

# COAL MINING AND ENVIRONMENTAL CHALLENGES IN MPUMALANGA (SOUTH AFRICA) AND CHHATTISGARH (INDIA) : A COMPARATIVE ANALYSIS

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*“The earth, the air, the land and the water are not an inheritance from our fore-fathers but on loan from our children. So we have to hand over to them at least as it was handed over to us.” — Mahatma Gandhi*

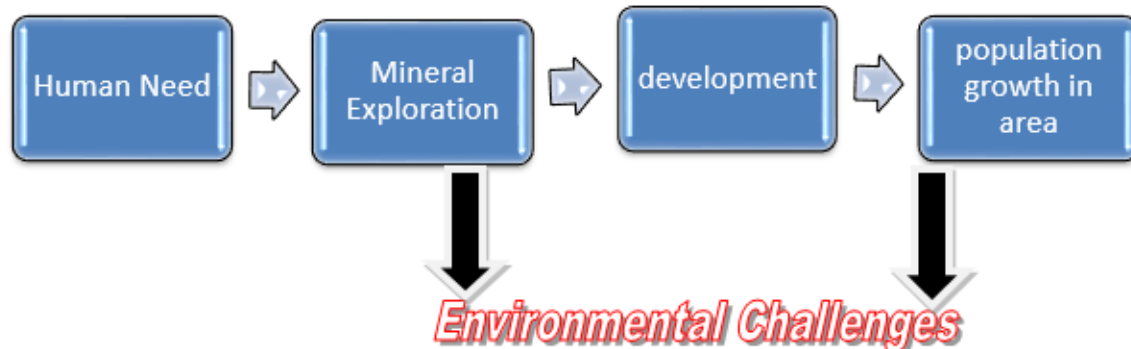
**Abstract:** Coal Mining is generally considered to be an environmentally unfriendly activity as all the component of environment are affected by various operations in mining and associate activities. At the same time coal mining of the minerals is essential for the development of the society and hence the nations as the basic raw materials for almost all the industrial activities. Coal mining and associated activities are playing vital role for social environmental problems in Mpumalanga and Chhattisgarh. Mpumalanga has long been seen as an area of bad air quality. Over recent decades, a number of studies have drawn attention to higher than normal rates of respiratory disease and stunted in children. Policies that target improving education, creating employment or incentivising environmentally favourable behaviour can achieve the environmental sustainability.

**Key Word:** Mining, Environment, Pollution etc.

## 1. INTRODUCTION

The mining and mineral industry plays an important role in the economic and socio-political development of South Africa and India. Coal Mining is generally considered to be an environmentally unfriendly activity as all the component of environment are affected by various operations in mining and associate activities. At the same time coal mining of the minerals is essential for the development of the society and hence the nations as the basic raw materials for almost all the industrial activities. Coal mines and mining activity inherently disturb the environment, because they involve the excavation and processing of rock and soil. Operations, whether smaller or large-scale, are inherently disruptive to the environment, producing enormous quantities of waste that can have deleterious impacts for decades. The environmental deterioration caused by coal mining occurs mainly as a result of inappropriate and wasteful working practices and rehabilitation measures. Coal mining has a number of common stages or activities, each of which has potentially-adverse impacts on the natural environment, society and cultural heritage, the health and safety of mine workers, and communities based in close proximity to operations.

**Flow chart 1.1: Basic understanding of environmental challenges.**



## 2. COAL MINING IN MPUMALANGA AND CHHATTISGARH

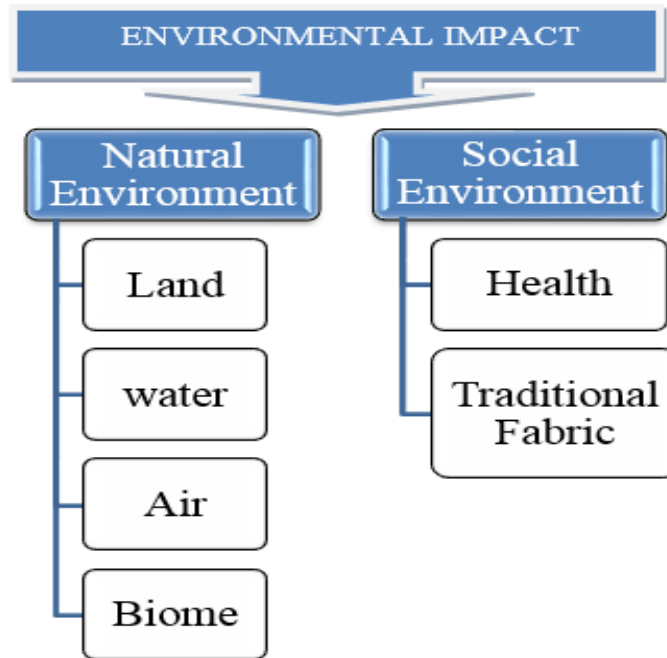
Mpumalanga, the name means "east", or literally "the place where the sun rises" in the Swazi, Xhosa, Ndebele and Zulu languages. Mpumalanga lies in eastern South Africa, bordering Swaziland and Mozambique. It constitutes 6.5% of South Africa's land area. Extensive mining is done and the minerals found include coal, gold, platinum group metals, silica, chromite etc. Mpumalanga is popular with tourists. Kruger National Park, is a popular destination. The other major tourist attractions include the Sudwala Caves and the Blyde River Canyon. Mining in Mpumalanga accounts for 83% of South Africa's coal production. Currently there are 68 coal field projects are working in Mpumalanga. Camden, Grootvli and Komati are the three main power station in Mpumalanga.

The state of Chhattisgarh was created in 2000 when the region was separated from Madhya Pradesh. Chhattisgarh covers 135000 square kilometres and is populated by 25.5 million people, most of them living in rural areas (the urbanisation rate is 20%). 12% of the Chhattisgarh people belong to Scheduled caste. Moreover, Chhattisgarh has fairly significant tribal or Adivasi population comprising more than one third of the total population (32.5%). The state has 16% of the total coal deposits. The state ranks second in coal production by contributing over

18% to the total national production. Most of the coal deposits are of power grade coal. 44483 million tonnes coal has been estimated in 12 coalfields of the state located in Raigarh, Surguja, Koriya and Korba districts.

### 3. ENVIRONMENTAL CHALLENGES OF COAL MINING

Coal is a fossil fuel that's burned to generate electricity and heat, or liquefied to produce gas and diesel fuel. What results is a useful but highly controversial rock that, while valuable to human energy production, is never the less difficult, expensive and dangerous to obtain with high costs to the environment and human health.



#### PHYSICAL ENVIRONMENTAL CHALLENGES

Coal mining adversely affects the ecosystem as a whole. Coal mining is usually associated with the degradation of natural resources and destruction of habitat. The method of waste disposal affects land, water and air and it turns the quality of life of the people adjacent areas.

**Deforestation-** Increasing population and the resultant increase in mining and industrialization are major proximate factors contributing to the deforestation in the area of Chhattisgarh. Due to mining activity around 78.49% of the forest area has been highly affected in Korba district. Mpumalanga occupies 21% of plant species. Nearly a quarter of its vegetation types are under threatened. Nevertheless, 76% of Mpumalanga's grasslands have been targeted by mining and prospecting applications.

**Land degradation-** Today, surface mining is much more common in Mpumalanga and Chhattisgarh. After mining most of the mines are left open, because of this a large area of land remains useless. The impact of coal mining include sterilization of land due to collapse and acidification of soils, the effects of coal mining persists for years after coal has removed.

**Decline and loss of biodiversity-** Mpumalanga and Chhattisgarh both are rich in forest cover and biodiversity. During mining, tons of the earth's land is scooped up in order to get to the ore. This process causes the land to lose its biodiversity. Removal of soil and rock overburden covering the coal resource causes burial and loss of topsoil, exposes parent material, and creates large infertile wastelands. It destroys many natural soil characteristics and reduces its biodiversity and productivity for agriculture.

**Pollution-** The Mpumalanga province declared as an air quality priority area. Currently province has amongst the worst air quality in the world, largely due to coal mining. In Chhattisgarh also the fact finding report revealed that the air quality in the area is exceptionally poor resulting the in several health issues among the residents. More than 100 earning members from 240 families of the Kosampali- Sarasmal panchayat in Raigarh district have died from respiratory disease in the last two decades. Acid Mine Drainage is the flow of polluted water from old mining areas, including coal. The water may contain high levels of salts, sulphate, iron, and aluminium toxic heavy metals such as cadmium and cobalt, and radioactive elements. This contaminated water can pollute soil and water supplies as it spreads underground and flows into streams and rivers.

In Korba district of Chhattisgarh, forest area has decreased by 25.2 % mainly near coal mines and due to lease given to power plants. Actual mining area has increased from 0.40 sq. km to 8.84 sq. km. Deposition of fly ash and coal dust have affected about 844.90 sq. km area as per December 1988 imagery. The Hasdeo River is getting more and more polluted mainly due to the turbid waters of ash pond on the Ahiran River. So, power hub become a pollution hub.

#### SOCIAL ENVIRONMENTAL CHALLENGES

Coal mining and associated activities are playing vital role for social environmental problems in Mpumalanga and Chhattisgarh. Mpumalanga has long been seen as an area of bad air quality. Over recent decades, a number of studies have drawn attention to higher than normal rates of respiratory disease and stunted in children. In October 2012, the Bureau for Food and Agriculture Policy released a pilot study on the impact of coal mining in Mpumalanga. The study assessed the impact of this transformation, ranging from the loss of maize production and resulting price increases to the loss of employment, soil degradation, water and air pollution and health impacts.

In Chhattisgarh most affected coal mining blocks of Korba, Raigarh, Surguja and Koriya has drastically changed. Heaps of the coal dust and fly ash have covered the area which was once covered by forest. The mining in the region has resulted the drastic decline in the growth of Mahua flowers and Tendupatta leaves which are the primary sources of livelihood for the most of the villagers in these districts.

As a result of the expansion of coal industry, Mpumalanga and Chhattisgarh have a huge increase in population in coal mining areas. Increase of the population has put the pressure on these cities. In these cities there are many problems like public hygiene, sanitation and health issues are increasing because of the uncontrolled increment in population. As a result of this life expectancy is decreasing gradually.

#### 4. POLICY MEASURES AND PLANNING ACTION

A latest report by Centre for Environmental Right, South Africa explains the major environmental consequences and poor governance. Mining is a destructive activity that poses significant threats to the environment, health and livelihoods. Managing these threats to avoid the violation of Constitutional rights requires strong, well-resourced and principled regulation.

For the past fourteen years, Mpumalanga has experienced a proliferation of prospecting and mining right applications, particularly for coal. Regulation by the two departments with primary responsibility for mining – the Department of Mineral Resources (DMR) and the Department of Water and Sanitation (DWS) – has been poor. Civil society organisations, communities, researchers, farmers and other government agencies have expressed concern about the detrimental impacts of mining on water security, soil and food security, and the health, well-being and development prospects of communities in Mpumalanga. Many have implored the DMR and DWS to stem the tide by refusing to authorise mining and water use that will cause unacceptable pollution and degradation. In Chhattisgarh the implementation and monitoring of pollution control measures and for overall environmental management, environmental cell at the area and corporate level (Corporate social responsibility) will take all necessary care.

#### 5. CONCLUSION

The environmental problems appear to be important challenges in the twenty first century. In previous years, world politics and every person in general was busy with politics and war. But with the development of new technologies, with the increasing number of plants and factories all types of manufacturing in general, was a huge shift has been made towards environmental issues. In general, a large majority of India and South Africa are more dependent on their natural resources for economic and social needs. Olifants River Mpumalanga and Hasdeo River in Chhattisgarh are much polluted due to coal mining. So environmental challenge in coal mining region is very rigorous so this is important to find the problems and solutions. There are never the less options that can reduce a driver indirectly, for example, policies that target improving education, creating employment or incentivising environmentally favourable behaviour.

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