

**Report of the CPCB In-house Committee on  
Methodology for Assessing Environmental  
Compensation and Action Plan to Utilize the Fund**



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## **Abstract**

Environmental compensation is a policy instrument for the protection of the environment which works on the Polluter Pay Principal. Environmental compensation has already been implemented in various countries, although limited in scope. Experiences from these implementations are mixed and tend to stress the importance of certain principles in order to achieve the overall objective of protection of the environment.

The Hon'ble National Green Tribunal through its various judgments has empowered the Central Pollution Control Board to lay down the methodology to assess and recover compensation for damage to the environment and utilize such amount in terms of an action plan for protection of the environment.

An attempt has been made by the CPCB in-house Committee to develop a methodology for assessing environmental compensation to be levied on concerned industry, authority, individual etc. for the protection of environment. Expert institutions/ NGOs like The Energy and Resources Institute, Centre for Science and Environment-India, Institute of Economic Growth etc. were also consulted to finalize the report. Overall objective is to develop self-sense of responsibility towards the environment and to make defaulters realize their mistake by imposing compensation, which will be utilized for the protection/restoration of the environment.

Although, this is the first attempt in India towards development of methodology for assessing environmental compensation, however, efforts have been made to simplifying the process so that regulatory institutions can easily adopt the methodology for implementation.

# Chapter-I: Environment Compensation to be levied on Industrial Units

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## 1.1 Background

The Hon'ble National Green Tribunal (NGT), Principal Bench in the matter of OA No. 593/2017 (WP (CIVIL) No. 375/2012, Paryavaran Suraksha Samiti & Anr. Vs. Union of India & Ors. directed Central Pollution Control Board (CPCB) that:

*“The CPCB may take penal action for failure, if any, against those accountable for setting up and maintaining STPs, CETPs and ETPs. CPCB may also assess and recover compensation for damage to the environment and said fund may be kept in a separate account and utilized in terms of an action plan for protection of the environment. Such action plan may be prepared by the CPCB within three months” (Annexure-I).*

## 1.2 Constitution of the Committee

In this context, Chairman, CPCB constituted a Committee under the Chairmanship of Shri A. Sudhakar, I/c WQM-I with Shri A. K. Vidyarthi, I/c WQM-II, Shri P. K. Gupta, I/c IPC-VI, Shri Nazimuddin I/c IPC-II and Dr. S. K. Paliwal, Scientist 'D' as members. The Committee was asked to deliberate on this issue and come up with a draft formulation before 15.9.2018.

## 1.3 Methodology for Assessing Environmental Compensation

The Committee discussed the issue on 4.9.2018, 13.9.2018, 17.9.2018 and 09.10.2018. A meeting was also held with Senior Officers of CPCB Head Office and Regional Directorates through video conferencing on 28.09.2018 to discuss the draft report and to seek comments/feedbacks. The comments/feedbacks received and deliberations of the Committee on the same are given in **Annexure-II**.

As per the Hon'ble NGT suggestion, CPCB has invited comments of 3 expert institution, namely, Centre for Science and Environment (CSE), Institute of Economic Growth (IEG) and The Energy Research Institute (TERI). A meeting to incorporate the comments of the expert institutions and to finalize the report, was held on 27/03/2019. The CPCB in-house committee on Environmental Compensation has deliberated on the comments and finalized the report accordingly. The Committee's deliberations are attached as **Annexure-III**.

It was deliberated for developing a formula for imposing environmental compensation on industrial units for violation of directions issued by regulatory bodies and this is the first attempt made. The committee discussed that environmental compensation should be based on "Polluter Pay Principle". The Committee decided to list the instances for taking cognizance of cases fit for violation and levy environmental compensation.

### Cases considered for levying Environmental Compensation (EC):

- a) Discharges in violation of consent conditions, mainly prescribed standards / consent limits.
- b) Not complying with the directions issued, such as direction for closure due to non-installation of OCEMS, non-adherence to the action plans submitted etc.
- c) Intentional avoidance of data submission or data manipulation by tampering the Online Continuous Emission / Effluent Monitoring systems.
- d) Accidental discharges lasting for short durations resulting into damage to the environment.
- e) Intentional discharges to the environment -- land, water and air resulting into acute injury or damage to the environment.
- f) Injection of treated/partially treated/ untreated effluents to ground water.

**1.3.1** In the instances as mentioned at *a, b and c* above, Pollution Index may be used as a basis to levy the Environmental Compensation. CPCB has published guidelines for categorization of industries into Red, Orange, Green and White based on concept of Pollution Index (PI). The Pollution Index is arrived after considering quantity & quality of emissions/ effluents generated, types of hazardous wastes generated and consumption of resources. Pollution Index of an industrial sector is a numerical number in the range of 0 to 100 and can be represented as follows:

$$PI = f(\text{Water Pollution Score, Air Pollution Score \& HW Generation Score})$$

*Pollution Index* is a number from 0 to 100 and increasing value of PI denotes the increasing degree of pollution *hazard from the industrial sector*.

CPCB has issued directions to all SPCBs/PCCs on 07.03.2016 to adopt the methodology and follow guidelines prepared by CPCB for categorization of industrial sectors into Red, Orange, Green and White.

The concept of Pollution Index, which was deliberated widely with all stakeholders and agreed, shall be used for calculating Environmental Compensation. This may help in implementation of such provision throughout the country, a successful initiative in vital field of industrial pollution control.

After considering various factors including the policy implementation issues, Committee has come up with following formula for levying the Environmental Compensation in instances as mentioned at *a, b and c* including non-compliance of the environmental standards / violation of directions.

The Environmental Compensation shall be based on the following formula:

$$EC = PI \times N \times R \times S \times LF$$

Where,

EC is Environmental Compensation in ₹

PI = Pollution Index of industrial sector

N = Number of days of violation took place

R = A factor in Rupees (₹) for EC

S = Factor for scale of operation

LF = Location factor

The formula incorporates the anticipated severity of environmental pollution in terms of Pollution Index, duration of violation in terms of number of days, scale of operation in terms of micro & small/medium/large industry and location in terms of proximity to the large habitations.

Note:

- a. The industrial sectors have been categorized into Red, Orange and Green, based on their Pollution Index in the range of 60 to 100, 41 to 59 and 21 to 40, respectively. It was suggested that the average pollution index of 80, 50 and 30 may be taken for calculating the Environmental Compensation for Red, Orange and Green categories of industries, respectively.
- b. N, number of days for which violation took place is the period between the day of violation observed/due date of direction's compliance and the day of compliance verified by CPCB/SPCB/PCC.
- c. R is a factor in Rupees, which may be a minimum of 100 and maximum of 500. It is suggested to consider R as 250, as the Environmental Compensation in cases of violation.
- d. S could be based on small/medium/large industry categorization, which may be 0.5 for micro or small, 1.0 for medium and 1.5 for large units.
- e. LF, could be based on population of the city/town and location of the industrial unit. For the industrial unit located within municipal boundary or up to 10 km distance from the municipal boundary of the city/town, following factors (LF) may be used:

**Table No. 1.1: Location Factor Values**

S. No.	Population* (million)	Location Factor# (LF)
1	1 to <5	1.25
2	5 to <10	1.5
3	10 and above	2.0

*\*Population of the city/town as per the latest Census of India*

*#LF will be 1.0 in case unit is located >10km from municipal boundary*

*LF is presumed as 1 for city/town having population less than one million.*

For notified Ecologically Sensitive areas, for beginning, LF may be assumed as 2.0. However, for critically Polluted Areas, LF may be explored in future.

- f. In any case, minimum Environmental Compensation shall be ₹ 5000/day.
- g. In order to include deterrent effect for repeated violations, EC may be increased on exponential basis, i.e. by 2 times on 1<sup>st</sup> repetition, 4 times on 2<sup>nd</sup> repetition and 8 times on further repetitions.
- h. If the operations of the industry are inevitable and violator continues its operations beyond 3 months then for deterrent compensation, EC may be increased by 2, 4 and 8 times for 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> quarter, respectively. Even if the operations are inevitable beyond 12 months, violator will not be allowed to operate.
- i. Besides EC, industry may be prosecuted or closure directions may be issued, whenever required.

A sample calculation for Environmental Compensation (without deterrent factor) is given at Table No. 1.2. It can be noticed that for all instances, EC for Red, Orange and Green category of industries varies from 3,750 to 60,000 ₹/day.

**Table No. 1.2: A sample calculation for Environmental Compensation**

<b>Industrial Category</b>	<b>Red</b>	<b>Orange</b>	<b>Green</b>
<b>Pollution Index (PI)</b>	60-100	41-59	21-40
<b>Average PI</b>	80	50	30
<b>R-Factor</b>	250		
<b>S-Factor</b>	0.5-1.5		
<b>L-Factor</b>	1.00-2.00		
<b>Environmental Compensation (₹/day)</b>	<b>10,000-60,000</b>	<b>6,250-37,500</b>	<b>5,000-22,500</b>

**1.3.2** In other instances i.e. *d, e and f*, the environmental compensation may contain two parts – one requires providing immediate relief and other long-term measures such as remediation. In all these cases, detailed investigations are required from expert institutions/organizations based on which environmental compensation will be decided. CPCB shall list the expert institutions for this purpose.

In such cases, comprehensive plan for remediation of environmental pollution may be prepared and executed under the supervision of a committee with representatives of SPCB, CPCB and expert institutions/organizations.

#### **1.4 Action Plan for Utilization of Environmental Compensation Fund**

The Committee discussed about the utilization of funds, which will be received by imposing Environmental Compensation. The following Action Plan is proposed to utilize the fund for protection of the environment.

#### **1.4.1. When Environmental Compensation is calculated through the Pollution Index:**

The amount received by imposing the Environmental Compensation to the industries / organization non-complying with the environmental standards / violating any CPCB's directions shall be deposited in a separate bank account. The amount accumulated will be utilized for Protection of Environment. The following schemes were identified, which may be considered for utilization of Environmental Compensation Fund:

- a. Industrial Inspections for compliance verification
- b. Installation of Continuous water quality monitoring stations / Continuous ambient air quality monitoring stations for strengthening of existing monitoring network
- c. Preparation of Comprehensive Industry Documents on Industrial Sectors / clean technology
- d. Investigations of environmental damages, preparation of DPRs
- e. Remediation of contaminated sites
- f. Infrastructure augmentation of Urban Local Bodies (ULBs) /capacity building of SPCBs/PCCs

The above proposed list may include other schemes also, depending upon the requirement.

Considering the availability of accumulated funds, CPCB will finalize the scheme, keeping in mind the priority, to utilize the funds of Environmental Compensation.

#### **1.4.2. When Environmental Compensation is assessed based on actual damage to the environment by Expert Organization/ Agency:**

The amount of Environmental Compensation under this case will be remediation costs, measures requiring immediate and short-term actions, compensation towards loss of ecology, etc., and will be utilized exclusively for the purpose at specific site, based on the detailed investigations by the Expert Organizations/ agencies.

### **1.5 Recommendations**

The Committee made following recommendations:

- 1.5.1 To begin with, Environmental Compensation may be levied by CPCB only when CPCB has issued the directions under the Environment (Protection) Act, 1986. In case of a, b and c, Environmental Compensation may be calculated based on the formula "EC = PI x N x R x S x LF", wherein, PI may be taken as 80, 50 and 30 for red, orange and green category of industries, respectively, and R may be taken as 250. S and LF may be taken as prescribed in the preceding paragraphs.

- 1.5.2 In case of d, e and f, the Environmental Compensation may be levied based on the detailed investigations by Expert Institutions/Organizations.
- 1.5.3 The Hon'ble Supreme Court in its order dated 22.02.2017 in the matter of Paryavaran Suraksha Samiti and another v/s Union of India and others (Writ Petition (Civil) No. 375 of 2012), directed that all running industrial units which require "consent to operate" from concerned State Pollution Control Board, have a primary effluent treatment plant in place. Therefore, no industry requiring ETP, shall be allowed to operate without ETP.
- 1.5.4 EC is not a substitute for taking actions under EP Act, Water Act or Air Act. In fact, units found polluting should be closed/prosecuted as per the Acts and Rules.

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## Chapter-II: Environmental Compensation to be levied on all violations of Graded Response Action Plan (GRAP) in NCR.

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### 2.1 Background

The CPCB In-house Committee also discussed that the EC shall also be levied on all violations of Graded Response Action Plan (GRAP) in NCR. The implementing agencies for each activity have been identified and the EC will be levied on these agencies. These violations attract graded amounts of EC depending on the state of ambient air quality, which is given in table below:

**Table No. 2.1: Environmental Compensation to be levied on all violations of Graded Response Action Plan (GRAP) in Delhi-NCR.**

Activity	State Of Air Quality	Environmental Compensation ( )
<b>Industrial Emissions</b>	Severe +/-Emergency	Rs 1.0 Crore
	Severe	Rs 50 Lakh
	Very Poor	Rs 25 Lakh
	Moderate to Poor	Rs 10 Lakh
<b>Vapour Recovery System (VRS) at Outlets of Oil Companies</b>		
<b>i. Not installed</b>	Target Date	Rs 1.0 Crore
<b>ii. Non-functional</b>	Very poor to Severe +	Rs 50.0 Lakh
	Moderate to Poor	Rs 25.0 Lakh
<b>Construction sites (Offending plot more than 20,000 Sq.m.)</b>	Severe +/-Emergency	Rs 1.0 Crore
	Severe	Rs 50 Lakh
	Very Poor	Rs 25 Lakh
	Moderate to Poor	Rs 10 Lakh
<b>Solid waste/ garbage dumping in Industrial Estates</b>	Very poor to Severe +	Rs 25.0 Lakh
	Moderate to Poor	Rs 10.0 Lakh
<b>Failure to water sprinkling on unpaved roads</b>		
<b>a) Hot-spots</b>	Very poor to Severe +	Rs 25.0 Lakh
<b>b) Other than Hot-spots</b>	Very poor to Severe +	Rs 10.0 Lakh

### 2.2 Action Plan for Utilization of Environmental Compensation Fund

EC levied on all violations of Graded Response Action Plan (GRAP) in Delhi NCR will be deposited in the same fund and will be utilized in the same manner as mentioned in para 1.4.1 of Chapter-I of this report.

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## **Chapter-III: Environmental Compensation to be levied in case of failure of preventing the pollutants being discharged in water bodies and failure to implement waste management rules**

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### **3.1 Background**

The Hon'ble Supreme Court in its order dated 22.02.2017 in the matter of Paryavaran Suraksha Samiti and another v/s Union of India and others (Writ Petition (Civil) No. 375 of 2012), directed State Governments (including the concerned Union Territories) to set-up Sewage Treatment Plants (STPs), which are already under implementation, within the time lines already postulated. Further, the STPs, which are yet to set-up, to be completed within a period of three years, from today, i.e. by 22.02.2020.

The Hon'ble NGT in its order dated 06.12.2018 (**Annexure-III**) in the matter of Court of its own motion v/s State of Karnataka (Original Application No. 125/2017 and M.A. No. 1337/2018) has given following directions:

*“Since failure of preventing the pollutants being discharged in water bodies (including lakes) and failure to implement solid and other waste management rules are too frequent and widespread, the CPCB must lay down specific guidelines to deal with the same, throughout India, including the scale of compensation to be recovered from different individuals/authorities, in addition to or as alternative to prosecution. The scale may have slabs, depending on extent of pollution caused, economic viability, etc. Deterrent effect for repeated wrongs may also be provided.”*

### **3.2 Ideology of Environmental Compensation Formula**

In compliance of the directions of the Hon'ble Tribunal, the Committee deliberated on the issue of environmental compensation to be recovered from individuals/authorities in case of failure of preventing the pollutants being discharged in water bodies and failure to implement solid and other waste management rules. The Committee has suggested that environmental compensation in these cases should be comprised of two components i.e.

1. Cost saved/benefits achieved by the concerned individual/authority by not having proper waste/sewage management system; and
2. Cost to the environment (environmental externality) due to untreated/partially treated waste/sewage because of insufficient capacity of waste/sewage management/treatment facility.

Cost saved/benefits achieved by not having proper waste/sewage management system includes the interest on capital cost of the waste/sewage management facility and daily operation and maintenance (O&M) cost associated with the facility.

The Committee suggested that annual interest rate as 10% on loan amount, borrowed by concerned individual/authority for setting-up waste/sewage management facility, may be assumed as Capital Cost Factor for calculation of environment compensation. Further, as whole O&M cost is saved by concerned individual/authority for not managing required waste/sewage management system, 100% of the O&M cost saved may be considered as O&M cost factor.

Therefore, generalized formula for Environmental Compensation may be described as:

$$EC = \text{Capital Cost Factor} \times \text{Marginal Average Capital Cost for Establishment of Waste or Sewage Management or Treatment Facility} \times (\text{Waste or Sewage Management or Treatment Capacity Gap}) + \text{O\&M Cost Factor} \times \text{Marginal Average O\&M Cost} \times (\text{Waste or Sewage Management or Treatment Capacity Gap}) \times \text{No. of Days for which facility was not available} + \text{Environmental Externality}$$

Cost to the environment due to untreated/partially treated waste/sewage discharge by concerned individual/authority may be assumed as recommended by the committee, which is mentioned below:

**Table No. 3.1: Environmental externality for untreated/partially treated sewage discharge**

Sewage Treatment Capacity Gap (MLD)	Marginal Cost of Environmental Externality (Rs. per MLD/day)	Minimum and Maximum value of Environmental Externality recommended by the Committee (Lacs Rs. Per Day)
Up to 200	75	Min. 0.05, Max. 0.10
201-500	85	Min. 0.25, Max. 0.35
501 and above	90	Min. 0.60, Max. 0.80

**Table No. 3.2: Environmental externality for improper municipal solid waste management**

Municipal Solid Waste Management Capacity Gap (TPD)	Marginal Cost of Environmental Externality (Rs. per ton per day)	Minimum and Maximum value of Environmental Externality recommended by the Committee (Lacs Rs. Per Day)
Up to 200	15	Min. 0.01, Max. 0.05
201-500	30	Min. 0.10, Max. 0.15
501-1000	35	Min. 0.25, Max. 0.35
1001-2000	40	Min. 0.50, Max. 0.60
Above 2000		Max. 0.80

The Committee further decided to fix a cap for minimum and maximum cost for capital and O&M component for Environmental Compensation, which are given in below tables:

**Table No. 3.3: Minimum and Maximum EC to be levied for untreated/partially treated sewage discharge**

Class of the City/Town	Mega-City	Million-plus City	Class-I City/Town and others
Minimum and Maximum values of EC (Total Capital Cost Component) recommended by the Committee (Lacs Rs.)	Min. 2000 Max. 20000	Min. 1000 Max. 10000	Min. 100 Max. 1000
Minimum and Maximum values of EC (O&M Cost Component) recommended by the Committee (Lacs Rs./day)	Min. 2 Max. 20	Min. 1 Max. 10	Min. 0.5 Max. 5

**Table No. 3.4: Minimum and Maximum EC to be levied for improper municipal solid waste management**

Class of the City/Town	Mega-City	Million-plus City	Class-I City/Town and others
Minimum and Maximum values of EC (Capital Cost Component) recommended by the Committee (Lacs Rs.)	Min. 1000 Max. 10000	Min. 500 Max. 5000	Min. 100 Max. 1000
Minimum and Maximum values of EC (O&M Cost Component) recommended by the Committee (Lacs Rs./day)	Min. 1.0 Max. 10.0	Min. 0.5 Max. 5.0	Min. 0.1 Max. 1.0

The application of formula for calculation of EC may be further understood with the example of two typical cases.

### **3.3 Environment Compensation for Discharge of Untreated/Partially Treated Sewage by Concerned Individual/Authority:**

BIS IS-1172:1993 suggests that for communities with population above 100,000, minimum of 150 to 200 lpcd of water demand is to be supplied. Further, 85% of return rate (CPHEEO Manual on Sewerage and Sewage Treatment Systems, 2013), may be considered for calculation of total sewage generation in a city. CPCB Report on “Performance evaluation of sewage treatment plants under NRCD, 2013”, describes that the capital cost for 1 MLD STP ranges from 0.63 Cr. to 3 Cr. and O&M cost is around Rs. 30,000 per month. After detail deliberations, the Committee suggested to assume capital cost for STPs as Rs. 1.75 Cr/MLD (marginal average cost). Further, expected cost for conveyance system is assumed as Rs. 5.55 Cr./MLD (marginal average cost) and annual O&M cost as 10% of the combined capital cost. Population of the city may be taken as per the latest Census of India. Based on these assumptions, Environmental Compensation to be levied on concerned ULB may be calculated with the following formula:

***EC= Capital Cost Factor x [Marginal Average Capital Cost for Treatment Facility x (Total Generation-Installed Capacity) + Marginal Average Capital Cost for Conveyance Facility x (Total Generation -Operational Capacity)] + O&M Cost Factor x Marginal Average O&M Cost x (Total Generation- Operational Capacity) x No. of Days for which facility was not available + Environmental Externality x No. of Days for which facility was not available***

*Alternatively;*

**EC (Lacs Rs.) = [17.5(Total Sewage Generation – Installed Treatment Capacity) + 55.5(Total Sewage Generation-Operational Capacity)] + 0.2(Sewage Generation-Operational Capacity) x N + Marginal Cost of Environmental Externality x (Total Sewage Generation-Operational Capacity) x N**

*Where; N= Number of days from the date of direction of CPCB/SPCB/PCC till the required capacity systems are provided by the concerned authority*

*Quantity of Sewage is in MLD*

**Table No. 3.5: Sample calculation for EC to be levied for discharge of untreated/partial treated Sewage**

<b>City</b>	<b>Delhi</b>	<b>Agra</b>	<b>Gurugram</b>	<b>Ambala</b>
<b>Population (2011)</b>	1,63,49,831	17,60,285	8,76,969	5,00,774
<b>Class</b>	Mega-City	Million-plus City	Class-I Town	Class-I Town
<b>Sewage Generation (MLD) (as per the latest data available with CPCB)</b>	4195	381	486	37
<b>Installed Treatment Capacity (MLD) (as per the latest data available with CPCB)</b>	2500	220	404	45.5
<b>Operational Capacity (MLD) (as per the latest data available with CPCB)</b>	1900	140	300	24.5
<b>Treatment Capacity Gap (MLD)</b>	2295	241	186	12.5
<b>Calculated EC (capital cost component for STPs) in Lacs Rs.</b>	29662.50	2817.50	1435.00	0.00
<b>Calculated EC (capital cost component for Conveyance System) in Lacs. Rs.</b>	127372.50	13375.50	10323.00	693.75
<b>Calculated EC (Total capital cost component) in Lacs Rs.</b>	157035.00	16193.00	11758.00	693.75
<b>Minimum and Maximum values of EC (Total Capital Cost Component) recommended by the Committee (Lacs Rs.)</b>	Min. 2000 Max. 20000	Min. 1000 Max. 10000	Min. 100 Max. 1000	Min. 100 Max. 1000
<b>Final EC (Total Capital Cost Component) in Lacs Rs.</b>	<b>20000.00</b>	<b>10000.00</b>	<b>1000.00</b>	<b>693.75</b>
<b>Calculated EC (O&amp;M Component in Lacs Rs./day)</b>	459.00	48.20	37.20	2.50
<b>Minimum and Maximum values of EC (O&amp;M Cost Component) recommended by the Committee (Lacs Rs./day)</b>	Min. 2 Max. 20	Min. 1 Max. 10	Min. 0.5 Max. 5	Min. 0.5 Max. 5
<b>Final EC (O&amp;M Component) in Lacs. Rs./Day</b>	<b>20.00</b>	<b>10.00</b>	<b>5.00</b>	<b>2.50</b>
<b>Calculated Environmental Externality (Lacs Rs .Per Day)</b>	2.0655	0.2049	0.1395	0.0094
<b>Minimum and Maximum value of Environmental Externality recommended by the Committee (Lacs Rs. Per Day)</b>	Min. 0.60 Max. 0.80	Min. 0.25 Max. 0.35	Min. 0.05 Max. 0.10	Min. 0.05 Max. 0.10
<b>Final Environmental Externality (Lacs Rs. Per day)</b>	<b>0.80</b>	<b>0.25</b>	<b>0.10</b>	<b>0.05</b>

### **3.4 Environment Compensation to be Levied on Concerned Individual/Authority for Improper Solid Waste Management:**

It is known that estimated MSW generation is approximately 1.5 lakh MT/Day in India (MoHUA Report-2016). As per the principles of SWM Rules, 2016 and PWM Rules 2016, as amended in 2018, the total cost of Municipal Solid Waste management in a city/town includes cost for door to door collection, cost of segregation at source, cost for transportation in segregated manner, cost for processing of MSW and disposal through facility like composting, biomethanation, recycling, co-processing in cement kilns etc.

In view of above, it is estimated that the total cost of processing and treatment of MSW for a city having population size of 1 lakh and generating approximately 50 tons/day of MSW is Rs.15.5 Crores, including capital cost (one time) and O & M cost for one year. The expenditure for subsequent years would be only Rs. 3.5 crores/annum.

CPCB sponsored a survey to ascertain the status of municipal solid waste disposal in 59 cities/towns of India. The survey was conducted by the Environment Protection Training Research Institute (EPTRI), Hyderabad. As per the survey, it is estimated that solid waste generated in small, medium and large cities and towns is about 0.1 kg (Class-III), 0.3-0.4 kg (Class-II) and 0.5 kg (Class-I) per capita per day respectively. The committee opined that 0.6 kg/day, 0.5 kg/day and 0.4 kg/day per capita waste generation may be assumed for mega-cities, million-plus UAs/towns and Class-I UA/Towns respectively for calculation of environmental compensation purposes. Based on these assumptions, Environmental Compensation to be levied on concerned ULB may be calculated with the following formula:

**EC = Capital Cost Factor x Marginal Average Cost for Waste Management x (Per day waste generation-Per day waste disposed as per the Rules) + O&M Cost Factor x Marginal Average O&M Cost x (Per day waste generation-Per day waste disposed as per the Rules) x Number of days violation took place + Environmental Externality x N**

Where;

Waste Quantity in tons per day (TPD)

N= Number of days from the date of direction of CPCB/SPCB/PCC till the required capacity systems are provided by the concerned authority

Simplifying;

**EC (Lacs Rs.) = 2.4(Waste Generation - Waste Disposed as per the Rules) +0.02 (Waste Generation - Waste Disposed as per the Rules) x N + Marginal Cost of Environmental Externality x (Waste Generation - Waste Disposed as per the Rules) x N**

**Table No. 3.6: Sample calculation for EC to be levied for improper management of Municipal Solid Waste**

City	Delhi	Agra	Gurugram	Ambala
Population (2011)	1,63,49,831	17,60,285	8,76,969	5,00,774
Class	Mega-City	Million-plus City	Class-I Town	Class-I Town
Waste Generation (kg. per person per day)	0.6	0.5	0.4	0.4
Waste Generation (TPD)	9809.90	880.14	350.79	200.31
Waste Disposal as per Rules (TPD) ( <i>assumed as 25% of waste generation for sample calculation</i> )	2452.47	220.04	87.70	50.08
Waste Management Capacity Gap (TPD)	7357.42	660.11	263.09	150.23
Calculated EC (capital cost component) in Lacs. Rs.	17657.82	1584.26	631.42	360.56
Minimum and Maximum values of EC (Capital Cost Component) recommended by the Committee (Lacs Rs.)	Min. 1000 Max. 10000	Min. 500 Max. 5000	Min. 100 Max. 1000	Min. 100 Max. 1000
Final EC (capital cost component) in Lacs. Rs.	<b>10000.00</b>	<b>1584.26</b>	<b>631.42</b>	<b>360.56</b>
Calculated EC (O&M Component) in Lacs. Rs./Day	147.15	13.20	5.26	3.00
Minimum and Maximum values of EC (O&M Cost Component) recommended by the Committee (Lacs Rs./Day)	Min. 1.0 Max. 10.0	Min. 0.5 Max. 5.0	Min. 0.1 Max. 1.0	Min. 0.1 Max. 1.0
Final EC (O&M Component) in Lacs. Rs./Day	<b>10.00</b>	<b>5.00</b>	<b>1.00</b>	<b>1.00</b>
Calculated Environmental Externality (Lacs Rs. Per Day)	2.58	0.18	0.03	0.02
Minimum and Maximum value of Environmental Externality recommended by the Committee (Lacs Rs. per day)	Max. 0.80	Min. 0.25 Max. 0.35	Min. 0.01 Max. 0.05	Min. 0.01 Max. 0.05
Final Environmental Externality (Lacs Rs. per day)	<b>0.80</b>	<b>0.25</b>	<b>0.03</b>	<b>0.02</b>

### 3.3 Action Plan for Utilization of Environmental Compensation Fund

EC levied in case of failure of preventing the pollutants being discharged in water bodies and failure to implement waste management rules will be deposited in the same fund and will be utilized in the same manner as mentioned in para 1.4.1 of Chapter-I of this report.

### 3.4 Recommendations

1. The Committee recommended that to begin with, Environmental Compensation to be recovered from individuals/authorities in case of failure of preventing the pollutants being discharged in water bodies and failure to implement solid waste management rules may be calculated with the methodology described in the report.
2. If mixing of Bio-medical Waste or Hazardous Waste is found in Municipal Solid Waste than capital cost component of EC may be increased by a multiplication factor of 1.5.

3. In order to include deterrent effect for continuous violations, component of O&M and Environmental Externality in EC formula may be increased on exponential basis by 2, 4, and 8 times after every six-months, beyond the time prescribed by authority for ensuring complete treatment of sewage/waste of the city/town.

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## **Chapter-IV: Environmental Compensation in Case of Illegal Extraction of Ground Water**

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### **4.1 Background**

The Hon'ble National Green Tribunal (NGT), Principal Bench in the matter of Shailesh Singh v/s Central Ground Water Board & Ors. (Original Application No. 327/2018) vide order dated 03/01/2019 (**Annexure-V**) directed Central Pollution Control Board (CPCB) that:

*“CPCB may constitute a mechanism to deal with individual cases of violation of norms, as existed prior to Notification of 12/12/2018, to determine the environment compensation to be recovered or other coercive measures to be taken, including prosecution, for past illegal extraction of ground water, as per law.”*

### **4.2 Constitution of the Committee**

In compliance to Hon'ble NGT dated 03/01/2019, CPCB constituted a committee under the Chairmanship of Shri A. Sudhakar, DH, WQM-I Division with Shri P. K. Gupta, DH, IPC-VI, Shri Vishal Gandhi, Sc. D, UPC-I Division and Smt. Suniti Parashar, Scientist B, WQM-I Division as members. The committee was asked to deliberate on this issue and come up with draft formulation of mechanism to determine the Environmental Compensation for illegal extraction of ground water.

### **4.3 Methodology for Assessing Environmental Compensation**

The committee discussed the issue on 07/02/2019, 07/03/2019 and 20/3/2019. The committee deliberated on the issue of Environmental Compensation to be recovered from individuals/industries such as domestic, packaging drinking water units, mining & infrastructure projects and industrial units in case of illegal extraction of ground water. The Guidelines/Criteria for evaluation of proposals/requests for Ground Water Abstraction, 2015 were also discussed and based on this further formulation to levy Environmental Compensation has been evolved.

### **4.4 Ideology of Environmental Compensation w.r.to illegal extraction of ground water**

Ground water is becoming an increasingly scarce resource because of its unabated and indiscriminate over-exploitation. Growth in ground water exploitation, however, has led to a steep fall in water table in several parts of the country. Use of ground water is becoming unsustainable day by day. The falling water table is a matter of special concern since it tends to reduce the accessibility of the resource to small and marginal farmers due to increase in costs of extractions.

Specific conditions applicable in Notified/Non-Notified areas for various users, as mentioned in Guidelines/Criteria for evaluation of proposals/requests for Ground Water Abstraction, 2015 are given below:

#### **For Notified Areas:**

1. Permission to abstract ground water through any energized means will not be accorded for any purpose other than drinking water.

2. Central Ground Water Authority (CGWA) so far has notified 162 areas, in the country for the purpose of regulation of ground water development.
3. Regulation of Ground Water development in Notified areas is through District Administrative Heads assisted by Advisory Committees under the provisions of Section 4 of the Environment (Protection) Act, 1986.
4. In Notified areas, ground water use in individual houses, infrastructure complexes like group housing societies, hospitals, schools etc. and drinking water requirements of workers in industries can be allowed.
5. NOC for ground water withdrawal will be considered only if Water Supplying Department is not providing adequate water in the area/premises. Proof for this is to be produced from the concerned authority by the applicant.
6. For individual houses, the maximum diameter of the tube-well should be restricted to 4 inch only and the capacity of the pump should not exceed 1HP. For infrastructure projects, maximum diameter of the ground water abstraction structures should be restricted to 150 mm (6 inches) only and capacity of the pump should not exceed 5 HP.
7. Any violation of the above conditions will attract legal action under Section 15 of the Environment (Protection) Act, 1986.

#### **For Non-Notified Areas:**

NOC for ground water withdrawal will be considered for industries/infrastructure/packaging as per safe, semi critical, critical and over-exploited criteria.

#### **4.5 Formula for Environmental Compensation for illegal extraction of ground water**

The committee decided that the formula should be based on water consumption (Pump Yield & Time duration) and rates for imposing Environmental Compensation for violation of illegal abstraction of ground water. The committee has proposed following formula for calculation of Environmental Compensation ( $EC_{GW}$ ):

$EC_{GW}$	=	<b>Water Consumption per Day x No. of Days x Environmental Compensation Rate for illegal extraction of ground water (<math>ECR_{GW}</math>)</b>
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Where water Consumption is in  $m^3/day$  and  $ECR_{GW}$  in  $Rs./m^3$

Yield of the pump varies based on the capacity/power of pump, water head etc. For reference purpose, yield of the pump may be assumed as given in **Annexure-VI**.

Time duration will be the period from which pump is operated illegally.

In case of illegal extraction of ground water, quantity of discharge as per the meter reading or as calculated with assumptions of yield and time may be used for calculation of  $EC_{GW}$ .

#### **4.6 Environmental Compensation Rate ( $ECR_{GW}$ ) for illegal use of Ground Water**

The committee decided that the Environmental Compensation Rate ( $ECR_{GW}$ ) for illegal extraction of ground water should increase with increase in water consumption as well as water scarcity in the area. Further,  $ECR_{GW}$  are kept relaxed for drinking and domestic use as compared to other uses, considering the basic need of human being.

As per CGWB, safe, semi-critical, critical and over-exploited areas are categorized from the ground water resources point of view (CGWB, 2017). List of safe, semi-critical, critical and over-exploited areas are available on the website of CGWB and can be accessed from- <http://cgwa-noc.gov.in/LandingPage/NotifiedAreas/CategorizationOfAssessmentUnits.pdf#ZOOM=150>.

Environmental Compensation Rates ( $EC_{GW}$ ) for illegal use of ground water ( $EC_{GW}$ ) for various purposes such as drinking/domestic use, packaging units, mining and industrial sectors as finalized by the committee are given in tables below:

#### 4.6.1 $EC_{GW}$ for Drinking and Domestic use:

Drinking and Domestic use means uses of ground water in households, institutional activity, hospitals, commercial complexes, townships etc.

Sl. No.	Area Category	Water Consumption ( $m^3/day$ )			
		<2	2 to <5	5 to <25	25 & above
Environmental Compensation Rate ( $EC_{GW}$ ) in Rs./ $m^3$					
1	Safe	4	6	8	10
2	Semi Critical	12	14	16	20
3	Critical	22	24	26	30
4	Over-Exploited	32	34	36	40
<b>Minimum <math>EC_{GW}</math>=Rs 10,000/- (for households) and Rs. 50,000 (for institutional activity, commercial complexes, townships etc.)</b>					

#### 4.6.2 $EC_{GW}$ for Packaged drinking water units:

Sl. No.	Area Category	Water Consumption ( $m^3/day$ )			
		<200	200 to <1000	1000 to <5000	5000 & above
Environmental Compensation Rate ( $EC_{GW}$ ) in Rs./ $m^3$					
1	Safe	12	18	24	30
2	Semi critical	24	36	48	60
3	Critical	36	48	66	90
4	Over-exploited	48	72	96	120
<b>Minimum <math>EC_{GW}</math>=Rs 1,00,000/-</b>					

#### 4.6.3 $EC_{GW}$ for Mining, Infrastructure and Dewatering Projects

Sl. No.	Area Category	Water Consumption ( $m^3/day$ )			
		<200	200 to <1000	1000 to <5000	5000 & above
Environmental Compensation Rate ( $EC_{GW}$ ) in Rs./ $m^3$					
1	Safe	15	21	30	40
2	Semi critical	30	45	60	75
3	Critical	45	60	85	115
4	Over-exploited	60	90	120	150
<b>Minimum <math>EC_{GW}</math>=Rs 1,00,000/-</b>					

#### 4.6.4 ECR<sub>GW</sub> for Industrial Units:

Sl. No.	Area Category	Water Consumption (m <sup>3</sup> /day)			
		<200	200 to <1000	1000 to <5000	5000 & above
		Environmental Compensation Rate (ECR <sub>GW</sub> ) in Rs./m <sup>3</sup>			
1	Safe	20	30	40	50
2	Semi critical	40	60	80	100
3	Critical	60	80	110	150
4	Over-exploited	80	120	160	200
<b>Minimum EC<sub>GW</sub>=Rs 1,00,000/-</b>					

For better understanding of implementation of EC<sub>GW</sub> policy, some example calculations are given below:

##### Example No. 1 (For drinking and domestic Use):

It is observed that a household in safe zone is extracting ground water illegally from past 2 year and 3 months with the help of 1 HP pump, dia 4 inches and head as 25 meter. It is assumed that the house-owner runs the pump for 0.5 hr/day. What Environmental Compensation (EC<sub>GW</sub>) will be charged to the owner?

**Solution:** Pump Yield (Please refer Annexure-VI) = 3 m<sup>3</sup>/hr  
 Daily Consumption = 3 x 0.5 = 1.5 m<sup>3</sup>  
 ECR<sub>GW</sub> = 4 Rs./m<sup>3</sup> (Please refer para 4.6.1)  
 EC to be levied = 4 x 1.5 = 6 Rs./day  
 Total time period = 820 days

Then, EC<sub>GW</sub> = 6 x 820

Calculated EC<sub>GW</sub> = 4,920 Rs.

**EC<sub>GW</sub> to be levied = 10,000 Rs. (minimum prescribed EC<sub>GW</sub>, please refer para 4.6.1)**

##### Example 2 (For Industrial Units):

It is observed that an industry in critical zone is extracting ground water illegally from past 1 year with the help of 5 HP pump, dia 6 inches and head as 50 meter. It is assumed that the industry runs the pump for 3 hrs/day. What Environmental Compensation (EC<sub>GW</sub>) will be charged to the owner?

**Solution:** Pump Yield (Please refer Annexure-VI) = 12 m<sup>3</sup>/hr  
 Daily Consumption = 12 x 3 = 36 m<sup>3</sup>/day  
 ECR<sub>GW</sub> = 60 Rs./m<sup>3</sup> (Please refer para 4.6.4)  
 EC to be levied = 60 x 36 = 2,160 Rs./day  
 Total time period = 365 days

Then, EC<sub>GW</sub> = 2,160 x 365

**EC<sub>GW</sub> = 7,88,400 Rs.**

## 4.7 Relaxation

Central Ground Water Authority (CGWA) reserves to right to relax or interpret these mechanisms in case of any exigency or situation of National strategic importance, as per Guidelines/Criteria for evaluation of proposals/requests for Ground Water Abstraction, 2015.

## 4.8 Recommendations

The committee has given following recommendations:

- The minimum Environmental Compensation for illegal extraction of ground water for domestic purpose will be Rs. 10,000, for institutional/commercial use will be 50,000 and for other uses will be 1,00,000.
- In case of fixation of liability, it always lies with current owner of the premises where illegal extraction is taking place.
- Time duration may be assumed to be one year in case where no evidence for period of installation of bore well could be established.
- For Drinking and Domestic use, where metering is not present but storage tank facility is available, minimum water consumption per day may be assumed as similar to the storage capacity of the tank.
- For industrial ground water use, where metering is not available, water consumption may be assumed as per the consent conditions. Further, where in case industry is operating without consent, water consumption may be calculated based on the plant capacity (on the recommendation of SPCB/PCC, if required). SPCB/PCC may bring the issue of illegal extraction of ground water in industries in to the notice of CGWA for appropriate action by CGWA.
- Authorities assigned for levy EC and taking penal action are listed below:

S. No.	Actions	Authority
1.	To seal the illegal bore-well/tube-well to stop extraction of water and further closure of project	District Collector
2.	To levy EC <sub>GW</sub> as per prescribed method	District Collector, CGWA
3.	To levy EC on water pollution, as per the method prescribed in report of CPCB- "EC on industrial pollution"	CPCB/SPCB/PCC
4.	Prosecution of violator	CGWA under EP Act SPCB/PCC under Air and Water Act

- CGWA may maintain a separate account for collection and utilization of fund, collected through the prescribed methodology in this report.

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**BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI**

**Original Application No. 593/2017  
(W.P. (Civil) No. 375/2012)**

**In the matter of:**

**Paryavaran Suraksha Samiti & Anr.  
Vs.  
Union of India & Ors.**

**CORAM : HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON  
HON'BLE DR. JUSTICE JAWAD RAHIM, JUDICIAL MEMBER  
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER  
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

**Present:** Applicant: Mr. Rohit Prajapati, Applicant in person  
Amicus Curiae: Mr. Jai A. Dehadrai, Adv.  
Respondent Nos. Mr. Nishe Rajan Shonker, Adv. for State of Kerala  
Mr. Tarunvir Singh Khehar, Ms. Guneet Khehar  
Mr. Sandeep Mishra Advs. for GNCTD  
Mr. Anil Shrivastava Mr Rituraj Bswas and  
Ms. Sujaya Bardhan, Advs. for State of Arunachal Pradesh  
Mr. Jogy Scaria, Ms. Beena Victor, Advs. for Kerala State Pollution Control Board  
Mr. Avijit Roy, Adv. for Assam Pollution Control Board  
Mr. Leishangthem Roshmani Kh, Ms. Maibam Babina, Advs. for State of Manipur  
Mr. Nikhil Nayyar, Mr. Dhananjay Bajjal, Advs. for APCCB and TSPCB  
Mr. Mukesh Verma, Adv.  
Mr. Tarunvir Singh Khehar, Adv., Mr. Sandeep Mishra and Ms. Guneet Khehar, Adv.  
Mr. Dinesh Jindal, LO for DPCC  
Ms. Aruna Mathur, Mr. Avneesh Arputham, Ms. Simraj Jeet and Ms. Anuradha Arputham, Advs. for State of Sikkim  
Mr. Raja Chatterjee, Mr. Piyush Sachdev, Ms. Abhinandini Yadav, Advs. and Advs. for State of WB  
Mr. Edward Belho, AAG, Mr. K. Luikang Michael and Ms. Hoinethiam, Advs. for State of Nagaland  
Ms. Enatoli Sema, Adv. for State of Nagaland and Pollution Control Board  
Mr. M. Paikaray and Mr. A.K. Panda, Advs. for SPCCB, Odisha  
Mr. Dhruv Pal, Adv. for State of Gujarat  
Mr. V.K. Shukla, Adv. for State of MP  
Mr. Jayesh Gaurav, Adv. for R-47  
Mr. Tayenjam Momo Singh, Adv. for Meghalaya Pollution Control Board  
Mr. Shlok Chandra and Mr. Ritesh Kumar Sharma, Advs.  
Mr. Gautam Singh and Mr. Shoeb Alam, Advs. for State of Bihar  
Ms. Aprajita Mukherjee, Adv.  
Ms. G. Indira, Adv. for UT of Andaman & Nicobar  
Mr. Balendu Shekhar, Mr. Sriansh Prakash and Mr. Rajkumar Maurya, Advs. for Ministry of Environment, Forest and Climate Change  
Ms. Puja Kalra, Adv. for SDMC & NDMC  
Mr. Anil Grover, AAG, Mr. Rahul Khurana and Mr. Mishal Vij, Advs. for State of Haryana and HSPCB

Ms. Yogmaya Agnihotri, Adv. and Ms. Prity, Adv. for CECB  
 Ms. Sakshi Popli, Adv. for Ministry of Environment, Forest and Climate Change  
 Mr. Shuvodeep Roy, Adv. and Mr. Rituraj Biswas, Adv. for State of Tripura & Tripura Pollution Control Board  
 Mr. Shashank Bajpai and Mr. Shakun S. Shukla, Adv. for State of Odisha  
 Ms. Asha Nayar Basu and Ms. Aradhita Ghosh Mandal, Adv.  
 Ms. Priyanka Sinha, Adv. for State of Jharkhand  
 Mr. Rajul Shrivastav, Adv. for MPPCB  
 Mr. Pradeep Misra and Mr. Daleep Dhyani Adv. for UPPCB  
 Mr. R. Rakesh Sharma and Mr. V. Mowli, Adv. for State of TN & TNPCB  
 Mr. Shubham Bhalla, Adv.  
 Mr. Shiv Mangal Sharma, AAG, Mr. Saurabh Rajpal, Mr. Adhiraj Singh, Ms. Shikha Sandhu and Mr. Vikrmjeet singh, Adv. for State of Rajasthan and Pollution Control Board  
 Mr. G. M. Kawoosa, Adv. for State of J & K  
 Mr. Divya Prakash Pande, Adv. For HPSPCB  
 Mr. Manish Kumar, Adv.

Date and Remarks	Orders of the Tribunal
<p>Item No. 12            August 03, 2018            A</p>	<p>1. This matter was taken by this Tribunal in furtherance to the orders of the Hon'ble Supreme Court dated 22.02.2017 <i>Paryavaran Suraksha Samiti Vs. Union of India</i> (2017) 5 SCC 326, establishment and functioning of ETPs/CETP/STPs.</p> <p>2. Vide order dated 25.05.2017, Notice was issued to Central Pollution Control Board and all the States Pollution Control Boards/Committees and the Ministry of Environment, Forest and Climate Change. They were directed to file status-cum-compliance report in terms of the orders of the Hon'ble Supreme Court. Accordingly, various status reports have been filed. An affidavit has been filed by the Ministry of Environment, Forest and Climate Change dated 04<sup>th</sup> July, 2017 stating as follows:</p> <p style="padding-left: 40px;"><i>"4. That the answering Respondent is engaged in policy formulation, prescribing standards and its implementation through the Central Pollution Control Board (CPCB), State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) for UTs. This Ministry has written to all SPCBs and PCCs as well as to CPCB to ensure compliance of the judgment of the Hon'ble Supreme Court and to submit detailed compliance report.</i></p>

	<p><b>Item No.</b> <b>12</b></p> <p><b>August 03,</b> <b>2018</b> <b>A</b></p>	<p>5. That the CPCB has also followed up with all SPCBs and PCCs through letters and review meetings to ensure compliance of the aforementioned judgment and that the matter was also discussed in the 62<sup>nd</sup> Conference of the Chairmen and Member Secretaries of SPCBs and PCCs held on 27.06.2017. That 26 SPCBs/PCCs have submitted the compliance report, which has been summarized at <b>Annexure-I</b>.</p> <p>6. That the CPCB has also carried out inspections of 17 categories of industries to verify compliance with its directions issued on online effluent/emission monitoring system and to cross-verify online results with manual sampling. During February-June, 2017, 64 industries were inspected and directions under section 5 of the Environment (Protection) Act, 1986 have been issued to 24 non-complying industries; 18 industries were complying; 8 were found closed and inspection reports of 14 industries are under process.</p> <p>7. That the CPCB and NMCG through 11 technical institutions, inspected 751 industries located in the River Ganga main stem during March-April, 2017 to verify the status of installation and connectivity of industries discharging effluents as well as their compliance with the standards. Closure directions have been issued to 154 industries; show cause notices issue to 36 industries; 149 industries were found complying and direction issued to 91 self-closed Grossly Polluting Industries (GPI) to remain closed; 93 GPI units were found closed as per directions; 38 GPI units found operational in violation of closure directions and inspection reports of 190 industries are under process".</p> <p>3. We have heard learned Amicus Curiae Sh. Jai A. Dehadrai and the learned counsel for Ministry of Environment, Forest and Climate Change, Central Pollution Control Board, various State Pollution Control Boards and the Pollution Control Committees.</p> <p>4. Learned Amicus Curiae has drawn our attention to orders dated 04.07.2017, 18.09.2017 and 11.10.2017 of the Tribunal directing the State Pollution Control Boards to file a statement as to how many Industrial Units discharging trade effluents or causing emissions exist in the State, how many are having their own STPs, ETPs and/or connected to Common Effluent Treatment Plant</p>
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	<p><b>Item No.</b> <b>12</b></p> <p><b>August 03,</b> <b>2018</b> <b>A</b></p>	<p>(CETP), whether any such CETP or ETP or STP is properly functioning and treating the effluents as per prescribed limits or not.</p> <p>5. Learned Amicus Curiae submitted that contamination of water due to industrial effluents can lead to various diseases and adverse consequences on the aquatic organism due to decreased level of oxygen. The use of technology can help reduction of adverse consequences. However, the best solution is to prevent pollution by soil conservation and proper disposal of toxics and chemicals which may include chemical recycling.</p> <p>6. Having monitored the matter for the last more than one year on several dates, we are of the view that the matter requires continuous monitoring by statutory authorities as per directions which we proceed to issue today.</p> <p>(i) We direct the Central Pollution Control Board (CPCB) to forthwith prepare an action plan after looking into all the status reports. The action plans must have mechanism to ensure compliance or all the directions in the order of the Hon'ble Supreme Court. To enable this to be done, a Nodal officer must be identified to deal with the issue of CETPs/ETPs/STPs.</p> <p>(ii) A representative of the Ministry of Environment, Forest and Climate Change may be associated with the Nodal Officer of the CETP for monitoring. The Monitoring by the said two officers- the representative of the MoEF and the Nodal Officer of the CPCB must be held atleast once in a month and on the basis of such meeting and the feedback taken further follow up action must be taken and</p>
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	<p><b>Item No. 12</b></p> <p><b>August 03, 2018</b></p> <p><b>A</b></p>	<p>appropriate directions issued. This process may be a continuous process.</p> <p>(iii) It must be ensured that STPs, CETPs and ETPs are functional and meet the requisite standards.</p> <p>(iv) There is already a direction in the above judgment under which 50% of the funds for the purpose are to be provided by the Central Government, 25% by the States and remaining 25% to be arranged by way of loans which is to be re-paid by the user industries. Local bodies and the States have duties as clearly stipulated in the judgment. There has to be online monitoring system by each State to display emission levels in public domain in terms of paragraph 17 of the order of the Hon'ble Supreme Court.</p> <p>(v) A report of the steps taken may be placed on the website of the Central Pollution Control Board atleast once in three months. Deficiencies if any may also be so displayed.</p> <p>(vi) The Central Pollution Control Board may take penal action for failure, if any, against those accountable for setting up and maintaining STPs, CETPs and ETPs. Central Pollution Control Board may also assess and recover compensation for damage to the environment and the said fund be kept in a separate account and utilized in terms of an action plan for protection of the environment. Such action plan may be prepared by the Central Pollution Control Board within three months from today.</p> <p>(vii) A compliance report in terms of the above order may be furnished to this Tribunal within four months from today by e-mail at <a href="mailto:filing.ngt@gmail.com">filing.ngt@gmail.com</a>.</p>
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	<p><b>Item No. 12</b></p> <p><b>August 03, 2018</b></p> <p><b>A</b></p>	<p>(7) Proceedings are disposed of.</p> <p>However, the report received from the Central Pollution Control Board may be placed for consideration before this Tribunal on 04.09.2018.</p> <p>We place on record our appreciation for the services rendered by the learned Amicus Curiae.</p> <p>....., CP (Adarsh Kumar Goel)</p> <p>....., JM (Dr. Jawad Rahim)</p> <p>....., JM (S.P. Wangdi)</p> <p>....., EM (Dr. Nagin Nanda)</p> <p>03.08.2018</p>
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Annexure-II  
Comments Received from Various RDs on Draft Report for Environmental Compensation

S. No.	Item	RD Kolkata	RD Vadodara	RD Bengaluru	RD Lucknow	Committee Deliberations
1	Case- a, b & c	Bypassing of effluent/emission should be given special consideration. EC levied on ROG categories of industries should be on the basis of inspection by CPCB, complaint verification and routine inspection.	Instead of "Compensation", "Penalty" word should be used. In case common facilities like CETPs, factor may be introduced based on member industries. Clarify the applicability of penalty in addition to closure directions for pro-longed and gross non-compliance.			The Committee discussed that the points highlighted by RD Kolkata are already the part of cases fit for violation and levy environmental compensation. However, as mentioned by RD Vadodara, word "Penalty" may be used for case a, b and c. For CETPs, a factor may be considered in future based on the capacity of the plant.
2	Case- d, e & f	Higher rates for irreparable damages crop, soil, health etc. Leakages/spillage should have different compensation value.	It should be mentioned that instances d, e & f shall be dealt for environmental compensation in line with the polluter pays principle, besides of environmental penalty for cases a, b and c.	Similar to 'Guidelines on Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Waste and Penalty', Guidelines may be prepared.		Suggestions made by RD Kolkata and Vadodara has already been taken care. Concept of environmental compensation is based on the philosophy of "polluters pay" and for grievance injury to environment, compensation will be charged as per the assessment of remediation cost, on case to case basis.
3	Pollution Index (PI)			Instead of average PI, Actual PI may be used.		Committee suggested that to make the implementation of EC simple and easy, use of average PI may be considered for calculation of EC.
4	R-factor	Should be based on pollution load. For ex. Amount of BOD/NOx etc. discharged.		May be classified based on the contribution of pollution load based on quantity of effluent, concentration, emissions	May be as per the category of industry, for ex. Red-500, Orange-300, Green-100.	As PI is based on the pollution load, suggestion of RDs are already taken care in the formula.
5	L-factor			May be redefined based on the features, activities involved and habitation.		L-factor may be covered in future as already indicated in the report.

S. No.	Item	RD Kolkata	RD Vadodara	RD Bengaluru	RD Lucknow	Committee Deliberations
6	Defining period of violations for which EC will be levied		Duration of violations needs more clarity.	For industry having OCEMS, no. of days may be counted based on the recorded data.  Industry without OCEMS- based on break down of ETP/APCD, disturbance of power supply or any failure of auxiliary machineries w.r.t. control system.	May be clearly defined as the period between the day of violation observed and the day of compliance verified by CPCB/SPCB/PCC.	The committee agreed that period of violation for which EC may be levied will be the period between the day of violation observed and the day of compliance verified by CPCB/SPCB/PCC.
7	Repeated Violations		Some number of days may be specified after which the penalty amount may get a factor of 1.5 or 2.		Multiplying factor for repeated violations may be included. For ex. 1 <sup>st</sup> Repetition- 25% 2 <sup>nd</sup> Repetition- 50% 3 <sup>rd</sup> Repetition- 100%	For habitual offenders, higher amount of penalty/compensation may be charged in future.
8	Utilization of fund	An environmental damage assessment cell may be created. Expertise in the field may be achieved by involving scientist/engineers and providing them training in country/abroad.	Amount should not be utilized for a) Industrial Inspections for compliance verification, b) Installation of Continuous water quality monitoring stations / Continuous ambient air quality monitoring stations for strengthening of existing monitoring network, c) Preparation of Comprehensive Industry Documents on Industrial Sectors / clean technology f) Funding to financially weaker municipalities for installation of STPs  The amount should be utilized solely for damage assessment, remediation of affected sites, orphan contaminated sites and creating awareness. The purpose should not get inclined towards revenue generation.			RD Vadodara suggested that amount should be utilized only for remediation purpose. However, committee discussed that the proposal for utilization of fund is prepared considering the other aspects (i.e. direct and indirect) for protection of environment, which include research, monitoring etc.  Suggestion of RD Kolkata may be considered in future.

9	Others	Higher EC for non-installation of pollution control measures. Expected sources should have different scoring methodology based on their weightage.	Thus, the functional fabric of CPCB shall remain intact.				The committee discussed that CPCB is already taking appropriate action including closure direction against the industries found operating without pollution control measures.
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### Comments Received from Various Expert Institutions on the Report on Environmental Compensation

As per the Hon'ble NGT suggestion, CPCB has invited comments of 3 expert institution, namely, Centre for Science and Environment (CSE), Institute of Economic Growth (IEG) and The Energy Research Institute (TERI). The CPCB in-house committee on Environmental Compensation has deliberated on the comments and finalized the report accordingly. The Committee's deliberations are summarized in table below:

S. No.	Item	Comments from TERI	Comments of CSE	Comments of IEG	Committee's Deliberations
1	Cases d, e and f	Distinction between categories "a, b, c" and "d, e, f" is not clear. Case specific investigations should be minimized. Proposed cases deals separately with intentional and accidental cases but sometimes they are not easy to establish.	-	Why cases 'e' and 'f' are left for later remediation and study?	There may be a varied damage to the environment as considered in cases 'e' and 'f'. Such damage assessment requires detailed case specific study and remediation measures. Therefore, whenever such case comes into the notice, Environmental Compensation may be levied based on the detailed investigation made by Expert Institutions/Organizations.
2	R-factor	-	R-factor should be Rs. 1,000/day.	Why R-factor is kept as 250, although the value ranges between 100 to 500?	In the Environmental Compensation policy, average value of the R-factor as 250 is recommended, keeping in view both its practicability as well as to make it significantly deterrent, which may be further revised in future.
3	L-factor	-	L-factor should be based on the population density of surroundings, instead of population of the nearby city/town.  For critically polluted areas/ ecologically fragile areas LF should be considered as 2.	For nearby city, having population less than 1 million, the LF is 1. This implies that we care only for populated regions only.  Industries located in critically polluted and ecologically fragile area should be closed down.	Population density for surrounding of industrial units will be complex because it will vary depending on area used in calculation of population density as industrial units are generally away from population.  More weightage is given to the higher population exposure to the risk. In case the industry is located in the city of population less than one million than the LF Factor will be 1.  Depending on the local environmental conditions, the restrictions on expansion and modernization of industries in critically polluted areas are imposed as per the prevailing policy of the Government of India. Similarly, industries in ecologically fragile areas are permitted after careful examination, as per prevailing policy of MoEFCC/SPCB,  The Committee agreed that for notified ecologically fragile areas, LF may be considered as 2. However, LF for critically polluted areas may be explored in future.

S. No.	Item	Comments of CSE	Comments of IEG	Committee's Deliberations
4	<b>S-factor</b>	Classification of industries should be based on profit/turnover basis.	-	Presently industrial units are classified into small, medium and large category (MSME Act, 2006) based on the data of assets/infrastructure available with them. The data for profit/turnover of industrial units are not available with SPCBs/PCCs and S-factor based on profit/turnover will complicate the procedure for calculation of EC. This may be considered in future when SPCBs/PCCs will have such type of data.
5	<b>Level of non-compliance</b>	Pollution Index does not measure the level of pollution. Further, averaging PI eliminates the variation in the nature/ impact of pollution that PI tries to capture. Further, the Red Category itself is too wide and some sort of sub-classification should be undertaken  The rate of the penalty should increase with the period of violation. The penalty should increase exponentially in case of repeated violations. The objective should be that units should choose to shut down operations when violations cannot be brought under control in the specified time.	-	Pollution Index (PI) itself covers the potential of environmental pollution as its calculation considers variation in pollution load.  The industrial sectors have been categorized into Red, Orange and Green, based on their Pollution Index in the range of 60 to 100, 41 to 59 and 21 to 40, respectively. As PI is not available for all the industrial sectors, calculating PI for rest of the sectors will delay the processing. Therefore, for calculating the Environmental Compensation average PI as 80, 50 and 30 may be used for Red, Orange and Green category of industries, respectively.  To keep the formula simple for better implementation, the IV factor may not be considered as there are different environmental parameters such as environmental standards and for each standard calculation of level of violation and its weightage will be a tedious task, which may bring difficulty in implementation of EC concept.  The Committee has agreed that in order to include deterrent effect for repeated violations, EC may be increased on exponential basis, i.e. by 2, 4 and 8 times on each similar violation. Further, if the violator continues its operations beyond 3 months then EC may be increased by 2, 4 and 8 times for 2 <sup>nd</sup> , 3 <sup>rd</sup> and 4 <sup>th</sup> quarter, respectively.  Besides EC, industry may be prosecuted or closure directions may be issued, whenever required.  EC is not a substitute for taking actions under EP Act, Water Act or Air Act. In fact, units found polluting should be closed/prosecuted as per the Acts.  Scheme of infrastructure augmentation of Urban Local Bodies (ULBs) /capacity building of SPCBs/PCCs is already covered in the report  Further, schemes such as incentives to regulators where no violations are observed and incentives to public for reporting violations may be considered separately.
6	<b>Utilization of fund</b>	Funds may be utilized for building monitoring and enforcement capacity of SPCBs and strengthening the pollution compliance especially in the MSME sector.	Incentives to regulators where no violations are observed and incentives to public for reporting violations may be provided.	

S. No.	Item	Comments of CSE	Comments of IEG	Committee's Deliberations
7	GRAP	-	Size of the construction sites more than 20,000 sqm. area are considered for EC. Although, small sites cumulatively impact significantly.  Illegal dumping of municipal solid waste regardless of the place should be penalized.	As per the EIA Notification, 2006, building construction projects more than 20,000 sqm. area are required to have environmental clearance, therefore, the same cut-off is maintained here.  Issue of illegal dumping of municipal solid waste is being covered in separate report of EC.
8	Others: (a)	Severity of violations should be measured in terms of hours of violation because for some pollutants even a few hours of violation can have serious environmental and health consequences. This would require continuous monitoring of stacks, which is not the case presently for most units. Therefore, continuous monitoring should be implemented urgently, to begin with for all red and orange categories.	-	Currently, online continuous effluent/emission monitoring system (OCEMS) is installed in only in 17 categories of highly polluting industries and some other industrial sectors. Further, in current practice the compliance of industries is only verified by physical monitoring and compensation may be imposed based on the manual testing. The idea of measurement of violation on hourly basis may be considered in future, when OCEMS is widely installed and included in policy.
	(b)	CETP should be categorized under Red Category of industries. Some sub-classification should be undertaken under red categories of industries.	-	CETPs are already categorized under Red Category of Industries
	(c)	Based on the spirit behind the proposed charge, it should therefore be called an "environmental penalty" rather than "environmental compensation".	-	The power of imposing "Penalty" lies in the jurisdiction of the Hon'ble Courts and NGT only. The CPCB is empowered to levy environmental compensation by the Hon'ble NGT in its order dated 03.08.2018 (OA No.593/2017). Therefore, term "Environmental Penalty" is avoidable.

Item Nos. 01 & 02

Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI

Original Application No. 125/2017  
(M.A. No. 1337/2018)

With

Original Application No. 217/2017  
(M.A. Nos. 761/2017, 1073/2017,  
1098/2017 & 1471/2017)

Court on its own Motion  
State of Karnataka

Versus

Applicant(s)

Respondent(s)

With

D. Kupendra Reddy

Versus

Applicant(s)

State of Karnataka

Respondent(s)

Date of hearing: 06.12.2018

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON  
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER  
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER  
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Original Application No. 125/2017  
(M.A. No. 1337/2018)

For Applicant(s): Mr. Sajan Poovayya, Sr. Advocate and Mr. Saransh Jain,  
Advocate for impleaded applicant - Namma Bengaluru  
Foundation  
Mr. Vikram Hegde, Advocate for impleaded applicant

For Respondents (s): Mr. Devraj Ashok, Advocate  
Mr. Rajkumar, Advocate and Ms. Sonia, LA  
Ms. Nidhi Mehrotra, Advocate

Original Application No. 217/2017  
(M.A. Nos. 761/2017, 1073/2017,  
1098/2017 & 1471/2017)

For Applicant(s): Ms. Guneet Khehar, Mr. Tarunvir Singh Khehar, Mr.  
P. Ramaprakash and Mr. Sandeep Mishra, Advocates

For Respondents (s): Dr. Abhishek Atrey, Advocate  
Mr. Rajkumar, Advocate and Ms. Sonia, LA

**ORDER**

1. The issue for consideration in the two matters, one initiated by the Tribunal on its own motion and the other filed by an individual relates to contamination of water bodies at Bengaluru - Bellandur lake, Agara lake and Varthur lake *inter-alia*, on account of discharge of untreated sewage and other effluents from

their performance should be recorded and considered favourably or otherwise for their career progression.

xv. Similar exercise as (xiv) may be undertaken to identify officers responsible for failure in the past. Such exercise may be completed within three months from today.

xvi. Since failure of preventing the pollutants being discharged in water bodies (including lakes) and failure to implement solid and other waste management rules are too frequent and widespread, the CPCB must lay down specific guidelines to deal with the same, throughout India, including the scale of compensation to be recovered from different individuals/authorities, in addition to or as alternative to prosecution. The scale may have slabs, depending on extent of pollution caused, economic viability, etc. Deterrent effect for repeated wrongs may also be provided.

xvii. MoEF&CC may specify limit for phosphorus in soaps and detergents to prevent damage to the environment and public health.

27. The above amount in the present case has been determined having regard to the estimated cost of setting up of STPs, based on the data available, which has been assessed with the assistance of the learned Counsel for the parties.

28. We have nominated Justice Santosh Hegde on information being provided during the hearing that he is agreeable to undertake the above job.

29. Justice Hegde will be entitled to a token honorarium of Rs. 2.5 Lakh per month from the date he assumes the charge. Justice Hegde will be entitled to assistance of persons of his choice for which remuneration will be paid by the SPCB, Karnataka as may be determined by Justice Hegde.

Item Nos. 1 to 11

Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH, NEW DELHI

Original Application No. 176/2015  
(M.A. No. 1332/2015)  
&  
Original Application No. 59/2012  
(M.A. No. 34/2016 & M.A. No. 190/2016)  
&  
Original Application No. 108/2013  
(M.A. No. 489/2015)  
&  
Original Application No. 179/2013  
(M.A. No. 866/2014 & M.A. NO. 644/2015)  
&  
Appeal No. 67/2015  
(M.A. No. 652/2015)  
And

Original Application No. 484/2015  
(M.A. No. 155/2017, M.A. No. 567/2017  
& M.A. No. 927/2017)  
And

Original Application No. 327/2018  
(M. A. No. 1282/2018)  
And

Original Application No. 115/2017  
(M.A. No. 442/2017)  
And

Original Application No. 411 of 2018  
And

Original Application No. 613/2017  
And

Original Application No. 614/2017

Shailesh Singh		Respondent(s)
	Versus	
Hotel Holiday Regency, Moradabad & Ors.		Applicant(s)
With		
Legal Aid, National Green Tribunal Bar Association		Applicant(s)
	Versus	
NCT of Delhi & Ors.		Respondent(s)
With		
Raj Hans Bansal		Applicant(s)
	Versus	
Ministry of Water Resources & Ors.		Respondent(s)
With		
Apex Chambers of Commerce and Industries of N.C.T. of Delhi & Ors.		Applicant(s)
	Versus	
Govt. of NCT Delhi & Ors.		Respondent(s)
With		
Vikrant Tongad		Applicant(s)

Versus

Union of India & Ors. Respondent(s)

With  
Shailesh Singh Applicant(s)

Versus

Hotel The Oberoi Amarvilas & Ors. Respondent(s)

With  
Shailesh Singh Applicant(s)

Versus

Panchsheel Buildtech Pvt. Ltd. & Ors. Respondent(s)

With  
Shailesh Singh Applicant(s)

Versus

Central Ground Water Board & Ors. Respondent(s)

With  
M/s A-One Mineral Water Industry Applicant(s)

Versus

Central Ground Water Authority & Ors. Respondent(s)

With  
Mohd. Javed Asghar Applicant(s)

Versus

M/s Upper Ganges Sugar and Industries Ltd.  
(Distillery Unit) & Ors. Respondent(s)

With  
Mohd. Javed Asghar Applicant(s)

Versus

State of U.P. & Ors. Respondent(s)

Hearing concluded on: 18.12.2018

Order uploaded on: 03.01.2019

**CORAM:** HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON  
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER  
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER  
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

For Applicant(s): Mr. Raj Pajwani, Senior Advocate and Mr. Rahul Choudhary, Advocate (In O.A. Nos. 59/2012 & 108/2013)  
Ms. Preeti Singh, Mr. S. Porwal, Mr. Shivam Jaiswal, Advocates (In O.A. Nos. 176/2015, 484/2015, 327/2018 & 115/2017)  
Mr. Amrendra Kumar Dubey, Advocate (O.A. No. 411/2018)

For Respondent (s): Ms. Sakshi Popli, Advocate for DJB (O.A. No. 59/2012)  
Mr. Sumeet Pushkarna, Mr. Devanshu, Advocates with Mr. Sudhir Chauhan, E.E., Delhi Jal Board (O.A. No. 108/2013)  
Mr. Ajay Jain, Advocate for GNCTD  
Mr. Ardhendumauli Kumar Prasad, Mr. Shashank Saxena, Ms. Diksha Gera, Mr. Amrithesh Raj, Advocates for CGWA  
Mr. Pradeep Mishra, Mr. Daleep Dhyani, Advocates for UPPCB  
Ms. Sakshi Popli, Advocate for NDMC  
Mr. Amit Tiwari, Mr. Rohit Pratap Singh, Advocates for State of UP

appropriate mechanism can be introduced consistent with the needs of environment.

29. The MoEF&CC is directed to constitute an Expert Committee by including representatives from IIT Delhi, IIT Roorkee, IIM Ahmedabad, CPCB, NITI Ayog and any other concerned agency or department to examine the issue of appropriate policy for conservation of ground water with a robust institutional mechanism for surveillance and monitoring with a view to enhance access to ground water for drinking purposes in OCS areas by way of appropriate replenishment practices which can be properly accounted and measured for as well as to sustain the floodplains of rivers in terms of e-flows and other water bodies. The MoEF & CC and MoWR may finalize the issue of subject remain *inter-se* with regard to ground water reserve and its quality.

30. The Committee may be constituted in two weeks and report of the Committee may be furnished to the MoEF &CC and this Tribunal in two months by e-mail at [ngt.filing@gmail.com](mailto:ngt.filing@gmail.com).

31. The Committee may also indicate the projection of its impact study in light of projected data for the next 50 years (in phased manner with action plan for each decade). Thereafter, fresh guidelines be issued by the concerned Ministry and the report furnished to the Tribunal on or before 30.04.2019.

32. The CPCB may constitute a mechanism to deal with individual cases of violations of norms, as existed prior to Notification of 12.12.2018, to determine the environment compensation to be recovered or other coercive measures to be taken, including prosecution, for past illegal extraction of ground water, as per

law. All the matters relating to illegal extraction of ground water by individuals are disposed of with these directions.

33. The Expert Committee report, the new policy and challenge to orders of authorities, if any, will be considered on the next date.

The matter be put up for above consideration in the first week of May, 2019.



**CRITERIA TO CALCULATE WATER CONSUMPTION****Table 1: Discharge of 4" Dia and 1 HP Pump**

Sl. No.	Depth (Meter)	Discharge	
		LPM	m <sup>3</sup> /hr
1	25	50	3
2	43	40	2.4
3	59	30	1.8
4	69	20	1.2
5	77	10	0.6

**Table 2: Discharge of 4" Dia and 2 HP Pump**

Sl. No.	Depth (Meter)	Discharge	
		LPM	m <sup>3</sup> /hr
1	60	50	3
2	98	40	2.4
3	124	30	1.8
4	141	20	1.2
5	165	10	0.6

**Table 3: Discharge of 6" Dia and 3 HP Pump**

Sl. No.	Depth (Meter)	Discharge	
		LPM	m <sup>3</sup> /hr
1	17	200	12
2	29	175	10.5
3	41	150	9
4	50	130	7.8
5	62	100	6

**Table 4: Discharge of 6" Dia and 5 HP Pump**

Sl. No.	Depth (Meter)	Discharge	
		LPM	m <sup>3</sup> /hr
1	26	225	13.5
2	50	200	12
3	70	175	10.5
4	86	150	9
5	92	140	8.4

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