



सत्यमेव जयते

# केन्द्रीय विद्युत विनियामक आयोग

## CENTRAL ELECTRICITY REGULATORY COMMISSION



No. 9/21/2016-Reg.Aff. (GC-MoP)/CERC

Dated: 19<sup>th</sup> August, 2016

The Secretary (Power)  
Ministry of Power  
Shram Shakti Bhawan  
Rafi Marg  
New Delhi - 110 001

**Sub: Impact of the revised environmental protection norms in respect of coal based thermal power plants as specified by the Ministry of Environment, Forest & Climate Change through the Environment (Protection) Amendment rules, 2015 -Advice under Section 79 (2) of the Electricity Act, 2003**

Sir,

The Ministry of Environment, Forest & Climate Change has notified the Environment (Protection) Amendment Rules, 2015 vide Notification dated 7.12.2015. This amendment has brought in revised environmental standards for the coal based thermal power plants in the country with an objective to reduce emission of pollutant matter as also to take up measures to reduce water consumption in the plants.

2. The Forum of Regulators in its 54<sup>th</sup> and 55<sup>th</sup> Meetings, deliberated upon these norms and their impact on generation sector. The Forum, during the discussions, observed that compliance of the environmental standards would necessitate the coal based thermal power plants to undertake large scale renovation of existing plants / augmentation of new plants by deploying new technologies. The new norms are expected to majorly impact 200 GW capacity of coal based thermal generation, which includes plants under advanced stage of commissioning.
3. In order to comply with the revised standards, the coal based thermal power plants would require to deploy new technologies, which *inter alia* include,
  - a. Flue Gas Desulphurization (FGD) process for controlling SOx emissions.
  - b. Equipment / processes for complying with emission standards of Suspended Particulate Matter (SPM).
  - c. Selective Non-Catalytic Reduction (SNCR) system / Selective Catalytic Reduction (SCR) system for controlling NOx emissions.
  - d. Installation of cooling towers in order to change over to closed cycle cooling water system for controlling water consumption.
4. In this regard, the Forum felt that deployment of new technologies may not be economically viable in respect of the plants "having residual life of 10 years or less after R&M and life extension", and for the plants "Commissioned prior to 1.1.2004". Further, the plants which have "space constraint" may not be able to deploy new technologies. Therefore, the Forum felt that the plants "having residual life of 10 years or less after R&M and life extension" and those

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“Commissioned prior to 1.1.2004” and “having space constraint for implementation of new technologies” may be exempted from the purview of the revised emission norms. Additionally, the plants which are either under construction or in the advanced stage of commissioning (i.e. likely to be commissioned in the next 3 – 4 years) may be allowed to undertake retrofit subsequent to commissioning as implementation of new norms during construction stage would have issues of guarantees and contract prices. Considering this, the revised norms for the new coal based thermal power plants be made applicable with effect from 1.1.2020.

5. As regards specific water consumption by the plants, the Forum observed that the deployment of Flue Gas Desulfurisation (FGD) technology would necessitate increase in specific water consumption. Therefore, the norm for specific water consumption may be increased from 2.5 CuM/MWh to 3.0 Cu M/MWh for all plants with Flue Gas Desulfurisation (FGD) technology. As regards water consumption by the coastal based plants, the new norms require installation of cooling towers and RO plants with specification which cannot be complied by sea water based plants and as such, will lead to shut down of such plants. Therefore, Coastal based plants may be exempted from installing closed cycle cooling systems.

6. The Forum is of the view that the implementation of new environmental norms should be done in a phased manner. Further, the modification and retrofitting of the equipment would also lead to substantial shutdown time. It is therefore, suggested that the norms can be initially implemented in new plants and the existing plants can take up implementation of revised norms in a staggered manner i.e. spreading over the next 5 to 10 years.

7. The Forum observed that availability of technology and equipment for deployment in the generating stations is limited. Import of equipment is likely to result in time and cost over-runs. Therefore, the Forum felt that appropriate measures may be taken for enhancing the capability of domestic equipment suppliers by facilitating them in technology transfer etc.

8. It has also been observed that implementation of new technologies / installation of equipment to achieve the revised standards in respect of suspended particulate matter, SO<sub>x</sub>, NO<sub>x</sub>, Mercury, water consumption etc. would involve at a macro level an estimated additional expenditure of Rs. 1.15 Cr./MW to Rs. 2.50 Cr./MW. The expenditure would vary from plant to plant, depending on the current technology employed, age of the plant, renovation / modernization carried out so far etc. It is anticipated that the additional capital expenditure is likely to have an impact of Rs. 0.40 to Rs. 0.90 per unit on the cost of bulk power supply. The impact would be much higher for the end consumer. As such, the Government of India may also consider the possibility of providing subsidy to meet the costs of implementation so as to reduce the impact on end consumers or part finance the expenditure from National Clean Energy Fund or clean energy cess collected.

Yours faithfully,



(Shubha Sarma)  
Secretary, CERC