

# What happened in Barendrecht?

Case study on the planned onshore carbon dioxide storage in Barendrecht, the Netherlands

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## Abstract

Since 2007, there have been plans to establish an onshore CCS (carbon capture and storage) demonstration project in the Dutch town of Barendrecht. This project, initiated by Shell, aims to store CO<sub>2</sub> from its nearby oil refinery in Pernis (in the Rotterdam harbour area) in two depleted gasfields largely located under Barendrecht. The plans caused debate between proponents and opponents, which delayed implementation of the project. Until the time of writing (June 2010), no decision about the implementation of the project has been made.

This case study report describes the events related to the Barendrecht project between 2007 and June 2010. The report, which is based on desk research and interviews with relevant stakeholders, outlines the defining moments that influenced the relationships between the stakeholders and their opinions of the project. It focuses on the characteristics of communication between stakeholders and to the community. Shortcomings in this communication are identified and presented as lessons for future CCS project developers.

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## Glossary

**AMESCO** study (Algemene Milieu Effecten Studie CO<sub>2</sub>-opslag): Study on the environmental aspects of CO<sub>2</sub> storage led by consultancy Royal Haskoning

**BCO<sub>2</sub>** (Bestuurlijk overleg CO<sub>2</sub>): Administrative consultation group of the Barendrecht CCS project on which the municipal, provincial and national government are represented

**CO<sub>2</sub>**: Carbon dioxide

**CCS**: Carbon capture and storage

**DCMR** (Dienst Centraal Milieubeheer Rijnmond): Environmental Protection Agency of Rijnmond, which is the permitting authority and consultant of the Province of South Holland, municipal governments, companies and individuals in the Rijnmond area

**DHV**: A global consultancy and engineering company, that helped the municipality of Barendrecht define its 'checklist' about the CCS-project

**DNV** (Det Norske Veritas): Global independent consultancy foundation aiming to protect life, ownership and environment

**EIA**: Environmental Impact Assessment. Required national procedure to assess environmental impacts of projects

**NAM** (Nederlandse Aardolie Maatschappij BV): The biggest oil and natural gas producer in the Netherlands

**OCAP** (Organic Carbon dioxide for Assimilation of Plants): A joint venture specialising in distribution of CO<sub>2</sub> from the Shell refinery in Pernis to neighbouring greenhouses

**RCI** (Rotterdam Climate Initiative): A climate partnership of the port and city of Rotterdam, Environmental Protection Agency DCMR and employer organisation Deltalinqs to reduce local CO<sub>2</sub> emissions, prepare the area for climate change and strengthen the local economy

**RCR** (Rijkscoördinatierегeling): National Coordination Regulation. Projects appointed under this regulation have national impact and the national government is authorised to award all needed permissions, including those normally awarded by local authorities

**RIVM** (Rijksinstituut voor Volksgezondheid en Milieu): National Institute for Public Health and Environment

**SNM** (Stichting Natuur en Milieu): National Society for Nature and Environment. A national independent environmental organisation

**TNO** (Toegepast Natuurwetenschappelijk Onderzoek): National research institute with a strong knowledge base on underground technology

Ministry of **VROM** (Volkshuisvesting, ruimtelijke ordening en milieu): Ministry of Housing, Spatial Planning and Environment

## What happened in Barendrecht?

### Executive summary

Since 2007, there have been plans to establish an onshore carbon capture and storage (CCS) demonstration project in the Dutch town of Barendrecht. This project, initiated by Shell, aims to store CO<sub>2</sub> from its nearby oil refinery in Pernis (in the Rotterdam harbour area) in two depleted gasfields largely located under Barendrecht. The plan caused debate between proponents and opponents, which delayed implementation of the project. Until the time of writing (June 2010), no decision about implementation of the project has been made.

The debate between the opponents and proponents of the project began immediately after the project was presented to the local community in early 2008. The local stakeholders (mainly municipal government) opposed the project and its proponents: the project developers and national government. During the debate, other stakeholders became involved and were considered to be opponents (e.g. citizens founded group No to CO<sub>2</sub> and experts who made critical remarks about the project) or proponents (e.g. researchers claiming that the project is safe).

From 2007 to June 2010, opposition to the project has increased, became more formalised and better organised. What began as opposition and critical questions from some local politicians led to formal opposition of the project by the whole municipal government later in 2008. This position was also taken by the provincial government in 2009. Increased communication from the opponents to other stakeholders and the community entrenched the debate in 2009. During a 'time-out' period announced by the national government (after the positive advice of the EIA Committee) to perform further research and 'cool down' emotions, the then only government opposition was extended with a local citizens initiative to oppose the project. The formal decision of the national government to continue with the project and growing attention on national television and other media increased the discussion and opposition (in Parliament and the community) further in 2010.

This case study report describes the events related to the Barendrecht project between 2007 and June 2010. The report, which is based on desk research and interviews with relevant stakeholders, outlines the defining moments that influenced relationships between the stakeholders and their opinions of the project. It focuses on the characteristics of communication between stakeholders and to the community. Shortcomings in this communication are identified and presented as lessons for future CCS project developers.

The most important lesson learned from the Barendrecht project is that it is important to create mutual trust between stakeholders and commitment to each other and to the project. This can be done by including all stakeholders in the project process at an early stage and communicating about the project and its process to the community. During this process the demands, needs, values and interests of the different stakeholders should be defined, discussed and integrated into the project design. The project process should be open and transparent to the participants, the community and other stakeholders.

## 1 Introduction and overview

Since 2007, advanced plans have existed to establish an onshore CCS (carbon capture and storage) demonstration project in the Dutch town of Barendrecht. This project, initiated by Shell, aims to store CO<sub>2</sub> (carbon dioxide) from its nearby oil refinery in Pernis (in the Rotterdam harbour area) in two depleted gasfields largely located under Barendrecht. The plans caused debate between proponents and opponents, which delayed implementation of the project. Until the time of writing (June 2010), no final decision about the implementation of the project has been made.

This case study report describes the national and local context of the Barendrecht CCS project (Chapter 2), the technical aspects of the project and the stakeholders involved (Chapter 3), the defining moments in the project's history from the end of 2007 until June 2010 (Chapter 4), media coverage (Chapter 5) and the debate between the stakeholders and the events and circumstances influencing this debate (Chapter 6).

The concluding chapter focuses on the characteristics and shortcomings of the communication between stakeholders and to the community. These shortcomings played an important role in the increased opposition, which led to the current delay in project planning and the remaining uncertainty about the project.

The conclusions of this case study are presented as lessons for future CCS project developers worldwide concerning the communication between and engagement of stakeholders and the community.

### 1.1 Methods used

To perform this case study an approach using a combination of desk research and interviews has been adopted. Through desk research we collected written information (including research reports, minutes of meetings, slides of presentations, press releases, websites of the different stakeholders, media reports) as well as video recordings of local and national television items on the Barendrecht project. Another important resource for this case study is the report on the project by Brunsting and Mikunda (2010) performed within the European research project NearCO<sub>2</sub>. Most of these sources are available online via websites (see the list of websites consulted in the resources overview at the end of this report). Other written resources were collected via the stakeholders e.g. the employees of the information centre provided hard copies of brochures, information about the visitor statistics, etc.

Information was also collected via interviews with representatives of the stakeholders involved. The interviews were based on a guideline developed in advance (see Appendix A). Interviewees were asked to elaborate on their own role in the project, the other stakeholders, the events they thought were important in the project communication, the relations between and the opinion forming of the stakeholders, the role of the media etc. Interviewees were selected because of their involvement in and opinion about the project. Between 5 October and 23 November 2009, a total of 10 people were interviewed representing the national Taskforce CCS (1), project initiators NAM and Shell (2,3), the municipal government (4) and local political parties (5,6), the provincial Environmental Protection Agency DCMR (7,8), the information centre CO<sub>2</sub> storage in Barendrecht (9) and the national NGO Greenpeace (10). The period between the interviews and the end date of the focus of this report (June 2010) was investigated via desk research and additional phone and email contact with some of the stakeholders.

## 2 Background

This chapter contains the technical and other details of the project planned in Barendrecht (2.1) as well as details about the location (2.2) of the planned project.

### 2.1 Project details

In Pernis (see figure 2.1), at the heart of the Rijnmond district and about 20 km from Barendrecht, Royal Dutch Shell operates a hydrogen production plant, part of a large oil refinery. As part of the hydrogen production process, a very pure stream of CO<sub>2</sub> is produced as an unwanted by-product (Shell CO<sub>2</sub> Storage, 2008). Shell has already managed to mitigate part of the plant's 1 million CO<sub>2</sub>ton/year emission through the provision of CO<sub>2</sub> to the soft drink industry (150,000 CO<sub>2</sub>ton/year), and to greenhouses in the summer months (380,000 CO<sub>2</sub>ton/year). Mainly because of lower demand in the winter, about 400,000 tonnes per year is still available for storage. Using an existing process installation, Shell plans to capture and compress the CO<sub>2</sub>, and then inject this amount into two almost expanded gasfields that sit two to three km under Barendrecht, and partly under the neighbouring town of Albrandswaard

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(Herber, 2008). If the project is to be implemented, Shell will receive a €30 million government subsidy for the small scale demonstration project, and would also benefit from emission savings under the European Union's Emissions Trading Scheme.

Barendrecht lies some 17 km from Pernis. In order to transport the CO<sub>2</sub> to the injection wells, a new steel pipeline of 16.5 kilometer will need to be built between Pernis and Barendrecht, however a large section of the pipeline will be able to be placed in an existing natural pipeline corridor (see Figure 3). Starting in 2011, it is foreseen that over 25 years, two depleted gasfields will be used to receive the CO<sub>2</sub>. The smaller of the two fields (Barendrecht) can store about 0.8 million tonnes at a depth of 1,700 m. The larger (Barendrecht-Ziedewij) can store about 9.5 million tonnes at a depth of 2,700 m. The sandstone reservoirs have a cap rock made of a thick layer of clay rock. The CO<sub>2</sub> will be compressed to a pressure of 40 bar before entering the pipeline. A second compressor at the point of injection will gradually increase the pressure until the end of the injection period. Each field will have one injection well. In Barendrecht one monitoring well is available and Barendrecht-Ziedewij has two potential monitoring wells.

The storage site at Barendrecht is particularly suited to the project for a number of reasons:

- The CO<sub>2</sub> stream from the hydrogen plant is very pure, and requires no additional treatment
- The CO<sub>2</sub> stream can be collected using an existing process installation
- The storage location is very close to Pernis
- The gasfields will be fully expended in 2010 and 2013, and thus utilisable for CO<sub>2</sub> storage
- The first gasfield is relatively small; therefore implementation of the entire project cycle can be completed within three years.

Shell has agreed to take ownership of the gasfields and injection site from Nederlandse Aardolie Maatschappij BV (NAM). According to the national government and the project developers, no major new technology is needed for this project. These parties state that the main learning objectives are in the areas of public acceptance, legal procedures and regulations, monitoring and verification, and obtaining CO<sub>2</sub> credits in the EU Emission Trading Scheme.

If successful, the Shell project at Barendrecht could lay the foundation for the replication of fully integrated CCS systems both in Rotterdam and the rest of the Netherlands. The Dutch Government is also optimistic that the project contributes to the development and innovation of CCS technologies in the country, placing the Netherlands in a favourable position for the international trade of equipment and expertise. If the endeavour is abandoned for whatever reason, this will negatively affect the attainability of local and national emission targets (Herber, 2008), and will perhaps warrant a government re-think of the deployment strategy for further CCS projects.



Figure 1 The location of the planned CO<sub>2</sub> pipeline and gasfields in Barendrecht  
Source: Shell CO<sub>2</sub> Storage, 2008.



## Case study on the planned onshore carbon dioxide storage in Barendrecht, the Netherlands

|                                 |   |
|---------------------------------|---|
| <b>Nature</b>                   | In 2007, the Dutch Government announced a tender for two small CCS demonstration projects to take place in order to build experience with CCS before larger CCS demonstrations due to begin in the country in 2015. The project would be deployed by a private company, although financial support would be made available by the government. Shell won a tender for one of these projects, and proceeded with EIA and licensing procedures in early 2008 |
| <b>Scale/size</b>               | Small demonstration project   |
| <b>Cost</b>                     | No cost data is available, but the government will provide a subsidy of €30 million   |
| <b>CO<sub>2</sub> amounts</b>   | Planning indicates that approximately 10 million tonnes would be stored   |
| <b>Source of CO<sub>2</sub></b> | A gasification hydrogen plant, a pure stream of CO <sub>2</sub>   |
| <b>Project duration</b>         | Injection in the first field was planned to start in 2011, for three years. Injection in the second field was planned to start in 2015, lasting for approximately 25 years  |
| <b>Technology type</b>          | Storage of CO <sub>2</sub> , comprehensive monitoring and verification  |
| <b>Pipeline</b>                 | A steel pipeline with a diameter of 36 cm (alternative 70 cm) is planned to be built 16.5 km from the source to the first gasfield, with an extension of 3.5 km to the second gasfield. The pipeline can use part of an existing pipeline corridor in certain places  |
| <b>Site selection</b>           | Site was chosen on the basis of close proximity to the source, the suitability of the geological storage complex, the possibility to inject CO <sub>2</sub> through existing wells, and the possibility of filling the first smaller gasfield, allowing full life cycle monitoring in a brief period (three years)  |
| <b>Location choice</b>          | Location is based on the existence of suitable storage site   |
| <b>Regulations</b>              | The environmental impact assessment has followed government guidelines and it was concluded that the project has an acceptable level of risk, both to site workers and the community. The effects of noise, waste and increased traffic are also understood to be negligible  |
| <b>Current status</b>           | In preparation stage, awaiting final approval from state government   |
| <b>Website</b>                  | <a href="http://www.shell.nl/home/content/nld/environment_society/co2_storage/">http://www.shell.nl/home/content/nld/environment_society/co2_storage/</a>   |

### 2.2 Location

Barendrecht is located in the west of the Netherlands (see figure 1), and has a population of approximately 44,000 people (Gemeente Barendrecht, 2009). The town is situated between the Rivers Maas (south of the town) and Rhine (north of the town). It is part of the conurbation of Rotterdam and close to the heavily industrialised Rijnmond district. The Rijnmond industrial area is home to a number of large oil refineries operated by (among others) Shell, ExxonMobil, Kuwait Petroleum (Q8) and BP, as well as chemical manufacturing plants such as Dow Chemical and ICI/ Akzo Nobel. This area is responsible for the bulk of chemical and fuel manufacture, storage and transport for large parts of central Europe. The area contributes significantly to the Dutch economy, but is also given precedence in Dutch energy and climate policy given its high rate of energy consumption and contribution to the country's greenhouse gas emissions.



Figure 2 Location of Barendrecht in the Netherlands (Zoekplaats, 2010)

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Barendrecht can be considered to be comprised of two areas, the town centre and Carnisselande (Gemeente Barendrecht, 2010). A large part of Carnisselande features newly built houses, and is mostly populated by families. A motorway (the A29), dissects the older part of Barendrecht from the newly built neighbourhood of Carnisselande. In recent years, the municipality of Barendrecht has witnessed a number of major infrastructure projects in the area, including the expansion of the large motorways that surround the town, and railway infrastructure such as a double-track freight line from Rotterdam to Germany ('Betuweroute', completed in 2007) and the commencement of the High-Speed Line South which connects Antwerp with Amsterdam Schiphol airport (started in 2009).

As shown in figure 3, most of the population is made up of people between the ages of 30 and 50, as well as a high proportion of children below the age of 10. The demographic distribution is not particularly unusual for the Netherlands, but the higher proportion of middle-aged citizens and children indicates that many families with young children live in the area.

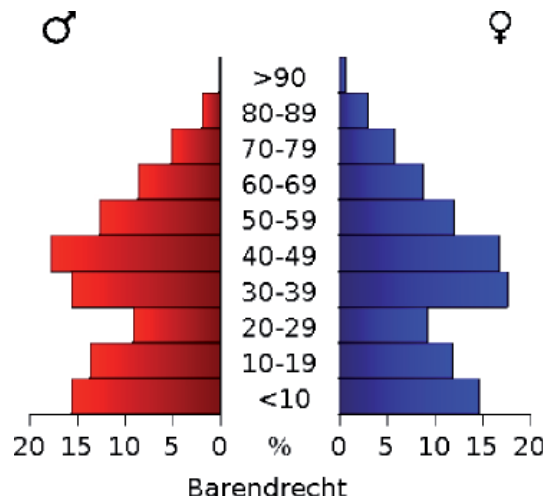


Figure 3 Population pyramid of Barendrecht (data source CBS, 2009)

## 3 Project context

In this chapter we present the relevant elements in the national (3.1) and local (3.2) context of the Barendrecht CCS project. The third sub-section describes the stakeholders involved in the project in more detail.

### 3.1 National context

Dutch CO<sub>2</sub> emissions have increased steadily from 161 MT CO<sub>2</sub> in 1990, to 176 MT CO<sub>2</sub> in 2005 (VROM, 2007). Carbon capture and storage (CCS) became a seriously considered CO<sub>2</sub> abatement option in Dutch climate and energy policies in 2007, as part of the 'Clean and Efficient' ('Schoon and Zuinig') policy package (VROM, 2007). This action plan for energy and climate calls for annual energy efficiency improvements of 2 per cent by 2020, a 30 per cent reduction in greenhouse gas emissions by 2020 (compared to 1990) and 20 per cent renewable energy in the energy mix by 2020.

In 2008, another set of policy recommendations called the 'Energy Report' (EZ, 2008) was adopted by Parliament. This report contained descriptions of a joint 'CCS project' between the Ministry of Housing, Spatial Planning and the Environment (VROM) and the Ministry of Economic Affairs (EZ). As part of the project, the CCS Taskforce was established in March 2008. This public-private partnership is responsible for the realisation of commercial CCS infrastructure. This requires a market-ready technology, organisation of the infrastructure, policy and juridical facilitation, financial arrangements and community endorsement. The Taskforce aims to speed up CCS projects in the Netherlands, by contributing to a positive image of CCS. Social acceptance is identified by the Taskforce as a major issue that is difficult to manage (Vergragt, 2009).

The Dutch Government has provided a budget for several research projects, including the implementation of four capture and two storage projects by 2012; the building of two large demonstration projects from 2012 to 2015 (with a storage component integrated from 2015-2020), and from 2020 onwards large-scale industrial implementation of CO<sub>2</sub> storage. From 2020 onwards, CCS is expected to be commercially viable without the need for government support. On 27 November 2008, the government decided to allocate €60 million for two CO<sub>2</sub> storage demonstration projects. These projects are located in Barendrecht, the subject of this case study, and in Geleen, in the south-east of the Netherlands.

### 3.2 Local context

In the Rotterdam area, the Rotterdam Climate Initiative (RCI) was set up in 2007 by four partners: the port of Rotterdam, the city of Rotterdam, Deltalinqs (a branch organisation representing the industrial and logistical companies in Rijnmond) and the Environmental Protection Agency of Rijnmond (DCMR). The chair of the RCI is former Dutch Prime Minister Lubbers, who is also member of the Dutch CCS Taskforce.

Rotterdam is aiming to become 'the world capital of CO<sub>2</sub>-free energy', and is one of 40 cities affiliated with the Large Cities Climate Leadership Group (C40). The RCI states that, despite maximum efforts to increase energy savings and the use of renewable energy, CCS will be necessary (RCI, 2008). In terms of CO<sub>2</sub> emission reductions, the target is a reduction by 2025 to 50 per cent of measured CO<sub>2</sub> levels in 1990, far exceeding national and European objectives. CCS plays the lead role in reducing CO<sub>2</sub> emissions from industry. To meet the challenging target, planned activities include advancements in energy conservation, sustainable energy and CCS (Vergragt, 2009).

According to the RCI, the Netherlands is in an excellent position to become a frontrunner in CCS technology development. There are plans to develop the Rotterdam Port area ('Rijnmond') into a major hub for CCS (RCI, 2008). Around Rotterdam there is a high concentration of CO<sub>2</sub> point sources, proximity of onshore and offshore storage sites, and existing CO<sub>2</sub> infrastructure that could connect to the harbour of Antwerp in Belgium and the German Ruhr region.

### 3.3 Stakeholders involved

Many stakeholders are involved in the Barendrecht CCS project. Their involvement ranges from being an official project partner (who are involved throughout the whole process and debate) to individuals or small groups that are involved in some part of the discussion or project process. The following outlines the most important stakeholders involved, their roles and positions.

#### Project developers

*Shell* is the initiator of the project. To develop the project, the company Shell CO<sub>2</sub> Storage BV is responsible for storage and monitoring. In this company, Shell cooperates with the employees of the *NAM* (Nederlandse Aardolie Maatschappij BV – the biggest oil and natural gas producer of the Netherlands). The NAM is responsible for existing natural gas production from the gasfields in Barendrecht. Another partner of the project developers is *OCAP* (Organic Carbon dioxide for Assimilation of Plants), a joint venture specialised in distribution of CO<sub>2</sub> from the Shell refinery in Pernis to neighbouring greenhouses. OCAP will be responsible in the Barendrecht project for the transport of CO<sub>2</sub>.

#### National government

The *national government* is involved via two ministries: the Ministry of Economic Affairs (EZ), represented by Minister Maria van der Hoeven, and the Ministry of Housing, Spatial Planning and Environment (VROM), represented by Minister Jacqueline Cramer.<sup>1</sup> The national government has set up the tender procedure to stimulate demonstration projects of CCS through which the Barendrecht project is funded. The Ministry of Economic Affairs established the CCS Project Directorate and the Taskforce CCS with representatives of public and private parties including industry, NGOs and governments to support the development of CCS in the Netherlands.

The Barendrecht project was also discussed within the *national parliament*. Most parliamentary discussions took place towards the end of 2009 and in the first half of 2010. Questions were asked by individual members of the parliament to the responsible Ministers about the local opposition, safety and health issues and technical characteristics. These questions were often raised after events related to the Barendrecht project were reported in the media. Most of these questions were critical of the Ministers' decisions to continue with the project despite local opposition.

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<sup>1</sup> These ministers were in charge from the beginning of the Barendrecht project until the fall of the government on 22 February 2010. At this date minister Cramer resigned (together with all her colleagues from the Labour Party (PvdA)) and her position was taken over by Tineke Huizinga-Heringa. Between the fall of the government and the formation of the new government (based on the elections of 9 June 2010), the ministers are so-called 'demission-air' which means that no decisions may be made on sensitive topics.

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### Local governments

Beside the national government, provincial and municipal governments are involved in the Barendrecht CCS project. The *provincial government* of Zuid-Holland consists of an *Executive Board* (represented by Deputy Eric van Heijningen) and a *Provincial Council* with representatives of different (national and local) *political parties*. The Deputy is head of the administrative consultation group (BCO<sub>2</sub> in which all governmental levels are present). The Executive Board is also involved and responsible for permitting procedures related to environmental issues and the EIA advice. In November 2009, the Provincial Council announced that it is officially against the project.

The Provincial Government cooperates closely with the Environmental Protection Agency of Rijnmond (DCMR). DCMR is the permitting authority and consultant of the province of Zuid Holland, the different municipal governments including Barendrecht, companies and individuals in the Rotterdam region. DCMR also controls the execution of permits and monitors all kinds of environmental issues in the region. In this CCS project, DCMR has three roles. It is appointed by the provincial Deputy to execute the leadership of the BCO<sub>2</sub>, responsible for the environmental permits related to the project, and one of the founders of the Rotterdam Climate Initiative (RCI) which actively promotes CCS in the region. DCMR officially is a neutral stakeholder in this project.

At the municipal level, the *governments of Barendrecht and Albrandswaard* are involved. The gasfields in which the CO<sub>2</sub> is planned to be stored are located under these two municipalities. The municipal government of Barendrecht is however much more actively involved in the project and the debate which makes stakeholders and the 'outside world' consider it as the 'Barendrecht project'<sup>2</sup>. The municipal government of Barendrecht consists of an *Executive Board* chaired by the mayor (represented in this project mostly by Alderman Simon Zuurbier) and the *Council* in which representatives of several national and local *political parties* take place. The official position since June 2009 of the Council and the Executive Board is that they are against the project. They also agreed to speak with one voice about the project, which blocks the expression of any individual opinions about the project of local politicians or parties. Some differences between the local political parties are seen in their activities related to informing and mobilising the public. The local Christian Democratic party, for example, has extensive information about the project on its website and the Green (GroenLinks) Party organises several events and campaigns to mobilise people.

### Other researchers, consultants and experts

Both the project initiators and opponents have hired several external experts, consultants and research organisations to perform research on aspects of the project or to answer specific questions. For example, several professors from Dutch universities and other experts were involved in the 'Knowledge Tables', meetings in which a set of questions from the municipality were answered by several experts. Other examples are the Dutch research organisation TNO, which was involved by Shell for its strong knowledge base on underground technology. Shell also hired consultancy Royal Haskoning to lead the AMESCO study about the environmental aspects of CO<sub>2</sub> storage in the Netherlands. In this study, other parties were involved including energy companies (Electrabel, Essent and Eneco) as well as other governments (provincial governments of Zuid Holland, Friesland, Groningen and Drenthe and the Ministry of VROM). Another example is the involvement of TNO, DCMR and the RIVM (National Institute for Public Health and Environment) for additional research by order of the national and provincial government. Other individuals also were involved to give their opinions about aspects of the project in written articles or television items.

Although external experts, researchers and consultants are mostly hired to have a neutral voice about different aspects of the project, we notice that in the debate those experts pronouncing opinions that are consistent with the message of the project developers are considered as project proponents and vice versa.

### NGOs

A few NGOs have also become involved in the debate about the project. National NGOs such as Greenpeace and SNM (the Netherlands Society for Nature and Environment) have stated their general vision about CCS. They are reluctant to pronounce their opinion on this specific project and prefer to act on the national level. Greenpeace, both nationally and internationally, is against CCS in relation to coal usage. SNM favours CCS because it considers CCS as the necessary intermediate step towards clean energy. It does, however, oppose public funding of CCS and

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<sup>2</sup> It is understood that the municipality of Barendrecht is more active in protesting against the project because most of the storage location lies under the town (see Figure 1).

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states that the polluters should pay themselves. SNM is also a member of the national Taskforce which promotes CCS in the Netherlands. Several stakeholders tried to involve more national and local NGOs, but these attempts were not successful. A reason for NGOs not to become involved is that they did not want to take a standpoint on a particular CCS project

In 2009, a group of Barendrecht citizens set up a foundation against the project (Stichting CO<sub>2</sub> is nee – CO<sub>2</sub> is no). They actively protest against the project via a website and different events.

### Local population

An important stakeholder in this project is of course the local population of Barendrecht (and Albrandswaard). The municipal government represents the people of the municipality in the debate. We don't know however to what extent community opinion is consistent with the opinion expressed by the municipal government. No official community consultation has taken place and it was beyond the scope of the present case study to undertake such an activity. Our observations of local public opinion is based on the reactions and involvement of the community in the debate, reporting in the media, on the interviews with the stakeholders and on the observations of the employees of the information centre in Barendrecht. Between March and October 2009, about 900 people visited the centre of which a large majority were inhabitants of Barendrecht. According to the opinion of an employee of the information centre, about one-third of these visitors are against the project, one-third is in favour and one-third is relatively neutral. If this is the case, there is significantly more diversity and balance in the positions of the community than in the opinions expressed by the local political parties and municipal government.

### Media

Most of the media (local and national newspapers and television, websites, magazines etc) are following the debate and present the different opinions about the project. Only a few media events have aimed to form or influence opinions. The media has thus not taken a pronounced position in the debate (see further the media analysis in Chapter 5).

## 4 Defining moments in the project's history

In the interviews, the stakeholders were asked to name the moments (events, activities, circumstances) in the project's history that have been important in forming opinions of stakeholders and the community. We concentrate on these so-called 'defining moments' named by the interviewees because these give insights into what the stakeholders consider as important moments in the project which influenced stakeholders' opinions and the debate. These insights provide a good overview of the project process and the accompanying debate. Below these 'defining moments' are described in more detail in chronological order. These descriptions combine data from written resources about the defining moments with data collected via the interviews. In Figure 4 a schematic overview of these defining moments is given.

### 4.1 The initial phase

The national government announced a tender procedure for grants for CCS demonstration projects in 2007. Shell submitted the Barendrecht project to this tender. The grants were expected to be assigned by the end of 2007. At that time CCS was not a large topic at the ministries. The CCS Project Directorate and the national Taskforce CCS were established later in 2008 to stimulate the development of CCS.

One of the reports often referred to by stakeholders is the AMESCO (Generic Environmental Impact Study on CO<sub>2</sub> storage) study, which was initiated by the NAM, composed by different public and industrial parties and published in July 2007. The report aims to provide a basis for EIA procedures and legislation in relation to CCS. In the conclusion of the chapter on Dutch geography, the report states that one could claim that policy is needed to forbid the storage of CO<sub>2</sub> in densely populated areas. The surrounding text however explains that such an approach would limit possibilities for storage sites to agricultural areas with low population density, and did not conclude that such a policy would be desirable. However, this sentence is often referred to as such by opponents of the project.

## What happened in Barendrecht?

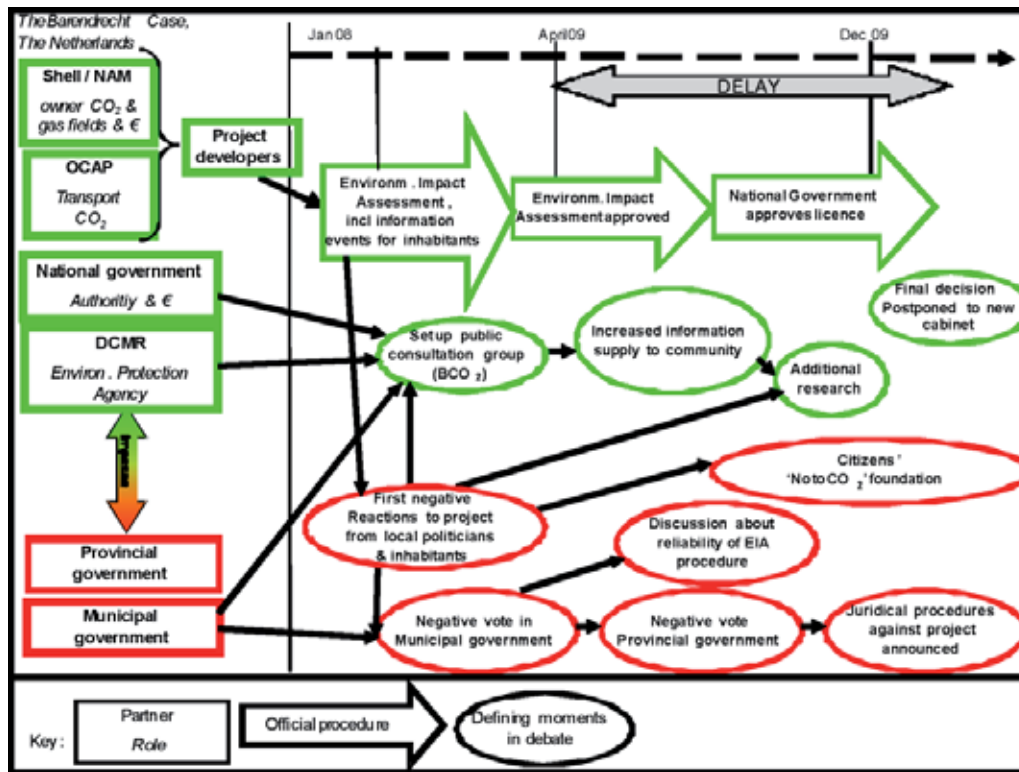


Figure 4 Schematic overview of defining moments in Barendrecht CCS project

### 4.2 First presentation to the community

In the interviews, representatives of Shell and the municipal government refer to the first informal contacts about the CCS project in 2007. Shell presented its project to the Executive Board of Barendrecht. Some of the members of the Executive Board were initially in favour of the project, others had doubts and it was decided to consult the city Council about it. Shell was asked by the Executive Board to present the project to the city Council, which it did at the beginning of 2008 (before the public meetings mentioned below). Most of the Council was not enthusiastic about the project. This opposition was strongest in the local labour party (PvdA).

Meanwhile, Shell had begun the Environmental Impact Assessment (EIA) procedure. A couple of weeks after the project was presented to the city Council, Shell organised two information meetings to present the CCS project to the Barendrecht community. These meetings were part of the EIA procedure. Both were chaired by an external discussion leader and consisted of several presentations of the project developers (NAM, Shell, and OCAP) and TNO. The meetings were approved by the municipal Board, but no representatives of the municipality were involved in the organisation or in a presentation because a formal decision of the municipal Board about the project was pending.

The first of these public meetings (in February 2008) was attended by about 60 people, of whom many were known for being active in local politics in Barendrecht. During the meeting, Shell and TNO presented details about the technology, risks, geology of the project, details about the EIA procedures and the AMESCO study. It was stated that the project was completely safe. A representative of the national government was present to explain why CCS in general was needed. His role was limited because the national government was hesitant to speak about specific CCS projects while no decisions about the grants were yet made. During the meeting some concerns were raised but no significant debate was held, according to interviewees present. It was decided to organise a second meeting to answer questions and inform more people.

During the second public meeting (in April 2008), no representative of the national government was present due to a cancellation just before the meeting. The most distinguishable features between the two meetings, was the increased attendance (180 people), and the increased number of questions and concerns raised. Those questions that could not be answered during the meeting (due to lack of time), were answered by the project developers on paper in the minutes of the meeting which were publicly accessible on Shell's website. Another difference between

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what was presented at the meetings was a change in the presentation made by Shell, which concerned an added remark next to an image with a cross-section of the local geography which stated that the trees on the picture were not properly scaled.<sup>3</sup>

Most stakeholders refer to the public meetings as the beginning of the debate. Two elements of these meetings are often mentioned for having a supposedly great influence on the opinion formed by stakeholders. These were the questions and concerns raised about the technical details and safety of the project, especially by some local politicians who in their view did not receive satisfying answers of the project developers. This was the first public opposition to the project from local politicians. Secondly, the limited visibility of the national government at these public meetings was identified by most stakeholders as having a large influence on the following debate. Apart from a short presentation by a representative of the ministry of VROM during the first public meeting, only limited attention was given to the standpoint of the national government, the role of this project in a national context and related national policy. This created the feeling that the project was Shell's idea. Reflecting on these meetings, an interviewee said that community irritation was raised and an atmosphere was created of Shell versus the public.

### 4.3 Initial reactions and actions of the community

After the first public meeting, the frequency of discussions about the project within the local political parties increased. One of the local party leaders who had been present at the public meeting and who had read the AMESCO report was convinced that the project had not been thought through well enough. She was especially worried about monitoring and long-term storage. She asked for all Shell's reports of the EIA procedure. It took Shell some time to fulfil this request due to, among other matters, the confidentiality of the reports. The local party leader followed by other local politicians took this delay as evidence that Shell was not willing to provide information. In the same period an article about the project was published in a national newspaper (Volkskrant). Opposing residents and local politicians were quoted as being worried about the safety ("because people make mistakes") and location of the project ("so many young families live here").

After the second public meeting organised by the project developers, the municipality advised the project developers to stop informing the community because this seemed to have a negative impact on the project. Representatives of the municipality went to the office of Shell/NAM in the town of Assen to express this message. The alderman and the mayor also visited Minister Cramer to ask for more information about the standpoint of the national government on this matter, and discuss the project with her.

Meanwhile, opposition among local politicians increased and more questions were raised. The Executive Board of Barendrecht as well as the Council wanted to base their official position on the EIA reports (which were published in 2009). The local political debate however raised enough concerns to accept a motion in June 2008 that more research was needed before the project could be accepted or rejected. On demand of the alderman, a consultation group ('klankbordgroep') was established with most local party leaders as members. They directly discussed issues related to the CCS project with the alderman. An interviewee involved in this local decision-making process stated that there was an enormous unity within the municipal government although some were more extreme in their position than others. The local Green (GroenLinks) Party ceased to support the motion for several weeks because it thought more action should be taken against the project by the Council and Board. The party began mobilising the Barendrecht community via a petition (resulting in about 900 signatures) and a protest walk against CCS in which 300 to 400 people participated.

To create an overview of questions, concerns and requirements of the municipality, the consultation group together with the Council and alderman set up a 'checklist' (toetskader) for the project. Residents and external experts were also asked for input. The checklist (finalised on 15 December 2008) contained about 100 questions and requirements divided into seven themes: general issues, safety, risk analysis, geological research, changes of property values, legal issues and monitoring. The official position of Board and Council was that answers to all questions must be provided and all requirements fulfilled before the Board could make a decision about accepting or rejecting the project. Checklist questions were taken up in the non-public meetings ('Knowledge Tables') in which several experts were invited to provide answers to the municipality at the beginning of 2009 (see Paragraph 4.4).

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<sup>3</sup> In later presentations and brochures of Shell the image with the tree was replaced by an image of a cross section of the geography and the local IKEA building and the Euromast (a high tower in Rotterdam) in the same scale to illustrate the depth of the gas fields.

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Meanwhile, the local Christian Democratic party widened the debate about the CCS project. It sought contact with and discussed the project with other local, provincial and national policy makers from the same and other political parties. It contacted local politicians in Geleen, the town in which another CCS project had received a grant from the same tender, and former Prime Minister Ruud Lubbers (also a Christian Democrat) to increase opposition to the project. It also sent a letter with questions to the national Parliament and Senate, and actively updated the community via the party website.

To summarise, the approval of the motion within the municipality meant that the internal debate and normal dualism between local council and executive board was put aside.<sup>4</sup> This had a large effect on the debate about the project. The motion made it possible for the local political parties as well as the Board and Council to cooperate efficiently at the municipal level and express their viewpoints to the public and other stakeholders. By excluding internal debate about the project, it was also difficult for local political parties to reconsider their viewpoints, ask critical questions or bring in nuances in the debate.

### 4.4 Actions taken to improve communication and information

#### 4.4.1 The administrative consultation group (BCO<sub>2</sub>)

The growing discrepancy between the viewpoints of the local and national government in the months following the presentation of the project to the community negatively influenced the communication between stakeholders. The debate took place mostly via press releases and media, with almost no direct communication between the local government and the project developers (including the national government). To improve communication with the public, the administrative consultation CO<sub>2</sub>, called BCO<sub>2</sub>, was set up in mid-2008.<sup>5</sup> Deputy Eric van Heijningen was appointed as the official chair of BCO<sub>2</sub>. DCMR became the executive and Arie Deelen, head of the expertise centre of DCMR, was appointed as facilitator. Other members of BCO<sub>2</sub> were the responsible aldermen of the municipalities of Barendrecht and Albrandswaard and two representatives of the national government (the Project Director CCS and an expert on mining legislation). Two working groups were established within the BCO<sub>2</sub>: a Procedures Working Group and a Communication Working Group. Project developers Shell and OCAP were not members of BCO<sub>2</sub>. They were informed about the discussions and outcomes of the consultation group via facilitator DCMR. Looking back, a representative of the municipality stated that the structure of the BCO<sub>2</sub> is not common. It would have been more logical to have the BCO<sub>2</sub> chaired by the Minister and not by the Deputy, who is a middle-level official.

In the second half of 2008 and beginning of 2009, the EIA processes and permissions and legislation were discussed in the Procedures Working Group. Because the project procedures were new for all parties, many questions existed about the process, planning and responsibilities. The activities of this working group decreased at the beginning in 2009 because most procedural issues were clear by then for the stakeholders involved.

Communication experts of the parties involved in the BCO<sub>2</sub> together with Shell formed the Communication Working Group. They did not aim for a collective communication strategy (that was not possible any more according to the parties involved because the opinions about the project were too diverse). The aim of this working group was to inform each other about what would be communicated to the 'outside world' before it was done to avoid unpleasant surprises for each other. Still, the communication working group was involved in other communication activities including two information events organised by the municipalities Barendrecht and Albrandswaard at the beginning of 2009 for the citizens of Barendrecht, the establishment of the information centre in Barendrecht in March and visits of the Ministers to Barendrecht in June 2009.

Apart from the consultation and communication working group, the BCO<sub>2</sub> initiated the expert meetings ('Knowledge Tables') to answer the checklist questions of the municipality.<sup>6</sup> The questions were grouped in four

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<sup>4</sup> Interviewees have different ideas about the exact reasons for this decision. Some state that an earlier conflict between the alderman and members of the Council might be a reason and that the Council wanted to ensure that the alderman would not make any decisions without involving the Council

<sup>5</sup> During the interviews, different stakeholders were named as the initiator of BCO<sub>2</sub>. Other resources also do not give a definite answer. In any case, the national government played an important role in the formation of BCO<sub>2</sub>

<sup>6</sup> According to one interviewee DCMR advised the municipal government to start already with setting up the check-list and not wait until the EIA advice would be published before performing a second opinion (this was the initial plan of the municipal government).



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clusters: external safety, underground aspects, monitoring and location choice. Each cluster was discussed during one day in February 2009 with internal experts from stakeholders involved (Shell, NAM, the ministries, TNO etc) and external experts invited by the municipal government. All these checklist questions were discussed in the Knowledge Tables, which took place before the EIA report was published.

### 4.4.2 Public information meetings

The information meeting for the Barendrecht community organised by the municipal government on 18 February 2009 attracted 1,000 to 1,100 visitors. No other item on the political agenda of Barendrecht had attracted so many people before. Several speakers were present from the local government, national government, DCMR and Shell. Some NGOs that are not in favour of CCS were also invited by the municipal government, but none was present at the information kiosk. Greenpeace did send a set of brochures which explained its general view on CCS in relation to coal plants. Many questions and concerns were raised during the discussions. Stakeholders interviewed about the meeting said that they had the impression that most of the people present opposed the project. In any case, an observer mentioned that the few who were neutral or in favour of the project did not express themselves during these meetings. In its report of the meeting, Shell claimed that the project was not profitable. This remark was heavily debated afterwards because the public did not believe it. Shell also said that they would take into account public opposition. This was interpreted by the public that the project would be cancelled if local opposition was large. Shell explained later that it meant it would cancel the project if general (national) public opposition was too large.

A week before this meeting in Barendrecht, a similar event, with stands and representatives of the different organisations involved, was organised for the Albrandswaard community. About 20 to 40 people attended. No strong concerns were reported from the community. The difference between the reactions of the politicians and communities are explained differently by the stakeholders interviewed. Many point out that the image that Shell used in its first presentations, which highlighted the exact locations of the gasfields under the municipalities, played a large role in shaping community reactions. People literally checked whether their house was located above the gasfields or not. If it was not, they were less concerned. This is supported by findings of the people working in the information centre where the same image is shown to visitors. People first check if their house is above the gasfields and often feel relieved if it is not. The limited amount of concerns raised by the public and local politicians in Albrandswaard can be explained by the fact that only a few houses in the municipality are located directly above the gasfields. Some interviewees point out another reason for the difference between the opposition across the municipalities. According to them, the initial loud and emotional protests of some politicians in Barendrecht and their active encouragement of others to be involved in the debate, increased the emotions and opposition in the town. Because no such activism was shown in Albrandswaard, the project became a less of an issue there.

### 4.4.3 Public information centre

Another result of the Communication Working Group of the BCO<sub>2</sub> was the establishment in March 2009 of an information centre in Barendrecht (Infopunt CO<sub>2</sub> opslag) with its own website, [www.infopuntco2opslag.nl](http://www.infopuntco2opslag.nl). The aim of this centre is to inform the general public about all aspects of and opinions about the CO<sub>2</sub> storage project in Barendrecht. The information centre is located in Shopping Centre Clarnisse Lande, near one of the CO<sub>2</sub> injection sites and in the middle of the neighbourhood situated above one of the gasfields. The company Podium BV was ordered by the Ministry of Housing, Spatial Planning and Environment to establish the information centre. The company also pays the people working in the centre. Other parties involved are Shell, OCAP, DCMR and the province.

Communication experts of the parties involved in the information centre regularly work together to decide the content and deliver the necessary information for the centre. The information presented is divided into two sections: a set of permanent displays and a topical section. The permanent section is comprised of several large posters (A2) of OCAP, Shell, DCMR and TNO with information (text and images) about the technical aspects of the project, the characteristics of the geology and the planning. These posters, apart from those of DCMR, carry the logo of the organisation that produced them. A centre employee said that these posters include good information to explain the project to visitors. The topical section of the centre includes information such as the status of different procedures, recent articles in local, national and international newspapers, brochures about the project and CCS in general from the different stakeholders (including Shell, DCMR and the Taskforce CCS) but also from NGOs not directly involved

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in the project (such as Greenpeace and SNM), and announcements about activities related to the project. The employees aim to present all opinions about the project in a neutral and objective way.

The municipality is not involved in the establishment of the information centre or in the content of the information provided (although it is mentioned as a partner on the centre website). A representative of the municipality said that they are not joining because of the difficulty of representing different opinions in one information centre, which is paid by the national government (a proponent of the project). The interviewee also said that the number of visitors is relatively low and this indicated that the public did not want an information centre. The municipal government has its own ways of bringing its message to the public, including its website and through the local political parties, interviews with representatives of the municipal government in local and national media, columns and other articles in local and national media and public meetings.

At the time of the interview with an employee of the information centre (29 October 2009), about 900 people had visited the centre since its opening in March 2009. These include individuals, groups of people (such as students) and media (mostly local press). According to the interviewee most visitors are from Barendrecht (about 90 per cent). Other visitors come from surrounding municipalities or further away. The employee confirmed that many visitors think that the information centre is a proponent of the project and that the staff are paid by Shell. The employees explain to these visitors that this is not true and that they are a neutral information supplier. The employee estimates that about one-third of the visitors are neutral about the project, one-third in favour and one-third against.

The visitors have different backgrounds, questions and opinions of the project. The employees see some changes in the questions of the visitors. In the first months after the centre was opened, most questions related to procedural issues (who was responsible, when and what would be decided, what possibilities there were to participate in or react to decisions). Later in 2009 (after the EIA was approved), more questions were related to health risks (often related to the pipelines) and long-term safety. The employees also noticed that the visitors become more informed and reacted less emotionally than in the first months.

Apart from providing information, the centre also organises events such as visits to the injection point. Two visits to the injection point took place in May 2009. A total of 36 people joined these outings (19 and 17). A large majority of these participants were already involved in the project through their job or political activities. A journalist present on the first visit reported in the local newspaper *De Schakel* under the heading: "Information Centre tells the half truth about CCS", suggesting that the excursions were pro-CCS propaganda. The few citizens present on the visits asked critical technical questions.

In the first months after the opening of the centre, the employees actively approached the community and offered to give presentations about the project to sporting and service clubs, schools, elderly homes, Christian and Muslim associations and other groups within Barendrecht. Only some service clubs (Rotary and Lions) were interested and a centre employee gave a presentation to them about the project together with a representative of Shell in May 2009.

Visitors to the centre often refer to the public meetings organised by the municipality in early 2009. The interviewed employee, who was not present at these meetings himself, said that based on the reactions of the visitors he gets the impression that these were very important and emotional meetings in which a trend was set. Visitors to the centre also often refer to the visits of the Ministers to Barendrecht in June 2009 (see below).

### 4.4.4 Personal visits of the Ministers

A third action of the Communication Working Group was organising visits of the Ministers Cramer of Housing, Spatial Planning and Environment and Van der Hoeven of Environmental Affairs to Barendrecht. The aim was to discuss the project with the municipal government and residents in an informal way and answer community questions. These so called 'Living Room' visits took place in June 2009 at the homes of residents worried about the project and in the information centre. The interviewed employee of the information centre noticed that many people were very positive about these visits. Although opinions did not really change, people liked the fact that the Ministers came, listened and answered questions openly.

### 4.4.5 Other communication actions

In the same month that the information centre was established (March 2009), Dutch NGO MilieuCentraal (an environmental information organisation) launched the website [www.co2afvangenopslag.nl](http://www.co2afvangenopslag.nl). The website was developed by an editorial board with representatives of the national government, NGOs, research organisations and

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industry. It provided information about climate change, CO<sub>2</sub> emissions and CCS. The website was requested by the national government and aimed to be neutral and represent different views. It was however not positively received and considered as pro-CCS propaganda. This may be due to the number of other events occurring in the same period or because that none of the known opponents of the Barendrecht project was involved.

In sum, several activities took place to improve communication between the stakeholders and information supply to the community when the opposition to the project increased. A stakeholder consultation group was set up to create dialogue between government stakeholders on the different levels. No official dialogue was set up with all the stakeholders involved. The only occasions where all stakeholders cooperated with each other were the expert meetings (Knowledge Tables) in which experts invited by opponents and proponents discussed the municipality's checklist. These were not public meetings and only invited stakeholders were allowed to participate.

After the project was presented to the community by the project developers, proponents and opponents also increased their communication to the public using their own communication channels (such as websites, posters and brochures). Proponents sometimes coordinated their communication (e.g. the establishment of the information centre and the website [www.co2afvangenopslag.nl](http://www.co2afvangenopslag.nl)). Only on very few occasions did local opponents cooperate with the proponents in combined communication actions (except the 'Living Room' visits of the Ministers, which were co-organised by the municipal government).

### 4.5 Events related to legislation and the EIA procedure

Representatives of the different levels of government refer to the effect of the so-called National Coordination Regulation (rijkscoördinatierегeling or RCR) on the opinion forming and position of the governments involved. On 1 March 2009, the CO<sub>2</sub> storage project in Barendrecht was included in the RCR. This meant that it is a project with national impact and so the national government can grant all permissions, including the ones related to the zoning plan that are normally awarded by the municipal government. Before the project was included in the RCR, the municipal government was the single stakeholder authorised to add the necessary changes to the zoning plan (and change the purpose of the location of the injection point from gas extraction to CO<sub>2</sub> storage). It lost this authority through the RCR. According to a representative of the municipal government, the municipality did not know that this RCR was going to be put in place. Several stakeholders confirmed that the RCR had a negative effect on the relationships between stakeholders. The municipal government believed the RCR was a means of coercion to continue the project. According to the interviewee, the first reaction of the municipal government was dismay because it felt that the decision had been taken out of its hands.

The EIA procedure was started by Shell in 2008. Together with several partners, the required research reports about safety and environmental aspects were compiled and together with the accompanying licence requests sent to the responsible authorities in December 2008.<sup>7</sup> According to one of the stakeholders, an EIA support group was established which came together every six weeks during the EIA procedure to discuss its progress. The members were Shell, DCMR, the ministries of Economic Affairs and VROM, the province and the municipalities involved. Membership was voluntary and the group operated independently from the BCO<sub>2</sub>. Apart from this one stakeholder, none of the other stakeholders referred to this EIA support group in the interviews, and the desk research found no information about this group.

The approval of the EIA report was published in local and national media and the report was made public in early February. Stakeholders and individuals were invited to make submissions in the following six weeks. A total of 1,570 viewpoints were submitted including more than 900 'standard forms' signed by members of the Barendrecht community. This form had been provided by the local Green (GroenLinks) Party, which is opposed to the project. It summoned people through local media to object to the project via the form. Subsequently the EIA committee reviewed the EIA report including the submissions and the outcomes of the expert meetings and published its decision to approve the EIA on 23 April 2009. This approval meant the project could continue with the design of the necessary licences, to which again viewpoints could be submitted.

According to the municipal government, not all answers provided via the expert meetings and the EIA reports were satisfactory and not all requirements of their checklist were fulfilled. Although the requirements of the municipal

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<sup>7</sup> The responsible authority for the approval of the EIA procedure is the provincial government, which assigns a EIA Committee of independent experts to formulate the EIA advice.

## What happened in Barendrecht?

government were discussed, an interviewee representing the municipal government stated that it was unclear and not decided upon if and how the requirements would fit the licences. The municipal Board and Council pronounced this dissatisfaction in an official submission (*zienswijze*) to the EIA. The Ministers involved sent a letter to the municipal government in June 2009 stating that they understood that the municipality must have felt overwhelmed by the project and that they would discuss their future decisions with the municipal government.

Another discussion about the procedures related to the EIA was raised by the municipal government. The EIA procedure consists of two parts: a 'plan-EIA' and a 'decision-EIA'. Often these parts are carried out separately (including two procedures in which viewpoints can be submitted), but they can also be combined in one procedure as in this project. The 'plan-EIA' focuses on the location of the planned project. According to the municipal government, the evaluation of possible locations has not been done sufficiently because the location was already decided upon (based on economic reasons because other locations would be more expensive for Shell) and the project at this location was already awarded with a subsidy from the national government. The lack of a separate 'plan-EIA' confirmed this idea in its view.

In sum, for the local opponents (mainly the municipal government), the procedural issues related to the RCR and the EIA were interpreted as events that removed any remaining possibilities for legal opposition from the project process. After this, they did not have any legal possibilities or power left to oppose the project. Because they felt strongly that they were not involved and not listened to in discussions about these procedural issues, their opposition to the project increased.

### 4.6 Towards the final formal decision

#### 4.6.1 Additional research: location choice, human health and project safety

After the EIA was approved, the Ministers postponed the decision about continuation of the project to November 2009. They announced that they wanted to wait for emotions to cool down and to commission additional research on issues raised by the local stakeholders opposing the project. Three topics were further analysed and the outcomes were published in October 2009.

Additional research on the choice of Barendrecht as the location for CCS was performed by the Dutch research institute TNO. It found that there is one offshore (P6 South) and one onshore (Barendrecht) location with best suitable geographic conditions for CCS. The outcomes were verified by the research institute Det Norske Veritas (DNV).

The draft research outline set up for this research was discussed within the BCO<sub>2</sub>. According to the interviewee representing the municipal government, the aim was to perform this study together with all stakeholders to search for answers to the open questions of the municipality. The comments the municipal government presented were, according to the interviewee, not taken into account and TNO researched only what the national government had asked for. The interviewee referred to it as a typical result of the BCO<sub>2</sub>. The municipal government reacted to the outcomes of the location study with a press release and news conference stating that it was happy to hear of other potential locations.

A second topic for additional research was the impact of the project on human health, especially the psychosomatic effects (such as fear) on residents. The Dutch National Institute for Public Health and Environment (RIVM) stated in its research report that no exact predictions could be made because no initial measurement of the psychosomatic situation had been performed nor were results available from comparable situations nationally or internationally. It did give some recommendations to the project developers (mainly to the governments involved) on how to proceed to reduce the risks for residents before, during and after the project was established.

The other additional research study in this period was performed by DCMR on project safety. Together with the authorities responsible for the safety in the area (e.g. fire brigade, police), it assessed the risks of the project and concluded that no safety or risk boundaries would be exceeded. The report stated that the largest risks of the project were related to the transport of CO<sub>2</sub> through the pipeline, to be largely built within the existing pipeline corridor. It also stated that with additional measurements, these risks could be managed.

### 4.6.2 Increasing local opposition

After the approval of the EIA, the local (and other) stakeholders realised that there were no remaining formal possibilities to stop the project through standard procedures. In the period before the final decision from the Ministers, local opposition remained one of the few things that could convince the Ministers not to continue with the project. But many stakeholders interviewed, including the representatives of the municipal government, indicated that they realised that if the Ministers would decide that the project in Barendrecht would not go through, it would become very difficult to implement onshore CCS in the Netherlands.

So far the local opposition was still organised and initiated by the municipal government, local political parties or individual politicians. In the second half of 2009, the first organised community opposition took place. In the local newspaper *de Schakel*, a group of residents announced the formation of a local activist group called 'CO<sub>2</sub> is no', which became an association soon after. The group organised demonstrations, set up online and paper petitions and informed other residents about the project and why they should oppose it, using a website, local media and leaflets. The group also contacted municipalities and stakeholders involved in other CCS projects in the Netherlands to protest against those. The mascot of the association is a guinea pig (named 'Cootje 2', referring to CO<sub>2</sub>) because guinea pigs live close to the ground and would be the first to suffer when high concentrations of CO<sub>2</sub> would exist (from leakages).

### 4.6.3 Final decision

On 18 November 2009, the Ministers of Economic Affairs and Housing, Spatial Planning and Environment announced their official approval of the project despite the formal opposition of local and provincial government (the provincial government had announced its formal rejection of the project a few weeks earlier). The Ministers considered the project as being safe and necessary as a transition technology to buy time to create other sustainable energy solutions. They stressed that the storage in the larger of the two gasfields would start only after the injection and storage in the first and smaller field had proven to be safe. The media coverage of the government decision included headlines such as: "Shell has taken the government as hostage". The municipal government announced that it would now try to stop the project via legal procedures and the Council of State.

The Ministers had promised the Barendrecht community that they would visit the town to explain their decision in detail. This meeting took place on 1 December 2009. The municipal government had called for community members opposed to the project to join the meeting in the local theatre. Some 600 people attended and an unknown number watched the event (via live broadcasting) at the town hall. According to the second author of this report, who was present in the theatre, the large majority of people in the theatre were opposed to the project. The Ministers were continuously interrupted by many boos, whistles, cries of disapproval and insults. The speeches of community members frequently raised the point that the decision-making process had been unfair and that they would not allow the project to take place. The event was reported widely in national and local media.

In sum, the period between the EIA approval and the formal decision of the Ministers to continue with the project, the local opponents took stronger positions and further formalised their actions. The period which was originally planned by the national government to decrease the emotions and improve the relationships with and between the stakeholders had the opposite effect. The positions of the different stakeholders were at this stage very much polarised, lacking mutual trust, respect and understanding. The stakeholders interviewed mostly agreed that it would be difficult to re-open the discussion or have an effective dialogue with all stakeholders.

## 4.7 The discussion continues ...

After the formal decision from the Ministers to continue the project, other decisions about planning and the necessary permissions had to be made by the national authorities (Ministries). Preparations for these took place early in 2010. In the same period, several other events reinforced the discussions about the project again.

In January 2010, discussions in the national parliament showed that most opposition parties oppose the project. Also at that time, the local political parties opposing the project in their constituency tried to influence the national wing of their political parties to turn against the project. A situation arose in which the national Christian Democratic and Labour Party agreed with the project, but the local divisions of the parties in Barendrecht were strongly against it. Supporting a project with so much opposition would not bode well for local elections.

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In February 2010, the national government fell and the Labour Party left the government. This meant that structural decisions about the project had to wait for the new government to be installed (based on the elections of 9 June 2010). In March, it was announced that the Barendrecht CO<sub>2</sub> project became part of the Crisis and Economic Reform Law (Crisis- en Herstelwet). This law was created to stimulate the economy after the financial crisis in 2008-2009 by speeding up large national (infrastructure) projects. This law forbids local governments to take any legal action against projects. The possibility for private parties or citizens to protest against the project however still exists.

Also in the first months of 2010, several items were broadcast on national television in different news programs about the project. In these programs, opponents, proponents, community members and external experts were interviewed. The statements of the people interviewed raised again the discussion in the media but also in the national parliament. Based on these statements, members of several opposition parties officially asked explanation from the Minister Van de Hoeven about some of the statements of the external experts interviewed.

To summarize, due to the ongoing discussion and the fall of the government, structural decisions needed for the project to continue could not be made but preparations for the project within the Ministries continued. Meanwhile, the local opposition appeared to broaden from local government to the community and also to a national level (mainly due to the growing attention on the project).

## 5 Media coverage

The project has received a great deal of media attention since first appearing in the press in early February 2008. The following media analysis focuses on describing the media reaction to key events related to the project and also to national CCS policy. The selection of these key events is based on the 'defining moments' stipulated by the stakeholders involved in the interviews presented in Chapter 4 of this case study report. The media analysis has been conducted by first producing a chronological log of media reports<sup>8</sup>, a total of 66 from different media sources<sup>9</sup> between 5 February 2008 and 26 May 2010. These reports have been selected and categorised on the base of date published, their source (media format) and the topic covered.<sup>10</sup>

Due the huge amount of media attention, making an account of every piece of media on the project and (Dutch) national CCS policy would be unrealistic within the framework of this case study. Working with a selected number of entries instead of a database of all media coverage of the project also includes some limitations. No conclusions can be drawn about the complete media coverage and we therefore also decided not to include any quantitative analysis. The analysis below and the conclusions presented focus on the used set of data and not all media coverage of the Barendrecht project. Readers are encouraged to return to the detailed descriptions of the 'defining moments' in Chapter 4 to make optimum use of this analysis.

### 5.1 The initial phase

During the initial phase of project, when Shell submitted the demonstration project at Barendrecht for the tender of the national government, there was no media coverage because the process was not made public.

### 5.2 First presentation of the project to the community

Consistent with the first public meetings between Shell and members of the Barendrecht community (active in local politics), the initial appearance of the project in the media occurred on 5 February 2008 in a national newspaper. The article, entitled: "For the first time – underground CO<sub>2</sub> storage", is mostly a descriptive piece, explaining the basic nature of the project, the intended schedule of activities and role of the project developers Shell and OCAP. The issue of safety is mentioned in the article, and a Shell spokesperson is quoted as saying that CO<sub>2</sub> is not dangerous.

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<sup>8</sup> See appendix B for the overview of entries used

<sup>9</sup> National and local newspapers, magazines, newsletters, international media, national and local television / radio, press releases and internet based media (blogs, twitter, Youtube, websites, etc)

<sup>10</sup> Titles and quotes from the media reports are translated by the authors of this report.

### 5.3 Initial reactions and actions of the community

Soon after the first public meeting, the first article that included interviews with Barendrecht residents was published on 16 February in a national newspaper. The article featured the headline: "No CO<sub>2</sub> under our backgarden!" The article involves a number of interviews with residents of Barendrecht and the neighbouring area of Carnisselande, one of which expresses her frustration at not being able to have a say in the plans, referring to a 'dictatorship'. Another resident infers that the subsidised storage will save Shell having to pay emission rights. This point also marks the first moment when a local leader of a political party becomes involved. Tessa Augustijn, of the Green (GroenLinks) Party, states her opinion that Shell and NAM are telling the residents of Barendrecht to "jump in the water and see if you reach the other side", given the nature of the demonstration project.

The newspaper article also refers to the volcanic Lake Nyos in Cameroon, when 1.6 million tonnes of carbon dioxide was released from the lake bed in 1986, suffocating 1,700 people. The article states: "Who considers the safety risks of underground storage of CO<sub>2</sub>, will be led to the disaster in Cameroon". However, from a scientific perspective, the basic geological aspects of Lake Nyos (CO<sub>2</sub> is released from a magma chamber), are not comparable to CO<sub>2</sub> injection and storage, and therefore the risks cannot be perceived as similar.

In April 2008, another article by a national newspaper was published with the headline: "Unrest grows in Barendrecht about CO<sub>2</sub> storage". This piece featured an interview with a resident of Barendrecht, who said: "From an investigation it seems that if the gas escapes everyone within the range of 16 to 23 km will be dead. That could be 10,000, more like 100,000 people, how can it [the project] be safe?" Another resident said: "The pipeline will sit very shallow in the ground. If some idiot drills through it, that sort of disaster can happen." This statement cannot be substantiated. The article also explained that a local politician from the Christian Democratic Party had been asking Shell for the official investigation reports for two months. Shell responded by saying that "these investigations will be integrated into the official environmental impact assessment report".

In November 2008, the responsible Alderman (Mr Zuurbier) of Barendrecht was interviewed by a local radio station. During this interview he announced: "There is a great deal of concern among the residents, concerns that I have to take seriously." In the same interview, the alderman also announced that the council was commissioning an independent investigation of the project. On 19 December 2008, on a different local radio station, it was declared that the council of Barendrecht had unanimously decided on the questions to be included in the municipal 'checklist', a list of actions and questions which much be fulfilled or answered before the Executive Board of Barendrecht would accept the project.

### 5.4 Actions taken to improve communication and information

The public information meeting on 18 February 2009 attracted between 1,000 and 1,100 people, and also a team from a national television channel who produced a three-minute item for the national news the following day. This item included an interview with the project manager of Shell, and also with an opposition leader from the local Christian Democratic Party. It was also reported that: "Neither Alderman Zuurbier nor the environmental authority, the DCMR, could win their [the local residents'] trust. Others had more sinister beliefs about the project, choosing to hold the opinion that CO<sub>2</sub> storage was going to earn Shell and the state huge sums of money." The report said that one opponent shouted: "Why don't you just tell us that Barendrecht is the cheapest option, because that's the truth."

For the opening of the public information centre on 17 March 2009, the Ministry of Housing, Spatial Planning and Environment (VROM) announced the opening with a press release on its website the previous day. According to the media analysis, the opening of the information centre was not covered by any local or national newspaper. The press release said: "During the information evening in February, it appeared that a number of citizens had questions about the advantages, disadvantages and risks of the project. The goal of the information point is to answer some of these questions." A particular initiative that did receive media attention (national newspaper) was the visits to the injection point that took place in May 2009.

### 5.5 Events related to legislation and the EIA procedure

In February 2009, the Environmental Impact Assessment (EIA) was approved and released to the public, after which stakeholders and individuals could submit responses. A local television channel covered the issue on its website, with a descriptive article. After the compulsory period provided to comment on the EIA, the council of Barendrecht

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published a press release on 27 April which said: "The most important concerns have not been addressed." One of the specific concerns of the council was that Shell had used model calculations to estimate the behaviour of CO<sub>2</sub> underground, and these were only calculations. Because of this, and several other reasons, the council said that the EIA was not sufficient to meet official judicial procedures.

### 5.6 Towards the final formal decision

#### 5.6.1 Additional research: location choice, human health and project safety

After the EIA was approved, and the independent commission declared the project safe, Minister Cramer (VROM) announced that the decision to go ahead with the project would be delayed until the beginning of 2010. This news was released in a national newspaper article on 22 June 2009. The reason for the delay according to the newspaper was that Minister Cramer wanted to consider the necessity and usefulness of the project. The newspaper also highlighted that the decisions were originally planned for the end of 2009, but had now been further postponed.

Shortly after the decision was postponed, Minister Cramer sent a letter to the council of Barendrecht explaining that additional investigation would be conducted regarding the suitability of alternative locations for the project. A press release from the ministry of VROM on 26 June 2009 explained that the Ministers Cramer (VROM) and Van der Hoeven (Economic Affairs) recognised that a number of people still did not understand why the location at Barendrecht had been chosen, and they felt this was understandable. Because of this, an investigation would take place comparing the location with other potential storage areas in the Netherlands. It was stated that no decision would be taken until this report was complete. The Ministers also said that the project has had an awkward beginning, and this would be taken into account for the remainder of the process.

On 29 October 2010, a press release by the Ministry of VROM said that several investigations regarding the Barendrecht project had been completed, and that reports were now publicly available. One of the reports produced by the Dutch research institute TNO focused on alternative storage locations for CO<sub>2</sub> in the Netherlands, a report on which the Ministers had previously placed a great deal of emphasis. On 3 November, an article was published by a national newspaper with the headline: "Eleven alternative storage locations for CO<sub>2</sub> storage Barendrecht." The opening sentence said: "In the Netherlands there are 11 locations where CO<sub>2</sub> storage can be done safer than under Barendrecht." This was not an official conclusion of the report made by TNO. What the newspaper was referring to was the comment (included in the article) from Alderman Zuurbier of Barendrecht, that the gasfields that would be used for CO<sub>2</sub> storage had the thinnest layer of clay 'cap rock' of all the locations, and that the Barendrecht location has been chosen only because of financial reasons.

#### 5.6.2 Increasing local opposition

In March 2009 a protest march was organised by the local branch of the local Green (GroenLinks) Party. The march was covered by a national newspaper, with an article on 21 March entitled: "Hundreds protest against CO<sub>2</sub> storage Barendrecht. Before the protest march, a member of the Green (GroenLinks) Party handed the Mayor of Barendrecht approximately 750 letters of complaint about the project. With the establishment of the activist group, Stichting (foundation) 'CO<sub>2</sub> is Nee' (CO<sub>2</sub> is no), the efforts of this group featured prominently in a local newspaper *de Schakel*. One of the most bizarre actions organised by the group was featured on the front page of the newspaper on 5 November 2009, with the title: "Guinea pig race against CO<sub>2</sub>". The group had previously chosen the guinea pig as its mascot, and had organised the event at a local pet store for the guinea pig owners of Barendrecht. On 10 November 2009, members of the group were interviewed on regional radio, and called for the Ministers Maria van der Hoeven (Economic Affairs) and Jacqueline Cramer (VROM) to make a final decision on the project.

#### 5.6.3 Final decision

On 18 November 2009, the Ministers of Economic Affairs and Housing, Spatial Planning and Environment (VROM) agreed to continue with the CO<sub>2</sub> storage project at Barendrecht. The story was covered by at least three national newspapers. On the same day as the news release from the Ministers, the Council of Barendrecht released its own announcement stating that the "Dutch cabinet has been taken hostage by Shell, as Shell has said they will only start [CCS] project in Barendrecht and nowhere else. The Ministers have slammed the decision in the faces of the Provincial Council, and have ignored all the conclusions of the reports, and the will of the inhabitants of Barendrecht." Also on 18 November, in an article entitled: "Greenpeace not happy with CO<sub>2</sub> storage", a national



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newspaper had spoken to a representative of Greenpeace who had said that the people of Barendrecht were correct to be concerned about their safety, and that "The system [CCS] is only possible with huge governmental support, not only in the demonstration phase but also afterwards."

Shortly after the announcement of the final decision, on 1 December the Ministers attended a meeting in a local theatre, with the intention of explaining their decision to the community. A report of the event in a national newspaper carried the headline: "Ministers defy angry and scared citizens". The paper reported that the Ministers had to cope with a great deal of resistance from the audience, not only questions and voiced opinions, but also angry shouting and insults.

### 5.7 The discussion continues ...

In early January 2010, the Barendrecht CO<sub>2</sub> project continued to appear in local and national newspapers. With the formal decision to proceed with the project made by the Ministers in November 2009, emphasis was placed on the acceptance of the project by the national parliament. On 26 January it became known that the majority of the Dutch parliament were in agreement with the decision, and this was reported in a national newspaper under the headline: "Parliament supports Barendrecht decision". The article also stated that: "The test in the South Holland province is meant to be a precedent to mass CO<sub>2</sub> storage in the north of the Netherlands."

In addition to coverage of the judicial proceedings of the project in the national parliament, the general discussion of CCS in the Netherlands continued. Various local newspapers published reports of potential CO<sub>2</sub> projects in other parts of the country, and the reactions of local officials to such suggestions. One local newspaper published an article with the headline: "Shock of suggestion of CO<sub>2</sub> storage in Grijpskerk", and another had the headline: "CO<sub>2</sub> in the Drenthe unspeakable". Greenpeace also published a report in February, stating that a survey had revealed that the building of new coal-fired power plants with CCS was not welcome in the north of the Netherlands, and would lead to political unrest.

On 18 February 2010, the Dutch cabinet broke down over a disagreement regarding withdrawing troops from the war in Afghanistan. The government decided that 'structural decisions' (which could not be reversed) about the Barendrecht project would have to be postponed until a new cabinet was formed (due after elections on 9 June 2010). A local newspaper reported on the subject: "After the fall of the cabinet CO<sub>2</sub> storage now in the freezer". Preparation for the required legislation of the project continued (these were not considered 'structural decisions'). After the project had been accepted to become part of the Crisis and Economic Reform Law, a parliamentary decision was reached to continue with the project. The same local newspaper reported on 15 March: "Sorted: CO<sub>2</sub> in Parliament". The article continued to read: "The underground storage of CO<sub>2</sub> in Barendrecht looks to have been arranged with a trick." The case appeared suddenly on the parliamentary agenda on 16 March. In an interview with the opposition leader of a local political party, it was stated that this was 'not fair play'. An alderman of Barendrecht said in an interview that he felt 'fooled' by the Cabinet.

On 28 March 2010, a Dutch national television program (Zembla) aired a documentary about the Barendrecht project, using the title: "CO<sub>2</sub> bomb under Barendrecht". It said: "CO<sub>2</sub> storage is presented as the solution to the climate problem. The Netherlands must reduce its CO<sub>2</sub> emissions by 20 per cent by 2020 and so must rush. Moreover, storing CO<sub>2</sub> in used gasfields can earn much money. Everything is being done to arrange a test under the residential area of Barendrecht." In the program, Barendrecht residents opposed to the project were interviewed as well as some external experts who claimed that the project should not take place. Resigned Minister Cramer and a spokesperson of Shell were also interviewed. The documentary also claimed that a critical report by a university professor was held back from the decision process, and this story was covered separately in a national newspaper with the headline: "Debatable report about CO<sub>2</sub> storage – under the mat". After the program, questions about this report were also raised by members of parliament. The Zembla documentary had taken a notably negative stance towards the project at Barendrecht, and would have had significant outreach given it was broadcast on national television at peak time (9.50pm).

On 21 April 2010, the Barendrecht project was again debated by the Dutch Cabinet. A national newspaper carried the report with the following headline: "Cabinet: until now no reason to block CO<sub>2</sub> storage project". It was reported that by majority vote, the cabinet saw no reason to withdraw the project, however the final decision will be made after the national elections in June 2010. Preparations for the project could in any case continue. Local opposition to the project remains, and on 1 June a local newspaper announced a symposium entitled: "CO<sub>2</sub> under Barendrecht. That's not going in", that would be held the following day.

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### 5.8 Concluding remarks

The media generally took the role of event following rather than active opinion former. This is primarily so for national newspapers, which in general reported on major events and important political decisions, and hence played a neutral role in discussion. Most local newspapers sided strongly with local opposition parties, and one local newspaper even printed a petition form, which could be filled in and cut out. Nevertheless, a number of media reports could be regarded as opinion forming. An article was published in the popular scientific magazine *Nature, Science and Technology* in March 2009. It carried the headline: "Sleeping with the windows closed", and also included a computer-generated image of a CO<sub>2</sub> 'blowout' in the town of Barendrecht. In addition, the Zembla documentary (see above) can also be regarded as subjective material. The article headed: "No CO<sub>2</sub> under our back garden", one of the first published on the project, in February 2008, draws on the natural CO<sub>2</sub> disaster in Cameroon in 1986. Given that the scientific details of the Barendrecht project and this natural event are fundamentally dissimilar, the reason for this report is unclear, however it could lead to the formation of incorrect opinions by readers.

The language used by the media to describe the project is worth attention. Local and national newspapers continually refer to the project as a 'test'. Although a full analysis of all the media attention has not been conducted, it is understood that the project is referred to as a 'demonstration' rather than a 'test' by the project initiators. The term 'demonstration' was used in the tender procedure of the national government and refers to the demonstration of the procedural and legal issues related to CCS projects in Dutch context. It was however often interpreted by project opponents as 'demonstration of technologies'. The project is also referred to as an 'experiment' by project opponents, but not directly by media.

## 6 The larger debate about the project

This chapter focuses in more depth on the debate between the stakeholders and the communication towards each other and the community in relation to the Barendrecht CCS project between the end of 2007 and June 2010. It covers the development of the debate, the reactions of the project developers to the opponents' arguments and other events or circumstances that influenced the opinions and positions of stakeholders.

### 6.1 Development of the debate

The debate between the opponents and proponents of the project began directly after the project was presented to the local community in 2008. The local stakeholders (mainly municipal government) opposed the project from this moment onward. Official proponents of the project are the project developers and national government. During the debate, other stakeholders became involved and were considered as being opponents (e.g. citizens group No to CO<sub>2</sub>, experts who openly criticised the project) or proponents (e.g. researchers claiming that CCS in general or in this particular project is safe).

Between 2007 and June 2010, opposition to the project increased, became more formalised and better organised. Starting in 2008 with opposition and critical questions from some local politicians, later that year the whole municipal government formally opposed the project. This position was taken by the Provincial Government in 2009. Increased communication from the opponents to other stakeholders and the public entrenched the debate in 2009. During a 'time-out' period announced by the national government (on the advice of the EIA Committee) to perform further research and 'cool down' emotions, the so far only government opposition was extended with a local community initiative to oppose the project. The formal final decision of the national government to continue with the project and growing attention for the project on national television (and other media) increased discussion and opposition on a national scale (in Parliament and the community) in 2010.

### 6.2 Reactions from project developers to arguments of opponents

From the desk research and interviews with stakeholders we learn that the project developers and other proponents reacted with several actions to the arguments used by the opponents. Most of these actions were related to performing additional research or attracting external experts to the debate, increasing information supply or adapting the project to local demands. These reactions however did not visibly change the opinions of the opponents or decrease local opposition. For example:

- Shell and the national government performed *additional research* on the location for CCS demonstration projects, the risks for public health and the effects on the environment. These were reactions of the project developers to

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the arguments of the local opponents that Barendrecht would not be the best location (but the cheapest), that it would not be safe and that it was unclear what the effects on public health and the environment could be. The outcomes of these investigations were that the gasfields in Barendrecht are technically the best onshore location for a CCS demonstration project and that no health, safety or environmental boundaries would be reached. These outcomes however did not decrease local opposition.

- The project developers reacted to many questions from the community about the project, the procedures, the risks, the planning, why CCS is needed by *providing more information* about the different aspects of the project via different channels (e.g. expert meetings, personal visits of Ministers, information centre). This increase of information supply did not change the opinions of the opponents.
- The reaction of the project developers to worries about the effects of the project on property values was to start the set up of compensation measures for property value decrease. Although this *adaptation of the project to local demands* might have changed the opinions of some individuals in Barendrecht, it did not affect the opinions of the municipal government or other opposing stakeholders.

The reactions to the arguments of the opponents provided additional answers and discussion about the project. Most of these reactions were related to additional research and led to numbers and facts that according to the proponents illustrated that the arguments used by the opponents were not valid (any longer). But the local opposition did not decrease. This remaining resistance was explained by the project developers as 'emotions', 'incapability to understand the technical aspects' and 'irrationality' of community members. Seeing the opponents (mainly local community members) as 'emotional' and 'irrational' seems to have been the justification used by project developers to avoid cooperation with the local community.

### 6.3 Other events and underlying circumstances influencing the debate

The limited changes in the opinions of the project opponents after the actions and reactions of the project developers to their arguments, suggest that other elements have a larger influence on the debate. The stakeholders interviewed referred to many other underlying events and circumstances which have influenced the debate, their opinions about the project and the relationships between them. These are mostly not named as arguments in the debate or in the communication about the project and are thus often not known by others stakeholders or the outside world. For a full insight into the debate around the CCS project in Barendrecht, these underlying events and circumstances are essential.

One of the circumstances influencing the opposition of the local community is that they were *not involved in the design or planning* of the project in an early phase. The moment Shell presented the project plan to the community, it was already at a progressed stage of development. Technology, location, infrastructure, project partners, project planning etc were already decided. The community was confronted with (maybe even overwhelmed by) the plans and felt little space for manoeuvre. They could not participate in the project or have their ideas or opinions incorporated. The community felt that the only possibility they had was to accept or reject the proposed plan. Due to the lack of participation and involvement in the process, they felt little need to accept a project with such a large (negative) local impact.

The *order in which decisions were taken* in the project process also influenced the positions of the stakeholders. The EIA took place after the allocation of a grant from the national government to the project. The local stakeholders interpreted the fact that the grant was allocated as a signal that the national government had a strong preference for this project to take place at this location. This created the feeling among local opposing stakeholders that they were ignored and not listened to and that the EIA would not be a neutral and fair process.

Focusing on the initial rejection of local politicians and other community members, several interviewees refer also to the *lack of attention for local benefits* in the presentation of the project. The benefits presented (such as gaining knowledge and technology improvement) were benefits for the project developers. No local benefits for the community were incorporated in the project plan. Simultaneously the community strongly felt that they would be exposed to the risks of having CO<sub>2</sub> under their territory. The idea of having no benefits but high risks influenced the rejection of the project.

*Lack of sufficient attention for the context of CCS* also encouraged the community's rejection of the project. This context of climate change, the role of CCS in fighting climate change, the European and national policies related to CCS and climate change, were not included (or detailed enough) in the presentation of the project. This context would have explained why technologies such as CCS are developed, and would have shown the advantages and

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benefits of this project on a larger scale (for the Netherlands, Europe and the rest of the world). The lack of context led to the community being unable to view the project from a broader perspective, and hence focused on the local consequences.

Another circumstance influencing the relations between the stakeholders negatively and increasing the local opposition which was identified by local stakeholders in the interviews, were the *changes in related regulations*. In 2009 (after the project was presented to the community and local opposition was growing) the so-called National Coordination Regulation took effect. This regulation shifted all decision-making authority in relation to local projects with national relevance (including CCS projects) to the national government. The local politicians in Barendrecht felt that this regulation forced them to accept the project because their influence on local permission decisions was overruled.

These underlying circumstances and events with a negative impact on the debate, the positions of the stakeholders and their relationships can be summarised as a lack of involvement of stakeholders in the project design and process and too little attention for the context in which the project is taking place (a densely populated area, strongly opposing local politicians). Not surprisingly, these are very much consistent with conclusions of existing research<sup>11</sup> about the acceptance of projects by communities and stakeholders. These state that to create more societal acceptance for projects it is important to involve the needs, expectations and demands of (local) stakeholders and the local context in the planning and design of the project and throughout the whole project process.

In sum, in observing the debate between the stakeholders in Barendrecht, the growing impasse between the opponents and project developers and the underlying events and circumstances influencing the debate, it is likely that opposition to the project has increased due to the absence of an effective project process in which all stakeholders are involved in an early phase and in which mutual trust is built by openness and transparency.

## 7 Conclusion and lessons learned

This case study report outlines the context of the Barendrecht CCS project, the defining moments in the project history between the end of 2007 and June 2010 according to the stakeholders, the debate between the stakeholders, and the underlying events and circumstances influencing the opinions and positions of the different stakeholders.

From this we can conclude that the project has so far been delayed mainly due to increased (local) opposition. The previous chapters also show that this increased opposition can be largely explained by shortcomings in the communication between stakeholders and to the (local) community. This concluding chapter summarises these shortcomings and how these could have been overcome and translates them into lessons for future CCS project developers.

### 7.1 Shortcomings in the communication

Communication plays an important role in the process of projects such as Barendrecht CCS. The debate presented in the previous chapter and the underlying events and circumstances that influenced this, illustrate that shortcomings in the communication can be a crucial factor in the debate and the growing opposition of stakeholders and the public. Below we summarise these shortcomings, making a distinction between the communication between stakeholders and the communication towards (and engagement of) the public.

Based on desk research and the stakeholder interviews, the following characteristics of the communication between the stakeholders increased opposition to the project:

- The national government allocated a grant to the project to take place in Barendrecht via a tender procedure. No local stakeholders were consulted or involved in this process. The tender procedure did not include consultation of stakeholders or investigation of opinions of local stakeholders towards a CCS demonstration project in their community. If this would have been done, the potential for local opposition might have been noted and taken into account in the further project process and project design and in the presentation of the project to the community.

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<sup>11</sup> See for example the outcomes of the research performed in the project EU-research project 'Create Acceptance' ([www.createacceptance.net](http://www.createacceptance.net))

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- In the initial phase, no discussion or dialogue took place between the project developers (Shell and the national government) and the community. Shell presented the project to the community as a final plan. Even between the project developers (Shell and the national government) no open dialogue existed in this initial phase except from the formal tender procedures. This led to a situation in which the project was presented and interpreted as a project of Shell alone and not as a mutual project of different stakeholders. It increased the 'us and them' feeling and made Shell an easy target for opposition.
- After the local opposition became clear, a dialogue between stakeholders was set up via the BCO<sub>2</sub> (administrative consultation group). Members of the group were however only the public parties involved in the project. Shell or other industrial parties, NGOs, research institutes or community groups were not involved. Although the consultation group did improve communication between the different levels of government, it did not bring the viewpoints of the members closer to each other or decrease local opposition to the project. The consultation group could have been more successful if it would have been established earlier in the project process (before the project was presented to the community), when stakeholders had not taken strong positions towards each other and the project.
- The debate between the stakeholders took place mostly in public via formal procedures, the BCO<sub>2</sub>, organised events, press releases or through the media. Little (informal) direct contact existed between the project developers and opponents. This made it difficult to reconsider or add nuances to earlier expressed opinions. The relationships between stakeholders could have been better if more direct contact between them was established or organised (especially in the beginning of the project, when stakeholders had not taken their positions). This could have been done via a project process (led by a 'neutral' process manager) in which mutual trust and openness was created about the project and the considerations of the different stakeholders. Within this process, the project could have been further designed to take into account the needs, values and demands of the different stakeholders. Although the outcome of this process (implementation of the project) might not be consistent with the wishes of all stakeholders, the fact that they had been involved in an open, fair and transparent process in which stakeholders trusted each other, would limit their resistance to the project.
- Through various institutional procedures, the national government gradually withdrew executive decision-making abilities from the municipal government. These changes in procedures (which were often not announced to the municipality in advance) increased the distrust in the national government by the local stakeholders and increased their opposition to the project. When these changes in procedures would have been discussed openly with the local stakeholders (especially with the municipal government) in advance (for example via a project process as described above), these would probably have had less negative impact on the debate.

When focusing specifically on communication towards the public (the community), the following characteristics increased local opposition:

- When the project was introduced to the local community, the reasons why CCS is needed, the link to national and international policy on climate change and CCS, the effect of CO<sub>2</sub> emissions and the choice of this location, were not explained well enough. The public had difficulties understanding why the project had to take place and why it should be located in their community. The project was perceived as an idea from Shell. If more attention would have been given to these contextual aspects and the involvement of the national government of the project in the initial phase, the public might have interpreted the project differently and accepted it better.
- The initial presentation of the project and the procedures was too complicated for the public to understand. It raised many questions and was conceived as too technical. A better adaptation of the presentation to the demands and needs of the public could have overcome this.
- Shell and the national government were not considered trustworthy information suppliers by the community because they were perceived to benefit from the continuation of the project. The information they provided and the risks was not trusted nor were the outcomes of research performed by others funded by Shell or the government. The project developers could have been perceived as more trustworthy by the public if the project process would have been more open and transparent from the beginning. If the project developers would have shared their ideas, uncertainties, underlying reasons and values and communicated about the submission of the project for the tender procedure, this could have created more trust in the project developers and the information they provided.
- Opponents and proponents of the project both communicated to the residents of Barendrecht. They provided separately from each other information about the project, the aspects raised in the debate and gave arguments

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for the public to be in favour of (the project developers) or against (the opponents) the project. There were almost no communal communication efforts in which opponents and proponents cooperated with each other. This lack of communal communication increased the idea within the public that you had to be in favour or against the project and that a more nuanced point of view was not possible. If more mutual communication efforts would have been made in which the project developers as the opponents would have cooperated, more nuance might have been brought into the debate.

Shortcomings in the communication led to opposition to the project, which increased throughout the project process. This led to delays in the project planning, the current impasse between stakeholders in which opinions are formulated that leave no room for manoeuvre or for an open dialogue and the still possible cancellation of the project.

Based on the debate about the project and the negative effects of this on the project process and planning, lessons can be learned for future CCS project developers worldwide. These lessons relate to the communication and relationships between stakeholders during the project process and to the communication with the community and public engagement.

### 7.2 Lessons learned about communication in CCS projects

From the Barendrecht CCS project, several lessons can be learned about communication between stakeholders and with the community. These lessons are especially relevant for future CCS project developers. They include:

- All stakeholders, including the community and local stakeholders, should be involved early in the project process to create mutual trust and commitment to each other and the process of developing the project together.
- The values, needs and opinions of all stakeholders and the community should be defined and taken into account in discussing possible project designs. This also implies that there is not just one solution put forward by the project developer without leaving room for adaptation. Compromises must be sought and incorporated in the project design.
- Regular formal and informal contact should take place with all stakeholders to discuss changes in the project, the process, the procedures, the needs or viewpoints of the stakeholders or in the context (e.g. legal changes).
- Stakeholders should not only discuss the actual CCS project, but also available alternatives and the larger context of CCS including why CCS is needed (climate change), what other CCS projects exist, what policies exist nationally and internationally and what this project contributes to the larger context.
- Communication towards the community (the public) must answer the specific needs of the community. These needs must be investigated before starting the communication. Based on the outcomes of this investigation the right communication materials, channels and senders can be chosen. From the Barendrecht project, we can learn that the following elements should be investigated:
  - The existing knowledge of the target group about climate change, characteristics and effects of CO<sub>2</sub>, existing policies on CCS and about the specific project.
  - The need (and level of detail) for information about technical, economic (for example property values), environmental elements of the project.
  - Existing local (and national) discussions or debates that can be related to the project.
  - The image and position of stakeholders involved and their (historical) relation with the community.
- The sender of the message must be trusted by the community. Any message from a distrusted stakeholder will be distrusted by the public.

## Case study on the planned onshore carbon dioxide storage in Barendrecht, the Netherlands

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### Interviews

Between 5 October and 23 November 2009, a total of 10 interviews were held with representatives of the following stakeholders of the Barendrecht CCS project:

- National Taskforce CCS
- NAM
- Shell
- Municipal government
- Local political parties (2)
- DCMR (2)
- Information centre
- Greenpeace

### Websites

Many websites provide information about the project and the opinions of stakeholders. These websites also provide links to additional resources such as the EIA documents, brochures, presentations, reports of the research performed, press releases and media articles.

#### Websites from stakeholders

[www.shell.nl](http://www.shell.nl)  
[www.dcmr.nl](http://www.dcmr.nl)  
[www.barendrecht.nl](http://www.barendrecht.nl)  
[www.d66barendrecht.nl](http://www.d66barendrecht.nl)  
[www.cdabarendrecht.nl](http://www.cdabarendrecht.nl)  
[www.barendrecht.groenlinks.nl](http://www.barendrecht.groenlinks.nl)  
[www.infopuntco2opslag.nl](http://www.infopuntco2opslag.nl)  
[www.senternovem.nl/taskforceccs](http://www.senternovem.nl/taskforceccs)  
[www.vrom.nl](http://www.vrom.nl)  
[www.rijksoverheid.nl](http://www.rijksoverheid.nl)  
[www.rotterdamclimateinitiative.nl](http://www.rotterdamclimateinitiative.nl)

#### Websites of local and national media and blogs

[www.deschakelbarendrecht.nl](http://www.deschakelbarendrecht.nl)  
[www.deweekkrant.nl/het\\_zuiden\\_barendrecht](http://www.deweekkrant.nl/het_zuiden_barendrecht)  
[www.rijnmond.nl](http://www.rijnmond.nl)  
[www.volkskrant.nl](http://www.volkskrant.nl)  
[www.detelegraaf.nl](http://www.detelegraaf.nl)  
[www.fd.nl](http://www.fd.nl)  
[www.retecool.com](http://www.retecool.com)  
[www.vkblog.nl](http://www.vkblog.nl)  
[www.clubvan30.nl](http://www.clubvan30.nl)

#### Other websites

[www.co2afvangenopslag.nl](http://www.co2afvangenopslag.nl)  
[www.algemene-energieraad.nl](http://www.algemene-energieraad.nl)  
[www.createacceptance.net](http://www.createacceptance.net)



## Appendix A – Interview guide

### Interview Guide for International Comparison of Public Outreach Practices Associated with Large-Scale CCS Projects

Discuss informed consent with participant and ask to sign and return letter. Notify participants that they can stop the interview at any time. Notify and receive consent from participant that the interview will be audio-recorded.

1. Tell me a little about you, your prior experience and what brought you to the project?
2. [For those related to project INDUSTRY, GOVERNMENT, RESEARCHERS ETC]  
What was your specific role in relation to the project XX? Why did you get involved in that role?

OR

- [For others in the community: LOCAL COMMUNITY NGOs OTHERS ETC]  
How and when did you first hear about the project?
3. How would you describe your relationship to the local community?
    - a. If multi-generational, going how far back?
    - b. Do you own, rent, work in the subject community?
    - c. How long have you been in the community?
  4. How would you describe/(characterize) the/your local community?
    - a. Close knit, rural, urban, in decay, vibrant, etc - can you provide some examples that demonstrate this?
  5. What do you know about sequestration/carbon capture and storage - what is your level of expertise, experience with CCS (country specific)?
  6. Did you know about sequestration/carbon capture and storage before or after learning about the project in your community? (LESS LIKELY TO BE ASKED OF PROJECT PERSONNEL, GOVERNMENT ETC)
  7. What were the benefits that the developers communicated about the project?
    - a. How were they presented?
  8. What do you think were the benefits of the project to the/your community?
  9. How did the community perceive the benefits?
  10. What do you believe were the main questions/issues raised by stakeholders in the community?
  11. What is the community perception of the project developer?
  12. Was community engagement a project priority? How was the community engaged? What information was presented about the project?
  13. Can you think of an event or circumstance when things related to the project and how the public viewed it went very well?
  14. Can you think of an event or circumstance when things related to the project and how the public viewed it went poorly?
  15. Was there a particular event that marked a change in the level of public acceptance towards the project?
    - a. What happened?
    - b. [If INTERVIEWEE IS RELATED TO PROJECT]: How did you respond?
  16. What other information would stakeholders have liked to have heard or seen?
    - a. Were there any unanswered questions?

As participant if they are willing to provide educational background information, how long lived in community, and other information they believe might be important to understanding their role in the community.

## Appendix B – Data used for media analysis

2008

| Date        | Source               | Topic                                   | Headline  | Summary   |
|-------------|----------------------|---|---|---|
| 5 February  | National newspaper   | Barendrecht CCS Project: Announcement   | For the first time - underground CO <sub>2</sub> storage.         | The almost empty gas fields at Barendrecht will be probably used to store CO <sub>2</sub> . The Dutch Oil Company (NAM), Shell and gas transport company OCAP are responsible for the project. It will be the first time CO <sub>2</sub> will be stored underground.  |
| 16 February | National newspaper   | Barendrecht CCS Project: Public opinion | People of Barendrecht: "No CO <sub>2</sub> under our backgarden!" | The underground storage of CO <sub>2</sub> means less greenhouse gas emissions in the atmosphere, but what if you live above the storage area? "Have we no say in this small dictatorship?" Resident Jeannette Michels is disgruntled at the plans to store CO <sub>2</sub> under the recently built neighbourhood in Barendrecht. Residents are asking the question why a potentially dangerous project is being planned for their highly populated family neighbourhood. The local leader of political party Groenlinks Tessa Augustijn exclaims that its like Shell and NAM are telling them to "jump in the water and see if you reach the otherside". given the demonstrative nature of the project. NAM reacted by saying that CO <sub>2</sub> is often injected into oilfields to increase pressure, and is totally safe. References are made to the leakage of CO <sub>2</sub> from a natural underground lake (lake Nyos in Cameroon) that killed 1,700 people. The government of Barendrecht was informed of the project this week, and will wait for the environmental impact assessment before making a decision. |
| 3 April     | Press release - VROM | National CCS policy                     | Cramer: "The Netherlands should be a frontrunner in CCS."         | The Dutch Minister of the Environment, Jacqueline Cramer has said that the Netherlands should be a frontrunner in the development of carbon capture and storage.  |
| 8 April     | Press release: VROM  | National CCS policy                     | Taskforce for Carbon Capture and Storage officially announced     | Minister Cramer of VROM officially announced the Taskforce Carbon Capture and Storage. The Taskforce will be responsible for the regulations of CCS in the Netherlands, the European regulation of CCS, the storage and transport of CO <sub>2</sub> and the demonstration projects.  |
| 8 April     | National newspaper   | National CCS policy                     | Shell wants government support for CO <sub>2</sub> project        | The chairman of Shell Jeroen van der Veer stressed yesterday that the regulation for CCS in the Netherlands has large gaps. Liability of the storage is a major issue for Shell, and they want to know who will be responsible should a leak occur.   |

2008

| Date      | Source                             | Topic   | Headline   | Summary  |
|-----------|------------------------------------|---|--|--|
| 18 April  | Newsletter - Energy sector         | Barendrecht CCS Project: Expert opinion       | CO <sub>2</sub> Expert: "Rather no CO <sub>2</sub> storage at Barendrecht."      | A CO <sub>2</sub> expert, Dr Cozijnsen has stated that even though underground storage of CO <sub>2</sub> is considered safe, to avoid public unrest and jurisdictional procedures it would be better to test the concept in a less populated area. He feels that the unrest felt by the inhabitants of Barendrecht is already reason enough to move the project to the North of the Netherlands.  |
| 21 April  | National newspaper                 | Barendrecht CCS Project: Public opinion       | Unrest grows in Barendrecht about the CO <sub>2</sub> storage project.           | The inhabitants of Barendrecht are not satisfied with the proof of project safety provided by Shell and NAM. A member of the public of Barendrecht states that "CO <sub>2</sub> is dangerous in high concentrations. The don't know what will happen if something goes wrong." "Investigations have shown that if the gas escapes that everybody in an area of 16 to 23 kilometers will be dead." Last week Shell and NAM provided an information evening about the project. Local leader of political party VVD, Vera Spruit, mentions that they are preparing judicial steps to move against Shell and NAM because they were not invited to talk about the plans before they were announced. |
| 3 June    | Press release: Barendrecht council | Barendrecht CCS Project: Judicial proceedings | Barendrecht: "Have not said no to the project yet."                              | The council of Barendrecht have still not given a definitive answer whether to support the storage of CO <sub>2</sub> . The members will wait until they have more information about what the exact plans are. The State was unanimous in announcing that in considering all the information for the project consent, the concerns of the citizens of Barendrecht will come first.   |
| 11 June   | National newspaper                 | Barendrecht CCS Project: National policy      | Cramer: "May be we would rather not have underground storage under Barendrecht". | The Minister of the Environment Jacqueline Cramer, has doubts about the project because the area is so densely populated. However she has also said that it would be a great shame if the project didn't go ahead because of social commotion.   |
| 27 June   | National newspaper                 | Barendrecht CCS Project: National policy      | Decision of underground storage in Barendrecht is delayed.                       | A national newspaper reported yesterday that Minister Cramer has delayed the consent decision of the Barendrecht project. The decision was initially planned for the end of June 2008, but has no been delayed until 'this summer'. The reason for the delay is unclear.   |
| 16 August | National newspaper                 | Barendrecht CCS Project: National policy      | Decision of CO <sub>2</sub> Project Barendrecht delayed until later this year.   | The decision will now be taken during sometime this Autumn' to fill the two nearly empty gas fields in Barendrecht. The decision, which was originally planned to be announced in April 2009, was first delayed until 'sometime during the summer', and has now been delayed a second time until Autumn. The government has stated that there is no special reason for the delay. There is much unrest in the town of Barendrecht.   |

## What happened in Barendrecht?

2008

| Date        | Source                                       | Topic   | Headline   | Summary   |
|-------------|--|---|--|---|
| 5 September | Press release: National research institution | CCS: Public opinion                           | Citizens doubt whether CO <sub>2</sub> storage is a good solution.                       | Citizens have big doubts about CO <sub>2</sub> storage procedure, they are not sure whether it is the right solution for the climate problem and are concerned about the risks of leaking and ground instability. This result has come from an investigation by the Rathenau Institute, which was offered to the energy ministers of certain Dutch political parties yesterday. The investigation reveals that 'clean fossil' was viewed by many participants in the investigations as false advertising.   |
| 4 October   | Press release: Provincial government         | Barendrecht CCS Project: National policy      | Governments look to cooperate on Barendrecht decision                                    | At the CO <sub>2</sub> storage project in Barendrecht, a careful and clear procedure for the area is being followed. The state, province and council will work together so that all the required information regarding safety and the environment will be provided, and that good communication with the inhabitants will be organised.   |
| 18 October  | National newspaper                           | Barendrecht CCS Project: Information evening. | Shell and VROM reassure inhabitants about CO <sub>2</sub> storage                        | During an information evening for the town of Albrandswaard, Shell and the Dutch ministry of the Environment (VROM) have reassured the inhabitants about the plans of CO <sub>2</sub> storage in Barendrecht. The most pressing questions were about what would happen in the CO <sub>2</sub> would leak. Annemarie van der Rest stated that "the cap rock that now holds the natural gas will also hold the CO <sub>2</sub> ", and when asked about the risks to housing, "at the deepest point, around 1700m, the soil may move around 1 cm".   |
| 27 November | National radio - website report              | Barendrecht CCS Project: Public opinion       | Barendrecht not happy with CO <sub>2</sub> storage project                               | The people of Barendrecht will not readily accept Shell putting CO <sub>2</sub> under their ground. According to the Alderman Simon Zuurbier, there is great concern amongst the people, a concern that he must take very seriously. Personally, the Alderman would rather see the CO <sub>2</sub> be stored offshore. The council are having an independent investigation of the Shell plans. If the report says the storage is safe, then the council will agree with the project, said the Alderman. On Thursday it was made known that Shell would receive millions of Euros to experiment with CO <sub>2</sub> storage under the ground. |
| 11 December | National newspaper                           | Barendrecht CCS Project: Public opinion       | CO <sub>2</sub> Storage: Barendrecht residents want the value of their houses guaranteed | Barendrecht residents want to have a fund setup so that any drop in value of their house can be compensated. The leader of the local political party the CDA, Corrie Righolt-Dam, insists that this fund is organized before any storage activities take place. "Experts have said that there could be depreciation in the value of the houses, then we want the money available. It doesn't matter if Shell or the government contributes it." The compensation  |

2008

| Date        | Source                        | Topic                                   | Headline  | Summary  |
|-------------|-------------------------------|---|---|--|
| 15 December | National newspaper            | CCS in the Netherlands                  | So, CO <sub>2</sub> storage is not dangerous, Minister Cramer | <p>fund is one of the conditions for Barendrecht allowing the project to gain consent, as well as the question of who is responsible in case of leakage, being adequately answered.</p> <p>"A disaster cannot be ruled out. There only has to be one thing to go wrong, and a disaster could take place." Said Rob Biersma, editor of a national newspaper NRC-Handelsblad. Mr Biersma was reacting to minister Cramer's (VROM) statement that "CO<sub>2</sub> is no dangerous gas. We breath it out." Biersma warns that according to the American Environmental Protection Agency (EPA), carbon dioxide is not just a suffocating gas, but also has paradoxical and active physiological effects. In the blood 4% makes the breathing deeper, but a concentration of above 17% can kill most people within a minute. In between can lead to dizziness and unconsciousness.</p> |
| 16 December | Local newspaper (Barendrecht) | Other CCS projects abroad               | Shell: No leak at Sleipner.                                   | <p>Shell has responded to claims that an onshore CO<sub>2</sub> storage in Norway, known as Sleipner, is leaking, as incorrect. The claim has been used by the council as an argument against the project at Barendrecht. Shell, TNO and the company responsible for the project in Norway, Statoil, have said that claims of leakage are unfounded. The project in Norway will use the same technological procedure as in Barendrecht.</p>  |
| 19 December | Local television              | Barendrecht CCS Project: Public opinion | Barendrecht decide on question checklist                      | <p>The council of Barendrecht has unanimously decided on a question checklist for the project coordinators. The council wants all the questions to be answered before the project is granted consent. The main subjects of the questions revolve around, safety, risk analysis, geological analysis, depreciation of houses, legal procedures and monitoring.</p>  |

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2009

| Date        | Source                           | Topic                                       | Headline  | Summary  |
|-------------|----------------------------------|---|---|--|
| 28 January  | Greenpeace briefing              | Other CCS projects abroad                   | CO <sub>2</sub> storage in the North Sea is leaking process water.  | The Utsira field in the North Sea is leaking process water. The significance of this is that it is the same field which as demonstration for CO <sub>2</sub> storage is running, the so called Sleipner project. 1 million tons of CO <sub>2</sub> has already been injected, however this has currently been stopped. The question has been raised that, if process water can unexpectedly leak, can the same eventually happen with CO <sub>2</sub> .  |
| 5 February  | National newspaper               | Barendrecht CCS Project: Academic opinion   | Expert is negative about CO <sub>2</sub> storage in Barendrecht     | An expert appointed by the council of Barendrecht has stated that when viewed scientifically, there is currently too much uncertainty about underground CO <sub>2</sub> storage. A professor of hydrology, Cees van den Akker, finds the underground storage of CO <sub>2</sub> at Barendrecht not safe enough. He also mentioned that a government report published two years ago regarding suitable places for CO <sub>2</sub> storage in the Netherlands, advised against storage projects in highly populated areas with much infrastructure. Mr van den Akker also feels that safety has not been guaranteed. At the end of June, a decision on the project will be made on the basis of facts and figures. |
| 6 February  | Local television                 | Barendrecht CCS Project: Public involvement | Barendrecht can now comment on the Environmental Impact Assessment. | Residents of the council of Barendrecht and Albrandswaard have the opportunity over the next six days to comment on the environment impact assessment (EIA) about the underground storage of CO <sub>2</sub> . The EIA has been made public this week. The council of Barendrecht will shortly organise another information meeting for residents.   |
| 12 February | Horticulture industry newsletter | National CO <sub>2</sub> pipeline leakage   | CO <sub>2</sub> pipeline Westland leaks                             | The delivery of CO <sub>2</sub> to the horticultural industry North of the Rotterdam Harbour, and Shell's Pernis refinery, was stopped on Tuesday. It seems that the transport pipes were leaking. It is not known how long it will take to fix the leak, or how much CO <sub>2</sub> has escaped.   |
| 19 February | National television              | Barendrecht CCS Project: Public opinion     | Barendrecht vote against CO <sub>2</sub> storage project            | During an information evening in Barendrecht, approximately 1000 residents showed their concerns yesterday evening. Most of the residents have been asking why their highly densely populated area has been chosen for this pioneering project. Many are afraid of the risks if something should go wrong, or that their houses will lose value. Neither Alderman Zuurbier or the environmental authority the DCMR could win   |

2009

| Date     | Source                             | Topic  | Headline  | Summary  |
|----------|------------------------------------|--|---|--|
| 6 March  | National newspaper                 | Barendrecht CCS Project: Academic opinion                | 'CO <sub>2</sub> storage under Barendrecht a irresponsible experiment'    | <p>their trust. Others had more sinister beliefs about the project, choosing to hold the opinion that CO<sub>2</sub> storage was going to earn Shell and the State huge sums of money. One opponent shouted, "why don't you just tell us that Barendrecht is the cheapest option, because that's the truth."</p> <p>A professor and leading lecturer at the University of Utrecht in the Netherlands, Krijn de Jong, finds the storage of CO<sub>2</sub> in the empty gasfield not safe, calling it 'irresponsible'.</p> |
| 10 March | National newspaper                 | Barendrecht CCS Project: Researcher opinion              | ECN: The state has had too little influence in Barendrecht.               | <p>The state should have been involved more with 'Barendrecht'. If CCS is not deployed there the technology runs the risk of being sidelined. According to ECN, "something has gone wrong with the communication," states Heleen Groenenberg. "So far, all the explanation for the project has been the responsibility of Shell, which is not enough for such a sensitive project."</p>  |
| 13 March | Environmental organisation release | National CCS information                                 | New website about CO <sub>2</sub> capture and storage                     | <p>Since yesterday there is a new website available <a href="http://www.co2afvangenopslag.nl">www.co2afvangenopslag.nl</a> (CO<sub>2</sub> capture and storage). The goal of this website is to give citizens a reliable knowledge basis in order to form their own opinion. The information on the website has been compiled by experts from business, the government and environmental organizations.</p>  |
| 13 March | Energy related website             | Barendrecht CCS Project: Communication and participation | 'Cramer should have allowed Barendrecht to comment on planning proposals' | <p>In spite of energy research institute ECN reiterating this week that CO<sub>2</sub> can be stored safely, Barendrecht is less sure about that. The mayor and the councilors are against the project, a stance which ECN believes has been caused by miscommunication. This importance of this project has only been communicated by Shell, there should have been more parties behind the message, especially the government." States Heleen Groenenberg from ECN.</p>  |
| 17 March | Press release VROM                 | Barendrecht CCS Project: Communication                   | Information point opened in Barendrecht                                   | <p>Residents of Barendrecht can from today find information about the underground CO<sub>2</sub> storage project. The information point opened its doors on the 17th of March and will be opened 5 days per week.</p>  |

## What happened in Barendrecht?

2009

| Date     | Source                  | Topic   | Headline  | Summary   |
|----------|-------------------------|---|---|---|
| 22 March | National newspaper      | Barendrecht CCS Project: Public opinion       | Hundreds protest against CO <sub>2</sub> storage Barendrecht                | On Saturday, hundreds of protestors marched against the CO <sub>2</sub> storage project. The protest was organized by the local division of political party Groenlinks. Groenlinks has given the mayor of Barendrecht 750 objection letters, and a petition containing 1000 signatures. The people of Barendrecht are concerned about the project as a number of risks are still unclear.   |
| 26 March | Energy related website  | Barendrecht CCS Project: Public opinion       | Barendrecht unanimous against CO <sub>2</sub> storage project               | The council of Barendrecht has unanimously approved the objections of the mayor and Aldermen, regarding the CO <sub>2</sub> storage project.  |
| 28 March | National newspaper      | Barendrecht CCS Project: Shell comment        | Shell angry at suggestive information about Barendrecht                     | Shell is angry about the publication of a manipulated photo depicting a CO <sub>2</sub> disaster in Barendrecht. The photo was published by the Natural Science and Technology magazine, who say that CO <sub>2</sub> storage is not as safe as the safety studies have shown. According to the magazine, the model used in the studies does not include potential for terrorist attacks, or if a leak should occur when there is very little wind.   |
| 31 March | National newspaper      | Barendrecht CCS Project: Shell comment        | Barendrecht: Shell criticizes the communication of the project by the State | Shell Director, Peter de Wit has stated that the State has not done enough to emphasize the importance of the CCS project in Barendrecht. "The government should have communicated the national importance of CCS, and Barendrecht's role within that. If the government has done enough? No, not yet."   |
| 16 April | National television     | Barendrecht CCS Project: Judicial proceedings | Stop the storage project at Barendrecht                                     | Barendrecht has asked minister Cramer from VROM to stop the project. According to the council jurisdictional mistakes have been made, in particular Shell should have investigated which location in the Netherlands is most suited to storage of CO <sub>2</sub> . But instead they chose Barendrecht immediately.   |
| 22 April | International newspaper | Barendrecht CCS Project                       | Shell's Plan to Lead in Storage of Carbon Dioxide Hits a Snag               | Royal Dutch Shell PLC's push to become a world leader in the technology to capture and store carbon dioxide has hit a snag in the Netherlands, where locals are trying to block the company's plan to bury CO <sub>2</sub> under their town. The case of the Dutch town of Barendrecht shows there are other obstacles, too: grassroots opposition from locals who say it's unsafe. Barendrecht shows how not-in-my-backyard activism can trump efforts to stop global warming, even in countries with powerful green movements like the Netherlands. |



2009

| Date     | Source   | Topic  | Headline   | Summary   |
|----------|--|--|--|---|
| 24 April | Press Release Environmental Impact Assessment Agency | Barendrecht CCS Project: Judicial proceedings            | 'CO <sub>2</sub> -storage Barendrecht conforms to safety standards | The independent commission for environmental impact assessment has declared that the EIA for the underground storage at Barendrecht is reliable, and conforms to Dutch safety standards.  |
| 27 April | Press release: Barendrecht council                   | Barendrecht CCS project: Local council opinion           | Barendrecht: The most pressing concerns have not been addressed    | The commission of the environmental impact assessment (EIA) agency has missed out the most important concerns of the Barendrecht report. Because of this the EIA report is not sufficient to meet judicial requirements.  |
| 27 May   | National newspaper                                   | Barendrecht CCS Project: Communication and participation | Excursion to the CO <sub>2</sub> capture site at Pernis            | Next Saturday, inhabitants of Barendrecht that still have many questions can visit the place where the CO <sub>2</sub> is captured at the Shell Oil refinery in Pernis. At the refinery, the district manager will answer questions about gas extraction and CO <sub>2</sub> injection.   |
| 11 June  | National newspaper                                   | Barendrecht CCS Project: Judicial proceedings            | The Netherlands must participate in CO <sub>2</sub> storage        | During a hearing at the Dutch parliament, the director of the Taskforce CCS, Stan Dessens insisted that the decision should not be left to the local councilors alone, otherwise nothing will happen.   |
| 16 June  | Local newspaper                                      | Barendrecht CCS Project: Communication and participation | Minister in Barendrecht: The procedure was poorly initiated        | Minister Cramer has admitted in a meeting in Barendrecht that the project was poorly initiated, but insisted that the miscommunication would be corrected. "Absolute safety I can't guarantee, but safety is the most important criteria." Said Maria van der Hoeven.   |
| 21 June  | National television                                  | Barendrecht CCS Project: National government decision    | Barendrecht decision, expected in 2010.                            | The cabinet has delayed the decision about CO <sub>2</sub> storage in Barendrecht until 2010. Minister Cramer wants to consider the necessity and usefulness of the project, speaking at a meeting in Barendrecht. Shell has advanced plans for the project. An EIA has concluded that the project is safe, however the inhabitants of Barendrecht are still concerned about the risks of leakage, and a reduction in the value of their homes.   |
| 26 June  | Press release VROM                                   | Barendrecht CCS Project: National government decision    | Ministers: Letter to Barendrecht council                           | There is further investigation needed before a decision can be taken. Therefore alternative locations will be considered. In a letter written to the council of Barendrecht, more investigation is required into different location alternatives before a decision can be made. The council have asked the ministers to stall the preparation of the project until all of their questions have been answered. One of the most important questions is why the Barendrecht area was chosen, and that is why the investigation of alternative locations will be performed. |

## What happened in Barendrecht?

2009

| Date        | Source                             | Topic   | Headline  | Summary   |
|-------------|------------------------------------|---|---|---|
| 23 July     | National newspaper                 | Barendrecht CCS Project: National government decision | Barendrecht business is taking CCS policy hostage                     | If the cabinet deviates from its plans for CCS in Barendrecht due to public resistance, it will create a governing dilemma for itself. What will remain of the credibility of CCS policy, and where, when and how will CCS be allowed to take place. "The inhabitants of Barendrecht are holding the government hostage, who don't dare to press the go button," says Mr Zijlstra.  |
| 3 November  | National newspaper                 | Barendrecht CCS project: Local council opinion        | 11 optional storage options for CO <sub>2</sub> storage Barendrecht   | In the Netherlands there are 11 alternative locations where CO <sub>2</sub> storage can be much safer than under Barendrecht. According to Alderman Zuurbier, Barendrecht has the thinnest layer of clay and the most densely populated area. A report from TNO, "makes clear that Barendrecht has only been chosen on the basis of a financial argument. The council believes that the billions of euros that will have to be eventually invested for CCS, that the cost of the demo project is not a decisive factor. |
| 9 November  | National newspaper                 | Barendrecht CCS Project: Shell comment                | Shell will step out of CCS if Barendrecht is cancelled                | If the state decides to choose a storage pilot project in another location rather than Barendrecht, then Shell will leave the project. Storage in the North Sea is no option. This reaction came in response to the findings of Dutch research institute TNO, which declared that there are 11 optional storage locations other than Barendrecht. Shell state that Barendrecht is the ideal pilot project, and it is economically feasible. Shell do not see a reason why the project should not be realised.           |
| 10 November | Local television                   | Barendrecht CCS Project: Action group comment         | Action group asks for decision about Barendrecht                      | The association CO <sub>2</sub> is NO from Barendrecht have called ministers Van der Hoeven and Cramer to give the final decision about the project within a month. In a letter to the Ministers, the residents of Barendrecht has said that more time is needed to study all the reports that have been made by experts.   |
| 18 November | Press release VROM                 | Barendrecht CCS Project: National government decision | Green light for the restricted CO <sub>2</sub> storage at Barendrecht | Minister Cramer (VROM) and minister Van der Hoeven (EZ) has decided today, under conditions, to give the green light for restricted CO <sub>2</sub> storage at Barendrecht. The cabinet leaders have decided to phase the project, with first a small field being used for storing 0.8 megaton CO <sub>2</sub> .  |
| 18 November | Press release: Barendrecht Council | Barendrecht CCS project: Local council opinion        | Barendrecht: Cabinet is blind towards the concerns of the people      | With the decision to go ahead with the CO <sub>2</sub> storage project at Barendrecht, the cabinet has been taken hostage by Shell. Shell has stated that they will only start a project in Barendrecht and nowhere else. The Ministers have slammed the decision in the faces of the provincial states, and have   |

2009

| Date        | Source                               | Topic  | Headline   | Summary   |
|-------------|--------------------------------------|--|--|---|
| 18 November | National newspaper                   | Barendrecht CCS Project: NGO comment                     | Greenpeace not happy with CO <sub>2</sub> storage            | <p>ignored all the conclusions of the reports, and the will of the inhabitants of Barendrecht.</p> <p>According to Greenpeace, the inhabitants of Barendrecht are correct to be concerned about their safety. They have also said that CCS requires huge amounts of government support, which is better spent on renewables.<br/>                     "The system is only possible with huge government support, not only in the demonstrations phase but also afterwards."</p>   |
| 18 November | Internet site VROM, web-blog         |  | Cramer comments on Barendrecht: Difficult to convince locals | <p>It is clear that anyone who deploys a serious climate policy does not want to be the winner of a popularity contest. It is difficult to convince locals that storage of CO<sub>2</sub> is safe. As I say, who works on an effective climate policy should not busy themselves with their own popularity.</p>   |
| 1 December  | Press release: Provincial government | Other planned Dutch CCS projects                         | Friesland also turns against CO <sub>2</sub> storage         | <p>The states of Friesland does not want any CO<sub>2</sub> storage in the Frisian ground. Because the risks of CO<sub>2</sub> storage cannot be excluded, and also the fact that there are no businesses were CO<sub>2</sub> would be captured from in the state, we have chosen not to work with plans for CO<sub>2</sub> storage in Friesland.</p>   |
| 2 December  | NRC Handelsblad                      | Barendrecht CCS Project: Participation and communication | Ministers defy angry and scared citizens                     | <p>Account of the public meeting in Barendrecht on Monday December 1st, at which the Ministers of Spatial Planning and Economic Affairs explained their decision to go ahead with the project to 500 people in the local theatre. The meeting was broadcasted on a screen at the town hall where more people (number not reported) had gathered to watch. The Ministers had to cope with a great deal of resistance from the audience. Not only questions and voiced opinions, but also angry shouting and insults.</p> |
| 4 December  | National newspaper                   | Barendrecht CCS Project: Participation and communication | 'Barendrecht'to be presented at Copenhagen                   | <p>The South-Holland Province representative Erik van Heijningen (VVD) will give a presentation at the climate conference in Copenhagen, calling Barendrecht an innovative project.</p>   |

## What happened in Barendrecht?

2010

| Date        | Source                    | Topic   | Headline  | Summary  |
|-------------|---------------------------|---|---|--|
| 12 January  | National television       | Barendrecht CCS Project: Judicial proceedings | SP and PVV votes against Barendrecht storage project            | A small majority in the parliament has voted for the storage project. The political parties of the SP and the PVV voted against the project.   |
| 18 January  | Local newspaper           | Other potential storage locations             | Shock of suggestion of CO <sub>2</sub> storage Grijpskerk       | The Major of Grijpskerk has said that local politics should not suggest that CO <sub>2</sub> storage could come in the area, "absolutely no way".  |
| 19 January  | National television       | Barendrecht CCS Project: Judicial proceedings | Barendrecht decision deferred                                   | The Dutch parliament has deferred the decision to store CO <sub>2</sub> under Barendrecht. On Tuesday that was a number of motion which were to be voted on, but one party the 'Christian Unie' asked to delay the decision.         |
| 26 January  | National newspaper        | Barendrecht CCS Project: Judicial proceedings | Parliaments supports Barendrecht decision                       | The Dutch parliament is in agreement with the CO <sub>2</sub> storage project in Barendrecht. The test in the South -Holland province is meant to be a precedent to mass CO <sub>2</sub> storage in North-Holland.                   |
| 17 February | Press release: Greenpeace | National CCS Projects: Public opinion         | No support for CCS in North-Holland                             | The storage of CO <sub>2</sub> shall in many councils lead to political unrest. The plans of the government to build new coal-fired power plants and pump the CO <sub>2</sub> under residential area are not welcome in 70 councils. |
| 22 February | Local newspaper           | Barendrecht CCS Project: Judicial proceedings | CO <sub>2</sub> -plan in the freezer                            | With the fall of the parliamentary cabinet, the plan for the underground storage at Barendrecht will probably disappear into the freezer until after the elections.  |
| 2 March     | National newspaper        | Barendrecht CCS Project: Judicial proceedings | CO <sub>2</sub> storage Barendrecht postponed                   | The resigning Minister Maria van der Hoeven from Economic Affairs will not be permitted by the Dutch parliament to give permission to the CO <sub>2</sub> storage project in Barendrecht.  |
| 15 March    | Local newspaper           | Barendrecht CCS Project: Judicial proceedings | Complete: CO <sub>2</sub> storage in the Senate                 | The underground storage of CO <sub>2</sub> in Barendrecht seems to have been arranged like a trick. Tomorrow, the decision came suddenly on the agenda of the Senate, as part of the crisis and recovery law.                        |
| 17 March    | National television       | Barendrecht CCS Project: Judicial proceedings | CO <sub>2</sub> storage in Barendrecht cannot be fought anymore | The council of Barendrecht cannot go to the judge anymore to fight against the CO <sub>2</sub> storage plans. This is the result of the agreement of the Senate after the motion was brought in under the crisis and recovery law.   |