

IPCC SRCCS – Review of Media Impact

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<u>IPCC SPECIAL REPORT</u> <u>MEDIA IMPACT</u>

Background

The IPCC Special Report on CO_2 Capture and Storage (SRCCS) was released in September 2006. The IEA Greenhouse Gas R&D Programme (IEA GHG) played an active role in the development of this important report and its members requested that IEA GHG consider the impact the release of the report had on the public awareness of CO_2 capture and storage (CCS) by gauging the response of the media to the reports publication.

To undertake this review of media impact IEA GHG agreed contracts with two specialist organisations. The first of these studies was agreed with the Copernicus Institute, University of Utrecht, the Netherlands and the second with Tyndall Centre, University of Manchester, UK. Two contracts were agreed because of the different approaches used and the different geographical distribution of the media searches proposed. The Copernicus Institute proposed to use a web based search tool to review media articles in the European press, the countries covered included; UK¹, Netherlands, France, Spain², Italy and Germany. In contrast, the Tyndall Centre study involved a dedicated exercise where an individual would review news articles in the English speaking press alone. This review covered newspaper articles in: UK, USA, Canada, Australia and New Zealand. In each case, articles were scanned for three months before the release of the IPCC SRCCS (released week 39, 26th -30th September 2005) and for three months after. Overall, it was considered that the two studies gave a good global coverage of media response covering most regions of the world that were actively developing CCS projects with the noted exception of Japan.

Results and Discussion

The results of the two studies are first reported individually and then compared.

Copernicus Institute Study Results

The study set out to answer a number of key questions which are listed below along with the conclusions drawn from the analysis of the articles published in the media in each country.

Q1: Did the release of the IPCC SRCCS influence the total number of news articles related to climate change?

No, not surprisingly the release of the IPCC SRCCS was not found to have influenced the number of climate change related articles. Other events more closely linked to the climate change debate like the G8 Summit and the COP 11/MOP 1 had the biggest influence on the number of published articles related to climate change.

Q2: Did the release of the IPCC SRCCS influence the number of written articles related to CCS? Yes, for all six languages reviewed the number of articles on CCS increased in the three months after the special report was released compared to the three months before, see Table 1, overleaf.

In particular, the week (week 39) of the release of the special report and the weeks around COP 11 (week 48) showed high peaks in the number of CCS articles released.

¹ The review was not exclusive to UK newspapers but included all English speaking papers; therefore it also covered USA, Canada etc., which do overlap with the Tyndall study. However it is felt to be an interesting exercise to see if the two studies compare or contrast with each other.

² The study reviewed the Spanish speaking press in general and not just Spain, which meant that areas of South America were also covered.



Language	3 months before SR	3 months after SR	Increase
English ³	207	350	69%
Spanish ⁴	4	13	225%
Italian ⁵	10	11	10%
French	8	19	138%
German	4	25	525%
Dutch ⁶	25	84	236%

Table 1: Number of articles published on CCS for six languages

Q3: Did the release of the IPCC SRCCS change the opinion expressed in news articles on CCS?

 \tilde{Y} es, after the special report was released it was seen that for most of the languages reviewed there was an increase in the number of CCS articles that can be considered to be positive and a decrease in articles that can be considered as negative. The only exception was Germany; where the number of negative articles increased after the release of the special report⁷.

Q4: Were the reporters better informed after the special report?

Yes, after the special report, the number of neutral CCS articles that mentioned both positive and negative arguments increased for most languages. It was interpreted that this result suggests that reporters became better informed after the release of the special report than before the release.

Q5: Did the arguments change after the release of IPCC SRCCS?

Yes, in terms of arguments used, the release of the special report had a different impact on different languages but in general after its release there were less positive arguments and more negative arguments used when CCS is discussed. It was interpreted that before the release of the SRCCS advocates of CCS had greater influence on the arguments in the articles in press than after its release. Initially this result seems out of step with Q3, which indicated a higher share of positive articles SRCCS compared to before. However, the consultant explained this anomaly by stating that overall there was an increase in the number of neutral articles that list both positive and negative arguments after the special report.

The English articles that actually discussed the SRCCS mentioned much more arguments than other country article on CCS and were well balanced in their arguments.

Q6c: Did the type of arguments change after the release of IPCC SRCCS?

Yes, the results showed that both the number of positive and negative arguments used increased after the release of the special report. Especially the number of positive arguments narrows down after the special report for most languages. So the special report leads to more focus. For the negative arguments we see a strong concentration to a smaller number of arguments for the English language but for the other languages the list increases.

³ As indicated earlier the larger number of English speaking articles reflects the fact that these cover a number of countries like, UK, USA, Canada and Australia which are all extremely active in developing CCS projects.

⁴ Although Spanish is a language that is spoken in many countries, the total number of articles on CCS is surprisingly low. For instance there were no articles on CCS identified in South America, which implies discussions on the topic have not started there.

⁵ The review concluded based both on the lack of articles and the low technical depth of the argument in these articles that it seems that the Italian media, and hence the public, is not well informed about CCS.

⁶ The very high score of the Dutch articles might be due to the fact that both the scientific and policy discussion on CCS started early in The Netherlands. The Dutch government mentioned CCS as one of three pillars of climate policy as early as 1999.

⁷ It was felt that in Germany environmental organizations often get a say in the articles and they are more likely to highlight the negative aspects of CCS than the positives because they are not strongly in favour of the technology preferring for example renewable energy.



The most mentioned positive arguments were:

- Potential contribution to CO₂ emission reduction,
- The large potential of CCS, the cost-effectiveness of this option compared to other CO₂ mitigation technologies,
- The possibility to clean our fossil fuel use (especially clean coal technology),
- The possibility for enhanced oil and gas recovery
- And the availability of well sealed reservoirs (low chance of leaking).

The most mentioned negative arguments were

- High costs,
- The fact that the technology still needs to prove itself,
- The fact that regulations are not ready,
- Uncertainty about leakage and the consequences for climate change,
- Ecological risks of CO₂ storage in deep oceans,
- Risks for ecosystems on shore,
- Dependency on subsidies,
- The lower efficiency of electricity plants (energy penalty),
- And that storage sites might be too far from emission sources.

It must be noted that the Dutch and German articles stress the threat for renewable energy. This is not a big issue for the other languages. It is felt that environmental NGO's especially in Germany, often quote CCS in articles and highlight the potential negative impact of CCS on renewable energy.

None of the negative arguments are surprising and indicate key areas and topics where there is a need to communicate more effectively.

Tyndall Centre Study

The study reviewed the number of articles on each of the main electricity supply technologies across the five study countries concerned. The subject of nuclear power attracted a lot of media attention in the UK and Australia during the review period, more so than CCS. In Canada and New Zealand CCS receives the least attention of the energy technologies covered.

The majority of the articles collected on CCS refer to the technology with respect to coal fired generation, although a couple in the UK mention it in connection to gas fired plant; there is no mention of industrial sources of CO_2 in any of the articles collected.

Table 2, overleaf, summarises the level of CCS reporting in each country, the level of coverage given to the IPCC SRCCS and the perspective adopted in the articles on CCS. The perspective taken in individual articles is presented in the main report.

It can be seen that the launch of the IPCC SRCCS in September 2006 was covered in each of the five study countries, except New Zealand. Thereafter, it is occasionally referred to in order to lend an 'official' positive scientific view on the technology. Typically, the IPCC SRCCS is cited as concluding that CCS could have a significant impact on CO_2 cuts and that, while it has the potential to reduce CO_2 abatement costs, some form of financial incentive would nevertheless be necessary before it would be implemented on a significant scale.



	Australia	Canada	UK	New	USA	Total
				Zealand		
Total no. of articles on CCS	24	5	29	1	9	67
Reference to IPCC SRCCS	5 (21%)	1 (20%)	4 (14%)	0	2 (22%)	12
Articles positive about CCS	7 (29%)	3 (60%)	12 (41%)	1	2 (22%)	24
Articles negative about CCS	4 (17%)	0	2 (7%)	0	1 (11%)	8
Articles presenting positive	7 (29%)	0	6 (21%)	0	2 (22%)	13
and negative aspects of CCS						
Articles presenting neutral	6 (25%)	2 (40%)	9 (32%)	0	4 (44%)	22
view of CCS						

Note: Figures in parentheses represent percentages of total articles

Table 2. Summary of articles on CCS

The majority of articles on CCS present a positive neutral or view of the technology. The country with the highest level of negative reporting on CCS was Australia. The main negative aspects of CCS raised in the Australian press were costs (in six articles) and that the technology is unproven or untested (in five articles).

The particular elements of the IPCC SRCCS which were cited in each country are summarised in Table 3.

	Australia	Canada	UK	USA
Government incentives	1	1	1	
required				
CCS could reduce costs	2	-	1	1
of mitigation by 30%				
CCS could have	2	1	1	2
significant impact on CO ₂				
reductions				
CCS incurs an energy	-	-	1	-
penalty				
Other options (e.g.	-	-	1	-
mineral carbonisation,				
ocean storage) are risky				

Table 3. What elements of the IPCC SRCCS were cited?

The results indicate that the media are aware that there are a number of benefits that CCS offers, by reducing overall mitigation costs, making large reductions in emissions and that it is a lower risk option than ocean storage option. However, the two negative issues highlighted were the energy penalty incurred by the technology and also the need for government incentives.

From the in depth analysis of the individual paper articles that were reviewed in the study, the contractors considered that one of the key messages that came over is the need for a legislative framework to provide the necessary financial incentives to allow investment in CCS technology. This is summed up by a quote from an energy provider in Australia: '*The [Government] is dangerously picking the technology but failing to build the market for it*' (The Sydney Morning Herald, 11/01/06)



Summary

The results of the two studies seem to indicate that after the release of the IPCC SRCCS there were more articles on CCS in the press. Although these may have been due to other events and press releases, like the BP Miller field announcement and developments on clean coal projects in Australia rather than the IPCC report directly. However, it does seem that the release of the IPCC report has resulted in better balanced articles and a trend to more positive articles on CCS after it was published.

Conclusions

The studies when taken together indicate that there is a still someway to go in convincing people that the technology is both technically and economically viable and safe. The release of IPCC SRCCS appears to have not been totally successful in helping to allay peoples concerns over the technology. Public concerns are likely to become heightened as the technology moves nearer to widespread implementation. Unless these issues are addressed early then the publics concerns could prove to be a major barrier to CCS implementation. The study has also shown that public awareness is still limited in a number of countries and regions of the world. The other key barriers that the study has highlighted are the need for the development of appropriate regulatory frameworks and the need for financial incentives for CCS to be taken up by commercial developers in sectors like the power industry and major manufacturing industries.

Recommendations

The main recommendations resulting from this study are:

- 1. A communications programme needs to be developed to address the key negative issues raised by this study with regard to CCS technology.
- 2. Governments need to make best efforts to develop regulatory frameworks for CCS as soon as possible.
- 3. Financial incentives for CCS in the power and manufacturing industries need to be developed to stimulate investment.

The impact of the *`IPCC Special Report on Carbon Capture and Storage'* on written news reports

-draft-

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1. Introduction

28 September 2005, the IPCC released a Special Report on Carbon dioxide Capture and Storage (CCS). CCS is an innovative method to reduce the emission of carbon dioxide to the atmosphere and is likely to affect the current discussions on strategies to reduce greenhouse gas emissions.

The IEA Greenhouse Gas R&D program is interested in the question whether the release of the IPCC SRCCS has an effect on the way CCS is discussed in the written media worldwide. The interest lies in the effect in terms of volume and content of the news articles. Since the IPCC Special Report on CCS discusses a new option in the battle to mitigate climate change it is also interesting to know whether the Special Report led to an increase in written news reports on the broad topic of climate change.

Therefore this report aims to answer the following research questions (RQ) for six languages (English, Spanish, Italian, French, German, and Dutch):

RQ1: Did the release of the IPCC SRCCS influence the total number of news articles related to climate change?

RQ2: Did the release of the IPCC SRCCS influence the number of news articles related to CCS?

RQ3: Did the release of the IPCC SRCCS change the opinion expressed in news articles on CCS?

RQ4: Are reporters better informed after the special report; do the number of arguments and the type of arguments change after the release of IPCC SRCCS?

In this report we will fist discuss the research methods used and then we present the results per research question. We end with conclusions.

2. Research methods

2.1 Key word search

The research is based on searching news archives for different languages¹. The following languages are taken into account: English, Spanish, Italian, French, German, and Dutch.

The search for relevant articles is based on key-word searches. Table 1 shows the key words used per language for searching the articles on climate change.

Language	Search terms
English	climate change
Spanish	cambio climático
Italian	cambiamenti climatici
French	changement climatique
German	Klimawandel
Dutch	klimaatverandering

Table 1: Key words for searching climate change articles.

For mapping the articles on CCS the following steps were taken:

The terminology for CCS used in the press releases on the IPCC special report were used as starting point.

These terms were translated for the non-English languages and used in the databases to obtain a first set of newspaper articles in each language. These articles were analysed to find the different translations for "carbon capture and storage".

For each language, different queries were tried on the database.

The query with most hits and least irrelevant hits was selected as the final query. Table 2 shows the search terms used to obtain the final set of articles to be used for this report. The final set still contained irrelevant articles, for example describing carbon storage in forest or storage of hydrogen. These articles were left out of the analysis.

Table 2: Search terms for articles on carbon capture and storage

Language	Search terms
English	carbon AND capture AND storage
Spanish	carbono AND secuestro OR almacenamiento
Italian	(CO2 OR carbonio OR anidride carbonica) AND
	(cattura OR sequestrazione OR sequestro OR stoccaggio)
French	carbone AND (stockage OR sequestration) AND (captage OR capture)
German	CO2 AND (Speicherung OR Lagerung)
Dutch	(CO2 OR kooldioxide) AND opslag

2.2 Analysis of the articles

To answer research question 1, *all articles related to climate change* are counted and plotted in a graph for the period 3 months before the IPCC SRCC till three months after the IPCC SRCC. The trend line will indicate whether the IPCC report has had an impact on the intensity of discussions around climate change. The graphs will be specified for all 6 different languages.

¹ The Lexus Nexus TM academic news archive is used as primary data source.

Exact the same method is used to answer research question 2. In this case however, the search for articles was narrowed down to carbon capture and storage.

To answer research question 3, all articles that deal with the topic 'carbon capture and storage' are read and analyzed. All articles are scored as 1) positive, 2) negative or 3) neutral. To determine whether an article is positive, negative or neutral much attention is paid to the title and how CCS is described in the first few lines of the article. Then all arguments mentioned in the article are analysed. Based on these two factors, a decision is made for the classification. Every researcher's classification was checked by a second researcher and differences were discussed to harmonize the classification procedure.

A fourth category indicates whether the articles mention CCS but do not discuss the option. Graphs are plotted for the six languages to depict the distribution of positive, negative, neutral and `mentioned only' articles.

Finally, the main arguments in favour and against CCS are distilled from each article. The procedure for scoring the arguments is as follows.

Twenty articles on CCS are read and all positive and negative arguments are listed. Based on these list, a gross list of positive and negative arguments is created. Each reviewer of the articles (different reviewers for different languages) used this list to score each article. A selection of articles were analysed by two reviewers to ensure that arguments were interpreted in the same way.

During the analysis additional arguments that were not part of the starting list were added and communicated to the other reviewers.

3. Results

3.1 Did the SRCSS influence the total number of climate change related articles?

Table 3 shows the number of articles on climate change in the three months before and after the special report. The change in the total number of articles on climate change differs per country. A clear trend is not visible for this level of aggregation.

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Language	3 months before SR	3 months after SR	increase
English	13989	14533	4%
Spanish	818	671	-18%
Italian	175	173	-1%
French	1255	1494	19%
German	1132	1104	-2%
Dutch	559	515	-8%

Table 3: Number of articles on climate change

Therefore Figure 1 presents a graph where the number of articles on climate change is plotted over time for the English articles. The Figure clearly shows that other events have a major impact on the number of climate change articles. Note the peak in week 27 (G8 conference) and the peak in week 44 (Conference of the Parties 11). The release of the IPCC SRCCS was in week 39. Afterwards a dip occurred instead of a rise on the number of climate change related articles. This supports the conclusion that the Special Report did not affect the number of articles on climate change.



Figure 1: number of articles in English language on climate change

The number of climate change related articles are much higher for the English language than all other languages that have been analysed (see Table 3). Figure 2 therefore shows a scaled graph for all climate change related articles. In this graph the number of articles

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during the G8 summit for each language are set at 100. The stacked bar therefore totals 600. All other weeks are depicted relative to the number of articles during this week. So when the number of articles related to climate change is 50% of the number of articles in week 27, it is presented as 50.

The Figure clearly shows that major climate change events like the CoP 11 and the G8 summit (where climate change was a major topic) strongly influenced the number of articles for all languages. Like it was the case for the English language, the release of the IPCC SRCCS in week 39 does not show an increase in climate change articles for the other five languages.

Thus we conclude that the special report did not affect the total number of climate change related articles.



Figure 2: Total number of climate change related articles for six languages scaled against week 27 (= 100)

3.2 Did the SRCCS influence the number of articles on CCS?

The number of articles on CCS is clearly influenced by the IPCC SRCCS. Figure 3 shows the total number of articles on CCS for all six languages. The Figure shows a local peak in week 39 (release of SRCCS). This implies that the special report is indeed picked up and increased news coverage for this topic. More striking is that the number of articles related to CCS stays at a higher level than before the release of the Special Report. A good example of this trend is that the CoP 11 led to less attention for climate change in media compared to the G8 summit but in terms of CCS related articles the week of the CoP 11 scores higher than the week of the G8 summit.





The high number of English articles compared to the other languages makes it difficult to analyse the total impact for all languages. Therefore Figure 4 presents a scaled graph for all languages. In this case all weeks are scaled to week 48 (CoP 11). For each language the number of articles related to CCS is set at 100 in this week. For all other weeks the number of articles are scaled to this week.

Note that the total height of the peaks in Figure 4 does not say anything about the total number of articles related to CCS. Therefore Figure 3 needs to be analysed. In the case of Figure 4, a peak tells us that on average the different languages pay more attention to CCS compared to the other weeks. The Figure is especially useful to compare the height of the stack for each language individually.

Figure 4 shows a very clear peak at the release of the IPCC SRCCS. Thus on average many languages pay a lot of attention to CCS compared to the other weeks. Furthermore also this figure clearly shows that the effect is lasting. After the release of the Special Report most languages pay more attention to CCS then before the special report. This effect is the smallest for the English language due to a very large peak in week 26. In this week many articles pay attention to a British BP experiment with CCS. This seems a well-orchestrated event related to the G8 summit in Scotland.

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Figure 4: Number of articles related to CCS, scaled against week 48 (=100 for each language)

Table 4 shows the sum of the number of articles for the three months period before the Special Report and for the three months after per language. Also the increase in articles is stated.

The table shows a strong increase in the number of articles on CCS after the publication of the special report, in all six languages. In the 3 months after the publication, the number of articles on CCS increased by 10-525%.

Language	3 months before SR	3 months after SR	Increase
English	207	350	69%
Spanish	4	13	225%
Italian	10	11	10%
French	8	19	138%
German	4	25	525%
Dutch	25	84	236%

Table 4: Number of articles on CCS for six languages

Table 5 shows the share of articles on CCS in the total number of articles on climate change. This share indicates the relative importance of CCS in the climate change discussion. The table states that for all languages the share increased after the special report. The share increased from 0,4-4,5% in the 3 months before the publication of the Special Report to 1,3-16,3% in the 3 months after the publication.

Relatively speaking, CCS is mentioned most often in Dutch articles with 4,5% and 16,3% before and after the special report respectively, followed by the English articles with

1,5% and 2,4% respectively. The other languages all show a development from 0,5% to 1-2%. The very high score of the Dutch articles might be due to the fact that both the scientific and policy discussion on CCS started early in The Netherlands. The first international conference on CCS was organised by Utrecht University in Amsterdam in 1992. The Dutch government already mentioned CCS as one of three pillars of climate policy in 1999.

Language	3 months before SR	3 months after SR
English	1,5%	2,4%
Spanish	0,5%	1,9%
Italian	5.7%	6.4%
French	0,6%	1,3%
German	0,4%	2,3%
Dutch	4,5%	16,3%

Table 5: number of articles on CCS divid	ed by number of articles on c	limate change
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Thus we can conclude that the Special Report affected the number of articles on CCS in a positive way both in absolute terms (+10% - 525%) and in relative terms compared to the articles on climate change.

3.3 Did the IPCC SRCCS change the opinion expressed in news articles about CCS?

To answer this question we study the share of CCS articles that can be considered positive, negative and neutral. Our starting point is that a higher share of positive articles after the release of the Special Report is an indication that the perception regarding CCS has become more positive. The same holds for negative articles.

We will discuss the trends in positive, negative and neutral articles per language.

3.3.1 English

Figure 5 shows the results for the English articles. The figure shows that after the Special Report the share of articles that only mention CCS decreased. Both positive and neutral articles strongly increased. The number of negative articles increased only slightly.

After the publication of the Special Report, the share of articles with a neutral or balanced view increased from 15% to 28%. The share of articles that only mention CCS as an option without giving details or arguments, decreased from 31% to 22%. This implies that in the period after publication of the Special Report, not only more articles on CCS are published, but they also contain more information on positive and negative arguments.

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Figure 5: labelling of articles before and after the Special Report (English)

3.3.2 Dutch

Figure 6 shows the results for the Dutch language. The Figure shows that after the publication of the Special Report, the share of articles with a neutral or balanced view increased (from 31% to 47%). The share of positive articles increased in absolute terms but decreased in share (from 62% to 43%) and the share of negative articles dropped from 5% to 2%. The share of articles which only mentioned CCS as an option without giving details or arguments, increased from 0% to 8%. It seems that before the publication of the Special Report supporters of CCS dominated the news articles on CCS. In the 3 months after the Special Report a more balanced picture was drawn in the media.



Figure 6: Labelling of articles before and after the Special Report (Dutch)

3.3.3. German

Figure 7 shows the results for the German news articles. The first thing that attracts attention is the steep rise in the number of articles. Before the Special Report, CCS was hardly discussed and afterwards it picked up attention. When the numbers in Figure 7 are converted into shares we see that the share of negative articles is much larger than for the English and Dutch language. Environmental organizations often get a say in the articles and they highlight the negative aspects of CCS as an alternative to renewable energy.



Figure 7: Labelling of articles before and after the Special Report (German)

3.3.4 French

Figure 8 shows the results for the French news articles. After the IPCC special report, no negative articles are counted. The total amount of articles on CCS increased significantly after the special report. The number of positive articles increased after the special report both in absolute and relative terms. Also a large increase in articles is visible that only mention CCS after the special report.



Figure 8: Labelling of articles before and after the Special Report (French)

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3.3.5 Spanish

Figure 9 shows the results for the Spanish news articles. Even though Spanish is a language that is spoken in many countries, the total number of articles on CCS is surprisingly low. Apparently, discussions on CCS are not picked up in South America. We do see an increase in the number of articles after the Special Report and no articles are categorized as being negative about CCS. Not only the number of positive articles on CCS increased, also the share has increased from 25% to 54%.



Figure 9: Labelling of articles before and after the Special Report (Spanish)

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3.3.6 Italian

Finally Figure 10 shows the results for the Italian language. The figure shows a low number of articles on CCS. Surprisingly non of the articles in the three months before the special report could be characterised as positive while afterwards about a quarter of the articles were positive. Furthermore quite a high share of articles just mentions the option. It seems that the Italian public is not well informed about this option.



Figure 10: Labelling of articles before and after the Special Report (Italian)

3.3.7 conclusions

Based on the results presented above we may conclude that the special report overall had a positive effect on the way CCS is presented in the media. In absolute terms the number of articles increase for all languages. In relative terms in most languages we see an increase in positive articles and a decrease in negative articles. An exception is Germany with an increased share of negative articles after the special report. Furthermore, we often counted an increase in neutral articles. These articles list both positive and negative articles. This suggests that reporters are better informed after the special report.

In the next session we will evaluate whether reporters are indeed better informed after the special report and which arguments are used to evaluate CCS.



3.4 Are reporters better informed after the special report and what arguments are used to evaluate CCS?

Table 6 shows the average number of positive and negative arguments that are mentioned per article in the three months before the special reports versus the three months after the special report. Only the positive, negative and neutral articles are taken into account since the `mention only' articles do not state any arguments.

Table 6 shows us that for four languages the average number of positive arguments declines after the special report. Only Italian and French articles show an increase in the number of positive arguments. In terms of negative arguments the number of arguments increases for three languages, the number decreases for two languages and stays constant for one language. Note the steep increase in the average number of negative arguments for the English and German language.

Based on this table we may conclude that special report influenced the media differently for different languages, but all in all the press is better informed in terms of negative arguments related to CCS after the special report and less positive arguments are mentioned.

Table	e 6: Average	number	of arguments	per	articles	corrected for	`mentioned
only	articles						

	positive argume	nts	negative argum	nents
	before	after	before	after
Dutch	2.3	1.5	0.6	0.7
English	2.6	2.1	1.0	1.8
Spanish	2.0	1.8	2.7	1.1
Italian	1.3	3.0	2.0	2.0
French	1.2	2.0	2.5	2.2
German	4.0	3.1	0.5	2.9

Up till now we have analysed the average number of arguments per article for the complete three months periods before and after the special report. The question may arise whether this is different compared to the articles that mention the special report specifically. These articles are often explicitly based on the special report. For the English language we have analysed the average number of positive and negative arguments for these articles. The results are that these articles on average mention 3.1 positive arguments and 3.2 negative arguments.

Thus, on average the English articles that are based on the special report mention more arguments than the rest of the English articles that deal with CCS. Also the number of positive and negative arguments are more balanced than for the rest of the English articles.

We will now analyse which arguments are generally mentioned in the articles that discuss CCS and how the special report influenced this. Table 8 therefore presents all arguments that have been found in articles discussing CCS. The column (-) presents how often the arguments are mentioned in the three months before the special report and the column (+) presents the results for the three months period after the special report. The list of arguments is sorted based on how often the arguments were mentioned in the English language after the special report.

The most mentioned positive arguments are the

Potential contribution to CO2 emission reduction,



- The large potential of CCS, the cost-effectiveness of this option compared to other CO2 mitigation technologies,
- The possibility to clean our fossil fuel use (especially clean coal technology),
- The possibility for enhanced oil and gas recovery
- And the availability of well sealed reservoirs (low chance of leaking).

The most mentioned negative arguments are

- High costs,
- The fact that the technology still needs to proof itself,
- The fact that regulations are not ready,
- Uncertainty about leakage and the consequences for climate change,
- Ecological risks of CO2 storage in deep oceans,
- Risks for ecosystems,
- Dependency on subsidies,
- The lower efficiency of electricity plants (energy penalty),
- And that storage sites might be too far from emission sources.

Table 8 shows clearly that the number of times different arguments are used differ quite strongly before and after the special report. In Table 8 remarkable changes in frequencies have been noted in bold. Note the high impact on the top 6 negative arguments for the English language.

Positive arguments that are used significantly more often after the special report are:

- Contribution to CO2 emission reduction
- Large potential
- Cost effectiveness
- Well-sealed reservoirs available
- Well-known technologies
- Successful pilot projects have taken place
- Big emitters close to suitable geological formations
- CCS is relative safe technology

Positive arguments that are used significantly less after the report are:

- Coal bed methane
- CCS delivers business opportunities

The latter might be due to the fact that the BP press statement on the project in Scotland (before the special report) referred to business opportunities and this event got quite some attention.

Note the specific circumstances for the Netherlands where small earth quakes and soil sagging occurs in the Northern part of the Netherlands to the depletion of gas fields. CCS is mentioned as option to prevent further sagging. Also note some opposite trends in frequencies of arguments used by Dutch and English articles.

Negative arguments that are used significantly more often after the special report are the top seven of negative arguments listed above plus the arguments that CCS is not the panacea and the limited potential of CCS. Note that the Dutch and German articles stress the threat for renewable energy. This is not a big issue for the other languages. Especially in Germany, Greenpeace is often quoted in CCS articles and they highlight the potential negative impact of CCS on renewable energy.

Based on the above we may conclude that the special report did influence the frequency in which many arguments are used. Eight positive arguments get much more attention after the special report and nine negative arguments.

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Table 8: Number of times arguments are used in the 6 languages in the period before (-) and after (+) the publication of the Special Report

	Dut	ch	Englis	h	Spani	sh	Italian		Frenc	h	Gei	man
	-	+	-	+	-	+	-	+	-	+	-	+
Positive arguments	59	66	234	398	6	16	4	12	7	22	8	56
CO2-reduction	15	30	62	117	3	9	2	4	4	10	3	23
Large potential	6	6	6	32	0	0	0	2	0	0	0	0
Cost effective	1	4	7	32	0	2	0	0	1	3	1	3
Clean fossil fuel	5	5	37	32	0	0	0	0	0	0	0	1
Enhanced oil/gas recovery	3	1	32	25	1	0	0	0	0	3	1	7
Well sealed reservoirs available	5	2	11	25	0	0	0	2	0	3	0	2
Well known technologies	0	3	7	19	0	1	0	0	0	1	0	1
Successful pilot projects	4	0	7	19	0	0	0	2	1	0	0	4
Big emitters close to suitable geological formations	0	0	2	13	0	0	0	1	0	0	0	2
	2	1	1	13	0	0	0	0	1	1	0	1
Business opportunities	ა ი	0	12	9	0	0	0	0	1	0	ა ი	1
(bydrogen)	U	0	1	3	0	0	0	0	0	0	0	I
Compatibility with current energy system	0	0	3	0	0	0	2	1	0	0	0	4
Coal bed methane	0	0	10	0	0	0	0	0	0	0	0	2
Mineralization	0	0	6	0	0	0	0	0	0	0	0	3
Helps against sagging	4	0	0	0	0	0	0	0	0	0	0	0
Less dependence on oil imports	0	0	4	0	0	0	0	0	0	0	0	0
Bridge to hydrogen economy	0	0	1	0	0	0	0	0	0	0	0	0
Alternative for nuclear	0	0	3	0	0	0	0	0	0	1	0	0
Can be used within a decade	0	0	3	0	0	0	0	0	0	0	0	0
Chance for renewables because	0	0	0	0	0	0	0	0	0	0	0	1
tossil fuel more expensive	15	24	96	247	0	10	6	0	15	24	4	50
Negative arguments	<mark>15</mark>	31 6	86 22	347 60	8 1	10 1	6 1	8	15 3	24 7	1	52 7
Negative arguments High costs	<mark>15</mark> 5 0	31 6 2	86 22 13	347 60 47	<mark>8</mark> 1 1	10 1 0	6 1 0	8 1 2	15 3 2	24 7 1	<mark>1</mark> 1 0	52 7 5
Negative arguments High costs Technology is not ready Regulation not ready (e.g. OSPAR)	<mark>15</mark> 5 0	31 6 2 0	86 22 13 4	347 60 47 44	8 1 1 0	10 1 0 0	6 1 0	8 1 2 0	15 3 2 1	24 7 1	1 1 0	52 7 5 0
Negative arguments High costs Technology is not ready Regulation not ready (e.g. OSPAR) Uncertainty about climate benefit	15 5 0 0 2	31 6 2 0	86 22 13 4 2	347 60 47 44 35	8 1 1 0 1	10 1 0 0	6 1 0 0	8 1 2 0 1	15 3 2 1 0	24 7 1 1 0	1 1 0 0	52 7 5 0 4
Negative arguments High costs Technology is not ready Regulation not ready (e.g. OSPAR) Uncertainty about climate benefit through leakage Ecological risks of ocean storage	<mark>15</mark> 5 0 2 0	31 6 2 0 0	86 22 13 4 2 4	347 60 47 44 35 28	8 1 1 0 1	10 1 0 0 0 3	6 1 0 1 1	8 1 2 0 1	15 3 2 1 0	24 7 1 1 0 2	1 1 0 0 0	52 7 5 0 4 3
Negative arguments High costs Technology is not ready Regulation not ready (e.g. OSPAR) Uncertainty about climate benefit through leakage Ecological risks of ocean storage Ecosystems risks	15 5 0 2 0 2	31 6 2 0 0 1	86 22 13 4 2 4 3	347 60 47 44 35 28 25	8 1 1 0 1 1 1	10 1 0 0 0 3 0	6 1 0 1 1 1	8 1 2 0 1 0 1	15 3 2 1 0 0 2	24 7 1 1 0 2 3	1 0 0 0 0	52 7 5 0 4 3 6
Negative arguments High costs Technology is not ready Regulation not ready (e.g. OSPAR) Uncertainty about climate benefit through leakage Ecological risks of ocean storage Ecosystems risks Dependent on subsidy	15 5 0 2 0 2 0	31 6 2 0 0 1 1 0	86 22 13 4 2 4 3 3	 347 60 47 44 35 28 25 22 	8 1 1 0 1 1 1 0	10 1 0 0 0 3 0 0	6 1 0 1 1 1	8 1 2 0 1 0 1 1	15 3 2 1 0 2 0	24 7 1 1 0 2 3 0	1 0 0 0 0 0	52 7 5 0 4 3 6 0
Negative arguments High costs Technology is not ready Regulation not ready (e.g. OSPAR) Uncertainty about climate benefit through leakage Ecological risks of ocean storage Ecosystems risks Dependent on subsidy Energy penalty	15 5 0 2 0 2 0 0	31 6 2 0 0 1 1 0 1	86 22 13 4 2 4 3 3 5	 347 60 47 44 35 28 25 22 19 	8 1 1 0 1 1 1 0 0	10 1 0 0 0 3 0 0 3	6 1 0 1 1 1 0 2	8 1 2 0 1 0 1 1 0	15 3 2 1 0 2 0 2 0	24 7 1 1 0 2 3 0 0	1 0 0 0 0 0 0	52 7 5 0 4 3 6 0 5
Negative arguments High costs Technology is not ready Regulation not ready (e.g. OSPAR) Uncertainty about climate benefit through leakage Ecological risks of ocean storage Ecosystems risks Dependent on subsidy Energy penalty Storage sites too far from emission sources	15 5 0 2 0 2 0 0 0 0	31 6 2 0 1 1 0 1 0	86 22 13 4 2 4 3 3 5 3	 347 60 47 44 35 28 25 22 19 19 	8 1 0 1 1 1 0 0 0	10 1 0 0 3 0 0 3 0 3 0	6 1 0 1 1 1 0 2 0	8 1 2 0 1 0 1 1 0 0	15 3 2 1 0 2 0 1 0	24 7 1 0 2 3 0 0 0 0	1 0 0 0 0 0 0 0	52 7 5 0 4 3 6 0 5 0
Negative arguments High costs Technology is not ready Regulation not ready (e.g. OSPAR) Uncertainty about climate benefit through leakage Ecological risks of ocean storage Ecosystems risks Dependent on subsidy Energy penalty Storage sites too far from emission sources CCS is not panacea	15 5 0 2 0 2 0 0 0 0 0 0	31 6 2 0 1 1 1 0 1 0 1	86 22 13 4 2 4 3 3 5 3 2	 347 60 47 44 35 28 25 22 19 19 13 	8 1 1 0 1 1 1 0 0 0 1	10 1 0 0 3 0 3 0 3 0 0	6 1 0 1 1 1 2 0 0	8 1 2 0 1 0 1 1 0 0 1	15 3 2 1 0 2 0 2 0 1 0 1	24 7 1 0 2 3 0 0 0 0 1	1 0 0 0 0 0 0 0 0	52 7 5 0 4 3 6 0 5 0 5 0 3
Negative arguments High costs Technology is not ready Regulation not ready (e.g. OSPAR) Uncertainty about climate benefit through leakage Ecological risks of ocean storage Ecosystems risks Dependent on subsidy Energy penalty Storage sites too far from emission sources CCS is not panacea Limited potential	15 5 0 2 0 2 0 0 0 0 0 0 0 0	31 6 2 0 1 1 0 1 0 1 1	86 22 13 4 2 4 3 3 5 3 2 0	 347 60 47 44 35 28 25 22 19 19 13 13 	8 1 1 1 1 1 0 0 0 1 0	10 1 0 0 3 0 0 3 0 0 0 0 0	6 1 0 1 1 1 0 2 0 0 0	8 1 2 0 1 0 1 1 0 0 1 0	15 3 2 1 0 2 0 2 0 1 0 1 0	24 7 1 0 2 3 0 0 0 0 1 0	1 1 0 0 0 0 0 0 0 0 0 0	52 7 5 0 4 3 6 0 5 0 5 0 3 2
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4. Conclusions

In this section we will present the conclusions of our analyses by answering the research questions as introduced in section 1.

RQ1: Did the release of the IPCC SRCCS influence the total number of news articles related to climate change?

No, the IPCC SRCCS had no influence on the number of climate change related articles. It were events like the G8 summit and the CoP 11 that mainly determined the number of climate change related articles.

RQ2: Did the release of the IPCC SRCCS influence the number of written articles related to CCS?

Yes, for all six languages that were analysed the number of articles on CCS increased in the three months after the special report compared to the three months before.

Especially the week of the release of the special report and the weeks around CoP 11 shows high peaks in the number of CCS articles. Where for climate change the G8 summit (week 26) received much more attention than the CoP 11 (week 48), for CCS this was the opposite. This can be attributed to the release of the special report in week 39.

RQ3: Did the release of the IPCC SRCCS change the opinion expressed in news articles on CCS?

Yes, after the special report we see for most languages an increase of CCS articles that can be labelled as positive and a decrease in articles labelled as negative. Germany is an exception; here the negative articles increase after the special report.

RQ4a: Are reporters better informed after the special report?

Yes. After the special report, the number of neutral CCS articles that mention both positive and negative arguments increased for most languages. This suggests that reporters are better informed after the release of the special report than before the release.

RQ4b: Do the number of arguments change after the release of IPCC SRCCS?

Yes. In terms of arguments used, the release of the special report had a different impact on the different languages but on average less positive arguments and more negative arguments are used when CCS is discussed. It seems that before the special report advocates of CCS had greater influence on the argumentation in the articles than after the special report. At first sight this seems not in line with the higher share of articles that are labelled as positive after the special report compared to before, but this can be explained by the increase of the number of neutral articles that list both positive and negative arguments after the special report.

The English articles that actually discussed the special report mentioned much more arguments than other articles on CCS and were well balanced in their argumentation.

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RQ4c: Do the type of arguments change after the release of IPCC SRCCS?

Yes, a number of positive and negative arguments are used much more often after the release of the special report. Especially the number of positive arguments narrows down after the special report for most languages. So the special report lead to more focus. For the negative arguments we see a strong concentration to a smaller number of arguments for the English language but for the other languages the list increases.

Carbon Dioxide Capture and Storage in the Media

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Tyndall Centre for Climate Change Research February 2006

Report Prepared for the IEA Greenhouse Gas R&D Programme

Introduction

This report describes a review of the print media coverage of Carbon dioxide capture and storage (CCS) in five English speaking countries during the period 1 September 2005 to 31 January 2006. The study was commissioned by the IEA Greenhouse Gas R&D Programme in order to explore the impact of the publication of the IPCC Special Report on Carbon Capture and Storage (IPCC SRCCS), at the end of September 2005, on media coverage of CCS technologies. In order to provide a rough benchmark to this coverage we have also tracked media articles on other low carbon electricity supply technologies (nuclear power, wind, solar, biomass) and coal fired generation (without CCS)). While every effort has been made to ensure a comprehensive catalogue of articles on these subjects, the data should be treated as indicative only. The comprehensiveness of the catalogue of CCS articles can be treated with a greater level of confidence.

After describing the approach adopted in this study we will present a brief overview of the newspaper articles covered across all five countries. We will then consider the coverage of electricity supply technologies in each individual country in more detail.

Method

Summary information for all articles was recorded on a purpose-built database for the period 1 September 2005 to 31 January 2006. Electronic copies of all articles are available and those on CCS supplied, the catalogue of articles mentioning CCS is presented in Annex 1.

The Factiva® database was used for searching across the relevant print media. Articles were collected through a daily search of the following key words: climate change, global warming, carbon, CO₂, geosequestration, coal, wind power, nuclear power, nuclear energy, biomass, solar. Since the primary purpose of this study is to explore how CCS is reported we have made every effort to ensure that the survey of articles relating to this technology is exhaustive; whilst we have been as thorough as possible with the other related technologies, their results should be seen as more indicative.

We have included all articles that relate to the application of the various power generation technologies, we have not included articles relating to share prices or financial data concerning the respective companies, reports on outages of individual plants, or letters to editors. Also we have not included articles relating to general climate change policy, or to mitigation in any demand sector other than electricity generation (for example biofuels for transport are not included). Each article is assigned one of the following categories: coal (with no mention of CCS), CCS, nuclear, wind, solar, biomass, renewables – mixed. The 'renewables – mixed' category refers to articles that mention several types of renewable energy rather than being focused on one group of technologies such as solar or wind. The category if there is any mention of CCS, otherwise it is allocated to the category which best describes the main focus of the article. Those articles referring only to clean coal technologies (which do not refer explicitly to CO_2 storage) have been classified as non-CCS coal on the grounds that they will not raise awareness or significantly influence opinion on CCS technologies; such cases are clearly indicated in the text below.

The following journals were included for each country:

- Australia AAP, The Advertiser, The Australian, Australian Financial Review, BRW, Courier Mail, Daily Telegraph, Reuters, Sunday Mail, Sunday Telegraph, The Sydney Morning Herald, West Australian.
- Canada Globe and Mail, National Post, Reuters, Toronto Star.
- New Zealand Reuters, New Zealand Herald, The Daily Post.
- Great Britain The Guardian, Financial Times, Daily Telegraph, Economist, Independent, Independent on Sunday, Observer, Reuters, Sunday Telegraph, Sunday Times, The Times.

• USA –New York Times, Reuters, Time Magazine, USA Today, Wall Street Journal, Washington Post.



Results

Figure 1. Summary of articles by subject in all countries

Figure 1 provides an overview of the number of articles on each of the main electricity supply technologies across the five study countries between September 2005 and January 2006. Clearly, the subject of nuclear power has attracted a very high level of media attention in the UK during this period; it has also attracted a significant level of attention in Australia. Figure 1 also shows that the technology to receive the next greatest number of articles is Carbon dioxide capture and storage; in the USA it is the subject of almost the same number of articles as nuclear power, in the UK and Australia it is the next highest after nuclear power, in Canada and New Zealand it receives the least attention of the energy technologies covered (although there are no articles on coal generation without CCS in New Zealand). In Australia and the UK, the number of articles referring to CCS is roughly double the number of articles about coal generation that do not refer to the CCS technology. By contrast, in the US it is roughly equal whereas in Canada there are slightly more articles about coal generation that don't mention CCS at all.

The majority of the articles collected on CCS refer to the technology with respect to coal fired generation, although a couple in the UK mention it in connection to gas fired plant; there is no mention of industrial sources of CO_2 in any of the articles collected.

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	Australia	Canada	Great	New	USA	lotal
			Britain	Zealand		
Total no. CCS	24	5	29	1	9	67
Reference to IPCC SRCCS	5 (21%)	1 (20%)	4 (14%)	0	2 (22%)	12
Articles positive about CCS	7 (29%)	3 (60%)	12 (41%)	1	2 (22%)	24
Articles negative about CCS	4 (17%)	0	2 (7%)	0	1 (11%)	8
Articles presenting positive and negative aspects of CCS	7 (29%)	0	6 (21%)	0	2 (22%)	13
Articles presenting neutral view of CCS	6 (25%)	2 (40%)	9 (32%)	0	4 (44%)	22

Table 1. Summary of articles on CCS

Table 1 summarises the CCS reporting in each country, the level of coverage given to the IPCC SRCCS and the perspective adopted in the articles on CCS. The perspective taken in individual articles is presented in Annex 1.

The launch of the IPCC SRCCS in September 2005 was covered in each of our five study countries, except New Zealand. Thereafter, it is occasionally referred to in order to lend an 'official' positive scientific view on the technology. Typically, the IPCC SRCCS is cited as concluding that CCS could have a significant impact on CO_2 cuts and that, while it has the potential to reduce CO_2 abatement costs, some form of financial incentive would nevertheless be necessary before it would be implemented on a significant scale. Table 2 summarise which elements of the IPCC SRCCS were cited in each country.

The majority of articles on CCS present a neutral or positive view of the technology; the country with the most negative reporting on CC was Australia. The main negative aspects of CCS raised in the Australian press were costs (in six articles) and that the technology is unproven or untested (in five articles).

	ie ii e e oi			
	Australia	Canada	UK	USA
Government incentives	1	1	1	
required				
CCS could reduce costs of	2		1	1
mitigation by 30%				
CCS could have significant	2	1	1	2
impact on CO ₂ reductions				
No comments on content of			1	
report				
CCS incurs energy penalty			1	
Other options (e.g mineral			1	
carbonisation, ocean				
storage) are risky				

Table 2. What elements of the IPCC SRCCS are cited

Australia



In Australia, nuclear power was the subject of the greatest number of articles but CCS also received a significant level of attention – particularly in September and January. Reporting on renewable energy was dominated by solar power.

<u>September</u>

There were six articles on CCS in September¹. Of these, one describes an announcement of a scheme in Spain receiving government support (Sydney Morning Herald, 10/09/05), three report the release of a report of the (negative) environmental impacts of the proposed Gorgon LNG/CCS scheme in Australia (The Australian, 13/09/05a,b; The West Australian, 15/09/05) and two report the release of the IPCC

¹ CCS is typically termed 'geosequestration' in Australia

SRCCS (The West Australian, 28/09/05, The Advertiser, 28/09/05). One of the articles relating to the IPCC report states that '*Plans [for CCS] have been supported in an international report despite concerns from conservationists*', that the report has found that CCS '*could significantly lower the cost of addressing climate change*' and hence that '*the report helps the controversial Gorgon gas project*' (The West Australian, 28/09/05). The other simply provides a brief statement that the report was released.

The articles collated during September are dominated by the nuclear debate. These were mostly prompted by a political debate relating to the possibility of Australia reopening uranium mines with a view to exporting uranium and to pursuing domestic nuclear power. The majority of the articles on nuclear power in September were triggered by statements initially by the Foreign Minister, Alexander Downing, in support of both in principle, followed by responses by other ministers and environment groups and some articles explaining the issues surrounding the use of nuclear power.

October

There was only one article mentioning CCS in Australia during October, describing calls by Kelly Thambimuthu (Chief Executive of the Centre for Low Emission Coal and Chair of the IEAGHG R&D Programme) for "*an institutional value for carbon in Australia*" in order promote clean coal technology such as CCS (Reuters, 17/10/05). The general coal article shown for this month concerns the need for expanded infrastructure as demand for coal increases and includes no mention of any environmental controls related to coal use. The political debate over whether Australia should adopt nuclear power continues in October in 5 articles.

November

There are no articles referring to CCS in this month. Three articles about coal firing do not mention CCS: two of these relate to the use of domestic brown coal, supported by big business, rejected by environmental groups and amidst uncertainty over future regulation of greenhouse gas emissions. The third article refers to expanding use of coal generation in India, balancing security of supply against greenhouse gas emissions.

December

There were two Australian newspaper articles on CCS in December. One article was prompted by a report from the Potsdam Institute in Berlin stating that CCS was essential in achieving deep cuts in CO₂ emissions - described as "*back(ing) Australia's push to develop clean coal technology*" – and leading to a statement by the Federal Environment Minister, Ian Campbell, that a breakthrough in CCS technology was "*crucial to addressing climate change*" and that Australia "*was already leading the world in the development of a CCS regulatory regime*" (The Australian, 13/12/05); the article also refers back to the IPCC SRCCS for the potential contribution CCS could make to global greenhouse gas reductions. The second describes a feasibility study into a new brown coal fired power plant using clean coal technology to which "*A process also probably needs to be developed to effectively capture emissions so that they can be sequestered underground*" (The Australian, 16/12/06). In contrast there were five articles about coal generation in this month, two of which describe coal bed methane schemes, one calls for the promotion of clean coal (instead of wind power) to avoid climate change but does not explicitly mention CCS, one describes calls from the coal lobby to promote coal over gas despite its environmental performance (West Australian, 15/12/05) and one calls for the use of coal on economic grounds with no mention of environmental impacts (BRW, 15/12/05).

January

In January, the sharp increase in coverage of CCS is due to reporting of the meeting of the Asia-Pacific Partnership on Clean Development and Climate (the so-called AP6 meeting) held in Sydney during the week beginning 9 January and the announcement of a CCS demonstration project storing CO_2 in a depleted gas field in the Otway Basin. A total of 14 articles appeared this month of which four describe the Otway basin scheme, six report on the AP6 meeting and a further two discuss both events. The remaining two articles report the announcement of the Futuregen programme in the US (Australian

Financial Review, 09/01/06), an announcement that "coal friendly" technologies will become a greater priority in the CSIRO research programme at the expense of some of its studies into renewable energy (presenting a somewhat sceptical view of this) (The Australian, 31/01/06).

The IPCC SRCCS is referred to in two of the above articles - one presents the conclusion that including CCS in an abatement portfolio '*reduces mitigation costs by 30 per cent or more*' (Australian Financial Review, 24/01/06) and the other describing that the report suggested that CCS '*would do little to protect the climate unless emissions were priced at more more than* US25 to US30 per tonne CO₂' (The Sydney Morning Herald, 09/01/06).

Two articles on coal-firing appear in the Australian press in January. One in which Paul Chiaro (the chief executive of Energy at Rio Tinto) argues for widespread implementation of clean coal technology to reduce greenhouse gases, although does not explicitly refer to CCS (Australian Financial Review, 09/01/06). The second article reports that the economies of the members of the AP6 meeting would remain underpinned by fossil fuels, in particular coal, despite implications to greenhouse gas emissions.

The debate over the role of Nuclear power continued in January with nine articles and a further three articles on whether to resume uranium mining.



Canada

We found very little coverage of CCS in Canada with only two of the five articles catalogued referring to the technology directly in the context of Canadian applications, despite there being several CCS initiatives on-going and planned in Canada.

Canada is currently facing an electricity shortfall and many of the articles relate to how this shortfall might be met. In particular, the vast majority of articles about nuclear power concern the political debate over whether new nuclear plant will be constructed and the level of public support for such a policy. Currently Canada generates 14% of its electricity by nuclear power and the debate in Canada parallels to the current nuclear debate in the UK, a point noted in two articles in the Canadian press – including one noting that any decision in Britain to construct new nuclear plant would give a boost to the Canadian nuclear industry (Toronto Star, 25/11/05). A similar situation exists with respect to coal in Canada with all five articles calling for clean coal to be included in the fuel mix, without mention of CCS.

A relatively high proportion of the Canadian press articles relate to renewable energy - in particular wind and solar, one of these is directly critical of wind power and four of the fourteen articles on renewables describe projects outside Canada.

September

There was one Canadian press article on CCS in September and this was in response to the launch of the IPCC SRCCS in Montreal that month. The article is generally positive about the prospect for CCS stating

that "the endorsement [of CCS] by the IPCC is good news for the Federal Government" although cautious about the increase in electricity prices likely to result (Toronto Star 26/12/05).

October

No articles on CCS.

November

In November there were two articles on CCS. The first article reports the launch of the BP's alternative energy unit and although the article focuses on renewables it mentions CCS in the context of uncertainty over the level of investment in different technologies depending on "*the nature of opportunities and [UK] government support*" (The Globe and Mail, 29/11/05)

The second reports on the publication of a book by Canadian academic Mark Jaccard (2005) predicting that fossil fuels (coal in particular) will remain the dominant energy source well into the future, supplying zero emission electricity and hydrogen with CO_2 storage (The Globe and Mail, 30/11/05).

December

No articles on CCS.

January

An article discussing the problem of CO_2 emissions from Canada's oilsands production raises the potential for capturing and transporting CO_2 for use in Enhanced Oil Recovery (EOR) elsewhere, although there is no mention of long term storage in the article (National Post, 19/01/06). Also this month CCS is mentioned as an aside in an article describing the potential for underground coal gasification at offshore fields in Norway.



There is just one article concerning CCS in the New Zealand press, during November. This article reports on the huge reserves of lignite in New Zealand and the great potential for energy, through various lignite derived carriers, including CCS as a means of making conversion processes cleaner. Again nuclear power dominates the other coverage; all but one of the five articles report calls for New Zealand to revisit the use of nuclear power and one article, written by the Iranian Ambassador to New Zealand justifies Iran's need for nuclear power. There is also an article reporting approval of a large scale solar power programme in California.

New Zealand

United Kingdom



Overall, reporting on nuclear power dominates articles catalogued in the UK; by far the majority of these articles, however appear in November. Several factors came together this month to provoke a media blitz on nuclear power: the launch of a report at the Royal Society by the government funded UK Energy Research Centre predicting a 20% shortfall in electricity as existing nuclear plants are phased out; a call by the CBI for the government to make a decision over nuclear power by the end of the year; and statements by the Prime Minister, Tony Blair, and other cabinet ministers in the lead up to the announcement of an Energy Review in the UK, which would include assessment of nuclear power. Roughly half of these articles report statements made by key government and scientific players in the debate as described above and half are opinion or commentary pieces, mainly by journalists. Reporting on renewable energy was spread fairly evenly between the main technology types, although the highest number (ten) related to wind power, three of these argued against the use of wind power in the UK.

September

In September, three articles report on an EU-China summit at which an agreement on CCS was made; in one of these (Guardian, 05/09/05a) this was only mentioned at the end of a longer piece about British-Chinese relations in general, whereas the agreement is central to another article (Reuters News, 05/09/05) and prominent in the third article (Guardian, 05/09/05b). All three articles take a positive view of CCS, with Reuters quoting from WWF and stating that '*the environmental group WWF hailed the agreement*'. A third article describing this summit is concerned primarily with a textiles trade war between China and the UK and mentions the agreement only briefly, describing it as a '*clean coal power plant to help [*China*] develop greener energy sources*' (The Guardian, 06/09/05); this article has been classified under 'coal' since the CCS technology is not mentioned explicitly.

The other two British articles on CCS are triggered by the launch this month of the IPCC SRCCS. One simply states that the IPCC has launched a special report on CCS (Financial Times, 26/09/05); the following day the same journal ran a longer article which presents a mixed view of the technology – despite the title '*carbon capture has a big future, says scientists*' and reporting the potential for a 30% or more reduction in the cost of mitigating global warming, the article also refers to uncertainty over potential storage capacity in key emitting countries such as China and India, and to the energy penalty associated with CCS. The article also reports the scientific concerns over the environmental impact of ocean storage

October

Of the four UK articles that describe CCS technology in October, one is a long article discussing nuclear power that refers fairly briefly to CCS as a beneficial alternative to nuclear power (The Guardian, 04/10/05). Another very short article reports the formation by eleven companies of the Carbon Capture and Storage Association (Daily Telegraph, 05/10/05). An article in the Financial Times refers to the EU-China agreement on clean coal technology and CCS as a positive step towards achieving emissions reductions in developing nations, which in turn has positive implications for re-engaging countries such

as the US in international efforts on climate change (Financial Times 10/10/05). The Independent presents a report by the EEF (The Manufacturer's Organisation) calling for the current renewables obligation to be replaced by a 'zero carbon obligation' primarily to encourage new nuclear power stations as well as other options such as CCS (Independent, 24/10/05).

November

As described above, debate on the future of electricity supply in the UK really heated up in November and seven articles appeared on CCS. The first of these reports on a high level conference of environment ministers held in London (Guardian, 02/11/05), citing CCS as a means of allowing developing countries such as China to use their coal reserves without emitting large amounts of CO₂; the article states that the technology has become popular with both politicians and environmentalists '*as a way to prevent the building of new nuclear power stations*' but that '*a viable large-scale system could be decades away*'. Another article describing the state visit to the UK by the Chinese president, mentions CCS only in the final sentence which refers to the EU-China agreement on a CCS plant (Reuters News, 07/11/05).

An article reporting the launch of the BP Alternative Energy group, although focusing on renewables does mention plans for the Miller /Peterhead scheme as '*the world's first gas power plant (...) where carbon is separated and buried underground*' (The Independent, 29/11/05). Two further articles, essentially triggered by the topical energy debate, focus on how Britain's reserves of coal could be used in the future, with both articles presenting neutral descriptions of the CCS process (Guardian, 30/11/05; The Sunday Telegraph, 27/11/05).

Of the four articles catalogued under 'coal' this month, three refer to upgrades to existing plant to bring them inline with the EU Large Combustion Plant Directive (Fiddlers' Ferry, Ferrybridge and Aberthaw); the fourth is a short piece among several describing different types of power generation (including one on 'clean coal' described above).

An agreement to cooperate on CCS signed by the British and Norwegian Energy Ministers in London at the end of November triggered an article in the Independent on Sunday (27/11/05), describing CCS as having the potential to reduce emissions from power stations by 90%, with the enhanced oil recovery as an added advantage, but amid concerns over safety and liability in the event of leakage.

Finally, and article triggered by the UNFCCC Conference in Montreal this month presents concerns over emissions from China and India given their planned expansion in coal use; the article describes post-combustion capture, IGCC and oxyfuel combustion but cites negative aspects of cost, '*concerns over short-term legality and long-term safety*' and energy penalties and considers that capture technology is too immature (Guardian, 30/11/05).

December

December also saw seven articles on CCS. The Observer devoted an article to CCS following the launch of the House of Commons Committee on Science and Technology review of CCS (House of Commons, 2006); this article describes initiatives such as the Miller/Peterhead project in the North Sea and quotes UK geologist Stuart Haszeldine as saying 'there is enough space under the north sea to store Europe's entire carbon output for between 70 to 200 years', also quoting reluctant support for the technology by Friends of the Earth (The Observer 04/12/05).

Two articles report an announcement by the UK Chancellor, Gordon Brown, of a partnership with the Norwegian government to explore incentives to promote CCS in the North Sea; the first of these quotes Mr Brown as seeing it as a combined response to increases in oil and gas prices and global warming (The Daily Telegraph, 06/12/05); the second of these states that CCS was '*broadly supported by scientists*' in the IPCC SRCCS (Guardian. 06/12/05).

The UNFCCC talks in Montreal this month also prompted an article using quotes and references to Mark Jaccard (see articles in Canada) and Bert Metz (IPCC SRCCS). This article concentrates on the IPCC SRCCS analysis of the costs of the technology, stating, in three separate places, that CCS technology depends on '*clear financial incentives*' through government intervention and that '*the technology will never be taken up using voluntary measures alone*' (The Daily Telegraph, 08/12/05).

CCS is mentioned briefly in three articles reporting an announcement by E.ON of a feasibility study into the construction of a new coal plant with CCS in the UK; the focus of the first article is on investment in the UK power sector (The Times, 21/12/05); while the second is just a short statement about the study with the comment that CCS would allow '*sidestepping tightening European rules in pollution*' (Independent, 21/12/05); a third article prompted by E.ON's plans, also in the Independent two days later, takes a more positive view of the technology in enabling continued use of coal in the UK (Independent 23/12/05). Another article concerned with investment in the energy sector describes CCS as a '*viable alternative to nuclear power*' and quotes a representative of the merchant bank Climate Change Capital describing it as '*a proven technology*' (Financial Times, 19/12/05).

January

In January, there was one article in the British press reporting the conference of the groups of six Asia Pacific countries held in Sydney this month; mentioning CCS only briefly it reports environmentalists warning that '*no technical fix could fix the problem of climate change*' (Guardian, 12/01/06).

The remaining four CCS articles this month all relate to the on-going debate on energy supply in the UK. One reports concerns voiced by a UK scientist, Kevin Anderson, that an increase in coal use 'could not be reconciled with emissions targets' without CCS technology, an argument supported by quotes from the Energy Minister, Malcolm Wicks, that the future role of coal in the UK 'would depend on whether clean coal technology could become competitive over the next 10 to 15 years' (Financial Times, 17/01/06). An article written by the Jeroen van der Veer, the Chief Executive of Shell, presents the arguments for technological solutions to concerns over peak oil, including CCS to allow 'green fossil fuels' which 'could be cheaper, more convenient and more flexible than alternative energies' (Financial Times, 25/01/06).

Another article this month presents the benefits of coal – referring to biomass cofiring in place at Drax, the EON CCS feasibility study, CCS at Sleipner and the Miller/Peterhead project in the North Sea, stating that the 'greatest excitement (...) is reserved for carbon capture and storage' but raises concerns that the government may ignore coal in its forthcoming energy review (The Sunday Times, 29/01/06).

In an interview in the Guardian, Marc Jaccard (Jaccard, 2005), discusses the options for satisfying global energy needs without high CO_2 emissions, taking a positive for the role view of CCS and EOR saying that '*the technologies for doing that* (capturing carbon) *have existed for decades*' commenting that the inevitable increase in costs associated with avoiding CO_2 emissions to the atmosphere should not be a problem once policies recognise the need to do so, stating that a new coal gasification plant would become profitable once oil reaches \$35 per barrel (Guardian, 31/01/06).

There were three articles on coal firing this month which did not mention CCS - two of these discussing the prospects for coal to continue to play a significant role and one very briefly reporting the announcement in the previous month by EON relating to a possible new clean coal plant.



USA

In total, only 38 articles were collected from the USA; although fewer daily newspapers were included in the study, we are confident that we have not excluded any equivalent sources. It appears that there is simply a lower level of reporting of energy technologies in the *print media* than in Britain and Australia. Resources did not enable us to explore other additional online sources which may have yielded more relevant articles.

The spread of subjects is much more evenly distributed across the technologies in the US, the dominance of articles on nuclear power seen in other countries is replaced by coal (with and without CCS technology). Of these articles there were only 9 which discussed CCS; these are described below by the month in which they appear.

During the study period, a further ten articles relate to coal fired generation that make no mention of CCS. One of these, described below in December, refers to the Futuregen project, another refers to coal gasification with the possibility of providing CO_2 for EOR - but with no mention of long term storage of CO_2 (Reuters 17/11/05). There are two other articles that refer to coal gasification technology, three articles referring to the IGCC technology and four referring to clean coal technology in more general terms.

Reporting on renewable energy in the US is dominated by solar with just one article about the potential for wind power and nothing on biomass. The ten articles relating nuclear power mostly report a positive future for nuclear power in the US; there is one article reporting on reactions to a UN report suggesting that fewer deaths were associated with the Chernobyl disaster than previously thought; two articles report the debate over starting new nuclear programmes in the US and Canada respectively and one reporting a long standing flaw in a nuclear reactor in Arizona that had gone undetected for 20 years.

September

In September there was one article from the New York Times reporting the release of the IPCC SRCCS, presenting both the benefits and potential uncertainties associated with the technology, in particular its cost (New York Times, 28/09/05). Earlier this month there was a briefing paragraph in the same paper briefly reporting the agreement between the EU and China on CCS (described in more detail under the UK section) (New York Times, 06/09/05).

October

The CCS article in October appeared in Time magazine; entitled '*Coal is Back*' (Time, 23/10/05), it reports how coal may see a renaissance in meeting future energy needs, a paragraph of this states that '*an unlikely trio of industry, the government and environmentalists want to capture carbon dioxide* (...) *and store it deep underground*' although it takes a rather sceptical view as to whether this is technically possible.

November

The three November CCS articles all appeared within a week of each other. A long article in the Wall Street Journal (25/11/05) explains how the CCS technology forms a '*centrepiece*' in the US government's approach to combating global warming in the build up to the UNFCCC meeting to be held in Montreal the following month and referring to the IPCC SRCCS. Another article reports the announcement of the Futuregen project (Reuters, 28/11/05). The third article reports the launch of the BP Alternative-Energy group; although this article also describes developments in renewables, it refers to the group's near term plans for CO₂ storage in offshore hydrocarbon fields in the UK (Wall Street Journal, 29/11/05).

December

Two articles have been classified under CCS for December; one of these reports on the announcement of Futuregen project which, '*if it works*', it reports, will support US policy to '*reduce reliance on imported oil and natural gas by using technology clean up and increase the use of coal*' (Wall Street Journal, 07/12/05). Another article also reports on Futuregen, without any explicit mention of CCS it refers to a '*prototype coal-burning power plant with no emissions*' (The New York Times, 07/12/05) but does not explain how this is achieved (and consequently has been classified under 'coal' since it does not contribute to raising awareness of CCS). Also this month, an article predominantly concerned with

biological sequestration mentions underground and ocean CO_2 storage in passing only (with the implication that they provide less promising options) (The New York Times, 27/12/05).

January

This month, an article in the Wall Street Journal takes a positive view of the emergence of IGCC technology in the US with what it describes as '*perhaps the most compelling advantage of an IGCC plant is the ability to control carbon dioxide emissions*' (Wall Street Journal, 04/01/06) which, it says, receives praise from environmentalists, the coal industry and energy independence campaigners.

Summary

This report has presented an overview of the reporting of technologies for carbon dioxide capture and storage in the print media in five English speaking countries. This has revealed that, particularly in Australia and the UK, CCS is gaining representation in the press. The key benefits of CCS are typically seen as being a means of maintaining a significant use of coal generation, with advantages in terms of security of supply, potential to exploit domestic coal reserves and sometimes as an alternative to nuclear power, but without the CO_2 emissions previously associated with the use of coal. Overall, across all countries studied, more articles present a positive or neutral view of the technology than a negative or mixed view. The negative aspect of CCS that is most frequently raised in the print media is its cost (particularly in Australia and the USA) but also the technology is seem as being 'unproven' or 'untested'; other more fundamental concerns that are presented (particularly in the UK) relate to safety and leakage issues, uncertainty over whether the technology would be sufficiently developed in the near term to be a significant mitigation option with doubts over concerns including available capacity worldwide and the energy penalty associated with capture.

One of the key messages that repeatedly emerges is the urgent need for a legislative framework to provide the necessary financial incentives to allow investment in CCS technology. This is summed up by a quote from an energy provider in Australia:

'*The [Government] is dangerously picking the technology but failing to build the market for it*' (The Sydney Morning Herald, 11/01/06)

References

House of Commons Science and Technology Committee, 2005, *Meeting UK Energy and Climate Needs, The role of carbon capture and Storage*, First Report of Session 2005-2006, Vol 1, Report No. HC 578-I

IPCC SRCCS (2005), *Carbon Dioxide Capture and Storage*, Intergovernmental Panel on Climate Change Special Report.

M. Jaccard, 2005, Sustainable Fossil Fuels: The Unusual Suspect in the Quest for Clean and Enduring Energy, Cambridge University Press IPCC 2005

Annex 1 – Catalogue of articles featuring CCS

(1 September 2005 – 31 January 2006)

Australia

Journal	Date	Title	Perspective
Australian Financial Review	07/09/05	Shades of green and brown on Victoria's energy palette	Neutral
Sydney Morning Herald	10/09/05	Vertical thinking Spanish style	Neutral
The Australian	13/09/05	Doubts plague plan to bury gas under protected island	Negative
The Australian	13/09/05	Radical method may bury gas plant	Mixed
The West Australian	15/09/05	Gorgon greenhouse impacts understated backers admit	Negative
The West Australian	28/09/05	Inject greenhouse gas into the Earth: What is geosequestration?	Mixed
The Advertiser	28/09/05	Canada CO ₂ Strategy	Neutral
Reuters	17/10/05	Clean coal possible for Australia	Positive
The Australian	13/12/05	Aussies lead the race for clean air	Positive
The Australian	16/12/06	Brown is the new green in \$50m coal study	Positive
Australian Financial Review	07/01/06	The heat is on to find ways out of Kyoto	Positive
Australian Financial Review	09/01/06	Plan to bury greenhouse gas	Mixed
Sydney Morning Herald	09/01/06	Go-ahead for gas store trial	Positive
Sydney Morning Herald	09/01/06	Incentives seen as only greenhouse solution	Mixed
The Australian	09/01/06	Plan to bury carbon dioxide deep down	Neutral
The Advertiser	09/01/06	Gas store underground	Neutral
Australian Financial Review	09/01/06	Plan to build emission-free power plant	Positive
Reuters	10/01/06	Coal and oil to dominate Sydney climate meet	Neutral
Sydney Morning Herald	11/01/06	Coal comfort	Mixed
Sydney Morning Herald	11/01/06	The high cost of fossil free air	Mixed
The Australian	09/01/06	Big funds needed to back pact	Negative
The Advertiser	12/01/06	Waste of money	Negative
Australian Financial Review	24/01/06	Carbon storage just has to work	Positive
The Australian	31/01/06	CSIRO warms to coal research	Mixed

Canada

Journal	Date	Title	Perspective
Toronto Star	26/09/05	Experts give boost to Kyoto gas burial plans	Positive
The Globe and	29/11/05	BP forms alternative energy division	Neutral
Mail			
The Globe and	30/11/05	Worried about fuel? The end may not be near	Positive
Mail			

National Post	21/12/06	Norway has vast inaccessible seabed coal reserves	Neutral
National Post	19/01/06	Oilsands players must curb CO ₂	Positive

New Zealand

Journal	Date	Title	Perspective
New Zealand	18/11/05	Lignite can power future	Positive
Herald			

UK

Journal	Date	Title	Perspective
The Guardian	05/09/05a	Blair steps up British efforts to woo Beijing	Positive
The Guardian	05/09/05b	Blair signs 'clean coal' deal with China	Positive
Reuters News	05/09/05	UPDATE 1-EU to help China tackle greenhouse gas emissions	Positive
The Guardian	04/10/05	G2:Back to the future: Nuclear power was dead in the water - wildly expensive deeply unpopular and a nightmare to clean up. But now the government is talking about a new generation of reactors. Can it really be the green answer to our energy needs?	Positive
Financial Times	27/09/05	Carbon Capture has a big future	Mixed
Daily Telegraph	05/10/05	Carbon dioxide group launches	Neutral
Financial Times	10/10/05	Technology to provide clean coal blueprint	Positive
Independent	24/10/05	EEF calls for scrapping of renewables scheme	Positive
Guardian	02/11/05	Climate change talks target the new polluters	Mixed
Reuters News	07/11/05	UK seeks Chinese lead on Climate Change	Neutral
The Independent	29/11/05	BP looks 'beyond petroleum' with \$8bn renewables spend	Neutral
Guardian	30/11/05	Clean Coal	Neutral
The Sunday Telegraph	27/11/05	Energy crisis heralds return of 'King Coal'	Neutral
Independent on Sunday	27/11/05	Carbon waste solution may lie at bottom of sea	Mixed
Guardian	30/11/05	A dirty business: as the reserves of other fossil fuels start to run out it seems inevitable that the world will turn back to coal for its energy needs.	Mixed
The Observer	04/12/05	Britain 'could bury greenhouse gases'	Neutral
Daily Telegraph	06/12/05	North Sea 'carbon capture' boost for coal reserves	Neutral
Guardian	06/12/05	Energy Plans to pump carbon into ageing North Sea Oil fields	Positive
Reuters	07/12/05	FACTBOX Possible solutions to global warming	Neutral
The Daily Telegraph	08/12/05	Clean Fossil Fuels 'will power world into next century'	Mixed
The Times	21/12/05	E.ON looks at building coal-fired power plant in Britain	Neutral
Financial Times	19/12/05	Sustainable power gains in promise	Positive
Independent	21/12/05	UK could get new coal fired plant	Negative
Independent	23/12/05	Coal begins to make its comeback from the bottom of a dark and very deep pit	Positive
Guardian	12/01/06	Private sector will defeat climate change US tells anti-Kyoto Summit	Mixed
Financial Times	17/01/06	Switch to coal-fired power poses problems over carbon emissions	Negative
Financial Times	25/01/06	A vision for meeting energy needs beyond oil	Positive
Guardian	31/01/06	Fossil fuels can keep the world going and they need not be dirty	Positive
The Sunday Times	29/01/06	Coal Cleans up to be king again	Positive

USA

Journal	Date	Title	Perspective
New York Times	06/09/05	World Briefing Asia: China: Europe to provide cleaner power	Neutral
New York Times	28/09/05	Steps to limit global warming gas	Mixed
Time Magazine	23/10/05	Coal is back	Negative
Wall Street	25/11/05	US digs deep to solve emissions problem	Mixed
Journal			
Reuters	28/11/05	Deal to build US clean coal plant imminent - official	Neutral
Wall Street	29/11/05	BP plans 48 billion investment in alternative energy projects	Neutral
Journal			
Wall Street	07/12/05	US group plan 'clean coal' plant	Positive
Journal			
The New York	27/12/05	Promising but with problems	Neutral
Times			
Wall Street	04/01/06	Coal gasification begins to emerge	Positive
Journal			