SA has potential to develop way to limit carbon's role in climate change

From MINING WEEKLY

Johannesburg – South Africa will host the 2008 Carbon Sequestration Leadership Forum, linked to climate change, where the crucial issue of carbon capture and storage (CCS) will be thrashed out.

It is estimated that fossil fuel combustion liberates 26 gigatons of carbon dioxide (CO_2) into the atmosphere.

Many are proposing the capture of fossil fuel carbon prior to its release into the atmosphere and storage in permanent reservoirs as a way of stabilising atmospheric CO_2 emission concentrations.

Two CSLF-registered CCS projects for zero-emission, coal-fired power plants are the FutureGen project in the US, which expects full-scale, emission mitigating operations starting in 2012, and the ZeroGen project in Australia, which expects plant operation as early as 2011.

"What South Africa can do is to concentrate on becoming country ready," explained Tony Surridge, senior manager: advanced fossil fuel use of the South African National Energy Research Institute.

In that way, he said, CCS could be implemented, should it become more affordable, meet sustainability aspects and be accepted as a clean development mechanism, which the SA Climate Action Network so far opposes.

Surridge sees country readiness as involving various steps:

"Firstly, the identification of regulatory gaps is needed," he said. "While South Africa has adequate legislation governing the removal of carbon from the earth, it has no legislation governing to put it back into the earth. An update of the energy white paper will thus be required.

"Secondly, the identification of the potential sources of CO_2 will be needed, as well as identification of appropriate technologies to concentrate that CO_2.

CLEAR THINKING Tony Surridge says South Africa needs to prepare for ways to make the necessary technology more affordable

"Thirdly, identification of potential storage sites needs to take place. Initial investigation into potential storage sites in South Africa shows that they would be quite a distance from capture sites, since the most significant capture sites are in the Witbank and Mpumalanga areas. Because identification of storage sites involves a process similar to that used when undertaking exploration drilling to search for oil.

"South Africa already has a vast amount of geographical knowledge of the potential for storage sites,"said Surridge.

"Monitoring and verification of the integrity of storage sites need to be addressed. We are still quite a few years away from being country ready, and we still have a lot more work to do.

"This is one of the main reasons for being a part of the CSLF, so that we can keep track of and acquire the knowledge of new technologies."

South Africa is in the unique position of already having a producer of concentrated CO_2, in the form of coal-to-liquid fuel company Sasol, which has advanced knowledge of the technology involved.

Sasol's plant in Secunda already produces about 30 million tons of 98 percent concentrated CO_2, and the capture and storage of these emissions will significantly lower the costs involved, as the most expensive part of the process – capture –, will have already been done.

"Precombustion, which turns the fossil fuel into hydrogen, is at the heart of the Sasol process," said Philip Lloyd of the University of Cape Town's energy research centre.

"And Sasol knows more about it than anyone [else] in the world. For these reasons, South Africa could be leaders in the implementation of this technology.

"It presents wonderful test circumstances, and the Sasol knowledge can help to attract international funding, which we will need in South Africa if we are to go ahead with CCS projects," said Lloyd.

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