



Russian CO₂ Storage and Capture Summary

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The Annual Carbon Sequestration Leadership Forum
Berlin, Germany
26-30 September 2005

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Dear Ladies and Gentlemen!

Please allow me to extend greetings on behalf of the Government of the Russian Federation to the participants of the Annual Carbon Sequestration Leadership Forum.

On behalf of one of the CSLF founders let me also greet the new members of our Forum and express hope on our fruitful collaboration.

The primary measures (such as energy-saving, transition to natural gas, etc.) proved insufficient to achieve the goals set forth in the UN Framework Convention on Climate Change: to balance the atmospheric carbon dioxide concentration at the level not dangerous for the mankind. That is why research programs have been recently developed to reduce CO₂ emissions with more expensive techniques to be adopted within medium- and long-term periods. They are: use of low-carbon fuels, exhaust carbon dioxide capture and storage (or utilization) and others.

Significant reduction of CO₂ emissions from thermal power plants is achieved today in Russia by combined electricity and heat production. Russia is the recognized leader in centralized heat supply. The combined electricity and heat production allow reducing the country's fuel consumption approximately by 20 million tons of equivalent fuel annually. Increasing the efficiency of coal-fed

power-generating units is very important, especially considering the trend of the coal share to grow in electricity- and heat production by 35% by 2015.

Another technological solution is CO₂ separation from energy units with subsequent storage or utilization.

The following technological schemes are proposed:

- Combined cycle plants with coal gasification and CO₂ removal from the cycle
- Different techniques of CO₂ absorption from exhaust gases of traditional thermal power plants
- Burning fossil fuels in oxygen environment
- Burning fossil fuels in chemical cycles using metal oxides as oxygen carriers

Federal Agency on Science and Innovations has selected a number of most promising R&D projects on CO₂ sequestration. Contracts on state budget financing have been concluded on a competitive basis. Among the projects financed by the Agency the following can be mentioned:

An advanced combined-cycle power unit with coal gasification through CO steam conversion with subsequent CO₂ dry absorption and CO₂ chemical absorption from combustion residues. The work is being done at an operating industrial plant with coal gasification in melt and at a laboratory-scale plant.

Another project explores possibilities of burning fossil fuels in a chemical cycle, where a metal oxide substitutes the air as the oxygen carrier.

The project aim is the examination of different metal oxides, preliminary elaboration of the scheme and equipment for the project implementation and for CO₂ removal from the cycle. A pilot unit has been created and the field tests are currently underway.

A very important step in solving the problems of CO₂ sequestration is the audits of the main CO₂ “producers” in different industry branches and extensive studies of the regional geological conditions for CO₂ storage by pumping into underground. The audits are now carrying out in Russia with the purpose to determine possible areas for CO₂ storage nearby the principal “producers” location.

Russian research centers collaborate with their foreign colleagues in the projects aimed at examining CO₂ separation and storage within the EC FP6. They contribute, in particular, to the “Calcium Cycle for Efficient and low Cost CO₂ Capture using Fluidized Bed Systems” program, 12 companies from 8 countries participating, with University of Stuttgart – Institute of Process Engineering and Power Plant Technology as the directing agency.

Thank you for your attention.