# INDIA'S REAL-TIME ENVIRONMENTAL MONITORING - PHASE 2

**The real-time environmental monitoring is the future of India's Environmental Governance system. The new age technology is using advance, digitalized and sophisticated equipment to replace the conventional laboratory-based pollution monitoring and reporting system. More than INR 5000 crores and tremendous effort have already been invested in last six experiencing years; now time has come for the government to institutionalize it.**

India's environmental compliance check regime now has a new face owing to use of online pollution monitoring and reporting systems. It is not the same conventional system where pollution monitoring in industry was being carried by an external laboratory with a report only made accessible to a handful of people in a few months time. Today, online monitors are the preferred method of pollution monitoring. Such large scale use of online monitoring systems was not thought before February 2014 when it was first mandated in major industries by the central pollution control board (CPCB). These monitors, now, are not only required by large scale industries falling under the CPCB's "17 categories of highly polluting industries" but also in medium and small-scale ones located in the Ganga basin for effluent monitoring as per CPCB requirement. A number of state-level regulatory requirements also demand industry to use real-time monitors such as particulate matter emission trading scheme (PM-ETS) in Gujarat and Star Rating Programme in the state of Odisha, Maharashtra and Jharkhand. Installation of real-time monitors for all Red category industries in Delhi-NCR has also been directed by the national green tribunal (NGT) in the pretext of high-level pollution.

The requirement of these "new-age monitors" has created a huge market in India, so much so that almost all the main technology manufacturers across the world have got their share in the Indian market. At present the approximate size of the Indian market is over INR 5,000 crore which includes installation and maintenance of various types of continuous emission monitors (CEMS), effluent quality monitors (CEQMS), ambient air quality monitors (CAAQMS) and portable equipment for environmental monitoring and testing. The market still continues to grow further.

## Choosing real-time monitoring - Is it worth it?

Significant economic burdens and challenges have come with installing real-time monitoring systems. Therefore, the question often raised is- Is it worth it?  Well - answer is yes; there are multiple aspects to consider.

Poor data credibility and corruption have historically been serious challenges for India's environmental governance. Poor data quality, lack of transparency, non-uniform data reporting, lack of trust between regulator and industries have had a severe impact on suitable policy making and realization of useful environmental initiatives at ground level. Real-time monitoring initiative if implemented properly brings a solution. The last six years have shown good signs - the positive approach towards environmental monitoring has now become a serious function.

Where expanding industrial scale and mounting workloads on environmental regulators have made it tough to watch industries on a regular basis, real-time monitoring gives a helping hand. This system gives real-time remote access of industrial pollution reports and enables regulators to send automatic alarms and instructions to industries without additional manpower and travel requirements. It also helps industry make operations more optimised and efficient. At the same time, it has also been an important tool in taking precautionary and immediate corrective measures to stop unfortunate incidents.

Moreover, using these systems create a good amount of credible data which will assist in effective and practical policy decisions. Like in the USA, China and many other countries, real-time monitoring system can also lead towards a market-based emission control mechanism, popularly known as emission trading scheme. It would be ideal that this new technology guides India's compliance check system towards "self- monitoring" regime in future.

## Real-time monitoring phase 2-crucial

On an average, online monitors have 7-8 years of life or lower without proper maintenance and the constant exposure to harsh environments. In India, monitors are usually exposed to high temperatures, dust, moisture, and corrosive pollutants. Adding to this, lack of skilled manpower and knowledge leads to inadequate maintenance. It has now been more than six years since industries first started the installation of online emission and effluent monitors, time of replacement is almost there. New industries now also need monitors for mandatory pollution monitoring requirements. This phase-2 demand will now add significantly to the existing market and will happen soon after the economic impact of COVID19 episode subsides. Considering existing infrastructure and accessories used in installation, existing long-term maintenance contract and manpower in place, INR 2000-3000 crore new investment is expected in phase-2. Its, therefore, important that mistakes made in phase-1 shall not be repeated and a blue-print for next phase shall be defined beforehand.

## Clear blueprint and time-bound action plan needed

Expectations from real-time monitoring initiative are clear- shifting to a digitalised online regime where credible data collected from industry is used for legal compliance check and developing a sense towards self- monitoring in industry. The goal should be inclusive to boost the development of indigenous manufacturing, capability of certification, testing and auditing of real-time monitoring systems. This Job is difficult and needs a lot of calculated and concerted efforts by all the stakeholders. It is therefore important for the CPCB to take SPCBs, PCCs, industries and relevant parties into confidence and share the responsibilities and liabilities. Using the experience of last six years; it is now time to utilize this investment and effort on the ground. Keeping a clear blueprint in the front and a time-bound action plan needs to be followed.

## Action plan to succeed
### 1. Ready the Legal framework

To bring legal sanctity in the real-time monitoring system, amendments are needed in the Environmental (Protection) Act, 1986, the Water (Prevention and Control of Pollution) Act 1974, and the Air (Prevention and Control of Pollution) Act 1981. The Rule 6 of EPA- "Procedure of taking samples" gives legal sanctity to manual pollution monitoring only, which has to be amended to make provisions to include real-time monitoring into practice. In the same line, section 21 and 22 of the Water Act, 1974 and the section 26 and section 27 of the Air Act, 1981 which talk about manual sampling and reporting of results, need to be modified accordingly.

Without further delay, the CPCB should initiate the amendment processes, keeping a fixed deadline, not beyond 1st January 2022, in focus. This deadline should be notified well in advance to all the state pollution control boards (SPCBs), pollution control

committees (PCCs), industries and other stakeholders so that they can prepare themselves to adopt to the new regulatory system. A consultation meeting before the formalised system comes in effect will be a good guidance drive for all.

## 2. Government must take over the data handling and access

Data carries the highest importance in the real-time monitoring-based compliance check regime. Presently, the data access and handling by private players brings serious concerns being raised by industries, technology manufacturers and state regulators. Users call it is a serious conflict of interest as some private players have access to the industry data which is prone to be used unethically, directly or indirectly. Truly, it could have been acceptable only during trial phase of real-time monitoring, but not now as it is going to be the heart of legal compliance check system. Once the real-time monitoring is legalised, various legal disputes of industrial non-compliance may emerge where data security, credibility and responsibility will become pain in the neck of the regulator.

India has touched new heights in information technology and digitalization, and real-time data handling is just a tiny job. The government is already operating many digital programmes where enormous amount of critical data is being handled successfully, with the help of government entity- the National Informatics Centre (NIC) and other credible and neutral expert players. Its high time that the government takes over and manages the real-time monitoring data like other such programmes. A sensitive and legal system for country's environmental governance must be credible, conflict-free and secured with the government.

## 3. Finalize indigenous certification system

After much delay, the job of a developing indigenous certification system has been awarded to the National Physical Laboratory (NPL) in 2019. Keeping the timeline in mind, the union Ministry of Environment, Forest, and Climate Change (MoEF&CC) and the CPCB must now track the progress and assist the NPL to come-up with a proper certification system . Once the system is put into place it will help to improve quality of indigenous equipment which currently is being produced and used in a very unorganised way. Better quality of locally produced equipment will help in data quality improvement, a more competitive market and a lesser dependency on imports- in line with "Atmanirbhar Bharat" and "Made in India" concept.

## 4. Empanel the capable laboratories

Analytical Environmental laboratories have a crucial role in calibration, testing and performance checks of real-time monitors which are needed as per the CPCB guidelines, but unfortunately, have not been in place till date. The CPCB had come-up with a notice calling for laboratories to get empanelled for real-time monitoring jobs, but it never moved further. Currently, vendors, industry itself or laboratories recognized under the EPA and accredited under the National Accreditation Board for Testing and Calibration (NABL), but not evaluated for real-time monitoring expertise, are doing these jobs. Using Real time data for legal cases may end up in severe disputes related to non-compliance conditions. Therefore, it is important for the government and CPCB to define the procedure and protocol for identification, evaluation, and empanelment of suitable laboratories as early as a certification system is put into place.



Photo: Sanjeev K Kanchan

## 5. Let the industries assess themselves first

Industries have gone through numerous challenges for implementation of real-time monitoring systems. Early challenges were largely superficial in nature such as- incorrect technology selection, incorrect installation, no calibration and maintenance and data tampering much of which has been resolved. New challenges have emerged and in most of industries these are complex and difficult to identify and rectify without sufficient knowledge. These include- non-availability of correct point and position of installation, wrong equipment set-up, no proper calibration and performance checks of equipment, missing data standardization etc. All these end-up in inaccurate data supply which therefore must be rectified.

It will be nearly impossible for the CPCB, SPCBs and PCCs to audit every industry to identify and rectify the problems. The way out is to ask industry to self- assess their installation by plant officials or hired experts and to submit the audit reports and action points to the respective regulators. It will be easier and much quicker to resolve a major proportion of data quality problems, the remaining can be dealt on case to case basis with plants. The CPCB can also identify a group of experts for this purpose.

## 6. Formalise the existing system before any expansion

While the blueprint for environmental monitoring phase-2 rectifies existing data accuracy problems and prepares for legalising the use of real-time data, the government should be wary of extending real-time monitoring into any new industry category. Existing industries have gained more than six years of experience in using this new system; therefore, it would be easier to formalise it with them. Adding new industries before formalising the existing set-up, will only multiply the problems. The experience of a formalised system in the existing industries will guide and encourage systematic transition into new groups.

## 7. Allow performance-based relaxation to industries

The maintenance requirement of real-time monitors such as- daily zero drift test, fortnightly span drift test, calibration in six months and data comparison with reference methods for CEMS. These are crucial for data accuracy but are costly and tedious. Many industries possess high quality equipment which are nicely set-up and maintained; therefore, incidents of drift and other problems are rare. It is, therefore, advisable to recognize such good practices by assessing previous data and allow them to reduce the frequency of unnecessary tests requirements. This will not only save operational cost but will also encourage industries to ensure better operation and maintenance and data quality.

## 8. Not to forget the capacity building requirement

One of the crucial requirements is training and skill development for regulators, industries, manufacturers, and service providers. Where the government needs to mandate minimum man-days of training for government officials, industries should get trained for better performance and compliance record. Adequate knowledge of real-time monitoring system is needed in industries to properly implement the system whereas for pollution control boards, it is must to ensure effective pollution control regulation and guidance to the industries. Since the world is already moving towards more advance real-time technologies and suitable policies for very low-level emission monitoring, air pollution source apportionment, emission monitoring in maritime industry, moving vehicle emission monitoring and predictive emission monitoring, the Indian government must keep these in mind and prepare for future policy and regulatory framework development.

**Author Contact Details**

Sanjeev K. Kanchan, Environmentalist, Research & Advocacy professional
• Email: sanjeevkanchan11@gmail.com • 🐦 @SanjeevKKanchan

Read, Print, Share or Comment on this Article at: envirotech-online.com/article 🇫 🐦 🔗