

7. Climate Change: CCS [72]

Commitment:

“We strongly support the launching of 20 large-scale CCS demonstration projects globally by 2010, taking into account various national circumstances with a view to beginning broad deployment of CCS by 2020.”

G8 Leaders Declaration on the Environment and Climate Change

Assessment:

Country	Final Compliance Score		
	Lack of Compliance	Work in Progress	Full Compliance
Canada	-1	0	+1
France	-1		
Germany		0	
Italy	-1		
Japan			+1
Russia	-1		
United Kingdom	-1		
United States			+1
European Union			+1
Average Score		0	

Background:

Many have suggested that carbon capture and storage (CCS) systems will be essential in the fight against climate change.³⁹² By trapping and storing carbon dioxide (CO₂) from emission points, such as power plants, CCS technology could prevent harmful greenhouse gas from reaching the Earth's atmosphere. Currently, human activity causes 27 billion tonnes of CO₂ emissions per year.³⁹³ Some argue that CCS technology could reduce carbon emissions by 9-16 billion tonnes worldwide by 2050 if it is implemented without delay.³⁹⁴

³⁹² Report to the G8 Summit, International Energy Agency (Paris) July 2008. Date of Access: 20 November 2008. http://www.iea.org/G8/2008/G8_IEAwork_2008.pdf.

³⁹³ Pamphlet on CO₂ Storage, European Technology Platform for Zero Emissions Fossil Fuel Power Plants (Brussels) August 2008. Date of Access: 2 December 2008. <http://www.zero-emissionplatform.eu/website/docs/ETP%20ZEP/ZEP%20insert%20on%20CO2%20storage.pdf>.

³⁹⁴ EU Demonstration Programme for CO₂ Capture and Storage, European Technology Platform for Zero Emission Fossil Fuel Power Plants (Brussels) 10 November 2008. Date of Access: 16 December 2008. <http://www.zero-emissionplatform.eu/website/docs/ETP%20ZEP/EU%20Demonstration%20Programme%20for%20CCS%20-%20ZEP's%20Proposal.pdf>.

Small-scale CCS demonstration projects are already in place across the globe and have been functioning for over ten years.³⁹⁵ Large-scale capture and storage, however, has yet to be proven technologically and financially feasible.

Reducing carbon emissions has been an important issue for the G8. At the 2003 Evian Summit, G8 members articulated their desire for “cleaner, more efficient fossil fuel technologies and carbon sequestration systems,” and agreed to work towards increasing the availability of, and access to, carbon capture technology.³⁹⁶

Members agreed to undertake a number of measures for the implementation of carbon capture and low-emissions technologies at the 2005 Gleneagles Summit. In the Gleneagles Plan of Action for Climate Change, Clean Energy and Sustainable Development, members promised to “accelerate the development and commercialization of carbon capture and storage technology” by exploring its potential and addressing barriers to the public acceptability of the technology.³⁹⁷ The following summits in St Petersburg and Heiligendamm in 2006 and 2007 both saw reiterations of the Gleneagles Plan of Action.

At the 2008 Hokkaido-Toyako Summit, the International Energy Agency (IEA) reported that fossil fuel power generation, renewables, nuclear energy, “and especially” CCS technology could lead to a 50 per cent reduction of CO₂ emissions.³⁹⁸ With 14 CCS demonstration projects already operating around the world and many more in the planning stages, CCS technology is likely to remain on the G8 agenda into the future.³⁹⁹

Commitment Features:

The commitment focuses on the next stage of CCS implementation, the creation of large-scale, working CCS systems that can serve as a proof of concept for widespread commercialization. G8 members have agreed to support the launch 20 large-scale CCS demonstration projects by 2010. Some action must be taken in this compliance cycle. Support for large-scale CCS projects outside the G8 can constitute compliance. Support for basic research or small-scale demonstration projects do not constitute compliance.

Scoring:

³⁹⁵ Pamphlet on CO₂ Storage, European Technology Platform for Zero Emissions Fossil Fuel Power Plants (Brussels) August 2008. Date of Access: 2 December 2008. <http://www.zero-emissionplatform.eu/website/docs/ETP%20ZEP/ZEP%20insert%20on%20CO2%20storage.pdf>.

³⁹⁶ Science and Technology for Sustainable Development – A G8 Action Plan, 2003 Evian Summit (Evian) 2003. Date of Access: 16 December 2006. http://www.g8.fr/evian/english/navigation/2003_g8_summit/summit_documents/science_and_technology_for_sustainable_development_-_a_g8_action_plan.html.

³⁹⁷ 2005 Gleneagles Plan of Action on Climate Change, Clean Energy and Sustainable Development, G8 Information Centre (Toronto) 8 July 2005. Date of Access: 16 December 2008. <http://www.g7.utoronto.ca/summit/2005gleneagles/climatechangeplan.pdf>.

³⁹⁸ Report to the G8 Summit, International Energy Agency (Paris) July 2008. Date of Access: 20 November 2008. http://www.iea.org/g8/2008/G8_IEAwork_2008.pdf.

³⁹⁹ Rai, Varun, Ngai-Chi Chung, Mark C. Thurber and David G. Victor. PESD Carbon Storage Project Database, Program on Sustainable Energy and Development (Stanford) 12 November 2008. Date of Access: 1 December 2008. http://iis-db.stanford.edu/pubs/22191/wp76_Oct08_pesd_ccs_database.pdf.

-1	Member cuts funding OR provides no funding to large-scale CCS demonstration projects currently in development.
0	Member continues funding an existing large-scale CCS demonstration project.
+1	Member creates OR allocates resources to create a new large-scale CCS demonstration project.

Lead Analyst: Denitza Koev

Canada: +1

Canada has fully complied with its commitment to support large-scale CCS demonstration projects.

On 28 July 2008, Sustainable Development Technology Canada announced support and funding for 19 Clean Technology projects. Among the projects to be funded is the Aquistore Project, which aims to demonstrate the viability of CCS in the Western Canadian Sedimentary Basin.⁴⁰⁰ When complete, Aquistore plans to sequester underground up to 500 tonnes of CO₂ per day.⁴⁰¹ The project will receive CDN5 million from the Government of Canada.⁴⁰²

Canada has funded a new large-scale CCS demonstration project. Thus, it has received a score of +1.

Analyst: Jayme Miles Turney

France: -1

France has failed to comply with its commitment to support large-scale CCS demonstration projects.

On 21 October 2008, France's National Assembly adopted a bill drafted by the Grenelle Environment,⁴⁰³ explicitly endorsing the bill's plans to equip new coal power stations with CCS mechanisms.⁴⁰⁴

⁴⁰⁰ Government of Canada boosts 19 Clean Technology Projects Sustainable Development Technology Canada approves \$57 million in new funding, Sustainable Development Technology Canada (Ottawa) 28 July 2008. Date of Access: 13 December 2008.

http://www.sdtc.ca/en/news/media_releases/media_28072008.htm.

⁴⁰¹ Round 12 Funded Projects, Sustainable Development Technology Canada (Ottawa) 28 July 2008. Date of Access: 13 December 2008. http://www.sdtc.ca/en/news/media_releases/Projects_Rd12.htm.

⁴⁰² Johnstone, Bruce, PTRC gets funding for carbon storage research project, Leader Post (Regina) 28 July 2008. Date of Access: 13 December 2008.

<http://www.canada.com/reginaleaderpost/news/story.html?id=b74e347a-eb3c-43c9-8ac4-21febf463072>.

⁴⁰³ Mesures phares du projet et principaux points adoptés en séance à l'Assemblée nationale, Ministry of Ecology, Energy, Sustainable Development and Spatial Planning (Paris) 20 October 2008. Date of Access: 14 December 2008.

http://www.environnement.gouv.fr/article.php3?id_article=3791&var_recherche=carbone.

On 8 February 2007, in cooperation with the French Petroleum Institute (IFP) and the French Bureau of Geological and Mining Research (BRGM),⁴⁰⁵ French multinationals Total and Alstom launched the world's first carbon capture and geological sequestration project in the Lacq basin in Southwestern France.⁴⁰⁶ The injection of carbon into the demonstrator unit is scheduled to start before the end of 2008.⁴⁰⁷

As part of the Zero Emissions Fossil Fuel Power Plants (ZEP) program, the project will receive a portion of the EUR7 billion the EU allocated to the development of CCS demonstration plants on 12 December 2008.⁴⁰⁸ Funds will be collected from national governments across the EU, but the amount to be contributed by France remains unclear.

Thus, France has been awarded a score of -1. Despite supporting CCS in general, there is no evidence that the French government is directly supporting any large-scale CCS demonstration projects.

Analyst: Amelie Meyer-Robinson

Germany: 0

Germany has partially complied with its commitment to support large-scale CCS demonstration projects.

In October 2008, the Federal Ministry for Economics and Technology (BMWi) announced that it will be allocating an additional EUR396 million for the promotion of CCS technology and innovation for the years 2009-2012.⁴⁰⁹ Concurrently, the BMWi allocated EUR18 million to its CO2 reduction technologies (COORETEC) initiative for

⁴⁰⁴ Mesures phares du projet et principaux points adoptés en séance à l'Assemblée nationale, Ministry of Ecology, Energy, Sustainable Development and Spatial Planning (Paris) 20 October 2008. Date of Access: 14 December 2008.

http://www.environnement.gouv.fr/article.php?id_article=3791&var_recherche=carbone.

⁴⁰⁵ International CCS Technology Survey: France, Innovation Norway (Oslo) 14 July 2008. Date of Access: 14 December 2008. <http://www.gassnova.no/gassnova/frontend/files/CONTENT/CCSWorld/Europa/IN-report-june08-France.pdf>.

⁴⁰⁶ Total launches the first integrated CO2 capture and geological sequestration project in a depleted natural gas field, Total Press Releases (Paris) 8 February 2007. Date of Access: 14 December 2008.

http://www.total.com/en/press/press_releases/pr_2007/070208-co2-capture-sequestration_11400.htm.

⁴⁰⁷ Total launches the first integrated CO2 capture and geological sequestration project in a depleted natural gas field, Total Press Releases (Paris) 8 February 2007. Date of Access: 14 December 2008.

http://www.total.com/en/press/press_releases/pr_2007/070208-co2-capture-sequestration_11400.htm.

⁴⁰⁸ EU leaders clinch deal on CO2 storage financing, EurActiv Network (Brussels) 12 December 2008. Date of Access: 16 December 2008. <http://www.euractiv.com/en/energy/eu-leaders-clinch-deal-co2-storage-financing/article-178038>.

⁴⁰⁹ Schlaglichter der Wirtschaftspolitik: Monthly Report Oct. 2008, Federal Ministry of Economics and Technology (Berlin) 24 September 2008. Date of Access: 14 December 2008.

<http://www.bmwi.de/BMWi/Redaktion/PDF/Publikationen/Monatsbericht/schlaglichter-der-wirtschaftspolitik-10-2008.property=pdf.bereich=bmwi.sprache=de.rwb=true.pdf>.

the years 2007-2009, with a yearly raise of EUR7-14 million.⁴¹⁰ COORETEC will continue to use the funds to study a variety of CCS technologies.

At a conference in Meseberg on 23 and 24 August 2007, the German Federal Cabinet formulated the Integrated Energy and Climate Program (IEKP) with a broad objective of achieving a 40 per cent reduction in CO₂ by 2020.⁴¹¹ The IEKP explicitly called for the construction of “at least” two or three major CCS demonstration projects among the twelve EU-wide demonstration projects planned by the EU.⁴¹² In order to implement this program, the Federal Cabinet made a commitment of EUR2.6 billion annually.⁴¹³ In April 2008, the government fell short of its commitment and allocated only EUR600 million to the IEKP.⁴¹⁴

On 3 September 2008, Schwarze Pumpe – a coal-fired power station in North Germany – began operating. The project is coordinated by French engineering services company Alstom and Swedish electricity services company Vattenfall. Vattenfall is the owner of the power plant and has entirely funded the EUR70 million Schwarze Pumpe project.⁴¹⁵ The pilot plant will run for three years in order to demonstrate the process of carbon capture using Oxyfuel combustion technology.⁴¹⁶ The German government has not directly supported this project.

In August 2008, Germany announced its plan to implement national legislation on CCS to parallel EU CCS legislation.⁴¹⁷ On 9 September 2008, BMWi State Secretary Jochen Homann spoke in this vein at the launching of the Schwarze Pumpe demonstration

⁴¹⁰ Entscheidender Schritt auf dem Weg zum CO₂-armen Kraftwerk, Federal Ministry of Economics and Technology (Berlin) 13 June 2007. Date of Access: 14 December 2008.

<http://www.bmwi.de/BMWi/Navigation/Presse/pressemitteilungen.did=207072.html>.

⁴¹¹ Die nationale Klimaschutzstrategie, German Federal Government (Berlin) 2008. Date of Access: 14 December 2008.

<http://www.bundesregierung.de/Content/DE/StatischeSeiten/Breg/ThemenAZ/Klimaschutz/klimaschutz-2006-07-27-die-nationale-strategie.html>.

⁴¹² Eckpunkte für ein integriertes Energie- und Klimaprogramm, German Federal Government (Berlin) August 2007. Date of Access: 14 December 2008.

<http://www.bundesregierung.de/Content/DE/Artikel/2007/08/Anlagen/eckpunkte.property=publicationFile.pdf>.

⁴¹³ Die nationale Klimaschutzstrategie, German Federal Government (Berlin) 2008. Date of Access: 14 December 2008.

<http://www.bundesregierung.de/Content/DE/StatischeSeiten/Breg/ThemenAZ/Klimaschutz/klimaschutz-2006-07-27-die-nationale-strategie.html>.

⁴¹⁴ Bundespolitik und Kommunalfinzen, German Federal Finance Ministry (Berlin) 21 April 2008. Date of Access: December 14, 2008.

http://www.bundesfinanzministerium.de/nn_53848/DE/BMF_Startseite/Aktuelles/Monatsbericht_des_BMF/2008/04/001_a_mb_april.property=publicationFile.pdf.

⁴¹⁵ Harrabin, Roger, Germany leads 'clean coal' pilot, BBC News Germany (Cologne) 3 September 2008. Date of Access: 14 December 2008. <http://news.bbc.co.uk/2/hi/science/nature/7584151.stm>.

⁴¹⁶ Vattenfall's project on CCS – Pilot Plant, Vattenfall Europe's Project on CCS (Stockholm) 3 September 2008. Date of Access: 14 December 2008.

http://www.vattenfall.com/www/co2_en/co2_en/879177tbd/879211pilot/index.jsp.

⁴¹⁷ Effizienz, Transparenz, Wettbewerb: Sichere und bezahlbare Energie für Deutschland, Federal Ministry of Economics and Technology (Berlin) August 2008. Date of Access: 14 December 2008.

<http://www.bmwi.de/BMWi/Redaktion/PDF/Publikationen/effizienz-transparenz-wettbewerb.property=pdf.bereich=bmwi.sprache=de.rwb=true.pdf>.

project, commenting that “the launch of this pilot project demonstrates that we are on the right path when it comes to the promotion of innovative low-emissions power plants in the framework of COORETEC...what is of utmost importance now is that we continue to stay committed to the research into, and development and demonstration of, these technologies so that they are made marketable by 2020.”⁴¹⁸

Thus, Germany has been awarded a score of 0. Although Germany has not increased its funding for CCS since the Hokkaido-Toyako Summit, in this compliance cycle it has continued to fund the IEKP, which has a mandate to launch large-scale CCS demonstration projects.

Analyst: Amelie Meyer-Robinson

Italy: -1

Italy has failed to comply with its commitment to support large-scale CCS demonstration projects.

The Italian government has not undertaken any CCS initiatives since the Hokkaido-Toyako Summit. Previously, the government contributed EUR150 million to the Energy R&D Program.⁴¹⁹ The two main research agencies engaged in carbon capture and storage technology are the National Agency for New Technologies, Energy and the Environment (ENEA) and the National Research Council (CNR).⁴²⁰

On 21 October 2008, Italian oil and gas company Eni and electric power utility Enel signed an agreement to implement Italy’s first large-scale CCS demonstration project at the Brindisi thermal power station.⁴²¹ The project will test the feasibility of the entire CO₂ capture and storage process. The Brindisi pilot plant is expected to be operational by the fall of 2009.⁴²² The Italian government did not announce funding for the project. However, Eni, Enel, and the Italian Environment Ministry signed a Memorandum of Understanding aimed at the verification and diffusion of CCS technology. At the close of the meeting, Environment Minister Stefania Prestigiacomo reaffirmed “the Government’s

⁴¹⁸ Staatssekretär Jochen Homann begrüßt Inbetriebnahme der ersten Demonstrationsanlage für Kohlendioxidabscheidung und -speicherung, Federal Ministry of Economics and Technology (Berlin) 9 September 2008. Date of Access: 14 December 2008.

<http://www.bmwi.de/BMWi/Navigation/Presse/pressemitteilungen,did=269486.html>.

⁴¹⁹ International CCS technology Survey Executive Summary July 2008. Date of Access 12 December 2008.

<http://74.125.95.132/search?q=cache:RMv3l9TjefwJ:www.gassnova.no/gassnova/frontend/files/CONTENT/CCSWorld/Europa/summary-f-i.pdf+Italy+150+Euros+to+CCS&hl=en&ct=clnk&cd=1&gl=ca>.

⁴²⁰ International CCS Technology Survey, Innovation Norway and Gassnova (Porsgrunn) July 2008. Date of Access: 20 December 2008.

<http://www.innovasjon Norge.no/upload/Surveillance%20of%20CCS%20projects%20and%20initatives%20-%20over3.0%20dist.pdf>

⁴²¹ Press Release: Eni and Enel sign strategic agreement on CO₂ capture, Eni (Rome) 21 October 2008. Date of Access: 21 December 2008. http://www.eni.it/en_IT/media/press-releases/2008/10/2008-10-21-accordo-Eni-Enel.shtml.

⁴²² Press Release: Eni and Enel sign strategic agreement on CO₂ capture, Eni (Rome) 21 October 2008. Date of Access: 21 December 2008. http://www.eni.it/en_IT/media/press-releases/2008/10/2008-10-21-accordo-Eni-Enel.shtml.

commitment is to support and promote [CCS] experimentations, which represent an important contribution towards the need to reduce greenhouse gases in the global energy scenario.”⁴²³

Thus, Italy has been awarded a score of -1. While Italy has supported general research on CCS, there is no evidence that it is supporting large-scale CCS demonstration projects.

Analysts: Krista Gallagher and Dasha Frolova

Japan: +1

Japan has fully complied with its commitment to support large-scale CCS demonstration projects.

Twenty-nine major companies have pooled their resources into Japan CCS Co. Ltd, incorporated on 26 May 2008. Its aim is to “achieve early massive reduction of CO₂ emissions by CCS,” burying 50 million tonnes of CO₂ a year by 2020.⁴²⁴

In December 2008, Japan CCS said that it was about to begin construction on a large-scale CCS demonstration project in an offshore gas field.⁴²⁵ The project has been made possible in part by subsidies from the Government of Japan.⁴²⁶ The Japanese government is expected to invest USD30 billion over the next five years to develop clean energy technology, including CCS on coal fired power plants.⁴²⁷

Thus, Japan has been awarded a score of +1 for subsidizing the construction of a new large-scale CCS demonstration project.

Analyst: Jayme Miles Turney

Russia: -1

Russia has failed to comply with its commitment to support large-scale CCS demonstration projects.

There is no evidence that Russia has done anything to support the deployment of CCS technology.

⁴²³ Press Release: Eni and Enel sign strategic agreement on CO₂ capture, Eni (Rome) 21 October 2008. Date of Access: 21 December 2008. http://www.eni.it/en_IT/media/press-releases/2008/10/2008-10-21-accordo-Eni-Enel.shtml.

⁴²⁴ Japan CCS has embarked upon a full-scale enterprise, Japan CCS (Tokyo) 26 September 2008. Date of Access: 12 December 2008. <http://www.rite.or.jp/Japanese/labochoryu/ccs/ccs2008tokyo/6.pdf>.

⁴²⁵ Japan CCS has embarked upon a full-scale enterprise, Japan CCS (Tokyo) 26 September 2008. Date of Access: 12 December 2008. <http://www.rite.or.jp/Japanese/labochoryu/ccs/ccs2008tokyo/6.pdf>.

⁴²⁶ Interview: Japan needs to capture CO₂ to meet emissions goals, Reuters (Tokyo) 8 December 2008.

Date of Access: 22 January 2009.

<http://www.reuters.com/article/companyNews/idUKT36243120081208?symbol=5001.T&pageNumber=2&virtualBrandChannel=0&sp=true>.

⁴²⁷ International CCS technology survey, Innovation Norway and Gassnova (Porsgrunn) July 2008. Date of Access: 20 December 2008.

<http://www.innovasjon Norge.no/upload/Surveillance%20of%20CCS%20projects%20and%20initatives%20-%20ver3.0%20dist.pdf>.

Thus, Russia has been awarded a score of -1.

Analyst: Natalya Churkina

United Kingdom: -1

The United Kingdom has failed to comply with its commitment to support large-scale CCS demonstration projects.

On 19 December 2008, UK Prime Minister Gordon Brown announced a number of investment initiatives to address the global economic downturn.⁴²⁸ Prime Minister Brown's plans include more funding for CCS, the exact form of which is unclear.

The United Kingdom has pursued CCS funding from the European Union. In December, on Prime Minister Brown's urging, EU leadership agreed to grant 200 million emissions trading scheme permits, worth perhaps EUR6 billion, to CCS projects.⁴²⁹

In November 2007, the Government launched a national competition on CCS technology.⁴³⁰ The contest, which is ongoing, should provide incentives for the development of large-scale CCS technology. A demonstration project is to be operating within a decade, but not within this compliance cycle.⁴³¹ The Guardian has estimated that a large-scale project is unlikely before 2013.⁴³² This contest was launched before the Hokkaido-Toyako Summit and has not developed further during this compliance cycle, so it does not constitute compliance.

In September 2008, the UK's Environment Agency, a government watchdog in on environmental issues, urged the government to pursue large-scale CCS.⁴³³ In a submission to the government's CCS consultations, the Agency argued that planned coal-fired generating stations should not be built without CCS technology.⁴³⁴

Thus, the UK has been awarded a score of -1. Despite some success securing funding for CCS in general, the UK is still several years away from a large-scale CCS project.

⁴²⁸ Gordon Brown unveils economic measures to prepare UK for downturn, The Guardian (London) 19 December 2008. Date of Access: 15 January 2009.

<http://www.guardian.co.uk/politics/2008/dec/19/gordonbrown-economy>.

⁴²⁹ UK wins battle over carbon capture billions: sources, Reuters (Brussels) 12 December 2008. Date of Access: 15 January 2009. <http://www.reuters.com/article/GCA-GreenBusiness/idUSTRE4BB3OY20081212>.

⁴³⁰ UK crawls to carbon capture, Royal Society of Chemists, July 2007. Date of Access: 15 January 2009. <http://www.rsc.org/chemistryworld/Issues/2007/July2007/UKCrawlsToCarbonCapture.asp>.

⁴³¹ UK crawls to carbon capture, Royal Society of Chemists, July 2007. Date of Access: 15 January 2009. <http://www.rsc.org/chemistryworld/Issues/2007/July2007/UKCrawlsToCarbonCapture.asp>.

⁴³² 'Ban dirty coal' says government environment watchdog, The Guardian (London) 25 September 2008. Date of Access: 15 January 2009.

<http://www.guardian.co.uk/environment/2008/sep/25/carboncapturestorage.climatechange>.

⁴³³ 'Ban dirty coal' says government environment watchdog, The Guardian (London) 25 September 2008. Date of Access: 15 January 2009.

<http://www.guardian.co.uk/environment/2008/sep/25/carboncapturestorage.climatechange>.

⁴³⁴ 'Ban dirty coal' says government environment watchdog, The Guardian (London) 25 September 2008. Date of Access: 15 January 2009.

<http://www.guardian.co.uk/environment/2008/sep/25/carboncapturestorage.climatechange>.

United States: +1

The United States has fully complied with its commitment to support large-scale CCS demonstration projects.

On 17 November 2008, at the International Conference on Greenhouse Gas Control Technologies, Acting Deputy Secretary of Energy Jeffrey Kupfer announced a USD66.9 million grant to the Big Sky Regional Carbon Sequestration Partnership.⁴³⁵ The Big Sky Partnership marks the United States' seventh CCS project.

The project will conduct a large-scale test of CCS technology at the Riley Ridge Unit on the LaBarge Platform in Southwest Wyoming. Big Sky will demonstrate the ability of a geologic formation to store over two million tons of CO₂ in a safe and economic manner. The total cost of this project is estimated at USD131 million.⁴³⁶

Thus, the United States has been awarded a score of +1 for allocating resources to create a new large-scale CCS demonstration project.

Analyst: Krista Gallagher

European Union: +1

The EU has fully complied with its commitment to support large-scale CCS demonstration projects.

On 12 December 2008, the European Council allocated 300 million allowances from the EU Emissions Trading Scheme (ETS) to the development of CCS demonstration plants.⁴³⁷ These allowances are equivalent to approximately EUR7 billion in funding.⁴³⁸ While the sum is EUR2 billion short of the European Parliament's initial request, it meets the minimum amount set by the EU demonstration program.

The demonstration program was proposed on 10 November 2008 by the European Technology Platform for Zero Emissions Fossil Fuel Power Plants (ZEP) - a conglomerate of industry, scientist, and NGO stakeholders united in their support to fight climate change with CCS technology.⁴³⁹ The ZEP argues that ten to twelve large-scale

⁴³⁵ Address by Acting Deputy Secretary Kupfer at the 9th International Conference on Greenhouse Gas Control Technologies, US Department of Energy (Los Angeles) 17 November 2008. Date of Access: 11 December 2008. <http://www.energy.gov/news/6746.htm>.

⁴³⁶ Address by Acting Deputy Secretary Kupfer at the 9th International Conference on Greenhouse Gas Control Technologies, US Department of Energy (Los Angeles) 17 November 2008. Date of Access: 11 December 2008. <http://www.energy.gov/news/6746.htm>.

⁴³⁷ EU leaders clinch deal on CO₂ storage financing, EurActiv Network (Brussels) 12 December 2008. Date of Access: 16 December 2008. <http://www.euractiv.com/en/energy/eu-leaders-clinch-deal-co2-storage-financing/article-178038>.

⁴³⁸ EU leaders clinch deal on CO₂ storage financing, EurActiv Network (Brussels) 12 December 2008. Date of Access: 16 December 2008. <http://www.euractiv.com/en/energy/eu-leaders-clinch-deal-co2-storage-financing/article-178038>.

⁴³⁹ EU Demonstration Programme for CO₂ Capture and Storage, European Technology Platform for Zero Emission Fossil Fuel Power Plants (Brussels) 10 November 2008. Date of Access: 16 December 2008.

demonstration plants need to be operational by 2015 in order to make CCS technology commercially available by 2020.⁴⁴⁰ The project will cost an estimated EUR7-12 billion.

Prior to the establishment of the demonstration program, UK MEP Chris Davies and Dr Graeme Sweeney, chairman of the ZEP and executive vice president for Future Fuels and CO₂ at Royal Dutch Shell, coordinated their efforts on a legal framework for CCS.⁴⁴¹ On 7 October 2008, ENVI Committee MEPs voted in favour of an amendment to Directive 2001/80/EC, which requires EU member states to limit CO₂ performance of power stations. Under Amendment 27, power plant emissions cannot exceed 500 kg of CO₂ per kilowatt hour after 2015.⁴⁴² This change was suggested in a report by MEP Davies and supported by the ZEP.⁴⁴³ Davies designed the amendment to force companies to install CCS equipment, particularly targeting coal-fired power plants, which produce the highest amount of CO₂.

The EU has provided both funding and legislation for development and continual support of demonstrational and commercial CCS plants, respectively. Thus, the European Union has been awarded a score of +1.

Analyst: Denitza Koev

<http://www.zero-emissionplatform.eu/website/docs/ETP%20ZEP/EU%20Demonstration%20Programme%20for%20CCS%20-%20ZEP's%20Proposal.pdf>.

⁴⁴⁰ EU Demonstration Programme for CO₂ Capture and Storage, European Technology Platform for Zero Emission Fossil Fuel Power Plants (Brussels) 10 November 2008. Date of Access: 16 December 2008.

<http://www.zero-emissionplatform.eu/website/docs/ETP%20ZEP/EU%20Demonstration%20Programme%20for%20CCS%20-%20ZEP's%20Proposal.pdf>.

⁴⁴¹ EU offered plan to commercialise carbon capture, EurActive Network (Brussels) 12 November 2008. Date of Access: 16 December 2008. <http://www.euractiv.com/en/energy/eu-offered-plan-commercialise-carbon-capture/article-177087>.

⁴⁴² Davies, Chris. The geological storage of carbon dioxide and amending Council Directives, Committee on the Environment, Public Health and Food Safety, European Union (Brussels) 6 October 2008. Date of Access: 16 December 2008.

http://www.europarl.europa.eu/meetdocs/2004_2009/documents/dv/envi_20081006_ccs_compr_/envi_20081006_ccs_compr_en.pdf.

⁴⁴³ Mathiason, Nick. Carbon clean-up in Stinky Town, The Guardian (London) 28 September 2008. Date of Access: 16 December 2008.

<http://www.guardian.co.uk/business/2008/sep/28/utilities.carboncapturestorage>.