

COAL AND COAL SEAM GAS

What is coal seam gas and how is it extracted?

Coal seam gas is natural gas found in coal deposits, typically 300-600 metres underground. During the formation of coal, large quantities of gas are generated and stored within the coal on internal surfaces. Because coal has a large internal surface area, it can store up to seven times as much gas as a conventional natural gas reservoir of equal rock volume.

Coal seam gas is held in place by water pressure. To extract it, wells are drilled through the coal seams and the water pressure is reduced by extracting some of the water. This releases natural gas from the coal. The gas and water are separated and the gas is piped to compression plants for transportation via gas transmission pipelines.

In some cases hydraulic fracturing, or ‘fracking’, is used to extract coal seam gas. Hydraulic fracturing is the process of injecting fluid under high pressure into a coal seam to widen existing fractures and create new ones. A ‘proppant’ such as sand is mixed with the injected fluid, carried into the fracture and serves to keep the fractures open once the fracture treatment is complete and the pressure is released. This enhances the removal of water and extraction of coal seam gas. Not all coal seam gas extraction operations involve hydraulic fracturing.

Coal seam gas production in Australia

The commercial production of coal seam gas in Australia is quite recent, commencing in 1996 in the Bowen Basin, Queensland. Significant reserves of coal seam gas are known in the Bowen and Surat basins in Queensland. In New South Wales reserves have been proven in the Sydney, Gunnedah, Clarence-Moreton and Gloucester basins. Exploration has been undertaken or is planned to be undertaken in other coal basins including the Galilee, Arckaringa, Perth and Pedirka basins.

Potential impacts of the production of coal seam gas on water resources

To produce gas from coal seams, water must be extracted first, lowering the pressure so the gas can flow out of the coal. The volume of groundwater extracted can vary significantly between individual wells, coal seams and coal basins, depending on geological conditions.

Groundwater extraction may affect the quality and reduce the quantity of groundwater in adjacent aquifers that may be used for town water supply, irrigation, or by springs and other ecosystems. Environmental impacts may also occur from the storage and disposal of extracted groundwater and the effects of chemicals used in drilling and hydraulic fracturing.

Australia's highly diverse landscapes mean the potential impacts can vary for each coal seam gas project. This is why potential impacts must be assessed at the project level.

Coal mining in Australia

Australia is a significant global producer and exporter of coal, with 6 per cent of the world's economic resources of black coal and 25 per cent of the world's economic resources of brown coal. Coal has been mined in Australia for over 200 years and deposits occur in all states and the Northern Territory.

Potential impacts of coal mining on water resources

During coal mining, groundwater may need to be extracted to enable safe operation of the mine. Groundwater extraction may affect the quality and reduce the quantity of groundwater in adjacent aquifers that may be used for town water supply, irrigation, or by springs and other ecosystems. Environmental impacts may also occur from stream diversions and land subsidence.

Australia's highly diverse landscapes mean the potential impacts can vary for each coal mining project. This is why potential impacts must be assessed at the project level.

Source: <https://www.environment.gov.au/water/coal-and-coal-seam-gas/about>