Source Rock Potential of Cretaceous successions in the Upper Benue Rift Basins of Nigeria.

[1]AKANDE, SAMUEL O., [1]OJO, OLUSOLA J. and [2]ERDTMANN, BERND D. [1]Department of Geology, University of Ilorin, Ilorin, Nigeria; [2]Institut für Geowissenschaften II, Technische Universität Berlin, Berlin, Germany.

The Upper Benue rift comprising the Gongola and Yola Basins in Nigeria consist of marine and non marine successions of predominantly clastic rocks in a continental setting. In places, these Cretaceous sequences contain appreciable Total Organic Carbon (TOC), e.g 1.46% in the Gombe Formation and 2.45% for the Pindiga Formation in the Kumo area (Gongola Basin), 12.9% for the Yolde and 1.31 for the Bima Formations in the Numan area (Yola Basin). Most samples in the two basins however exhibit less than 1.0%TOC.

The genetic or hydrocarbon potential (S1+S2) of all samples analysed except one, was less than 2kgHC/ton of rock strongly indicating a poor potential for generating commercial amounts of hydrocarbons. Out of the 69 source rock facies analysed, only one showed good to excellent petroleum potential of 26kgHC/ton of rock. Vitrinite reflectance Rom between 0.41 to 0.65% suggest immature to mature sediments in the Gongola Basin although maturity was attained (Rom 0.64 to 0.77%) in the Yola Basin. The prevalence of terrestrially derived Type III kerogens in these basins suggest a possible gas potential.