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Case study of communication and social perceptions towards CCS in the cement industry

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Abstract

The research question for this case study on CO_2 capture perceptions is *"How has the Norcem cement plant in Brevik, Norway communicated its CO_2 capture project, and how do the local residents perceive the project?"* The study argues that Norcem finds itself in a good situation to successfully communicate the CO_2 capture project. First, because it historically has established itself as an important and well-liked cornerstone company which is part of the Brevik identity. Second, because Norcem through their general communication approach have been considerate and built trust with the community. In this regard, the study argues that people, ahead of the CO_2 capture project, hold perceptions of Norcem and that, accordingly, Norcem's communication of the project is interpreted based on these existing perceptions. Altogether, Norcem appears to be in a suitable situation for further communicating with the local community about the full-scale CO_2 capture project. The study shows that Norcem's communication about the CO_2 capture project has happened through different channels, but that it has been limited due to uncertainty on whether their planned full-scale CO_2 capture project would be realized. The interviewees' knowledge and perceptions of the project varies. However, several interviewees state on their own initiative that the project can stimulate increased local employment and that reducing CO_2 emissions is positive for the environment. Also, some interviewees are concerned with how the project will affect their living conditions. Through the study, it has been possible to define but not answer the basic democratic question about how local residents, if desired, can be involved in technically complex industry-scale projects, regulated by procedures and laws.

Keywords: social perceptions; communication; CO_2 capture; CCS: cement; local community, CEMCAP

1. Introduction

Social perceptions are indeed a complex matter and more relevant than ever given clear expectations about companies' broad corporate social responsibility. Awareness about social perceptions for large-scale, complex technologies, such as CO_2 capture and storage (CCS), could also bring an additional dimension to the understanding of how to progress with the implementation of such technologies. This has been the reason for including the present case study on social perceptions of CCS in the Horizon2020 project CEMCAP [1].

The research question for the present study is *"How has the Norcem cement plant in Brevik, Norway communicated its CO_2 capture project and how do the local residents perceive the project?"* The study was undertaken in January-February 2018, when the further progress of the Norcem CO_2 capture project was still

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uncertain. Since then, Norway and the CCS community has reached an important milestone: The Norwegian government has in 2018 decided that the Norcem cement plant in Brevik, Norway is one of two candidates to complete a FEED study for CO_2 capture in the Norwegian full-scale CCS project [2].

1.1. Existing literature on social acceptance for CCS in the cement industry

Many point to CCS as important for reducing greenhouse gas emissions in the cement industry, and social acceptance is necessary for successful implementation of this CO_2 emissions abatement technology [3,4]. Amanda Boyd [5] provides a good insight into the different sides of understanding public CCS perceptions. Teir et al. [6] state the need for further research on site-specific local community context. The present study does so by drawing on previous research by Haug and Stigson [7]. The authors describe shortly Norcem's CO_2 capture project in Brevik and argue that the long industrial history of the Porsgrunn area, where Brevik is situated, creates favorable social conditions for the project.

1.2. Methodology and structure

The case study relies on primary sources and interviews with regular members and steering committee members of the residents' association Brevik Vel, other residents in the Brevik community, and employees at Norcem. Semi-structured interviews with mainly open-ended questions were used as method [8]. While using interview as a method requires the consideration of several issues [9,10], meeting the local residents in person has made it possible to understand the social dimension better than any document could have enabled. Information from 15 persons (hereafter referred to as interviewees) of which twelve are local residents and three are Norcem employees, is the foundation for the study's analysis. It must be emphasized that the aim of the current study is not to provide the view of all the local residents. The study rather looks at the perceptions of a handful of representatives from the Brevik community.

The paper begins with a description of how Norcem is an important part of local history and identity in the community of Brevik, before describing the general communication approach that Norcem has adopted with the Brevik residents and the residents' association Brevik Vel. Norcem’s communication approach about the CO_2 capture project is presented subsequently, before proceeding to describe the perceptions about the project. It is emphasized that people have not been asked to provide *facts* about CO_2 capture or CCS, but rather to provide their *perceptions*.

2. Norcem is part of local history and identity

Norcem started the cement production in 1919 and quickly became an important player in the village's economic life [11]. At the most, 700 people worked at Norcem. The plant itself put its mark on Brevik, and so did the people who came there to work. They settled and Brevik became a workers' village. The first decades of the factory's operation laid in many ways the basis for Brevik as we know it today [11]. In 2018, Norcem Brevik has 200 employees and most of them live in the nearby area. Thus, Norcem is still a cornerstone company in Brevik.

The residents' personal stories about Norcem developed in line with the development of the plant itself, as stated by one of the interviewees. "Almost everyone in Brevik knows someone who works [at Norcem]. Families have worked there for generations". The interviews showed that many have their own stories about Norcem and they are manifold. One interviewee whose dad and husband worked at Norcem has visited the mines both as a child and adult, hinting about proudness, and eagerly talked about the life of the factory workers. Another interviewee had Norcem as part of the childhood fantasies and believed "that the rubber crumb on football pitches came from Norcem". The interviewee said it was surprising "to find out that they made cement from rock, and not the big rubber granules". The interviewee's sibling even believed that "that the three chimneys emitted coffee, tea and sugar". Furthermore, Norcem has through many years supported different social activities in Brevik e.g. the school marching band and celebration of the national holiday on May 17. Brevik retain a strong community spirit and many take part in a range of voluntary activities. In this regard, many consider Norcem's engagement in the community's

social activities as positive. The engagement helps to integrate the plant into the everyday lives of the Brevik inhabitants. By doing so, Norcem also consolidates its position on a community level.

All in all, the historical development of Norcem into the local society explains why and how it has become part of the local identity in Brevik. Norcem's interaction with the society has to a large degree given way to credibility and trust from the local community. As the following section will show, so has Norcem's general communication approach.

3. Building trust through the general communication approach

One important part of Norcem's general communication approach is the open line towards the neighbors through the resident's association Brevik Vel. This contact was established in the 1980s. Today, Norcem and Brevik Vel meet in the contact committee 2-4 times per year, providing a forum in which the residents' association can ask questions and present proposals. One interviewee describes a fruitful contact with Norcem through many years. Another interviewee describes a good relation with the new factory manager and further states "We want to contribute towards how they [Norcem] can be good [at what they do]".

Another part of Norcem's general communication approach includes sending out press releases and other information material[†] and sharing information via Internet. Norcem has a website and a public Facebook page. On the "Norcem Brevik" Facebook page, people have the possibility to make direct contact with the plant. This gives the general public an easy way to give feedback on matters related to the plant's operation, and for Norcem to publicly inform about their activities. All interviewees appreciate Norcem's openness about what is going on. This is also expressed in the online posts with comments like "Good that you let us know" [12]. Interviewees also state that Norcem has an accommodating attitude e.g. when they pay for the neighbours' car wash, during instances where there has been much dust release. People feel “seen” by Norcem and feel their lives are taken into account. In other words, they are being involved.

In sum, Norcem has since the beginning of its operations carried out activities that have helped to create an image of Norcem as a trusted cornerstone company which is part of the local identity in Brevik. This is the background for the perceptions that residents have created of the CO_2 capture project.

4. Norcem's communication about the CO_2 capture project

Norcem has communicated the CO_2 capture project through different channels. First, the residents' association Brevik Vel has been a central channel for reaching out to the local residents. Secondly, the media, website and social media have been used to share information about the CO_2 capture project. A 2-page article in the major Norwegian newspaper Aftenposten triggered the local media, which are now proactive to get project updates out to the public. Importantly, many interviewees referred to local media as a central source of information. Also, the CO_2 capture project is described on Norcem's website and the Facebook page of Norcem Brevik. In the period between October 2015 up until March 2018, Norcem posted 14 posts with information about the CO_2 capture project (e.g. links to articles). Norcem Brevik Facebook page has per March 2018 709 followers [13].

Compared to the communication about the general operations however, the communication about the CO_2 capture project to the local residents has been limited. In fact, Norcem has sought not to communicate too much about the CO_2 capture project too early in the process (information from Norcem employee). Keeping a low communication profile has been considered suitable because of the political and economic uncertainty related to the actual realization of the project, bearing in mind the cancellation in 2013 of the previous full-scale Norwegian CCS project at Mongstad. Instead of focusing on the public, Norcem has thus focused on reaching out to technology networks at the national and international level and to the Porsgrunn municipality, where Brevik is located.

[†] The press releases tend to result in news articles in the local media. Furthermore, Norcem used to send out the leaflet "Utsikt" and information letters. However, as Norcem receives much local media attention and the readers get the same information elsewhere, these letters are rarely sent out nowadays.

In addition, the government's funding institution for national CCS projects, Gassnova, has spread information about the CO_2 capture project.

5. Local resident's perceptions of Norcem's CO_2 capture project

How do the local residents perceive the CO_2 capture project? As the present study is expected to reach readers with deep insight into CO_2 capture and CCS, it is emphasized that the study has investigated the *perceptions* local residents have of Norcem's CO_2 capture project. i.e. the residents have not been asked for or expected to provide correct facts. The perceptions have been shared on the interviewees own initiative i.e. they were not asked directly to answer yes or no to each of the viewpoints. The main perceptions explained by the residents are that

- the CO_2 capture project can stimulate local employment
- the project can be good for the environment
- there is a concern about how the project affects their living conditions

It was also revealed during the interviews that some residents mix the CO_2 capture project with another project also dealing with CO_2, but owned by another company.

6. The wish for residents' involvement in the complex, technology-oriented CO_2 capture project

Interviewees not working at Norcem do not feel that they have been *involved* in the CO_2 capture project. Three of the interviewees do not want to be involved in the project, either because they are simply not interested, or because they consider that the project should be handled by experts. However, five interviewees state that they *would* like to be involved in the project. Most interviewees were not sure exactly what the involvement should be like, but stated that in-depth information and knowledge is necessary to get somehow involved.

It is not obvious from the current study what the Brevik residents actually mean by being involved, but indeed the issue of local residents wishing for involvement in the Norcem CO_2 capture has a more general aspect. To be involved in things that will affect oneself, is in many ways a basic democratic principle. The key question is how to involve the general public, whose knowledge about complex industrial projects regulated by procedures and laws is limited or non-existent. The present study cannot answer this question, only shed a light on it.

7. Summary and conclusions

This study has investigated Norcem's communication of its CO_2 capture project and how the local residents perceived the project in January/February 2018.

The study finds that Norcem is a cornerstone company in Brevik that has succeeded in building trust for over a century. Norcem has informed and involved the local residents in its operations. This is largely the starting point from which local residents will perceive the Norcem's CO_2 capture project. Norcem has communicated about the CO_2 capture project through different channels, but only to a limited extent, because of the political and economic uncertainty related to the actual realization of the project. However, Norcem is in a good position to successfully communicate the project to the local community because of its good standing and established communication channels.

The interviewees' knowledge and perceptions about the project varies. While some have never heard about the project previously, others have in-depth knowledge. It is found that people, regardless of their insight into the project, appear to create perceptions of it.

Finally, it has been possible to define but not answer the basic democratic question about how local residents, if desired, can be involved in technically complex industry-scale projects, regulated by procedures and laws.

The findings in this study could be further investigated in at least three different directions. First, a larger study in Brevik could be envisaged, including further qualitative interviews, the use of quantitative methods and more in-depth analysis of primary sources. That type of study may increase our knowledge about and understanding of the social perceptions of Norcem's CO_2 capture project, as it progresses. Secondly, a comparative study of the different planned CO_2 capture projects from other industrial or power plants, would create a broader knowledge about the

CO_2 capture perceptions in local communities. Furthermore, it should be relevant to explore what could be the means to create local involvement in a project as technically complex as the Norcem CO_2 capture project.

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