

Geological sequestration of CO₂; Why, where and what role for geoscientists?

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Abstract

There has been a marked shift amongst scientists in the international arena over the last decade as to the likelihood that anthropogenic emissions of CO₂ are affecting the world's climate. Not all scientists are necessarily convinced, quoting geological data to support their opinion. Can we afford to wait to get absolute proof and settle the debate with those not yet persuaded? Are there options now that may be environmentally responsible, whilst also making economic sense for our future?

Irrespective of the climate debate, there are other reasons to start to seriously consider our options. Some scientists believe that within our lifetime the oceanic uptake of CO₂ from the CO₂ enriched atmosphere, with the subsequent reduction of the pH of the oceans, may mean that the ecosystems of the world's oceans will be seriously affected. Technologies such as generation of energy through Integrated Gasification Combined Cycle (IGCC) power plants and proposed coal to liquids operations, might be a long term goal, especially if they simultaneously produce pure CO₂ that can be captured more economically, reduce overall emissions of pollutants, and provide a lead into a hydrogen economy.

If low emission technologies that capture CO₂ at the source are to succeed, and so provide a more sustainable energy industry, then places for storing very large volumes of CO₂ will need to be defined, tested and proven. Petroleum geoscientists, have the skills and knowledge to identify CO₂ storage potential. If industry is to successfully operate in a new carbon constrained world, then geoscientists will have to play a vital role in the exploration, development, operational and monitoring phases of CO₂ sequestration.

Keywords: Geosequestration, CO₂, sequestration, climate change.



Biography

John Bradshaw has a BSc (Honours) and PhD from the University of New South Wales. He has worked as a consultant, in industry and government over the last 24 years. He has managed several large industry sponsored research programmes examining the petroleum potential of Australia and PNG, and has published over 90 papers and reports. Since 1999 he has dedicated all of his time to CO₂ Storage of CO₂, working with the GEODISC project and the Cooperative Research Centre for Greenhouse Gas Technologies (CO2CRC). He is currently a Principal Research Scientist at Geoscience Australia, is a Lead Author on the Special Report by the Intergovernmental Panel on Climate Change on Carbon Capture and Storage, and is part of the Australian technical delegation on the international Carbon Sequestration Leadership Forum. He is a member of PESA, AAPG, DEG and GSA.