

## **Petroleum Geology of Iraq**

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There are more than 100 oil and gas fields in Iraq, containing more than 137 billion barrels of recoverable oil (GBO) and 106 trillion cubic feet of recoverable gas (TCFG). Of this resource, about 25 GBO and 11 TCFG have been produced.

Nearly all oil and gas fields are located in the Mesopotamian Foredeep, Gotnia Basin, and Zagros Foldbelt. Minor discoveries and shows are on the Arabian Platform along the western flank of the Mesopotamian Foredeep. One gas discovery (Akkas Field) is on the Arabian Platform in western Iraq.

98% of the oil and gas is in reservoirs of Cenozoic and Cretaceous age. The largest reserves occur in 1) carbonates of the Kirkuk Group of Miocene-Oligocene age, in fields within the Zagros Foldbelt of northeastern Iraq; 2) carbonates of the Mishrif Formation of Cenomanian age, in fields within the Mesopotamian Foredeep and Zagros Foldbelt in southern and central Iraq; and 3) sandstones of the Zubair Formation of Albian-Barremian age, in fields within the Mesopotamian Foredeep and Zagros Foldbelt in southern and central Iraq. Large reserves also occur in the Upper Cretaceous above the Mishrif and in the Lower Cretaceous below the Zubair. Smaller reserves occur in other Neogene and Paleogene carbonates and sandstones, Jurassic and Triassic carbonates, and Ordovician sandstones.

Nearly all of the oil and gas was generated from highly organic-rich and oil-prone carbonates of the Jurassic Sargelu and Naokelekan formations, which are widely distributed and mature for oil and gas generation across the Mesopotamian Foredeep and Zagros Foldbelt. Lesser amounts of oil and gas are derived from 1) Lower Cretaceous oil-prone source rocks in the Zagros Foldbelt; 2) Triassic oil-prone source rocks in northwestern Iraq; and 3) Silurian gas-prone source rocks in western Iraq. The immense volume of oil generated from the Jurassic source rocks migrated vertically to fill stacked reservoir intervals in fields. Oil migrated laterally to small fields and large seeps along the western margin of the Mesopotamian Foredeep.

Oil and gas plays are proven and well known for the Cenozoic and most of the Cretaceous. The deeper plays of the Lower Cretaceous, Jurassic and older are less well explored in the Mesopotamian Foredeep, Gotnia Basin, and Kirkuk Embayment of the Zagros Foldbelt. Exploration is occurring in the lightly drilled interior of the Zagros Foldbelt of Kurdistan. The Paleozoic plays in western Iraq are also lightly explored.