

INFORMATION DISCLOSURE TO IMPROVE ENVIRONMENTAL REGULATION

The Maharashtra Star Rating Scheme

Maharashtra, India
July 2020



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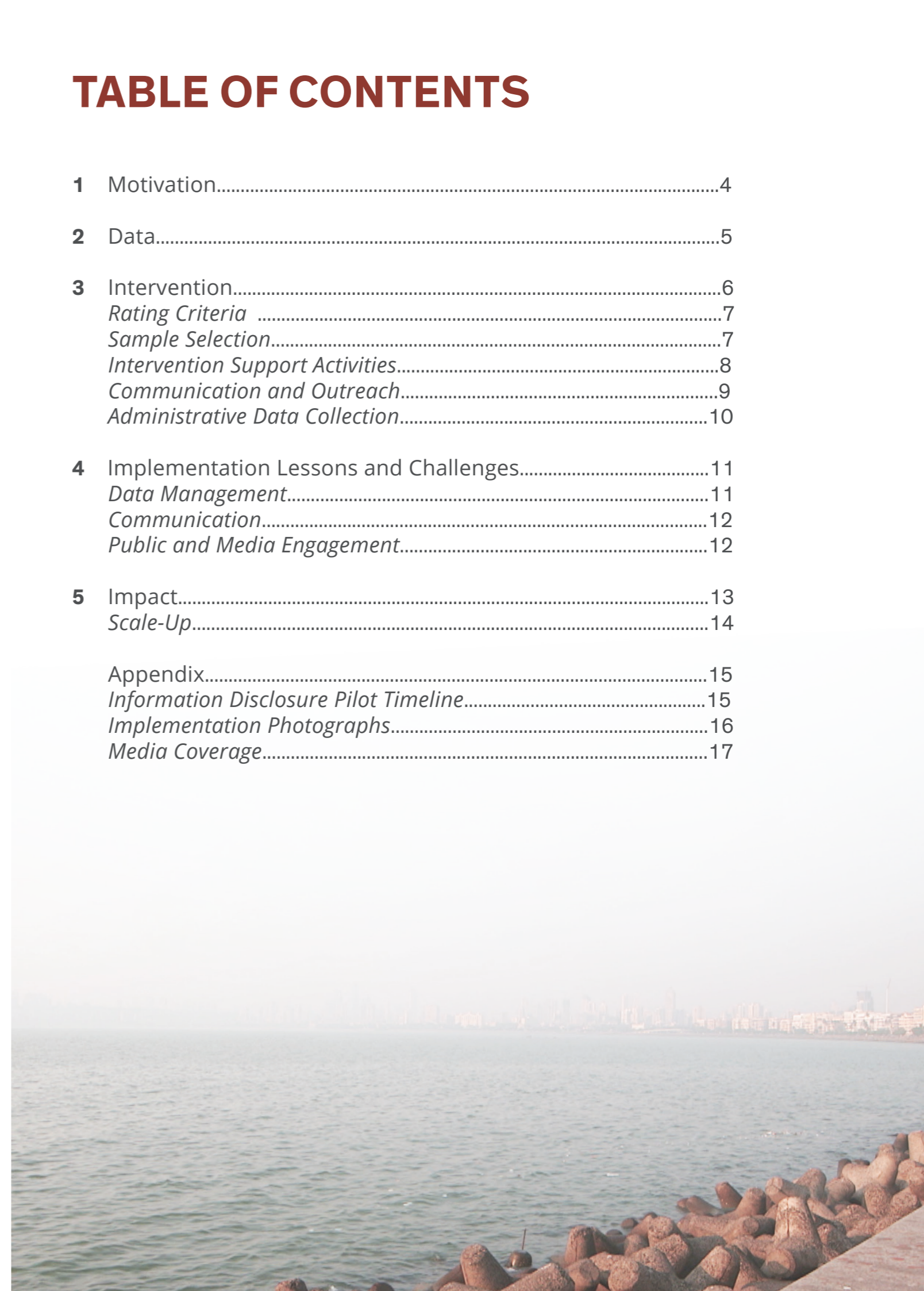
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GLOSSARY OF TERMS

Project or Pilot: A pilot information disclosure scheme implemented in partnership with the Maharashtra Pollution Control (MPCB), set up in a randomized control trial setting. This is referred to as the “**Pilot**” or the “**Project**”

Randomized Control Trial: Method of evaluation of the project, hereinafter referred to as “**RCT**”

Treatment: Treatment refers to the group of industries who receive pollution related information disclosure intervention as a part of the RCT design of the project

Control: Control refers to the group of industries that do not receive pollution related information disclosure intervention as a part of the RCT design of the project

Maharashtra Pollution Control Board: The environmental regulator for the State of Maharashtra, hereinafter referred to as the “**MPCB**”, government implementation partner of the project

Maharashtra Star Rating Scheme: Name of the pilot pollution-related information disclosure scheme implemented in collaboration with the MPCB

Principal Investigators: The Project is headed by four principal investigators – Prof. Michael Greenstone (University of Chicago), Prof. Rohini Pande (Yale University), Dr. Nicholas Ryan (Yale University) and Dr. Anant Sudarshan (University of Chicago)

Abdul Latif Jameel Poverty Action Lab South Asia: Academic implementation partner of the project, referred to as “**J-PAL SA**”

Project Team/Research Team/Project field team: Research Associates and field staff employed by J-PAL SA, reporting to the principal investigators of the project, as well as liaising with the Maharashtra Pollution Control Board for the implementation and monitoring of the scheme

Industry or plant: Refers to industrial facilities under the star rating scheme, belonging to sectors – Cement, Chemicals, Metal Works, Paper, Pharmaceuticals, Power, Sugar and Distilleries or Textiles

Consent to operate: Every industry in the State of Maharashtra requires a consent to operate (referred to as “consent”) from the MPCB, for the purpose of setting up their business (or expansion) in the State. This document contains details of the plant’s location, products, capacity, pollution mitigation equipment, bank guarantees etc.

CC/CAC classification: Consent Committee (hereinafter referred to as the “CC”) or the Consent Appraisal Committee (hereinafter referred to as the “CAC”) are committees within the MPCB based at their headquarters in Mumbai. These committees review the consent applications of very large scale (capital investment greater than INR 25 crore) industries with high polluting potential. Applications of smaller industries with low polluting potential are reviewed by the regional offices of the MPCB.

1 MOTIVATION

This document summarizes learnings from a large-scale pilot involving the design, implementation, and evaluation of a pollution disclosure and ratings scheme for industrial plants, in the Indian state of Maharashtra. Known as the Maharashtra Star Rating Scheme, the project builds upon a recent history of legal reform in India that has strengthened the public right to information. India’s Right to Information Act (2005) enables citizens to access several types data from the state, including – in theory – data on plant emissions. Nevertheless, the transaction costs involved in obtaining useful information on environmental performance are high. For example, data on industry pollution in India is typically stored in a disaggregated manner in the form of individual test results, sometimes only in paper form. As such, it is all but impossible for the public at large, or scientists and academics, to access this information for multiple plants over time. For this reason, both the relative performance and pollution trends of industrial plants in India has remained opaque.

Transparency is arguably a public good, and information disclosure initiatives have been recognized as a “third wave” in environment regulation after command-and-control and market-based approaches. Among the popular disclosure schemes around the world are – Indonesia’s PROPER, Africa’s AKOBEN, US’s Toxic Release Inventory, China’s Blue Map initiative and Philippines’ Eco-watch. While these schemes have been deemed successful, they have not been subject to rigorous evaluation. The Star Rating Scheme, implemented in partnership with the Maharashtra Pollution Control Board (MPCB), is the first environmental performance rating initiative to be evaluated in a Randomized Control Trial (RCT) setting.

There are several mechanisms through which a public ratings scheme might change behavior. One channel is via peer pressure applied by the public, who are claimants on clean air rights and may act as Coasian agents once informed about plant behavior. Peer comparisons may also provide new information about the set of economically feasible pollution outcomes and may spur peer competitive behavior amongst industry managers.

Additionally, public disclosure on the website could create pressure on the industry from shareholders, customers, and employees, in addition to the affected citizens and the regulator. A non-experimental study on Indonesia’s Information Disclosure scheme – PROPER – suggested that these ratings may have helped to increase pressure from the shareholders and that bad ratings reduced the market value of the company (Blackman et al 2004). Environmental information-disclosure schemes have been recognized as cost-effective tools because they require minimal additional staff and leverage information that is already held by regulators. Therefore, information disclosure schemes are particularly useful in command and control regimes which are often limited by budgetary and staff constraints.

The Maharashtra Star Rating Scheme was launched on 5th June 2017 by the Chief Minister of the state. This project represents the first initiative in India in which plants have been mandatorily rated based on legally actionable government tests of pollution. These ratings are publicly disclosed on the Scheme website (mpcb.info). The state of Maharashtra is one of the most industrialized states in India and the Star Rating scheme targets large plants with capital investments exceeding 25 crore INR and belonging to the Cement, Chemicals, Metal Works, Paper, Pharmaceuticals, Power, Sugar and Distilleries or Textiles sector. There were just under 1,000 such plants in the state when the pilot began.

From this initial population, a randomly chosen subset of “treatment” plants were gradually phased into the ratings scheme. Those plants not selected for initial inclusion in the ratings scheme form a statistically identical “control group” that can be compared with rated plants in the treatment. Following the completion of the pilot evaluation, control plants will also be integrated into the public ratings regime. The design of the pilot makes it well suited to conduct a rigorous evaluation of this type of disclosure and ratings regime.

2 DATA

Arguably the greatest challenge in initiating a pollution disclosure regime anywhere in India is the remarkable paucity of high-quality and organized data. In this regard, India has made limited progress in comparison with China, a country that had been criticized for insufficient transparency with regards environmental data, till recently. In 2006, the China Institute of Public & Environmental Affairs began collating public information on air and water pollution and environmental violations at plants across the country. This first ground-breaking step came from civil society, not the government. Since then, the Chinese government has gone further and made available a large amount of real-time data on ambient and plant pollution levels, including the 2014 disclosure of industrial emissions for around 13,000 enterprises.

In most Indian states, officials from the State Pollution Control Boards (SPCBs), or accredited laboratories, perform environmental audits of industrial plants. These audits could either be routine, or as a response to an industrial plant applying for consent to operate, or as a follow-up to a violation discovered in a previous inspection.¹

The process is manual and time-consuming and the number of approved employees at the SPCBs has decreased over time, although the number of industries they regulate has increased by two or three-fold.² This is one reason why data on plant's pollution performance is sparse. In Maharashtra, data collected at the start of the star rating scheme revealed that even amongst the largest, most polluting plants - which formed part of the initiative - the average number of pollution tests per year per plant was just 1.4, with many plants not tested in over a year.

In addition to being infrequent, inspection data is not only unavailable to the public but in practice can be unavailable to the regulator, at least in a sufficiently usable form. For example, the data management practices of the MPCB are not uniform across the State. Of the 12 regional offices, six do not ascribe to a Laboratory Information Management System (LIMS).

As a result, the stack sampling reports from these ROs and their associated sub-regional offices are stored in hard copies which need to be physically collected and digitized. Even where a LIMS system was present, aggregated datasets combining all regional offices have not been created. As a result, no one – not even the regulator – was able to properly conduct a state-wide analysis of environmental compliance and pollution trends, over time and across plants.³

A fundamental contribution of this pilot has been to address this problem of availability of information on industrial pollution and environmental compliance. A field team of researchers was set up to physically collect industrial stack emissions data monthly from various regional and sub-regional offices of the MPCB. A separate data team was developed to accurately digitize these reports. Since 2014, more than 20,000 stack samples have been collected and digitized which has helped in shortlisting industries for the scheme and in publishing ratings of eligible industries on the website. This unique dataset underlies the pilot initiative described in this document. A longer-term implementation challenge is to integrate this type of information aggregation exercise into normal government function.

¹ Duflo, E., Greenstone, M., Pande, R. and Ryan, N. (2018), The Value of Regulatory Discretion: Estimates From Environmental Inspections in India. *Econometrica*, 86: 2123-2160. doi:10.3982/ECTA12876.

² Bhushan, Chandra. (2009). The Status of Environmental Regulatory Capacity in India. 10.13140/RG.2.2.10289.84329.

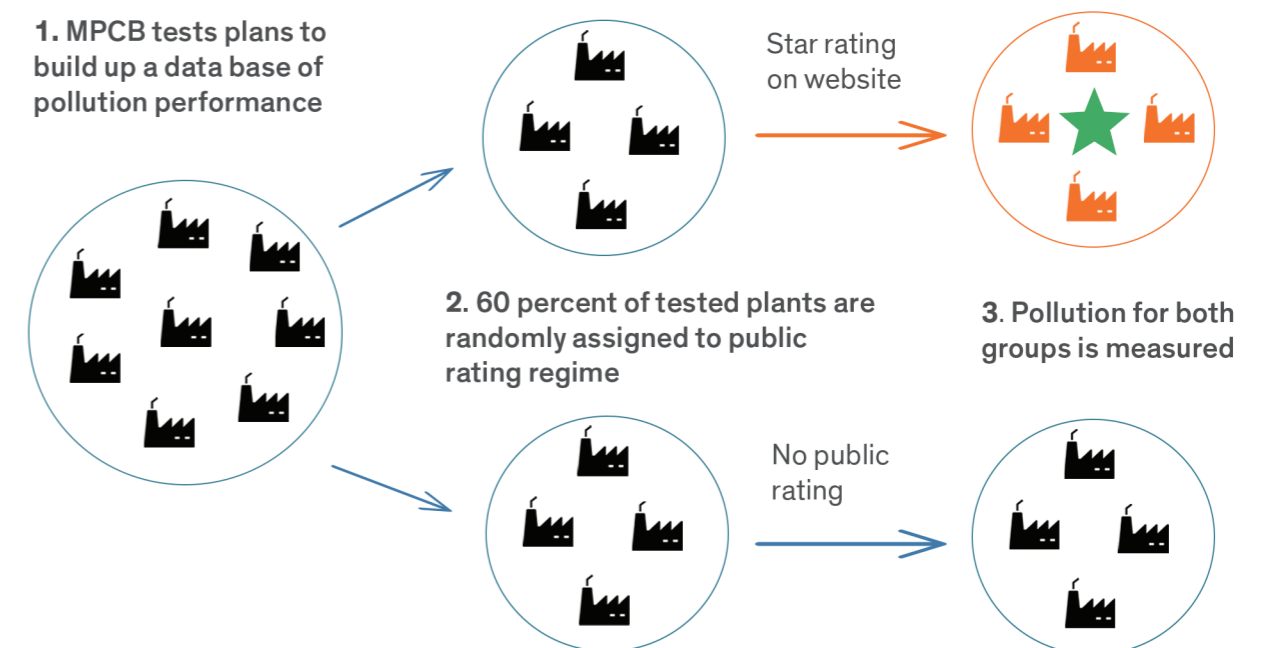
³ Recently, the government has begun to take steps to require the widespread use of Continuous Emissions Monitoring Systems (CEMS). CEMS are instruments that attach to the chimney stack of factories and supply real-time data on the emissions being generated. In so doing, they allow for dramatic improvements in the time granularity of data available to regulators.

3 INTERVENTION

The Maharashtra Star Rating Scheme was launched in collaboration with the Maharashtra Pollution Control Board on 5th June 2017. The scheme is unique in being rolled out as a randomized control trial covering about 1000 plants categorized as 'Red' category (for high pollution potential) and as 'Large' by investment measures. The samples in the plants were randomly assigned by researchers into treatment and control groups, where the former is rated online, and the latter forms an identical comparison group where testing continues but no public ratings are disclosed. Figure 1 illustrates the design of the experiment.

Rated firms vary in both output size and efficiency, across a variety of sectors. To measure the impact of this treatment, University of Chicago researchers, with their academic colleagues, tracked two key outcome variables. The first variable – environmental performance (emissions concentrations) – was collected as part of the regulatory process. Data was also collected on regulatory actions on industries who violate standards to measure whether regulator behavior changes for firms whose performance is visible to the public. Finally, researchers collected different measures of public engagement, a fundamental variable determining the success of any disclosure regime. On this front it is also of interest to identify techniques that are most useful at increasing engagement.

Figure 1: Evaluation design for the Maharashtra Star Rating Scheme





RATING CRITERIA

To arrive at the star rating of an industry, MPCB inspection data is used. Median of the four most recent PM test samples is calculated, and the respective star rating is assigned based on the rubric in Table 1. Star Rating data is updated monthly on the website. The availability of data is a key constraint here – since plants are sampled about once a year, a four-sample requirement necessarily requires relying on old data. Unfortunately choosing the most recent sample also poses problems because it bases ratings on a single point in time, rather than sustained performance. To balance these trade-offs, only samples taken in the last three years were regarded as valid. This meant that the sample of rated plants grew gradually over time, as new tests were conducted, rising from just 119 at the start of the pilot (June 2017) to 438 by August 2019.



SAMPLE SELECTION

Subject to having sufficient testing data and being in the treatment group, all industries fulfilling the requirements below were mandatorily rated.

1. Industries needed to have a consent granted by the Consent Committee (CC) or the Consent Appraisal Committee (CAC). Industries pertaining to the Consent Committee have an investment between 25 crores and 75 crores, whereas industries pertaining to the Consent Appraisal Committee have an investment of over 75 crores.

2. Industries needed to be from the following 11 broad sectors:

- Cement
- Chemicals
- Food Processing
- Glass and Ceramics
- Metal Works
- Paper
- Pharmaceuticals
- Power
- Sugar and Distilleries
- Textiles
- Bio-medical waste incinerators

Table 1: Rubric for Star Ratings

Rating	Range of PM emissions Median (mg/Nm ³)		Rating Key	Representation
	Minimum	Maximum		
5 star	0	50	Very Good	★★★★★
4 star	50	100	Good	★★★★☆
3 star	100	150	Moderate	★★★☆☆
2 star	150	250	Poor	★★☆☆☆
1 star	250 and above		Very Poor	★☆☆☆☆

Note that since only treatment group plants were publicly rated, the total number of plants with data sufficient to assign them a star rating is much higher (731). As the evaluation period of the pilot draws to a close, the rating scheme can be scaled up to cover control plants as well.

3. Industries needed to have at least four stack samples collected by the MCPB.

The scope of the star rating scheme was expanded by the Maharashtra Pollution Control Board to include a wider set of highly polluting industries in 2019, thereby increasing the sample size at a faster pace. Industries were included into the scheme in six phases depending on MPCB inspection capacity and data availability, depicted in Table 2.

Table 2: Phase-wise treatment summary

Release	Control	Treatment	Total	Web launch
1	78	119	197	Jun-17
2	20	31	51	Apr-18
3	83	123	206	Apr-18
4	37	57	94	Oct-18
5	19	25	44	Aug-19
6	56	83	139	Aug-19



INTERVENTION SUPPORT ACTIVITIES

Ratings are made publicly available through an interactive website, where users can leave comments, complaints, suggestions, or initiate discussions. The website was further promoted through outreach activities to spread awareness among the public. The website was launched by the Chief Minister of Maharashtra on 5 June 2017 and has been successfully running for three years.

Industries receive their star ratings from the MPCB in what is termed as a “report card distribution” event. The event enables industry-regulator dialogue, visibility of peer performance and dissemination of best practices. In these workshops, industries are presented with a report card that reflects the respective star rating and the inspection data used to arrive at that rating. Industries with favorable ratings are applauded while those with lower ratings are called out by the regulator, thereby creating a competitive environment among the industries in the scheme.

During 2018-2019, five such industry report card workshops were organized by the MPCB in Mumbai, Nagpur, and Pune. These workshops have been found to be effective in apprising the senior management of industries about the pollution performance of their respective industries, thereby adding significant pressure on poor performing industries to improve.

To support the implementation of the star rating scheme, several communication and outreach activities were conducted to spread awareness about the scheme. In addition, administrative data was collected and digitized to obtain information about the scheme industries, monitor their inspection frequency and measure the frequency of regulatory communications.

Figure 2 : One - Star Report card for an industry

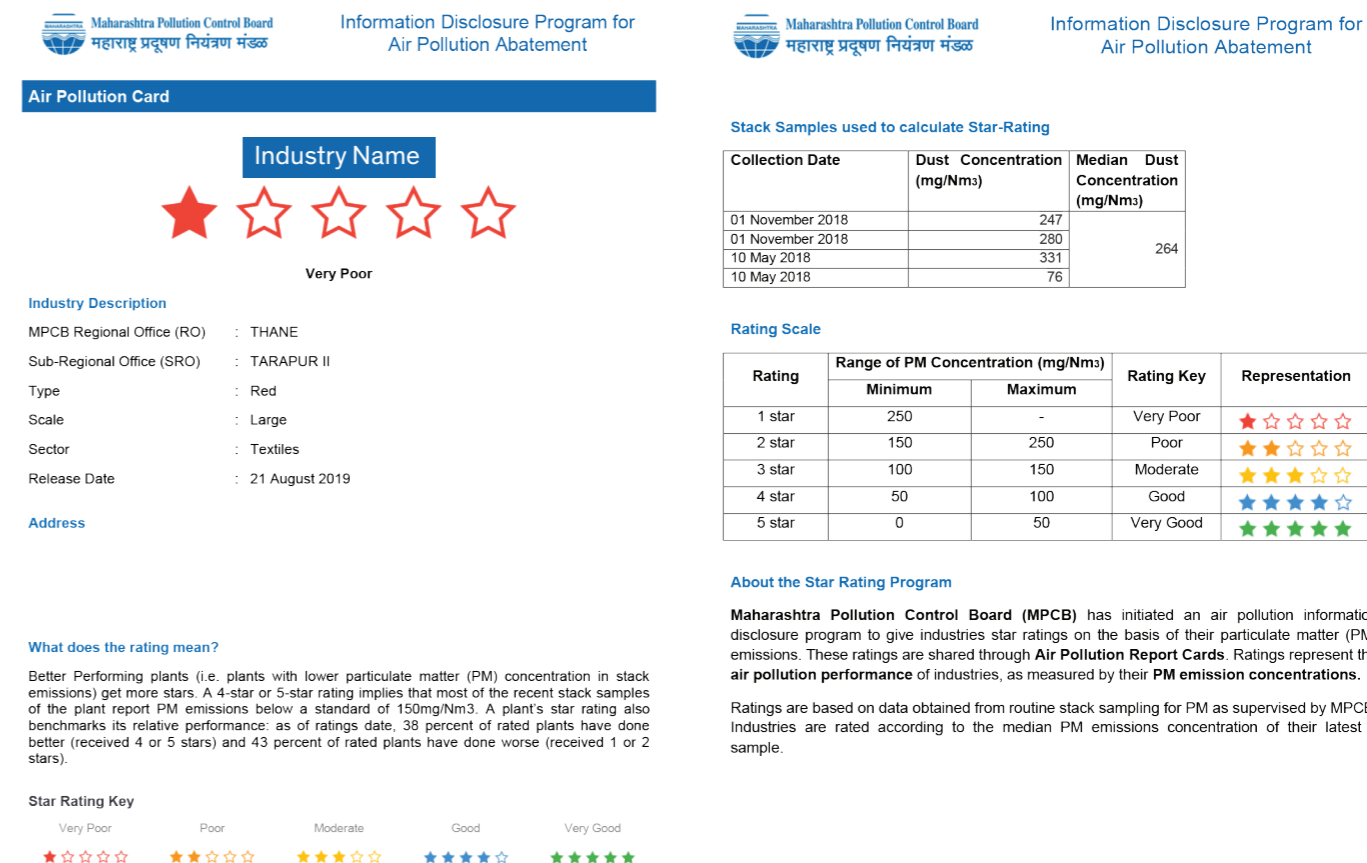
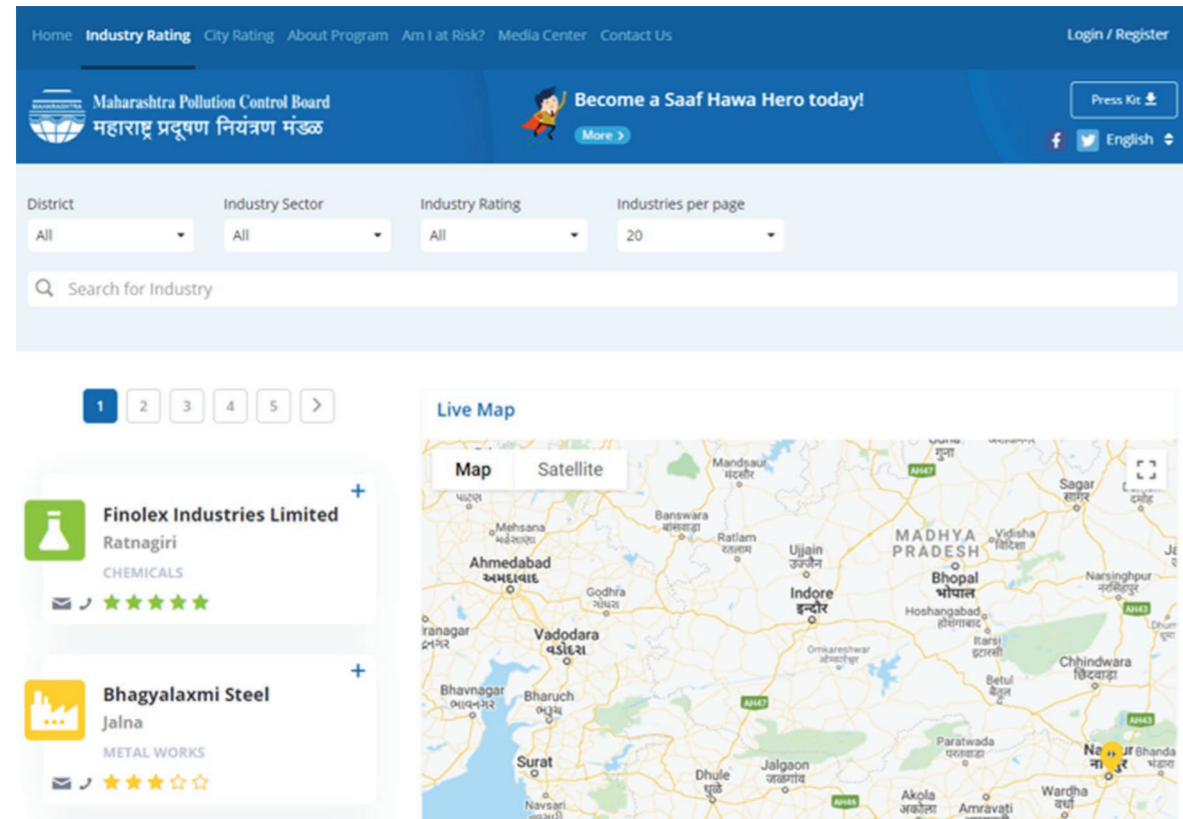


Figure 3: The Star Rating website (mpcb.info)



COMMUNICATION AND OUTREACH

This scheme relies on public pressure to drive industrial compliance and regulator accountability. Therefore, communication and outreach activities were conducted across different cities of Maharashtra to spread awareness about the scheme and to educate residents to monitor, track and complain about the polluting industries on the website.

Offline communication and awareness activities

1. Awareness workshops: Since 2017, a total of 31 awareness workshop were conducted across Maharashtra in eight non-attainment cities as per the National Clear Air Plan (NCAP) – Chandrapur, Nagpur, Mumbai, Nashik, Aurangabad, Pune, Ulhasnagar & Kolhapur. For these workshops, strong partnerships were established with grassroot level local stakeholders. Awareness workshops were conducted in different formats – lectures, street plays, discussions, workshops with regional journalists and interactions with students, among others.

2. Pamphlets and street plays: In tier 2 cities, about 60,000 pamphlets were distributed through newspaper vendors for extensive outreach to local communities in creating basic awareness. A street play was organized in Chandrapur, a city known to have the country's worst air quality. This attracted widespread coverage in the media.

3. Print media: Since January 2019, the Maharashtra Star Rating Scheme has received 114 mentions in Maharashtra media, which include 19 different publications in three languages (Marathi, English & Hindi) and has managed to reach more than 70 lakh people (based on each publication's daily circulation numbers). Publications that have repeatedly carried articles, op-eds, coverages, and write-ups include Maharashtra Times, Sakal, Loksatta, Lokmat, DNA, Times of India, Indian Express, Hindustan Times, Saamana, The Hitavada amongst other regional dailies.

Online Awareness campaigns

1. Celebrity endorsements: The Maharashtra Star Rating received several endorsements from prominent politicians and members of civil society in the state. Renowned social worker, recipient of Padma Shri & the Ramon Magsaysay award, Dr. Prakash Amte endorsed the initiative and has written op-eds for the Star Rating Scheme describing it as a crucial platform for public participation in the fight against air pollution. Maharashtra's Hon. Chief Minister Mr. Devendra Fadnavis recorded an exclusive video message on the pilot ratings scheme to mark World Environment Day. This scheme has also been endorsed by well know celebrities like, filmmaker Vivek Agnihotri, fashion designer Shaina N C, theater personality Makarand Deshpande and news analyst Ekta Kumar.

2. Digital marketing: A digital marketing firm, was employed to market the scheme on digital platforms such as Facebook, Twitter, and Google Ads. As a result of such advertisements, the Star Rating website at one point received about 4000 unique users per day. So far, the website has received more than 1.5 million hits. Figure 4 shows the impact of digital marketing on the engagement of the public with the Star Ratings, via the website at www.mpcb.info



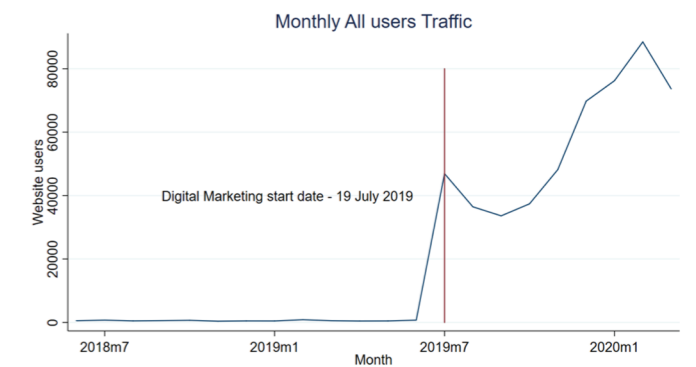
ADMINISTRATIVE DATA COLLECTION

The research team undertook an extensive process of digitization of administrative data to obtain industry specific information and regulatory communications to industries. These datasets formed a crucial part of implementation monitoring of the scheme. As part of the digitization exercise, data was gathered from different sources.

• Industry consents: Industries need to obtain a consent to operate from the regulator to operate their business in Maharashtra. Once granted, these consent documents are available as PDFs on the MPCB official website. The research team downloaded and digitized the consents of all scheme industries, to obtain industry-specific information related to scale, sector of operation, as well as air pollution related information such as, emission sources, stack level information, air pollution control devices installed, fuels used and compliance limits.

• Regulatory notices: In addition to industry abatement behavior, the study also aimed to measure the effect of the scheme on regulator behavior.

Figure 4: Increase in website engagement following digital marketing activities



Since January 2019, Twitter posts have made 16.8 million impressions and Facebook posts have reached more than 100 million users during the same period. The media has also engaged frequently with the content on the website.

4 IMPLEMENTATION LESSONS AND CHALLENGES

Over the three-year period of implementation of the Maharashtra Star Rating Scheme, several lessons emerged that should be kept in mind when considering scale-up or replication.



DATA MANAGEMENT

In addition to being infrequent and disaggregated, there was previously no rule defining which plants were tested in any given month. The project created a randomized scheduler and assigned inspection dates for industries every month based on polluting potential and size of industries.

Large industries and industries categorized as highly polluting were scheduled more often than small industries and less polluting industries.

Unfortunately, despite an assigned schedule, pollution testing of industries occurred only for approximately 50 percent of these visits (Figure 5).

Figure 5: Percentage of plants visited or sampled by MPCB inspectors

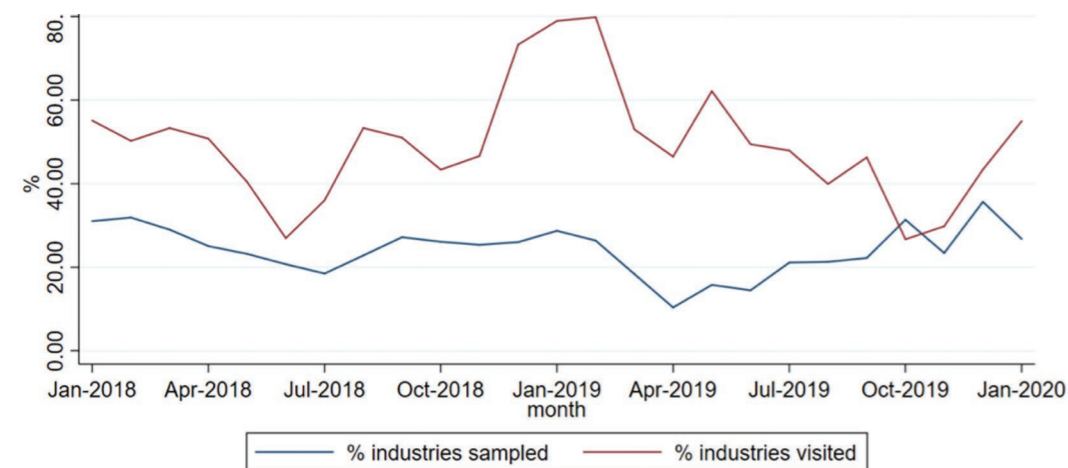
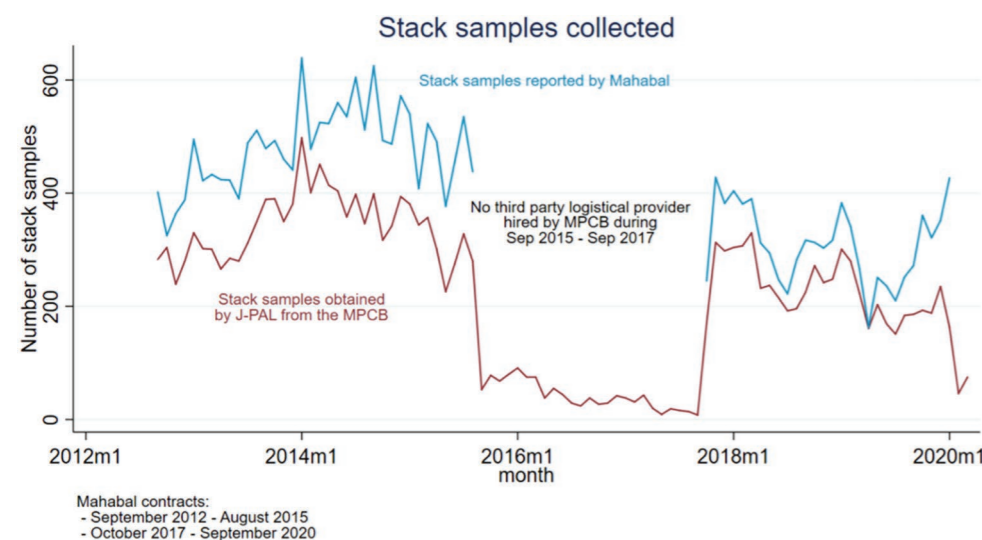


Figure 6: Regulatory pollution tests conducted over time



There are two main reasons for this:

1. Decentralization of decision to test plant:

The regional or the sub-regional officer of the pollution control board ultimately decides whether emission samples should be taken during an inspection visit. The incentives of regional offices are aligned towards conducting only a general inspection of the industry, excluding the more time intensive activity of stack sampling. Further, adherence to an inspection schedule was measured by the MPCB head office in terms of industries visited, not tests conducted. Officials are reprimanded if inspection visit rates are low, however, they are not held accountable for lower stack sampling frequency, which is also not monitored as extensively.

2. Staff shortages:

The MPCB is struggling with shortage of staff in some of the regional and sub-regional offices, as a result of which officers who are assigned field inspection duty are often busy with other allocated work. The environmental regulator also relies on a third-party laboratory responsible for collecting samples because of severe in-house staff shortfalls. During the period September 2015-September 2017, the number of pollution tests collected across the state was exceptionally low because this third-party contract was not renewed. Fortunately, the ratings pilot launched just after the new contract was signed, but this experience suggests an ongoing danger to these initiatives in the future. In addition, the effect of a hiatus in testing was that ratings were forced to rely on relatively old data – at least at the start of implementation. Once sampling rates rose, star ratings could then be updated with new information.



COMMUNICATION

An Information Disclosure scheme could change industry behavior through several channels. Only one of these is through the public at large applying pressure on regulators. Other reasons why these initiatives may be successful include their effect on plant management, shareholders, or downstream buyers.

Firms may be concerned about public reputation or their ability to compete for green contracts, but these incentives likely do not apply to factory-level environmental engineers. Thus, if the Star Rating performance of a factory does not reach the desk of firm management, it is less likely to result in changes in pollution behavior.

This can be a challenge because the regulatory apparatus of environmental regulators and firms is not designed to bring information on plant-level pollution testing performance to CEOs or board-members. To the extent that innovative solutions can be found to mitigate these communication challenges, a ratings scheme is likely to be more successful. One such pathway would be for state governments (and not merely environmental regulators) to work with national industry associations to elevate the profile of pollution ratings.



PUBLIC AND MEDIA ENGAGEMENT

An important consideration in the success of a ratings initiative is the role of the media. It is important that journalists understand the basis of ratings and hold pollution control boards accountable for ensuring the quality and timeliness of disclosed information. To some extent media interest in information disclosure initiatives is a measure of public demand – if this type of initiative is not deemed newsworthy, it is unlikely that ratings will be as effective.

The fact that media and civil society engagement is critical to the success of pollution ratings or disclosure schemes complicates the question of whether this type of regulatory innovation “works”. Arguably the answer depends on the consumer, not the intervention by itself. This is especially true when the government introduces a disclosure regime.

5 IMPACT

In evaluating an environmental performance rating initiative such as the Maharashtra Star Ratings Scheme, one view might be that greater transparency and disclosure is a public good. Consequently, one might regard the introduction of such policy measures as valuable independent of their short-run impact on plant and regulator behavior measured by any other metrics.

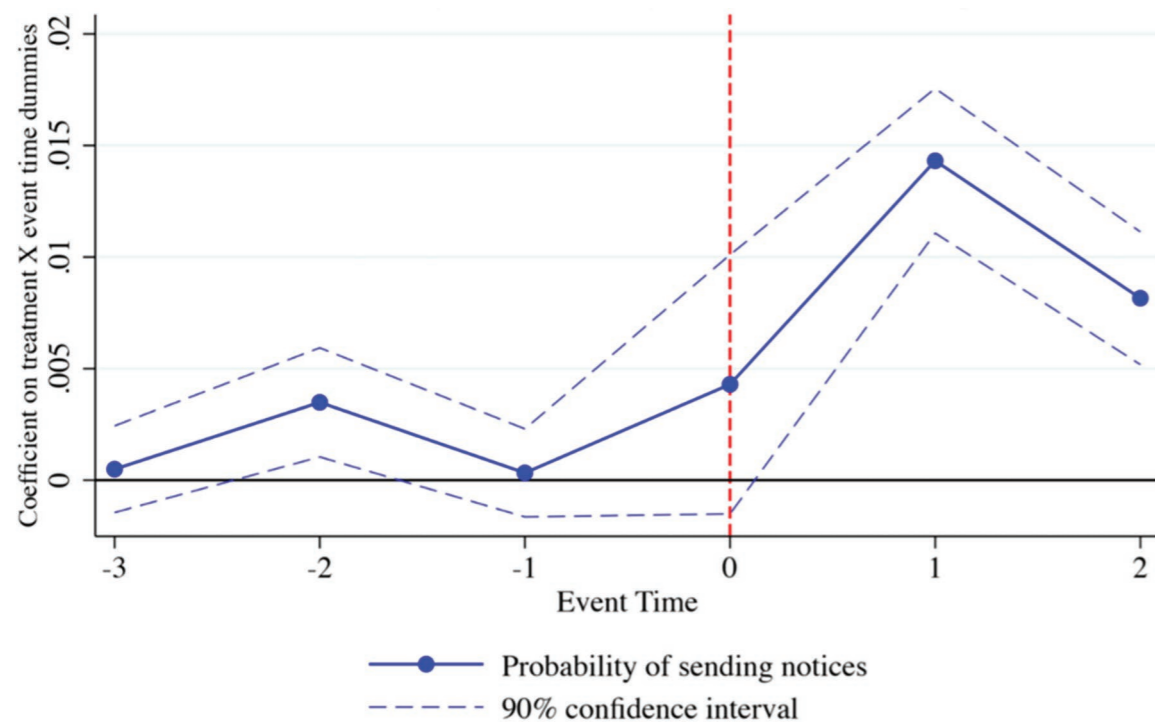
That said, the design of the pilot implemented in this project allows us to credibly measure whether the nature of regulator interaction or polluting behavior of plants changed because they were publicly rated. The first outcome we consider is the issuance of “Show-cause Notices”. A show-cause notice is a formal and legally actionable communication from the regulator to a polluting plant, asking them to provide valid explanations for exceeding regulatory standards, failing which legal action including closure notices might be issued.

Figure 7 provides the change in probability of getting a show-cause notice from three years before to two years after being put on the website, relative to the year before being rated as zero. Being rated publicly significantly increases the probability that a plant receives a legally actionable and formal communication from the regulator, relating to the pollution they produce.

The model underlying Figure 7 is an event study specification as in Equation (1). The dependent variable is an indicator variable taking the value one (zero) when a plant receives (does not receive) a show-cause notice in a year. T_i is an indicator variable taking the value 1 for plants randomly assigned to be rated. The variable t measures the number of years since the year of adding the plant to the ratings website, and the regression includes controls for month and industry fixed effects to control for unobservable factors influencing the outcome.

$$y_{it} = \alpha_i + \gamma_m + \sum_{k=-3}^{k=2} T_i \times I[t = k] + \epsilon_{it}$$

Figure 7: Probability of regulator sending a show-cause notice to plants following public listing on Star Rating website



Regulatory interaction with plants is an intermediate step enroute to reducing actual emissions. It is just as important to evaluate whether there is any change in actual pollution from plants, because of being publicly rated. Unfortunately, evidence on this question remains unclear. The Covid-19 pandemic has resulted in widespread industry closures (temporary or permanent) and coincided with the completion of the project duration, ruling out independent survey data collection. The effect of the economic damage from the pandemic on factory operations is also likely to last for an extended period, with associated impacts on pollution that likely dwarf any direct effect of the Star Ratings scheme.

The regulatory testing that underlies the star ratings does provide intermittent data on plant pollution over the last few years. Unfortunately, because of infrequent testing and sampling patterns that are not random, it is difficult to reach precise conclusions with this information alone. Although regulatory testing data is consistent with reductions in pollution, it is not possible to rule out zero impacts either. Therefore, this report offers no conclusions on this question. As the economy slowly returns to normal over the remainder of the year, it is possible that additional data collection including independent survey evidence might enable firmer conclusions on the likely impact of the ratings scheme on factory pollution.



SCALE-UP

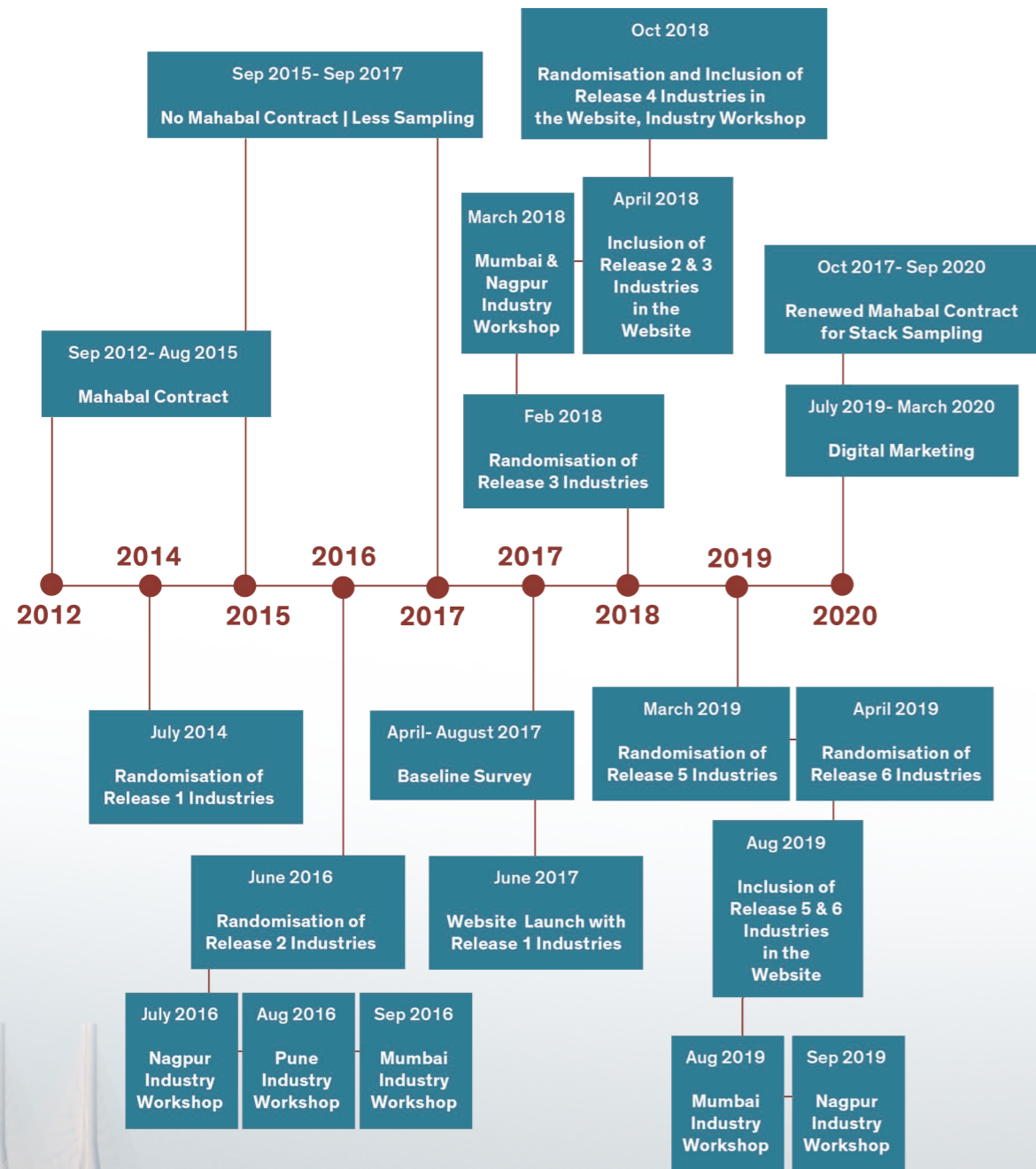
The Star Rating scheme has demonstrated the feasibility of utilizing public disclosure of information on the pollution of industrial plants as a tool for environmental regulation. Based on the positive media coverage received by the Maharashtra pilot, two other states – Odisha and Jharkhand – have launched their own Star Rating Scheme in a bid to cut air pollution. These initiatives are aimed at informing residents and industries and strengthening the regulatory efforts of the PCB’s to reduce pollution.

The Odisha initiative, in a first of its kind utilizes data available from continuous emission monitoring systems (CEMS) in real time to monitor industries and publish industry ratings. To the extent that transparency is a valuable end goal in and of itself, and the release of this data a useful public good, we view this as an important achievement independently of impact on plant emissions.



APPENDIX

INFORMATION DISCLOSURE PILOT TIMELINE



IMPLEMENTATION PHOTOGRAPHS



Hon. CM of Maharashtra at the launch of the scheme on 5 June 2017



Hon. CM of Maharashtra launched the City rating page on the Star rating website on 4 June 2019



Dr. Leni Chaudhuri, Country Director at TCD and Dr. VM Motghare, Joint Director (Air Pollution Control) at MPCB present a star rating report card to industry representatives in Mumbai in August 2019



Dr. VM Motghare, Joint Director (Air Pollution Control) at MPCB presents a star rating report card to industry representatives in Nagpur in September 2019



Chandrapur Feb '18, Nashik Feb '18, Mumbai Feb '18



Nagpur Jan '18, Nagpur Mar '18, Chandrapur Jan '18



Communication and Outreach workshops in Aurangabad (left) and Mumbai (right) in 2019

Outreach workshops in 2018 in the cities - Nashik, Mumbai, Nagpur, and Chandrapur in Maharashtra

Pollution control: State star rates 48 more industries from Vidarbha

■ Koradi, Khaperkheda thermal power stations of Mahagenco, Mouda super thermal power project of NTPC earn five-star rating
 ■ Chandrapur super thermal power station, Ordnance Factory Ambajhari earn four-star rating



Koradi thermal power station is one of the industries that earned a five-star rating.

MAHARASHTRA Government's Star Rating Programme, the first-of-its-kind initiative in India to rate large industrial plants based on their emission levels, has expanded to include 48 more industries from Vidarbha region. The list includes thermal power plants of State-run Maharashtra State Power Generation Company Limited (Mahagenco) and

National Thermal Power Corporation (NTPC), Ordnance Factory Ambajhari, and several private industrial units from Nagpur, Chandrapur, Bhandara, Akola, and Amravati districts. The five-star rating system gives out one star to the most polluting unit and five stars to the

Chandrapur super thermal station of Mahagenco Ordnance Factory An have earned four-star rating. "The programme has been implemented successfully in seven of the State and so far industries and public have keen and active interest in industries, 11 were two-19 were five-star industries are planning to expand their of industries over a time," said Dr P An Member Secretary, Maharashtra Pollution Control Board in an event that announced expansion of the program Nagpur on Saturday. Representatives of industries also were present on the occasion where they handed over to them their cards containing their 'Star Rating'.

स्टार रेटिंग उलगाडणार प्रदूषणाची पोखोळ!

शिवजीवित प्रदूषणाने कहर केव्यानेतर सर्वेच गाळे खाडवतून जागी झाली आहेत. महाराष्ट्र प्रदूषण नियंत्रण मंडळाने आता सर्वाधिक प्रदूषण करणाऱ्या कारखान्यांची पोखोळी काढण्यासाठी 'स्टार रेटिंग' कार्यक्रम सुरू केला आहे. त्याविषयी...

- प्रतिनिधी

महाराष्ट्र प्रदूषण नियंत्रण मंडळाने 'स्टार रेटिंग' कार्यक्रम अंमलबजावणीसाठी २२,००० औद्योगिक व वाणिज्यिक कारखान्यांची यादी तयार करून सुरुवात केली आहे. यादीत २००० औद्योगिक व वाणिज्यिक कारखान्यांची यादी तयार करण्यात आली आहे. यादीत २००० औद्योगिक व वाणिज्यिक कारखान्यांची यादी तयार करण्यात आली आहे. यादीत २००० औद्योगिक व वाणिज्यिक कारखान्यांची यादी तयार करण्यात आली आहे.



प्रदूषणाने कहर केव्यानेतर सर्वेच गाळे खाडवतून जागी झाली आहेत.

आता, उद्योग क्षेत्र, शिवजीवित क्षेत्र, राज्यातील औद्योगिक क्षेत्रात प्रदूषण नियंत्रण मंडळाने आता सर्वाधिक प्रदूषण करणाऱ्या कारखान्यांची पोखोळी काढण्यासाठी 'स्टार रेटिंग' कार्यक्रम सुरू केला आहे. त्याविषयी...

स्टार रेटिंग वेबसाइट बन रही युवा चंद्रपुर की आवाज

चंद्रपुर की प्रदूषित हवा स्वच्छ करने की मुहिम



अखिर यह कार्यक्रम आवश्यक क्यों

नगराध्यक्ष प्रदूषण नियंत्रण मंडळ का उत्तर देते-ह कार्यक्रम भारत का पहला कार्यक्रम है। जिसमें २० हजार औद्योगिक वायु उत्सर्जकों की जांच की जा रही है। जिसमें २० हजार औद्योगिक वायु उत्सर्जकों की जांच की जा रही है। जिसमें २० हजार औद्योगिक वायु उत्सर्जकों की जांच की जा रही है। जिसमें २० हजार औद्योगिक वायु उत्सर्जकों की जांच की जा रही है।

चर्चासत्र का मार्गदर्शन प्रदूषण नियंत्रण मंडळ के निदेशकों ने किया। इसमें नगराध्यक्ष, नगर पंचायत के सदस्य, प्रदूषण नियंत्रण मंडळ के निदेशकों ने किया। इसमें नगराध्यक्ष, नगर पंचायत के सदस्य, प्रदूषण नियंत्रण मंडळ के निदेशकों ने किया। इसमें नगराध्यक्ष, नगर पंचायत के सदस्य, प्रदूषण नियंत्रण मंडळ के निदेशकों ने किया।

Pollution control: State star rates 48 more industries from Vidarbha

(Contd from page 1)

Recently, 50 new industries from Mumbai metropolitan region also were added to the 'Star Rating' website.

The Star Rating Programme is the first in the world to be designed to scientifically measure the impact on pollution from industry. This is being done by MPCB in collaboration with researchers from Tata Centre for Development (TCD) and Energy Policy Institute at the University of Chicago's India team (EPIC).



V M Motghare, Joint Director (Air Pollution Control), MPCB; Dr P Anbalagan, Member Secretary of MPCB, and other officials during the meeting held in the city on Saturday.

- Limited, Uttam Value Steel Industries Limited, B S Ispat Limited (formerly known as Lloyd Steel Industries Limited), and Vidarbha Industries Private Limited also have got five-star rating.
- Vasant Sahakari Sakhar Karkhana Limited and Murli Cement Industries Limited, both in Chandrapur district, have got only one star rating each in the list of 48 new units added to the list. The units that have got only two stars are as follows: Reliance Industries Limited, B S Ispat Limited, Bazargaon Paper Mill, Jayswal Neco Limited's another plant, JSW Ispat Steel Limited, Mahu Paper Mill Limited (Unit I and II), Morarji Textile Limited, Rake Power Limited, S R Mohota Spinning and Weaving Mills Limited, Sanjay Rolling and Engineering Limited, and Topworth Urja and Metals Limited. Rest of the industries have got three or four star ratings.

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A unique program highlighting environment issues

While the world is struggling with environmental issues, pollution is one of the major aspects hampering environment. Considering this, Shivaji University has organized various programs for students recently. The program aimed at informing students about the Star Rating Program of Maharashtra Pollution Control board which helps common person to understand the level of pollutants in the air.

The program was organized by Environment science department of Shivaji University in association with the Udyog Sanwad Kendra and Energy Policy Institute of Chicago University. Ishan Chaudhari of Energy policy institute informed students about the Star Rating program and how

लोकामत

हवा होणार अधिक स्वच्छ आणि शुद्ध; 'स्टार रेटिंग प्रोग्राम'

सचिन लुंगसे
 लोकामत न्यूज नेटवर्क

पर्यावरणात्सव

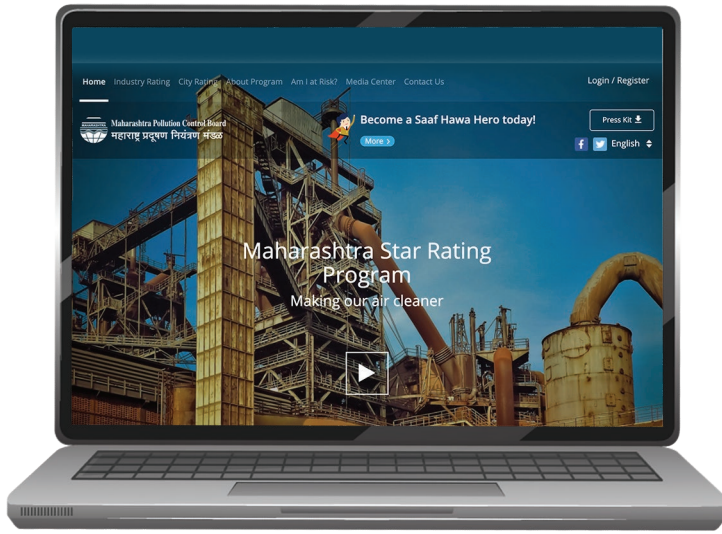
कारणीभूत असतानाच, औद्योगिक प्रदूषणाही तेवढेच जबाबदार आहे. परिणामी, अशा औद्योगिक प्रदूषणाची माहिती घेत, त्याचवेळी योग्य ती कार्यवाही करणे, योग्य त्या सूचना देणे आणि टेकनॉलॉजी मागिते लोकांमध्ये पोहोचण्याचा मार्ग निवडणे महत्त्वाचे असल्याचे आहे. विशेषतः सर्वांना पारदर्शकरीत्या माहिती उपलब्ध असणे, प्रदूषण कमी करण्यासाठी नागरिकांसाठी सहाय्य नोंदवित्ता याबाबत अत्याधुनिक तंत्रज्ञान वापरत प्रदूषण कमी करण्याचा प्रयत्न घ्यावा. वायुप्रदूषणास वातावरणातील धूळ, धूर असे धटक

आपण राहत असलेल्या परिसरातील औद्योगिक वसाहतीतून होत असलेल्या प्रदूषणाची माहितीदेखील नागरिकांना उपलब्ध होत आहे. नागरिकांना सूचना देण्यासाठी, कल्पकतादेखील या माध्यमातून मांडता येत आहेत.

- सुर्वीन तीन महिन्यांत राज्यातील २६ शहरांत नवे ४० एअर क्वालिटी मॉनिटरिंग स्टेशन बसणार.
- राज्यात पुणे, चंद्रपूर आणि औरंगाबाद शहरे अत्यंत प्रदूषित आहेत.
- आपल्या परिसरात कोणता उद्योग सर्वाधिक वायुप्रदूषण करतो; जाणून घ्या!
- आपल्या शहराच्या हवा गुणवत्तेबाबत माहिती घ्या.
- वायुप्रदूषण नियंत्रण मंडळात सहभागी व्हा.
- वायुप्रदूषणाची लहव्यात सहाय्य घ्या.

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