

## 7.2 **New and Old Oil Shale Deposits in Jordan: Comparative Study**

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Jordan possesses vast reserves of oil shale, which are spread throughout the kingdom from the Yarmouk River at the northern border with Syria to the Jafir Basin in the south of Jordan. This paper presents a comparative study of the oil shale resources in Jordan. Recent discoveries of oil shale deposits in Jafir Basin and Wadi Maghar area will be highlighted. The study will describe the characteristics of oil shale resources in every respect in terms of distribution, chemical and mineralogical composition, reserves, overburden, heat value, sulphur content and oil content. Oil shale deposits at Yarmouk River were used during World War I. Germany, in cooperation with the Ottoman Empire, installed the first plant in 1915 to produce oil from oil shale. Shale oil produced was used as fuel and lubrication oil to operate the Hejaz Railway before other countries tried to use oil shale distillation. 45 years later, other deposits of oil shale were discovered in the Lajjun area by a German geological mission. In 1985 a large bulk sample extracted from an open pit mine in Lajjun was shipped to Germany and processed using the Lurgi/Ruhrgas process. The process produced almost sulphur-free and stable syncrude with a calculated production price of US \$ 15.60/bbl. The other oil shale deposits were also investigated to different degrees. The stripping ratio is generally 1:1, except for Sultani, with a ratio of 1:1.6. Calculated and indicated reserves in billion tons and average oil contents for the various deposits are as follows: Al-Lajjun (1.17, 10.5%), Yarmouk River (ND, 6%), Jafir (ND, 5.5%) Wadi Maghar (40.925, 6.26%), Sultani (1.13, 9.5%) Attarat Umm Ghudran (23.11, 8.28%), Jurf Ed-Darawish (2.5, 5.7%), Eth-Thamad (11.5, 7.8%) and Al Nadiyya (ND, 7%). [ND – not determined]

The Jordanian strategy for oil shale exploitation is directed to examining the possible use of new technology. Recommendations and conclusions for promising and potential investments will be mentioned.