is research project co-funded by the Research Fund for Coal and Steel (RFCS):
GRANT AGREEMENT NO. 101157400 - RFCS-2023
Start time: 01.07.2024
Duration: 3.0 years

Figure 7 “About project” – Page Tab on SIRIMA website.

The next tab, "Digital database", apart from "Dissemination", will be the most important element of the website and should be the main place of interest for stakeholders visiting the website. It will contain links to the next sub-tabs, which will present information and data such as a map of shallow mining areas of hard coal and/or ore deposits in areas of abandoned mines in the SIRIMA project Partner's countries or a database of post-mining sinkholes observed in these countries. Additionally, there will be information on seismological, geodetic (satellite geodesy), hydrogeological observations or AI-based modelling. At the current stage of the project, the "Digital database" tab is in the creation phase.

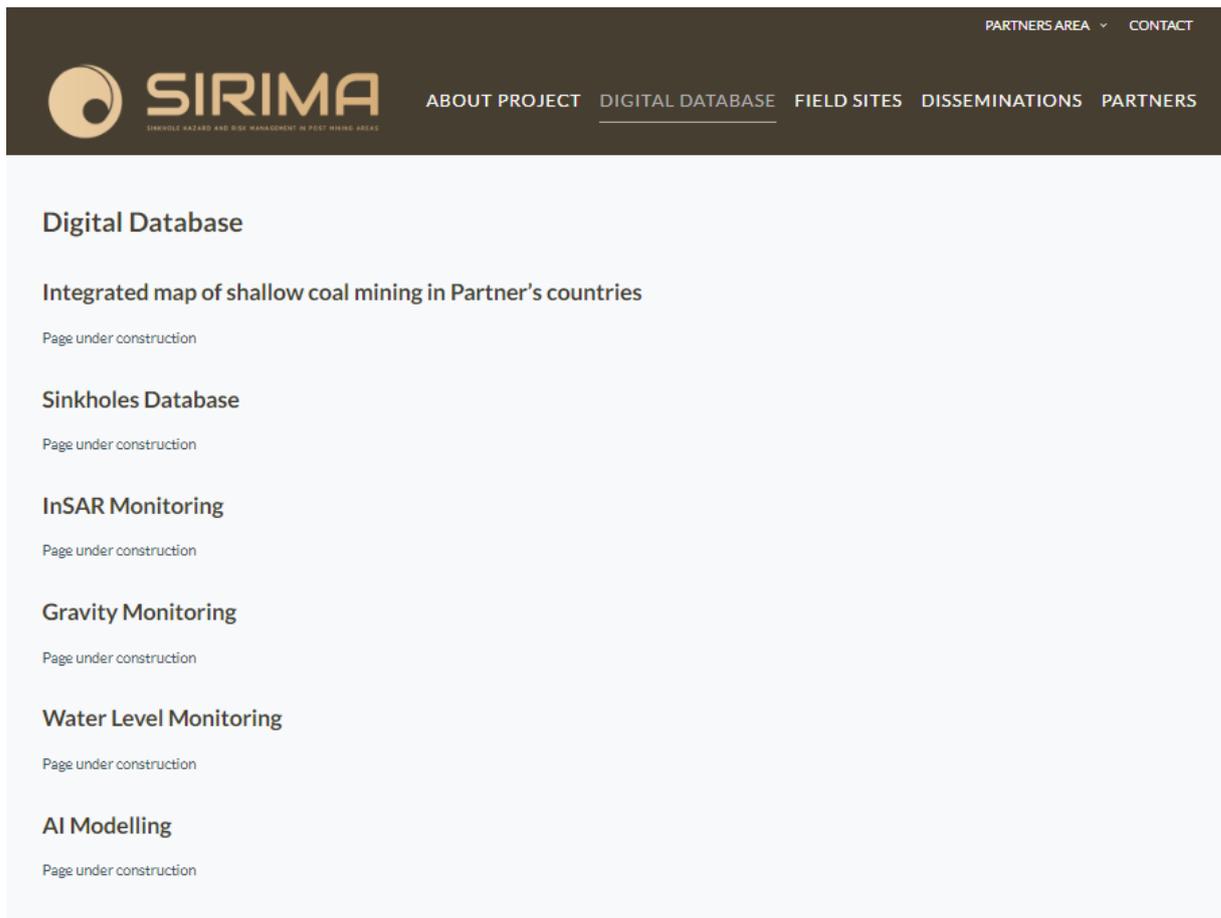


Figure 8 "Digital Database" – Page Tab on SIRIMA website.

The next tab, Field sites, presents locations that were selected at the stage of preparing the project application. Each of these locations is subject to threats that we are working on as part of the activities planned in WPs.



Field Sites

Field Site in France (Thil in the Lorraine iron basin)

The Lorraine iron ore basin is located in the north-east of France and extends from the border with Luxembourg in the north to south of Nancy. It is divided into two sub-basins: the Briey-Longwy basin in the north, and the Nancy basin in the south, covering 1,300 km² and 380 km² respectively. The Thil site (in north of Meurthe-et-Moselle) is close to the Luxembourg border (Fig. 1).

Iron formations are found in oolitic sedimentary deposits dating from the Aalenian period (about 150 million years ago). The deposit is alternating mineral-rich seams containing 30-35% iron, separated by less rich areas called interseams. The formation ranges from a few meters to about sixty meters thick. The various seams are found over the entire basin but with variable contents and thicknesses. Depending on the area, one to six seams were exploited in a single vertical operation. The Lorraine deposit lies underneath the Bajocian marl-limestone series. The deposit outcrops in the north, at the borders with Belgium and Luxembourg, and in the east along the Moselle valley. It sinks with an average dip of 3% towards the west to reach a depth of 280 meters at the western limit of the exploitable, managed area.

Ore has been extracted since the middle ages, but industrial mining only began in the 19th century after the Thomas-Gilchrist process was invented. Iron ore was first removed manually (extraction and loading). After the Second World War, mechanization developed progressively with use of two main extraction methods: *abandoned room and pillar* and *caving room and pillar*. Miners could bolt the roof. (see Isabelle Vuidart, Rak Hadadou, Pascale Hanocq, Laurent Semmelbeck. *Post-mining management in a major French mining area - example of the Lorraine iron ore basin*. Mine Closure 2014 : 9th International Conference on mine closure, Oct 2014, Johannesburg, South Africa. 14 p. <hal-01100459>). The last working mine in Lorraine closed in 1993.



Figure 9 "Field sites" – part of the tab on SIRIMA website.

The Dissemination tab presents information about activities taking place during the project implementation, prepared reports, personal and online meetings, events and actions related to the implementation of the SIRIMA project.



Figure 10 “Disseminations” –Page Tab on SIRIMA website.

The last tab of the main navigation bar is the tab showing the project Partners, their logos and links to their websites.



Project Partners



Główny Instytut Górnictwa - Państwowy Instytut Badawczy (Central Mining Institute - National Research Institute)
GIG-PIB

Poland
gig.eu



L'Institut national de l'environnement industriel et des risques (The National Institute of Industrial Environment and Risks)
INERIS

France
ineris.fr



Bureau de recherches géologiques et minières (French Geological Survey)
BRGM

France
brgm.fr



Forschungszentrum Nachbergbau, Technische Hochschule Georg Agricola University, Research Center of Post-Mining (Research Center for Post-Mining, Technical University Georg Agricola University, Research Center of Post-Mining)
THGA

Germany
fzn.thga.de



Instytut Mechaniki Górotworu Polskiej Akademii Nauk (Strota Mechanics Research Institut Polish Academy of Sciences)

Poland
imgpan.pl



Systra Subterra

Spain
subterra-ing.com



Ecole des Mines de Nancy, Université de Lorraine

France
univ-lorraine.fr



GEODERIS est un Groupement d'Intérêt Public (GIP) constitué par le ministère de la transition écologique et solidaire, le BRGM et l'INERIS.

France
geoderis.fr

Figure 11 “Disseminations” –Page Tab on SIRIMA website.

Partners Area is a password-protected sub-page accessible to Project Partners only. The site is used to communicate and share information just between Project Partners. Below in figures 13 and 14 the elements of this space are shown.

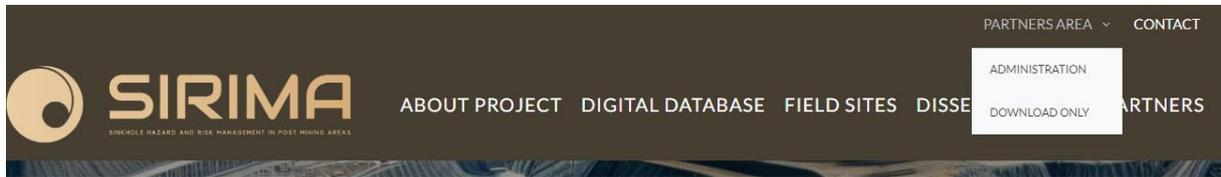


Figure 12. Access to Partners Area Tab.

Share Sync Copy link Add shortcut to OneDrive Download Export to Excel

Wasilewski Filip > Project's Websites > sirima.gig.eu > **SIRIMA Project's Partners Only Access**

Name	Modified	Modified By	File size	Sharing	Activity
WP6	September 23	Wasilewski Filip	4 items	Shared	
WP1	September 23	Wasilewski Filip	5 items	Shared	
WP2	September 23	Wasilewski Filip	4 items	Shared	
WP3	September 23	Wasilewski Filip	4 items	Shared	
WP4	September 23	Wasilewski Filip	4 items	Shared	
WP5	September 23	Wasilewski Filip	4 items	Shared	

Figure 123 “Partners Area” on SIRIMA website.

Wasilewski Filip > Project's Websites > sirima.gig.eu > SIRIMA Project's Partners Only Access > WP1 > Meetings > **Kick-Off Meeting**

Name	Modified	Modified By	File size	Sharing	Activity
Presentations	October 3	Kortas Lukasz	12 items	Shared	
Agenda Kick-off meeting SIRIMA.pdf	October 3	Kortas Lukasz	827 KB	Shared	
MINUTES_of_Kickoff_SIRIMA.pdf	October 3	Kortas Lukasz	506 KB	Shared	

Figure 134 Example of data acquisition in “Partners Area” on SIRIMA website.

The last subtab on project website is “Contact” (figure 15).



The screenshot shows the 'Contact Us' page of the SIRIMA website. At the top, there is a navigation bar with 'PARTNERS AREA' and 'CONTACT' on the right, and 'ABOUT PROJECT', 'DIGITAL DATABASE', 'FIELD SITES', 'DISSEMINATIONS', and 'PARTNERS' in the center. The SIRIMA logo is on the left. Below the navigation bar, the 'Contact Us' section features three columns: 'Address', 'E-mail', and 'Phone'. The 'Address' column lists the Central Mining Institute, National Research Institute, Department of Geology and Geophysics and Surface Protection, plac Gwarków 1, 40-166 Katowice, Poland. The 'E-mail' column shows sirima.rfcs@gmail.com. The 'Phone' column shows Mon - Fri: 7:00 - 15:00 and +48 32 259 2350. Below this information is a Google Map showing the location of the Central Mining Institute in Katowice, Poland. The map includes a search box for 'Central Mining Institute' with a 4.5-star rating and 25 reviews. At the bottom of the page, there are logos for 'Co-funded by the European Union', the 'European Commission', and the 'Research Fund for Coal & Steel'. A footer bar contains the text 'Central Mining Institute - National Research Institute | Privacy Policy | Accessibility Statement' and social media icons for LinkedIn, Facebook, and Email.

Figure 145 Contact tab with GIG-PIB data as the project coordinator on the SIRIMA website.

3.3.3. Social Media

Social media tools such as an account on Facebook (figure 10) has been created, aiming at reaching the audience of professionals, students and young researchers, constantly updated with the latest news from the project.

3.3.4. Press releases

Press releases will be published along with the life of the project, starting from the beginning. Activities on this topic have already been initiated in connection with the Kick-Off Meeting held at the end of August 2024.

3.3.5. Official project documents

At the beginning of the project, at the logo development stage, a template for project documents (letter) and presentations were prepared. These documents were made available to Partners before the first meeting inaugurating the project. These materials are not publicly available, they are basic elements of the project identification for use in the exchange of information and dissemination of the project.

3.4. Dissemination management

According to the Article 17 of the Grant Agreement: “the beneficiaries must promote the action and its results by providing targeted information to multiple audiences (including the media and the public), in accordance with Annex 1 and in a strategic, coherent and effective manner. Before engaging in a communication or dissemination activity expected to have a major media impact, the beneficiaries must inform the granting authority”.

The dissemination of the project and, above all, the activities undertaken and the results of these works is a joint task of all project Partners. In particular, Partners are required to undertake promotional activities by presenting the project on the Partner's website and on social media accounts managed by them. As part of these activities, it is necessary to present a short description of the activities in the project and the project itself, contact details of the person responsible for the project in a given institution, the project logo, the European Union flags, and the source of project financing.

All SIRIMA Project Partners will make every effort to disseminate the project, e.g. by participating in conferences and giving presentations, preparing scientific and press publications, participating in promotional meetings and by establishing contacts that can contribute to the widest possible dissemination of information about the project implementation.

In order to maintain the correct path of project communication management, the Team Leader is responsible for publishing SIRIMA project-related materials in each institution. The Team Leader is obliged to inform the Project Coordinator about the actions taken to disseminate the project. Their contact details, where it is important for the dissemination of the project, are as follows:

Organisation	Name	email
1. GIG-PIB	Sławomir Siwek	ssiwek@gig.eu
2. INERIS	Isabelle Vuidart	Isabelle.VUIDART@ineris.fr
3. BRGM	Pascal Dominique	p.dominique@brgm.fr
4. DMT-THGA	Stefan Moellerherm	stefan.moellerherm@thga.de
5. IMG-PAN	Krzysztof Tajduś	tajdus@imgpan.pl
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In addition, the principles of dissemination and protection of intellectual property rights in the SIRIMA project are included in the Project Agreement and the Consortium Agreement. Each Partner, by joining the Project, has committed to comply with the provisions of Article 17 (Communication, Dissemination and Visibility) of the Project Agreement and Chapter 8 (Results) of the Consortium Agreement.

All consortium Partners are encouraged to report the results of each dissemination activity immediately after they are presented. It is required that information about the dissemination of the project in the form of a report, note, along with an appropriate document (article, presentation, conference materials, photos, etc.) will be added by the Partner on the common space on the project website in the "Disseminations" directory. If possible, it is suggested to gather a database of contacts to people and institutions that use the results of the SIRIMA project presented by the Partners. Creating a database can help to disseminate the project even better.

For monitoring purposes, the dissemination activities will be reassessed regularly during the project progress meetings.

3.5. Dissemination activities timing

The dissemination activities will be performed according to the following logical schedule:

1. Initial awareness phase (month 0-6): this especially includes the establishment of SIRIMA project website, analysis of relevant information resources, identification of dissemination opportunities and creation of basic dissemination tools including the graphical identity of the project (i.e. project logo, project website, templates for project documents and project presentations).

2. Targeted dissemination phase (month 7-36): the consortium will enrich the website, publish publications, issue the first press release and attend selected events. During

this phase, the project stakeholders will be informed about the data generated and the results of their analysis and interpretation, as well as about the possibilities of their use.

4. The Communication Plan for the SIRIMA project

The aim of communication on SIRIMA project is to inform, promote and communicate the activities and project results. The dissemination will aim to reach the largest possible group of potential recipients and subsequent users of the data created as part of this project, the model and the guidelines contained in the project summary guide.

The project results, due to the scope of work, will affect a very wide group of recipients. Therefore, various sources of communication will be used for dissemination. Each of these groups requires a different method of communication. In the case of institutional representatives, research units, offices or companies (groups TG1-2-3 – see 3.2), the basic communication methods prepared by the project team will be: publications and press materials. The Partners will individually and in collaboration publish and present scientific advances in technical papers as well as in journals (peer-reviewed or not) and magazines. Scientific publications are an effective way to disseminate high-level project information and to attract the interest of representatives of the various target groups. Publications in specialised magazines, papers sent to related events will attract the attention of technicians and researchers as well as allow collaborating within the purposes of SIRIMA Project.

Special points will be the participation of project team members in conferences, where they will present the results of the work carried out so far as well as the planned effects of their implementation. As part of this activity, it will be possible to participate in 2 - 3 conferences such as: Mining Natural Hazards (GZN) or the School of Underground Exploitation in Poland or the NACHbergbauZeit or the Altbergbaukongress (old mining conference) in Germany. In addition to participation in conferences, the project team plans to organize project meetings solely devoted to the project:

1. Workshop 1 – project Kick-off meeting – organized as one day meeting.
2. Workshop 2 – as part of popular scientific conference – special session – in the second year of the project - organized by a Partner.
3. Workshop 3 – as a summary and closure of the project – organized by the project coordinator in Poland.

These meetings will include both in-person and electronic participation of team members.

An important element of communication, as already mentioned, will be the project website, where subsequent layers will be created relating to consecutive elements of the project. Special layers will be those in the form of a map showing areas of shallow hard coal and/or ore exploitation in the SIRIMA project Partner's countries participating in the project, as well as a database of observed sinkholes in these countries.

It is also planned to use modern methods of transmitting information - through social media platforms (e.g. Facebook, LinkedIn, Researchgate), where current achievements from the work of the project team will be presented in the form of short messages. Social media

and local media will be the primary means of communication with the 4th Target Group (see 3.2) of project recipients.

The first information about the project will appear when confirmed information about the granting of project financing is obtained (Kick-off Meeting). GIG-PIB (Coordinator of the Project), as a unit that has conducted many research projects in various fields and financed from various sources, has extensive experience and appropriate tools. The primary source of contact will be the project website, the GIG-PIB website and Partners' websites, and the GIG-PIB Facebook channel. It is planned that after the automatic monitoring system for the groundwater level is launched in the research area most at risk of sinkholes (Siersza test site), special leaflets and posters encourage residents to use the information.

The measurable effects of SIRIMA DECP implementation can be listed as Key Impact Pathways (KIPs):

- Number of visits to the project website - approximately 1,000 views in the last year of the project,
- Number of prepared press releases – 3,
- Participation in the conferences/workshops – 3,
- Publications – 3,
- Database created as part of the project, with public access – 1
- Database in form of map with public access – 1

The project SIRIMA is linked to other RFCS, international research and innovation activities, the results of which are used in the project (Postminquake), or which, through existing affinities, will draw information from the SIRIMA project (Pomhaz).

4. The Exploitation Plan for the SIRIMA project

Exploitation, according to Annex 5 (Specific Rules) and Article 16 (Intellectual Property Rights (IPR), Background and Results, Access Rights and Rights of Use) of Grant Agreement means “the use of results in further research and innovation activities other than those covered by the action concerned, including inter alia, commercial exploitation such as developing, creating, manufacturing and marketing a product or process, creating and providing a service, or in standardisation activities”.

Exploitation is focused on accelerating and streamlining both the uptake of individual SIRIMA results, as well as the commercialisation of the system.

As part of the SIRIMA project implementation, at least two exploitable results will be produced:

- research data,
- monitoring systems.

The commercialisation process will be related to the monitoring system created in cooperation with an industrial Partner (SRK S.A.) and local government (Trzebinia Commune). The possibility of using the project results will be determined in the final project report, when all project effects are known and the possibility of exploitation is determined.