



Mapping CCS in Spain

Report Summary

Madrid, July 2009

New thermal power plants

There is no approved plan to build any new thermal power plant in Spain. Due to the actual economic recess, all the existing projects to build new thermal power plants are interrupted. The main reason is that electricity demand has fallen 18% and current thermal plants have to stop their operation since the production is higher than the demand. Another reason behind this is that wind energy production and renewable energy sources in general are sharply increasing.

Energy production and emission breakdown from different fossil fuels

	% of power generation	TWh (electricity)	CO2 emissions (million tonnes) from electricity
Coal	23 %	68.850	65,58
Gas	31 %	93.985	23,81
Oil	7 %	21.065	11,28
Total	61 %	183.900	100,67

Scenarios for different greenhouse gas reduction trajectories

Title	Organisation	Years covered	Brief description
<u>Spanish Climate Change and Clean Energy Strategy</u>	The Ministry of Environment	2007-2020	The SCCCES includes different measures that contribute to sustainable development within the scope of climate change and clean energy. CCS is included in this strategy as a mitigation tool.
<u>Spanish Climate Change Policy</u>	The Ministry of Environment	2007-2020	This document contains a summary of the Action Plan and the Climate Change and Clean Energy Strategy.
<u>A New Energy Model for Spain</u>	Ideas Foundation	2009-2050	This report submitted by the Ideas Foundation closes with several recommendations for managing the change in the national energy model by 2050 addressed at public authorities and society as a whole.
<u>Scenarios for the Spanish Electricity Sector</u>	University of Comillas for WWF/ADENA	2010-2020-2050	This study develops various scenarios for the Spanish electricity sector for the years 2010 and 2020, with the aim to provide guidance to the sector and policy makers regarding electricity generation and consumption patterns in order to achieve a carbon free sector for the year 2050.

State of regulatory process for CCS

The Secretaries of State for Energy and for Climate Change presented on July 27th 2009 the bill for the geological storage of CO₂. The aim is to establish a Spanish regulatory framework ensuring a safe CO₂ geological storage for people and the environment. The new legislation lays the foundations for future exploitation licenses of carbon dioxide storage sites. The bill is the transposition into national law of the Geological Storage of CO₂ Directive (2009/31/EC) and it establishes the legal framework according to which storage permits will be granted for a minimum of 20 years before the legal responsibility passes to State's hands. The bill will be under public consultation until 30th September. Once the bill is approved by the Spanish General Courts (legislature of Spain) the new law will come into force in January 2013.

National CCS supporting programs and plans for full-scale CCS

The Singular and Strategic Project for Advanced Generation, Capture and Storage of CO₂ (PSE-CO₂) is the main Spanish initiative for RD&I of CCS technologies. It is funded by the Ministry of Science and Innovation and coordinated by CIEMAT. It is structured in four sub-projects:

- **Project # 1:** [CIUDEN](#)'s Test Facilities for Advanced Technologies on CO₂ Capture and Storage in Coal Power Generation. El Bierzo, Spain. The project is to explore CO₂ capture with oxyfuel technology in a 20MW pilot plant.
- **Project # 2:** [ELCOGAS](#)'s CO₂ line Puertollano, Spain. To demonstrate the feasibility of capture of CO₂ and production of H₂ in an IGCC plant that uses solid fossil fuels and wastes as main feedstock.
- **Project # 3:** is to [study](#) and regulate geological CO₂ storage in Spain by IGME. The Geological Survey of Spain (Instituto Geologico y Minero de Espana, IGME) is a Public Research Organisation of the Spanish Government.
- **Project # 4:** is to [study](#) public awareness of CCS technologies by CIEMAT. The Sociotechnical Research Unit carries out R&D activities in psychosocial matters to find out the human and social impact on technology, in safety and in the environment of complex systems.

Plans for full-scale CCS: The Compostilla Project. Spanish electricity major Endesa is planning a 500MW circulating fluidized-bed (CFB) oxy-fuel demonstration plant with CCS. The company intends the plant to fire various fuels, including domestic and imported coals and biomass, which led to the choice of the CFB technology. Construction of the plant could start in 2012, after which the plant could be in operation by 2015 to gather operational experience. The technology could be available for 2020 for further retrofits. A solution for transport and storage should be available

within the same time frame.