



# Positioning paper of the focus conference participants on carbon capture and storage technology (CCS)



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## Introduction

This position paper is the result of several weeks of opinion-forming in the course of the focus conference on carbon capture and storage technology (CCS). The aim of the focus conference was to develop an informed and structured opinion of a citizens group on CCS technology. The focus was on the perception of the benefits and risks of CCS technology as well as on the requirements of the citizens with regard to the socially acceptable implementation of CCS projects.

The group of citizens which participated in the focus conference consisted of 16 persons (8 women and 8 men), who are residents of the municipalities of Góra, Jemielno, Wąsosz, Niechlów, Rawicz and Bojanowo.

The focus conference consisted of two parts. During the first weekend in March 2012, participants had the opportunity to learn about the scientific, technical and social aspects of CCS technology. In the second weekend in April 2012, the citizens learned about different points of view with regard to CCS technology, and they developed their own opinion about this technology, which they have expressed in this position paper. Experts from research, policy makers, industry and NGOs were invited to participate in both weekends, during which they gave presentations and answered questions from citizens.

## 1. General information about CCS

CCS is a new technology for carbon dioxide (CO<sub>2</sub>) capture and geological storage. According to the European Union, CCS technology will enable Europe to become a global leader in the important and promising field of reduction of CO<sub>2</sub> emissions into the atmosphere. The goal of the European Union is to check first-hand how this technology works.

By 2020, the CO<sub>2</sub> emissions from the EU countries should be reduced by 20%, which, on a global scale will only be about 3%. The primary objective of CCS is to reduce CO<sub>2</sub> emissions into the atmosphere.

Innovative CCS technology has not yet been deployed on a commercial scale. A pilot research project is being conducted in Germany, where small quantities of pure CO<sub>2</sub> are injected into the ground.

The use of this new technology can reduce CO<sub>2</sub> emissions resulting from combustion processes by 90% or more. CCS technology is still in the research stage and will probably yield results in 2015.

One of the main arguments of the proponents of CCS is that the mining industry has more than 30 years of experience with the technology of underground CO<sub>2</sub> injection for enhanced gas and oil recovery.

Austria decided to prohibit underground storage of carbon dioxide in its country.

The mining and energy industry holds the dominant belief that the construction of a new power plant with a CCS installation will significantly reduce its efficiency, which makes an investment in such an installation unprofitable.

The only CCS project in Poland is carried out by the PGE Bełchatów Power Plant.

Poland is one of the most coal-dependent countries in Europe. Approximately 90% of its energy is produced by coal plants, which obviously leads to high CO<sub>2</sub> emissions. If we realize that the combustion of 1 kg coal leads

to more than 2 kg of CO<sub>2</sub>, then the scale of the problem becomes quite obvious. It forces us to find new technologies that reduce carbon dioxide emissions into the atmosphere as soon as possible. One of these technologies is CCS, but there are also other, already known and proven, technologies.

Injection of carbon dioxide in the existing gas mines can extend their service life up to about 20 years. On the other hand, it may inhibit the development of Poland.

The European Union has planned to implement several CCS demonstration projects in Europe. It is feared that Poland could become a "garbage dump" for the European CO<sub>2</sub> emissions. But there are more threats. For instance, in the United States, stored CO<sub>2</sub> escaped to the surface and caused a fatal accident.

## **2. CCS on a national dimension**

The priorities for implementation of CCS technology in Poland are the legal framework and the attitude of the government towards this technology. Significant is also the financial contribution of the state and entities interested in use of the CCS.

There are several locations in Poland, where CO<sub>2</sub> can be stored. Only deep geological structures of sufficient tightness, located in areas of little seismic activity, are selected as storage sites. After a series of tests and analyses, appropriate areas for storage of CO<sub>2</sub>, including the gas fields of Żuchłów and Załęcze, have been identified. These locations seem to be appropriate, including from an economic perspective, because this area still has active gas mines. Within a period of five years the gas production in these mines will decrease, however, which could lead to the closure of the mines. Therefore, the storage of CO<sub>2</sub> in the natural gas deposits of Żuchłów and Załęcze seems to be well-founded.

The construction costs of the CCS installation as well as costs of the implementation and deployment of CCS technology are a serious problem. According to experts, the estimated cost of this investment is about 10 billion PLN, but we do not know who exactly will cover these costs. In the face of the rising unemployment in the country, this investment would benefit the preservation of existing jobs, and might even lead to creation of new jobs. However, the question arises whether these jobs can sufficiently compensate for the enormous costs related to the implementation of the CCS technology.

Undoubtedly, the introduction of the CO<sub>2</sub> capture and storage technology would lead to increased influence of Poland on the European policy for climate protection. At the same time, Poland will contribute to environmental protection and fulfil the international obligations related to complying with fixed limits of CO<sub>2</sub> emissions to the atmosphere.

The gas mines of Załęcze and Żuchłów have favourable geological conditions for the implementation of the CCS technology, because they are located in an area with little seismic activity. However, there is no guarantee that an unforeseeable event will not occur in the future.

The key to success for the implementation of CCS technology is to create an appropriate information campaign for the public on a national level as well as to provide assurance as to who will take the responsibility for implementation of the CCS project.

### **3. CCS on a regional (personal) dimension**

The planned location of the CO<sub>2</sub> storage site in the gas mines in Załęcze and Żuchlow raises safety concerns within the community.

One of the risks arising from the injection of CO<sub>2</sub> into the ground may be earth tremors, which may adversely affect the safety of CO<sub>2</sub> storage. CO<sub>2</sub> storage sites may pose a threat to the environment and the residents.

The use of CCS technology in both gas mines can extend their service life by several decades. CO<sub>2</sub> is only allowed from the nearest region and must be transported through pipelines.

Location of the storage site raises concerns about possible loss of value of surrounding real estate (buildings and land). Residents of the areas where the storage sites are planned should be informed about the consequences of the introduction of the CCS technology.

## 4. Summary

**The majority of the group (11 persons) thinks that there are too many uncertainties to clearly opt for carbon capture and storage technology (CCS). The rest of the group (5 persons) is against the deployment of CCS in the gas fields of Załęcze and Żuchłów.**

Poland is a country that is struggling with the current economic crisis. Yes, we care about the environment and reduction of CO<sub>2</sub> emissions into the atmosphere, but at present CCS technology is too costly to invest in.

In our opinion, the local community should accept the CCS project in the region only if the following conditions are met:

- the validity of the CCS project should be presented to the local community,
- the safety of the CO<sub>2</sub> storage should be guaranteed,
- appropriate legal standards to regulate liability for the implementation and deployment of CCS technology should be implemented,
- specific data related to employment issues in the implementation of the CCS project in the region should be presented,
- entities responsible for funding of the CCS project should be defined,
- a public information campaign on CCS technology should be prepared,
- more than 50% of the residents should agree (e.g. in a referendum) to the realization of a CCS project in the area,
- the government should guarantee that the stored CO<sub>2</sub> will come only from our region.

**The public should also be informed about alternative solutions (other than CCS) to reduce CO<sub>2</sub> emissions into the atmosphere.**

## **Annotation from the organizers**

The Independent Institute for Environmental Issues (UfU) was responsible for the preparation of the content and arranging of the focus conference. Moderators supported the conference participants in developing their opinion in an impartial manner.

The focus conference on CCS technology was conducted in the framework of the SiteChar project, whose main aim is to examine the technical, economic and societal requirements for a company to be allowed to store CO<sub>2</sub> underground. The research in the SiteChar project leading to these results has received funding from the European Union Seventh Framework Programme of the European Community for research, technological development and demonstration activities (FP7/2007-2013) under grant agreement n° 256705.

This "Positioning paper of the focus conference participants on CO<sub>2</sub> capture and storage technology (CCS)" and its importance for the Polish climate strategy will be presented to the public and policy makers, industry and social organizations during an information meeting on 25 June 2012 in Góra Śląska.