

Geological characteristics and economic evaluation of oil shale deposits in Tigray, Ethiopia

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The oil shale deposits in Tigray are widely distributed in the eastern and central part of the region. The oil shale deposits are of upper Paleozoic in age and are found as remnant of the Cretaceous erosion period underlain by tillite and overlain by sandstone. They were formed during the glacial retreat followed by marine deposition of shale in a basin which had been created by the enormous load of the glaciers. The deposits have an average mineable bed thickness of 55 meters, and cover an area extent of 30.38 km². The upper part shows interbeds and laminations of shaley limestone. The resource is estimated to be 3.89×10^9 tonnes. The shale shows regular closely spaced fracturing towards N30°W dipping 80°E and N70°E dipping 75°NW. Open cast mining of the oil shale is more preferable than *in-situ* retorting in Tigray. Ethiopia is a very poor country and is a net importer of fuel (which expends a huge amount of hard currency) and contains no known petroleum reserves. Thus, the exploitation of the Tigray oil shale deposits is an excellent alternative to fulfill the fuel and other petroleum product demand of the country.