

Implications of New Regulations for Water Consumption by Coal Thermal Power Plants

Summary Highlights

Manthan Adhyayan Kendra. 8 February 2016

On 8th Dec 2015, the Ministry of Environment, Forests and Climate Change (MoEFCC) notified new regulations concerning emissions and water use of thermal power plants (TPPs) in India. This was in the form of amendments to the Schedule I of the Environment (Protection) Rules 1986. This note analyses some implications of these new regulations.

This note limits itself to looking at the implications of rules with respect to the water consumption limits of coal based power plants.

KEY NEW REGULATIONS

The notification essentially brings in four changes or new regulations:

1. It requires all thermal power plants with once through cooling (OTC) to install cooling towers (which we can infer to mean that they have to switch to recirculating cooling)
2. It requires all these above plants, and all existing plants with cooling towers to achieve a maximum specific water consumption of 3.5 Cubic meter / MWh (Cum/MWh).
3. New plants to be installed after 1 Jan 2017 to meet specific water consumption of 2.5 Cum/MWh.
4. New plants to be installed after 1 Jan 2017 to achieve zero waste water discharged.

Before we look at the implications of each, two important overarching facts need to be noted. One, there is limited data available in public domain regarding designed water consumption by thermal power plants, and practically no data regarding the actual water consumption. This makes it difficult to gauge fully the implications of the new rules. Second, water consumption varies widely across individual power plants, depending on a host of factors ranging from plant technology, plant efficiency, coal quality, location, operation and maintenance practises etc. This means that the implications for each plant will vary on a case by case basis.

SUMMARY HIGHLIGHTS

- For the first time, there will be legally mandatory limits on the amount of water a thermal power plant can consume. This is a welcome step, for thermal power plants are huge consumers of water.
- The regulations for existing plants, allowing maximum specific consumption of 3.5 Cum/MWh, are considerably lax. The Central Electricity Authority (CEA) itself has noted in its 2012 report on minimisation of water use at thermal power plant that even sub-critical plants (which is the technology used by most existing TPPs) can achieve a specific consumption of 3.0 Cum/MWh. Even these lax regulations would however, be an improvement over the current water consumption of existing TPPs.
- The water consumption limit set for plants to be installed after Jan 2017 is 2.5 Cum/MWh. This represents the advantage that would be offered by the use of better and more efficient

technology as TPPs after this date are also required to be based on supercritical technology. These norms are well within the reach for such technologies. However, CEA and MoEFCC will need to ensure that the newer plants are actually designed to take full advantage of what the new technology offers, particularly in water and coal use. This is not the case right now.

- Many TPPs are likely to require significant modifications to their original designs to comply with the new regulations. These changes could be in the cooling systems like installing cooling towers, or in the ash disposal systems, or in waste water disposal systems or others. CEA/MoEFCC should assess all existing and proposed TPPs to see which TPPs need what kind of design changes and retrofits, and should monitor the progress on the same.
- If the water consumption limits are implemented and adhered to in letter and in spirit, these limits will have two major benefits. One is of course that if thermal power plants follow these limits, then significant quantities of water would be saved, water that could be used for other purposes, or could remain in the water bodies and ecosystems, helping preserve and protect these.
- MoEFCC should revise environmental clearances to TPPs to reflect the new water requirements, and should work with state governments to ensure that TPPs surrender any water allocation that is in excess of the newly worked out water requirement.
- Another, and equally major benefit of the new regulations would be a curb on huge quantities of ash being dumped as slurry in ash ponds all over the country. This is because one major component of water consumption goes towards wet disposal of ash, and dry disposal and full utilisation of fly ash would be critical to meeting the proposed limits – at least the limits for the plants installed after 1 Jan 2017.
- At the same time, the new limits, combined with some other regulations introduced by the MoEFCC, would need significant quantities of coal to be first “washed”, which would be done by washeries in the mining areas. This could result in pushing and concentrating the ash disposal as well as water consumption problem onto coal mining areas, where it has already reached crisis proportions. This implies that along with the new water regulations, it is important to also bring in better regulations and their better implementation for the washeries and for washery reject based thermal power plants.
- Proper implementation in letter and spirit of the new water consumption regulations will be critical factor that will determine how effective these regulations are.
- The regulations related to water, as well as the existing regulations related to ash utilisation, and some new amendments to them are complementary and reinforce each other. If MoEFCC can also bring in better regulations for washeries and washery reject based power plants, all these would provide tremendous synergy in achieving multiple benefits of reducing water use and curbing pollution due to ash.
- Some of the factors that will help better and more effective implementation of these norms include the political will of the authorities, especially MoEFCC to enforce these regulations, the synergetic application of regulations for ash, water, washeries, and washery reject based plants, regular and publicly accessible monitoring and reporting of actual water use by TPPs, and effective citizen and community participation.
- Effective citizen and community participation will be critical to effective implementation. In turn, effective public participation will need full transparency, and hence MoEFCC and CEA must mandate full monitoring of the actual water use, including its breakup for various

different purposes, and must ensure that all this information is available in the public domain.

- CEA/MoEFCC must also make public the design changes and retrofits required for all existing, under-construction and planned TPPs. They should track the progress on this, which too should be made public.

Manthan Adhyayan Kendra
manthan.shripad@gmail.com

You can also read the *Full Detailed Note* [here](#).