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Understanding, preventing and mitigating the potential environmental impacts and risks of shale gas exploration and exploitation

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Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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1. Introduction

The SHEER Kick-off Meeting was held in Krakow on May 5-8, 2015.

This deliverable represents a summary report of the main discussions and outcomes of the meeting.

2. Agenda

2.1 TUESDAY – May 5

5th May 2015	
9:00 – 9:30	Stanislaw Lasocki (IGF-PAS) and others
9:30 –10:00	<i>Welcome addresses</i>
10:00-10:30	Paolo Gasparini (AMRA) <i>The SHEER Project: outline, problems to be solved and expected results</i>
10.30-10.45	Neil Burnside (UGL) on the behalf of Christopher McDermott <i>Outline and expected results of FraCrisk project</i>
10.45-11.15	<i>Coffee Break</i>
11.15-11.45	Beata Orlecka-Sikora (IGF-PAS) <i>SHEER Database outline</i>
11.45-12.00	Peter Styles (KeU) <i>Description of the data from the Preese Hall shale gas site</i>
12.00-12.15	<i>Discussion on the database</i>
12.15-12.45	Andrew Gunning (RSKW Ltd) on behalf of Ruth Allen (RSKW Ltd) <i>Developing guidelines for risk management of shale gas</i>
12.45-13.00	Peter Styles (KeU) <i>Workplan of communication and dissemination activities</i> <i>Discussion</i>
<i>13.00-14.00</i>	<i>Lunch</i>
14:00-14:15	Simone Cesca (GFZ) <i>Workplan for induced seismicity</i>
14.15-14.30	Simone Cesca (GFZ) <i>Contribution of GFZ on the analysis of induced seismicity</i>
14.30-15.00	Matteo Picozzi (AMRA), Paolo Capuano (AMRA) <i>Contribution of AMRA on the analysis of induced seismicity</i>
15.00-15.15	<i>Discussion</i>
15.15-15.30	Stanislaw Lasocki (IGF-PAS) <i>Contribution of IGF-PAS on the analysis of induced seismicity</i>
15.30-15.45	<i>Coffee Break</i>
15.45-16.00	Peter Styles (KeU) <i>Multi-physical modeling of induced seismicity</i>
16.00-16.15	<i>Discussion</i>
16.15-16.30	Andrew Gunning (RSKW Ltd)

16.30-16.45	<i>Workplan of Hydrogeological modeling and groundwater contamination</i> <i>Discussion</i>
16.45-17.15	Janusz Jaroslowski (IGF-PAS) <i>Workplan of analysis of air pollution and monitoring activities</i>
17.15-17.30	<i>Discussion</i> End of the session

2.2 WEDNESDAY – May 6

6th May 2015	
9.30 –10.00	Alexander Garcia (AMRA) <i>Workplan for the development of multi-risk analysis</i>
10.00-10.15	Simona Esposito (AMRA) <i>Roadmap to study the impact of shale gas exploitation on the building environment</i>
10.15-10.30	Valentina Ivan, Raffaella Russo (AMRA) <i>Overview of social and economic aspects and possible roadmap for the project</i>
10.30-11.00	Dirk Kraaijpoel (KNMI) <i>Contribution of KNMI and AMRA on Seismic Hazard Assessment and</i> <i>Contribution of KNMI on the multi-risk analysis</i>
11.00-11.30	<i>Discussion</i>
11.30-11.45	<i>Coffee Break</i>
11.45-12.15	Stanislaw Lasocki (IGF-PAS) and Monika Kadzikiewicz-Schoeneich (PGNiG) <i>The Polish shale gas site</i> <i>Discussion on the Polish Shale Gas site</i>
12.15-12.45	
12.45-13.30	Lunch
13.30-15.30	Special sessions for planning of initial activities
13.30-14.30	<i>A. Monitoring activities of the Polish shale gas site (WP3, Stanislaw Lasocki IGF-PAS)</i>
14.30-15.30	<i>B. Database gathering (WP2, Beata Orlecka-Sikora IGF-PAS)</i>
15.30-16.00	<i>Coffee break</i>
16:00-16.30	Beata Orlecka-Sikora, Stanislaw Lasocki (IGF-PAS) <i>Summarizing outcomes of the special sessions</i>
16.30-16.45	<i>Discussion</i>
16.45-17.00	Alfonso Rossi Filangieri (AMRA) <i>Management of SHEER Project</i> End of the session
19.30-21.00	Social Dinner

2.3 THURSDAY – May 7

7th May 2015	
9.15-9.30	Alfonso Rossi Filangieri (AMRA) <i>Management of SHEER Project</i>
9.30-9.45	Paolo Gasparini (AMRA) <i>Presentation of the Advisory Board and its roles</i>
9.45-10.15	Advisory Board
10.15-10.30	<i>Coffee break</i>
10.30-13.00	Advisory Board , PMT Meeting SHEER Scientific Committee (Gasparini) <i>Discussion with Advisory Board</i>
13.00-13.30	
13:30-14:30	<i>Lunch</i>
14.30	<i>Visit to the Polish gas site</i>

2.4 FRIDAY- May 8

8th May 2015	
	<i>Visit at the Polish shale gas site</i>

3. List of participants

The list of participants is in Annex 1.

4. Report

All of the above mentioned presentations will be available on the SHEER webpage.

The last part of the second day was devoted to discussions on the main contractual and legal aspects of the project and to the presentation and discussion of the main outcomes of the WP parallel sessions.

The main outcomes of the “**Special sessions for planning of initial activities**” are outlined in Annex II.

During the third day, the Scientific Coordination Committee and the Project Management Team were held. It was decided to have this first meeting jointly.

The minutes of the meeting are reported below.

5. Minutes of the Project Management Team and Scientific Coordination Committee Meeting Agenda

- a) Coordination with other LCE16 projects
- b) Confidentiality issues
- c) Coordination of seismic data processing
- d) Satellite data
- e) First year meeting
- f) Any other possible meetings (WPs, PMT, SCC)
- g) Website
- h) Dissemination actions to be started now
- i) Monitoring of the performance of dissemination actions
- j) Links with Canada

All the aforementioned items have been widely discussed and the main outcomes can be summarized as follows:

a) Coordination with other LCE16 projects

The European Commission strongly suggested to have an effective cooperation and coordination among the four funded projects. AMRA invited the other project representatives to the SHEER KoM; unfortunately, none could attend.

The KoM of the FracRisk project (Project Leader: School of Geosciences, Edinburgh University) will be probably held on July 1-2 2015: Peter Styles (KeU), Neil Burnside (UGL), Paul Younger (UGL) and Andrew Gunning (RSK Ltd) are likely to attend.

Paolo Gasparini will prepare a presentation to be given at this meeting.

After the FracRisk KoM, the Project Management Team will organize a skype talk to discuss on the possible forms of interaction with the other projects.

b) Confidentiality issues

IGF - PAS is working out a confidential agreement with the PGNiG.

It was pointed out that a number of deliverables are confidential.

In order to have as many deliverables as possible in the public area of the website, it was decided that they should not include confidential data in the main part. These data will be included in annex. A template for the deliverables will be prepared by AMRA and sent to the PMT for its approval.

The Advisory Board members should sign a *Non-Disclosure Agreement* before having access to the SHEER deliverables.

SHEER researchers will be asked to send their scientific publications and presentations to "external meeting" to the PMT only to check that sensitive data are not included; the scientific contents of such publications will not be judged.

c) Coordination of seismic data processing

It is very important to have no overlapping but complementarity of the seismic data processing.

Simone Cesca (GFZ) will analyse all the planned processing of seismic data presented by the partners, trying to coordinate them. He will send a report by the end of June. If overlapping problems should arise, a WP4 meeting will be held.

d) Satellite data

An AMRA research group led by Riccardo Lanari (Italian CNR) will analyse satellite data; probably not all these data are free.

Riccardo Lanari will send a proposal for processing data in a proposed time window to Stanislaw Lasocki (IGF-PAS) and Peter Styles (KeU) for the following sites:

- Blackpool
- Wysin
- Lubocino

e) First year meeting

The first annual meeting of the SHEER meeting will be held in April or May 2016 in Naples.
The second annual meeting will be probably held in Blackpool-

f) Any other possible meetings (WPs, PMT, SCC)

The next Scientific Committee Meeting and Project Management Meeting will be held in Katowice, Poland, in November 2015.

g) Website

AMRA will be responsible for the construction of the SHEER website.

The project website will have a public area and a reserved area with three accessibility levels:

- Public
- Restricted (just for the consortium member and the operator)
- Reserved (just for the consortium members)

In addition to the website, other dissemination tools will be developed. A SHEER blog and Facebook and Twitter pages will be created and managed by Rachel Westwood (KeU)

The SHEER project blog managed by Rachel Westwood (KeU) will perform different dissemination levels referred to:

- Scientists
- Schools
- Local Authorities

The web site will also contain a link to the data repository by Beata Orlecka Sikora (IGF-PAS), available just for the consortium members.

A website preliminary version will be available within one month and will be on line around middle June.

h) Dissemination actions to be started now

The European Commission is strongly stressing the importance of dissemination actions for the SHEER project. The dissemination will be structured at different levels.

In addition to the actions described under point 7, the first dissemination tool will be:

- A general SHEER presentation prepared by AMRA
- On the basis of this presentation, the University of Keele will prepare a flyer (3 levels: scientific community, shareholder and general public)
- A general Poster to be possibly used in meetings and scientific conferences to be prepared by the University of Keele

Peter Styles (KeU) is an Advisory Board member of the Shale Gas Europe, a platform bringing together industry, experts and academics to collect, share and communicate the interesting science and technology involved in shale gas exploration.

The SHEER project could be disseminated also through this channel.

The University of Wyoming (Mike Cheadle) has already started to disseminate the SHEER project start and the information are widely circulating in the US.

Alfonso Rossi Filangieri (AMRA) will ask them to send us the activities carried out.

i) Monitoring of the performance of dissemination actions

The monitoring activity will evaluate the performance of the dissemination actions considering the number of downloads, the number of visitors and so on.

j) Links with Canada

AMRA has an important collaboration with the Italian Commerce Chamber in Canada.

A strong interest in the SHEER project has been showed by officers of some Companies operating in Canada as well as from officers of Alberta and Ontario Governments.

This collaboration could provide useful data to the SHEER project.

It is important to organize a meeting in Canada between September and October 2015. In addition to Paolo Gasparini, some other members of the consortium (P. Styles, A. Gunning) could take part to the mission.

The possibility of covering the related costs using SHEER money has to be discussed with the EC Project Officer.

6. Minutes of the Advisory Board

The SHale gas Exploration and Exploitation induced Risks (SHEER) project held its initial plenary meeting in Krakow, Poland on May 5-8, 2015. The goal of this HORIZON 2020 project is to “develop best practices for assessing and mitigating the environmental footprint of shale gas exploration and exploitation.” The meeting was attended by the project management, lead investigators, scientific and technical team members and the SHEER Advisory Board.

The Advisory Board provides the SHEER management with advice on the overall direction of the project, monitors progress in meeting milestones, and offers solutions to problems that it identifies or are referred to it by management. It also helps management disseminate results to stakeholders. Thus, its role is to assist rather than just review the SHEER project, and it was in this spirit that the first Advisory Board meeting was held on May 7, 2015.

The Board was particularly impressed by the comprehensive nature of the project with strong emphasis on gathering data from the two experimental sites in Poland and the United Kingdom. The breadth of the project’s eight work packages is also notable, covering assessment and monitoring of the critical environmental hazards associated with shale gas development and their integration into guidelines for best practices. There is also a healthy balance between the core scientific investigations of induced seismicity potential, groundwater and air pollution and the translation of scientific knowledge into products for other stakeholders and the public at large.

By assembling a team with a broad range of expertise, SHEER possesses the scientific and technical knowledge required to successfully carry-out each of the work packages. They appear to be achievable within the allotted time for the project, but some will be needed to start without delay. In particular, both the Board and SHEER management are well-aware of the importance of beginning baseline monitoring for groundwater, air quality and seismic activity before drilling operations commence.

It is expected that drilling will begin first in Poland, possibly as early the summer of 2015 with fracking of the well in the fall. The plans for establishing the monitoring systems this summer are ambitious and it is critical to the project that they are established without delay. The Board would like to be kept informed of progress in that regard. We were less certain about the status of and plans for developing a comprehensive geological model of the site and environs. The value of an integrated model is obvious, and because some of the most important information resides in the hands of the oil company (well logs, geologic framework, seismic sections, etc.) establishing a data sharing agreement with them needs to be a high priority. We understand that data sharing arrangements with the operator in the United Kingdom are in place, including access to seismic data from the company’s network.

Communication will be a major issue at many levels for a project of this complexity and scope. Internal communication within work packages does not appear to be a major concern at this time to the Board based on the robust discussions within those teams during the Krakow meeting. Communication across work plans and disciplines, however, will need to be nurtured and monitored by the project management, as success of the overall project will depend on the integration of many pieces. We strongly encourage the management team to focus on cross-project integration, beginning with a clearer definition of the intended audiences for the deliverables. In addition, the deliverables from WP7 and WP8 need better definition. This will help insure that each work package team delivers products that meet the needs of those work packages. For instance, how will monitoring be integrated in to hazard assessment? Will the project largely limit best-practice recommendations to hazard (a source of potential danger or harm) or will it include risk (chance of suffering loss or harm)? Clarifying the goals as well as the intended audiences will focus the work.

We also note the importance of staying abreast of other projects and programs that are also developing “best practices” for shale gas exploitation, including other HORIZON 2020 projects, national projects in EU countries such as the Netherlands, and overseas. The Board also noted the value of transparency during the operational phases of the project and importance of sharing project data and information with the stakeholders, including the operating companies and local government. SHEER, however, should not communicate directly with the public. This is the role of government and the companies. This is another reason why the project would benefit from a clear statement of the goals of the communication program to avoid any confusion or missteps in the future. The SHEER project has the potential to make a significant socio-economic and political impact, and it is vital that you communicate in appropriate language and disseminate findings through channels that will reach all stakeholders.

ANNEX I

LIST OF PARTICIPANTS

N°	SURNAME	NAME
P. N° 1 - AMRA - ANALISI E MONITARAGGIO DEL RISCHIO AMBIENTALE SCARL		
1	ESPOSITO	SIMONA
2	GARCIA	ALEXANDER
3	GASPARINI	PAOLO
4	IVAN	VALENTINA
5	PICOZZI	MATTEO
6	ROSSI FILANGIERI	ALFONSO
7	RUSSO	RAFFAELLA
P. N° 2 – IGF- PAS- INSTITUTE OF GEOPHYSICS, POLISH ACADEMY OF SCIENCES		
1	BIALON	WOJCIECH
2	JAROSLAWSKI	JANUSZ
3	LASOCKI	STANISLAW
4	LEPTOKAROPOULOS	KONSTANTINOS
5	LISOWSKA	ANNA
6	MIREK	JANUSZ
7	OLSZEWSKA	DOROTA
8	ORLECKA-SIKORA	BEATA
9	OTTO	KRZYSZTOF
10	RUDZINSKI	LUKASZ
11	WISZNIOWSKI	JAN
P. N°3 KeU - UNIVERSITY OF KEELE		
1	STYLES	PETER
P. N°4 - GEOFORSCHUNGSZENTRUM POTSDAM		
1	CESCA	SIMONE
P. N°5 – KNMI - KONINKLIJK NEDERLANDS METEOROLOGISCH INSTITUUT		
1	KRAAIJPOEL	DIRK
P. N°6 – RSK - RSK W Ltd		
1	GUNNING	ANDREW
P. N° 7 – UGL - UNIVERSITY OF GLASGOW		
1	YOUNGER	PAUL
2	BURNSIDE	NEIL
PGNiG		
1	KADZIKIEWICZ-SHOENEICH	MONIKA
ADVISORY BOARD		
1	ELLSWORTH	WILLIAM
2	TERLIZZESE	FRANCO
3	GIARDINI	DOMENICO
4	DI BUCCI	DANIELA
5	GREEN	ROB
6	PIENKOWSKI	GRZEGORZ
7	MARKIEWICZ	JAN KACPER
8	CLARKE	HUW

ANNEX II

WP SPECIAL SESSIONS MINUTES

WP2 COMPILATION OF THE SHEER DATABASE

IGF PAS, AMRA, KeU, GFZ, KNMI, RSK W Ltd, UNIVERSITY OF WYOMING

The data gathered for this WP will consist of:

1. the collection of 6 past case study episodes data and 1 on-site monitoring episode. The data consists of geophysical data, technological data and data describing the environment. The geophysical datasets include also the water and air contamination data. The 6 past case study episodes are:
 - WYSIN episode - responsible person – someone from IGF-PAS
 - LUBOCINO episode - responsible person: Monika Staszek (IGF-PAS)
 - PREESE HALL episode - responsible person: Peter Styles (KeU)
 - BECKINGHAM SITE episode - responsible person: Peter Styles (KeU)
 - GROENINGEN FIELD episode - responsible person: Dirk Kraaijpoel (KNMI)
 - GROSS SCHOENENBECK episode - responsible person: Dorota Olszewska (IGF-PAS)
 - GEYSER episode - responsible person: Matteo Picozzi (AMRA)
 - WYOMING episode - Peter Styles (KeU) will recognize the possibility to get access to this dataset.

There is also the possibility to get data from Canada. The responsible person is Paolo Gasparini

2. the socio-economic and vulnerability data

To collect/ensure also the satellite data for each episode, the responsible people will contact Riccardo Lanari (AMRA).

Actions:

1. to fill in the inquires concerning the 6 past case study episodes sent by email and send them back to Dorota Olszewska (IGF-PAS) by the end of June 2015.
2. in July-August 2015 Dorota Olszewska (IGF-PAS) and IGF team will check the completeness of information and quality of datasets (comprehensiveness).
3. In September 2015 datasets implementation will start.
4. Monika Staszek (IGF-PAS) will create an account in CIBIS-SHEER (the repository) for data partners where to get access to GROSS SCHOENENBECK episode data and to learn what/how looks like the database environment.

5. Andrew Gunning (RSK W Ltd) will send to Jan Wiszniowski (IGF-PAS) and Dorota Olszewska (IGF-PAS) a short description of water contamination data formats.

6. Jan Wiszniowski (IGF-PAS), Janusz Jaroslowski (IGF-PAS) and Andrew Gunning (RSK W Ltd) will start the preparation of the acquisition of water-data and air-data.

7. Simone Cesca (GFZ) will send to Jan Wiszniowski (IGF-PAS) information about the seismic stations planned to be installed in Wysin.

8. Raffaella Russo (AMRA) and Simona Esposito (AMRA) will be in touch with Dorota Olszewska (IGF-PAS) and Pete Styles (KeU) to provide information on data needed for the socio-economic and engineering impacts. Dorota Olszewska (IGF-PAS) and Peter Styles (KeU) will check the availability of these data, respectively for the Wysin and the U.K.-sites. Raffaella Russo (AMRA) and Simona Esposito (AMRA) will then organize how to collect this information.

WP3 ON SITE MONITORING

IGF PAS, KeU, GFZ, KNMI, AMRA

Objective: to estimate a timeline of preparatory tasks for monitoring.

Main outcomes:

1. Hydraulic and seismic borehole monitoring timeline:

- 7-17/05/2015: Site information collection (PGNiG, open reports), translation etc.
- 18/05-22/06/2015: Planning
- 23/06-22/09/2015: Tender for drilling, environmental permits, drilling
- 23/09-27/09/2015: Instrument installment. Starting monitoring on 27/09/2015

manpower = KeU students

Peter Styles (KeU) will determine borehole geophones availability

2. Surface seismic monitoring timeline:

- 7/05-7/06/2015: Setups location planning, negotiations with land owners, site rent
- 7/06/2015 Raw sites ready
- 7/05-7/06/2015 IT site for data acquisition and storage
- 8/06-30/06/2015 Public tender for sites preparation
- 8/06-21/08/2015 Station installment

Whenever possible stations will be installed consecutively to reduce to minimum a delay in background seismicity monitoring

Installation of stations from GFZ will be carried on together by German and Polish team

Costs of site preparation was not planned.

3. Air monitoring station installation done: 30/06/2015

Objective: Onsite data streams

Main outcomes:

1. Seismic: wherever possible real time transmission through GSM. Is not possible off line data collection once a month.
2. Hydraulic:
 - a. Real time: x, y, z, t, parameters, every 15 min.
 - b. Samples: separate files of the same format as (a), off-line
3. Atmospheric:
 - a. Raw data: x, y, parameters, every 1 hour, real time
 - b. Validated data: same as (a) but off-line

Formats of 2 & 3 will be provided to IGF