

20.24 **Current Status of Oil Shale Resources of Indonesia**

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Indonesia is rich in energy resources, including oil shale that is currently undeveloped, but considered a potential future energy source. Indonesian oil shale generally occurs with other fossil fuel-bearing formations in Tertiary sedimentary basins as well as some Pre-Tertiary successions. Between 2000 and 2007, the Center for Geological Resources has carried out preliminary oil shale exploration in 49 areas in Tertiary basins to understand the geology, characteristics and resources. Indonesian oil shale, commonly dark brown to black, fissile paper laminated shale, interbedded with clay, silt, and sandstone as well as coal, can be grouped into three genetic types based on organic matter composition: humic, sapropelic and bitumen rich rocks. Indonesian humic oil shale samples, whose organic matter is dominated by vitrinite macerals, show oil yield up to 150 liters/ton. Sapropelic oil shale, dominated by liptinite, lamalginite, and locally, telalginite, shows oil yield from 5 to >200 liter/ton. Bitumen-rich rocks associated with lamalginite have oil yield from 14 to 248 liter/ton. CGR's research divided oil shale bearing formations into three groups: medium to high potential (oil yield >10 litre/ton; occurring in Sumatra, Java, Kalimantan and South East Sulawesi), low potential (oil yield <10 liter /ton; occurring in Sumatra, Java and Sulawesi) and potentially oil shale bearing formations (units requiring further investigation on Sumatra, Java, Kalimantan, Sulawesi, Maluku, and Papua). Only a few of the many oil shale studies carried out in Indonesia include geochemical analysis. Analysis of oil shale from Sumatra indicates TOC values from 0.12 to 13.49%, with mainly type II and very minor type I kerogen. Maximum vitrinite reflectance varies from 0.26 to 0.66%, suggesting immature to mature thermal level. Oil shale from Buton has TOC values of 11.57%, and maximum vitrinite reflectance ranging from 0.2 – 0.61%. The total Indonesian oil shale resource is 11,248.24 billion tons with oil yield from 1 - 248 liter/ton. Four areas have oil shale deposits >1,000 billion tons, including Sungai Dareh (4,793.90 billion ton, oil yield 18 - 60 liter/ton), Padang Lawas (2,081.18 billion tons, oil yield 2 - 78 liter/ton) and Talawi (1,392.08 billion tons, oil yield 5 - 50 liter/ton) in Sumatra and Buton (4,633.138 billion tons, oil yield 20 - 40 liter/ton) in South East Sulawesi.