IEAGHG Information Paper; 2014-IP14: Guangdong province China: CCUS and Carbon Trading Initiatives

Following the IEA MOST and WPFF meetings in China (See 2014-IP 12), I was invited to visit Guangdong province in Southern China by the Secretary General, UK-China (Guangdong) CCUS Centre., Xi Liang. The Centre was established in December 2013 as part of co-operation agreement between the UK Research Council and the National Science Foundation of China. The partners of the Centre are the Guangdong Electric Power Design Institute (GEDI), the Clean Energy Design Institute and the UK and Scottish CCS RC's. The Centre has completed a capture ready scheme for the Haifeng power plant operated and built by China Resources Power. There are plans to establish a 1 million t/y CO_2 injection demonstration at the Haifeng plant with offshore storage in a deep saline formation. In addition the Centre plans to build a capture test facility using a slip stream from one of the other boilers at Haifeng to test new capture technologies that have the potential to reduce the current costs of capture.

The Haifeng Power Plant now being built by China Resources Power Holding Limited, is at a site located in Xiaomo Town, Haifeng County, Shanwei City, Guangdong province, and has a planned total capacity are 8×1000MW units. Phase 1 units 1 and 2 are under construction these are 2×1000MW ultra-supercritical coal-fired power units, with operation expected between Dec 2014 and April 2015 (see boiler units in background of photograph above).

The ultimate project will look like the picture below, with a 100,000 tonne coal import terminal.

1GW s ultra supercritical boilers are much bigger than those typically built in Europe or North America. Discussions with GEDI’s Chief Design engineer indicated they were working on a 1243MW ultra supercritical boiler design double that of a typical 660Mw boiler built in the UK.

Guangdong province is also one of the 7 regions taking part in the pilot carbon markets scheme in China. Guangdong, is China's most populous province with more than 100 million people, and launch a carbon permits market in December 2013 that is the world's second biggest after the European Union’s ETS. More than 200 heavy emitting companies from power, cement, iron and steel sectors are required to participate in Guangdong's pilot project, expanding a city scheme launched in the region's city of Shenzhen earlier this year. On the first day of exchange, just over 120,000 tonnes of allowances changed hands, each priced at 60-61 RMB approx. €7/t compared to the then ETS price of €5/t).

The Guangdong platform is part of a wider pilot being rolled out across China over the course of this year and next. Shanghai and Beijing began carbon trading in November 2013, and other schemes are expected to follow in Tianjin, Chongqing, and the province of Hubei in 2014.

The carbon trading schemes are part of China commitment to reduce its carbon dioxide emissions per unit of GDP by up to 45 percent by 2020.

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