Position Paper on Comprehensive Environmental Pollution Index (CEPI)

Background information

The Directive Principles of the State Policy of the Indian Constitution provide the State's commitment to protect the environment. The Constitutional provisions have been brought into effect through "regulatory environmental protection laws" exemplified in the umbrella Environment (Protection) Act, 1986 and the more specific Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981.

Section 2 of the Environment Protection Act (EPA), 1986, carries important definitions relevant to this position paper on CEPI:

i. **Environment** *includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property.*

ii. **Environmental pollution** *means the presence in the environment of any environmental pollutant.*

iii. **Environmental pollutant** *means any solid, liquid, or gaseous substance present in such concentration as may be or may tend to be injurious to the environment.*

Read together, it is apparent that the mere presence of a solid, liquid or gaseous substance in the environment does not pollute the environment. Environmental pollution manifests only when such substances are present in such concentration that may be injurious to the environment.

The Ministry of Environment, Forest & Climate Change (MoEF&CC) is responsible for making rules to implement the Environment Protection Act and has adopted industry specific standards for effluent discharge and emissions for the industries (i.e., point source pollution).

i. **Point source pollution**: Any single identifiable source of pollution from which pollutants are discharged, such as a pipe, ditch or factory smokestack. This is highly regulated by the Central and State agencies through the legal/regulatory instruments referred above.

ii. **Non-point source pollution:** Refers to a mix of pollutants present in the ambient environment that originate from diverse sources such as transport,

construction, agriculture, use of fire wood, open drains carrying untreated solid/liquid wastes. etc. In case of non-point source pollution, neither the source nor the quantity of specific emission can be observed/measured with sufficient accuracy. Non-point source pollution is a major source of pollution in India (unlike the western countries). No legal/regulatory instruments monitor and control non-point source pollution in India.

The industries in India have the legal obligations to meet the emission and effluent discharge standards set by the State regulators. The industry's obligation/responsibility is limited to meeting the point source pollution norms/standards. The industry's obligations do not extend to mitigation of pollution from non-point sources.

iii. **Ambient environment pollution** represents a mix of point source pollutants (factories, power plants, etc.) and non-point sources (transport, domestic, agriculture, etc.). Comprehensive Environmental Pollution Index (CEPI) concerns ambient environment pollution.

The table below shows the components of the Comprehensive Environmental Pollution Index (CEPI) scores introduced by the Central Pollution Control Board (CPCB):

CEPI Score Components. Inherent flaws

Components	Particulars	Max Marks/Weightage	Inherent flaws
A	Scale of Industrial Activity	20	Subjective criteria
B	Status of Ambient Env. Quality (Air/Surface Water/Ground Water)	50	Though fairly objective, major limitation is that the samples are collected from ambient environment. Therefore, the measured pollutants do not directly relate to industry emission /effluent release. Remember, the ambient environment pollution is a mix of point source (factories, power plants, etc.) and non-source point pollution (transport, municipal, domestic, etc.). There

			are also apprehensions about the location and the methods used for sampling and accuracy of the analysis.
C	Health related statistics	10	Subjective criteria. Using the number of hospital admissions to give additional weightage to CEPI scores is bad science. Correlation does not imply causation. Most health problems have multiple causes.
D	Compliance status of industries	20	Subjective criteria

Flaws in the factors used for calculating EPI and CEPI

Environmental Pollution Index (EPI) for air, water and land is calculated using **Factors A, B, C and D**.

Factor A includes a component of group B which consist of organic / pollutants / chemicals that are probably carcinogenic (USEPA class 2 and 3) or substances with some systematic toxicity. E.g. VOC's , PAHs, PCBs, air pollutants such as PM10 and PM2.5. The pollutants' load in the samples need not necessarily be due to industrial activities but can be from sources external to the industry.

The increase in Factor A contributes to increase in Factor B too. This means that an increase in a single component – even from external sources-, will significantly push the CEPI score.

Factor C can be due to many other reasons external to industrial activities.

Factor D ignores lack of pollution control facilities for municipal and household wastes.

The CEPI score of an industrial area is based on the Environmental Pollution Index (EPI) that considers both industrial (source point) and non-industrial (non-source point) pollutants.

In the CEPI Score calculation, there is a factor called **A2**. The **A2** is to be taken as **4** in large industrial area; **2.5** in medium industrial area and **1** in small industrial area. Hence irrespective of the factor **A1** (which is based on presence of toxins); any large industrial estate will get the maximum score of 4 under **A2**.

All the large industrial clusters can therefore easily slip into the category of "Critically polluted" due to this multiplication factor.

Even if one EPI exceeds the threshold on the day of measurement, the entire industrial area will be considered critically or severely polluted as empirically explained in the table below.

Sr. no	Industrial Area	EPI (Air)	EPI (Water)	EPI (Land)	CEPI Score*	Classification
1	I	10	20	**70**	**70.6** (Above 70 on account of land EPI)	**Critically Polluted**
2	II	10	**70**	20	**70.6** (Above 70 on account of water EPI)	**Critically Polluted**
3	III	**70**	20	10	**70.6** (Above 70 on account of air EPI)	**Critically Polluted**
4	IV	10	20	**60**	**60.8** (Above 60 on account of land EPI)	**Severely Polluted**
5	V	10	**60**	20	**60.8** (Above 60on account of water EPI)	**Severely Polluted**
6	VI	**60**	20	10	**60.8** (Above 60 on account of air EPI)	**Severely Polluted**

*CEPI Score is calculated as CEPI = i_m + [(100 – i_m) x (i_2/100) x (i_3/100)] where i_m = maximum sub-indices i.e. maximum among all 3 EPI Scores and i_2, i_3 = other two sub-indices i.e. other two EPI scores

There are several fundamental questions concerning the CEPI: -

1. Were there any industry specific (red & orange) standards developed by the CPCB for effluent/emission release in order to sustain the CEPI score at **<60** in the industrial clusters in the country? If yes, was it gazette notified under the statutory powers of Water Act, 1974 and the Air Act, 1981?

2. If the CEPI score in an industrial cluster remains **<60,** does it, by default, indicate that all the manufacturing units functioning therein meet all the applicable source point emission/effluent discharge norms?

3. Is there any scientific study ever conducted to validate the assumption that CEPI score of **<60** is environmentally benign and acceptable as threshold health standards?

4. Is it legally binding on all the individual manufacturing units in an industrial cluster to collectively/collaboratively ensure that the CEPI score does not exceed 60 in their industrial cluster? Is this in addition to meeting the source point emission/effluent discharge of environmental pollutants? Or, *in lieu* of them?

5. Is compliance with CEPI score of **<60** in an industrial cluster recommendatory or mandatory?

6. If mandatory, is there a breach of any statutory/regulatory norm/s when the CEPI score exceeds 60 in an industrial cluster? If yes, what are those statutory/regulatory norms?

7. Does CEPI score of **>60** in an industrial cluster attract Polluter Pay Principle? If yes, who is the polluter in this case? All the production units in the industrial cluster? Or only those individual units that fail to meet the source point effluent/emission standards?

8. In the absence of source apportionment studies, can the entire responsibility for ambient environmental pollutants' load be put on the industrial activities? Do the provisions in the environmental protection statutes such as Water Act, Air Act and EPA permit that?

9. Measurement of criteria pollutants chosen for CEPI are taken from various pathways in the environment (air, water and land). A major limitation of this is that the results are only representative of the sample location. Therefore, these data require a detailed chemical characterization of emission sources before they are considered for any policy dialogue.

10. In the month of February 2018, two private firms (both Govt. recognized) collected environmental samples for CEPI related analysis. One was engaged by the CPCB and another by local industry association in Vapi, Gujarat The Firm engaged by CPCB showed CEPI score as **79.95** whereas the one engaged by the Vapi Industry Association showed the CEPI score as **53.82.** There is a huge difference between the two studies in the observed Environmental Pollution Index (EPI).

11. The CEPI classifies India's industrial areas into three categories as shown below:

Category	CEPI Score
Critically polluted	> 70
Severely Polluted	60-70
Otherwise polluted	0-60

Even when the CEPI score is just 1, the industrial cluster comes under the category of "*otherwise polluted*". This is rather strange, as it completely disregards the definition of the term "environment pollutant" given in the Environmental Protection Act.

Going by this categorization, there is not a single industrial cluster in India that remains non-polluted. The CEPI assigned pollution tag conjures up a bad image of the Indian industry, globally. It acts as a powerful non-tariff barrier against made in India products in the international trade, adversely affecting our exports.

12. There is no correlation whatsoever between the CEPI scores and human health. The average life expectancy is high in highly industrialized states, such as Maharashtra, Gujarat and Tamil Nadu when compared to the industrially backward states such as Odisha, Chhattisgarh and Madhya Pradesh.

	State	No. of Critical and Severely Polluted Industrial Area	Average Life Expectancy (Years)
High Industrialised States	Tamil Nadu	8	71.4
	Gujarat	7	69.5
	Maharashtra	6	72.2
Low Industrialised States	Odisha	2	67.6
	Chhattisgarh	2	65.2
	Madhya Pradesh	1	65.4

Source: NGT Order 10th July 2019 and RBI Handbook of Statistics on Indian States 2019

It is clear, industrial activity leads to economic prosperity and overall improvement in the quality of life.

13. As regards incidence of cancers, it is the North Eastern States where there is poor industrialization, lead the pack. See the table given below:

Rank	Sates	Age Standardized Cancer Rate (per 100,000 population)
1	Mizoram	186.5
2	Meghalaya	153.3
3	Delhi	148.6
4	Arunachal Pradesh	145.9
5	Haryana	139.1
6	Assam	134.4
7	Nagaland	127.1
8	Kerala	125.4
9	Karnataka	123.5
10	Sikkim	123.1

Source: The burden of cancers and their variations across the states of India: The Global Burden of Disease Study 1990-2016 (fig.1, appendix pg. 30), published in Sept. 18

Contrary to popular perception, the least industrialized states in India lead in cancer incidence.

14. The raw data generated while collecting and analyzing ambient environment samples are not available in public domain (with SPCB) for checking their scientific veracity and data integrity. The NABL - accredited laboratories using the government funds generate these data. Stone walling the data goes against the National Data Sharing and Accessibility Policy (NDSAP)- 2012 of the Government of India. The NDSAP applies to all sharable non-sensitive data generated using the government funds by various Ministries/Departments of Government of India as well as the States. Therefore, all the raw data generated during analysis of the environmental samples (air, water and soil) including chromatograms data should be uploaded on the website of the SPCBs.

15. The precision and accuracy of the measurement depends on the skills of the analyst/investigator. We request the CPCB/SPCB to make available to us all the raw data – including chromatograms- generated for developing the CEPI scores submitted to the NGT in the OA 1038/2018.

16. The operative part of the NGT order of 10th July 19 (OA 1038/2019) states, inter alia, the following:

"No further industrial activities or expansion be allowed with regard to red and orange category units till the said areas are brought within the prescribed parameters or till carrying capacity of area is assessed and new units or

expansion is found viable having regard to the carrying capacity of the area and environmental norms"

What are the *"parameters prescribed*" in this regard?

The NGT order implies that SPCBs/PCCs permit industrial clusters be developed without assessing their carrying capacity. This is incorrect.

Does CEPI have force of law?

The CEPI scores have no force of law and effect. The CEPI scores are not laws.

CEPI can at best be considered as a guideline. It is settled in law that guidelines are not binding. They are not enforceable by law and never mandatory.

Guideline is a principle while law is a statute passed by the Parliament and notified by the government.

As the guidelines do not have the force and effect of law, the regulators/authorities cannot take enforcement actions based on the guidelines.

There is no statutory requirement to conform to the CEPI by the individual industries operating from an industrial area. The CEPI scores fail to give any scientifically satisfying reasons to conclude that there is violation of environmental pollution (regulatory) norms by the industries.

There are apprehensions that CEPI conflicts with the laws specifically governing the pollution /emission standards applicable to individual industrial unit.

When the CEPI scores reach **>60** in an industrial area**,** is there any breach of any statutory/regulatory regime?

If an industrial cluster is found to be CEPI compliant (with score **<60**), does it automatically mean that all the industrial units have complied with all the statutory/regulatory emission norms?

Conversely, if the CEPI score exceeds 60 pushing an industrial area into a severely/critically polluted category, can all the industrial units as a whole cannot be regarded as jointly and severally responsible for not complying with emission norms?

By classifying an entire industrial area as Critically Polluted Area (CPA) or Severely Polluted Area (SPA), the CEPI delivers some sort of *ex post facto law* to all the units in an industrial area without identifying the units causing unacceptable pollution.

Using the number of hospital admissions to give additional weightage to the CEPI score is bad science. Correlation does not imply causation. Most health problems have multiple causes. The 18th century Scottish philosopher David Hume pointed out that *the causation is induced logically not observed empirically*.

Polluter pays principle and CEPI

The polluter pays principle requires establishing a strong causal connection between the activity and pollution and between the pollution and damage.

The causation and the causal link must be determined scientifically.

The industries cannot be held responsible for the pollution or damage that they did not cause.

If non-polluting units in an industrial estate are asked to stop or restrict production on account of their being located in a Critically Polluted Area (CPA) or Severely Polluted Area (SPA), it goes counter to the rights guaranteed by Article 19 of the Constitution. CEPI affects substantive rights.

In pollution management, the industries can only be expected to comply with existing regulatory requirements /statutory duties applicable to each production unit. They cannot be held responsible directly or indirectly for pollution from other third-party sources in the neighborhoods.

It is inappropriate to apply the polluter pays principle in a large area/environment that receives pollutants from multiple sources.

A non-polluter or non-contributor to the risk of pollution must never be burdened by the polluter pays principle.

Besides, the polluter pays principle cannot ignore the principle of proportionality-in the event of any confirmed pollution and consequent damage.

CEPI. Correlation and causation confusion.

The CEPI is just a numerical simulation. Based more on assumptions.

The criteria pollutants considered for calculating the CEPI scores do not have sources exclusively attributable to the industrial activities.

Absent source apportionment studies, CEPI scores fail to provide robust scientific basis for any administratively or legally enforceable environmental quality.

Source apportionment helps the stakeholders to understand how much pollution is under their jurisdiction to control.

CEPI is based neither on diagnosis nor prognosis. It is a poor indicator of pollution.

CEPI has algorithm that makes its application inherently flawed and inappropriate for the purpose intended.

Conclusion:

Area based environmental management policies do not work in India for a variety of reasons. Below cited references from two international bodies confirm this;

- ***"Area based environmental management programme approach to environmental regulations has been tried in India since 1991 through different CPCB and SPCB programmes…. They have so far had mixed success mostly due to lack of coordinating efforts targeting industry, municipal and non-point pollution sources."*** observed UNDP in its report Analysis of Existing Environmental Instruments in India (2004).

- ***"Municipal and domestic sources of pollution often pose a greater risk to public health and the health of an ecosystem, due to the large volume of untreated sewage and domestic waste. Hospital waste and air pollution from transport, garbage burning, and even dust from poorly paved roads are other examples of pollution sources that increasingly compromise the effectiveness of pollution control and environmental management efforts by large industries."*** Observed World Bank in its report India: Strengthening Institutions for Sustainable Growth (2006).

These observations from international bodies though do not expressly refer to CEPI, do explain why the CEPI regime is inappropriate in India.

The CEPI is just a numerical simulation. The uncertainties in the parameters considered and other mistaken assumption would make any mathematical model inappropriate for taking regulatory decisions.

The CEPI assessment follows one-size-fits-all approach using misconceived numerical values that comes with built-in structural bias against industrial activities.

The CEPI is not the right tool to assess the pollution load in a location or situation where multiple sources of pollutants are present. Applying the CEPI scores in an industrial area where the environmental receives pollutants from both industrial and non-industrial sources including mobile sources raise the questions regarding burden sharing and equity. In a situation like this it is neither logical nor fair to apply the precautionary principle or polluter pays principle.

The raw data generated while collecting and analyzing ambient environment samples for calculating CEPI scores are not available in public domain for checking their scientific veracity and data integrity.

CEPI is systematically biased against industrial sector in India.

ICC supports robust implementation of existing pollution monitoring and mitigation measures supported by statutes. CEPI is not supported by the statutes.

The manufacturing sector accounts for only **13%** in India's GDP. Surely, this sector cannot be made accountable for **100%** of the environmental pollution – with or without the CEPI.

Curbing industrial activities on the strength of CEPI score is catastrophic. It can subvert our country's ambitious plans to reach **$5 trillion** economy by 2024.

We are confident that the facts and information given in this position paper would enable an informed discussion on the contentious CEPI.

We request the Ministry of Environment, Forest and Climate Change (MoEF&CC) and Central Pollution Control Board (CPCB) to abandon CEPI based assessment completely.

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About Indian Chemical Council (ICC):

ICC an apex trade body for the Indian chemical industry whose size is estimated to be **$150 bn**. India is a net exporter of chemicals - Export: **$48 bn** and Import: **$45 bn** in the FY 2020-21.

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