

Coal resources of Pakistan: new coalfields of Balochistan, Khyber Pakhtunkhwa and Azad Kashmir

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Abstract

Pakistan is ranked 7th internationally regarding lignitic coal reserves but unluckily importing coal. Due to energy crises and increasing population it is vital to discover new coalfields in order to meet requirements. Coal deposits are extensively developed in all the four provinces of Pakistan and Azad Kashmir. Coal from different areas of Pakistan generally ranges from lignite to high volatile bituminous. These coals are friable, with relatively high content of ash and sulphur. As a result of research by Malkani in 2012 the total coal reserves of Pakistan are increased upto 186,282.43 million tones/mt due to some extensions of previous coalfields and also many new coalfields of Balochistan. Due to recent research by Malkani and Mahmood in early 2016 the total coal reserves of Pakistan increased upto 186,288.05mt with break up as Sind 185457mt, Balochistan 458.72mt, Punjab 235mt, Khyber Pakhtunkhwa 126.74mt and Azad Kashmir 10.59 mt. Pakistan has huge coal reserves of 186,288.05 mt. Out of which 3479.86mt are proved, 12023.93mt are indicated, 56951.96mt are inferred and 113832.30mt are hypothetical. The bulk of coal reserves are found more than 99% in Sind Province and more than 94% in Thar coalfields of Sind. In Sind it occurs in Sonda-Thatta (3700mt), Lakhra (1328mt), Indus East (1777mt), Badin (850mt), Meting-Jhimpir (161mt), Jheruck (1823mt) Ongar (312mt) and Thar (175506mt, which is one of the largest coalfields in the world). In Balochistan it is found in areas of Sor Range-Sinjidi-Deghari (54.5mt), Pir Ismail Ziarat (15.8mt), Khost-Shahrig-Harnai (86.4mt), Duki-Anambar (80.4mt), Mach-Abegum (22.7mt), Johan (0.5mt), and new coalfields of Chamalang-Nosham (100mt), Kingri K-T coal (81mt) and Eocene coal (1mt), Toi Nala-Ghoze Ghar (15.4mt) and Narwal (1mt). Coal is found in Punjab in areas of Makarwal (22mt), Salt Range (213mt) and D.G.Khan. In Khyber Pakhtunkhwa coal is found in areas of Hangu-Orakzai (81mt), Cherat (7.74mt), and alongwith new coalfields like Gulakhel-Karak-Laki Marawat (30mt), Dara Adamkhel (3.75mt), Bagnotar-Kala Pani (3.75mt) and Shirani (0.5mt). In Azad Kashmir it is found in areas of Kotli-Tatta Pani-Nikial (8.72mt) and Seri Dara-Khila (new coalfield) Muzaffarabad (1.87mt). Stratigraphically, the coals of Pakistan are developed in different stratigraphic horizons. Limited coal resources are also found in Permian strata of Bori Khel area of Western Salt Range, Punjab and in Jurassic strata of Reshit-Chapursun Valley of Hunza area of Gilgit-Baltistan. In Balochistan coal is mostly developed in a single stratigraphic position i.e., Toi Formation of Chamalang (Ghazij) Group of Early Eocene, except Aram-Kingri coalfields which are developed in Latest Cretaceous Vitakri Formation (coal, carbonaceous shale, green and red shale and quartzose sandstone), while in Sind it is confined to two different stratigraphic position i.e., in the Middle Paleocene Bara Formation of Ranikot Group and Early Eocene Sohnari Formation of Laki Group. In Punjab coal is developed in Latest Cretaceous-Early Paleocene Hangu Formation (synonym Patala-a lateral facies variation) in Makarwal, Eastern and Central Salt Range. In Khyber Pakhtunkhwa and Azad Kashmir coal is developed in Latest Cretaceous-Early Paleocene Hangu Formation. In the Gilgit-Baltistan coal is reported in Jurassic strata of Reshit Chapursun (Hunza).