Environment and Sustainability Committee

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Inquiry into energy policy and planning in Wales – Evidence from RWE Npower CCS project, Aberthaw power station

HEADLINE POINTS

- RWE recognises that the management of CO_2 emissions is a key strategic issue.

- Coal continues to have an important role to play in the UK and Global energy mix, subject to addressing the emissions issues. CCS demonstration and commercialisation are therefore important in finding any global solution to climate change given the level of usage of fossil fuels for the foreseeable future.

- There has been a failure by the EU and UK Governments to engage with the public and to put forward credible pan-European and national CCS strategies. CCS has therefore failed to take off.

- The next round of competition for CCS should be aligned with EU New Entrant Reserve (NER) allowances.

- There is no economic case for the development of new coal plant in the medium term particularly with the imposition of the Emissions Performance Standard for new plant. The result is that CCS demonstration plant are unlikely to materialise.

- The lack of clarity around the support mechanisms available under the Electricity Market Reform in the UK will further delay investment.

- The focus for CCS should remain on coal plant rather than being extended to gas-fired plant.

- We are willing to work with other industry and Governmental departments in order to reduce the risks around CCS development.

DETAILS OF KEY POINTS

- The management of CO_2 emissions is a key strategic issue facing the RWE organisation as a whole and CCS is a key part of this strategy over the long term (the other key element being efficiency upgrades in the short-medium term).

- We still believe that coal has an important role to play in the UK and global energy mix if emissions issues can be addressed by parallel CCS development and see ourselves as potential contenders for future CCS competition rounds (provided the economics stack up and the policy framework is right).

- Failure to engage the public on CCS has resulted in significant opposition and delay in the implementation of the legal framework for CO_2 storage and transportation. This has led to the withdrawal of support for 'on land' storage in the Netherlands and Denmark. At the same time, in Germany it has been a case of 'too little, too late – a draft law was approved by the federal cabinet after earlier drafts had been blocked by states sceptical of CCS.

- There has been a failure to put forward a credible national CCS strategy. Furthermore, development in the UK has been stymied by an inadequate approach to risk sharing on demonstration projects and a poorly handled UK approach to funding of the first round carbon capture competition. Investment in CCS demonstration projects will require a mixture of funding from public funds and developers. However it is important that there is a sharing of risks between Government and developers (with developers taking on usual project risks) or it is unlikely that investment in projects will be forthcoming.

- The timing of the next round of competition for funding of demonstration projects in the UK should be aligned to the timing of competitions for funding from the EU New Entrant Reserve (NER) allowances. This is a scheme whereby 300 million allowances under the EU Emissions Trading Scheme are set aside and sold off to provide funding for innovative renewable and CCS technologies. The NER funding is available until 31st December 2015 to help stimulate the construction and operation of CCS demonstration but places very challenging timescales on such plant.

- There is no economic case for the development of new coal plant in the medium term, therefore it is unlikely that large scale, full chain CCS demonstrators will result from the next competition. EPS policy in the UK adds greater regulatory risk and uncertainty. The imposition of an Emissions Performance Standard (EPS) as a future requirement for plant fitted with CCS once the technology has been proven will introduce additional risks to the developer and deter investment in new coal fired power stations. Furthermore it will not provide any further emission reductions as the EU ETS cap already provides the cap on EU emissions.

- There has been no clarity to date around the Electricity Market Reform framework and how it will impact CCS projects. This will further delay any investment in the UK. The scale of demonstration plant required is a considerable increment compared to current pilots. Whilst we agree that funding – either through a levy raised on consumers (the CCS levy) or through general public funding – will be necessary for the demonstration phase. We do not believe this funding should be extended to support retrofitting of further units or new build once the technology has been proven. A single mechanism, such as low carbon obligation, should be considered as part of the Electricity Market Review to delivering a diverse mix of low carbon generation.

- The priority for CCS should be coal as its application on gas-fired plant is significantly more expensive per tonne of CO_2 abated and any

suggestions of future requirements for CCS on gas plant could act as a deterrent for investment in gas-fired generation, which has a critical role to play in the transition to a low carbon economy. The focus should be on demonstrating the technology on coal-fired power stations which remains the global priority. Given this context it is not clear what benefits there would be from demonstration on gas-fired plant. In addition it is likely to lead to significantly higher demonstration programme costs for the consumer.

- RWE npower would be willing to explore the potential for a more collaborative approach with other players and Government to reduce the scale of individual financial and regulatory risk exposure as a basis for participating in a post-combustion CCS demonstration project

CCS COMPETITION

- RWE npower withdrew from the earlier round of the UK CCS competition in November 2009. Instead we pursued our own strategy for a 3MW carbon capture pilot plant at Aberthaw. RWE continues to build experience in carbon capture technologies across the group through a number of carbon capture pilot projects in the UK, Germany and the USA. More detail of the Aberthaw project is given below.

ABERTHAW PILOT PROJECT

- The CO_2 capture pilot project to be located at Aberthaw is part of a broader RWE Power and RWE npower complementary post-combustion capture (PCC) programme. Aberthaw is likely to be our only high load coal plant in the UK between now and 2015. However it is not located close to the likely early CO_2 storage locations in the UK which are likely to be in the North Sea.

- The 50 tonnes CO_2/day (3MWe equivalent) CO_2 capture pilot plant at Aberthaw is part of a phased investigation into PPC technologies in the UK that started with the 1 tonne CO_2/day capture rig at Didcot (commissioned in 2008).

- Project overview:
    - Joint project between Cansolv Technologies Incorporated, part of Shell Global Solutions and RWE npower with both parties contributing to overall costs – we selected Cansolv through a rigorous assessment of the technologies
    - The plant modules were fabricated in China during the first half of 2011 and were delivered to Aberthaw at the end of August. Since then we have been progressing with installation and commissioning work.
    - Dialogue with the Environment Agency about permitting the process was very positive and a Variation to the Aberthaw Environmental Permit allowing operation of the pilot plant was granted in June 2011.
    - As well as CO_2, the plant will capture SO_2.
    - The pilot plant is interfaced with the main station so that the flue gas can be taken and returned to the main flue gas system.

The return gases, once stripped of amines, pass through the FGD and to atmosphere as they would have done without being diverted through the pilot plant
    - A test programme has been agreed with Cansolv which will see the pilot plant operate for at least 8,400 hours to gather data.
    - Data from Aberthaw will be used in the development of the future RWE Group CCS strategy.

- We see the benefits of developing and operating the pilot plant for our business as:
    - Enabling us to understand the viability, effectiveness, reliability and costs of the PCC technology at a pilot plant scale,
    - To begin to understand the operations and maintenance implications of this technology and the associate integration issues,
    - To gain the necessary knowledge to be an informed buyer of CCS technologies in future'
    - To help us understand the environmental and planning implications so that we are able to be more informed for future decisions.