Shale Gas/Oil Potential in Western Australia

Western Australia (WA) has the potential to be one of the first states with commercially viable shale oil and gas production in Australia. Recently estimated volumes in the Canning and Perth Basins of WA are estimated at 1027 and 221 Tcf of recoverable gas, respectively.

Canning Basin

The Canning Basin shows potential for vast shale and tight gas resources in Paleozoic marine shales that contain both oil and gas. However, no attempts have been made to produce oil and gas directly from them. Results include the basin source conventional accumulations of oil and gas, including those at Ungani, Valhalla, Blina, Bakken, Barnett, and Marcellus Formations. An assessment of the potential shale gas resource in the Canning Basin shows potential for vast shale and tight gas resources in Paleozoic marine shales.

Perth Basin

Three of the five potentially prospective Perth Basin shale basins, the Kockatea and Carynginia Formations and the Irwin River Coal Measures, were classified as high-quality source rocks based on geochemical, lithological and reservoir properties. The best potential seal in the Perth Basin is the Kockatea Shale, partly because it is a true shale in place, with very little oil or gas, and partly because, unlike all other potential seals, it is a thick, fairly monomictic unit that overlies the lower sandstones. It consists of dark shale, mucilaginous siltstone, and minor sandstones and interbeds. The Carynginia Formation, although considered to have some oil and gas potential, is less promising as a seal than the Kockatea Shale, partly because it is a shale in place just like the Kockatea Shale.

The best potential seal in the Collie Basin is the Middle Jurassic–Cretaceous Woodside Formation. The Carynginia Formation extends throughout the subsurface of much of the northern Perth Basin and consists of black to grey, micaceous, jarositic shale and siltstone with lesser interbedded sandstone and conglomerate. The best marine shales and claysubenes of the Carynginia Formation have moderately good source potential. The third shale layer, the Irwin River Coal Measures, also have a possible source potential, or at least a lower seal potential, but the formation consists of a mixed succession of sandstone, siltstone, and coal. It is about 50 m thick in the type section but reaches 236 m in the subsurface west of the Yaralla Fault. The main source rock interval is 20 to 150 m thick and between 1000 m and 5000 m in depth.

Shale Gas/Oil Potential in Western Australia

There are two main source rock basins in Western Australia: the Canning Basin in the north and the Perth Basin in the south. The Canning Basin has the potential for large-scale shale gas production, while the Perth Basin has the potential for stranded gas resources. The Canning Basin has the potential for vast shale and tight gas resources in Paleozoic marine shales that contain both oil and gas. However, no attempts have been made to produce oil and gas directly from them. Results include the basin source conventional accumulations of oil and gas, including those at Ungani, Valhalla, Blina, Bakken, Barnett, and Marcellus Formations. An assessment of the potential shale gas resource in the Canning Basin shows potential for vast shale and tight gas resources in Paleozoic marine shales.

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