

Agreement

among

**THE MINISTRY OF SCIENCE AND TECHNOLOGY
OF THE PEOPLE'S REPUBLIC OF CHINA
("MOST")**

and

**THE MINISTRY FOR THE ENVIRONMENT, LAND AND SEA
OF THE REPUBLIC OF ITALY
("IMELS")**

and

**EDEL S.P.A.
("ENEL")**

(Hereinafter called the Parties)

**ON CLEAN COAL TECHNOLOGIES (CCTs) INCLUDING CARBON
CAPTURE AND STORAGE AND ULTRA SUPER CRITICAL COAL FIRED
POWER PLANTS TECHNOLOGIES**

Whereas

- a) MOST, IMELS and ENEL signed a Memorandum of Understanding on *Cooperation on Clean Coal Technologies* on May 5, 2008 aimed at establishing a constructive dialogue on the transfer and development of Clean Coal Technologies, including Carbon Capture and Storage and Ultra Super Critical Coal Fired Power Plants technologies;

- b) There is an ongoing cooperation between MOST and IMELS based on the Agreement For the Establishment of a Sino-Italian Facility (hereinafter brief as SIF) signed in Beijing on July 24, 2003. The cooperation has the purpose to facilitate the financial support to projects that are linked to the control, stabilization, reduction and prevention of anthropogenic emissions of greenhouse gases (“GHG”) thus substantially contributing to the mitigation and adaptation of climate change;
 - c) Chinese Government has already implemented laws and actions in order to achieve important results in energy saving and efficiency and, by means of all his Ministries and Agencies, it is further proceeding in encouraging energy efficiency improvement as well as in promoting viable actions toward the sustainable use of energy in China;
 - d) The Clean Coal Technologies (“CCTs”) have a huge potential for abatement of GHG and, through the Carbon Capture and Storage, can lead to the emission-free power plant;
 - e) ENEL is active in the development of several initiatives aiming to increase energy efficiency, to favor the security of supply and to tackle the climate change reducing CO2 emissions. ENEL is also active in the development of Clean Coal Technologies including Carbon Capture and Storage and Ultra Super Critical Coal Fired Power Plants technologies;
 - f) ENEL and IMELS are already cooperating into the framework of the Sino-Italian Cooperation Program in various activities aimed at transferring technology to Chinese counterparts and reducing GHG emissions.
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It is agreed that

1. The Parties will continue and strengthen the cooperation started under the framework of the MoU on *Clean Coal Technologies, including Carbon Capture and Storage and Ultra Super Critical Coal Fired Power Plants Technologies*, signed on May 5, 2008, in view to move to an Operational Phase of Cooperation.
2. The Parties will jointly design and implement an activity plan (“Activity Plan”), for a cooperation on *Pilot scale post-combustion CO2 capture and preliminary feasibility study on application of CCS to coal fired power plants and subsequent injection for enhanced oil recovery (Phase 1)*, according to the Priorities and Preliminary Work Program described in Annex I to the present Agreement.
3. The working group set in the framework of the MoU referred to in art. 1 will define a final work program, (“Final Work Program”) including budget, to be submitted to the steering committee (“Steering Committee) set under art. 4 of the present Agreement, within 2 months from its signature.

4. A Steering Committee will be established, consisting of two IMELS representatives, two MOST representatives and two ENEL representatives. The Steering Committee will be responsible for: (a) providing guidance and highlighting priorities; (b) evaluating the cooperation activities progress; (c) approving the Final Work Program and taking decisions on financial allocations; (d) monitoring the financial and technical management of the activities. The Steering Committee will convene at least once a year. Decisions will be taken by consensus. The Parties will notify each other within one month from the signature of the present Agreement the names of their representatives in the Steering Committee.

IN WITNESS WHEREOF, the undersigned, being duly authorized thereto, have signed the present Agreement in three copies in English, in Beijing on 14 September, 2009.

Ministry of Science and Technology of P.R. China



Ministry for the Environment, Land and Sea of the Republic of Italy



Enel S.p.A.



ANNEX 1

PRELIMINARY WORK PLAN FOR COOPERATION

among

THE MINISTRY OF SCIENCE AND TECHNOLOGY

OF THE PEOPLE'S REPUBLIC OF CHINA

("MOST")

and

THE ITALIAN MINISTRY OF THE ENVIRONMENT, LAND AND SEA

("IMELS")

and

ENEL S.P.A.

("ENEL")

(Hereinafter called Parties)

ON

**PILOT SCALE POST-COMBUSTION CO₂ CAPTURE AND
PRELIMINARY FEASIBILITY STUDY ON APPLICATION OF CCS
TO COAL FIRED POWER PLANTS AND SUBSEQUENT INJECTION
FOR ENHANCED OIL RECOVERY**

1. Preliminary Work Plan

1.1 Phase 1: short term cooperation

The short term cooperation program will last no more than 15 months and will be aimed at achieving the following goals:

- Exchange of information about the results of CO₂ post-combustion capture tests to be performed, on a pilot scale, both in Italy and in China. Said exchange of information will be especially focused on sorbent performances, efficiency penalty and waste residues from the process.
- Based on the above information, the development of a preliminary feasibility study for a demo scale CO₂ capture plant to be built in an existing coal fired power plant in China including the CO₂ transportation and injection systems (“Project”). The selected coal fired power plant shall be located nearby an oil field in which the captured CO₂ will be used within the Enhanced Oil Recovery process. In particular, the preliminary feasibility study will include:
 - A preliminary evaluation of the optimal plant size;
 - The definition of the carbon capture technology and sorbent to be used;
 - A preliminary study on CO₂ capture system integrated with a coal-fired power plant. Important process parameters, including the sizing of the absorber and stripper, packing height of the towers, the sizing of heat exchangers, the reboiler steam extraction point, and the water reinjection point in the steam cycle will be determined;
 - Assessment of the coal fired power station located near the selected oil field to prepare a first preliminary design to evaluate carbon capture technology application in terms of feasibility and impact on plant performances;
 - A preliminary evaluation of the CO₂ storage capacity for such site assuming a CO₂ Enhanced Oil Recovery (“EOR”) process;
 - The definition of process design data for the preliminary plan for CO₂ transportation system from the power plant to the CO₂ storage site;
 - An assessment of the environmental and safety issues in the area along the CO₂ transportation system (such as a pipeline) and the storage site during and after CO₂ EOR process in the selected oil field;
 - Planning and preliminary budgeting of a detailed feasibility study for the development of a CCS power plant with CO₂ storage for EOR.

The detailed activity plan will be defined in the Final Work Program to be developed by the Parties as per art. 3 of the Agreement.

1.2 Phase 2: medium term cooperation

At the end of Phase 1, based on the achieved results, the Parties may decide to further enhance their cooperation in order to develop a detailed feasibility study of the Project.

The development of said detailed feasibility study will have an estimated duration of a two years and will include:

- A basic design and a preliminary cost evaluation of CCS demo plant to be integrated in EOR project
- A Front End Engineering Design for carbon capture, transportation and storage sections
- The definition of a detailed program and the related budget for the construction of “zero emission” demo plant

At the end of the Phase 2, Parties may agree to further enhance their cooperation by entering into a new agreement aimed at designing, building and operating for experimental purposes a CCS demo plant.

2. Cooperation program development

2.1 Cooperation activity management

The Steering Committee nominated by MOST, IMELS and ENEL shall be responsible for approving the Final Work Plan as defined in the above par. 1.1 and the related budget as well as for monitoring the implementation of the actions included in the Final Work Plan.

It is understood that Phase 1 shall start once the Steering Committee will approve said Final Work Program.

2.2 Sino-Italian Cooperation: Time schedule

