

# White Coal - A Sustainable, Viable, Eco Friendly Alternative to Fossil Fuel: A Critical Analysis with Special Reference to India

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**Abstract:** *The paper analyses White Coal and Briquetting technology as a viable alternative to polluting fossil fuels. The importance of this as an alternative has been realised by the Indian Government. The government has gone and is going great lengths to encourage the manufacture of briquettes. This would go a long way in solving major macro-economic issues that India faces in terms of unemployment, and it would also address the issue of health that is being faced by the marginalised Indians due to the continuous use of harmful wood, coal, and dung as household fuel. The importance of this medium has been recognised; the question at hand is to increase its usage.*

**Keywords:** White Coal, Fossil Fuel

## 1. Research Question

The paper attempts to discuss the viability on the use of white coal as an environmentally friendly alternative. Saving the environment has become an extremely pressing issue for all countries whether developed or emerging, thus the search is continuous for products that can be a viable alternative to fossil fuel. White coal is one of the products that fit the bill. This paper attempts to study the areas where it can replace polluting fuels, in a beneficial manner.

## 2. Introduction

White coal is a fuel which is formed by drying chopped wood over a fire. Its origin was in England from the mid-16<sup>th</sup> to the late 17<sup>th</sup> century. It does not emit carbon which charcoal does. Thus, in the present context it is more acceptable given the increasing concerns with respect to the emission of carbon in the atmosphere. The important characteristic of this coal is that it produces more heat than Green Wood but less heat than charcoal. This again prevents pollution of the environment as the extent of lead emission is reduced, when burning takes place at low temperatures.



**Figure 1:** Image of White Coal  
Source: Google Image

This was originally added to charcoal to help the charcoal burn at a lower temperature, such that the lead content would remain intact.

In 16<sup>th</sup>-17<sup>th</sup> century England this coal was produced in distinctive circular pits. These pits had a channel, and they were known as 'Q-Pits'. These were commonly found in the woods of Yorkshire. White coal was originally used for the smelting of lead prior to the industrial revolution in Britain, till a process was discovered that used coal. Thus, this was used as a fuel prior to Britain's Industrialisation.



**Figure 2:** A Q-Pit in the Woodland Area of Scotland and East Derbyshire

Source: Wikipedia

The above is an example of a Q-Pit.

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### 3. Definition

White coal is a type of fuel that was originally produced by drying chopped wood over fire. They are alternatively known as biomass Briquettes. These have a huge potential to be an extremely viable alternative to fossil fuel. As the disastrous consequences of climate change have reared its ugly head the world over, the need to reduce carbon footprints has become an imperative requirement. Amongst the viable alternatives is white coal. Though it was originally used in the 17th century, by drying wood in recent years the manufacture of white coal has been widened as there has been an ever-increasing search for products that reduce carbon footprints. Research has led to a wide range of materials that can be used in its manufacture. Some of these are indicated below.

- Rice husk and paddy straw
- Press Mud
- Sugarcane Straw
- Groundnut shells
- Cotton hulls and sacks
- Castor seed shells
- Forest leaves; wood chips and shavings
- Sugarcane bagasse
- Mustard Waste
- Coir Dust
- Coffee Husk
- Sunflower waste
- Maize Stalks
- Bajra cobs
- Sesame seeds oil cakes
- Wheat straw and many other agricultural and forest waste.

Given the wide range of its production especially from a huge number of waste products the potential of all of them being very high to be used as a viable alternative, has increased many folds. Below is one example of a Briquetting Machine.



**Figure 3:** A sample of a Briquetting machine  
Source: Google image

The process of Briquetting consists of the following steps:

- 1) Gathering biomass waste material
- 2) Crushing the waste products
- 3) Compressing them to form a briquette through the various machines that are available
- 4) Drying the Briquette.

It is only when the Briquette has dried up that it can be used as an alternative to the regular fossil fuels.

#### 1) Degree of Impact of the product

As White Coal is tipped to be a direct substitute for white coal, it would be prudent to list the negative impact of the use of the normal Black Coal, and then compare the way in which the White coal scores over it. The main pressing issues with respect to the use of black coal are:

- 1) The impact that it has on environment, even though it is available in abundance in the world, this with respect to its mining as well as its use. The environmental hazards include both air as well as ground water pollution. Mining and the burning of coal leads to the emission of toxic Greenhouse gasses, which are the main culprit of global climate change that the World is witnessing. Coal mining, its preparation and combustion pollutes the air, water, and land.
- 2) The second major impact is with respect to health. The adverse impact of health on the poor economic socio groups especially in countries like India have impacted the poor with respect to reduced working hours being put in by the worker, along with the amount of money being spent on treating the ailment. This is a double whammy for the poor strata of workers that are largely affected in developing economies like India.

#### 3.1 Environment

Black coal combustion creates many poisonous gasses like, nitrogen oxide, sulphur oxide, carbon dioxide, methane, and heavy metals. White coal on the other hand is defined as a product of waste material that has been discharged by human activity. This is completely a waste product for the economy, which is either burnt, further polluting the atmosphere or else dumped into the sea, or landfills, leading to water and ground pollution. To overcome this technology has been developed which effectively uses this waste material to make briquettes. This technology requires the use of a Briquetting machine. The use of these machines helps convert big bulky waste into smaller pieces that makes them easier to carry from place to place. These are cheaper than firewood and have no harmful effect on environment impact on environment when burnt. They release zero toxins in the atmosphere. White coal is moisture free and has a low ash content.

Thus, as far as this product is concerned it completely eradicates the poisonous impact of black coal with respect to the environment.

### 3.2 Medical

The use of White coal is an enormous boon in saving the health of millions of underprivileged sections of the population in developing countries like India. Most of the rural poor use solid traditional biofuels such as fuel wood, dung and agricultural residues which have an extremely adverse impact on the human health. The burning of such products releases a huge amount of carbon monoxide in the atmosphere, leading to headaches, nausea, dizziness and further leading to untimely deaths. The continuous use of clean energy like White coal would improve health outcomes, reducing respiratory diseases. This leads to an enormous increase in health expenditure of already poor households. Thus, to move to a more environment friendly alternative would improve the incomes of the poor strata of society.

#### 1) Commercial Use of the Product

This product is cheaper than coal and firewood, making it an extremely viable alternative. As there is no sulphur in White coal it is not a harmful product for the environment. As the moisture content is nil, burning becomes much easier and faster. As briquettes are made from a whole host of waste products, it is helpful in cleaning up the environment. If this technique was not available the waste products would have to be burnt to make space, but instead it is being used in a manner that is helping the environment in several ways.

Firstly, it gets rid of the waste material and rubbish, many manufacturers just throw away and,

Secondly a product is being manufactured that is a viable alternative to both wood and coal, less harmful, more uniform combustion, low ash content, moisture content is nil, higher volatile matter in briquettes.

For a country like India, where there are such large quantities of waste products, that it makes economic sense, to effectively consume them. The Government of India is making a huge attempt to make the production of the product attractive by giving a huge number of sops.

#### 2) Incentives Provided by the Indian Government to Increase the use of White Coal

Many Indian companies have switched their boiler fuel from black coal to White coal. Due to this increasing shift many manufacturing units have come up in Gujarat, Maharashtra, Tamil Nadu, and Rajasthan. As these units use agricultural wastes most of these units are spread in the Northern part of India. Basically, in the farming belt of India.

To encourage the production of biodegradable products and to help reduce carbon imprints, especially in the wake of the severe crisis that the world has experienced with respect to climate change, the Government of India has instituted the Section 80-JJA of the Income Tax Act. This states that a deduction for profits is allowed from the business of collecting and processing of bio-degradable waste. This was amended by the Finance Act 2020. This law was especially instituted for encouraging the manufacture of biodegradable

material. It categorically states that “where the gross total income of an income taxpayer includes any profits and gains derived from the business of collecting and processing or treating of biodegradable waste for generating power or producing bio fertilisers, bio pesticides or any other biological agents, including products like pellets, briquettes, organic matter. They will be allowed while computing the total income, a deduction of an amount equal to the whole of such profits and gains for five consecutive assessment years, beginning with the assessment year relevant to the previous year in which such business commences”. The above clearly indicates the seriousness that the Government of India is on replacing traditional polluting fossil fuels, with products that reduce pollution as well as improve the health of the marginalised section of society.

The Government of India in encouraging the setting up of Briquetting plants in India have gone a step further and have announced the following incentives:

- 100% Depreciation: The total value of briquetting plant and machinery is allowed to be depreciated in the first year
- Sales Tax Exemption: Various States have exempted biomass briquettes from sales tax.
- No License: Renewable energy sources have been exempted from obtaining any license
- Excise Exemption: The biomass briquettes are completely exempted from excise duty. Government of India is actively considering the exemption in the case of plant and machinery that are used in the production.
- Income tax holiday: This means that the owners who earn income from the plant are exempt from Income tax for the first five years of production.
- The Centre and the State governments give subsidies which is one of the most attractive propositions in setting up a biodegradable unit.
- Besides the above attractive terms, there are schemes which enable the manufacturers to obtain loans at low rate of interest from Government financial institutions.
- The reasons that the government is taking to promote this product, which is now considered as a part of the renewable energy repertoire, is that besides having a positive economic impact, the social impact of the product is enormous. These are;
- Reduction of greenhouse gasses.
- A product that is giving back to the environment instead of taking away from it, in the form of pollution. These products are helping in cleaning up the atmosphere.
- These industries are labour intensive. This is one of the most important and relevant features of the industry. It not only cleans up the environment it also helps the government in achieving one of its major economic indicators, namely reduction in employment figures. The Government of India is trying its best to increase the number of employed youth so that the economy can take advantage of the ‘Demographic Dividend’, and increase its GDP (Gross Domestic Product, such that it can achieve high sustainable rates of growth.
- The production of such products helps the Government of India save a lot of foreign exchange, which it spends on in importing crude. India spends approximately 80%



of its precious foreign exchange in meeting the oil requirements of the nation. India is totally dependent on imports for petroleum. The production of such commodities will help in the reduction of its import bill. The amount saved could be further utilised in increasing social indicators like education and health for one and all, more so for the marginalised sections of society.

- The most beneficial aspect of this product is that it is pollution free, and it goes a long way in increasing carbon credits for the nation.

These factors listed above go a long way in the encouragement of the production as well as the setting up of these type of manufacturing units.

#### 4. Conclusion

The use of white coal as a viable alternative to the traditional fossil fuel has immense potential for developing countries like India. These economies spend a lot of their hard-earned foreign reserves on importing crude and other petroleum products. As the economy grows in terms of Gross Domestic Product, the demand for imported petroleum products continues to increase. These countries must find alternative sources, so that they can reduce their import bill. White Coal and the manufacture of Briquettes is one source of an alternative energy source. The others that come under this category are solar, wind, hydro, to name a few. The most attractive aspect of White Coal and Briquettes as an alternative source is that it not only uses the waste material, but it also protects the environment. It can use farm waste to produce fuel. India having a large agriculture sector, as well as a large dependent work force on this sector, makes it even more attractive. As it would not only save the environment, it would consume the waste product as its raw material, and it would also increase employment opportunities in the Agriculture Sector.

The government realising the immense potential of this sector has announced a lot of sops. This could help in making it an attractive manufacturing sector. The issue lies in the fact that the Briquetting technology is yet to receive substantial attention in developing countries due to the impediments in the technology itself. Along with this is the lack of knowledge to adapt the technology to suit local products as well as local conditions. To solve the above issue, the Government of India would have to spend more time, energy and resources on research and development. Such a process would reap huge dividends for an emerging economy like India.

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