FINAL PROJECT REPORT SUBMISSION

The Indian coal industry plays an incredibly central role in the nation's economy and functioning, considering that 74 percent of India's total electricity consumption is generated from coal-fuelled thermal power.[1] India is the 2nd largest producer of coal in the world,[2] with an annual production of 893.08 MT of coal as of 2022-23.[3] Despite coal being so central to our economy, enough attention has not been paid by legislators to the pricing framework of coal in our country. Accordingly, this project focusses on the negative impact of the existing framework upon carbon emissions and explains the researcher's attempt to addressing this issue.

The flaw within the existing framework: Why doesn't it make sense?

Like any commodity, coal too is priced based on its quality. Quality, in the context of coal, refers to its calorific value, or in simpler terms, the amount of heat that can be generated from the consumption of a single unit. Basis the calorific value that it is capable of achieving, coal is then classified into grades, ranging from G1 to G17, with better grades being significantly more expensive than those with lower calorific values.

While the government choosing to price better grades of coal like G1 higher than less productive grades like G17 makes perfectly logical sense, the source of this problem is the extent to which the Government does so. To explain, consider the difference in the pricing of a kilogram of G1 coal and a kilogram of G17. While the base price of the latter is Rs. 598, that of the former is Rs. 9,596.[4] Observably, a kilogram of G1 is 16 times more expensive than a kilogram of G17 (9596/598). The reason this difference is pricing is unjustifiable, stems out of the fact that it has no correlation to the calorific values of either of these grades.

The calorific value of a particular grade of coal is generally defined in a range. Coal with a calorific value exceeding 7000 K.Cal./Kg. would qualify as G1, while coal with a calorific

[1] UNFCCC, 'India's Third Biennial Update Report to the United Nations Framework Convention on Climate Change' (2021) <https://unfccc.int/sites/default/files/resource/INDIA_%20BUR-3_20.02.2021_High.pdf> accessed 14 May 2023.
[2] Andrew Fawthorp, 'Profiling the Six Largest Coal-Producing Countries Around the World' (2021) <https://www.nsenergybusiness.com/features/six-largest-coal-producing-countries/> accessed 14 May 2023.
[3] Ministry of Coal, 'Reforms & Achievements of Ministry of Coal since 2014' (2023) <https://coal.gov.in/en/major-statistics/production-and-supplies> accessed 14 May 2023.
[4] Ministry of Coal, 'Office Memorandum' <https://coal.nic.in/sites/default/files/2022-02/28-01-2022-dec-nci.pdf> accessed May 14, 2023.

value between 2200 and 2500 K.Cal./Kg. would be defined as G17.[5] For the sake of an example, assume that a kilogram of G1 has a calorific value of 7500 K.Cal./Kg. and that a kilogram of G17 has a calorific value of 2500 K.Cal./Kg. Observably, a kilogram of G1 grade coal has a calorific value of 3 times that of a kilogram of G17 grade coal. While this may vary slightly based on the exact point within the acceptable range of calorific value that is assumed, it is safe to say that the difference in calorific value between these two grades is more or less 3 times.

Now, compare the difference in pricing of a kilogram of each of these grades with the difference in their calorific values. While G1 has a calorific value that is 3 times that of G17, it is also 16 times more expensive to consume. For this reason, it can be concluded that the existing framework disproportionately overprices better grade units of coal such as G1, without keeping in mind their calorific values, thereby making such pricing unjustifiable.

The incentivisation of pollution: Why is this discrepancy bad for the environment?

Place yourself in the shoes of an industrial level consumer of coal, and imagine that the entirety of your operation is run on the hopes of being able to turn a profit. As the head of your organisation, you are tasked with deciding the grade of coal that you would like to consume in bulk, with the aim of generating a certain amount of heat, which is essential to your production process. Before you are two options- G1 and G17.

If you opt to consumer a kilogram of G1, you could potentially generate 7500 K.Cal. worth of heat. Alternatively, you could generate the same amount of heat by opting to consume 3 kilograms of G17. Logically, the deciding factor becomes the cost of both these options. While opting for a kilogram of G1 would cost you Rs. 9596, choosing to consume 3 kilogram of G17 would only cost you Rs. 1794 (598 x 3). Effectively, opting for G17 would allow you to save Rs. 7802 for every 7500 K.Cal. worth of heat you require in your production process, thus making opting for G17 a no-brainer.

While this decision makes perfect commercial sense, it is incredibly harmful for the environment. By opting to consume G17, two extra kilograms worth of coal emissions are being released into the environment, for every 7500 K.Cal. worth of heat being consumed.

[5] Ministry of Coal, 'Coal Grades' (*Ministry of Coal, Government of India*) <https://coal.gov.in/en/major-statistics/coal-grades> accessed May 15, 2023.

These extra emissions are a direct result of the disproportionate pricing of better grades of coal, which in turn economically incentivises consumers of coal to opt for them, even though doing so is clearly the more pollutive means of production.

The injustice of this framework: Does the framework disproportionately affect somebody?

Opting for three kilograms of G17 over a single kilogram of G1 has two immediate impacts- the increased mining of coal, as well as the increased burning of it. Both of these increases have substantial repercussions on low-income vulnerable populations.

Studies indicate that in coal-rich states like Chhattisgarh and Odisha, particularly in areas that undergo heavy mining activities, the health of the local population and tribal communities is significantly harmed by these activities. For instance, the tuberculosis rate in Tamnar, a coal-rich area in Chhattisgarh, has been observed to be nearly double that of the national average and close to three times that of the state. This increase in tuberculosis rates as well as a range of other respiratory diseases is directly attributable to the large-scale coal mining that takes place in the area.[6]

Similarly, the increased burning of coal also has negative implications for communities residing in proximity to such sites. It is estimated that coal-based thermal power generating units without pollution prevention mechanisms are responsible for more than half the sulphur dioxide emissions, 30 percent of nitrogen oxide emissions and about 20 percent of other particulate matter in India.[7] While the impact of increased coal-burning is felt by the entirety of the country, those closest to coal-burning sites certainly bear the brunt of it.

When we couple this information with the fact that these communities also tend to be socio-economically backward, the result becomes clear. Since several of these individuals already suffer from various ailments including malnutrition, the impact of such increases upon their health and well-being is accelerated. While poor air quality is a problem that affects everyone, marginalised communities, such as those living in urban slums or rural areas with limited

[6] Mayank Agarwal *et al*., 'People living near mining activities at increased rate of diseases, says study' (2020) <https://india.mongabay.com/2020/12/people-living-near-mining-activities-at-increased-risk-of-diseases-says-study/> accessed May 16, 2023.

[7] Soundaram Ramanathan, 'Coal burning responsible for heavy pollution in India: IEACCC study' (2021) <https://www.downtoearth.org.in/news/air/coal-burning-responsible-for-heavy-air-pollution-in-india-ieaccc-study-75536> accessed May 16, 2023.

access to healthcare, are likely to face greater challenges in coping with the resulting health issues.

The lack of access to adequate healthcare facilities and resources further exacerbates the adverse impacts of these increases on vulnerable populations, thereby resulting in climate injustice. For these reasons, by incentivising consumers to opt for the consumption of 3 kilograms of G17 as opposed to a single kilogram of G1, the current pricing framework actively contributes to the problem of climate injustice.

Proportional pricing: What is the solution to this problem?

The solution to this problem is simple. If the centrally determined pricing regime for coal in India were to be made proportionate to the calorific value of that specific grade of coal, consumers would no longer be forced to consume additional units of lower grades of coal.

For instance, if a kilogram of G1 was reduced from Rs. 9596 to Rs. 1794 (598 x 3), the pricing of G1 would become proportionate to its calorific value, when compared to G17. In simpler terms, this price reduction would equalise the profit making ability of a consumer, regardless of which grade of coal they opt for. However, as consuming G17 would entail the consumption of 3 kilograms of coal as opposed to a single kilogram, consumers would be less likely to opt for G17 as doing so would come with additional transportation and logistical costs. Further, it is fair to assume that if a consumer is given to equally expensive choices, where one pollutes significantly more than the other, they are likely to select the less pollutive of the two. Accordingly, the solution to this problem lies in revising the pricing framework to be proportionate to the given calorific value of a grade of coal.

Targeted tweeting: What is my product and how does it help solve the problem?

The researcher identified social media as a means of potentially solving this problem. The goal was to promote the idea of amending the pricing framework itself, as highlighted above. Since this amendment cannot be made by the researcher himself in his capacity as a common man, the researcher used social media, specifically twitter, in order to reach out to individuals and organisations that have the power to do so.

With this aim in mind, the researcher concisely summarised this problem in a manner that is palatable for twitter and tweeted the same tagging Mr. Pralhad Joshi, i.e., the the Indian cabinet

minister of coal and mines, NTPC, i.e., India's largest single consumer of coal, the Ministry of Power, as well as Coal India. If any individuals or organisations are capable of having the centrally determined pricing framework amended, the researcher believes it is them. While a response is yet to be received from these twitter accounts, the researcher is hopeful that his tweets reached them.

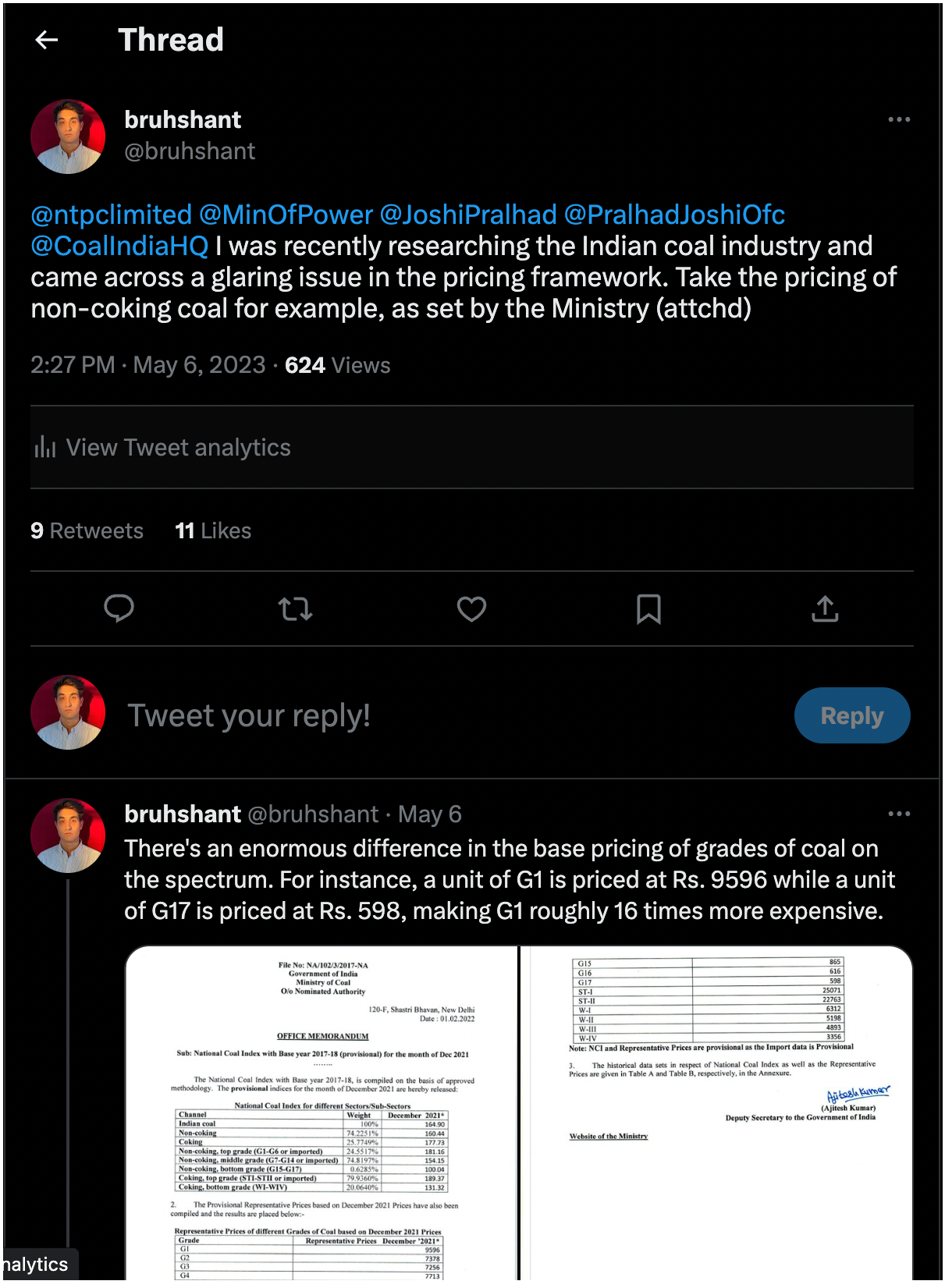
While an acknowledgement from one of these twitter accounts would be an incredible leap towards solving this problem, the number of eyeballs that this thread has been able to generate cannot be discounted. In a span of merely 12 days, this thread has acquired close to 650 verified views, as per twitter analytics.[8] Effectively, more than 50 new people have been engaging with this thread every single day.

While perhaps not as directly, these views certainly contribute towards solving this problem as well. Given its complexity, this failure within the Indian coal industry is not at all intuitive to the common man, hoping for a greener tomorrow. Through this twitter thread however, this problem has been concisely summarised and broken down, thus making it accessible to all. This accessibility in turn promotes awareness, which in time, is likely to result in action taking place. As the engagement levels of this twitter thread rise, more and more people become cognizant of an issue they were previously impervious to, and the potential for the redressal of the current pricing framework increases exponentially. While an acknowledgement from one of the tagged twitter accounts would have been ideal, the twitter thread in its current form certainly increases the chances of a correction in the current pricing framework.

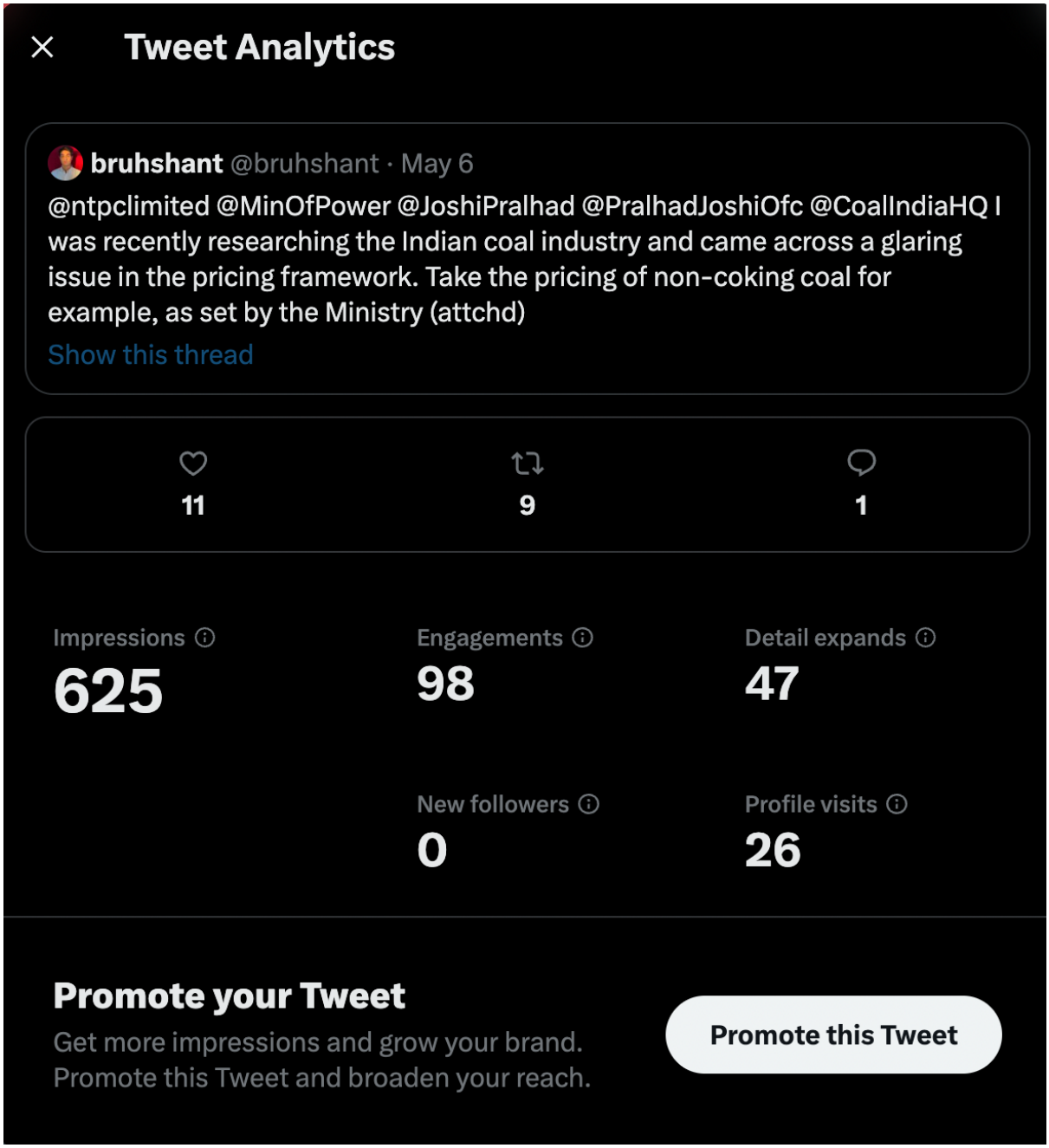
[8] See annexure.

ANNEXURE

Here's a link to the thread- https://twitter.com/bruhshant/status/1654772333670801408?s=20




Thread
bruhshant @bruhshant · May 6
However, when you compare the productivity (amount of heat that can generated by the consumption of one unit) of G1 and G17, G1 is roughly only 3 times more productive than G17.
1 1 4 143
bruhshant @bruhshant · May 6
In a nutshell, the problem is that while G1 is 16 times more expensive, it's only 3 times more productive than G17. So as a rationale consumer of coal, I'm more likely to consume 3 units of G17 than a single unit of G1.
1 3 105
bruhshant @bruhshant · May 6
In fact, consuming 3 units of G17 over a single unit of G1 would allow a consumer to save Rs. 7,802. The reason this is problematic is because the consumer is being economically incentivised to emit 2 extra coal units worth of emissions.
1 1 4 186
bruhshant @bruhshant · May 6
The current pricing framework needs to be urgently revised. Grade pricing needs to be made proportionate to productivity in order to prevent consumers from being forced into relatively more pollutive forms of coal consumption.
1 1 5 204
bruhshant @bruhshant · 18h
@ntpclimited
@MinOfPower
@JoshiPralhad
@PralhadJoshiOfc
@CoalIndiaHQ
This problem needs urgent redressal. It could potentially make our NDCs under the Paris Agreement a lot more achievable. Grade pricing needs to be made proportionate to productivity.


Tweet Analytics
bruhshant @bruhshant · May 6
@ntpclimited @MinOfPower @JoshiPralhad @PralhadJoshiOfc @CoalIndiaHQ I was recently researching the Indian coal industry and came across a glaring issue in the pricing framework. Take the pricing of non-coking coal for example, as set by the Ministry (attchd)
Show this thread
11
9
1
Impressions
625
Engagements
98
Detail expands
47
New followers
0
Profile visits
26
Promote your Tweet
Get more impressions and grow your brand. Promote this Tweet and broaden your reach.
Promote this Tweet