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SiteChar

Characterisation of European CO_2 storage

Deliverable N° D8.4
Quantitative social site characterisations

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Content

1 Executive summary

This report describes the results of the last stage of the in-depth social site characterisation activities at two prospective CCS sites as part of the SiteChar project: a CCS onshore site and a CCS offshore site. The onshore site is the Załęcze & Żuchlów site application (Poland - WP5) and the offshore site is the North Sea Moray Firth site (UK - WP3). This deliverable is a follow-up to deliverables D8.1, D8.2, and D8.3 (Brunsting et al., 2011; 2012$_a$; 2012$_b$) and describes the results from a repeated quantitative measurement of local awareness, knowledge, and perceptions of CCS at both sites using representative surveys. For comparison and discussion of all SiteChar WP8 results we refer to the final summary report D8.5 (Brunsting et al., 2013).

The 2nd survey showed some interesting results. First of all, awareness of CCS was still very low. While in the UK around half of the respondents had at least heard of local plans for CCS, in Poland this was only 21%. It seems that awareness in the UK was mostly induced by specific plans in the area that were abandoned in the course of the SiteChar project. Second, it seems that on the whole the local publics were rather positive about CCS. Most respondents expected a positive impact of CCS on the region. In the UK, arguments for that were mainly economic, while in Poland arguments were mainly related to environmental concerns. Although there are some worries about risks of leakage, especially at the onshore site in Poland, people think that authorities will properly regulate CCS and monitor the safety of CCS. Expectations were mostly that it would be good for the country and that it will help reach international targets for CO_2 reduction and buy time to develop renewable energy. Respondents seemed uncertain about the costs of using CCS and whether the technique is ready for widespread use. Especially in Poland people seemed to agree that CCS is essential for tackling climate change. Most differences between the two sites may be attributed to the proximity of the site to the local community. The Polish site is onshore and therefore much closer to the public, whereas the UK site is offshore. This likely raises different concerns as well as differences in their weight in the discussion. While the people at the Polish site have more concerns about environmental consequences of CCS such as risks for leakage, at the UK site concerns are more related to economic consequences. Also, perceived benefits are related to respectively environmental (Poland) and economic (UK) benefits. These results show the importance of a site specific approach when informing the public about CCS. On the whole, the local communities researched do not seem to principally oppose to CCS. A site-specific approach to informing and involving these local publics, using findings from the present survey, could further raise awareness and help citizens develop an informed opinion.

2 Introduction

This report describes the results of the last stage of the in-depth social site characterisation activities at two prospective CCS sites as part of the SiteChar project: a CCS onshore site and a CCS offshore site. The onshore site is the Załęcze & Żuchlów site application (Poland - WP5) and the offshore site is the North Sea Moray Firth site (UK - WP3). This deliverable is a follow-up to deliverables D8.1, D8.2, and D8.3 (Brunsting et al., 2011; 2012_a; 2012_b) and describes the results from a repeated quantitative measurement of local awareness, knowledge, and perceptions of CCS at both sites using representative surveys.

To measure public awareness of Carbon Capture and Storage (CCS), two surveys have been held at both the Polish site (onshore) and the UK site (offshore). The purpose of the 1st survey conducted in May 2011 was to obtain baseline data on awareness and perceptions of local plans for CCS as well as to characterise each site in terms of demographic, socio-political and economic features (see deliverable 8.1, Brunsting et al., 2011. After the 1st survey, focus conferences were held at both locations (see deliverable 8.2, Brunsting et al., 2012a) as well as information meetings (see deliverable 8.3, Brunsting et al., 2012b) to inform the local public and stakeholders on the project. The present deliverable describes the results of the 2nd survey. This survey was intended to monitor changes over time in awareness and knowledge of CCS as well as to obtain a quantitative measure of local public perceptions about CCS derived from the focus conferences and previous research. The 2nd survey in the UK was carried out in September 2012 and in Poland in July 2012, about one week after the information meetings. For an overview of all activities within WP8, see Table 1.

Table 1. Overview of the timing of all activities at both sites of WP8

Poland		UK (Scotland)
Fieldwork first half of 2011; data processing and reporting second half of 2012.	Social Site Characterisation: - Desk research - Stakeholder interviews - Media analysis - Survey	Fieldwork first half of 2011; data processing and reporting second half of 2012.
30-31 March & 20-21-22 April 2012	Focus conferences	30-31 March & 20-21-22 April 2012
June 25 2012	Information meeting	September 6 2012
Continuously	Website information	Continuously
July 2012	Second survey	September 2012

The document is structured as follows. Chapter 3 describes the survey methodology. Chapter 4 contains the country report for the Polish survey as well as a comparison between the 1st and the 2nd survey. Chapter 5 contains the country report for the UK site as well as a comparison between the 1st and the 2nd survey. In Chapter 6 relevant comparisons between countries are made and Chapter 7 provides a brief conclusion. For a more extensive discussion of all SiteChar WP8 results we refer to the final summary report D8.5 (Brunsting et al, 2013).

3 Survey Methodology

The survey, consisting of telephone interviews, was conducted in both Poland and the UK by market research firms among a representative sample of the local population. In Poland it was held in July 2013 and in the UK in September 2012. The market firms were selected because of their research experience and familiarity with the area. A quota sample was used to guarantee representativeness on age, sex, and education/employment. The sampling technique was the same as for the 1st survey and consisted of new respondents, who had not participated in the 1st survey. The interviewer introduced the research as a 15-minutes interview about 'life in your local area'. Respondents willing to participate subsequently received some screening questions (postcode, age, gender, employment) to determine whether they fit the profile. If so, the interviewer continued with the first question. If not, they were thanked for participation and the interview was ended.

As one of the aims of the 2nd survey was to measure changes in awareness and opinions over time, the survey largely contained the same questions regarding CCS as the 1st survey. There are two important differences, however. Firstly, the 1st survey took the shape of a local area satisfaction survey. To this end, apart from questions on CCS the questionnaire also contained questions regarding other issues that were relevant for the local area. In contrast, the 2nd survey focused solely on CCS as a local issue. Secondly, in contrast to the 1st survey, the second survey contained several statements on CCS in general and respondents were asked to state to what extent they either agreed or disagreed with these statements. Some of these questions were based on opinions voiced in the focus conferences. Others were based on issues that have shown to be important in explaining CCS acceptability in previous research (Paukovic, Brunsting, Straver, Mastop, de Best-Waldhober, 2012). To be able to keep the UK and Polish version of the survey the same we used statements from both the Polish and UK focus conferences in the survey and limited the statements to elements that are relevant for both sites.

Including these statements in the survey enhances both the validity and generalizability of findings. The focus conferences had only a small number of participants (11 in the UK and 16 in Poland). Such focus conferences provide unique in-depth and detailed insights in the public's thoughts and opinions about CCS. However, it remains unclear to what extent opinions voiced in such small groups are representative for what the local community as a whole thinks about CCS. Answers to the statements, collected from a representative community sample, can be used to validate the statements of the focus conference respondents and investigate to what extent opinions are shared by members of the local community.

The full UK version of the questionnaire which displays the questions in original order and coding can be found in Appendix 1. Below is a systematic overview of variables ordered by topic. In this overview, the variables are described as they were used in the analyses. All variables included a 'don't know' option to prevent respondents from stating opinions while they have none.

3.1.1 Demographic information

To obtain a profile of the local residents in terms of education and employment, respondents were asked three questions. First, respondents were asked to report their highest education level. Second, respondents were asked to indicate whether they rent or own a house. Third, respondents were asked to indicate in which sector they are employed. Answers to these open-ended questions were categorized by the interviewer on a predefined list of answer options. In the questionnaire, these questions were at the end (see Appendix 1).

3.1.2 Local issues

Respondents answered several questions regarding their local area, defined as *'the area within about 20 miles or 20 minutes driving from your home'*. First, they were asked how long they have been living in the area. Second, they were asked how satisfied or dissatisfied they are with their local area as a place to live. Answers ranged from 1 (very dissatisfied) to 5 (very satisfied). Third, respondents were asked how they think that in the next couple of years the local area will develop. Answer options were: 1 (get worse), 2 (stay the same), 3 (improve), or 4 (don't know).

To measure what respondents perceive to be important issues and developments in the area, they were asked two questions. First, respondents were asked what they see as the most important issue facing their local area (e.g. local economy, housing, local services). This was an open-ended question allowing for just one answer. The responses were categorized afterwards. To this question, 'don't know' was also categorized as valid answer because it tells something about the way people experience the area. However, respondents who replied 'don't know' did not receive the second question. The second question asked respondents what they see as other important issues facing their local area. This too was an open-ended question which allowed for multiple answers, which were categorized afterwards. Because multiple answers were possible, each issue was turned into a separate variable (e.g. the variable 'local economy') on which each respondent either scored 0 (not mentioned) or 1 (mentioned). To this question, 'don't know' was also categorized as valid answer because it tells something about the way respondents experience the area.

3.1.3 Perceptions of local CCS plans

The telephone interviewer told respondents that *'Our client, a European research consortium, is interested in what people think and know about carbon capture and storage. It is fine if you tell us you have never heard of carbon capture and storage, since it is in an early stage of development so we would not be surprised if you have not heard of it.'*

Then, respondents were first asked how much, if anything, before the interview, they knew about plans for carbon capture and storage in their area. Answers ranged from 'never heard about it' to 'a great deal'. Second, only those respondents who had at least heard about plans for CCS were asked what exactly they had heard about plans for carbon capture and storage in their area. This was an open-ended question allowing for multiple answers which were categorized afterwards. Third, only those respondents who had at least heard about plans for CCS were asked whether, overall, they thought the local plans for carbon capture and storage would have a positive or negative impact on their local area. Answer options ranged from 'very positive' to 'very negative' including the option 'no impact at all'. The fourth question depended on the answer given to the third question. If respondents expected no impact at all or did not know, no further questions were asked. If respondents expected a positive impact, they were asked to specify why they thought CCS would have a positive impact. If respondents indicated they expected a negative impact, they were asked to specify why they thought CCS would have a negative impact. Since this approach results in different numbers of respondents per question, Figure 1 displays the 'flow' of the questions about knowledge of local and general CCS for both the 1st and the 2nd survey in both Poland and the UK.

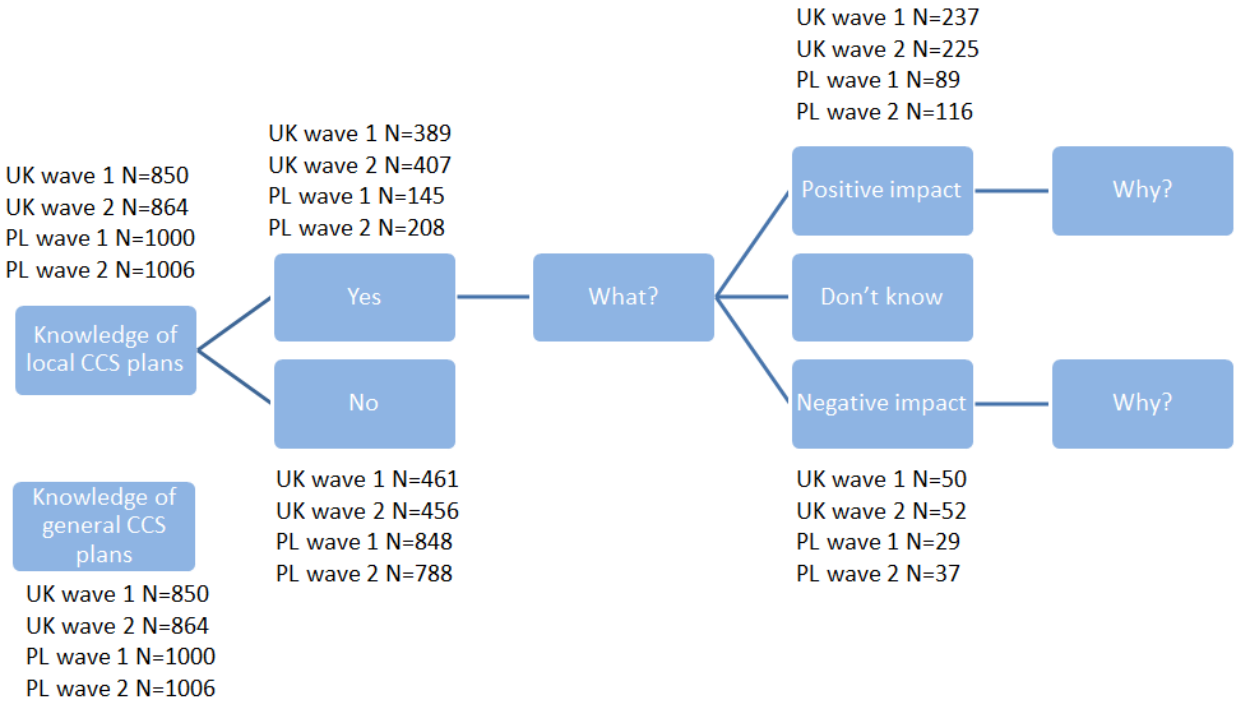


Figure 1 - Flow and number of respondents to the CCS knowledge questions

This 'flow' was developed to ensure proper measurement of what respondents think, if anything, about CCS without forcing them to 'make up' any reasons, either positive or negative, in an attempt to provide an answer. It is known from literature on survey design that respondents, attempting to be cooperative, will always try to answer questions even if they actually do not know the answers or if they do not have a strong opinion (Bishop et al., 1986; Schuman & Presser, 1981). The technique applied in the present questionnaire helps to avoid this effect.

The questions about why respondents expected either positive or negative impacts were open-ended, allowing for multiple answers which were categorized afterwards. Finally, only those respondents who had at least heard about plans for CCS were asked how important, if at all, they would say plans for carbon capture and storage in their local area are to them personally. Answer options ranged from 'not at all important' to 'very important'.

3.1.4 Perceptions of Carbon Capture and Storage in general

To obtain an extra measurement of awareness of CCS in general, all respondents were also asked how much, if anything, they knew about carbon capture and storage in general before the interview. Answer options ranged from 'never heard of it' to 'a great deal'.

New in the 2nd survey where twelve statements regarding CCS and one general statement about carbon emissions. Respondents first received the following information from the interviewer: '*Carbon dioxide – also known as CO_2 – is a greenhouse gas which is contributing to the rise in average temperatures on earth. One possible way of reducing the amount of carbon dioxide in the air is by using carbon capture and storage. It involves capturing and transporting carbon dioxide from power plants and storing it deep underground or under the seabed for many hundreds of years.'*

Next, respondents were asked to indicate to what degree they agree or disagree with the statements or whether they think some statements are likely or unlikely. To make the answering of the statements less tedious for respondents they received an open-ended question after the first eight statements, asking what they think their government should be doing differently to tackle climate change. As this was just a filler task the answers to this question were not further analysed. After the filler task respondents were given the four remaining statements and a final statement reading 'I believe that something must be done to reduce carbon emissions'.

3.1.5 CCS support

To get an impression of what respondents think of local and national plans for CCS, respondents received two questions. First, respondents were asked whether on balance they support or oppose using carbon capture and storage in their local area. Second, respondents answered the question whether on balance they support or oppose using carbon capture and storage in other parts of the country. Answer options ranged from 'strongly support' to 'strongly oppose'. Respondents who answered either of these questions or both neutral or negative ('neither support or oppose' to 'strongly oppose') received an additional question whether there is anything that would make them more supportive of using carbon capture and storage in their local area and/or in their country. This was an open-ended question.

In the next two chapters, the results of the quantitative site characterisation are presented. The percentages reported will not always exactly sum up to 100% due to rounding off.

4 Country report: Polish case

The 2nd survey was conducted by telephone in July 2012. It was held after the information meeting on CCS technology, which took place on 25th June 2012 in Góra Śląska. The same market research firm (TNS OBOP), with a good international reputation, was appointed to carry out both the 1st and the 2nd survey. The firm used quota samples to guarantee representatives on place of residence, age, sex, education and employment. The 2nd survey was conducted among a new sample of respondents who had not participated in the 1st survey, but just like in the 1st survey it included only respondents living in district Góra and municipalities Rawicz and Bojanowo. The methodology has been explained in the previous chapter. Results are given below.

4.1 Demographic information

1006 respondents in total participated in the 2nd survey, with somewhat more women (49%) than men (51%). The mean age of respondents was 45.0 (range: 18-88). In Figure 2 the educational level distribution of the respondents is shown. 39.9% of the Polish respondents have secondary school education, 24.1% professional education and 18.1% have Master level education.

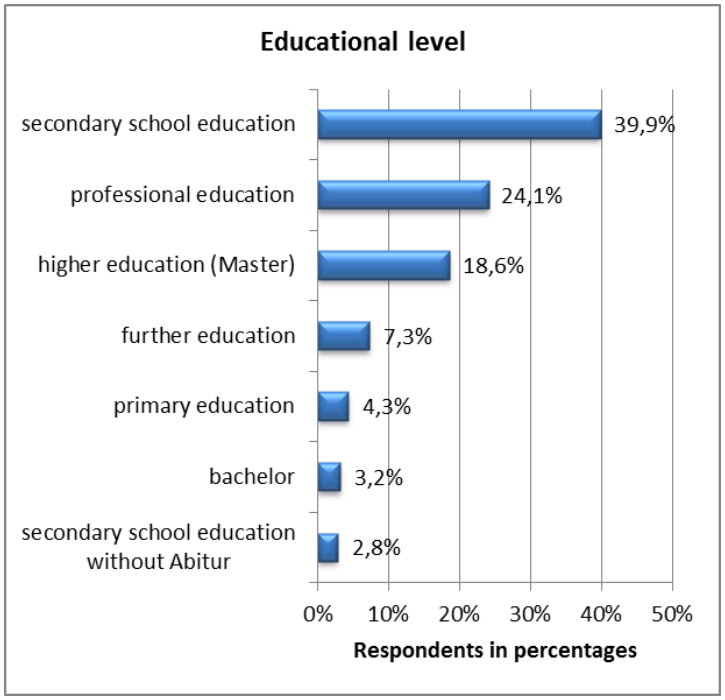


Figure 2 - Respondents educational level (n=1006)

As shown in Figures 3 and 4 half of the Polish respondents (50.2%) have employment and 18.8% of them work in the transport sector, 17.3% in farming, 12.9% in construction sector and 11.7% in retail. 8.2% of the respondents are unemployed and 21.2% are retired. Most Polish respondents (79%) have lived in the area over 20 years and 77% live in their own homes (see Figure 5 and 6). The demographic characteristics of the respondents in the 2nd survey are comparable with these from the 1st survey.

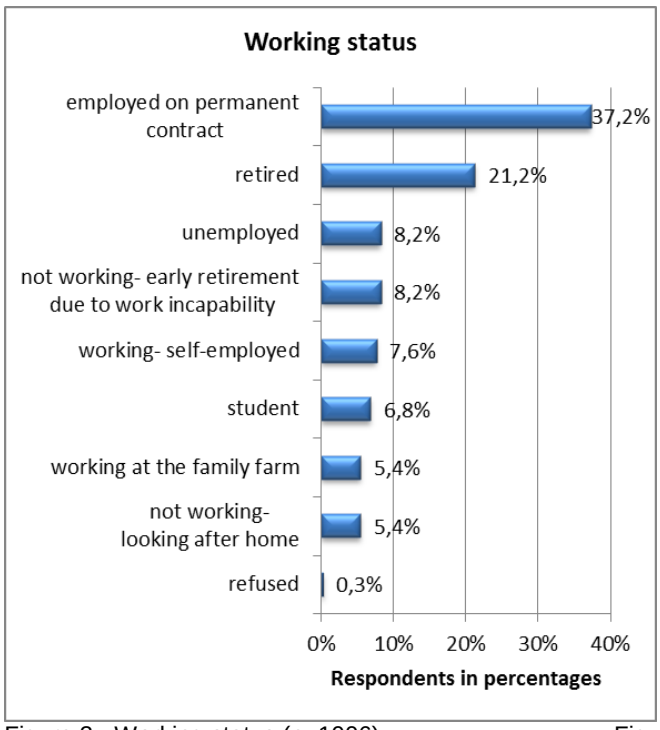


Figure 3 - Working status (n=1006)

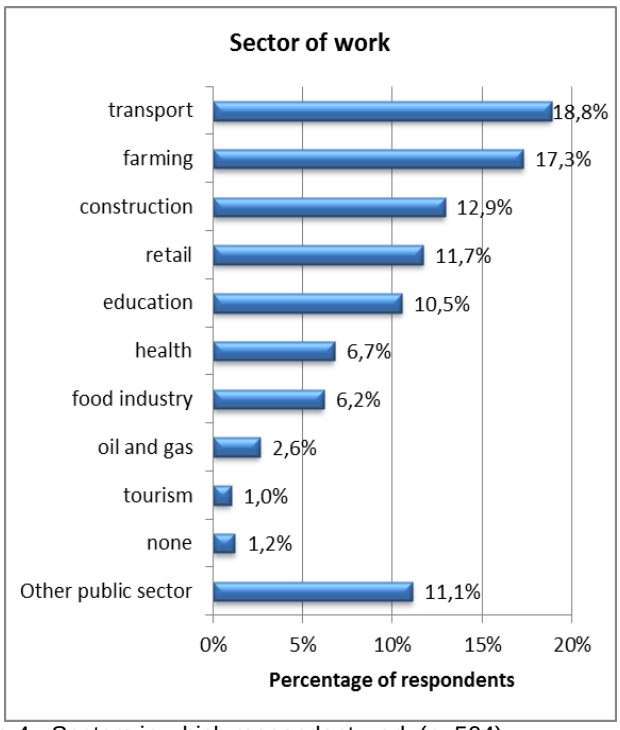


Figure 4 - Sectors in which respondent work (n=504)

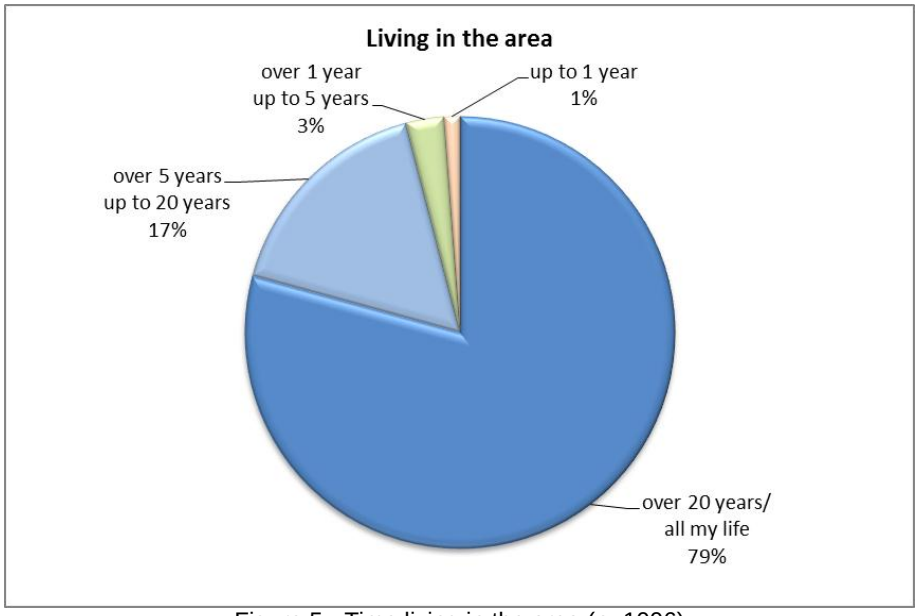


Figure 5 - Time living in the area (n=1006)

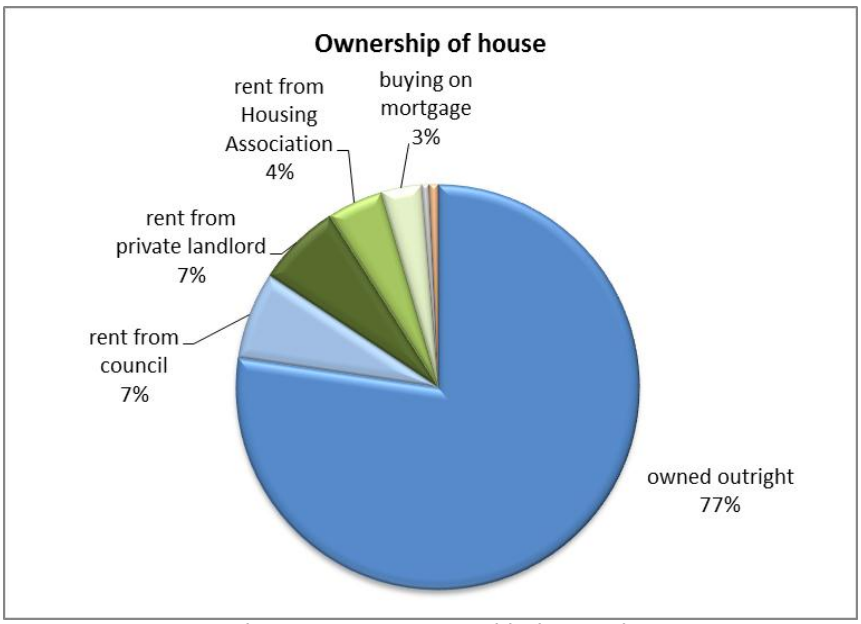


Figure 6 - House ownership (n=1006)

4.2 Local issues

In the next part of the survey the respondents were asked questions about their local area. Similar as in the 1st survey most respondents (74%) are satisfied with their living area. Only 12% answered that they are fairly or very dissatisfied with their local area (see Figure 7).

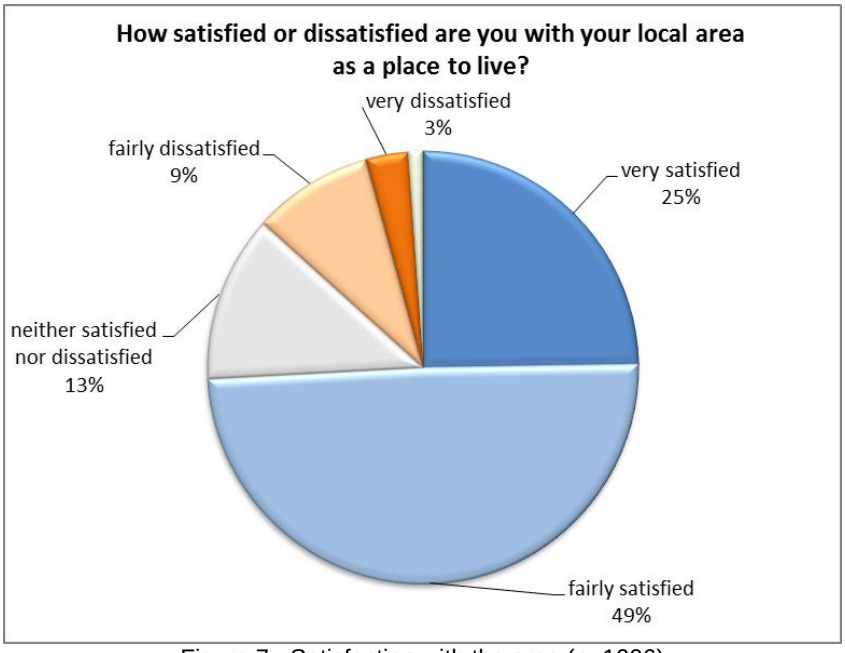
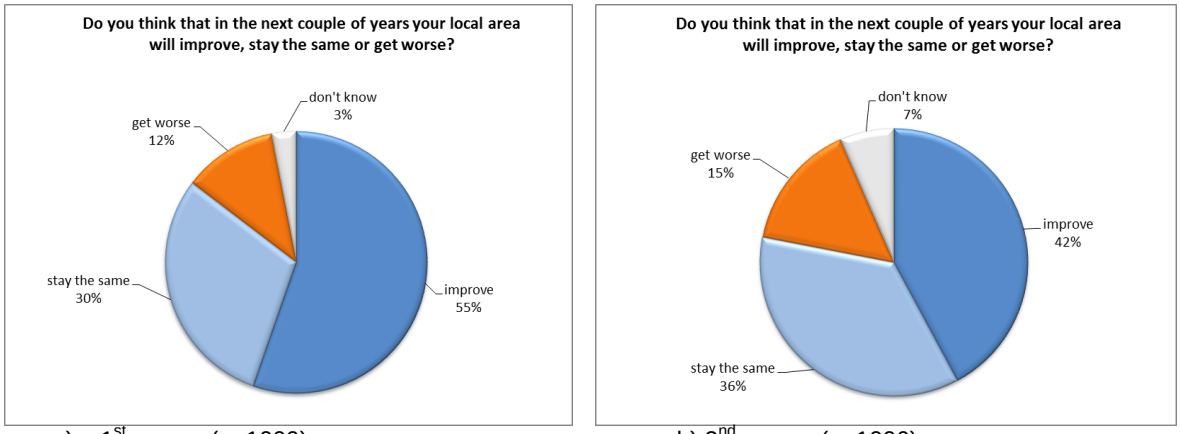


Figure 7 - Satisfaction with the area (n=1006)

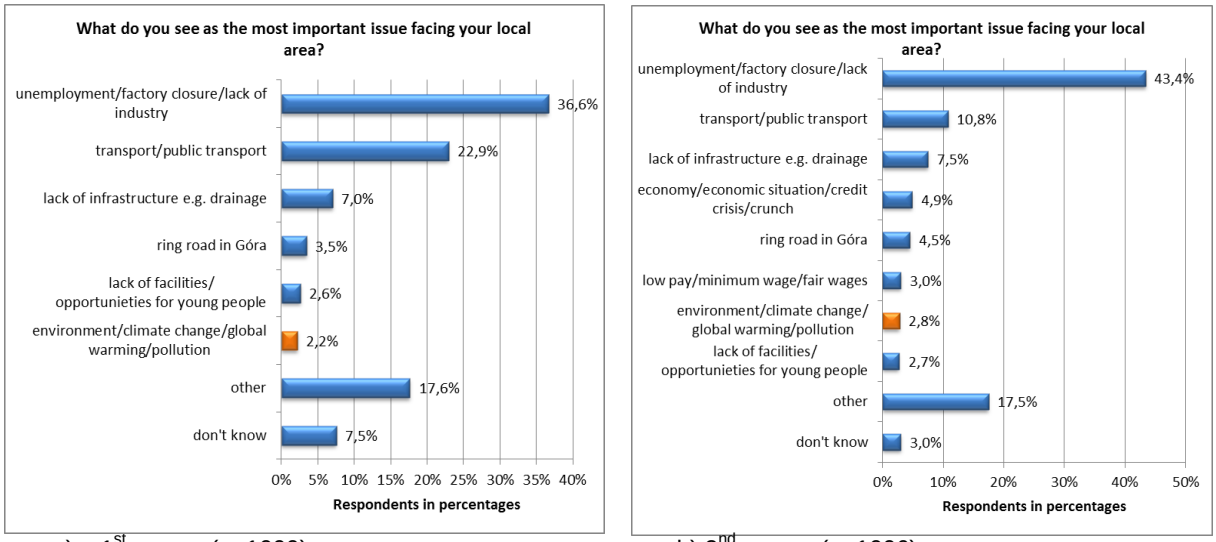
As can be seen in Figure 8b, 42% of the respondents thought that the situation in their local area will improve, a decline of 13% compared to the previous survey (see Figure 8a). It seems that less respondents are optimistic about the future of their area compared to the 1st survey.



a) 1st survey (n=1000) b) 2nd survey (n=1006)

Figure 8 - Expected change in the area

To appreciate the difficulties people in the Załęcze & Żuchlów site perceive, respondents were asked about the most important issues facing their local area. As shown in Figure 9b, 43.4% of the respondents mentioned unemployment as the most important issue in the area. This is almost 7percentage points more than in the 1st survey. With 10.8%, transport still seems to be second important local issue, although it's over 12 percentage points less than in the 1st survey. Overall, the results show that the economic issues, such as unemployment, economic situation, low pay etc. have gained importance compared to the 1st survey (see Figure 9a).



a) 1st survey (n=1000) b) 2nd survey (n=1006)

Figure 9 - Most important issues facing the local area

4.3 Perceptions of local Carbon Capture and Storage

Similar to the 1st survey, all respondents were asked whether they had heard anything about the CCS plans in the region before this interview. As can be seen in Figure 10, the awareness of CCS in the local area is still very low. Only 21% of the respondents have heard of local CCS plans. Compared to the 1st survey, awareness has increased by 7 percentage points.

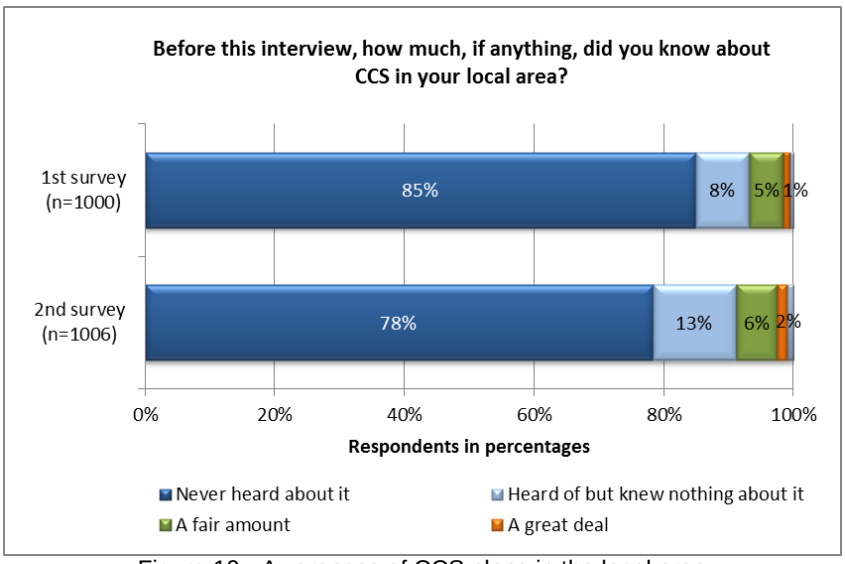
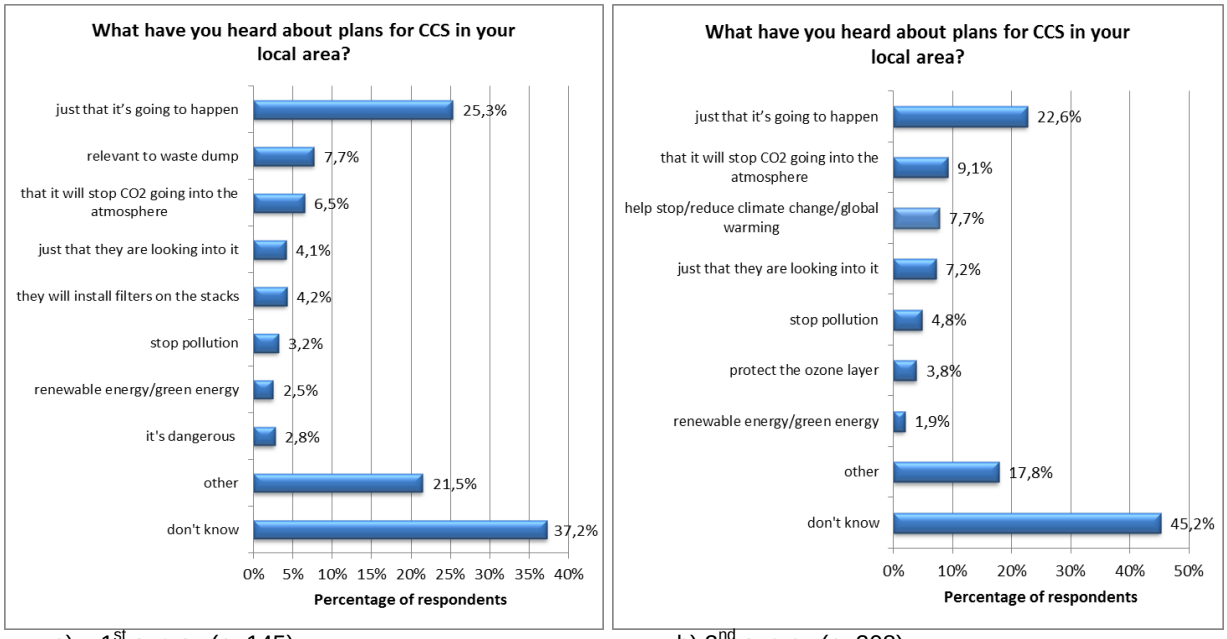


Figure 10 - Awareness of CCS plans in the local area

Respondents who had at least heard about the local CCS plans (n=208) were asked in an open-ended question (multiple answers possible) what they had heard about these plans. Results in Figure 11b show that 22.6% of the respondents has heard 'just that it is going to happen', slightly less than in the first survey (see Figure 11a). In comparison to the previous survey, respondents more frequently answered 'it will stop CO_2 going into the atmosphere' and 'help stop/reduce climate change/global warming' whereas overall less misconceptions were mentioned than in the 1st survey. These results show that although the awareness of CCS in the local area is very low, those who have heard of local CCS more often display concrete and correct knowledge about this technology. We may tentatively conclude that this is a positive effect of the public awareness activities undertaken in-between measurements within SiteChar, because apart from those activities little else has been going on in the region.



a) 1st survey (n=145) b) 2nd survey (n=208)

Figure 11 - What respondents have heard about CCS plans in their local area

Respondents who have heard of local CCS plans (n=208) where then asked whether in their opinion plans for CCS would have a positive or negative impact on their local area. As can be seen in Figure 12 the majority of the respondents (55%) expected a positive impact, 6 percentage points less than in the 1st survey. Only 18% of the respondents expected a negative impact of CCS on the local area. It can be also observed that the uncertainty among the respondents ("don't know" answers) increased compared to the 1st survey (15% vs. 7%). This increase in uncertainty may also be an effect of public awareness activities. Whereas the focus conferences and information meetings were helpful in informing and involving people, these events may also have raised new questions among the respondents.

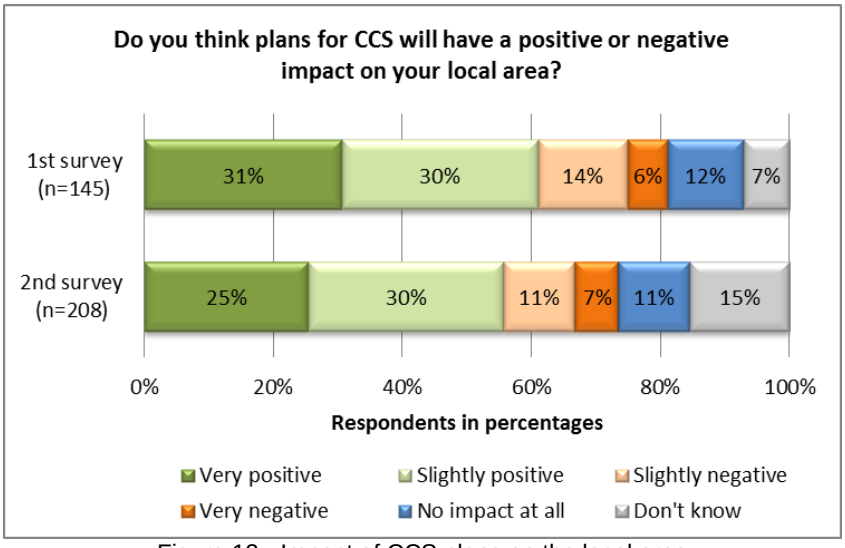
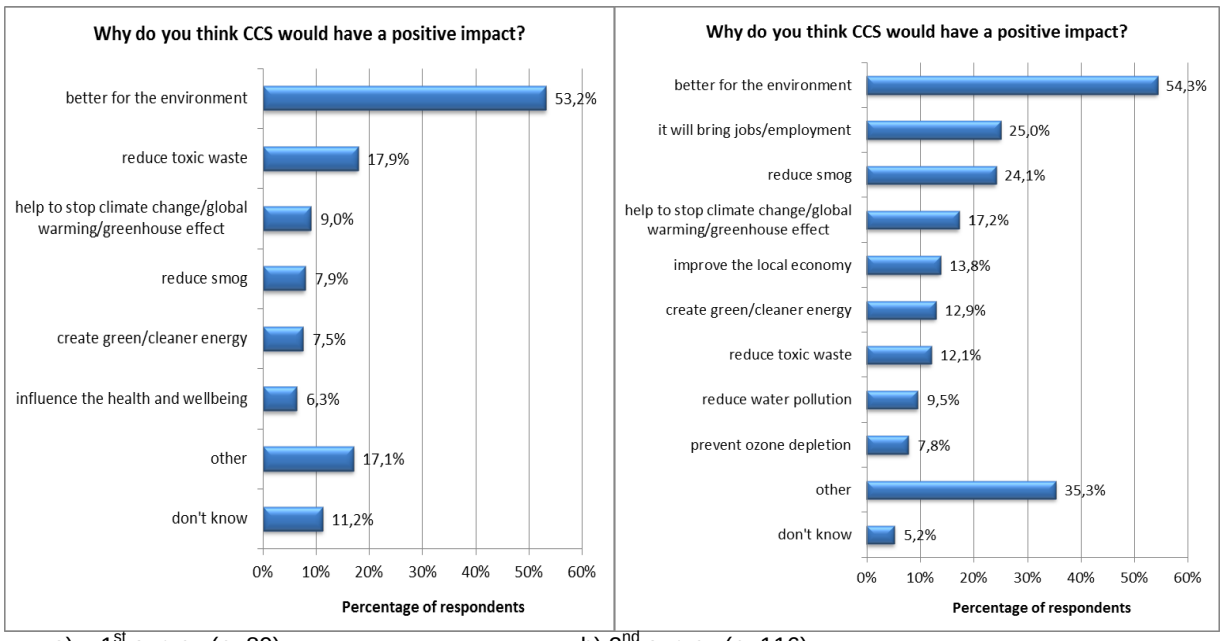


Figure 12 - Impact of CCS plans on the local area

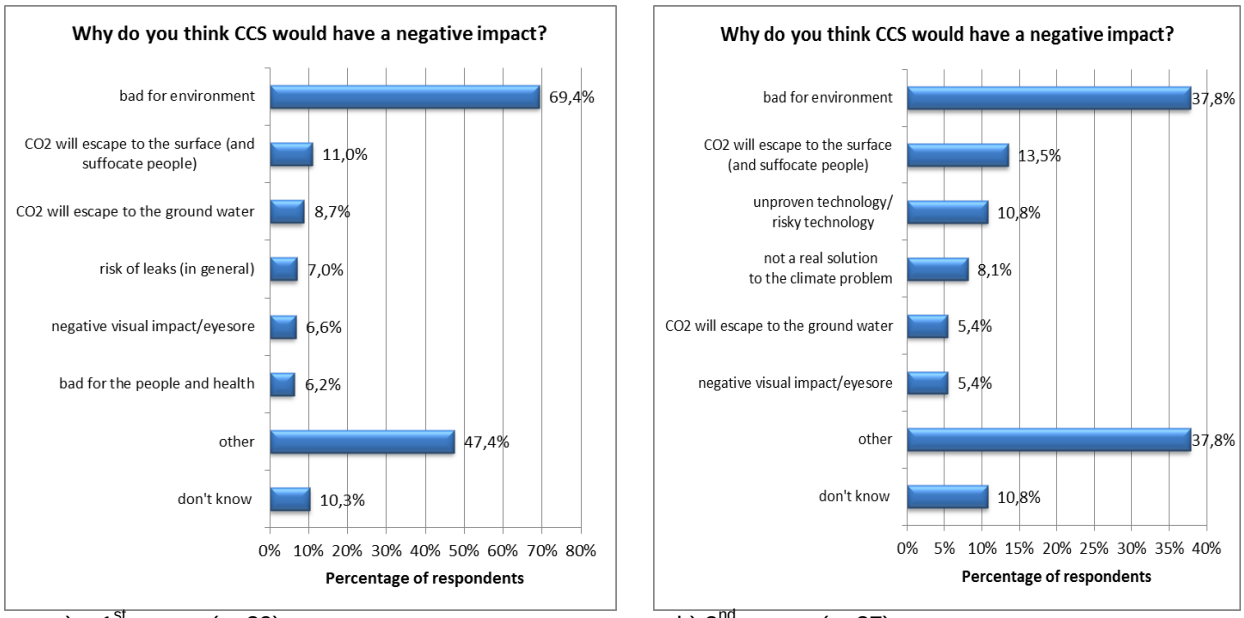
The 116 respondents who expected that CCS wil have a positive impact on their local area were then asked in an open-ended question (more than one answer possible) why they thought it may have a positive impact (see Figure 13). Like in the 1st survey, by far the most often reported positive impact is that CCS is better for the environment (54.3%) and 25% of the respondents thought that CCS will bring new jobs to the area. This impact and answer 'improve local economy', is mentioned by 13.8% of the respondents and is related to the most important issue faced the local area – unemployment. A significant number of the respondents mentioned impacts of local CCS plans that are incorrect or unrelated to CCS technology, for example that it will reduce smog (24.1%), reduce toxic waste (12.1%) or reduce water pollution (9.5%). These results show that although knowledge about CCS among those who have heard of it appears to have been improved, misconceptions are still held about the consequences of CCS and even appeared to have increased. It is unclear why this is the case, particularly as it seems to contradict the finding that more respondents than in the 1st survey were able to correctly state the aim of CCS. A possible explanation is that while knowledge of the aim of CCS has increased somewhat, the knowledge about CO_2 has not.



a) 1st survey (n=89) b) 2nd survey (n=116)

Figure 13 – Positive aspects of local CCS plans (answers with more then 5%)

The 37 respondents (18%) who indicated that in their opinion local plans for CCS will have a negative impact on the area were then asked why they think so (see Figure 14b). Due to the small sample size, strong conclusions should not be drawn on the basis of there results. Like in the 1st survey the most often mentioned argument was that CCS technology is bad for the environment (37.8%), but it was mentioned by a much lower number of respondents than in the 1st survey (69.4% - see Figure 14a). According to 13.5% of the respondents, CO_2 will escape to the surface and will suffocate people. 10.8% of the respondents estimate that CCS is an unproven technology and 8.1% think that it is not a real solution to the climate problem.



a) 1st survey (n=29) b) 2nd survey (n=37)

Figure 14 - Negative aspects of local CCS plans (answers with more than 5%)

Respondents who have at least heard about local plans for CCS were then asked how important these plans are for them personally. As can be seen in Figure 15, a large majority of the respondents in both surveys indicated that local CCS plans have at least a fairly high personal relevance to them (79% in 1st and 77% in the 2nd survey). For only 13% of the respondents do the plans for CCS in the local area have a low importance (a 4 percentage points decrease compared to the previous survey).

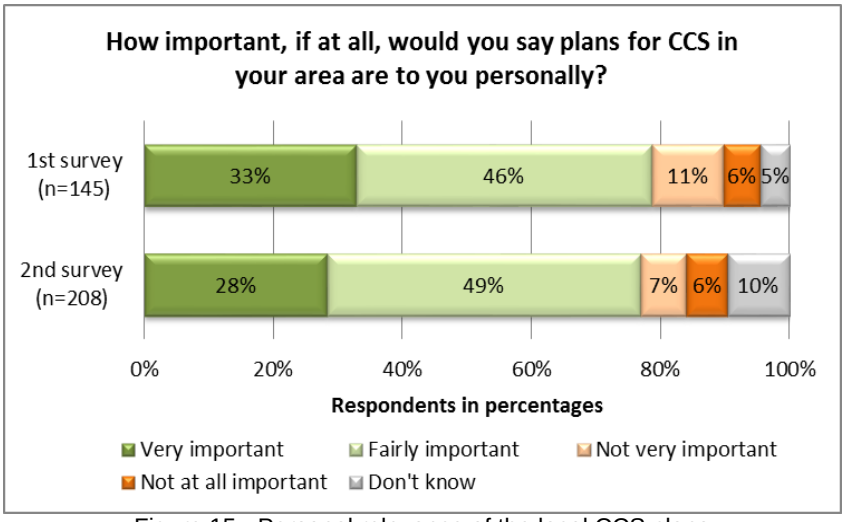


Figure 15 - Personal relevance of the local CCS plans

4.4 Perceptions of Carbon Capture and Storage in general

To measure awareness of CCS in general, all respondents were asked how much, if anything, they knew about carbon capture and storage in general before the interview. Of the respondents 27% indicated to have at least heard about CCS. Based on the results in Figure 16 it can be concluded that the awareness of CCS in general is still low but compared to the 1st survey it has increased by 10 percentage points. Although we cannot say with certainty what caused this increase, it may be a result of the public engagement activities carried out in the local area within the framework of the SiteChar project (focus conference, information meeting, articles in the local newspapers and internet, contacts with the local stakeholders etc.).

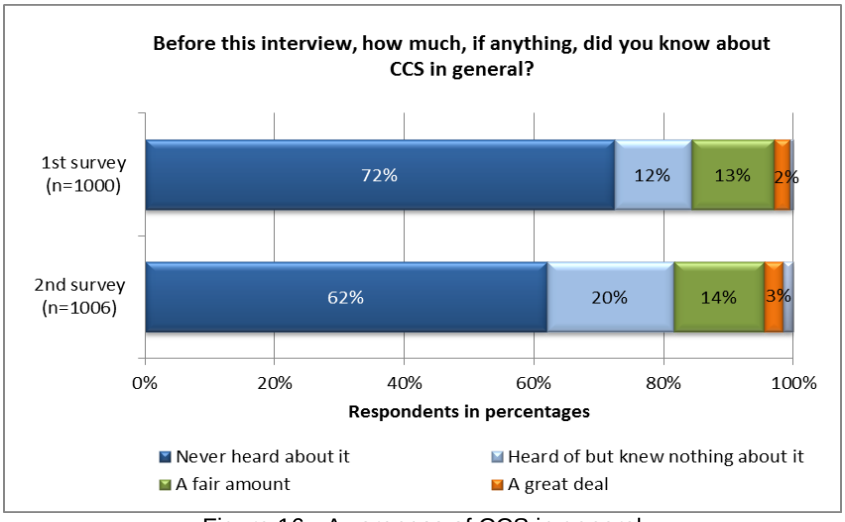


Figure 16 - Awareness of CCS in general

4.4.1 Perceived negative consequences of CCS

To measure the perceptions and attitudes of the respondents towards CCS technology, all respondents (n=1006) were asked to evaluate twelve statements concerning possible impacts of the CCS technology. As these questions were new as compared to the previous survey, no comparisons are possible between the 1st and 2nd survey.

The first two statements were related to the risk and consequences of CO_2 leakage. Answers were given on a scale from 'very likely' to 'very unlikely'. The results in Figure 17 show that of the respondents 45% stated that they think it is very or fairly likely that CO_2 will leak from the storage to the surface. Regarding the possibility that people will suffocate when stored CO_2 leaks to the surface, 45% thought it fairly to very likely that this will happen and 37% thought it fairly to very unlikely.

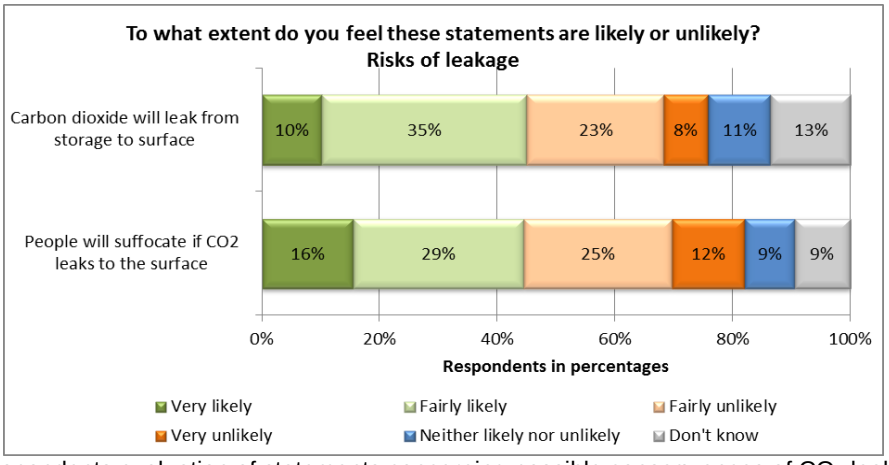


Figure 17 - Respondents evaluation of statements concerning possible consequences of CO_2 leakage (n=1006)

There were two other statements (see Figure 18) with regard to perceived negative consequences of CCS. 50% of the respondents agreed with the statement that CCS is too costly. Most other respondents (41%) were indifferent or did not know whether CCS would be too costly, while only 9% disagreed with the statement. Furthermore, almost half of the respondents (48%) thought that using CCS will decrease efforts put in renewable energy.

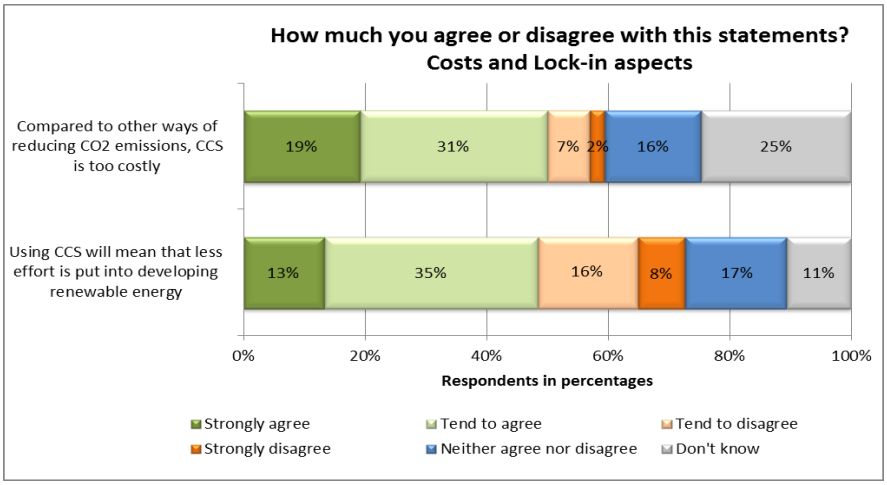


Figure 18 - Respondents evaluation of statements concerning possible negative consequences of CCS (n=1006)

4.4.2 Perceived positive consequences of CCS

Respondents were also asked about their perceptions of several positive consequences of CCS (see Figure 19). The first two statements concern trust in authorities to provide appropriate regulation and monitor the safety of CCS. Results show that the majority of the respondents (60% and 53% respectively) have trust in authorities. However, respondents seemed to find it difficult to judge whether CCS is ready for widespread use. Of the respondents 20% indicated that they do not know whether CCS is ready and an additional 21% neither agreed nor disagreed with the statement. Most respondents agreed with the statements about CCS being helpful to Poland to meet international agreements (62%) and to buy time to develop renewables (60%). However only 41% agreed on the statement that CCS will give Poland a technological advantage over other countries whereas 33% disagreed. Finally, a large majority of 69% stated that they think CCS is essential to tackle climate change.

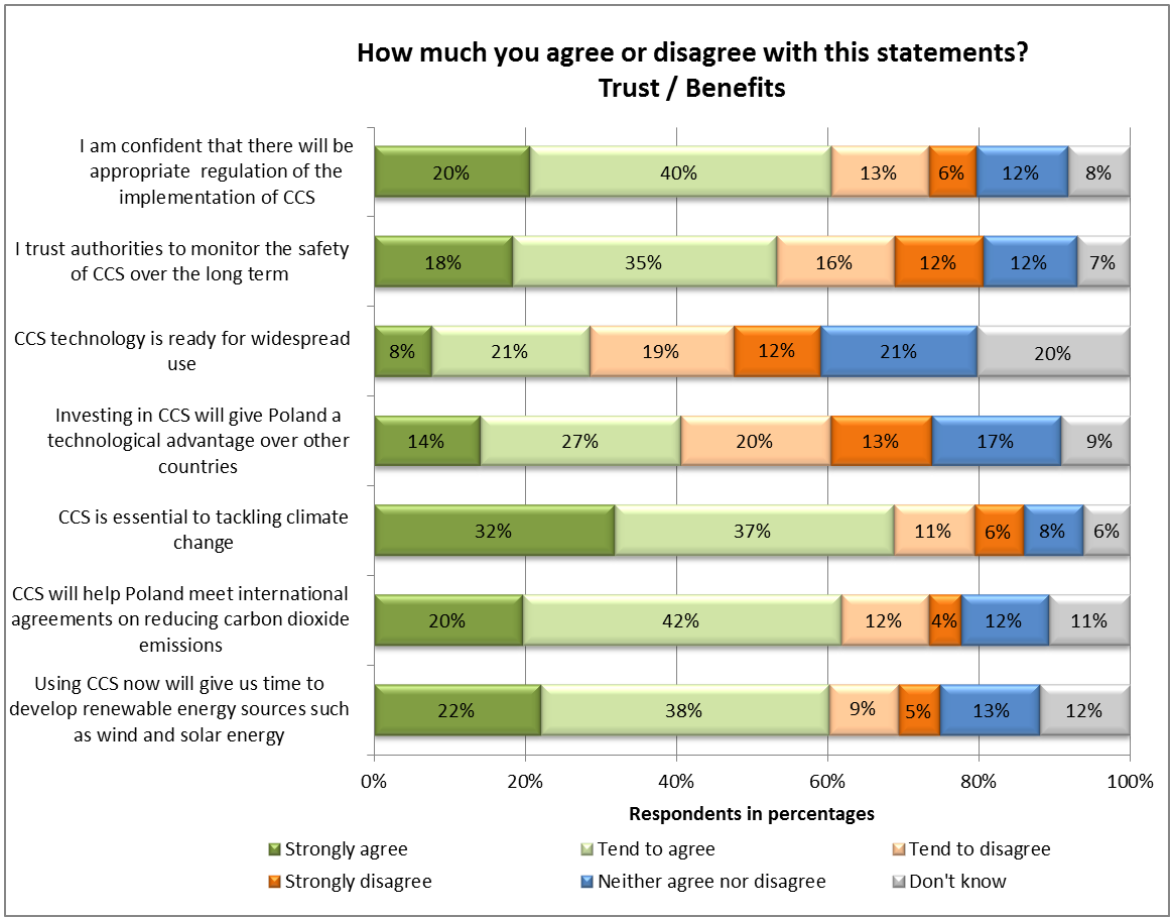


Figure 19 - Respondents evaluation of positive consequences of CCS (n=1006)

It is important to note that while half of the respondents on the one hand indicate that they think that investing in CCS will lead to less investments in renewables, a majority also thinks that it will buy time to develop renewables. As respondents had low levels of knowledge on what CCS actually is, it might be that they were unsure about the effect of CCS on renewables and therefore answered confirmative to both questions.

A final statement was about respondents sense of urgency with regard to reducing CO_2 emissions. A large majority (87%) indicated that they think that something must be done to reduce carbon emissions (see Figure 20).

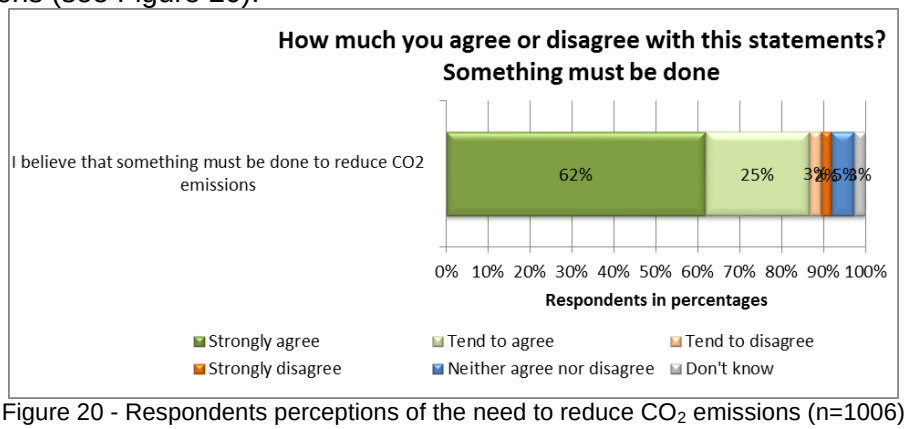


Figure 20 - Respondents perceptions of the need to reduce CO_2 emissions (n=1006)

4.5 CCS support

When asked whether respondents would support or oppose CCS in the area and in other parts of the country, 57% say they would support CCS in the area, and 62% say they would support CCS in other parts of the country (see Figure 21).

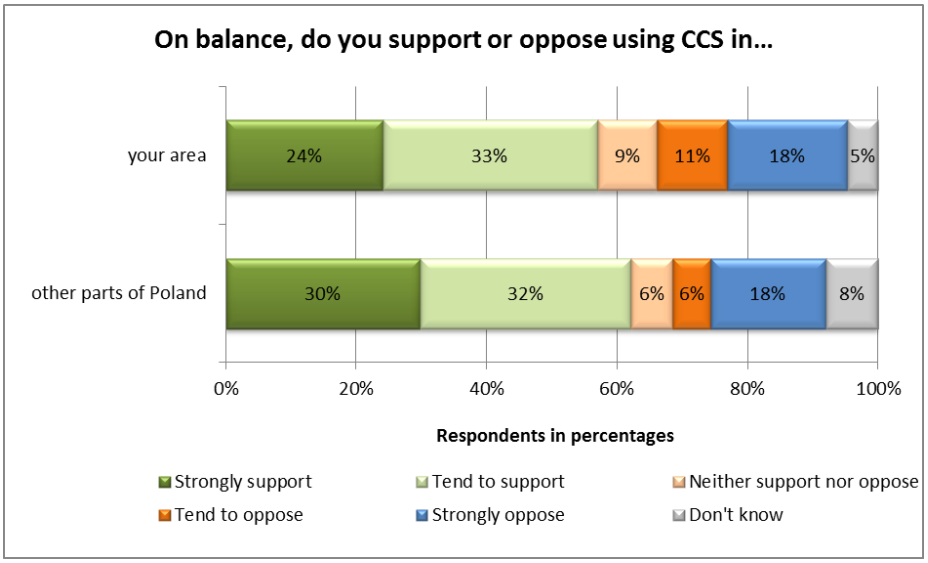


Figure 21 - Respondents opinion on using CCS in the area and other parts of the country (n=1006)

Respondents who answered ‘Neither support nor oppose’, ‘tend to oppose’ or ‘strongly oppose’ to CCS, either in the area or in other parts of the country (n = 424) were asked if anything would make them more supportive of using CCS (open-ended question, see Figure 22). Although the most often provided answer to this question was ‘none’ (28.8%) and ‘don’t know’ (28.3%) other answers that were provided were that if there would be more guarantees about safety (17%), if there would be more information (9.7%), if it would lead to more jobs in the area (9.2%) and if there would be proper consultation with the public (8.7%).

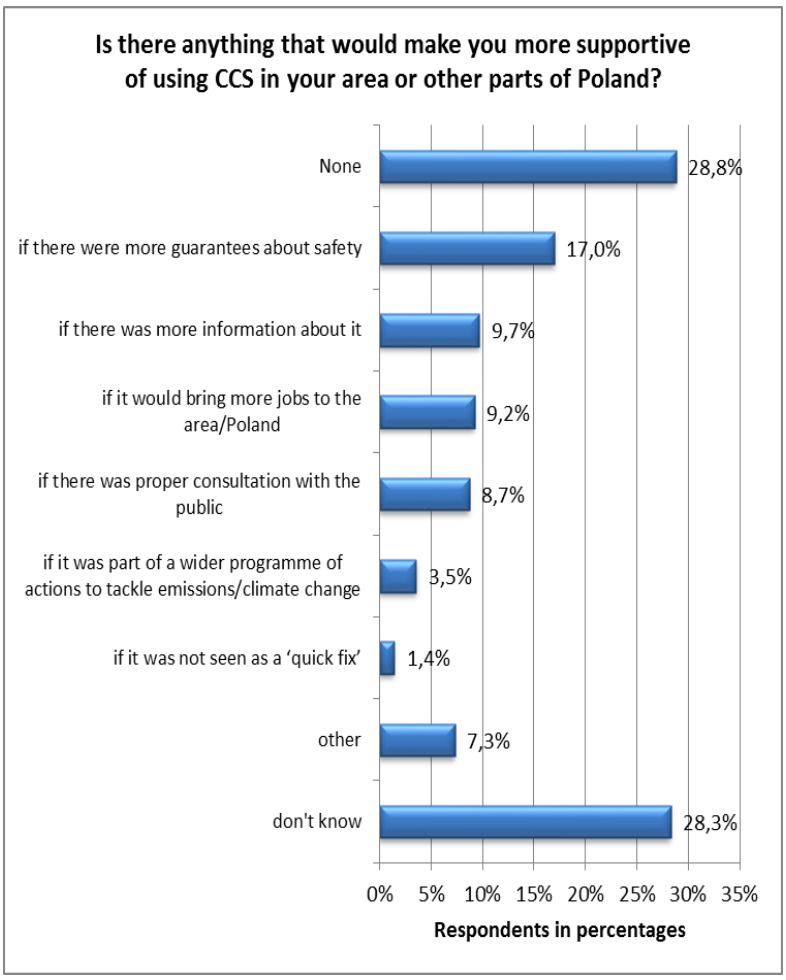


Figure 22 - What should be done to convince the respondents to support using CCS (n=424)

4.6 Conclusions

Although awareness of local plans for CCS and CCS in general has increased, it is still very low. A large majority of the respondents has not heard of (plans for) CCS. When asking the respondents who have at least heard of local plans for CCS what they have heard, answers are not very specific. The respondents who had heard of CCS did report that they expected a positive impact on the area of plans for CCS, although this number was slightly lower than in the 1st survey. When asked for reasons why they expect a positive impact, respondents mostly provide environmental arguments followed by the expectation that CCS may bring jobs to the area. The few respondents that expected a negative impact also reported mostly environmental damage and risks. The finding that a majority of 77% reported that they think plans for CCS in the area are important to them personally is difficult to interpret. One could argue that people must relate this to the expected positive impacts on the environment, given that this is the most expected outcome, however as a local issue the environment is only important to 2.8% of the respondents. It could be related to expectations about employment, but since only 25% of the respondents expect this there must be other explanations as well.

Perhaps the perceived importance relates to expected risks rather than benefits. 45% of the respondents thought it likely that CO_2 will leak to the surface and also 45% thought it is likely that people will suffocate when it leaks to the surface. Furthermore, half of the respondents thought that CCS would be too costly to develop. In all, it appears that whereas in the 1st survey personal importance could be related to economic expectations, in the 2nd survey it might relate to perceived risks. Although this can only be hypothesized, it would be in line with a similar shift in attention in the discussion about CCS at the Polish focus conferences.

Another interesting finding is that whereas 48% thought that applying CCS would mean that less effort will be put into developing renewable energy, 60% reported that it would probably buy time to develop renewables. These high percentages of confirmative answers to two opposing statements might be caused by respondents' reluctance to admit their lack of a clear opinion.

Most respondents put trust in regulation and monitoring measures by authorities. As said, 60% agreed that CCS will help Poland meet international targets for CO_2 reduction and thought using CCS will provide time to develop renewable energy. Also, 41% believed that CCS might give Poland a technical advantage over other countries. Interestingly, although almost 70% of the respondents thought that CCS is essential for tackling climate change, respondents were uncertain whether CCS is ready for widespread use.

On balance, a majority of respondents said that they support CCS, both locally and nationally. When respondents who are opposed or uncertain were asked what could be done to make them more supportive, most indicated they do not know or that nothing will change their opinion. Other answers were that they would like guarantees about safety and more information and consultation.

5 Country report: UK case

Similar to the 1st survey wave, the 2nd survey was conducted by telephone by the same market research firm based in Edinburgh (Ipsos MORI). The survey was held in the second half of September 2012, a week after the information meeting in the Moray Firth (which was held on September 6; for details see D8.3: Brunsting, et al., 2012a). This was somewhat later than in Poland due to developments in the region regarding CCS, resulting in the decision to postpone the information meeting. Similar to the previous survey, a quota sample was used to guarantee representativeness on age, sex, and education/employment. Using the postal code as the inclusion criterion, the sample only included respondents living along the coast south of the Moray Firth, including Peterhead in the east but excluding Inverness in the west. This was the same as in the 1st wave of the survey.

5.1 Demographic information

864 respondents in total participated with an almost equal distribution of men (49.4%) and women (50.6%). The mean age of respondents was 49.9 (range: 18-91). Figure 23 shows that 58.5% of the respondents (n=505) are employment, 41.7% of which are working full time and 16.8% on a part-time basis; 3.4% of the respondents are unemployed. Over a quarter of the respondents are retired.

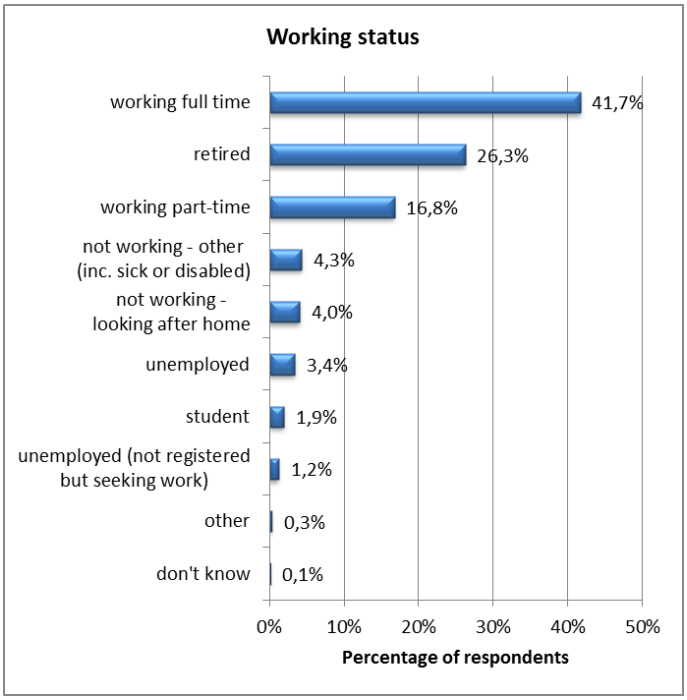


Figure 23 - Working status (n= 864)

As can be seen in Figure 24, 12.7% of the employed respondents work in the oil and gas sector, 12.6% in retail, 11% in health and 8.3% in education.

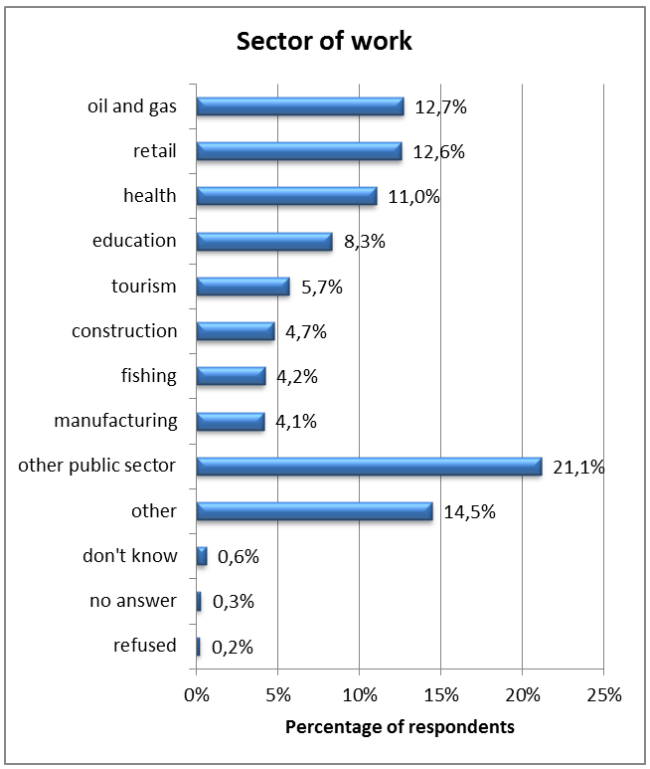


Figure 24 - Sectors in which respondent work (n=505)

Figure 25 shows the educational level distribution of the respondents; 18.7% of respondents have a university degree, 27.6% have post-school qualifications 1st grade or higher and 17.6% have no formal qualifications.

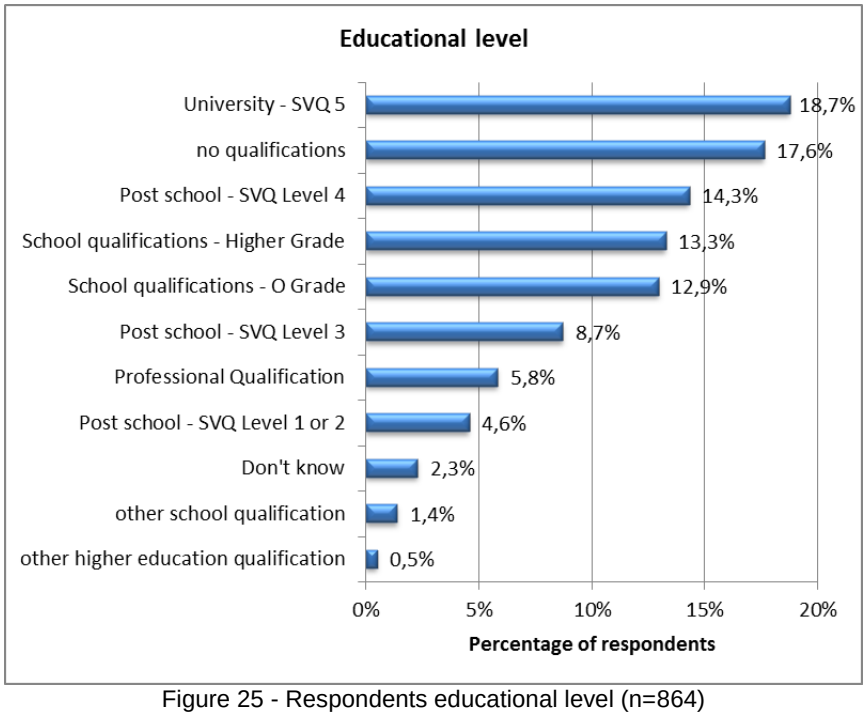


Figure 25 - Respondents educational level (n=864)

Most of the respondents have been living in the area for at least 20 years (61%) or have been living there for 5-20 years (30%). This is shown in Figure 26.

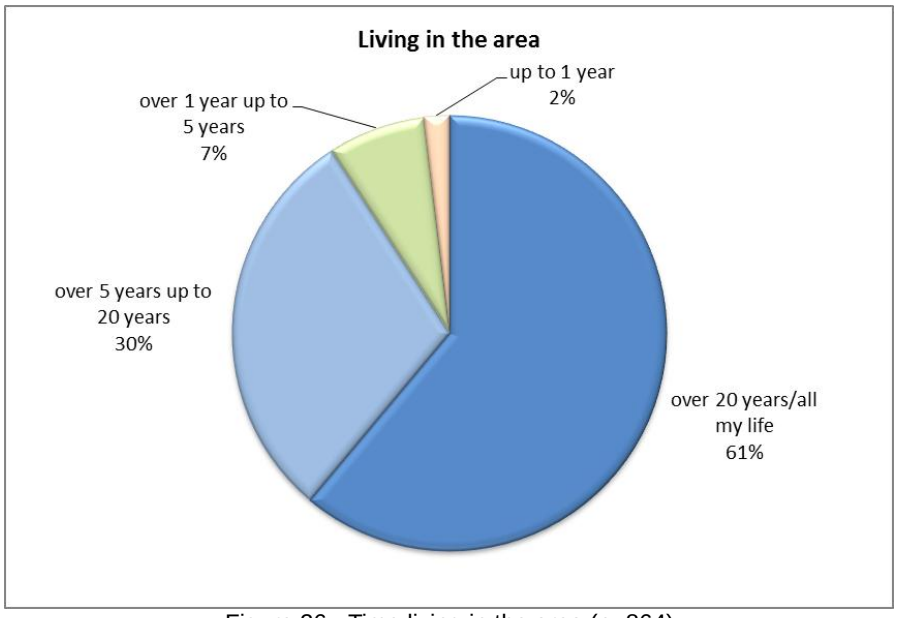


Figure 26 - Time living in the area (n=864)

Most of the respondents own their home (65%). Most of them still have a mortgage (36%), see Figure 27. One third of the respondents rent the house they are living in. This is a similar distribution as in the 1st survey.

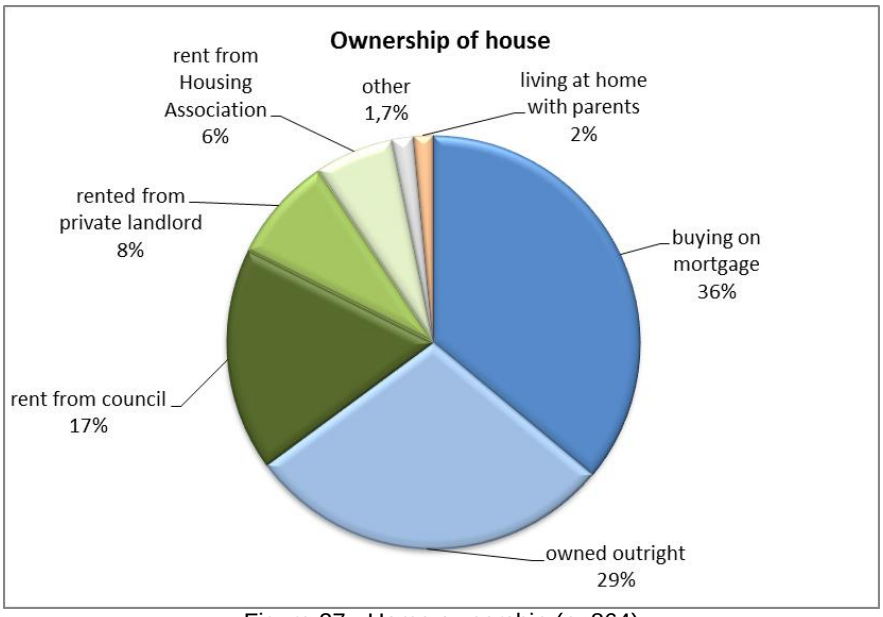


Figure 27 - Home ownership (n=864)

5.2 Local issues

We asked respondents whether they are satisfied or dissatisfied with their local area as a place to live. As can be seen in Figure 28, similarly to in the 1st survey, most respondents (86%) are satisfied with their local area and only 8% of the respondents are dissatisfied with their local area.

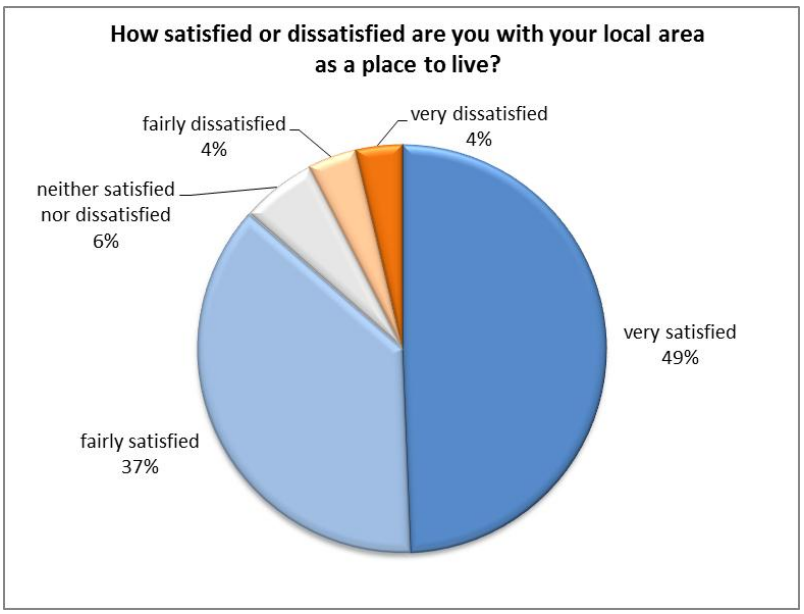
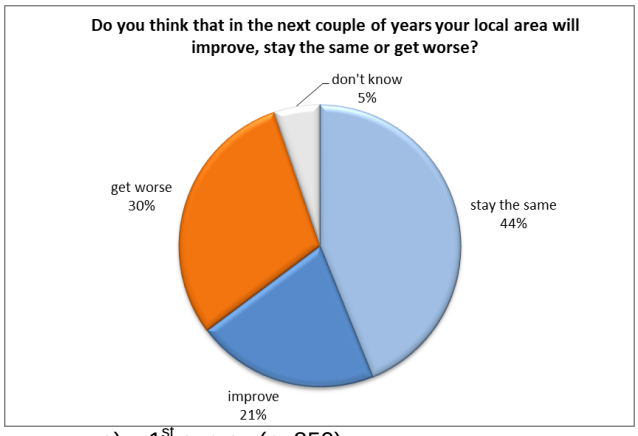
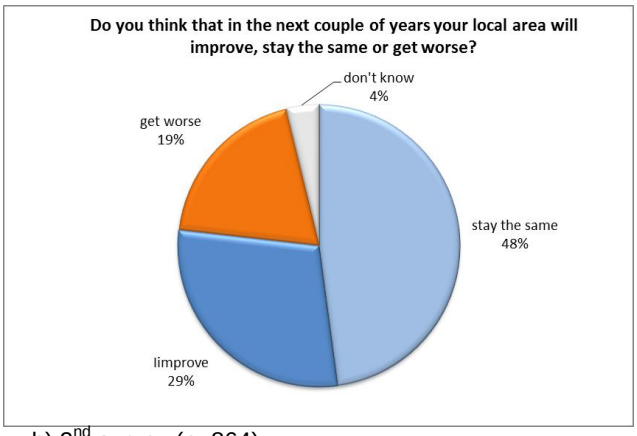


Figure 28 - Satisfaction with the area (n=864)

Respondents were also asked whether they think the local area will change in the coming years (see Figure 29). Interestingly, while in the 1st survey 30% of the respondents indicated that they thought the local area would get worse, in the 2nd survey only 19% of the respondents gave this answer. It seems that more respondents were positive about the future of their local area than at the time of the 1st survey.



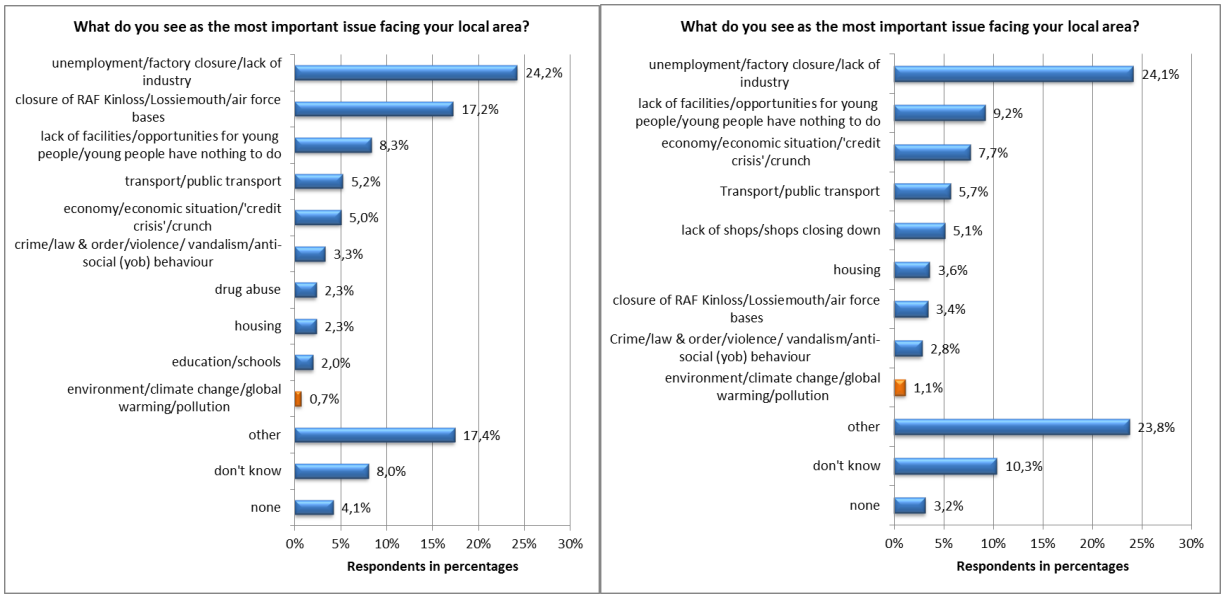
a) 1st survey (n=850)



b) 2nd survey (n=864)

Figure 29 - Expected change in the area

Next, respondents were asked in an open-ended question which issue facing the area they perceive to be most important. Answers were scored and coded into several categories. Similar to the 1st survey, respondents perceived unemployment to be the largest issue facing the area. The biggest change compared to the 1st survey is that the closure of the Royal Airforce Base (RAF) was no longer an issue in the 2nd survey, since by then it was known that it would stay open. The issues mentioned as most important seemed to be mostly related to the economic issues, such as unemployment, lack of opportunities for young people, the economic situation, and shops closing down. Although more than in the 1st survey, still only 1.1% of respondents see environmental issues as the most important issue facing the area (see Figure 30).



1st survey (n=850) b) 2nd survey (n=864)

Figure 30 - Most important issues facing the local area

5.3 Perceptions of local Carbon Capture and Storage

Following the general questions concerning the local environment, respondents were asked several questions with regard to CCS. First, respondents were asked whether they knew anything about carbon capture and storage *in the Moray Firth* before the interview. A little less than half of the respondents (47%) indicated to have heard of CCS in their area, including 17% who indicated knowing a fair amount or a great deal about this topic. In the 1st survey approximately the same number of respondents had indicated they had heard about CCS plans in the Moray Firth (46%), including 15% who indicated to know a fair amount or a great deal about this topic (see Figure 31).

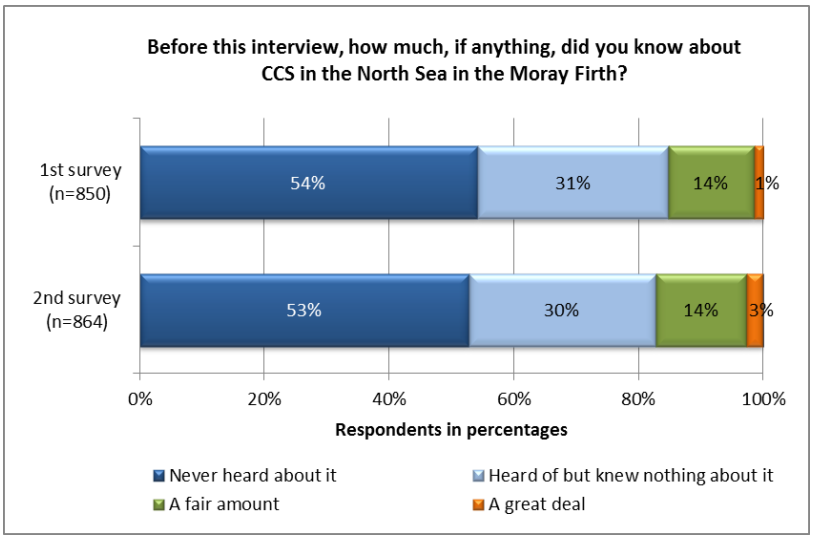
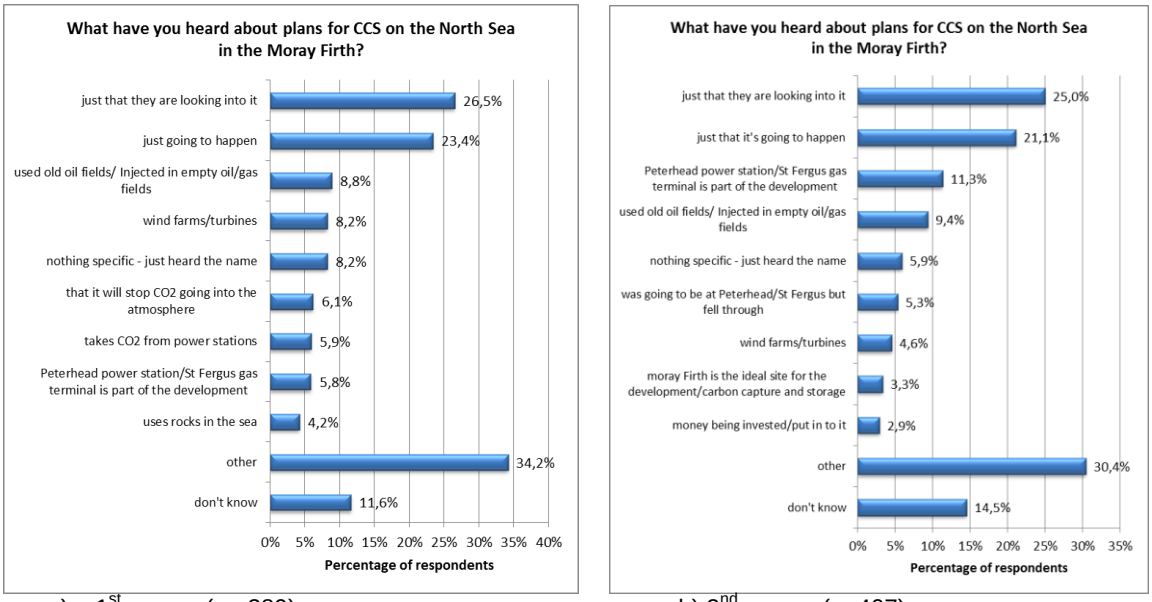


Figure 31 - Awareness of CCS plans in the Moray Firth

Respondents who indicated to at least have heard about CCS plans (n=407) were subsequently asked what they had heard about these plans in an open-ended question (see Figure 32b). Respondents were allowed to give multiple answers. Compared to the previous survey (see Figure 32a), it seems that slightly more respondents have a general idea of the local CCS plans than in the previous survey; less respondents gave answers such as 'just that it is going to happen', or 'that they are looking into it', or 'nothing specific-just heard the name' (58.1% vs. 52%). More respondents seemed to be aware of the involvement of Peterhead/St. Fergus, and several (5.3%) also indicated that these plans fell through. Based on this and the previous question, one might thus conclude that although overall reported awareness of CCS in the Moray Firth has not increased, respondents do seem to have more specific knowledge of CCS as well as of past and present plans.



a) 1st survey (n= 389) b) 2nd survey (n=407)

Figure 32 - What respondents have heard about CCS plans in the Moray Firth

Next, respondents who had indicated to have heard of CCS plans in the area (n=407) were asked whether in their opinion the plans for CCS in the Moray Firth would have a positive or negative impact on the area (see Figure 33). While a majority of respondents (55%) expected a positive impact, this was less compared to the 1st survey (61%). The number of respondents that expected a negative impact remained the same (13% vs. 13%). There was an increase in the number of respondents that expected no impact at all (14% vs. 10%), which - if compared with other results - may have to do with the increased awareness of respondents of the Peterhead project plans.

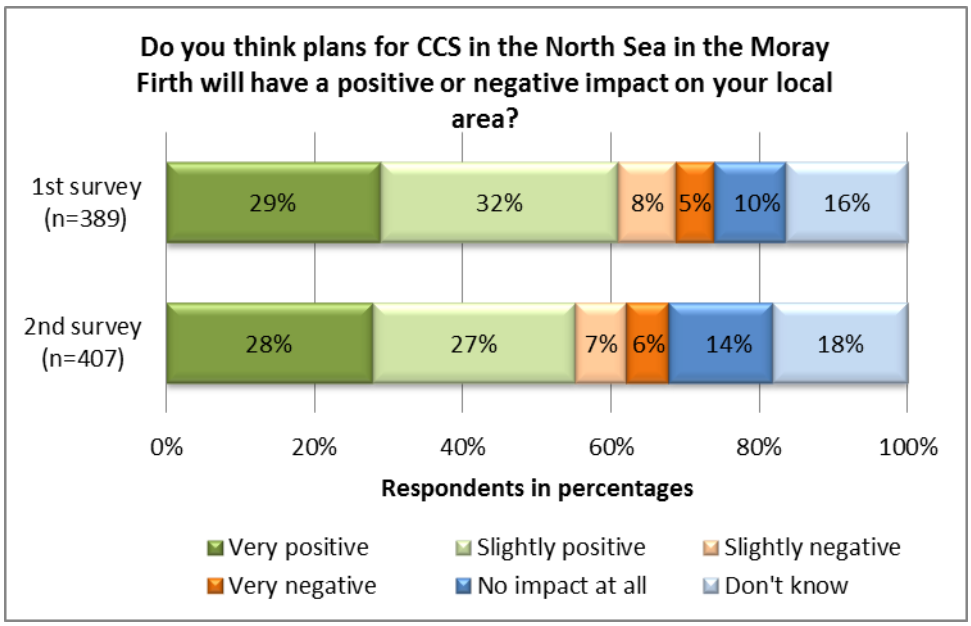
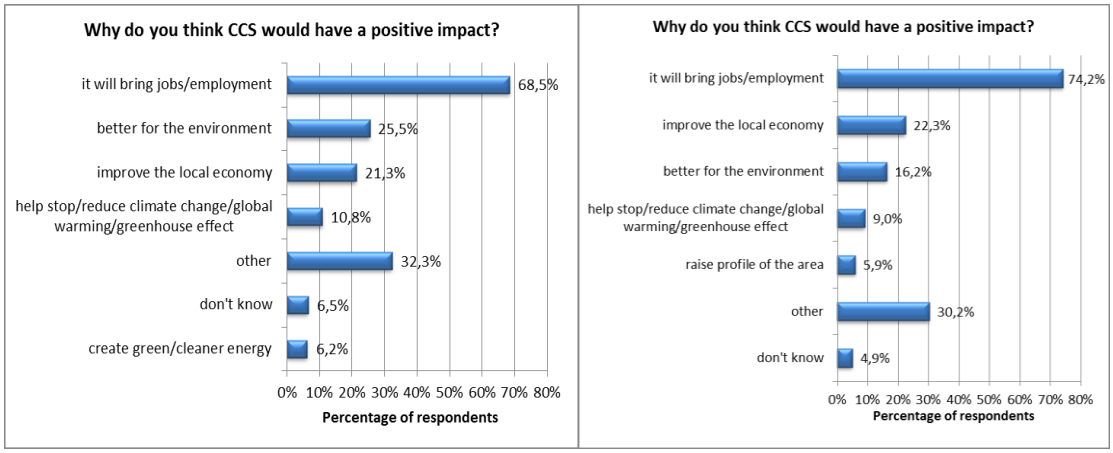


Figure 33 - Impact of CCS plans in the Moray Firth (n=407)

Respondents who were positive about local plans for CCS (n=225) were asked in an open-ended question about why they thought it may have a positive impact. Expected positive impacts for CCS in the area have remained quite similar over time. As can be seen in Figure 34, the most frequently mentioned were economic impacts; 74.2% of the respondents expected that local CCS will bring jobs to the area and 22.3% thought that it will improve the local economy. Other important expected advantages of local CCS are that it will be better for the environment (16.2%), that it will curb climate change (9%) and raise the profile of the area (5.9%) (see Figure 34).

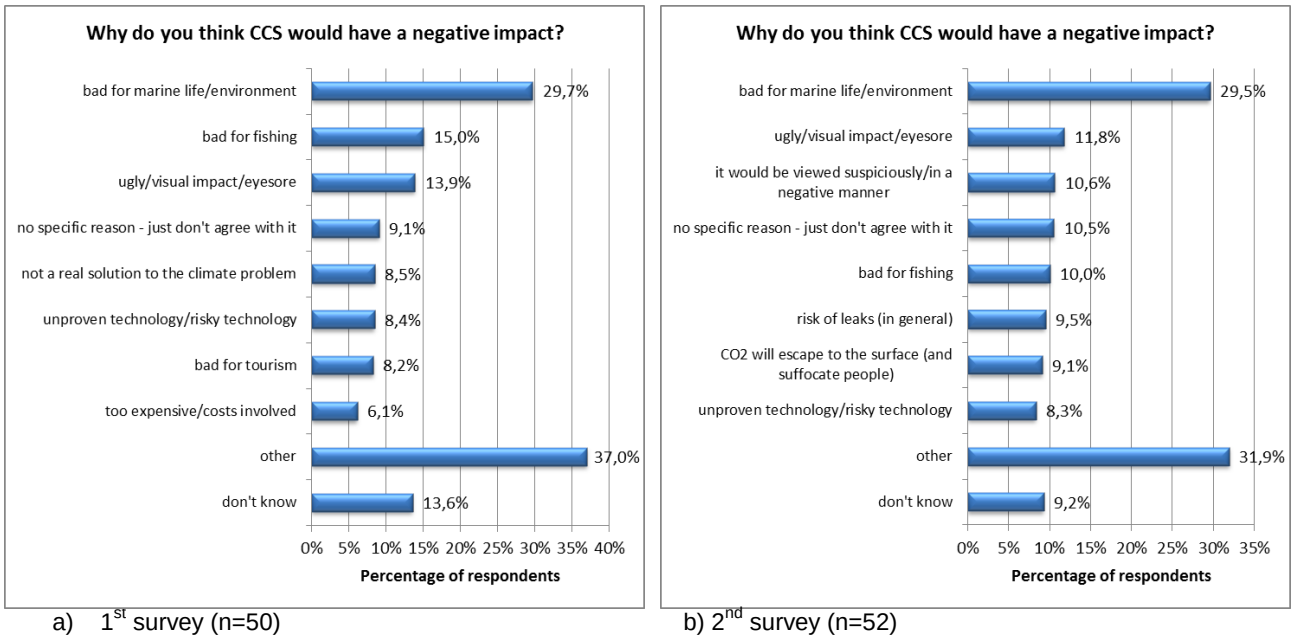


a) 1st survey (n=237) b) 2nd survey (n=225)

Figure 34 - Positive aspects of local CCS plans (answers with more than 5 %)

Only 52 respondents (12.7%) indicated that they expected CCS to have a negative impact on the area. These respondents were then asked in an open-ended question why they thought it may have a negative impact. However, due to the small number of responses, these results should be interpreted with caution. Similar issues were raised as in the previous survey (see Figure 35). Similar to the 1st survey, the most important negative impact expected is that CCS is bad for

marine life and the environment (29.5%) and will have a negative visual impact (11.8%). Furthermore, respondents indicated that they expect that deploying CCS in the area could be viewed suspiciously and negatively by others (10.6%). This was not mentioned in the 1st survey.



a) 1st survey (n=50) b) 2nd survey (n=52)

Figure 35 - Negative aspects of local CCS plans (answers with more than 5 %)

Respondents who had indicated to have heard of local CCS plans were asked how important they perceive those plans in the Moray Firth to be to them personally. It seems that respondents are rather divided regarding the personal relevance of local CCS plans. In the present survey, 44% of the respondents stated that it may be important to some degree, and 47% did not think it is important (see Figure 36).

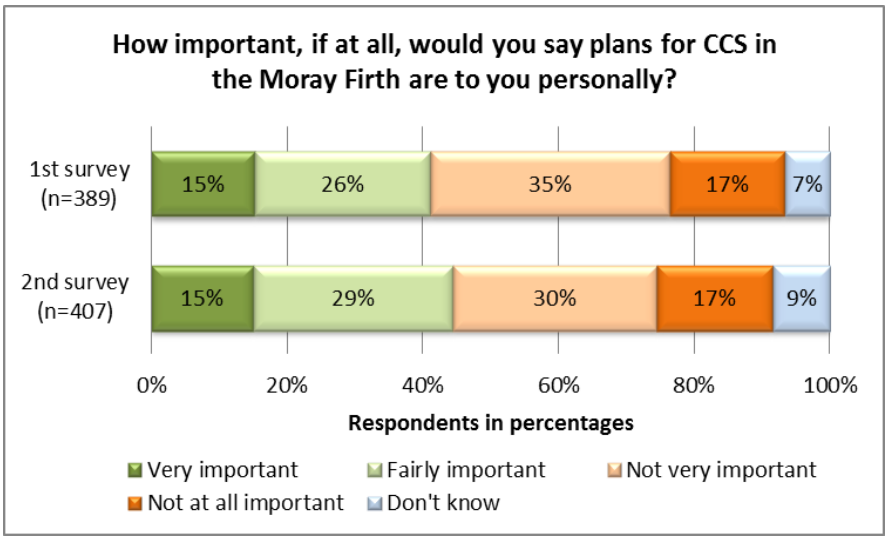


Figure 36 - Personal relevance of the local CCS plans

5.4 Perceptions of Carbon Capture and Storage in general

Respondents were asked how much they knew about CCS in general before the interview (see Figure 37). Results showed that a majority (51%) of the respondents indicated they had heard about CCS. This percentage is slightly lower than in the 1st survey, where 57% of the respondents indicated to have heard about CCS. It can be concluded that awareness of local CCS plans (see Section 5.3) is higher than awareness of CCS in general. Over time, awareness of CCS *in general* seems to have declined slightly, while awareness for *local plans* has stayed the same or has increased slightly. One possible explanation is that during the SiteChar project, attention arose to specific local plans (Peterhead).

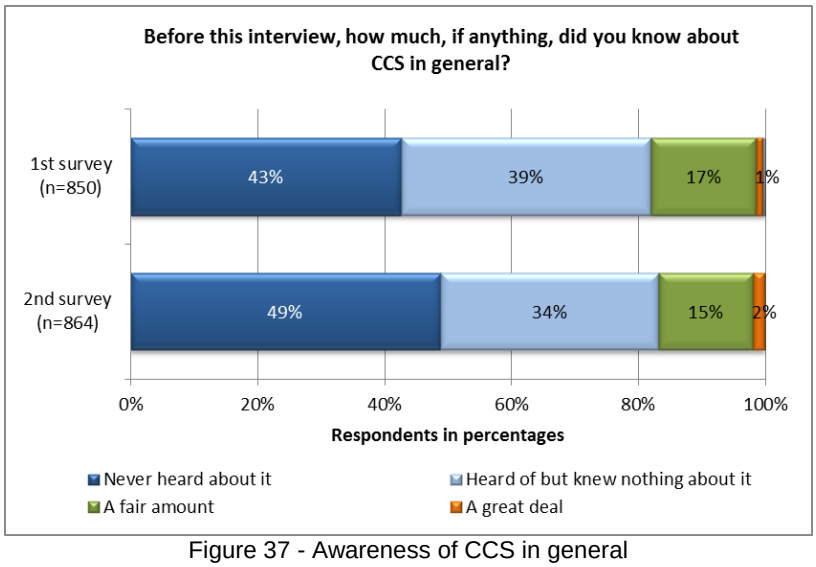


Figure 37 - Awareness of CCS in general

5.4.1 Perceived negative consequences of CCS

Respondents received twelve statements with regard to their perceptions and attitudes towards CCS technology. As these questions were not present in the 1st survey no comparisons over time can be made for the following questions.

The first two statements concerned possible leakage risks of CCS. The respondents were asked to indicate how likely they perceived these statements, on a scale from 'very likely' to 'very unlikely'. As can be seen in Figure 38, 43% of the respondents thought it very or fairly unlikely that CO_2 will leak from storage to the surface. There was more agreement amongst respondents for the statement that people will suffocate if CO_2 leaks to the surface; most respondents (71%) answered that they think it is fairly to very unlikely.

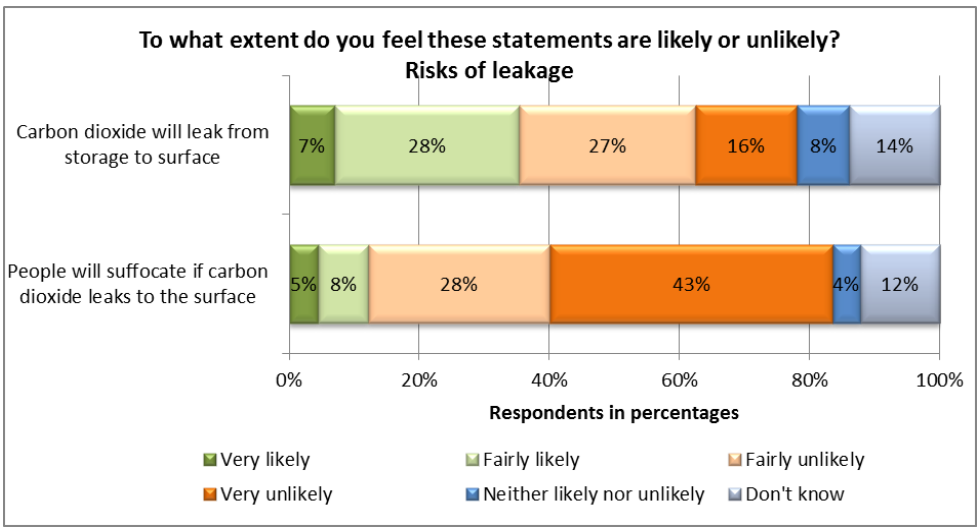


Figure 38 - Respondents evaluation of statements concerning possible consequences of CO_2 leakage (n=864)

Two statements (see Figure 39) with regard to other perceived negative consequences of CCS showed that, although 31% of the respondents stated that they could not say whether CCS would be too costly, 27% thought it would be and 35% thought it would not be. When asked whether they think developing CCS will decrease efforts put in renewable energy 34% thought it would and 41% thought it would not.

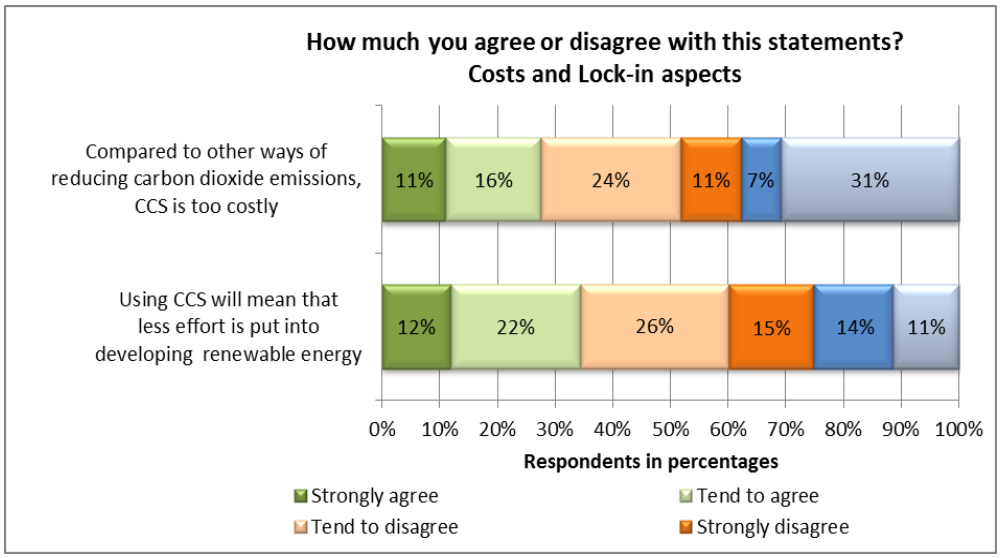


Figure 39 - Respondents evaluation of statements concerning possible negative consequences of CCS (n=864)

5.4.2 Perceived positive consequences of CCS

Respondents were also asked about their perceptions of several positive consequences of CCS (see Figure 40). The first two statements concern trust in authorities to provide appropriate regulation and monitor the safety of CCS. Results show that a majority of respondents (62% and 66% respectively) have trust in the authorities. Respondents seemed to find it difficult however to judge whether they think CCS is ready for widespread use. 29% of the respondents indicated that they do not know whether CCS is ready and an additional 22% neither agreed nor disagreed with the statement. Statements about CCS being helpful for Scotland in gaining a technological

advantage, meeting international agreements, and buying time to develop renewables were viewed rather positively by a majority of the respondents (scores ranging from 51-58%). Finally, 47% agreed or tended to agree with the statement that CCS is essential to tackling climate change.

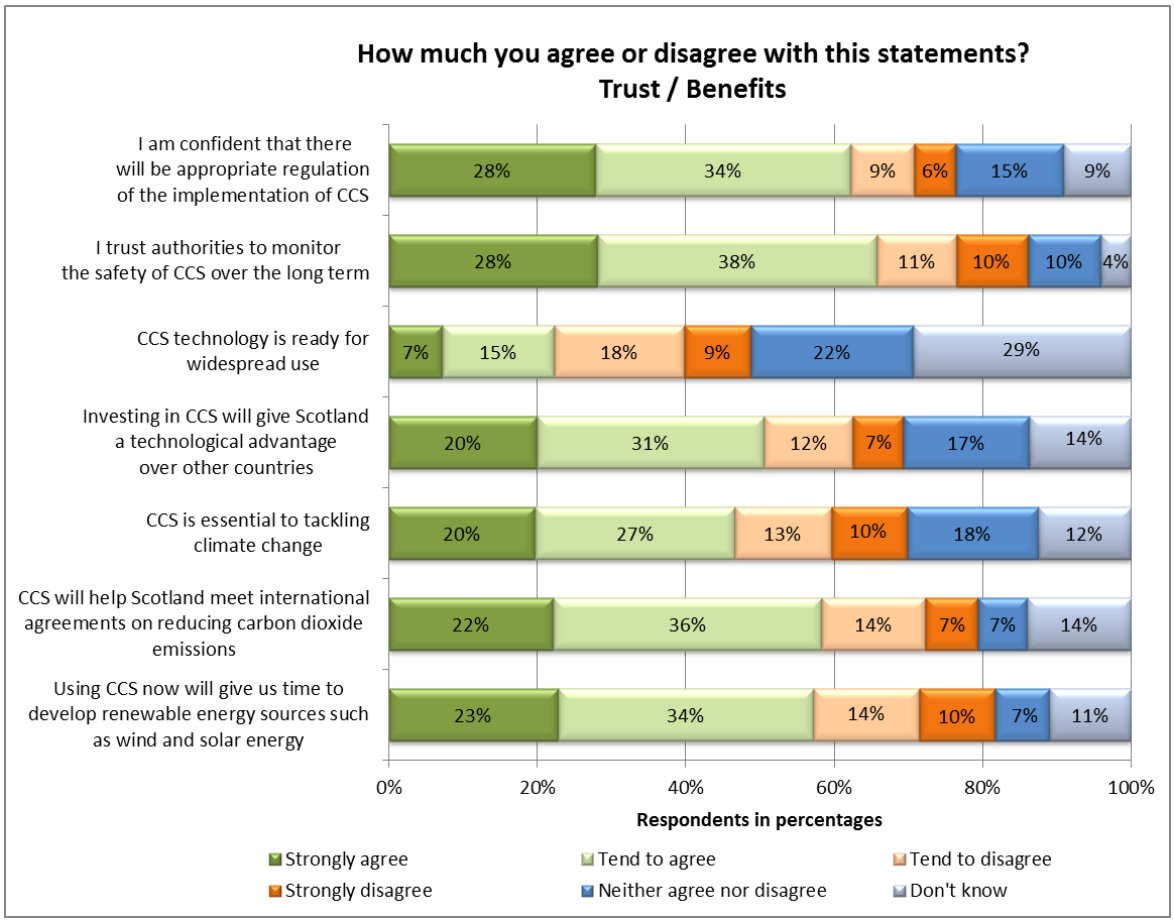


Figure 40 - Respondents evaluation of positive consequences of CCS (n=864)

A final statement was about respondents' sense of urgency with regard to reducing CO_2 emissions. A large majority (88%) indicated that they think that something must be done to reduce carbon emissions (see Figure 41).

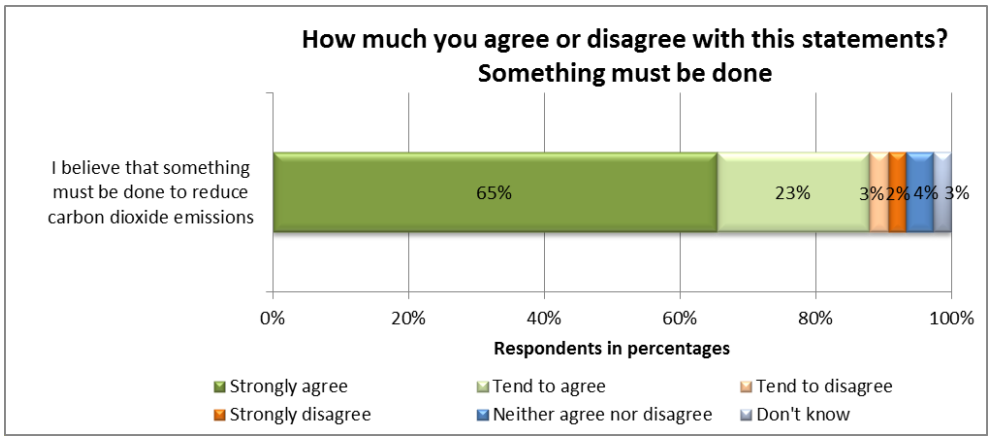


Figure 41 - Respondents perceptions of the need to reduce CO_2 emissions (n=864)

5.5 CCS support

When asked whether they would support or oppose CCS in the Moray Firth and in other parts of Scotland, 55% of the respondents said they would support CCS in the area, and 52% of the respondents said they would support in other parts of Scotland. Only a small percentage of respondents were really opposed (17% and 16% respectively), and about one-third were undecided or did not know.

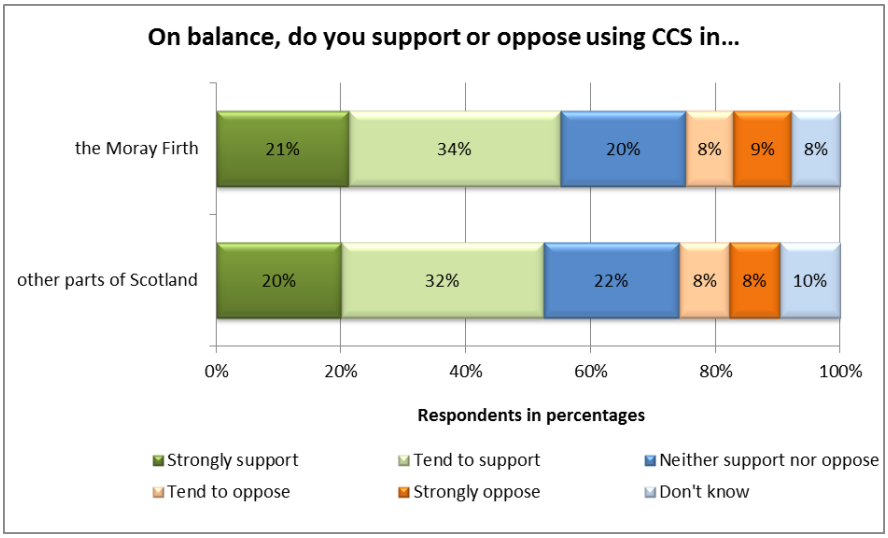


Figure 42 - Respondent's opinion on using CCS in the Moray Firth and other parts of Scotland (n=864)

Respondents who answered 'neither support nor oppose', 'tend to oppose' or 'strongly oppose' using CCS either in the Moray Firth or in other parts of Scotland (n=374) were asked whether there is anything that would make them more supportive of using CCS (open-ended question, see Figure 43). More than a one third of the respondents (37.4%) thought there should be more public engagement activities like information campaigns (27.3%) and consultations (10.1%). 5.5% of the respondents indicated that guarantees about safety would make them more supportive of CCS. Almost 35% of the respondents answered that they could not think of anything that would make them more supportive of CCS.

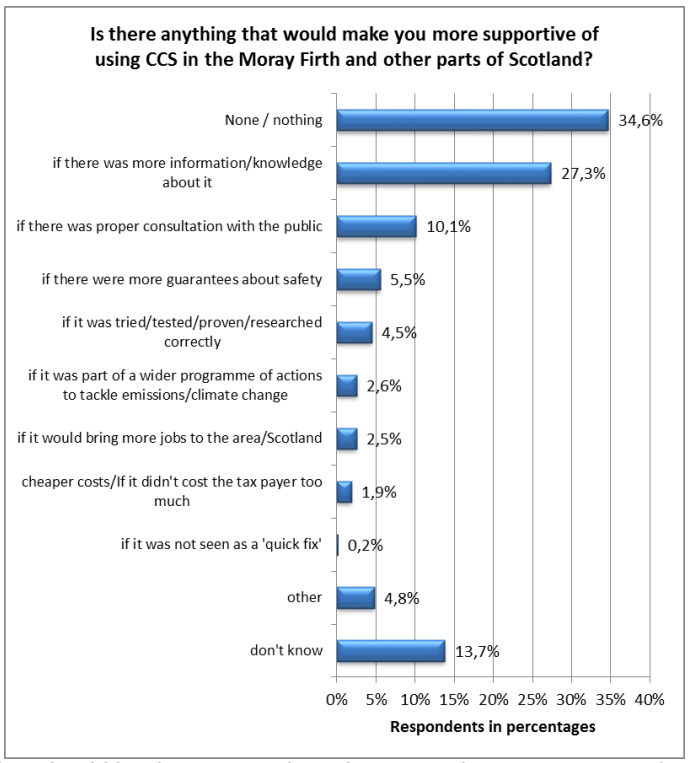


Figure 43 - What should be done to convince the respondents to support using CCS (n=374)

5.6 Conclusions

The results of the 2nd survey show that the awareness of CCS in general and of local plans for CCS in the Moray Firth is fairly low; around half of the respondents indicated to have at least heard of CCS. When asked what they had heard, most respondents indicated that they just heard it is going to happen or that they are looking into it. Other answers were related to specific project plans that were present in the area. Respondents who had at least heard about CCS mainly expected a positive impact of CCS on the local area. Arguments why respondents expect such positive impact are mainly economic. The majority of the respondents indicated that they think the most important benefit of CCS is that it will bring jobs to the area and improve the local economy. Around half of the respondents thought that local plans for CCS would be important to them personally, which is likely related to the positive expectations regarding employment.

With regard to perceptions of the risk that CO_2 will escape to the surface, respondents were divided in their perception of the likelihood that that would happen. Respondents were more certain about the risk of suffocation when CO_2 leaks; 71% thought that is unlikely to happen. Respondents were uncertain about whether CCS is too costly, 38% of the respondents said they do not know or neither agree or disagree with the statement. 41% of the respondents disagreed with the statement that using CCS will mean that less effort will be put in the development in renewables. Respondents have trust in the authorities when it comes to regulation and monitoring of safety of CCS. A majority also agrees that CCS will give the country a technological advantage over other countries, it will help meet international targets for CO_2 reduction, and buy time to develop renewable energy. 47% of the respondents thought CCS is essential for tackling climate change, but respondents were uncertain whether CCS is ready for widespread use (51% said they don't know or neither agree or disagree).

On balance, a majority of respondents said they support CCS both locally and nationally. When the respondents who either oppose or 'neither support or oppose' were asked what would make them more supportive, the most frequently used response was 'nothing'. Other answers were that they would like more information and consultation of the public and would like guarantees about safety.

6 Comparisons between countries and possible explanations

A representative sample of the local community was obtained in both countries. This makes the results of these surveys generalizable to the entire local community. Also, the questionnaires were identical in both countries (developed in English and translated to Polish), enabling between-country comparisons. One difference in the setup of the 2nd survey was the timing. While the Polish survey was held in July 2012, the UK survey was held in September 2012. The reason to differ the timing of these surveys was related to the timing of the information meeting (for more information see D8.3 by Brunsting et al., 2012). To capture any possible effects of the public awareness activities in the 2nd survey, it was administered about one week after the information meetings. This was more important than keeping the timing similar in both countries as they both already differed in local attention for CCS and CCS related projects. In the remainder of this chapter, results for both countries will be compared, followed by a brief conclusion in chapter 7.

6.1 Demographic information compared

When comparing the demographics from Poland and the UK we observe both similarities and differences. The number of respondents currently employed was rather similar in both countries, while the sectors in which respondents work differ. While most of the Polish respondents work in the transport, farming or construction sectors, most of the UK respondents work in the oil and gas sector, retail or health. In both countries a large number of respondents indicated to have been living in the area over 20 years or all their lives. Furthermore, while in both countries respondents seem to own their house rather than rent it, most UK respondents had mortgages while most Polish respondents owned their houses outright.

6.2 Local issues compared

Respondents in both countries are satisfied with their area, in the UK slightly more so than in Poland (86% vs. 74%) and in the UK significantly more respondents indicated that they are very satisfied with their area (49% vs. 25%). When asked whether they think the area will improve, stay the same or get worse, almost half of the UK respondents said that they think the area will stay the same while in Poland 42% of the respondents said they think the area will improve. It can thus be concluded that in both countries respondents are either already fairly to very satisfied or have positive expectations about the future.

Perceived important issues facing the local areas changed somewhat over time. In the UK the possible closure of the RAF base was no longer an issue. Other perceived issues remained about the same. In Poland, the most important changes were that even more respondents than in the 1st survey thought unemployment and lack of work were an issue. Transport was mentioned less frequently than in the 1st survey, while the economic crisis was mentioned more often. Between-countries comparison shows that a larger share of the Polish respondents consider unemployment to be an issue than of the UK respondents (43.4% vs. 24.1%).

6.3 Perceptions of local CCS compared

In the UK, awareness of local CCS has stayed the same over time, while in Poland the number of respondents that had at least heard of local CCS increased slightly. Still, among the Polish respondents there is much less awareness of local CCS plans than in the UK.

When comparing respondents' answers to the question what they have heard about local plans for CCS, the most often mentioned responses in both countries are that they just heard that there is being looked into it or that it is going to happen. Other answers differ somewhat more. While in

the UK respondents provided more answers regarding specific local plans (Peterhead plans, money being invested, the Moray Firth as an ideal area for CCS, etc.), the Polish respondents provided more general answers about CCS (will reduce climate change, stop CO_2 from going into the atmosphere, stop pollution, etc.). It is likely that this difference has been caused by the differences in status of plans for CCS in both areas. Whereas in Poland it was already highly uncertain during the SiteChar project whether the area would see a CCS project, plans were still being made in the UK and their cancellation has likely drawn attention and stirred discussion. For this reason, it is difficult, unfortunately, to ascribe changes between the 1st and the 2nd survey to the public awareness activities conducted within SiteChar. Too many other developments have been going on in the region.

When asked whether respondents expect a positive or negative impact of CCS on the region, both in Poland and in the UK a majority of respondents answered they expect a positive impact (55% in both Poland and the UK). For both countries this is a slight decrease compared to the previous survey. In the UK this seems to be caused by an increase in the number of respondents that expect no impact at all (the number of respondents expecting a negative impact remained the same - perhaps because the prospective site is off shore or because previous plans were cancelled). In Poland the number of respondents indicating they do not know whether to expect a negative or positive impact increased. Overall, uncertainty about the effects of CCS on the region seems to have increased in the Polish local community. A possible explanation is that the focus conferences, information meetings and related activities in the region, which were well attended, have answered some questions and have raised new questions regarding CCS.

Respondents who answered that they expect a positive impact were asked in an open-ended question why they think CCS will have a positive impact. The comparison between the countries showed some interesting results. While Polish respondents mentioned more environmental arguments (better for environment, stop global warming) including more misconceptions than in the 1st survey (reduce smog), UK respondents mentioned more economic arguments (bring jobs, improve local economy, raise profile of the area). This difference may stem from the difference in proximity to the site. In the UK the plans for CCS entails storing the CO_2 offshore under the seabed of the ocean, while in Poland the plans entail storing CO_2 under the ground. As the Polish CCS site is much closer to the local public than the UK site, a possible project would have a direct impact on their living area. Furthermore, in the UK quite a large number of respondents in the area work in the oil and gas sector and the region is used to the presence of this sector. Therefore, it may be that CCS is viewed more as an economic venture by the local public, which can have potential economic benefits for the region.

Respondents who expected a negative impact were invited to provide arguments for this expectation. Because the numbers of respondents to this question are very small for both countries (n_{PL}=37, n_{UK}=52, indicating not so many respondents expect negative consequences) we cannot draw strong conclusions from this data. That said, it seems that the negative arguments of the Polish respondents are also mainly related to the environment (bad for environment, CO_2 leakage, unproven technology) and mainly related to the economy for the UK respondents (visual impact, viewed negative, bad for fishing, bad for tourism). The perceived importance of local plans for respondents personally also showed some interesting differences. While in the UK 44% thought the plans are important, in Poland 77% seemed to think so. This finding, as well as the finding that environmental arguments are more relevant to Polish respondents may have to do with the difference in proximity of the sites to the local community. However, since not the environment but the region's economic situation is perceived as the most pressing issue, local perceptions of CCS not contributing to improvement in this situation could

possibly lead to favouring other activities over CSS. Further research would be needed to sustain this tentative conclusion.

6.4 Perceptions of Carbon Capture and Storage in General compared

In addition to awareness of local plans for CCS, we also assessed how much, if anything, respondents knew about CCS in general. Similar to our findings on awareness of local CCS plans, awareness was very low in both countries. In the UK, 49% of respondents indicated they had never heard about CCS before the interview, whereas in Poland this percentage was 62%. Interestingly however, in the UK awareness remained about the same over time and is also equal to the awareness of local CCS plans (53% have never heard of local plans for CCS). In Poland, awareness of CCS in general was higher than awareness of local plans (62% vs. 78% that have never heard about it), and the awareness of CCS in general has increased over time. Overall it can thus be concluded that in the UK around half the respondents in the Moray Firth area are aware of CCS in general and most likely have obtained this awareness through the presence of specific project plans for CCS in the area. In Poland, many respondents are still uninformed about CCS, which is probably due to the lower level of local CCS activity, but that awareness about general CCS is slowly increasing.

6.4.1 Perceived negative consequences compared

Respondents responded to twelve statements about possible consequences of CCS. With regard to risks of CO_2 leaking to the surface the perceptions are rather divided. In the UK, 35% of the respondents thought it likely that CO_2 will leak to the surface. In Poland this was somewhat higher; 45% thought it likely. Regarding the risk that people will suffocate if CO_2 leaks to the surface, there was more consensus among UK respondents. A majority of 71% thought that it would be unlikely that people would suffocate. The complete opposite is true for Polish respondents, of whom only 37% thought that this would be unlikely. From these results it can be concluded that Polish respondents perceive more risks for CO_2 leaking to the surface. This might again be explained by the proximity of the storage site. In Poland where CO_2 is stored in the ground such risks of leakage are more relevant than in the UK where CO_2 is stored in the seabed.

When asked whether they think CCS is too costly a large number of respondents indicated they do not know whether that would be the case. In Poland 41% of the respondents answered they do not know or neither agreed or disagreed with the statement, in the UK this was 38%. The remaining respondents in Poland seem to agree that they perceive CCS to be too costly (50% agree vs. 9% disagree). In the UK respondents were more divided; 27% agreed with the statement that CCS is too costly while 35% disagreed.

Almost half (48%) of the respondents in Poland agreed with the statement that using CCS will lead to less effort put into developing renewable energy. In contrast, in the UK, 41% of the respondents disagreed with the statement and only 34% agreed. It is difficult to say what causes this difference, but possibly there is indeed a difference between these countries regarding the risk of a lock-in. The UK is already developing many activities regarding renewable energy, including the Moray Firth area that faces, amongst others, plans for offshore wind parks. It is likely that if CCS would be developed there it would be part of a suite of options. In Poland on the other hand, CCS is more examined as a strategy that enables continued use of coal. If CCS is developed mainly for that reason instead of as a transition technology, this might indeed lead to lower investments in renewable energy.

6.4.2 Perceived positive consequences compared

Both in Poland and in the UK, the majority of respondents expected appropriate regulation for the implementation of CCS (60% in Poland and 62% in the UK) and put trust in authorities to monitor the safety on the long term (53% in Poland and 66% in the UK). To the question whether CCS is ready for widespread use a lot of respondents in both countries answered that they 'don't know' or 'neither agree or disagree' (41% in Poland and 51% in the UK), with among the remaining respondents about equal numbers agreeing or disagreeing. From this it can be concluded that respondents did not seem to think they can judge whether CCS is ready for widespread use.

Three statements involved economic advantages of developing CCS. Although in Poland respondents were more in doubt about whether CCS will give Poland a technological advantage over other countries than the respondents in the UK (41% in Poland and 51% in the UK), respondents in both countries seemed to agree that CCS will help meet international agreements on reducing emissions (62% in Poland agree and 58% in the UK) and that CCS will give time to develop renewable energy (60% in Poland and 57% in the UK).

When asked whether they think that CCS is essential to tackling climate change, respondents in both countries were positive. In the UK almost half of the respondents (47%) agreed that CCS is essential, in Poland this was even 69%. This difference may again have to do with the differences in the present structure of the energy development in the two countries. While the UK uses a larger variety of energy sources, Poland still has a large focus on coal as source of energy, and to maintain that CCS would be a necessary step.

Finally, a large majority in both countries agreed that something must be done to reduce CO_2 emissions. In Poland 87% of the respondents agreed with the statement, of which 62% even strongly agreed. In the UK similar percentages were obtained; 88% agreed of which 65% strongly agreeing. Thus in both countries there seems to be a sense of urgency of reducing CO_2 emissions.

6.5 CCS support compared

On balance, in both countries the majority of respondents were positive about CCS. Respondents supported CCS both in the area they live in (57% in Poland and 55% in the UK) as well as in other parts of the country (62% in Poland and 52% in the UK). Interestingly, whereas in the UK slightly more respondents are supportive of CCS in their own area, in Poland slightly more respondents are supportive of CCS elsewhere in the country. In the UK, perceived economic advantages might lead respondents to prefer the own region over other parts of the country whereas in Poland perceived risks to the environment may lead to a preference for CCS elsewhere. However these conclusions are tentative.

Respondents who answered this question neutral or negative were asked whether there would be anything to make them more supportive of CCS. While most respondents answer to this question that they do not know or that there is nothing that would make them more supportive, some UK respondents answered that increasing public involvement (information and consultation) would possibly influence their opinion, while particularly the Polish respondents indicated they would like to have more guarantees about safety.

7 Conclusion

Awareness of both general and local plans for CCS is still very low, particularly in Poland, although a slight increase in awareness had been observed there. In the UK, around half of the respondents had never heard about general or local plans for CCS, in Poland the numbers amounted to 78% for local plans and 62% for general awareness of CCS. Most respondents expect CCS to have a positive impact on the area. In the UK these positive expectations are mostly about possible economic advantages, while in Poland positive expectations are mostly about environmental advantages. Additionally, perceived importance of local CCS plans is much higher in Poland than in the UK and in Poland more risks are perceived related to CO_2 storage. This might be influenced by the difference in sites. As the potential site for CCS in Poland is on shore and in the UK it is off shore, this likely leads to different perceptions and expectations of the benefits or risks associated with the technique as well as a different weight assigned to advantages and disadvantages. Nevertheless, in both countries perceptions of CCS are rather positive. Most respondents have trust in proper regulation and monitoring of CCS and perceive the technology as essential to tackling climate change. Overall, the respondents tend to support using CCS both locally and nationally. Respondents did highlight the desire for more information, public consultation and – especially relevant for onshore sites – guarantees for safety. This should be taken into account in future public outreach concerning actual project plans.

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9 Appendix 1

11-016134-01 Moray Firth Residents Survey – Wave 2
FOR INTERNAL USE ONLY

FINAL QUESTIONNAIRE

<INSERT INTRODUCTION> **Good morning/afternoon/evening. My name is…… from Ipsos MORI, the independent research organisation. We are phoning to see if you would be willing to take part in a short survey about life in your local area. The interview will take around 15 minutes.**

I'd like to assure you that all of the information you provide will be treated in the strictest confidence and used for research purposes only. It will not be possible to identify any particular individuals or addresses in the results.

Would you be interested in taking part?

INT	Yes	1	CONTINUE TO QS1
	No	2	CLOSE

Screening

QS1 **So we can check the spread of interviews across the area please could you tell me your postcode…**WRITE IN. CATI TO CHECK AGAINST ELIGIBLE POSTCODES. NOTE: THE POSTCODE WILL BEGIN "AB" OR "IV"

Full Postcode ☐☐☐☐☐☐☐

( ) ( ) ( ) ( ) ( ) ( ) ( )

Q1	**Please could you tell me your age at your last birthday?** WRITE IN NUMBER. Numeric range (18 – 99) Don't know Refused Age bandings:	
	18 -24 CHECK QUOTA	
	25-34 CHECK QUOTA	
	35-54 CHECK QUOTA	
	55+ CHECK QUOTA	

Q2 **INTERVIEWER CODE: Gender**

Male	CHECK QUOTA
Female	CHECK QUOTA

ASK ALL

Q3 **And are you, yourself…..**

Working 30 hours or more a week (Full time)	1	CHECK QUOTA
Working 8 - 29 hours a week (Part-time)	2	
Not working (under 8 hrs) – looking after home	3	
Not working (under 8 hrs) - unemployed	4	
Not working (under 8 hrs) - unemployed (not registered but seeking work)	5	CHECK QUOTA
Not working (under 8 hrs) - retired	6	
Not working (under 8 hrs) - student	7	
Not working (under 8 hrs) - other (inc. sick or disabled)	8	
Other WRITE IN	9	
Don't know	10	
Refused	11	

Perception of the local area

ASK ALL

I'd like to begin by asking you about your local area. By local area I mean the area within about 20 miles or 20 minutes' drive from your home.

Q4	**How long have you lived in this area?** READ OUT. SINGLE CODE ONLY			
	Up to 1 year	1		
	Over 1 year up to 5 years	2		
	Over 5 years up to 20 years	3		
	Over 20 years/all my life	4		
	Don't know	3		

Q5	**In general, how satisfied or dissatisfied are you with your local area as a place to live?** SINGLE CODE ONLY			
	Very satisfied	1		
	Fairly satisfied	2		
	Neither satisfied nor dissatisfied	3		
	Fairly dissatisfied	4		
	Very dissatisfied	5		
	Don't know	6		

Q6	**Do you think that in the next couple of years your local area will improve, stay the same or get worse?** SINGLE CODE ONLY			
	Improve	1		
	Stay the same	2		
	Get worse	3		
	Don't know	4		

Q7a	**What do you see as the most important issue facing your local area?** DO NOT PROMPT, BUT PROBE FULLY. SINGLE CODE ONLY		
Q7b	EXCLUDE ANY MENTIONED AT Q7A **And what do you see as other important issues facing your local area?** DO NOT PROMPT, BUT PROBE FULLY. MULTICODE OK		
		Q7a	Q7b
	Closure of RAF Kinloss/Lossiemouth/air force bases	1	1
	Wind farms	2	2
	Carbon capture and storage development	3	3
	Moray Firth being designated as a Marine Protection Area	4	4
	Ageing population	5	5
	AIDS	6	6
	Animal welfare	7	7
	Countryside/rural life	8	8

	Crime/law & order/violence/ vandalism/anti-social (yob) behaviour	9	9
	Drug abuse	10	10
	Economy/economic situation/'credit crisis'/crunch	11	11
	Education/schools	12	12
	Environment/climate change/global warming/pollution	13	13
	Family breakdown/lack of discipline taught to young people	14	14
	GM/GM (Genetically Modified) foods	15	15
	Housing	16	16
	Immigration/immigrants (race relations)	17	17
	Inflation/prices/rising cost of living	18	18
	Lack of facilities/opportunities for young people/young people have nothing to do	19	19
	Local government/council tax	20	20
	Low pay/minimum wage/fair wages	21	21
	Morality/individual behaviour/lifestyle	22	22
	National Health Service/Hospitals/ Health care	23	23
	Nationalisation/Government control of institutions	24	24
	Obesity/ill health	25	25
	Pensions/social security/benefits	26	26
	Petrol prices/fuel prices	27	27
	Pound/exchange rate/value of pound	28	28
	Poverty/inequality	29	29
	Privatisation	30	30
	Public services in general	31	31
	Public sector cuts	32	32
	Religion/religious tolerance	43	43
	Rising energy prices	33	33
	Scottish Independence/constitution/Devolution	34	34
	Sectarianism	35	35
	Taxation	36	36
	Trade unions/strikes	37	37
	Transport/public transport	38	38
	Unemployment/factory closure/lack of industry	39	39
	Other (PLEASE WRITE IN)	40	40
	None	41	41
	Don't know	42	42
	Refused	44	44

Carbon capture and storage – local area

Our client, a European research consortium, is interested in what people think and know about carbon capture and storage. It is fine if you tell us you have never heard of carbon capture and storage, since it is in an early stage of development so we would not be surprised if you have not heard of it.

	ASK ALL			
Q8	**Before this interview, how much, if anything, did you know about plans for carbon capture and storage in the North Sea in the Moray Firth?** READ OUT. SINGLE CODE ONLY			
	A great deal	1	GO TO Q9	
	A fair amount	2	GO TO Q9	
	Heard of but knew nothing about it	3	GO TO Q9	
	Never heard about it	4	GO TO Q14	
	Don't know	5	GO TO Q14	
	ASK ALL WHO HAVE AT LEAST HEARD ABOUT PLANS FOR CCS (CODES 1-3 AT Q8)			
Q9	**What have you heard about plans for carbon capture and storage in the North Sea in the Moray Firth?** DO NOT PROMPT, BUT PROBE FULLY. MULTICODE OK			
	Just that it's going to happen	1		
	Just that they are looking into it	2		
	That it will stop CO_2 going into the atmosphere	3		
	Help stop/reduce climate change/global warming/greenhouse effect	4		
	Takes CO_2 from power stations	5		
	Uses rocks in the sea	6		
	Used old oil fields/ Injected in empty oil/gas fields	7		
	Wind farms/turbines	8		
	Wave/tidal power	9		
	Renewable energy/green energy	10		
	Protect the ozone layer	11		
	Prevent acid rain	12		
	Stop pollution	13		
	Unproven technology	14		
	Other (PLEASE SPECIFY)	15		
	Nothing	16		
	Don't know	17		

	ASK ALL WHO HAVE AT LEAST HEARD ABOUT PLANS FOR CCS (CODES 1-3 AT Q8)
Q10	**And, overall, do you think plans for carbon capture and storage in the North Sea in the Moray Firth would have a positive or negative impact on your local area?** READ OUT. SINGLE CODE ONLY

	Very positive	1	GO TO Q11	
	Slightly positive	2	GO TO Q11	
	Slightly negative	3	GO TO Q12	
	Very negative	4	GO TO Q12	
	No impact at all	5	GO TO Q13	
	Don't know	6	GO TO Q13	

	ASK ALL WHO SAY CCS WOULD HAVE A POSTIVE IMPACT ON THEIR LOCAL AREA (CODES 1 OR 2 AT Q10)		
Q11	**Why do you think it would have a positive impact?** DO NOT PROMPT, BUT PROBE FULLY. MULTICODE OK		
	It will bring jobs/employment	1	
	Improve the local economy	2	
	Better for the environment	3	
	Reduce toxic waste	4	
	Prevent ozone depletion	5	
	Help stop/reduce climate change/global warming/greenhouse effect	6	
	Prevent acid rain	7	
	Reduce smog	8	
	Reduce water pollution	9	
	Buy time for development of renewables	10	
	Will make Scotland self-sufficient/Scotland can create own energy	11	
	Allow people to continue using oil	12	
	Create more energy	13	
	Create green/cleaner energy	14	
	Could result in more oil and gas production	15	
	Good to be leader/at forefront of technology developments	16	
	Other (PLEASE SPECIFY)	17	
	Nothing	18	
	Don't know	19	

	ASK ALL WHO SAY CCS WOULD HAVE A NEGATIVE IMPACT ON THEIR LOCAL AREA (CODES 3 OR 4 AT Q10)		
Q12	**Why do you think it would have a negative impact?** DO NOT PROMPT, BUT PROBE FULLY. MULTICODE OK		
	Ugly/visual impact/eyesore	1	
	Bad for marine life/environment	2	
	Bad for fishing	3	
	Bad for tourism	4	
	Noise and disruption/increased traffic	5	
	risk of leaks (in general)/CO_2 will escape to the surface/suffocate people	6	
	Risk of explosion (in general)	7	
	Risk of leak from pipelines	8	
	Risk of explosion in pipelines	9	
	Not a real solution to the climate problem	10	
	Delays development of renewables	11	
	CO_2 will escape to the surface	12	
	Storage will be target of terrorist attack	13	
	Means that we will still create energy generated through burning coal	14	
	Unproven technology/risky technology	15	
	Other (PLEASE SPECIFY)	16	
	Nothing	17	
	Don't know	18	

	ASK ALL WHO HAVE AT LEAST HEARD ABOUT PLANS FOR CCS(CODES 1-3 AT Q8)			
Q13	**How important, if at all, would you say plans for carbon capture and storage in the Moray Firth are to you personally?** READ OUT. SINGLE CODE ONLY			
	Very important	1		
	Fairly important	2		
	Not very important	3		
	Not at all important	4		
	Don't know	5		

Carbon capture and storage - General

	ASK ALL			
Q14	**Before this interview, how much, if anything, did you know about carbon capture and storage in general?** READ OUT. SINGLE CODE ONLY			
	A great deal	**1**		
	A fair amount	**2**		
	Heard of but knew nothing about it	**3**		
	Never heard of it	**4**		
	Don't know	**5**		

ON SEPARATE SCREEN:

Carbon dioxide – also known as CO_2 – is a greenhouse gas which is contributing to the rise in average temperatures on earth. One possible way of reducing the amount of carbon dioxide in the air is by using carbon capture and storage. It involves capturing and transporting carbon dioxide from power plants and storing it deep underground or under the seabed for many hundreds of years.

NE W1		**The following statements are things that people have said about carbon capture and storage. To what extent to you feel these are likely or unlikely?** READ OUT. DO NOT ROTATE. SINGLE CODE EACH ROW.						
			Very likely	**Fairly likely**	**Neither likely nor unlikely**	**Fairly unlikely**	**Very unlikely**	**Don't know**
	a)	**Carbon dioxide will leak from storage to the surface**	1	2	3	4	5	6
	b)	**People will suffocate if carbon dioxide leaks to the surface**	1	2	3	4	5	6

NE W2		**Here are some more things people have said about carbon capture and storage. How much to you agree or disagree with each?** READ OUT. ROTATE ORDER. SINGLE CODE EACH ROW.						
			Strongly agree	**Tend to agree**	**Neither agree nor disagree**	**Tend to disagree**	**Strongly disagree**	**Don't know**
	a)	**Carbon capture and storage will help Scotland**	1	2	3	4	5	6

		meet international agreements on reducing carbon dioxide emissions						
	b)	**Using carbon capture and storage now will give us time to develop renewable energy sources such as wind and solar energy**	1	2	3	4	5	6
	c)	**Compared to other ways of reducing carbon dioxide emissions, carbon capture and storage is too costly**	1	2	3	4	5	6
	d)	**Carbon capture and storage is essential to tackling climate change**	1	2	3	4	5	6
	e)	**I am confident that there will be appropriate regulation of the implementation of carbon capture and storage**	1	2	3	4	5	6

NEW 3	**What, if anything, do you think the government should be doing differently to tackle climate change?** DO NOT PROMPT. PROBE FULLY.			
	Don't know	1		

NEW4		**Here are some more statements about carbon capture and storage. How much do you agree or disagree with each?** READ OUT. ROTATE ORDER. SINGLE CODE EACH ROW.						
			Strongly agree	**Tend to agree**	**Neither agree nor disagree**	**Tend to disagree**	**Strongly disagree**	**Don't know**
	a)	**Investing in carbon capture and storage will give Scotland a technological advantage over other countries**	1	2	3	4	5	6
	b)	**I trust authorities to monitor the safety of carbon capture and storage over the long term**	1	2	3	4	5	6
	c)	**Carbon Using carbon capture and storage will mean that less effort is put into developing renewable energy**	1	2	3	4	5	6
	d)	**Carbon Capture and Storage technology is ready for widespread use**	1	2	3	4	5	6
	e)	**I believe that something must be done to reduce carbon emissions** (DO NOT ROTATE)	1	2	3	4	5	6

ROTATE ORDER OF NEW5 AND NEW6

	ASK ALL			
NEW5	**On balance, do you support or oppose using carbon capture and storage *in the Moray Firth*?** READ OUT. SINGLE CODE ONLY			
	Strongly support	1		
	Tend to support	2		
	Neither support nor oppose	3		
	Tend to oppose	4		

	Strongly oppose	5		
	Don't know	6		

	ASK ALL			
NEW 6	**On balance, do you support or oppose using carbon capture and storage *in other parts of Scotland*?** READ OUT. SINGLE CODE ONLY			
	Strongly support	1		
	Tend to support	2		
	Neither support nor oppose	3		
	Tend to oppose	4		
	Strongly oppose	5		
	Don't know	6		

	ASK ALL WHO SAID 'NEITHER SUPPORT NOR OPPOSE', 'TEND TO OPPOSE' OR 'STRONGLY OPPOSE' (CODES 3-5) AT NEW5 AND/OR NEW6.		
NEW 7	**Is there anything that would make you more supportive of using carbon capture and storage in** [TEXT SUB AS APPROPRIATE: [IF (NEW5=3-5) AND (NEW6 ne 3-5)] **the Moray Firth/** [IF (NEW5 ne 3-5) AND (NEW6=3-5)] **other parts of Scotland/** [IF (NEW5=3-5) AND (NEW6=3-5)] **the Moray Firth and other parts of Scotland]?** DO NOT PROMPT, BUT PROBE FULLY. MULTICODE OK		
	If it was part of a wider programme of actions to tackle emissions/climate change	1	
	If it was not seen as a 'quick fix'	2	
	If there was proper consultation with the public	3	
	If it would bring more jobs to the area/Scotland	4	
	If there were more guarantees about safety	5	
	Other (PLEASE SPECIFY)	6	
	Nothing	7	
	Don't know	8	

About the respondent

I'd like to finish by asking some questions about your current circumstances….

NOTE TO SCRIPTERS: DEM1 and DEM2 have been deleted.

DEM3	**What is the highest level qualification you have?** SINGLE CODE ONLY.			
		No qualifications	1	
		School qualifications – O Grade, Standard Grade, Intermediate 1 or 2, GCSE, CSE	2	
		School qualifications – Higher Grade, Higher, Advanced Higher, CSYS, A Level	3	
		Post school - GSVQ Foundation or intermediate, SVQ Level 1 or 2, SCOTVEC Module, City and Guilds Craft	4	
		Post school - GSVQ Advanced, SVQ Level 3, ONC, OND, SCOTVEC National Diploma, City and Guilds Advanced Craft	5	
		Post school - HNC, HND, SVQ Level 4	6	
		University - Degree, Postgraduate, Masters, PhD, SVQ Level 5	7	
		Professional Qualification – e.g. teaching, accountancy	8	
		Other school qualification	9	
		Other higher education qualification	10	
		Don't know	11	

DEM4	**Do you own your home, or rent it?** SINGLE CODE ONLY.	
	Owned outright	1
	Buying on mortgage	2
	Rent from council	3
	Rent from Housing Association/ Trust	4
	Rented from private landlord	5
	Other (WRITE IN)	6

	ASK ALL THOSE WORKING (THOSE WHO ANSWERED 1/2 AT QWORK = Q3)	
DEM5	**And do you work in any of the following sectors?** READ OUT. SINGLE CODE ONLY.	
	Oil and gas	1
	Farming	2
	Fishing	3
	Tourism, hotel, entertainment	4
	Education	5
	Health	6
	Other public sector	7
	Retail	8
	Or another sector (PLEASE WRITE IN)	9
	Don't know	10

Thank and close