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Collaborative Project– GA No. 256705



**SiteChar  
Characterisation of European CO<sub>2</sub> storage**

**Deliverable N° D9.3  
Minutes of the First Workshop for Stakeholders**

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## 1 Introduction

Although planned in December 2011, the workshop was rescheduled to take place on 1<sup>st</sup> March 2012 to follow the CO<sub>2</sub>ReMoVe conference that was organised at IFPEN on 29<sup>th</sup> February 2012. The date of the First SiteChar Workshop for stakeholders entitled “Characterisation of European CO<sub>2</sub> storage” was agreed with the EU Scientific Officer.

This report provides the minutes of the workshop, a copy of the workshop agenda, participant’s list and press release. A full copy of the workshop presentations is also available in the appropriate section of the project web-site (<http://www.sitechar-co2.eu/>).

## 2 Minutes of the Workshop

### 2.1 Welcome

F. Kalaydjian (IFPEN) formally opened the workshop and welcomed the participants, addressing a special welcome to the Advisory Board members. He acknowledged that, currently, there are significant obstacles for the deployment of CCS in several European countries, including Austria, Germany, the Netherlands and Sweden, due to public acceptance issues. On the other hand, industry has shown much interest in site specific storage issues and public opinion. The speaker pointed out that SiteChar is focusing on the CO<sub>2</sub> storage site permitting process and de-risking the process, thereby informing public debate. One of the key objectives of the SiteChar project is to develop methodologies that aim to support the large-scale implementation of CCS. In this respect, a series of stakeholder workshops will be organised, of which this is the first, looking to communicate the knowledge and methodologies developed in the project and disseminate the lessons learned to the wider community.

Finally, F. Kalaydjian encouraged the participants to take active part in the open debates and wished everyone fruitful discussions.

### 2.2 The SiteChar project

F. Delprat-Jannaud (IFPEN) outlined the research objectives of the SiteChar project and introduced the research institutes, academic and industry partners, and the public institutions involved in the project as well as the two external partners. The speaker introduced five sites chosen for the detailed characterisation for CO<sub>2</sub> storage during the course of the research: the Outer Moray Firth (UK), Vedsted (Denmark), Zalezce-Zuchlow (Poland), Halten Terrace (Norway) and the Southern Adriatic Sea (Italy). It was highlighted that out of the five aforementioned sites, two were identified for preparation of dry-run licence applications ready to be submitted to the competent regulatory authority. The sites chosen for this exercise are the Outer Moray Firth (UK) and Vedsted (Denmark). The dry-run application materials will be reviewed by the SiteChar Regulatory Advisory Board. Representatives of the UK regulators will also be invited to comment on the Outer Moray Firth application.

The speaker then outlined the gaps in the existing knowledge and regulatory framework, which are to be addressed during the SiteChar project through development of a robust workflow and resolving specific issues through the eight work packages. F. Delprat-Jannaud then briefly presented each workpackage.

It was highlighted that the current EU directive on CO<sub>2</sub> storage does not prescribe the required level of details and the methods for site characterisation for safe and secure storage of CO<sub>2</sub>. The speaker concluded the presentation illustrating the key benefits of the SiteChar project, namely: a robust and effective workflow and technical recommendations for characterisation of CO<sub>2</sub> storage



sites from the perspective of both applicant and regulator and best practise guidance for future CO<sub>2</sub> storage site characterisation.

The speaker finally thanked the European Union, Industry (ENEL, PGNiG, STATOIL, Vattenfall, Veolia Environnement, Gassnova) and the Scottish Government for participating and funding the project.

### 2.3 The SiteChar workflow

F. Neele (TNO) outlined the development of a systematic workflow for CO<sub>2</sub> storage site characterisation, explaining the need for a robust tool to satisfy the requirements of the EU CCS directive. The speaker presented a set of scenarios looking forward in time (from 2020 to 2050) and illustrating the distribution of CO<sub>2</sub> sources and aquifer and gas field clusters within Europe and the corresponding CO<sub>2</sub> transport network required. It was shown that a portfolio of qualified sites is needed across Europe and that this need is urgent. It was noted that due to the presence of large numbers of aquifers and gas reservoirs, the North Sea is likely to be a key area in European CO<sub>2</sub> storage and a workflow model for the North Sea can serve as a template for other prospective sites.

The objectives of the generic workflow developed in SiteChar are to develop a site characterisation workflow that meets both operator and regulatory authority requirements, improve the workflow with specific attention on high-risk aspects and improve the efficiency of the site characterisation, considering the requirement for many qualified sites.

It was noted that the key issues with the current EU storage directive characterisation workflow are that it requires many aspects to be considered; it does not prescribe the necessary level of detail or the necessary methods to evaluate the site.

The proposed SiteChar workflow is a feedback system which indicates: how elements of characterisation contribute to the EU directive list of aspects; how elements of characterisation study are linked; and emphasises the need for cooperation between many experts and different areas of expertise in a CO<sub>2</sub> storage site characterisation study. The first version of the site characterisation workflow is already available as a draft project deliverable (D1.2, April 2011) which will be updated at the end of the SiteChar project.

### 2.4 The SiteChar development and review of dry-run licence applications

J. Pearce (NERC-BGS) presented the development and review of dry-run licence applications. The speaker stated that the motivation behind this work was that, to date, only one application has been made for a storage permit although some demonstration projects are working towards submitting permits but are not ready yet. He explained that SiteChar aims to test the process of permit development at credible sites without the constraints of commercial sensitivities, in a low risk 'research' environment, testing the permitting process both offshore and onshore, in a saline aquifer and depleted hydrocarbon field, thereby allowing the testing of the SiteChar workflow.

J. Pearce then presented the process of development and evaluation of the two dry-run storage permit applications including the role of the different teams (scientific, regulatory, advisory teams). The licence applications include most of the key elements required by the storage directive, namely, the geological description, a descriptive static model, an estimate of CO<sub>2</sub> storage capacity; measures to prevent significant irregularities; monitoring plan; corrective measures plan and post-closure plan. It was noted that a full environmental impact assessment is outside the scope of this research project. The speaker then presented a comparison between the Outer Moray Firth and Vedsted sites from the permitting perspective and highlighted the key questions



on permitting that need to be addressed. These focussed on the definition of the storage complex boundary, issues related to monitoring and the definition of key performance indicators that can be used to measure site performance for compliance and / or trigger corrective measures.

Finally, the next steps, timeline in preparing permit applications, review process and providing recommendations for best practise were presented.

## 2.5 Open discussion (1)

The open discussion started with an introduction from F. Kalaydjian who thanked the earlier presenters for setting the scene and for making clear that the permitting workflow is there to provide the framework and checklist necessary to de-risk the site characterisation and, therefore, is important for both regulators, as well as the industry. He invited the panel to offer their views on what are the most sensitive issues and how to resolve them in a credible way that supports storage site operations. Therefore, the focus of the discussion “The Permitting Workflow: How to get it operational” were:

- the most sensitive and important issues which need to be addressed and how to resolve them,
- the importance of earlier experience, lessons learnt through the recent permitting experience members of the panel and the audience have had
- recommendations to make the process smoother.

O. Tucker (Shell) explained that based on Shell’s experience with three projects - namely the Quest project (currently going through public hearings) the Longannet – Goldeneye project (which reached detailed negotiations of the storage permits with the regulator before the project was cancelled due to financial constraints) and Gorgon (where Shell is a joint partner) - he was to identify some key points. Amongst these he indicated that the stage gate approach could be an effective tool to identify the show-stoppers at an early stage and speed up the permitting process. Regarding dealing with sparse information, he suggested to use the evidence-based approach, as this process highlights knowns, unknowns and uncertainty; and, when applied to the key elements, helps to focus attention on key issues and decide when to bring in the right people and resources to address them. He noted that the whole permit application is one big risk assessment and that pragmatism, consideration of techno-economic elements and costs is essential. He also mentioned that workable definitions, particularly in relation to the time horizons, pressures and consequences for receptors should be used. Last but not least, the panellist suggested that it is important that everything is grounded in reality and that the focus is on “what is key” and “what is possible” for a good safe project and a good regulatory decision.

J. Pearce confirmed that the above points are in perfect agreement with the ethos of the SiteChar permitting workflow development. He also added that additional key points to consider are: what level of detail is required to demonstrate to the regulators that a site is safe; and, which criteria, likely to be agreed as conditions of a storage permit, should be used by operator and regulators to demonstrate appropriate site performance, which then allow the Competent Authority to assume the long term liability for the site.

O. Tucker very much supported these points and added that it is important to agree the level of uncertainty that we can live with. He also added that, as industry has had to do for conventional oil and gas operations, regulators and the public will have to be comfortable with the notion of an on-going appraisal for CO<sub>2</sub> storage sites.



F. Neele also supported the earlier remarks and indicated that long-term experience in the oil and gas business indicates that increasing characterisation and monitoring effort does not necessarily reduce uncertainty.

F. Recreo-Jimenez (Cuiden) supported the earlier comments and also added that risk should be considered probabilistically in the permitting process, although it is a difficult task. F. Delprat-Jannaud added that we also need to highlight to stakeholders that managing the risk is a task that can be handled.

H. Quinquis (IFPEN) asked O. Tucker what key show-stoppers they have identified when screening sites. Abandoned wells, land access and public opinion were mentioned as key show-stoppers, indicating that approximately 10% of screened sites may be considered appropriate.

R. Maurer (Statoil) noted that the Norwegian Ministry of Energy opened a nominations round earlier this year and that a licensing round is expected next. He pointed out that allocating industry resources and effort to CO<sub>2</sub> storage site characterisation, when the return for it is uncertain, is also an issue, together with the limited timeframe (usually couple of months) between the announcement of the licensing round and the application submission date. He indicated that SiteChar partners should consider this issue while building a potentially complicated/sophisticated characterisation workflow.

M. Kühn (GFZ) asked the industry partners if it may be possible to use industry data from natural gas storage sites and experiences/knowledge on issues that may go wrong or may be of interest. He also asked whether it would be possible to share these experiences with the research community to benefit the case for CO<sub>2</sub> storage. The industry partners expressed their interest in contributing to work and research drawing from their experience on thermal, fluid displacement issues and coupled thermal-geomechanical issues, as a learning resource for future CO<sub>2</sub> storage operations.

With these remarks the Open Discussion session was closed.

## 2.6 Links with other projects

### RISCS -

J. Pearce (NERC-BGS) presented an overview on EU-industry sponsored RISCS project, which is aimed at assessing the potential impacts of CO<sub>2</sub> leakage on various ecosystems. He indicated that RISCS is using both offshore and onshore, field and laboratory scale experiments, sites of natural CO<sub>2</sub> seepage and modelling approaches to understand the potential impacts. A major output of the project will be a detailed guide for impact appraisal. He then went on to highlight the links between RISCS and SiteChar. Details on the specific points are included on the relevant RISCS presentation from SiteChar the workshop.

### QICS

M Akhurst (NERC-BGS) presented an overview of the UK Research Council-funded QICS project aimed at quantifying and monitoring potential ecosystem impacts of geological carbon storage. The project focuses on modelling the flow of CO<sub>2</sub> through strata, sediment and water and understanding the sensitivities of the UK marine environment to a potential leak from a CCS system. A controlled release of CO<sub>2</sub> beneath the seabed will be monitored to assess the impact of CO<sub>2</sub> leakage on the geochemical and physical properties of the sediments for changes in pH, CO<sub>2</sub> content and temperature. The biogeochemical impact on the marine life is expected to be characterised through this research. Finally, it was pointed out that QICS findings are directly relevant for the dry-run storage licence application for the UK North Sea in SiteChar and that



some of the partners in the two research consortia are common, which enables seamless transfer of relevant knowledge.

### **CO<sub>2</sub>CARE**

M Kühn (GFZ) presented the EU-sponsored CO<sub>2</sub>CARE project, which is aimed at assessment of CO<sub>2</sub> storage site closure. The project is addressing well abandonment, post-closure reservoir management and risk management related to CO<sub>2</sub> storage site closure. He noted that the objectives of the project are achieved through laboratory experiments, numerical modelling and observation and interpretation of field data. The speaker highlighted how the issues investigated in CO<sub>2</sub>CARE are linked to SiteChar activities, e.g. site abandonment and risk management are necessary for a complete and comprehensive licence application, which is a key issue studied in the SiteChar project.

### **UltimateCO<sub>2</sub>**

P. Audigane (BRGM) presented an overview of the EU FP7 funded UltimateCO<sub>2</sub> project that started recently and aims to improve our understanding of the long-term fate of geologically stored CO<sub>2</sub>. The speaker outlined the planned experimental work investigating the CO<sub>2</sub> trapping mechanisms, mechanical integrity of caprock and mechanical and chemical damage to the well. The laboratory experimental work is expected to complement the numerical modelling of processes. Basin-scale reservoir simulations are also planned as a part of this project. He also indicated that the main link with SiteChar is to focus efforts in UltimateCO<sub>2</sub> on the key issues identified in SiteChar in terms of compliance with the EU CCS Directive.

## **2.7 Dry-run Application on the Scottish site**

M. Akhurst (NERC-BGS) detailed the current progress on the licence application for a multi-store CO<sub>2</sub> storage site in the UK North Sea, which is WP3 within SiteChar. The speaker highlighted the relevance of a multi-store CO<sub>2</sub> storage site as hydrocarbon fields are planned as stores for demonstration projects and saline aquifers are anticipated for the commercial-scale projects. The Captain Sandstone with a hydrocarbon field hosted within, studied in WP3 of SiteChar, fits perfectly this description. M. Akhurst went on to present the tasks and timeline for WP3. She described the site and discussed briefly the construction of the static geological model and the plans for two dynamic simulation scenarios. In the first, the CO<sub>2</sub> is injected in the hydrocarbon field and 'spills over' into the aquifer; and for the second the CO<sub>2</sub> is injected into the aquifer and then migrates up into the field. The speaker then discussed the preparation of the risk register and the risk categories and consequences identified by the research partners. She highlighted the key findings to date, namely uncertainties due to data gaps, and that since this is a theoretical project many risks may have high uncertainty at the end of SiteChar investigations. Finally, M. Akhurst briefed the workshop participants regarding the progress on the preparation of dry-run licence application.

## **2.8 Dry-run Application on the Danish site**

C Nielsen (GEUS) presented the progress on the characterisation of Danish CO<sub>2</sub> storage site, Vedsted. The speaker highlighted that the research aims at full chain characterisation including the interaction with surrounding aquifers. It was noted that initially, the storage site was expected to operate with emissions at 1.8 Mt of CO<sub>2</sub> per year, which was sourced from a power plant 30 km away. The formulation of initial geological model and CO<sub>2</sub> storage assessment of the Vedsted site was carried out by GEUS. The site is an onshore aquifer and is 1800-1900 m deep. The key challenge in the development of geological model was the sparse data in the form of one well with few wireline logs, vintage 2D seismic surveys and a regional geological interpretation. The model



generated using this data was named as version 0 and consisted of the Gassum and the shallower Haldager formations. GEUS carried out a preliminary dynamic reservoir modelling for the Gassum formation. After the seismic survey of 2008, major faults in Gassum reservoirs were identified and the geological model was updated. The speaker suggested possible compartmentalisation of the reservoir if recently identified major faults were sealing. For the SiteChar project the version 1 of Vedsted model was extended and the properties of the overburden were populated for geomechanical assessment. The major risks identified through an early risk assessment facilitated by DNV were: reservoir complexity due to interbedded sands, shales and faults addressed by the 2008 seismic survey; the secondary containment, *i.e.* the Haldager formation to be mitigated by comprehensive characterisation; and the abandoned well Vedsted-1. The risk register was used to identify the performance indicators for the site including storage capacity, injectivity, storage integrity, external environment, licence to operate and reputation. Recommendations for monitoring plan to address these issues have been devised to deep monitoring focusing on plume development and shallow monitoring focusing on developing a baseline for leakage detection. Regional pressure propagation was proposed to be monitored with and without water production. The speaker stated that for dry-run licence application the key performance parameters will be formulated and results from various studies will be re-evaluated and compiled.

## 2.9 The SiteChar public engagement activities

R Zimmer (UfU) presented the public engagement activities carried out in Scotland and Poland through media analysis and interviews. The work carried out so far involved description of the sites (*e.g.* recent local history, statistical data), media analysis (local/national), interviews with local stakeholders and representative survey of the local public. The speaker indicated that the work carried out in Poland has shown low media attention only present at national level and broad approval of CCS in media statements. In comparison, in Scotland it has been shown that media attention also exists at regional level and more positive messages than negative are heard. The main positive argument is that CCS is seen to be creating a new industrial sector with significant opportunities for new jobs, while the main negative argument relates to uncertainties about commercial feasibility. Stakeholder perceptions in the two countries were also discussed as well as the importance of local issues. The project website, focus conferences and information meetings are the instruments currently employed and these will continue to be used. Future activities planned by the WP8 partners include focus conferences, wherein lay people and experts meet to improve the awareness of CCS, and information meetings which are to be conducted around June 2012.

## 2.10 Open Discussion (2)

F. Delprat-Jannaud opened the session and introduced the convenor S. Vercelli (UniRoma1-CERI) and the panel members. S. Vercelli invited the panel members to share their thoughts and observations from the afternoon presentations and their own experiences.

F. Recreo-Jimenez indicated that although the site operated by CIUDEN is a small one, and the public is generally aware of similar activities related to oil and gas operations, there has been a lot of effort to communicate with the public and it has been generally successful. Most of the effort now is put on the information centre that is planned for the site, as well as disseminating information in schools.

O. Tucker indicated that in Shell's experience with one of their on-shore sites, prior to educating people about the CCS activities, opinions tended to be neutral, although later opposition arose. This case and other recent work indicate that the framing of risks is very significant and that the





key is the understanding of CCS risk in comparison to other risks people consider acceptable (likelihood of being struck by lightning or killed while driving a car).

F. Dalhoff (Vattenfall) added that Vattenfall invited independent experts to speak with the public, not on behalf of the company, and helped to arrange focus group meetings. From these discussions, they concluded that it is important that the public has some clear benefit from CCS implementation and that, if this is missing, irrespective of the quality of the project, the public may not support it. The audience offered similar opinions from other countries, including the south west of France.

R. Zimmer indicated that it is extremely beneficial that in the SiteChar project it has been possible to prepare in advance balanced information, which is correct but also understandable for the lay people. This work is being done in collaboration with companies and partners in the local regions, who understand the local sensitivities before public focus engagement events. His opinion is that educating the public is essential and should be done at the very early stages of the project.

M. Akhurst advised of the need to present a key learning from the preparation of the SiteChar dry-run licence applications. She described how site characterisation for geological storage of CO<sub>2</sub> is driven by the requirements of the Storage Permit Application; reducing uncertainty in the understanding of predicted site behaviour determines what investigations are needed to characterise the proposed site and appropriate management of risk. She acknowledged that this is not an easy message to convey to either a technical audience or the general public.

Other workshop participants also mentioned the importance of the press, as well as the timing of activities, considering local factors, such as elections and specific individual's views, which may influence strongly general opinions. One other issue that was discussed is that CCS gets more negative publicity when it is seen as a transition technology to prolong the use of fossil fuels. Other members of the audience discussed the importance of getting the first successful demonstrations of CCS working as a positive way to convince the public about the technology and its benefits. Other opinions were that these first demonstration projects should be planned in places where CCS is welcome, e.g. as a means to provide sustained employment, and that such places do exist.

It was agreed that one of the key communication aspects was the phrasing of the information and statements delivered, as these were often open for interpretation and likely to be misconstrued. It was also highlighted that often, technical experts were not the very best people to communicate with the general public, mostly relating to the use of technical language that may not be easily understood, or may be misinterpreted. The members of the panel highlighted the role of the Government in understanding and backing the technology to instigate confidence of general public. It was also noted that there was a need for the development of national consciousness before the specific local community is approached.

S. Vercelli closed the session with the remark that social characterisation of a CO<sub>2</sub> storage site is a region/site specific issue and, as such, it is important to conduct the necessary work at local and regional level.

### 3 Closing remarks

In closing the 1<sup>st</sup> SiteChar workshop, F. Delprat-Jannaud thanked the speakers, the panellists and particularly the members of the SiteChar Advisory Board, as well as the audience for attending the presentations and contributing actively to the two open discussions.

From these discussions some key conclusions were the need to identify as soon as possible show-stoppers, to drive the site permitting through the risk assessment work, but also that the



level of detail required by the regulators as well as the uncertainty with which we are able to live are important areas where work needs to continue.

F. Delprat-Jannaud recognised the importance of the links shown between SiteChar and other projects presented and thanked the speakers for contributing to the workshop, as well as for their readiness to continue exchanges and links between these projects and SiteChar.

She noted that the workshop highlighted that communicating with the public is a challenging task that requires collaboration between technical experts and social scientists and that the achievement of first positive experiences is important in building confidence.

Finally F. Delprat-Jannaud thanked all participants once again and invited them to the next SiteChar Workshop that will be organised in a few months time.

**Glossary:**

CO<sub>2</sub>CARE: EU FP7-funded project entitled “CO<sub>2</sub> Site Closure Assessment Research”

QICS: UK Natural Environment Research Council-funded project entitled “Quantifying and Monitoring Potential Ecosystem Impacts of Geological Carbon Storage”

RISCS: EU FP7-funded project entitled “Research into Impacts and Safety in CO<sub>2</sub> storage”

UltimateCO<sub>2</sub>: EU FP7-project entitled “Understanding the Long-Term fate of geologically stored CO<sub>2</sub>”



## 4 Workshop Agenda

8:30 – 9:00	Registration and welcome coffee	
9:00-9:15	Welcome	F. Kalaydjian (IFPEN)
9:15 -9:45	The SiteChar project <b><i>Towards a methodology to characterise a site up to the storage permit licence</i></b>	F. Delprat-Jannaud (IFPEN)
9:45 – 10:10	The SiteChar workflow <b><i>How to comply with the EU Directive?</i></b>	F. Neele (TNO)
10:10 – 10:25	The SiteChar development and review of dry-run licence applications <b><i>How to get ready for an industrial deployment of CCS?</i></b>	J. Pearce (NERC-BGS)
10:25 – 11:05	Open discussions (including panel responses) <u>Panel</u> <i>O. Tucker (Shell), F. Recreo-Jimenez (Ciuden), F. Delprat-Jannaud, F. Neele, J. Pearce</i>	F. Kalaydjian (IFPEN) – moderator
11:05 – 11:20	Coffee Break	
11:20 – 12:00	Links with other projects RISCS QICS CO <sub>2</sub> CARE UltimateCO <sub>2</sub>	J. Pearce (NERC-BGS) M.Akhurst (NERC-BGS) M. Kühn (GFZ) P. Audigane (BRGM)
12:00 – 13:30	Lunch	
	Applications on an offshore multi-store site and an onshore aquifer, two sites where the characterisation will be conducted up to a dry-run storage permit licence <b><i>Where do we stand and where do we want to go?</i></b>	
13:30 – 13:50	Application on the Scottish site	M. Akhurst (NERC-BGS)
13:50 – 14:10	Application on the Danish site	C. Nielsen (GEUS)
14:10 - 14:40	The SiteChar public engagement activities <b><i>How to raise public awareness?</i></b>	R. Zimmer (UfU)
14:40 - 15:20	Open discussions (including panel responses) <u>Panel</u> <i>O. Tucker (Shell), F. Recreo-Jimenez (Ciuden), F. Dalhoff (Vattenfall), M. Akhurst, C. Nielsen, R. Zimmer</i>	S. Vercelli (UniRoma1-CERI) – moderator
15:20 – 15:30	Wrap up / End of meeting	F. Delprat-Jannaud / F. Kalaydjian (IFPEN)



## 5 List of Participants

Name	Surname	Organization	Country
Maxine	AKHURST	British Geological Survey	United Kingdom
Hakan	ALKAN	Wintershall Holding GmbH	Germany
Pascal	AUDIGANE	BRGM	France
Axelle	BARONI	IFPEN	France
Per Eirik	BERGMO	SINTEF Petroleum Research	Norway
Katia	BESNARD	Veolia Environnement Recherche & Innovation SNC	France
Ameena	CAMPS	IEA Greenhouse Gas R & D Programme	United Kingdom
Paula	COUSSY	IFPEN	France
Finn	DALHOFF	Vattenfall Research and Development	Denmark
Jean-Pierre	DEFLANDRE	IFPEN	France
Florence	DELPRAT-JANNAUD	IFPEN	France
Brigitte	DOLIGEZ	IFPEN	France
Andreas	EHINGER	IFPEN / EERA-CCS	France
Peter	FRYKMAN	GEUS	Denmark
Bruno	GARCIA	IFPEN	France
Marie	GASTINE	BRGM	France
Rajesh	GOVINDAN	Imperial College London	United Kingdom
Nicolas	GUY	IFPEN	France
Silvana	IACOBELLIS	ENEL - Engineering and Innovation	Italy
François	KALAYDJIAN	IFPEN	France
Angeline	KNEPPERS	Global CCS Institute	France
Anna	KORRE	Imperial College London	United Kingdom
Michael	KÜHN	GFZ	Germany
Yann	LE GALLO	Geogreen	France
Jun	LI	ENPC	France
Enru	LIU	ExxonMobil Upstream Research Company	USA
Rudolf	MAURER	Statoil ASA	Norway
Stuart	MCKAY	Scottish Government	United Kingdom



Barbara	MERSON	OGS	Italy
Anthony	MICHEL	IFPEN	France
Filip	NEELE	TNO	The Netherlands
Carsten M.	NIELSEN	GEUS	Denmark
Britta	PAASCH	Statoil	Norway
Teddy	PARRA	IFPEN	France
Jonathan	PEARCE	British Geological Survey	United Kingdom
Niels	POULSEN	GEUS	Denmark
Hervé	QUINQUIS	IFPEN	France
Fernando	RECREO-JIMENEZ	CIUDEN	Spain
Sylvain	SERBUTOVIEZ	IFPEN	France
Ji-Quan	SHI	Imperial College London	United Kingdom
Amer	SYED	Imperial College London	United Kingdom
Dr Owain	TUCKER	Shell	United Kingdom
Samuela	VERCELLI	University of Rome La Sapienza	Italy
Gareth	WILLIAMS	British Geological Survey	United Kingdom
René	ZIMMER	UfU	Germany



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## 6 Press Release

### **First workshop of the SiteChar European project: “Characterise a CO<sub>2</sub> storage site up to the final stage of licensing: how to get started”**

The first workshop for the European SiteChar project, dedicated to improving the characterisation of sites for the geological storage of CO<sub>2</sub>, was held March 1<sup>st</sup> 2012, at IFP Energies nouvelles, Rueil-Malmaison (France). The SiteChar project partners are currently developing a methodology for the assessment of deep sedimentary rocks as potential geological storage sites and the preparation of storage licence applications, incorporating all the technical and economic considerations, as well as public awareness. The first SiteChar workshop focused on providing insights from the research carried out so far aiming to support industry, regulators and other stakeholders in the roll-out of geological storage on an industrial scale in Europe to reduce CO<sub>2</sub> emissions.

The SiteChar project brings together seventeen partners from research, industry and the consultancy sectors in ten EU countries: IFP Energies nouvelles (coordinator), AGH, ECN, ENEL, GEUS, GFZ, IMPERIAL, NERC (BGS), OGS, PGNiG, Statoil, TNO, SINTEF-PR, UniRoma1-CERI, UfU, Vattenfall and the Scottish Government. It is also supported by Veolia Environnement and Gassnova. The total SiteChar project budget of €5 million includes €3.7 million of a European Commission grant. The project celebrated its first birthday in January 2012 and is scheduled to continue for another two years until December 2013.

SiteChar examines the entire site characterisation chain, from the initial feasibility studies through to the final stage of application for a storage licence, on the basis of criteria defined by the relevant European legislation: storage capacities, geological modelling at basin or reservoir scale, injection scenarios, risk assessment, development of the site monitoring plan, technical and economic analysis (assessment of all the costs related to storage), public awareness, etc. This first workshop presented the SiteChar project philosophy and workflow developed so far and allowed for feedback and discussions amongst 45 participants from 25 organisations.

During the workshop, the research carried out in two out of the five potential European storage sites studied in SiteChar, a North Sea offshore multi-store site (hydrocarbon field and sandstone) in Scotland, an onshore sandstone in Denmark, was presented and discussed. At the Scottish and Danish sites the studies culminate in preparation of a dry-run storage site licence application which will be evaluated by a group of independent experts. Three test sites in the project focus on overcoming specific barriers related to the site characterisation methodology and include an onshore gas field in Poland, an offshore sandstone in Norway and a limestone beneath the Southern Adriatic Sea.

Taking consideration of the importance of public awareness and opinion there was a presentation regarding the relevant activities carried out so far in SiteChar in relation to the Polish and Scottish sites. This was followed by discussions regarding raising public awareness for CO<sub>2</sub> storage technologies in general.

The first SiteChar workshop was hailed a success having attracted significant interest and contribution from the wider community of stakeholders. The feedback received indicates that the project is progressing very well, and is expected to supply a practical methodology for CO<sub>2</sub> storage site characterisation.

website: [www.sitechar-co2.eu](http://www.sitechar-co2.eu)