

Coal Seam Gas in Australia: Resource Potential and Production Issues

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In 2009, Australia's estimated proven and probable coal seam gas (CSG) reserves were 21,180 petajoules (EnergyQuest, 2009); current total resource estimates, however, range up to 250,000 PJ. Last fiscal year, CSG production was 143 PJ to supply Australia's domestic market. Eight separate CSG to LNG projects have recently been proposed and "The Blueprint for Queensland's LNG Industry" estimates that collectively these would process more than 50 Mt/y (~2700 PJ/y) for export. This expansion, however, leads to challenges in developing sufficient production capacity, handling systems and water management. In 2007-08, >13 gigalitres of formation water were produced during CSG production and disposed of mainly in evaporation ponds, a practice which is about to be terminated. Government regulators estimate 126 and 280 GL/yr water production for a 10 and 40 Mt/yr LNG industry respectively. As most of the CSG reserves are located within the Great Artesian Basin, concerns exist on the effects of the major increase in production on water resources in adjacent aquifer systems.

The anticipated expanded production requires improved definitions of resource distributions, reservoir properties and compartmentalisation. A 'coal systems analysis' approach assists in accurately predicting reservoir quality and gas content. Fracture stimulation techniques lead to improving producibility of low permeability CSG reservoirs and numerical modelling techniques have been developed to improve predictions of dynamic reservoir response and aid in the design of production strategies. With adequate legislation in place and integrated reservoir management tools, Australia has the potential to develop a substantial CSG to LNG export industry.