

Setting Environmental Standards

Comparing Processes in Thermal Power Plants in India, US, and EU

SHRIPAD DHARMADHIKARY

This paper analyses the process by which the Ministry of Environment, Forest and Climate Change, sets new regulations or revises existing ones and compares the Indian processes with those in the United States and the European Union. The processes examined include regulations related to coal-fired thermal power plants and water. The Indian process is ad hoc, opaque, and has limited scope for public participation. This can lead to inappropriate standards, lack of legitimacy of standards, and absence of widespread acceptance, all leading to ineffective implementation. The paper discusses these critical deficiencies and suggests improvements.

This paper is based on a part of the work carried out by the author as an academic visitor to the Stranded Assets Programme (now Sustainable Finance Programme) at the Smith School of Enterprise and the Environment, University of Oxford. The author would like to thank Ben Caldecott, director at the programme, for providing him with the opportunity to conduct this research. He also wishes to thank Philippe Cullet, Pete Harrison, and Ashok Sreenivas for their comments on the draft of this paper, as well as Jinda Sandbhor for assistance with the research.

Shripad Dharmadhikary (manthan.shripad@gmail.com) works with Manthan Adhyayan Kendra, Pune, a centre engaged in analysis and advocacy in water and energy issues.

1 Introduction: New Regulations, Old Responses

On 7 December 2015, the Ministry of Environment, Forest and Climate Change (MOEFCC), Government of India, notified new regulations that limited the consumption of water and emission of certain pollutants by thermal power plants (TPPs) (GoI 2015). These regulations apply to existing plants, and many of them will need retrofits ranging from minor to extensive. While there are no official estimates in the public domain of the financial implications of these retrofits, media reports indicate that they could be as high as ₹2,00,000 crore. Electricity tariffs are likely to go up by 50–70 paise per unit (Sengupta 2016; Jai 2016). These tariffs represent a large financial burden, but are going to be welcomed as a step forward in the internalisation of external aspects—the social and environmental impact—of such projects.

Industry reactions have been low-key and whether or not the regulations will be embraced is unclear. However, the tone of the reactions in the public domain is that of serious concern regarding the practical side of the implementation (CSE 2016). One argument that many industry players are making is that the time given for compliance (two years) is too short. The requirements are too demanding, and industry wants the timeline to be extended to four–five years (Singh and Upadhyay 2016). There is a related concern that not enough equipment suppliers will meet the likely surge in demand as every TPP attempts to meet the regulations in the next couple of years. Other issues that the industry considers challenging include the outages required to carry out the retrofits, the increase in tariff, and whether distribution companies (DISCOMs) will be able to bear the burden of extra tariff (even now, DISCOM finances are seriously stressed, which affects their capacity to purchase power), the impact on bottom lines if the cost of implementation is to be internalised, and where the funds for the required capital expenditure for the retrofits would come from (banks are already saddled with large loans to the power sector, many of which border on non-performing assets, or are restructured). In sum, the response from the industry is not of whole-hearted or even grudging acceptance, but more of concern, albeit in a muted manner, that the regulations may be impractical, or at least overambitious. The non-committal response could even be preparing the grounds for an eventual demand for dilution or rollback of the regulations. This paper does not aim to address the merits of industry responses. Rather, it aims to address a different issue, emanating from responses to the regulations.

2 Anticipating Responses

An obvious thought that comes to mind when looking at industry responses is that these are fairly predictable ones, and *prima facie* are not unwarranted. Hence, one would expect that these concerns would have been anticipated, and that the MOEFCC would have their responses to these concerns in place when announcing the new regulations. The MOEFCC would have attempted to proactively take a stand on these anticipated industry responses, suggesting ways to allay these concerns, or explaining why the concerns were unjustified. For example, the MOEFCC could have published an explanation as to how the retrofits required by the regulations could indeed be implemented in two years. By doing this when the regulations were released, it could pre-empt and allay concerns, and demonstrate how the regulations could be met, thus increasing the chances of their timely and effective implementation. So, why did the MOEFCC not take these measures? During the process of framing regulations, did the MOEFCC consider the problems likely to arise during their implementation? If it did, then why is it not responding to the industry? Indeed, why must it wait for the industry to raise concerns? Can the MOEFCC not publish explanations *suo motu*, simultaneously with the release of the regulations?

These questions are equally valid with regard to the concerns of the industry and the concerns of all stakeholders. If the industry is concerned that there is not enough time to make the changes necessary to meet the regulations, this is also a concern for the people affected by TPP emissions. In the case of affected stakeholders, they would want the regulations to be met within the mandated time frame, or even earlier. Thus, they would be eager to understand how the MOEFCC has decided that two years would be sufficient—or necessary—for all TPPs to meet the regulations. This would help the MOEFCC in their endeavour to achieve early implementation by ensuring that no stakeholder raises unjustified concerns that delay instituting all the required measures.

3 Larger Questions about Setting Standards

Questions related to anticipating implementation problems and industry responses are part of a set of larger questions about the very process of setting these regulations and standards. These include questions concerning the criteria for setting specific standards, the justifications for various regulations and whether they are shared transparently with the public, the parties involved in the process of framing regulations, the process of dealing with comments on draft regulations, and so on. Questions on the process are critical because a good process for framing regulations is crucial to ensuring that regulations are robust, are widely accepted, are able to anticipate and address responses, and are implemented effectively.

Unfortunately, the entire process of the MOEFCC setting regulations is not transparent and has other critical lacunae. This paper attempts to analyse the process by which the MOEFCC sets new regulations or revises existing ones and compares them to similar processes in the United States (US) and the European Union (EU), in order to highlight important deficiencies and

suggest improvements to the MOEFCC process. The examination will be in the context of regulations related to coal-fired TPPs and water.

4 Setting Environmental Standards in the US

This paper examines the process for setting standards in the US¹ by studying the “Steam Electric Power Generating Effluent Guidelines—2015 Final Rule,” which are the regulations finalised by the US Environmental Protection Agency (EPA), in September 2015 (EPA 2015c). These rules set the limits for the quantity of effluents discharged by thermal power plants using steam for electricity generation, including coal-based thermal power plants. The rules set “new or additional requirements for waste water streams from the following processes and byproducts: flue gas desulfurization, fly ash, bottom ash, flue gas mercury control,” and some others (EPA 2015c). The Clean Water Act (CWA) of the US requires the EPA to establish effluent limitation guidelines (ELGs). The CWA prohibits the discharge of any pollutant into any waterbody without the express permission to do so. ELGs must be incorporated into all water pollution discharge permits issued to units in that sector. Moreover, ELGs represent the minimum requirements for all permits, although a permit may require more stringent controls if necessary (Harrison 2016).

The process of setting new regulations begins with the EPA asking “... if a regulation is needed at all ... The Agency researches the issues and, if necessary, proposes a regulation, also known as a Notice of Proposed Rulemaking (NPRM)” (EPA 2015e). The proposal is subsequently listed in the Federal Register so that members of the public can look at it and submit comments. Importantly, along with the text of the rule, supporting documents are also made available publicly. The EPA reviews the comments and then finalises the rules. The value of the process comes from some key elements, described below.

4.1 Comprehensive Background Status Study

In 2009, the EPA brought out its first document related to this rule revision. This document addressed the issue of whether regulation was needed. It summarised

(t)he information collected and analyzed by the United States Environmental Protection Agency (EPA) to review discharges from steam electric power generating facilities and to determine whether the current wastewater discharge regulations for these operations should be revised. EPA’s review of wastewater discharges and treatment technologies evaluated a range of waste streams and processes. (EPA 2009: xii)

The 233-page report captured the

[i]ndustry overview, data on wastewater characteristics of coal-fired plants, a description of applicable wastewater treatment technologies, a discussion of trends in the use of air pollution controls, and a description of environmental impacts. (EPA 2015d)

Thus, well before any new rule was proposed, the EPA came out with a detailed, comprehensive background document that looked at the industry status, pollution generation by the industry, and state-of-the-art treatment and control technologies. This study not only allowed the EPA to answer the

question of whether a new regulation was needed (it was, they found) but also allowed it to identify critical pollutants.

4.2 Draft Rule and Supporting Documents

Based on this detailed study, the EPA then drafted the rule, and on 7 June 2013, placed the proposed rule in the Federal Registry (EPA 2013a), inviting comments by 6 August 2013 (later extended to 20 September 2013). Importantly, this 113-page document “identified four preferred alternatives for regulation of discharges from existing sources.” Each of the options offered would reduce pollutants to different levels and also included different costs.

The draft rule was accompanied by four supporting documents. The Technical Development Document² dealt with “the effluent guidelines and the engineering analysis behind them, including identification of pollutants of concern, characterisation of waste water streams, pollution treatment and prevention technologies etc.” The Environmental Assessment of the Proposed Effluent Limitations document “[e]valuates environmental concerns and potential exposures (wildlife and humans) to pollutants commonly found in combustion wastewater discharges from steam electric power plants, and estimates the environmental improvements associated with proposed regulatory options.” The Benefit and Cost Analysis for the Proposed Effluent Limitations document gives the “[s]ummary of the societal benefits and costs expected to result from implementation of the proposed effluent guidelines.” The Regulatory Impact Analysis document presents an “[a]nalysis of the costs and economic impacts of the proposed effluent guidelines. [I]t also provides information pertinent to meeting several legislative and administrative requirements.”

These documents are several hundred pages long, are prepared in advance of the proposed rules, and provide the technical basis for preparing the rule. They also provide the data and logic used by the EPA in proposing the rule. These documents, therefore, are very important to understand the rationale behind the rule and to provide comments and input.

4.3 Comments and Consultation

The draft rule, published on 7 June 2013, was open to public comments until 20 September 2013. There was also at least one public hearing in which people could make oral submissions. The EPA also conducted a webinar on the proposed rule on 20 August 2013, in which it made a detailed presentation on the rule, and people could question a panel of five members from the EPA, including experts like an engineer, an economist, and a biologist (Jordan 2013). Further, the webinar also provided the contact information of people who could be approached for additional—technical and economic—information. All the comments (a total of 3,334) are available on the EPA website, which also has all the documents related to the consultation process (EPA 2016).

The EPA published the final rule on 3 November 2015. The final rule was 67 pages long and contained detailed explanations and the rationale for why the regulations were set the way they were. The final rule also presented several of the comments that were considered and why and how they were incorporated

(or not) into the rule. The entire process, from initiating the studies to publishing the final rule, took close to a decade. The need for a comprehensive study of the steam-based generating plants was first identified in 2005 (EPA 2009) and the study was published in 2009. The time between the publication of the draft rule and the final rule was around two years and five months.

4.4 Key Elements of the Process

The process of creating new regulations in the US, as described above, reveals some important characteristics. First, the process involves comprehensive background studies that cover all important aspects like industry status, technology of production, key pollutants, pollution control technologies, health and environmental effects, and the cost–benefit analysis of various pollution control regulations. Second, the rationale and justifications for the proposed and final regulations and their various components are presented in detail, and the responses to comments are provided. Thus, in a sense, the draft and final rules are both “reasoned” ones. Third, there is a high level of transparency in the process. Part of the transparency comes from presenting the reasoning behind the rule. This is enhanced by the fact that all comments, discussions, and supporting documents are in the public domain by default.³ Further, there are proactive attempts to communicate the contents of the rule and the rationale behind it through webinars and by making people available to respond to queries.⁴ Fourth, significant opportunities for public participation are built into the process. Many of the transparency mechanisms also encourage and enhance meaningful participation by the public.

Importantly, the process is institutionalised and standardised, which helps ensure that all the elements are followed (EPA 2015e). Moreover, the principles of transparency and public participation are enshrined in the law itself. As Pete Harrison—an attorney at Waterkeeper Alliance who is also trained as an environmental scientist—explains:

In the USA, most administrative rulemaking processes are governed by the Administrative Procedures Act (APA). For major rulemaking processes like the ELG updates, the APA requires, at a minimum, public notice of the proposed rule and a 30-day public comment period, after which the agency must consider the comments in finalizing the rule and include the rationale for including or rejecting input from the public comments. The APA also prohibits “arbitrary and capricious” action by government agencies, and from this stems the obligation for the agency proposing a rule to include all relevant documentation to support its decisions.⁵ (Harrison 2016)

Burrows and Garvey (2011) provide a good summary of the APA. Last

is an important feature of the Clean Water Act and US law that citizens can sue the government to force it to do its job. Even after EPA identified the need to update these effluent limitation guidelines, it failed to update them for several years, and environmental NGOs had to sue [the] EPA to compel action. (Harrison 2016)

4.5 Implications of the Process

While this process of setting new regulations has many good aspects, it should not be confused with the rules themselves. Indeed, regulations around coal mining and burning and rules

controlling the impact of these units on water have been weak in the US. In a statement in response to the new EPA Rule of 30 September 2015, Michael Brune, executive director of the Sierra Club said,

For decades, the coal industry has been dumping unlimited toxic waste into our waterways—and the Obama Administration just turned off the spigot.

Thousands of miles of waterways and hundreds of bodies of drinking water have been contaminated by the coal industry's dangerous exploitation of weak laws by pouring harmful heavy metals, including mercury and arsenic, and other chemicals into our water. The new safeguards announced by the Environmental Protection Agency will put an end to that, slashing pollution by more than 3 billion pounds every year. (2015)

Pete Harrison said that although

[d]ecades overdue, EPA's new limits will finally address the country's biggest source of toxic water pollution ... While the rule still fails to address waste leaking from old, inactive coal ash ponds, it will steer the industry away from the all-too-common practice of piping ash slurry into huge, unlined waste pits next to our rivers and lakes. That's a big step forward. (Waterkeeper Alliance 2015)

Indeed, the EPA itself admits in its webinar when first proposing the new rule:

EPA first promulgated effluent guidelines for this industry sector in 1974 ... But it has been more than 30 years now since they were last amended, back in 1982. The Steam Electric effluent guidelines apply to discharges from approximately 1100 fossil-fueled and nuclear-fueled plants ... And what we have found is that those regulations are ineffective for removing many of the pollutants that are present in these waste streams, such as dissolved metals and nutrients. (EPA 2013b)

It is interesting that until recently, several such rules in the US were weaker than the corresponding regulations in India, where the process of setting regulations is much weaker and far more opaque; we deal with the Indian process later in this paper. For example, while Indian regulations since 2009 have required full (100%) utilisation of the ash generated by coal-fired power plants, the US has had no such requirement. However, it would be wrong to dismiss the effectiveness of a strong, transparent, and participatory process in creating good regulations. In fact, just as a weak process can create strong regulations, a weak process can, and often does, create lax regulations, as is also seen in India. The advantage of a good process for creating new regulations is that such a process can help to create robust regulations, ensures wider acceptance of the regulations, and legitimises the rules greatly. All of this contributes to better implementation.

Indeed, implementation is the most striking difference between the scenarios in the US and India. Even if some regulations are superior in India, they are not implemented or are not implemented effectively. In the US, even if some regulations are weaker, they are implemented more effectively. In fact, the ease with which the Indian system sometimes produces strong regulations may well have to do with India's record of non-implementation! When one is confident that implementation will be weak and not mandated, strong rules become easier to accept, and resistance to the creation of

such rules is lesser, since they remain mostly confined to the rule book. The Indian rules related to the mandatory 100% utilisation of ash from coal plants is one such example; the rule is grossly violated in practice.

5 Setting Environmental Standards in the EU

The EU has 24 member countries, which include two of the biggest coal producers of the world—Germany and Poland—along with some of the biggest importers and users of coal (World Coal Association 2014). Coal accounts for about 25% of the electricity produced in the EU, apart from being an important energy source in other industries (European Commission 2015). The EU has a process that is similar to the US, in that it defines emission standards based on the best available technologies. The EU legislation for controlling pollution from TPPs has been in the form of several directives.⁶ Plants covered by the Large Combustion Plants (LCP) Directive (European Union 2008) were also covered by the Integrated Pollution Prevention and Control (IPPC) Directive (European Union 2015). The IPPC and six other directives were recast into the Industrial Emissions Directive (IED), which was adopted on 24 November 2010 (European Commission 2014). The IED repeals the IPPC and other directives with effect from January 2014, except the LCP which was repealed from 1 January 2016.

Under the IED, all coal-based power plants must have a permit based on the requirements of the directive. As a related Greenpeace report, *Smoke and Mirrors*, explains,

Industrial installations, including coal-fired power plants must have an environmental permit based on the requirements of the IED ...

The permit includes binding emission limits (e.g. for sulphur dioxide, nitrogen oxides) based on what the Best Available Techniques (BATs) can achieve. The BATs are defined in so-called BAT reference documents (BREFs). (Greenpeace 2015)

Thus, the BATs are at the core of the emission standards or the rules that regulate emissions. These are defined in the BAT reference documents (BREFs), which give “information on a specific industrial/agricultural sector in the EU, on the techniques and processes used in this sector, current emission and consumption levels, techniques to consider in the determination of the best available techniques (BAT) and emerging techniques.” The BREF document also has a section called “BAT conclusions,” which lays “down the conclusions on best available techniques. According to Article 14(3) of the IED, BAT conclusions shall be the reference for setting the permit conditions to installations covered by the Directive” (European Commission 2016). In other words, the BREF document is a comprehensive survey of the concerned industry (in our example here, TPPs), its production processes, the pollutants it generates, methods of control and treatment of pollution, and also recommendations of the best available technologies to abate pollution.

The latest BREF related to coal power plants is from 2006, titled “Reference Document on Best Available Techniques for Large Combustion Plants, July 2006” (European Commission 2006). Currently, the EU is updating this and a draft

BREF has been published, dated June 2016 (Joint Research Centre 2016).

The BREFs are prepared through a process which involves the participation of major stakeholders, including industry and non-governmental organisations (NGOs). The process is also enshrined in the law, that is, within the directive. Article 13 of the IED defines this process. The article requires the commission to initiate an exchange of information and also to set up a forum which includes the member states and all the key players mentioned earlier. The forum also sets up technical working groups to carry out the necessary studies. The draft finalised by the forum is also made publicly available, though it is not clear if there is a process for seeking, considering, and incorporating comments from the general public. However, the directive makes public participation in the actual permit granting process imperative.

It may be mentioned that BREFs do not set legally binding standards, but as per Article 14(3) of the IED, they only provide reference guidelines for permit conditions, including emission limits, which are set while keeping in mind the objectives of the directive and local conditions. However, considering that general principles laid out in Article 11 of the IED require that “the best available techniques are applied” and “no significant pollution is caused;” it is clear that BREFs provide a floor for environmental and emission standards.

Thus, the process for setting emission standards in the EU shares many characteristics with the process in the US. Particularly, a common feature is the preparation of comprehensive studies that form the basis for setting the standards. This process provides good opportunities for public participation, involvement of NGOs enshrined in the laws, transparency at all stages of the process, and provision of the rationale and justifications for the suggested standards.

One of the important tools in fostering transparency and accountability in the pollution monitoring sector is the European Pollutant Release and Transfer Register (E-PRTR). According to its website,

[The E-PRTR] is the Europe-wide register that provides easily accessible key environmental data from industrial facilities in European Union Member States ... The register contains data reported annually by more than 30,000 industrial facilities covering 65 economic activities across Europe.

For each facility, information is provided concerning the amounts of pollutant releases to air, water and land as well as off-site transfers of waste and of pollutants in waste water from a list of 91 key pollutants including heavy metals, pesticides, greenhouse gases and dioxins for years 2007 onwards.

The register contributes to *transparency and public participation in environmental decision-making*. (European Environment Agency 2015, emphasis in original)

The data can be searched and viewed facility-wise, industry-wise, or pollutant-wise through a geographic information system (GIS) interface. The facility-wise data, for example, will give the basic information about the facility, including its geographic location and emission rates for key pollutants. The data are also categorised according to river basin, which is very important when considering water pollution data. The

site also provides detailed information about the 91 pollutants being monitored, including their characteristics, the health risks they pose, and overall impact. The site allows users to download the data.

While not strictly a part of the regulation setting process, by promoting transparency and accountability, such tools help improve the quality and depth of public participation in the regulation setting processes. Hence, they are important in making regulation setting more effective.

The US EPA has an even more diverse and detailed set of public search tools (EPA 2015a). These include:

(i) Enforcement and Compliance History Online (ECHO), which is a detailed data search and access repository that “allows users to find and download information on permit data, inspections, violations, enforcement actions, and penalties.”

(ii) “Envirofacts” is a single point of access to US EPA environmental data.⁷

(iii) CWA discharge monitoring report (DMR) Pollutant Loading Tool is a tool that “helps users determine who is discharging, what pollutants they are discharging and how much, and where they are discharging.”⁸

(iv) My WATERS Mapper “Displays snapshots of EPA Office of Water program data and enables ... (creation of) customised maps at national and local scales.”⁹

6 Setting Environmental Standards in India

The Environment Protection Act, 1986 (EP Act) empowers the Government of India to “take all measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment,” including “laying down standards for the quality of environment in all its aspects” and “laying down standards for emission or discharge of environmental pollutants from various sources whatsoever.”¹⁰ The power to make rules under Section 25 of the EP Act further elaborates these powers. However, the EP Act does not say anything about the process through which standards are created or modified. Nor does the act or the rule say anything about requirements of transparency or public participation in the process. Similarly, there is no other publicly available document that lays down the process by which the central government or the Central/State Pollution Control Boards (CPCB/SPCB) create standards for pollution control. Much of the process is hidden from the public, including recent processes like the setting of new regulations for water consumption and emissions from TPPs, which took place in 2015.

During the research for this paper, we sent several queries to the MoEFCC and the CPCB for information about the Indian process for setting environmental standards. None of the queries were acknowledged or responded to. This is in line with past behaviour of the MoEFCC, because even invited public submissions are not acknowledged. However, a very senior official of the Pollution Control Board informed us of the process, under the agreement that he would not be quoted. Additionally, another former chairperson of the CPCB also discussed the process with us.

From both these conversations, it appears that the process for setting environmental standards in India is broadly similar to the processes in the US or EU. To quote the senior official:

From 1974 to 1986, the mechanism was that the Central Pollution Control Board developed these standards through a consultative process for each industry. These were called 'Minimal National Standards'. State Boards adopted these standards and they could prescribe more stringent standards but not dilute these ... In 1986 came the EPA. A comprehensive study of the sector is done—the manufacturing process, the raw materials, effluent discharges, control measures, [and] treatment measures. Then there is a two-stage consultation mechanism. One, with the peer industrial peers. This one is for seeking technical and economic feedback. This goes to the core group. That is the inter-ministerial and technical experts. Then it goes to the CPCB. After CPCB approval, this goes to the Ministry, which notifies the standard. Before that the draft standard is put into the public domain for comments ... The basic documents which do the sectoral comprehensive study are called the COINDS series. (Comprehensive Industrial Document Series)

While it appears to have many necessary key elements, in practice, the process is a shadow of what it should be. We examine the process with respect to regulations established in December 2015 that govern water consumption and emission norms of TPPs (henceforth, we will refer to these as the December 2015 Standards).

Let us start from the comprehensive sector study. The latest such study on the coal power generation sector, as per the website of the CPCB that lists all the Comprehensive Industry Document Series (COINDS) publications, is from 1986 (CPCB 2016). The document was prepared as a part of the Minimal National Standards series—the pre-EP Act era (CBPCWP 1986). The document itself is not available on the website, and we could only obtain a photocopy of the last copy left in the CPCB library. The copy is a summary of the original, which is no longer available at all. The document is 18 pages long.

So, the question arises as to what “comprehensive sectoral study” was used by MOEFCC when preparing the December 2015 Standards. MOEFCC either used a 30-year old “comprehensive” 18-page study, or it used a more recent study which is has not been made publicly available. It is worth mentioning that there are four other COINDS documents that may be relevant to the thermal power standards, and all of them are from 1984–86 period.¹¹ Regarding the specific standards themselves, the MOEFCC put up a draft notification of the December 15 Standards on its website on 15 May 2015, and it invited comments from the public. The entire draft was three pages long, and consisted only of the proposed standards for water consumption and emissions for TPPs. No reasons were presented as to why the standards were being proposed at the levels they were. There were no references to any papers or background studies that may have been used to prepare these standards. While the senior official quoted earlier mentioned a two-stage consultation mechanism of discussions with industrial peers and a core group—that is, the inter-ministerial and technical experts—the draft made no mention of any such consultations. There is no public knowledge of whether or not such consultations took place.

The MOEFCC received a large number of comments on the draft. Comments were not even acknowledged—at least not

the comments made by us and others we know. No information about the comments—the number of comments received, commentators, or the comments themselves—was published.¹² There were no opportunities to seek clarifications on the contents of the draft. On 7 December 2015, the MOEFCC published the final notification in the gazette, thus enforcing the standards. The final notification was five pages long, which included the Hindi and the English versions. The final notification was the same as the draft, except for a typo in a date which had been corrected. However, there was no indication of whether and how the received comments had been considered by the MOEFCC, and the reasons for rejecting or accepting any of the comments were not disclosed either. Just as with the draft, the final notification did not include any reasons or justifications for why the standards were set at the level they were. Thus, it is clear that process of setting environmental standards, at least for TPPs in India, is completely opaque; it has severely limited scope for public participation. This can potentially lead to inappropriate standards, a lack of legitimacy in the standards created, and an absence of widespread acceptance of the standards. From the two interviews that we had with former and current officials of the CPCB, it appears that there is supposed to be a process in place. However, this process is not documented, standardised, or publicly stated.

On 10 November 2015, we filed a request under the Right to Information Act to the CPCB, asking: “Are there any guidelines, manuals or circulars which lay down the process of setting up pollution standards for air and water for thermal power plants?” The response was clear and unambiguous: “There are no guidelines, manuals or circulars which lay down process of setting standards for air and water for thermal power plants.”¹³ This means that the process is not binding either by law or through a written protocol. Thus, the actual process undertaken is highly susceptible to discretionary changes. Further, combined with the fact that the actual process undertaken is not public knowledge, it is highly unaccountable.

While we have examined the process of setting standards for TPPs thus far, the process for setting of standards in other cases is quite similar.

7 Recommendations

Environmental concerns, including those surrounding the impact of pollution on health, are growing. With increased public awareness and the increased pace of economic activities, the importance of establishing adequate and robust standards is also growing. This requires that the process of setting environmental standards be created on solid grounds. To this end, drawing from the Indian, US, and EU case studies, we recommend the following:

- (i) The MOEFCC should draw up a comprehensive and transparent process for setting environmental standards, which should also have a provision for meaningful and substantial public participation. Public participation should be welcomed at all stages of setting standards.
- (ii) In the Indian context, it is important that such public participation includes input from independent experts, civil

society actors, and also people directly affected by the environmental impact of economic activities and pollution.

(iii) Such a process should be standardised, but also be flexible enough to meet the needs of different sectors.

(iv) The process should be codified through guidelines, manuals, and protocols as appropriate, and it should have legal backing.

(v) The provisions of transparency and public participation should be enshrined in law.

(vi) The process of setting up such a process must be undertaken in a transparent and participatory manner.

(vii) The standards should be based on comprehensive sector studies that list the key processes in the sector, important environmental issues and the pollutants that cause them, potential health and other impacts of pollutants, methods of avoiding, mitigating, and managing these impacts and pollutants, and a cost-benefit analysis of such methods.

(viii) The reasoning and justification behind the standards must be presented clearly and in detail. This is particularly important when standards are to be revised because of changing situations, changing technologies, etc.

(ix) The standards should be subject to regular reviews. Such reviews should be conducted at specified time intervals and can be triggered by specific situations, which should be indicated in the process of setting the standards.

(x) In anticipation of establishing a structured process for setting standards, the MoEFCC should immediately initiate comprehensive industry studies, which are already envisaged in the COINDS series of the CPCB. These studies should be

undertaken in an integrated and truly comprehensive manner, and the studies should include the participation of various key actors, including those mentioned above. They can also draw from the large body of knowledge the MoEFCC and CPCB already have in place.

(xi) A proper pollution inventory monitoring mechanism can be tremendously beneficial to setting up standards and effectively implementing them. Such a mechanism, whose data are publicly accessible, should also be set up simultaneously.

8 Conclusions

Growing levels of economic activity, mounting pollution, and environment and public health hazards have led to the urgent need to institute adequate norms and standards to control and manage these issues. The current process for creating norms is ad hoc, not properly codified, subject to arbitrary changes, opaque, and has little place for public participation. This leads to standards that are likely to be inadequate and inappropriate and may cause the developed standards to lack legitimacy or wide acceptance. All of these imply less effective implementation, which is already a weakness of the Indian environmental regime.

There is a need to establish a comprehensive, transparent, and participatory process of setting environmental standards that is backed by research studies. In setting up such a process, officials can draw useful lessons from similar processes in other regions, including the US and the EU, which have been discussed in this paper. Such a process should be properly codified and have appropriate legal backing.

NOTES

- This paper is not meant to be a comprehensive description of the process, nor is it meant to capture all the legal nuances. It attempts to draw out broadly the key concepts and elements of the process which are necessary to frame effective regulations. Moreover, this paper does not intend to discuss the effluent or water quality standards themselves, but limits itself to comparing the processes through which these are set.
- This is not the full title of the document. Similarly, the other three titles are also not the full titles. The full titles of all the documents, their descriptions, and the documents can be found on the EPA website (2015b). The descriptions quoted in the text are from this webpage.
- In some cases, the agency may redact parts of the submissions "such as those containing private or proprietary information, inappropriate language, or duplicate/near duplicate examples of a mass-mail campaign" (EPA 2016).
- We do not know how promptly and effectively queries are responded to.
- There are several other places where these principles are enshrined. For example, see Section 307(a)(2) of the Clean Water Act, or the "Executive Order 13563 of January 18, 2011—Improving Regulation and Regulatory Review."
- A "directive" is a legislative act that sets out a goal that all EU countries must achieve. However, it is up to the individual countries to devise their own laws on how to reach these goals (European Union 2016).
- "Envirofacts," United States Environmental Protection Agency, <https://www3.epa.gov/enviro/>.

- Clean Water Act DMR Pollutant Loading Tool, United States Environmental Protection Agency, <https://cfpub.epa.gov/dmr/>.
- My WATERS Mappers, United States Environmental Protection Agency, <https://watersgeo.epa.gov/mwm/>.
- Section 3(1), Section 3(2)(iii), and Section 3(2)(iv) of the Environment Protection Act 1986. The Water (Prevention and Control of Pollution) Act, 1974 also empowers the Central and State Pollution Control Boards to "lay down, modify or annul" standards for stream or well, or the effluent standards for sewage and trade effluents. Section 16(2)(g) and Section 17(1)(g).
- These are the "Comprehensive Industry Document on Gas-based Thermal Power Plant" and four documents in the Emission Regulations series (Part I-IV).
- We were subsequently able to obtain the set of comments under the Right to Information Act (RTI). However, the comments have not been suo moto published. Access to these still requires significant time under the RTI Act process.
- Letter from CPCB to Shripad Dharmadhikary, No. B-33014/7/2009/PCI-II/16087, 3 December 2015.

REFERENCES

- Burrows, Vanessa and Todd Garvey (2011): *A Brief Review of Rulemaking and Judicial Review*, Washington DC: Congressional Research Service.
- CBPCWP (1986): "Minimal National Standards Thermal Power Plants, Comprehensive Industry

Document Series COINDS/21/1986," New Delhi: Central Board for the Prevention and Control of Water Pollution.

CPCB (2016): "Comprehensive Industry Document Series (COINDS)," Central Pollution Control Board, http://cpcb.nic.in/Publications_Dtls.php?msgid=3.

CSE (2016): "New Environmental Norms for the Power Sector: Proceedings and Recommendations of the Stakeholder Workshop," New Delhi: Centre for Science and Environment.

EPA (2009): "Steam Electric Power Generating Point Source Category: Final Detailed Study Report," United States of America: United States Environmental Protection Agency.

— (2013a): "Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category; Proposed Rule," *Federal Register*, Vol 78, No 110, pp 34432–34543.

— (2013b): "Steam Electric Power Generating Effluent Guidelines—Proposed Rule: Transcript

Economic & Political WEEKLY

available at

Life Book House

Shop No 7, Masjid Betul
Mukarram Subji Mandi Road
Bhopal 462 001
Madhya Pradesh
Ph: 2740705

for the Webcast Held on August 20, 2013,” Washington DC: United States Environmental Protection Agency, Office of Water/Office of Science and Technology, Engineering and Analysis Division (4303T).

- (2015a): “National Pollutant Discharge Elimination System (NPDES),” Washington DC: United States Environmental Protection Agency.
- (2015b): “Proposed Effluent Guidelines for the Steam Electric Power Generating Category—Support Documents,” Washington DC: United States Environmental Protection Agency.
- (2015c): “Steam Electric Power Generating Effluent Guidelines—2015 Final Rule, 30 September 2015,” Washington DC: United States Environmental Protection Agency.
- (2015d): “Steam Electric Power Generating Effluent Guidelines Background Documents,” Washington DC: United States Environmental Protection Agency.
- (2015e): “The Basics of the Regulatory Process,” Washington DC: United States Environmental Protection Agency.
- (2016): “Rulemaking for the Steam Electric Power Generating Effluent Limitations Guidelines, Regulations,” Washington DC: United States Environmental Protection Agency.

European Commission (2006): “Integrated Pollution Prevention and Control: Reference Document on Best Available Techniques for Large Combustion Plants,” Brussels: European Commission.

- (2014): “Revision of IPPC Directive,” Brussels: European Commission Environment.
- (2015): “Coal and Other Solid Fuels,” European Commission Energy.
- (2016): “Reference Documents Under the IPPC

Directive and the IED,” European Commission—Joint Research Centre.

European Environment Agency (2015): “European Pollutant Release and Transfer Register (E-PRTR), European Pollutant Release and Transfer Register,” European Environment Agency.

European Union (2008): “Pollutants from Large Combustion Plants: Summaries of EU Legislation, 27 May 2008, EUR-Lex,” European Union.

- (2010): “Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on Industrial Emissions (Integrated Pollution Prevention and Control) (Recast),” *Official Journal of the European Union*, 17 December 2012, pp L334/17–L334/119.
- (2015): “Large Combustion Plants Directive,” European Commission Environment.
- (2016): “Regulations, Directives and Other Acts,” European Union.

GoI (1986): “Environment (Protection) Act 1986,” New Delhi: Ministry of Environment Forest and Climate Change.

- (2015): “Notification Dated 7 December 2015,” *Gazette of India*, Extraordinary Part II, Section 3, Sub-Section ii, New Delhi: Ministry of Environment Forest and Climate Change, <http://www.indiaenvironmentportal.org.in/files/file/Moef%20notification%20-%20gazette.pdf>.

Greenpeace (2015): *Smoke & Mirrors: How Europe’s Biggest Polluters became Their Own Regulators*, Brussels: Greenpeace European Unit.

Harrison, Pete (2016): “Personal Communication, email to author dated 29 August 2016.”

Jai, Shreya (2016): “Emission Norms to Raise NTPC Power Cost by 10%,” *Business Standard*, 20 February, http://www.business-standard.com/article/companies/emission-norms-to-raise-ntpc-power-cost-by-10-per-cent-11602200026_1.html.

com/article/companies/emission-norms-to-raise-ntpc-power-cost-by-10-per-cent-11602200026_1.html.

Joint Research Centre (2016): “Best Available Techniques (BAT) Reference Document for Large Combustion Plants: Final Draft,” Seville, Spain: Joint Research Centre European Commission.

Jordan, Ron (2013): “Steam Electric Power Generating Effluent Guidelines: Proposed Rule Webcast Presentation,” United States Environmental Protection Agency.

Sengupta, Debjoy (2016): “Power Tariff May Rise 70 Paise Per Unit as to Comply with New Set of Pollution Control Norms,” *Economic Times*, 22 February, <http://economictimes.indiatimes.com/industry/energy/power/power-tariffs-may-rise-70-paise-per-unit-as-to-comply-with-new-set-of-pollution-control-norms/articleshow/51087293.cms>.

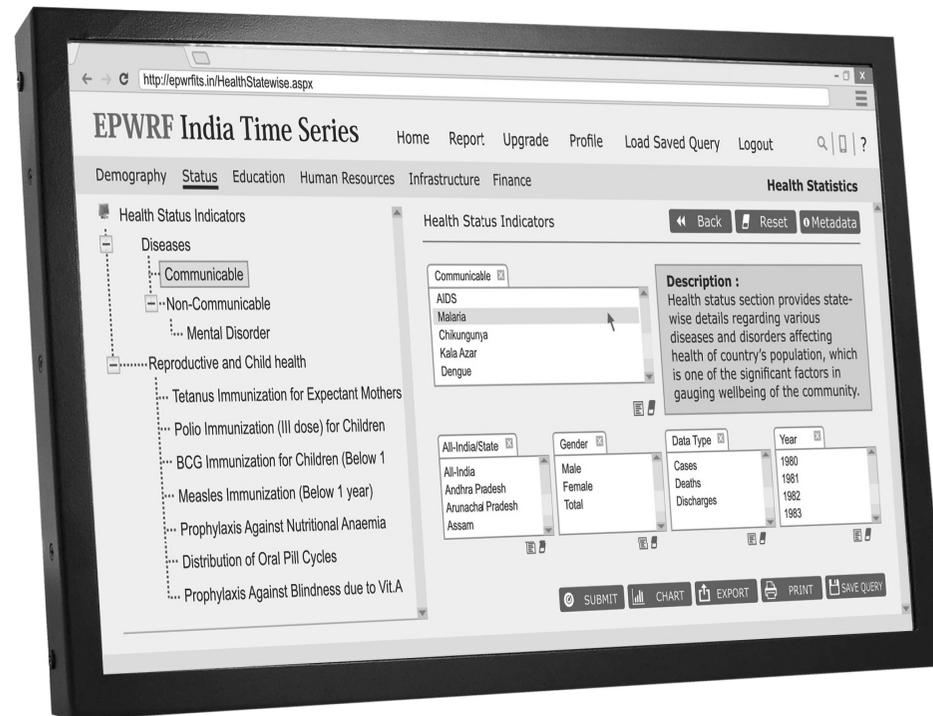
Sierra Club (2015): “Sierra Club Statement on New Water Pollution Safeguards,” 30 September, Sierra Club.

Singh, Rajesh and Anindya Upadhyay (2016): “Modi’s Plan to Clean Up World’s Worst Air Resisted by Indian Power Generators,” *Bloomberg*, 31 March, <http://www.bloomberg.com/news/articles/2016-03-30/modi-s-picnic-spot-plan-resisted-by-indian-power-generators>.

Waterkeeper Alliance (2015): “Waterkeeper Alliance Responds to EPA’s final Power Plant Toxic Water Pollution Rule,” 30 September, Waterkeeper Alliance.

World Coal Association (2014): *Coal Facts 2014*, *World Coal Association*, [http://www.worldcoal.org/bin/pdf/original_pdf_file/coal_facts_2014\(12_09_2014\).pdf](http://www.worldcoal.org/bin/pdf/original_pdf_file/coal_facts_2014(12_09_2014).pdf).

EPWRF India Time Series Module on Health Statistics



Features

Presents All-India and state-wise annual data from 1980 onwards.

Structured in six major sections :

- Demography
- Health Status
- Infrastructure
- Human Resources
- Health Education
- Health Finance

The EPWRF ITS has 16 modules covering a range of macro-economic, financial and social sector indicators on the Indian economy

For more details, visit : www.epwrfits.in