

Petroleum perspective of the Congo Basin in RDC: where do we stand?

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The Congo basin in RDC (also called Cuvette Centrale) is probably the last continental-scale sedimentary basin which is still poorly known in terms of petroleum system and related hydrocarbon resources. Its first exploration dates back to the 1950's (surface geology, field gravimetry, refraction seismics, two stratigraphic wells ~2000 m deep and fully cored). The second exploration campaign in the 1980's (3000 km reflection seismics, two exploration wells ~4000 m deep, aero magnetism, field gravimetry, source rock geochemistry) completed the knowledge of the basin, without finding evidence for the presence of oil. Since then, several studies aiming at estimating the petroleum potential of the Congo basin have been conducted in order to promote its exploration and attract investors. These studies reprocessed and reinterpreted the ancient data, without generating new ones. Several possible petroleum systems have been proposed, several possible source-rock levels identified and suggest plays were defined as target for exploration. This was completed by the search of hydrocarbon oil seepage for validating the proposed petroleum systems. As a result, some reports conclude in the probable presence of several giant deposits in the Congo basin, bringing hopes that the DRC could become an important producer in the future.

Stimulated by this renewed interest on the Congo basin, we initiated a revision of the stratigraphy, tectonic evolution and source-rock characteristics by re-evaluating the original data and re-analyzing the geological archives and samples from the first exploration campaign, stored in the collections of the Royal Museum for Central Africa (Kadima et al., 2011; Sachse et al., 2012). This lead to a new insight in the tectonostratigraphic evolution of the Congo basin and a more accurate characterization of the potential source rocks. It also evidenced large gaps in knowledge regarding the thermal evolution, deposition history, stratigraphic ages and lateral evolution of the sedimentary series. At the current state of knowledge, it is not possible to predict the petroleum potential of the Congo basin and even make rough estimates. Despite the identification of an Upper Jurassic and Lower Cretaceous potential source rock, the presence of an active petroleum systems is still hypothetical and has yet to be proven.

Sachse, V.F, Delvaux, D. and Littke, R. (2012). Petrological and geochemical investigations of potential source rocks of the Central Congo Basin, DRC. AAPG bulletin, 96(2), 277-300

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