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LEAVES
OF
IMPORTANT
SURVIVAL
TREES
IN
INDIA —
MAHUA,
KHEJDI,
ALDER,
PALMYRA
AND
OAK

14th May 2020

Shri Prakash Javadekar,
Honorable Minister
Ministry of Environment, Forest and Climate Change
Indira Paryavaran Bhawan,
New Delhi

Subject: CSE comments on draft notification which calls for amendments on ash content restriction in coal used by thermal power plants

Dear Prakashji,

I am writing to share our comment on April, 2020 draft notification on 'allowing thermal power plants to use unwashed coal' amending the notification dated 2nd January, 2014, which mandated 'certain categories of thermal power plants to use coal with ash content not exceeding 34 per cent'. We believe wider stakeholder consultations are necessary before amending the ash content restriction.

We are attaching our comments on the draft notification and will look forward to further discussions on this, if needed.

With our very best wishes,

Yours cordially,

Sunita Narain

Comments on April 2020 amendment in draft Notification vide number G.S.R. 02(E), dated 2nd January, 2014 which mandated coal based thermal power plants to use raw or blended or beneficiated coal with ash content not exceeding 34 per cent

Centre for Science and Environment

May 15, 2020

In 1997, the Ministry of Environment, Forest, and Climate Change (MoEF&CC) had capped the ash content in coal at 34 per cent for power stations located 1000 km away from the coal mines and those in critically polluted areas. In 2014, this rule was amended to include power plants located 500 km away from coal mines, which were also required to use coal of 34 percent ash content by 2016. However, the ash content in coal as delivered to power plants in India currently averages about 40 percent. Poor compliance levels of the notification which restricted ash content have led to the involvement of the judiciary in the last few years. Many public interest litigations (PILs) have been filed regarding violation of the notification stipulating maximum ash content of 34 percent by coal-based thermal power plants.

There have been continuous delays in the implementation of coal washing with respect to the growing demand of coking and non-coking coal by thermal power plants and steel industry.

The installed capacity for washing thermal coal was estimated to be 110 million tonnes (MT) in 2010-11 (including the private sector) and was expected to increase by 250 MT by 2016-17. However, washed coal capacity failed to increase; and in 2015, the capacity was only around 104 MT. In February, 2019, the coal ministry expressed concern over delay in the commissioning of around 18 washeries by state-owned Coal India Ltd (CIL) and stressed upon the need for timely completion of the projects. CIL had planned to set up 18 new washeries with an aggregate throughput capacity of 95.6 MTPA. In August, 2019, it was reported that India's plan to have cleaner coal has been delayed much beyond the deadline. Of the 18 coal washeries planned by CIL for both coking (for power plants) and non-coking (for steel plants), only one in each category has come up even after a decade of launching tenders for them.

The amended April, 2020 draft notification, which would permit the use of unwashed coal needs to be reviewed as it would shift the onus of pollution control because of higher ash content in coal to thermal power plants – and given that this sector remains the most polluting and its track-record in implementation of the 2015 emission standards is laggardly, this would only add to pollution load in and around the plants.

Point wise response to draft notification

1. **Washing or beneficiation of coal does not bring the ash content in the coal to zero or negligible and reduces to marginal percentage of ash.**

The objective of coal washing ore beneficiation was not to bring the ash content to zero, moreover, this is not practically possible. As per the MoEF&CC 2014 Notification, the objective was to supply ash content not exceeding 34 percent. It was essentially because of two reasons: 1) most of the coal washing technology had limitations to reduce ash content beyond 34 percent from high ash coal (40-45 per cent) and 2) there is availability of coal with fly ash content of less than 34 per cent in certain mining belts, and hence coal washing could be avoided for coal mined from these regions.

2. The rejects generated in the washing process finds a way into the market for use in industries and creates pollution.

This is a compliance issue and needs to be handled separately. Moreover, The Ministry of Power and Coal India Limited had extensive discussions on the management of coal residue/rejects within the coal washing facilities. At an inter-ministerial committee (IMC) meeting in the Ministry of Coal on 8th October, 2014, it was proposed that small sized coal-fired thermal power stations be built in order to utilize this waste. The stakeholders involved in this sector along with SPCB must establish a mechanism to deal with coal rejects in-situ.

3. Washing incurs additional cost to the coal besides causing challenges in handling, storage, transport and marketing. The transportation of coal from mine to washery and washed coal/rejects from washery to power plants involves multiple loading and unloading which leads to additional cost of transportation and in turn leads to higher power prices. Besides, non-availability of rail infrastructure will entail road transportation which will generate pollution.

This negates the benefits of coal washing as the coal washing process improves the calorific value of coal reducing the quantity to be transported, and thereby the transportation costs. According to the CSE's GRP study washing of coal costs Rs 85-135/tonne (of raw coal feed). Indian plants which have switched to use of washed coal have reported reduction in coal requirement by as much as 30 per cent which balances out the increased cost due to washing of coal[i].

CSE analyzed the cost of transportation of per tonne unwashed coal versus the sum of cost of transporting similar energy content rich washed coal up to a distance of 2000 km (the distance between a mine in West Bengal to Tamil Nadu) and coal washing charges. The cost of washed coal was higher at about Rs 322/- when compared to unwashed coal at Rs 207/- on transport by rail up to 100 km. However, beyond 500 kms, the transportation cost of washed coal was lesser in comparison to unwashed coal (see Table: CSE Analysis-benefits of washing coal).

Table: CSE Analysis – benefits of washing coal

Distance of transportation (km)*	Transportation cost by rail of unwashed coal Rs/tonne*	Transportation cost by rail of washed coal Rs/tonne^*(A)	Cost of washing, Rs/tonne (B)	Total Cost of washed coal: transportation + washing (A+B)
100	207	172	150	322
500	1,013	840	150	990
1,000	1,816	1507	150	1,657
1,500	2,587	2147	150	2,297
2,000	2,942	2442	150	2,592

Source: CSE Analysis, 2020*data sourced from: Kamboj, Puneet; Tongia, Rahul. "Indian Railways and Coal: An unsustainable interdependency", Brookings India report, July 2018.

CSE in its analysis considered conservatively 20 per cent reduction in coal quantity on washing coal due to improvement in calorific value and ash removal. The Erstwhile Planning Commission, now known as NITI Aayog's report in 2007 had also predicted similar benefits on washing coal. In addition to this auxiliary power consumption of coal power stations will be reduced as lesser quantities of material is handled. Use of washed coal can also reduce carbon dioxide emissions due to lesser transport of coal**.**

4. Washing process consumes resources such as land, fresh water and energy. It is also pollution intensive in terms of air pollution, water pollution, soil degradation and waste management which require advanced pollution control technologies for mitigation and control.

It is essential to discuss this issue with different stakeholders, combined with factual information based on ground research of coal washeries in India. Currently, it is required to install state-of-the-art coal washing technology to ensure coal washing work in an environmentally friendly manner

5. Due to increased cost of coal after washing, the thermal power plants located along the coast are opting for imported coal as a viable option, to meet the object of achieving ash content below 34% in the coal, which results in outflow of foreign exchange.

Only 31 GW of capacity is coastal, out of which around 17 GW is already designed for imported coal. Further, the interpretation of information on cost being a reason for driving import of coal along the coastal power station is not correct. It is to be noted that the average price of indigenous coal used by coal based thermal power stations is not more than Rs 700/tonne and washing of which cost up to Rs 135/tonne (raw coal fed). Thus, the total cost of indigenous coal after washing is less than Rs 1000/tonne. However imported coal cost varies anywhere between Rs5,000-7,000/tonne depending on the calorific value. The use of imported coal was driven by shortage of coal during the construction and operation phase of these power stations. Once a power station gets designed for a particular fuel it is difficult to switch the fuel with different properties.

The one of the reasons why coastal region power stations started using imported coal was due to shortage of coal production by CIL. Moreover, coal imports increased from 3 per cent in the 90s to over 10 per cent because of domestic coal shortage. During the 11th Five-Year Plan, India's coal demand increased at a compounded annual growth rate (CAGR) of 8.5 per cent. However, CIL's domestic production capacity has increased at a CAGR of only 4.4 per cent. Indian thermal power plants, which primarily depend on indigenous mines (116 GW of 153 GW installed capacity coal-based plants), required about 48 MT per month of coal. However, CIL had a target of producing about 36-37 MT coal/month and mines about 34-35 MT. This combined with addition of new coal-based thermal power plants lead the stakeholders to acquire coal mines in other countries to ensure energy security. **Shortage of coal production primarily drove import of coal. It has little or no link to the cost of coal washing.**

6. With advancement in pollution control technologies, thermal power plants are equipped to capture almost all the pollutants including fly-ash generated in the combustion process.

It is true that with the advancement of pollution control technologies thermal power plants are equipped to capture all the pollutants. However, the latest technology does not reduce fly ash generation, post-combustion. The quantity of fly ash generated in a thermal power plant will remain the same irrespective of the type of technology used. Therefore, it is beneficial to use washed coal so as to reduce the fly ash generation. Moreover, there are case studies which show reduced SO2 and NOx emission on usage of washed coal.

7. Over a period of time, many uses have been found for fly-ash which is used in cement manufacturing, brick making, road laying, as back-fill material etc. Several industries and construction activities, using fly-ash are generally located near Thermal Power Plants which are far away from coal mines.

Already around 60-70 MT of fly ash goes unutilized. Usage of unwashed coal would mean an addition of 6-7 MT (assuming 10 per cent excess ash) to this stock. This will add to the management woes of coal-based power stations and regulators.

8. Un-utilized fly-ash can be transported and filled in the closed or abandoned mines.

This will be difficult as many of the plants are located at a distance from the coal mines. Also, the MoEF& CC notification has not given any clarity to the thermal power stations on whether fly ash can be used to fill the closed or abandoned mines. The notification only allows use of fly ash for stowing/packing of mines for ensuring its structural stability. Also, for plants located away from the mines, sending the unutilized fly ash to the mines will add to the transport costs of disposal and will further increase the GHG emissions.

The current decision might be taken in totality considering poor investment in coal washeries, poor technology use in operations of existing washeries and increased pollution load due to transport and use of reject coal in small industries. However, it is clearly a result of the failures of multiple agencies, MoP, MoEF&CC and CIL at the different fronts.

The transportation and use of rejected coal from washeries in small industries is the consequence of government failure in bringing in-situ power rejected coal-based plants at the location of washeries. With little investment came in the washeries sector, the operations of existing coal washeries were always under scanner for not delivering ash content as per the quality and their poor environmental performance. Thus, it is quite possible we fail to use coal washeries the way it was planned to the desired benefits.

The new clean energy equipment in operation at the power station includes electrostatic precipitators, flue gas desulphurization energy and selective catalytic reactor systems. The efficiency of electrostatic precipitators, which regulate dust (ash) in the power plant, increases the use of less ash content in the fuel. Performance of the flue gas desulphurization technology needs a much lower level of particulate matter at its inlet to function optimally. The use of Selective Catalytic Reactors in new power stations is limited as on date due to the ash content of the fuel. No control on input ash content will further reduce the possibility in bringing these technologies to Indian power plants.

Provisions of draft notification will add to pollution from thermal power plants and reduce resource efficiency

Some plants may need to invest in upgrading their ESP to meet the stringent PM norms when supplied unwashed coal. They might have to use imported coal for blending to meet ash content requirements which in-fact can increase coal import. Fly ash handling problems and handling cost will also increase at the plant level. The future coal technologies are supercritical, ultra-super critical plant and IGCC plant of the capacity 800 MW and above. All these technologies require good quality coal but higher ash content will substantially reduce the benefits that can be achieved from these efficient coal technologies, in terms of efficiency, emissions and fly ash. High ash content will also reduce the life and hence long term economic and environmental benefit that can be achieved from the plant.

The 2014 notification by the MoEF&CC is very crucial and can enable transition into clean fuel. However, to ascertain implementation of the notification CIL and MoPshould ensure availability of washed coal. Implementation of this notification could benefit the environment and also reduce the cost of electricity generation from coal as excess quantity of coal transportation charges can be avoided. **Therefore, the dilution of the 2014 notification should not be permitted; instead it should be implemented for full pollution reduction benefits.**