International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2015): 78.96 | Impact Factor (2015): 6.391

Coal Resources and Its Prospects in Jammu and Kashmir

Sachin Changotra[1], Huny Sharma[2]

GGMSC College, Jammu, India

Abstract: ***Coal is a combustible black or brownish-black sedimentary rock usually occurring in rock strata in layers or veins called coal beds or coal seams. The harder forms, such as anthracite coal, can be regarded as metamorphic rock because of later exposure to elevated temperature and pressure. Coal is composed primarily of carbon, along with variable quantities of other elements, chiefly hydrogen, sulfur, oxygen, and nitrogen.[1] A fossil fuel, coal forms when dead plant matter is converted into peat, which in turn is converted into lignite, then sub-bituminous coal, after that bituminous coal, and lastly anthracite. This involves biological and geological processes that take place over time.***

Keywords: coal, kalakote, Jammu and Kashmir varieties, prospects

1. Introduction

Throughout human history, coal has been used as an energy resource, primarily burned for the production of electricity and heat, and is also used for industrial purposes, such as refining metals. Coal is the largest source of energy for the generation of electricity worldwide, as well as one of the largest worldwide anthropogenic sources of carbon dioxide releases. The extraction of coal, its use in energy production and its byproducts are all associated with environmental and health effects including climate change.[2]

2. Extraction

Coal is extracted from the ground by coal mining. Since 1983, the world's top coal producer has been China.[3] In 2015 China produced 3,747 million tonnes of coal – 48% of 7,861 million tonnes world coal production. In 2015 other large producers were United States (813 million tonnes), India (678), European Union (539) and Australia (503).[3] In 2010 the largest exporters were Australia with 328 million tonnes (27% of world coal export) and Indonesia with 316 million tonnes (26%),[4] while the largest importers were Japan with 207 million tonnes (18% of world coal import),

3. Types

As geological processes apply pressure to dead biotic material over time, under suitable conditions, its metamorphic grade increases successively into:

Peat, considered to be a precursor of coal, which has industrial importance as a fuel in some regions, for example, Ireland and Finland (In its dehydrated form, peat is a highly effective absorbent for fuel and oil spills on land and water, and also used as a conditioner for soil to make it more able to retain and slowly release water.)

Lignite, or brown coal, the lowest rank of coal, used almost exclusively as fuel for electric power generation Jet, a compact form of lignite, sometimes polished; used as an ornamental stone since the Upper Palaeolithic

Sub-bituminous coal, whose properties range between those of lignite and those of bituminous coal (It is used primarily as fuel for steam-electric power generation and is also an important source of light aromatic hydrocarbons for the chemical synthesis industry).

Bituminous coal, a dense sedimentary rock, usually black, but sometimes dark brown, often with well-defined bands of bright and dull material (Iit is used primarily as fuel in steam-electric power generation, with substantial quantities used for heat and power applications in manufacturing and to make coke).

Steam coal", a grade between bituminous coal and anthracite (It was once widely used as a fuel for steam locomotives. In this specialized use, it is sometimes known as "sea coal" in the US.[12] Small steam coal, also called dry small steam nuts (or DSSN) was used as a fuel for domestic water heating).

Anthracite, the highest rank of coal (It is a harder, glossy black coal used primarily for residential and commercial space heating; it may be divided further into metamorphically altered bituminous coal and "petrified oil", as from the deposits in Pennsylvania).

Graphite (It is one of the more difficult coals to ignite and not commonly used as fuel; it is most used in pencils, or powdered for lubrication).

4. Coal Mines Of Jammu And Kashmir

Occurrance : The coal is extracted from coal fields in Udhampur&Kalakot area which extends from Jangalgali in the east to Jigni in the West, falling in Districts of Udhampur and Rajouri and lies between latitude 30o-15o to 33o-15o and Longitude 74o-20o and 75o-10o

This coal which is semi anthractitic in rank occurs as black in form though about 10% of the production is in the form of Steam coal.

The coal is of generally of high heat value.

Licensed Under Creative Commons Attribution CC BY

(ii) Proximate analysis: The general proximate analysis of the coal is as under:

Ash- 20 to 30%
Volatile Matter- 10 to 13%
Moisture- 1 to 1.5 %
Calarific value- 6000 K. Cal/Kg to 7800 K. Cal/Kg.

The state of Jammu and Kashmir has very limited coal deposits. It is the Reasi Subdivision of the Udhampur district in which coal of anthracite qual-ity occurs in some widely distributed seams of 30 cm to 6 cm in thickness in association with nummulitic strata. The latter occur as inliers in the Murree Series.

Spread over a length of about 80 km (48 miles) and sandwiched be-tween Sirban limestone on the one hand and Murrees on the other, within the Eocene formation the coalfields are unlike the Gondwana coalfields in which the limits are well-defined by faults and/or older rocks

The intense and complex tectonic movements, however, have restricted the limit of coal-fields up to the extent these can be economically exploited. The high grade of Jammu coal is due to the organic forces, affecting the coalification in-crease towards the west, thus, carbonizing the original vegetal deposits Middlemiss has estimated the quantity available at 100,000,000 tonnes with mining at ordinary depth. Some of the Riasi semi-anthracite contain 60 to 82 per cent of fixed carbon.

The coal deposits of the state do not belong to the carboniferous period. They have their origin to the Lower Tertiary, Eocene, or Oligocene periods, and are found in association with Nummulitic limestone (Murree Series). They have low carbon contents, ranging between 50 to 60 per cent.

5. Major Deposits

The major coal deposits of the state are found at Kalakote, Jangalgali, Metka, Ladha, Chinka, Dhansal, Swalkote, Chakar, Dandil, Mohogala, San- gar-Marg, and Kura. Coal has also been reported from the Baramulla, Handwara, and Pulwama districts of Kashmir. Lignite is found at Shaliganga, Chowkibal and Nichahama (Kashmir Division). It has been estimated by the Geological Survey of India that the Kalakote coal mines have a workable reserve of about 5.4 million tonnes up to a depth of about 300 m. An analysis of the Kalakote coal reveals that it is of low volatile anthracite grade with ash content varying from 10 to 20 per cent and fixed carbon about 60 to 80 per cent.

In Ladda and Jangligali coal field's reserves are estimated to be about five million tonnes. The coal of Ladda also has about 50 per cent carbon and about 20 per cent impuri-ties and moisture contents. The Geological Survey of India has carried out explorations at Mo-hogala and Metka (Poonch District) and arrived at the result that these places, up to a depth of 300 m have about 9 million of coal. The fixed carbon in the coal of these deposits is about 57 per cent, volatile 30 per cent and ash and moisture 10 and 3 per cent respectively.

At present coal is being mined near Kalakote to feed the only thermal power plant of the state at Kalakote. The rated capacity of the plant is 7.5 MW and 35,000 tonnes of coal is being mined annually in its vicinity. The energy generation capacity of the plant may be enhanced substantially if new generators are installed in the Kalakote Plant and new technology is applied for the mining of coal.

Lignite deposits are found mainly in the Valley of Kashmir which occur in the Karewa formations, right from NichahomuptoLolab. The lignite seams are, however, associated with clays and loams and are inter-bedded in carbonaceous clays in various localities of Kashmir Division. The major lig-nite deposits are in are in the vicinity of Nichahom, Chowkibal, Budhasheng, Lanylab, Shaliganga, Raithan and Tangmarg.

According to the Geological Survey of India, Nichahom lignite seams occur from north to south, running over a distance of about 85 km and the estimated reserve of lignite in this mine is about 85 km and covering a width of 16 km up to a depth of 8 m. The estimated reserve of lignite in this mine is about 6 million tonnes. In between Nichahom and Chowkibal a reserve of 8 million tonnes has been estimated.

The total estimated reserve of lignite deposits in the state, according to the Directorate of Geology and Mining is about 85 million tonnes, but ow-ing to thin seams and high ash contents, it is mined only at Nichahom in Kashmir. In fact, the lignite of Kashmir Valley contains only 8 to 25 per cent carbon, 30 per cent ash, 15 per cent moisture and 27 per cent volatile matter.Peat—a superficial accumulation consisting of vegetation matter which has become decomposed to a certain limited extent in the cold regions is also found in the Valley of Kashmir. Its deposits are found mainly in the swampy grounds on both the sides of the Jhelum River below Srinagar. Peat is cut and dried before being used as fuel. It is applied in field as a manure. The Kash-miris call peat as demb-tsak.

References

[1] Field survey and prospecting conducted by the Geological Survey of In-dia in the 1980s, reveals that lignite, anthracite, and peat deposits are found in small quantities in some areas of the Jammu and Kashmir divisions.

Author Profile

Sachin Changotra is Contractual lecturer, Department of Geology, GGMSC College, Jammu and Kashmir

Licensed Under Creative Commons Attribution CC BY